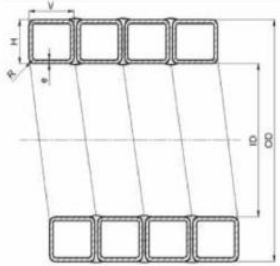
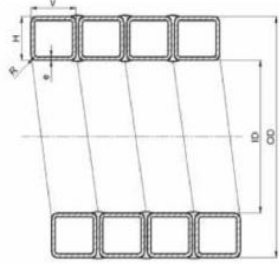


STATIA DE POMPARE A APELOR UZATE SPAU-2 (PLATFORMA B)

Nr.crt.	Specificatii tehnice impuse prin Caietul de sarcini	Corespondenta propunerii tehnice cu specificatiile tehnice impuse prin Caietul de sarcini	Producator
1	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.430 mm; – Htot = 6.790 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m³ (normativa ≥ 940 kg/m³ EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa submersibila 2 BUC – 1A+1R</p> <ul style="list-style-type: none"> - Q=25,0 l/s - H = 18.83 m; - P = 13.00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; – Comunicare cu aplicatii SCADA prin registri MODBUS; 	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.430 mm; – Htot = 6.790 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m³ (normativa ≥ 940 kg/m³ EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa submersibila 2 BUC – 1A+1R</p> <ul style="list-style-type: none"> - Q=25,0 l/s - H = 18.83 m; - P = 13.00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; – Comunicare cu aplicatii SCADA prin registri MODBUS; 	<p>HYDROGEO SISTEMI Bulgaria</p>

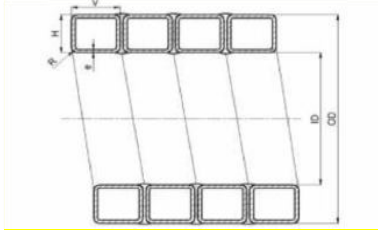
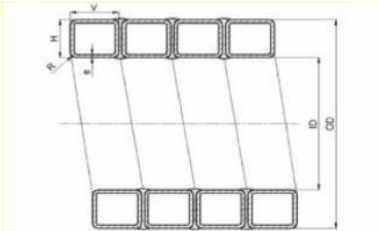
<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.: Vana sertar D250:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN250, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.: Vana sertar D250:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN250, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tijei si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tijei este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 25 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nereciclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D110 mm. <p>Lant de sustinere pompa – 2 buc.:</p> <ul style="list-style-type: none"> – Material: INOX. <p>Dispozitiv sustinere pompa submersibila – autocuple pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; <p>Sistem de bare culisante pentru curatire.</p>	<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tijei si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tijei este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 25 buc.:</p> <p>Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nereciclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D110 mm. <p>Lant de sustinere pompa – 2 buc.:</p> <ul style="list-style-type: none"> – Material: INOX. <p>Dispozitiv sustinere pompa submersibila – autocuple pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; <p>Sistem de bare culisante pentru curatire.</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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<p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D250. <p>Cutie stradala protectie kit actionare vana sertar – 1 buc.: – Material: fonta.</p> <p>Conducta de aerisire – 2 buc.: – Priza de intrare aer proaspat; – Priza de evacuare aer viciat;</p> <ul style="list-style-type: none"> – Material: PEID 100 D160 SDR17. <p>Sistem de ventilatie – 1 buc.: Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h. In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.</p> <ul style="list-style-type: none"> – Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1]; – Nivel zgomot la 3 m: 37 – 46 [dBA]. <p>Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.: – Cota minima de oprire pompe de la fundul bazinului: 0,29 m.</p> <p>Conducta trecere cabluri electrice – 1 buc.: Material PEID100, SDR17, D90.</p>	<p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D250. <p>Cutie stradala protectie kit actionare vana sertar – 1 buc.: – Material: fonta.</p> <p>Conducta de aerisire – 2 buc.:</p> <ul style="list-style-type: none"> – Priza de intrare aer proaspat; – Priza de evacuare aer viciat; – Material: PEID 100 D160 SDR17. <p>Sistem de ventilatie – 1 buc.: Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h. In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.</p> <ul style="list-style-type: none"> – Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1]; – Nivel zgomot la 3 m: 37 – 46 [dBA]. <p>Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.: – Cota minima de oprire pompe de la fundul bazinului: 0,29 m.</p> <p>Conducta trecere cabluri electrice – 1 buc.: Material PEID100, SDR17, D90.</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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2	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> - Respectarea conditiilor de temperatura: -35°C ÷ 45°C; - Amplasare: retea de canalizare fara presiune; - Montarea se va face conform instructiunilor de montare date de producator. 	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> - Respectarea conditiilor de temperatura: -35°C ÷ 45°C; - Amplasare: retea de canalizare fara presiune; <p>Montarea se va face conform instructiunilor de montare date de producator.</p>	
3	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> - Minim 24 luni de la livrare. - Furnizorul va asigura service in perioada de garantie. - Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie. 	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> - Minim 24 luni de la livrare. - Furnizorul va asigura service in perioada de garantie. <p>Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie.</p>	
4	<p>Alte conditii cu caracter tehnic:</p> <ul style="list-style-type: none"> - Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; - Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; - Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; - Furnizorul va pune la dispozitie contract de mentenanta. 	<p>Alte conditii cu caracter tehnic:</p> <ul style="list-style-type: none"> - Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; - Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; - Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; <p>Furnizorul va pune la dispozitie contract de mentenanta.</p>	

STATIA DE POMPARE A APELOR UZATE SPAU-3 (PLATFORMA C)

Nr.crt.	Specificatii tehnice impuse prin Caietul de sarcini	Corespondenta propunerii tehnice cu specificatiile tehnice impuse prin Caietul de sarcini	Producator
1	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.780 mm; – Htot = 7.140 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m3 (normativa ≥ 940 kg/m3 EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Q = 59.44 l/s - H = 10,32 m; - P = 10.00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; <p>Comunicare cu aplicatii SCADA prin registri MODBUS;</p>	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.780 mm; – Htot = 7.140 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m3 (normativa ≥ 940 kg/m3 EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Q = 59.44 l/s - H = 10,32 m; - P = 10.00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; <p>Comunicare cu aplicatii SCADA prin registri MODBUS;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>

<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.:</p> <p>Vana sertar D250:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN250, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.:</p> <p>Vana sertar D250:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN250, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tije si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tije este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 27 buc.:</p> <p>Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nerecyclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D160 mm. <p>Lant de sustinere pompa – 2 buc.: – Material: INOX.</p> <p>Dispozitiv sustinere pompa submersibila – autocuple pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem de bare culisante pentru curatire. <p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D250. <p>Cutie stradala protectie kit actionare vana sertar – 1 buc.: – Material: fonta.</p> <p>Conducta de aerisire – 2 buc.: – Priza de intrare aer proaspat;</p> <ul style="list-style-type: none"> – Priza de evacuare aer viciat; – Material: PEID 100 D160 SDR17. 	<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tije si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tije este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 27 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nerecyclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D160 mm. <p>Lant de sustinere pompa – 2buc.: – Material: INOX.</p> <p>Dispozitiv sustinere pompa submersibila – autocuple pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem de bare culisante pentru curatire. <p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D250. 	<p>HYDROGEO SISTEMI Bulgaria</p>
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Sistem de ventilatie – 1 buc.:

Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h.

In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.

- Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1];
- Nivel zgomot la 3 m: 37 – 46 [dBA].

Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.: – Cota minima de oprire pompe de la fundul bazinului: 0,29 m.

Conducta trecere cabluri electrice – 1 buc.:

Material PEID100, SDR17, D90.

Cutie stradala protectie kit actionare vana sertar – 1 buc.:

- Material: fonta.

Conducta de aerisire – 2 buc.: – Priza de intrare aer proaspat;

– Priza de evacuare aer viciat;

- Material: PEID 100 D160 SDR17.

Sistem de ventilatie – 1 buc.:

Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h.

In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125

W.

- Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1];
- Nivel zgomot la 3 m: 37 – 46 [dBA].

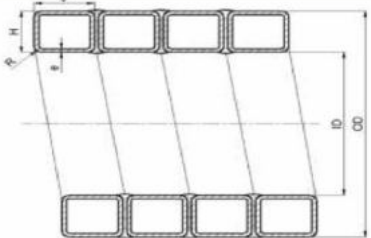
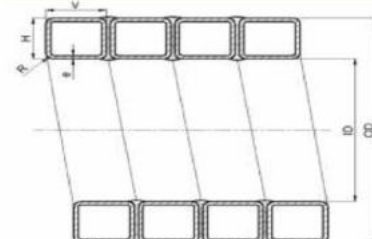
Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.: – Cota minima de oprire pompe de la fundul bazinului: 0,29 m.

Conducta trecere cabluri electrice – 1 buc.:

Material PEID100, SDR17, D90.

2	Specificatii de performanta si conditii privind siguranta in exploatare: <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ÷ 45°C; – Amplasare: retea de canalizare fara presiune; – Montarea se va face conform instructiunilor de montare date de producator. 	Specificatii de performanta si conditii privind siguranta in exploatare: <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ÷ 45°C; – Amplasare: retea de canalizare fara presiune; Montarea se va face conform instructiunilor de montare date de producator.	
3	Conditii de garantie si post-garantie: <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. – Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie. 	Conditii de garantie si post-garantie: <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie.	
4	Alte conditii cu caracter tehnic: <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; – Furnizorul va pune la dispozitie contract de mentenanta. 	Alte conditii cu caracter tehnic: <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; Furnizorul va pune la dispozitie contract de mentenanta.	HYDROGEO SISTEMI Bulgaria

Statia de pompare a apelor uzate SPAU-4 (Platforma D)

Nr.crt.	Specificatii tehnice impuse prin Caietul de sarcini	Corespondenta propunerii tehnice cu specificatiile tehnice impuse prin Caietul de sarcini	Producator
1	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.070 mm; – Htot = 6.430 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m³ (normativa ≥ 940 kg/m³ EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Qpompa = 5.8 l/s - H = 15,46 m; - P = 2.60 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; Comunicare cu aplicatii SCADA prin registri MODBUS; 	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.070 mm; – Htot = 6.430 mm; – Dint = 2.000 mm; – Dext = 2.205 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m³ (normativa ≥ 940 kg/m³ EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Qpompa = 5.8 l/s - H = 15,46 m; - P = 2.60 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; Comunicare cu aplicatii SCADA prin registri MODBUS; 	<p>HYDROGEO SISTEMI Bulgaria</p>

<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.:</p> <p>Vana sertar D200:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN200, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; – Material sertar: GJS 500+EPDM/NBR; 	<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.: Vana sertar D200:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN200, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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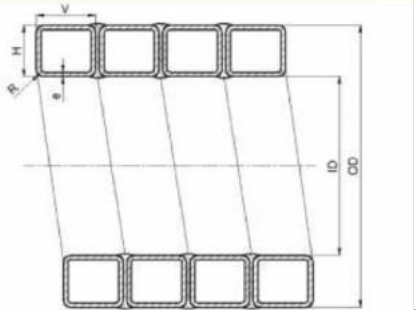
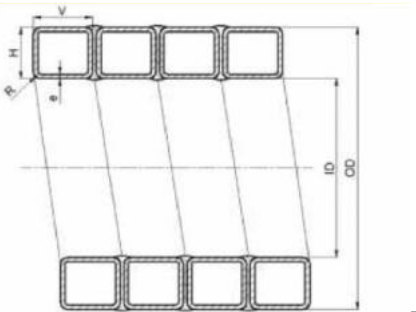
<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tije si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tije este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 24 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fature; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nereciclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D50 mm. <p>Lant de sustinere pompa – 2 buc.: – Material: INOX.</p> <p>Dispozitiv sustinere pompa submersibila – autocuplaje pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p>	<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tije si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tije este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 24 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fature; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nereciclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.:</p> <ul style="list-style-type: none"> – Material: INOX. <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D50 mm. <p>Lant de sustinere pompa – 2buc.: – Material: INOX.</p> <p>Dispozitiv sustinere pompa submersibila – autocuplaje pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED 	<p>HYDROGEO SISTEMI Bulgaria</p>
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– Alimentare 24V
Cos de retinere – 1 buc.:

	<ul style="list-style-type: none"> – Material: INOX; – Sistem de bare culisante pentru curatire. <p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D200. <p>Cutie stradala protectie kit actionare vana sertar – 1 buc.: – Material: fonta.</p> <p>Conducta de aerisire – 2 buc.:</p> <ul style="list-style-type: none"> – Priza de intrare aer proaspat; – Priza de evacuare aer viciat; <ul style="list-style-type: none"> – Material: PEID 100 D160 SDR17. <p>Sistem de ventilatie – 1 buc.: Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h. In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.</p> <ul style="list-style-type: none"> – Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1]; – Nivel zgomot la 3 m: 37 – 46 [dBA]. <p>Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.:</p> <ul style="list-style-type: none"> – Cota minima de oprire pompe de la fundul bazinului: 0,29 m. <p>Conducta trecere cabluri electrice – 1 buc.:</p> <ul style="list-style-type: none"> – Material PEID100, SDR17, D90. 	<ul style="list-style-type: none"> – Material: INOX; – Sistem de bare culisante pentru curatire. <p>Conducta de intrare – 1 buc.:</p> <ul style="list-style-type: none"> – Material: PEID100; – Capat flansa + flansa libere D200. <p>Cutie stradala protectie kit actionare vana sertar – 1 buc.: – Material: fonta.</p> <p>Conducta de aerisire – 2 buc.:</p> <ul style="list-style-type: none"> – Priza de intrare aer proaspat; – Priza de evacuare aer viciat; <ul style="list-style-type: none"> – Material: PEID 100 D160 SDR17. <p>Sistem de ventilatie – 1 buc.: Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h. In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.</p> <ul style="list-style-type: none"> – Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1]; – Nivel zgomot la 3 m: 37 – 46 [dBA]. <p>Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.:</p> <ul style="list-style-type: none"> – Cota minima de oprire pompe de la fundul bazinului: 0,29 m. <p>Conducta trecere cabluri electrice – 1 buc.: Material PEID100, SDR17, D90</p>	HYDROGEO SISTEMI Bulgaria
2	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ☐ 45°C; – Amplasare: retea de canalizare fara presiune; – Montarea se va face conform instructiunilor de montare date de producator. 	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ☐ 45°C; – Amplasare: retea de canalizare fara presiune; <p>Montarea se va face conform instructiunilor de montare date de producator.</p>	
3	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. – Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie. 	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. <p>Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie.</p>	

4	<p>Alte conditii cu caracter tehnic:</p> <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; – Furnizorul va pune la dispozitie contract de mentenanta. 	<p>Alte conditii cu caracter tehnic:</p> <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; <p>Furnizorul va pune la dispozitie contract de mentenanta.</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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STATIA DE POMPARE A APELOR UZATE SPAU-5 (PLATFORMA E)

Nr.crt.	Specificatii tehnice impuse prin Caietul de sarcini	Corespondenta propunerii tehnice cu specificatiile tehnice impuse prin Caietul de sarcini	Producator
1	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.470 mm; – Htot = 6.830 mm; – Dint = 2.500 mm; – Dext = 2.705 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m3 (normativa ≥ 940 kg/m3 EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Qpompa = 75.42 l/s - H = 10,49 m; - P = 11,00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; – Comunicare cu aplicatii SCADA prin registri MODBUS; 	<p>Parametrii tehnici si functionali:</p> <p>Bazin statie pompare – 1 buc:</p> <ul style="list-style-type: none"> – Material PEID spiralat, tub cu clasa de rigiditate SN8, cu pereti in structura tip figure; – Hcorp SPAU = 6.470 mm; – Htot = 6.830 mm; – Dint = 2.500 mm; – Dext = 2.705 mm; – Grosime profil: 9.0 mm; – Indice fluidate la cald (MFR) la 190°C/5kg – 1,5 g/10 min (normativa ≤ 1,6 g/1 min EN ISO 1133-1 Metoda A); – Densitatea – 955 kg/m3 (normativa ≥ 940 kg/m3 EN ISO 1183-1); – Modul de elasticitate – 1000 MPa (normativa ≥ 800 MPa EN ISO 527-2).  <p>Pompa – 2 bucati 1A+ 1R</p> <ul style="list-style-type: none"> - Qpompa = 75.42 l/s - H = 10,49 m; - P = 11,00 kW fiecare pompa. <p>Tablou de automatizare – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem complet automatizat; <p>Comunicare cu aplicatii SCADA prin registri MODBUS;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>

<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.: Vana sertar D300:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN300, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; – Material sertar: GJS 500+EPDM/NBR; 	<ul style="list-style-type: none"> – Parametri transmisi in SCADA; – Stare pompe (oprit/ functionare, avarie); – Nivel apa in cheson SPAU; – Orele de functionare pentru fiecare pompa; – Intrarea automata in functiune a pompei de rezerva; – Atingerea nivelului minim de avarie; – Depasirea nivelului maxim de avarie; – Tensiuni intre faze, curenti pe faze, putere active, reactiva, aparenta, factor de putere; – Prezenta/lipsa tensiune de alimentare. <p>Sistem de ridicat pompe – 1 buc.:</p> <ul style="list-style-type: none"> – Sistem de ridicat pompe din statie pompare cu capacitate de ridicare de maxim 600 kg; – Greutate totala sistem: 23.5 Kg; – Brat telescopic cu indicator de suprasarcina integrat; – Lamele de coloana care permit atasarea troliului unic si 2 intervale de raza (900 1200mm sau 1200 - 1500mm) – Certificare conform EN795:2012 - ca parte a unui sistem conform cu standardul EN363. In conformitate cu standardul AS/NZS 5532:2013; – Sistemul poate fi utilizat si in atmosfere explozive in Zona 2 conform regulamentelor ATEX; – Rotatia la 360° sub sarcina complete. <p>Capac carosabil – 2 buc.:</p> <ul style="list-style-type: none"> – Un capac este destinat manevrarii cosului, iar celalalt pentru acces in interiorul statiei si pentru manevrarea pompelor; – Material polimer – compozit; – Grupa 3, C250 conform EN 124; – Prevazut cu balama si sistem de zavorare in doua puncta; – Tip capac: rotund, cu rama; – Dimensiuni: diamtru interior (pas liber) – 600 mm, dimensiuni exterioare rama 887 mm, inaltime 130 mm; – Masa: 50 Kg; – Vopsit RAL 5015 epoxy 250 µm. <p>Vana de intrare (colector) – 1 buc.: Vana sertar D300:</p> <ul style="list-style-type: none"> – Prindere cu flanse pe un capat de flansa din PEID100, DN300, SDR17 - etansare cu garnitura EPDM; – Material corp vana: GJS 500; <p>Material sertar: GJS 500+EPDM/NBR;</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tijei si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tijei este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 26 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nerecyclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D200 mm. <p>Lant de sustinere pompa – 2 buc.: – Material: INOX.</p> <p>Dispozitiv sustinere pompa submersibila – autocuplaje pompe – 2 buc.:</p> <p>Sistem de iluminare interioara – 1 buc.:</p> <ul style="list-style-type: none"> – Lampa LED – Alimentare 24V <p>Cos de retinere – 1 buc.:</p>	<ul style="list-style-type: none"> – Piulita sertar: alama, cu posibilitate de inlocuire; – Tija: AISI 420, cu filet roluit; – garnitura dintre corp si capac: EPDM, capac: GJS 500; – Etansarea tijei si a pachetului de etansare se face cu O-ringuri: EPDM/NBR; – Pachetul de etansare este protejat cu garnitura anti-praf: garnitura NBR; – Suruburi corp - capac zincate, protejate cu parafina – Piulita tijei este din alama rezistenta la dezincare, cu posibilitate de inlocuire – Vopsit RAL 5015 epoxy 250 µm. <p>Platforma de lucru – 1 buc.:</p> <ul style="list-style-type: none"> – Material: INOX; – Sistem antiderapant; – Mana curenta; – Trapa acces pompe. <p>Scara access cu trepte ancorate – 26 buc.: Material inox acoperite cu un strat de PP:</p> <ul style="list-style-type: none"> – Trepte ancorate in structura de tip fagure; – Treptele sunt fabricate din otel inox de 12 mm incapsulate intr-o camasa de copolymer din propilena 100% nerecyclata (material 100% virgin); – Complet etans contra contactului cu apa; – Grad de coroziune zero. <p>Scarile sunt sudate de corpul statiei;</p> <p>Bara pentru culisare electropompa – 2 buc.: – Material: INOX.</p> <p>Conducta refulare – 2 buc.:</p> <ul style="list-style-type: none"> – Material PEID; – D200 mm. <p>Lant de sustinere pompa – 2 buc.: – Material: INOX.</p>	<p>HYDROGEO SISTEMI Bulgaria</p>
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- Sistem de bare culisante pentru curatire.

- Material: INOX;

Conducta de intrare – 1 buc.:

- Material: PEID100;
- Capat flansa + flansa libere D200.

Cutie stradala protectie kit actionare vana sertar – 1 buc.: –

Material: fonta.

Conducta de aerisire – 2 buc.: – Priza

de intrare aer proaspat; – Priza
de evacuare aer viciat;

- Material: PEID 100 D160 SDR17.

Sistem de ventilatie – 1 buc.:

Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h.

In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125 W.

- Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1];
- Nivel zgomot la 3 m: 37 – 46 [dBA].

Regulator de nivel cu contragreutati comanda pe nivele si rotire pompe – 3 buc.: – Cota minima

de oprire pompe de la fundul bazinului: 0,29 m.

Conducta trecere cabluri electrice – 1 buc.:

Material PEID100, SDR17, D90.

Dispozitiv sustinere pompa submersibila – autocuplaje pompe – 2 buc.:

Sistem de iluminare interioara – 1 buc.:

- Lampa LED
- Alimentare 24V

Cos de retinere – 1 buc.:

- Sistem de bare culisante pentru curatire.

- Material: INOX;

Conducta de intrare – 1 buc.:

- Material: PEID100;
- Capat flansa + flansa libere D200.

Cutie stradala protectie kit actionare

vana sertar – 1 buc.: – Material:
fonta.

Conducta de aerisire – 2 buc.: – Priza de intrare aer proaspat; – Priza de

evacuare aer viciat;

- Material: PEID 100 D160 SDR17.

Sistem de ventilatie – 1 buc.:

Ventilatia se realizeaza prin intermediul unui ventilator in line D150, cu capacitate de reimprospatare a aerului de 415 - 565mc/h.

In acord cu reglementarile ErP-regulation (EC) 327/2011 privind consumul energetic sub 125

W.

- Putere: 42 - 50 W – IPX4; – Rotatii: 1940 – 2620 RPM [min-1];
- Nivel zgomot la 3 m: 37 – 46 [dBA].

Regulator de nivel cu contragreutati comanda pe nivele si rotire

pompe – 3 buc.: – Cota minima de oprire pompe de la fundul
bazinului: 0,29 m.

Conducta trecere cabluri electrice – 1 buc.:

Material PEID100, SDR17, D90.

2	Specificatii de performanta si conditii privind siguranta in exploatare: <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ÷ 45°C; – Amplasare: retea de canalizare fara presiune; – Montarea se va face conform instructiunilor de montare date de producator. 	Specificatii de performanta si conditii privind siguranta in exploatare: <ul style="list-style-type: none"> – Respectarea conditiilor de temperatura: -35°C ÷ 45°C; – Amplasare: retea de canalizare fara presiune; Montarea se va face conform instructiunilor de montare date de producator.	
3	Conditii de garantie si post-garantie: <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. – Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie. 	Conditii de garantie si post-garantie: <ul style="list-style-type: none"> – Minim 24 luni de la livrare. – Furnizorul va asigura service in perioada de garantie. Furnizorul va asigura piese de schimb pe baza de comanda in perioada postgarantie.	
4	Alte conditii cu caracter tehnic: <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; – Furnizorul va pune la dispozitie contract de mentenanta. 	Alte conditii cu caracter tehnic: <ul style="list-style-type: none"> – Furnizorul este obligat sa asigure personal specializat care va realiza punerea in functiune a echipamentelor statiei de pompare; – Materiale din zona libera a caminului vor fi anti- Ex. Nu se permit legaturi electrice in interiorul caminului statiei de pompare; – Furnizorul va asigura deplasarea echipei de interventie in maxim 48 de ore de la solicitarii; Furnizorul va pune la dispozitie contract de mentenanta.	HYDROGEO SISTEMI Bulgaria

- **HYDROGEO SISTEMI LTD**
- BULGARIA 1404 SOFIA, 86 RALEVITSA STR
- VAT NR: BG201931854

WWPS – Data sheet

Manufacturer: HYDROGEO SISTEMI Ltd Bulgaria

Manhole:

Specification

Standard	EN 13476-2
Product appearance	Spirally profiled pipe
Dimension DN /ID	2000 mm
Dimension ID	≥ 1980 mm
Dimension OD	2190 ± 20 mm
Wall thicknesses	e5 min ≥ 7.0 mm
PE Density	≥ 0.93 g/cm ³
Ring stiffness	≥ SN 8 (kN /m ²)
Modulus of elasticity	≥ 1000 (N/mm ²)
Pipe flow index (MFR)	≤ 1,6 g/10 min (190 °C / 5.0 kg)

Characteristics

Dimensions	Requirements: Table 6	Test method: EN ISO 3126
Ring stiffness	Requirements: ≥ SN 8	Test method: EN ISO 9969
Impact strenght 0 °C	Requirements: No cracks	Test method: EN ISO 3127
Ring flexibility	Requirements: 30% deflexion without damages	Test method: EN ISO 13968
Pipe flow index (MFR)	Requirements: ≤ 20% of the material	Test method: EN ISO 1133-1
Creep ratio	Requirements: ≤ 4%	Test method: EN ISO 9967
Tightness of elastomeric ring seal joint	Requirements: No leakage	Test method: ISO 13259

FLOW RATE TABLE PIPE FILLING 95 %

slope m/m	DN/ID	1300	1400	1500	1600	1800	2000
1/1000	Q(l/s)	1916.45	2335.20	2806.89	3334.02	4564.30	6044.97
0.001	v(m/s)	1.44	1.52	1.59	1.66	1.79	1.93



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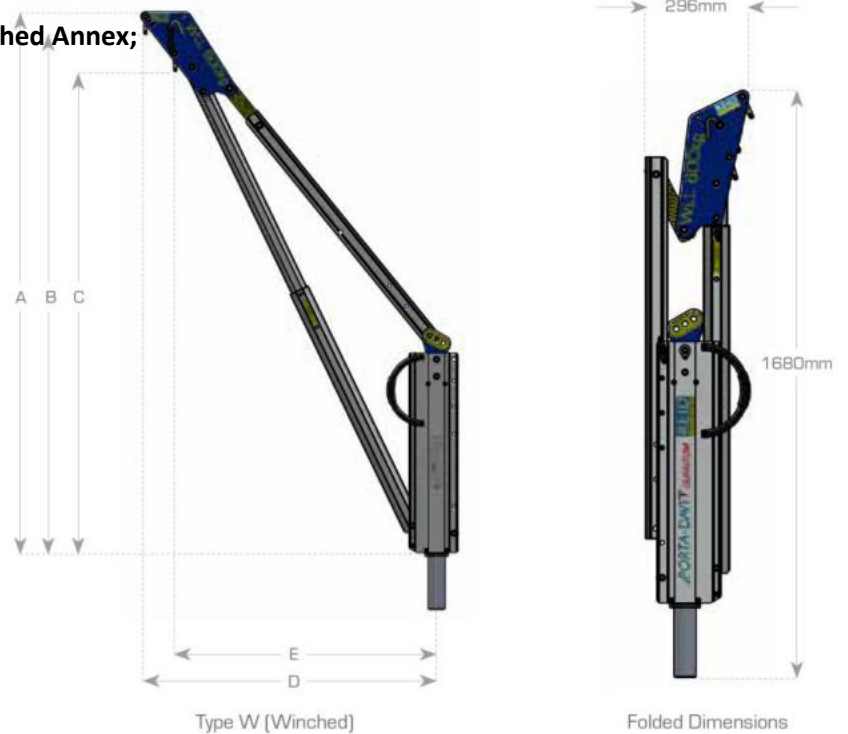
- VAT NR: BG201931854

Pumps – according to Annex

Automation panel:

- Fully automated system
- Communication with SCADA applications through MODBUS registers;
- parameters transmitted to SCADA:
 - Pump status (stopped / running, fault)
 - Water level in the WWPS drawer
 - The hours of operation for each pump
 - Automatic start-up of the stand by pump
 - Reaching the minimum level of damage
 - Exceeding the maximum level of damage
 - Voltages between phases, phases current, active power, reactive, apparent, power factor
 - The presence / absence of supply voltage

Pump lifting system – according to attached Annex;



WLL	Radius Adjustment Points	Dimensions (mm)					
		A	B	C	D	E	
PDQ 1	600kg	1	2007	1935	1799	1200	1100
		2	2061	1989	1848	1100	1000
		3	2111	2039	1892	1000	900

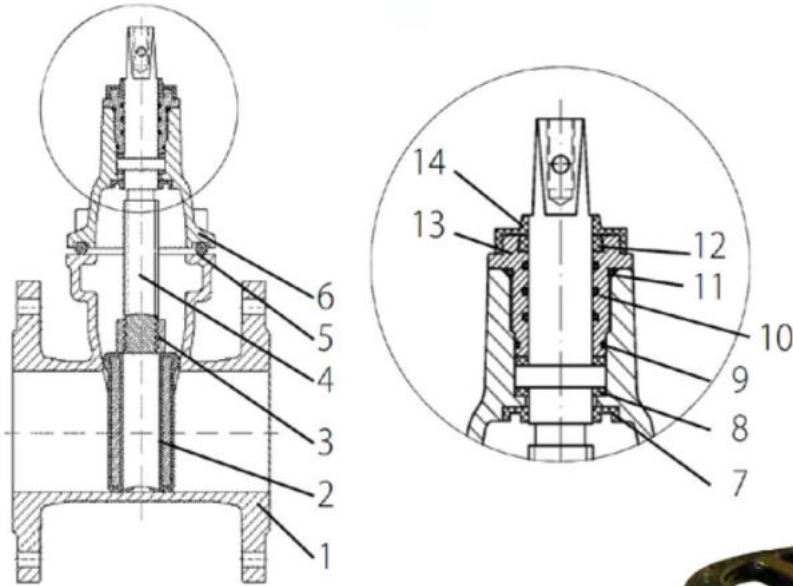
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- VAT NR: BG201931854

Road cover – according to attached Annex

Gate Valve specifications:

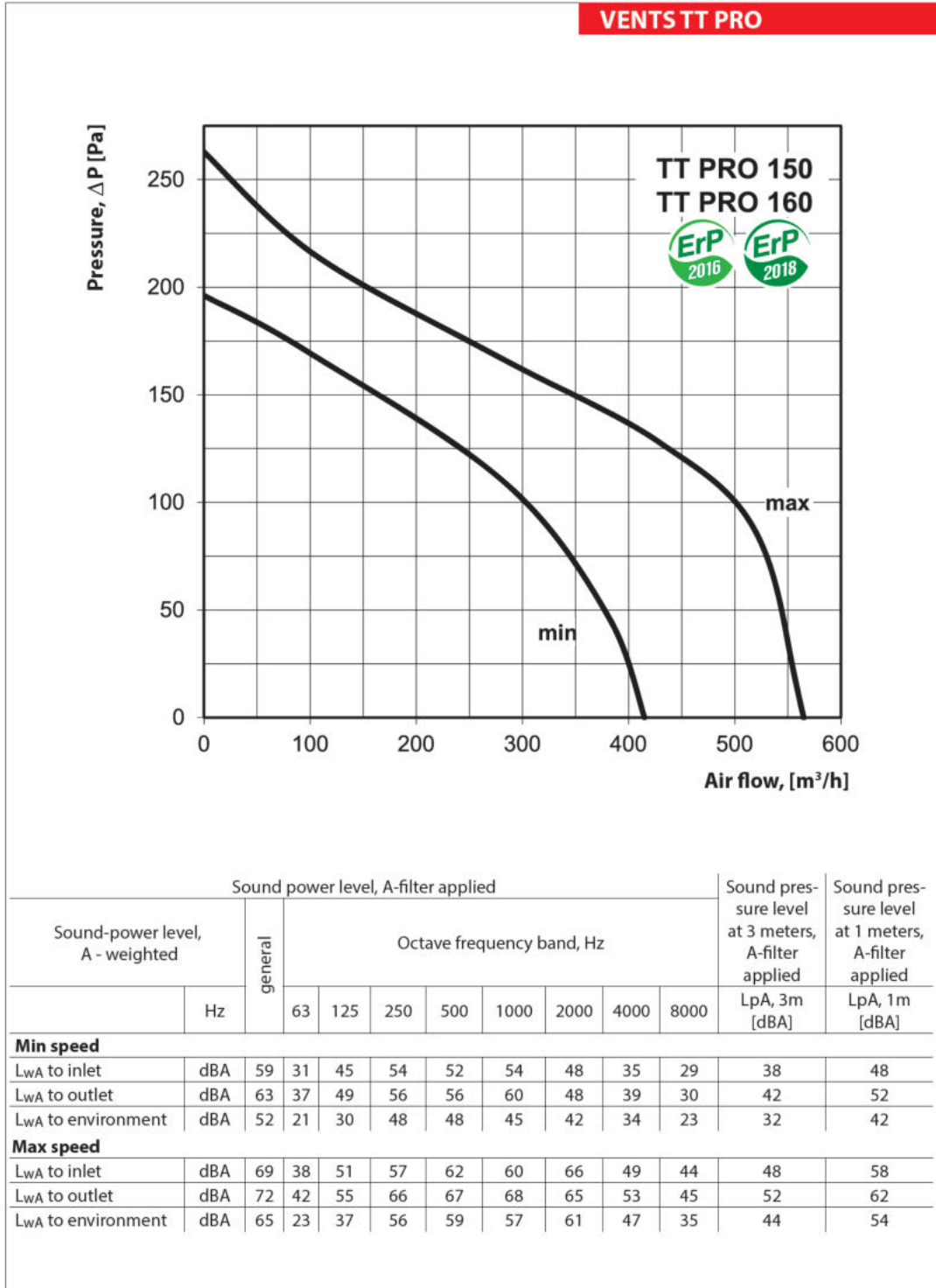


DESCRIPTION		
1	BODY	GJS500
2	GATE	GJS500+EPDM/NBR
3	NUT	BRASS
4	SHAFT	AISI 420
5	BODY-BONNET GASKET	EPDM
6	BONNET	GJS500
7	GASKET	EPDM
8	PACKING	PTFE
9	O-RINGS	EPDM
10	SHAFT-NET O-RINGS	NBR
11	O-RINGS	EPDM
12	O-RINGS	NBR
13	GLAND NUT	BRASS
14	DUST PROTECTOR	NBR
	PAINTING RAL 5015	Epoxy 250 μm



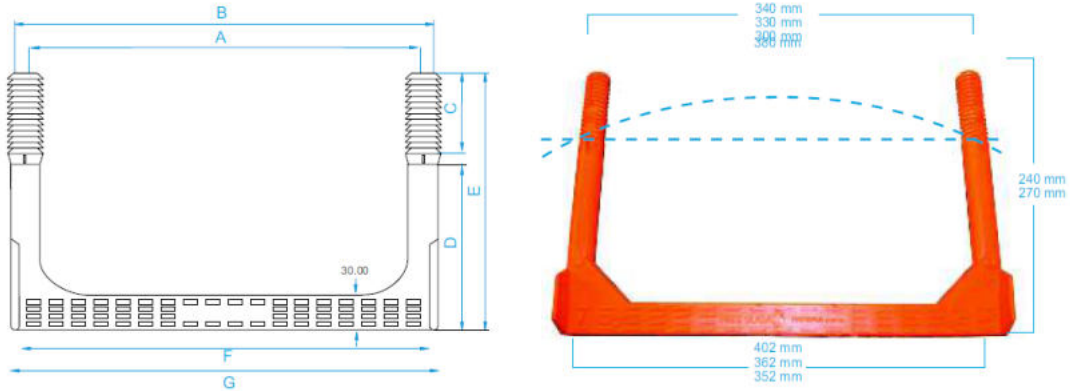
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Ventilation systems - according to attached Annex



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Anchored steps

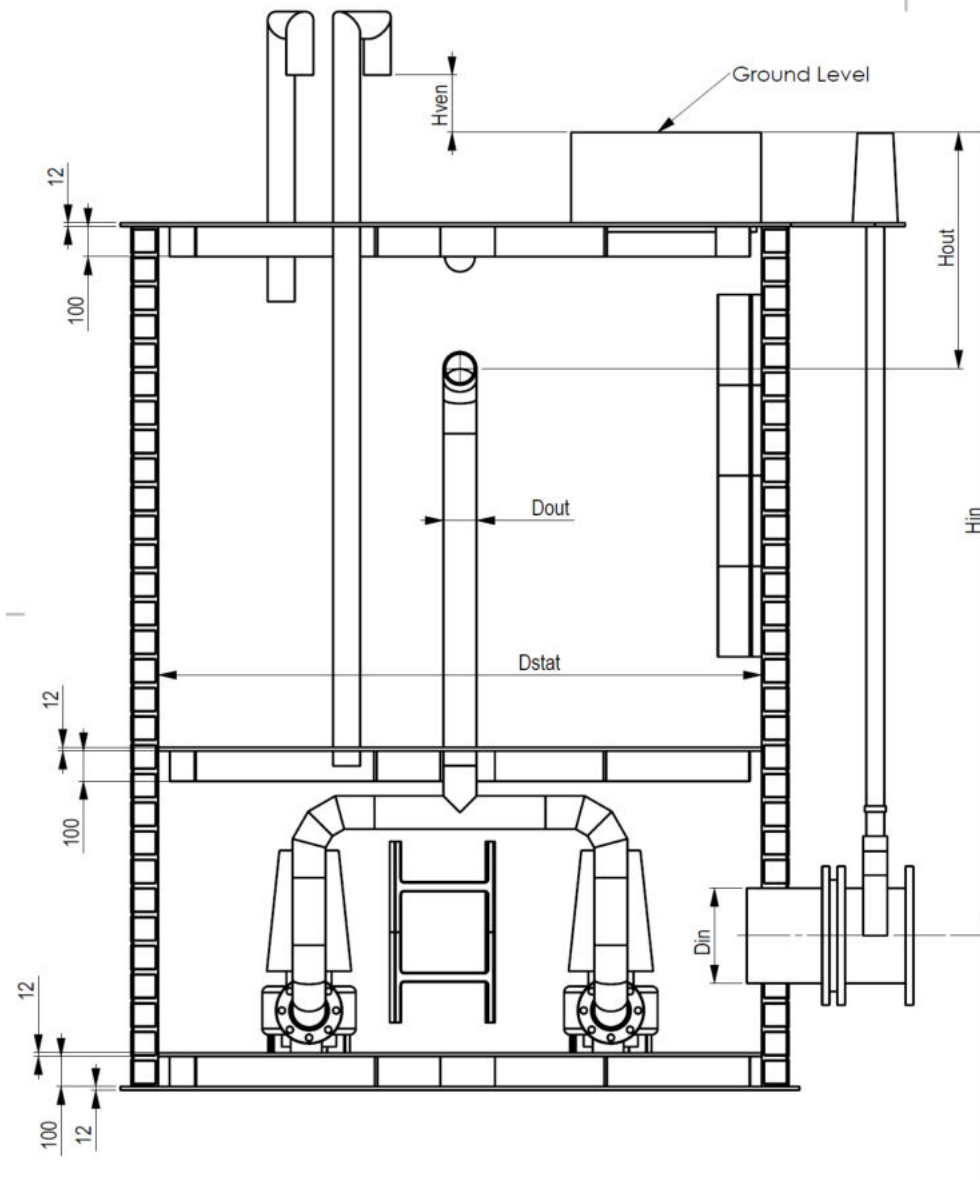


Modelo/ model	Medidas/ measures							Embalaje/ package	Color/ colour
	A	B	C	D	E	F	G		
								25 unid/caja 25 units/box	
340 C-R Plus	340	367	80	190	270	349,77	362	Palet 1000 uds./units	naranja / orange
330 C-R Plus	330	357	80	190	270	339,77	352	Palet 1000 uds./units	naranja / orange
300 C-R Plus	300	327	80	190	270	309,77	322	Palet 1000 uds./units	naranja / orange
340 C-R	340	367	80	160	240	349,77	362	Palet 1000 uds./units	naranja / orange
330 C-R	330	357	80	160	240	339,77	352	Palet 1000 uds./units	naranja / orange
300 C-R	300	327	80	160	240	309,77	322	Palet 1000 uds./units	naranja / orange

- **HYDROGEO SISTEMI LTD**

- BULGARIA 1404 SOFIA, 86 RALEVITSA STR

- VAT NR: BG201931854

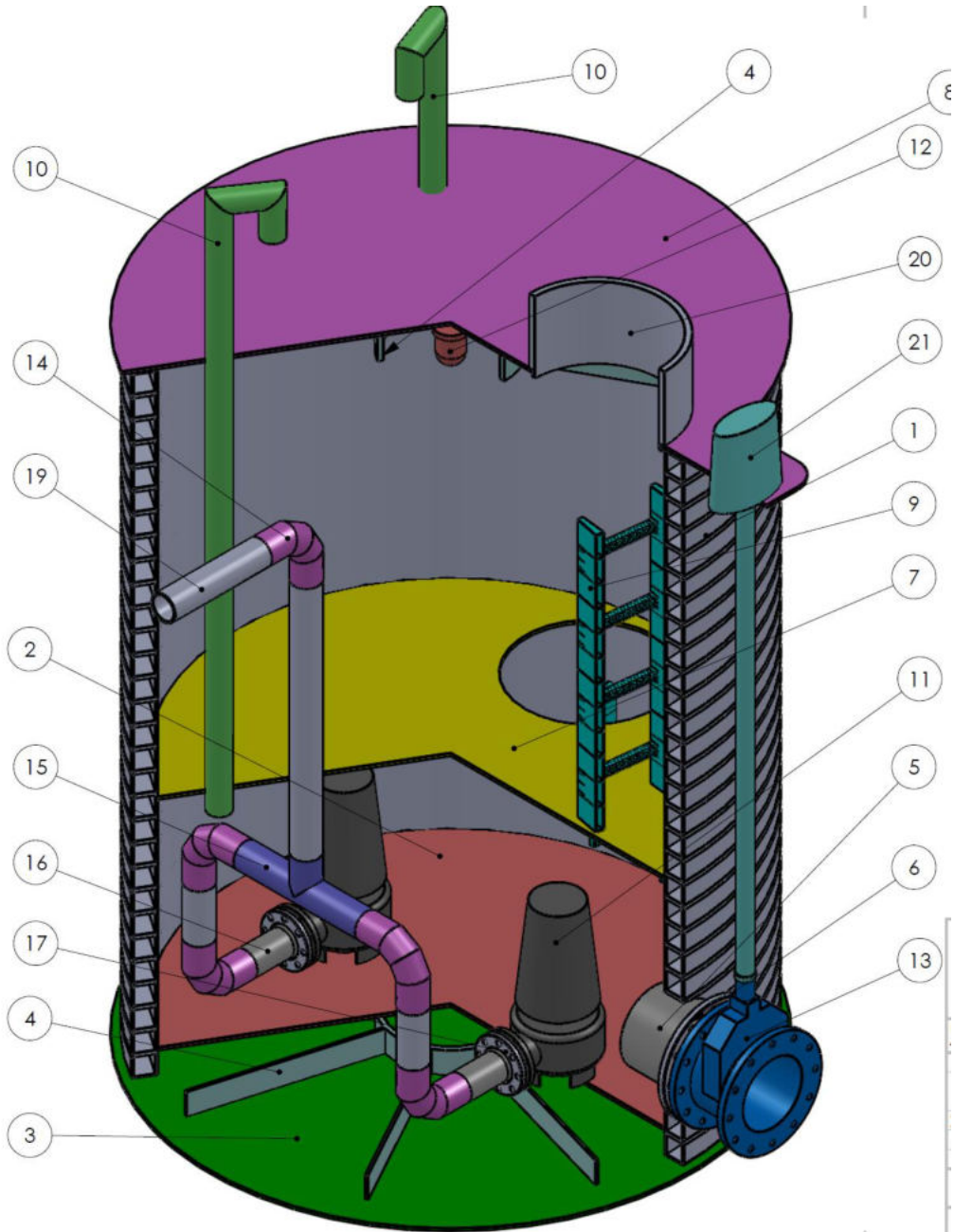


Simbol	Discription	Dimension
Hin	Height of the inlet pipe in the Pump station	According to the specification of the customer
Hout	Height of the output pipe from the Pump Station	According to the specification of the customer
Hven	Height of the ventilation pipe from the ground	According to the specification of the customer
Din	Diameter of the inlet pipe	According to the specification of the customer
Dout	Diameter of the outlet pipe	According to the specification of the customer
Dstat	Diameter of the Pump Station	According to the specification of the customer
Ainout	Angle betlin inlet pipe and outlet pipe	According to the specification of the customer

- **HYDROGEO SISTEMI LTD**

- BULGARIA 1404 SOFIA, 86 RALEVITSA STR

- VAT NR: BG201931854



ITEM NO.	PART NUMBER
1	Spiral Pipe
2	Bottom Plate2
3	Bottom Plate1
4	Reinforcement on Bottom Plate
5	Adapter Flange 1
6	Metal ring 1
7	Platform
8	Top Plate
9	Steps
10	Ventilation Pipe 1
11	Submersible Pump
12	Lamp
13	Inlet Valv
14	Ewbol 1 90dgr
15	TEE 1
16	Adapter Flange 2
17	Metal ring 2
18	Pipe 1
19	Pipe 2
20	Acces in the Pump Station
21	Acces to the shaft for opening and closing of the Valv





BULGARKONTROLA S.A.

**CARGO & DAMAGE SURVEYS, LABORATORY ANALYSES,
CONFORMITY ASSESSMENT & TECHNICAL INSPECTIONS,
MANAGEMENT SYSTEMS, ORGANIC CERTIFICATION**

Head office: 23, Sitnyakovo Blvd., 1505 Sofia, Bulgaria
Emergency mobile: +359 889 400 400, Tel.: +359 2 989 4070, Fax: +359 2 988 2354
E-mail: sales@bulgarkontrola.bg, cert@bulgarkontrola.bg

CERTIFICATE OF CONFORMITY

14 – НУРВСИРСБ – 3346

Issued pursuant to Art. 14, par.1 and par.2 of the Regulation № ПД-02-20-1 on 05.02.2015 on the terms and conditions for use of construction products in the construction of the Republic of Bulgaria on Ministry of Regional Development and Public Works for the **construction product**

PE&PP „Konti Kan Spiral”

**made of Polyethylene and/or Polypropilene Structured –wall piping system
with smooth internal and external surface with spiral shaped hollow sectors Type ”A2”,**
are designed for non pressure underground drainage and sewerage for piping systems, ,
with dimensions **DN-OD 1000÷2000 mm, DN-ID 100÷1200 mm, SN 4/SN 8/SN 10/SN12/SN16**, with technical date
and evaluated characteristics in accordance with national requirements as per Supplement № 1

place on the market by
KONTI HIDROPLAST DOOEL
ul. Industriska b.b. 1480 Gevgelia
Republic of North Macedonia

manufactured by
KONTI HIDROPLAST DOOEL
ul. Industriska b.b. 1480 Gevgelia
Republic of North Macedonia

This certificate certifies that the product has been evaluated and meets national requirements set out in

BDS EN EN 13476-2:2008

BDS EN EN 13476-2:2008/NA: 2015

*and item 11 of Annex 2 to item 2 of Order № 02-14-1329 from 03.12.2015,
of the Minister of Regional Development and Public Works*

The Certificate was issued on **06.03.2020**, cancel the Certificate № **14-НУРВСИРСБ-3244** on **17/06/2019** and remains valid to **05/03/2023**, the provided that the manufacturer ensures consistency of product characteristics and the conditions of production or production control has not been changed significantly.

Place: Sofia

Date: 06/03/2020

Director of "Conformity Assessment" Dept.

[Signature]
/T. Lyubanova/

BULGARKONTROLA S.A.– Sofia with identification number 14 of register Ministry of Regional Development and Public Works
Permit № ПОСН-14 on 15.09.2016 , issued by Ministry of Regional Development and Public Works



Supplement № 1
to Certificate of Conformity № 14- НУРВСИРСРБ-3346

1. Nominal dimension and stiffness

Nominal dimension DN-OD	Nominal dimension DN-ID	Stiffness SN (kN/m ²)
1000 ÷ 2000	1000 ÷ 2000	SN 4/SN 8/SN 10/SN12/SN16

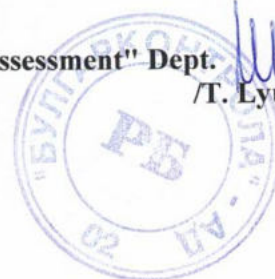
2. Evaluated characteristics in accordance with national requirements

Characteristics	Requirement to declare / border level
Appearance	Smooth and clean surface without pores, According item 5.1 BDS EN 13476-1:2008
Color	Pipes: External and internal layer : black
Geometrical characteristics, mm	DN-ID 1000÷2000 DN-OD 1000÷2000 According tabl. 5 and item 1 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Melt mass - flow rate (MFR), g/10min 210 °C/ 2,16 кг/10min	≤ 0,2 between MFR the raw material and the pipe of PP According tabl. NA 22 BDS EN 13476-2:2008/NA:2015
Melt mass - flow rate (MFR), g/10min 190 °C/ 5 кг/10min	± 20% between MFR the raw material and the pipe of PE According tabl. NA 22 BDS EN 13476-2:2008/NA:2015
Longitudinal reversion, % for PE spiral pipes	≤ 3%, without delamination, cracking and blisters According item 8.3.1., tabl. 13 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Longitudinal reversion, % for PP spiral pipes	≤ 2%, without delamination, cracking and blisters According item 8.2.1., tabl. 11 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Ring stiffness SN, κN/m ²	≥ declared value for SN According item 9.1. tabl. 15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Impact resistance (0 °C)	TIR ≤ 10 % without crashed According item 9.1 ,tabl. 15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Ring flexibility, κN	without damage , min. 30 % of d _{em} According item 9.1, tabl.15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015

Place: Sofia
Date: 06/03/2020

Director of "Conformity Assessment" Dept.

T. Lyubenova
/T. Lyubenova/





**KONTI
HIDROPLAST®**



MANUFACTURER OF POLYETHYLENE AND POLYPROPYLENE PIPES AND MOULDED ACCESSORIES
ACC. Number: 21030000057483; IBAN CODE: MK0721030000057483; SWIFT: TUTNMK22 Tutunska Bank AD Skopje
str. "Industrijska" bb 1480 Gevgelija R. Macedonia Tel.: 00 389 34 212 064; 211 757; 211 757; fax.: 00 389 34 211 964
e-mail: contact@konti-hidroplast.com.mk www.konti-hidroplast.com.mk

DATA SHEET FOR PE SPIRAL PIPE

Description

Polyethylene (PE) spiral profiled welded pipe

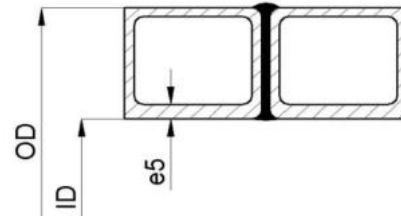
Application:

- Atmospheric and fecal sewerage
- Drainage

OD - Outside diameter of the pipe

ID - Inside diameter of the pipe

e5 - wall thicknesses



Specification


Standard	EN 13476-2		
Product appearance	Spirally profiled pipe		
Dimension DN /ID	2000 mm		
Dimension ID	≥ 1980 mm		
Dimension OD	2190 ± 20 mm		
Wall thicknesses	e5 min ≥ 7.0 mm		
PE Density	≥ 0.93 g/cm ³		
Ring stiffness	≥ SN 8 (kN /m ²)		
Modulus of elasticity	≥ 1000 (N/mm ²)		
Pipe flow index (MFR)	≤ 1,6 g/10 min (190 °C / 5.0 kg)		
Characteristics			
Dimensions	Requirements:	Table 6	Test method: EN ISO 3126
Ring stiffness	Requirements:	≥ SN 8	Test method: EN ISO 9969
Impact strenght 0 °C	Requirements:	No cracks	Test method: EN ISO 3127
Ring flexibility	Requirements:	30% deflection without damages	Test method: EN ISO 13968
Pipe flow index (MFR)	Requirements:	≤ 20% of the material	Test method: EN ISO 1133-1
Creep ratio	Requirements:	≤ 4%	Test method: EN ISO 9967
Tightness of elastomeric ring seal joint	Requirements:	No leakage	Test method: ISO 13259

FLOW RATE TABLE PIPE FILLING 95 %

slope m/m	DN/ID	1300	1400	1500	1600	1800	2000
1/1000	Q(l/s)	1916.45	2335.20	2806.89	3334.02	4564.30	6044.97
0.001	v(m/s)	1.44	1.52	1.59	1.66	1.79	1.93

Quality control | Laboratory
Bachelor mech.eng. Zafir Stardelev



Cant.	Descriere
1	<p>SL1.75.100.130.2.52S.S.N.51D.A</p>  <p>Notă! Poza de produs poate diferi de produsul actual</p> <p>Nr. Produs: 99622471</p> <p>Pompă centrifugă monoetajată, fără autoamorsare, destinat vehiculării apelor reziduale, apelor de proces și materialelor de vidanjare brute necernute.</p> <p>Pompa este destinată exploatarei intermitente și continue cu instalare submersă. Rotorul revoluționar S-tube® asigură un pasaj sferic liber al solidelor de până la 75 mm și este adecvat pentru apele reziduale cu un conținut de substanță uscată de până la 3 %.</p> <p>Sistemul SmartTrim de potrivire a jocului rotorului face posibilă menținerea performanței maxime. Pentru instalarea pe cuplă automată, sistemul de garnituri Grundfos SmartSeal asigură o racordare etanșă.</p> <p>Detalii suplimentare despre produs</p> <p>Aplicațiile tipice sunt transferul de lichide cum ar fi:</p> <ul style="list-style-type: none">• drenaj și apă de suprafață• apă uzată menajeră• ape uzate municipale• ape uzate industriale• apă de proces și de răcire. <p>Pompele sunt ideale pentru pomparea lichidelor de mai sus din locuri precum:</p> <ul style="list-style-type: none">• stații de pompare a rețelei municipale• stații de pompare de intrare în stațiile de epurare ape uzate• puțuri primare de limpezire în stațiile de epurare ape uzate• puțuri secundare de limpezire în stațiile de epurare ape uzate• stații de pompare pentru ape pluviale• clădiri publice• clădiri rezidențiale• fabrici și industrie. <p>Pompa este adecvată atât pentru instalare permanentă, cât și pentru instalare temporară. Consolele de ridicare montate pe pompe permit transportul și instalarea ușoară la locație.</p> <p>Pompă</p> <p>Carcasa pompei și partea de sus a motorului sunt confecționate din fontă (EN-GJL-250) iar rotorul este confecționat din fontă ductilă (EN-GJS-500).</p> <p>Carcasa pompei, partea de sus a motorului și rotorul sunt confecționate din fontă (EN-GJL-250).</p> <p>Toate suprafețele ale pieselor din fontă sunt protejate cu acoperire prin cataforeză.</p> <p>Suprafața pieselor din fontă ale pompei sunt apoi vopsite prin acoperire ecologică cu pulbere (de tip NCS 9000N (negru), cod de luciu 30, grosime 100 μm), care asigură o protecție superioară la șoc și împotriva coroziunii.</p> <p>Pompa finală este asamblată din piese deja vopsite, asigurându-se că în canalele dintre piese nu se poate forma rugină sau cruste.</p> <p>Rotorul S-tube® asigură pasajul sferic liber prin rotor și carcasa pompei și creează o extensie naturală a conductelor conectate la pompa.</p> <p>Cheia designului S-tube® este simplitatea, fără funcții de tăiere sau deplasare, care se pot uza în timp, asigurând astfel o eficiență constantă, superioară. Designul simplu înseamnă costuri mai mici cu ciclul de viață întrucât uzura abrazivă este redusă și există mai puține incidente de înfundare.</p>



This pump is equipped with the unique SmartTrim impeller clearance adjustment system that enables easy restoring of factory-set impeller clearance.

By tightening the adjustment screws on the exterior of the pump housing, peak pumping efficiency can be maintained.

This can be done on site, quickly and easily, without dismantling the pump and without using special tools.

Etanșările arborelui pompei constă din două etanșări mecanice care asigură o etanșare fiabilă între lichidul pompat și motor. Etanșarea arborelui este un cartuș de etanșare care permite deservirea ușoară.

Combinatia etanșărilor primare și secundare într-un sistem de cartuș de etanșare a arborelui are drept rezultat o lungime mai mică a ansamblului, în comparație cu etanșările convenționale. În plus, acest design minimizează riscul instalării incorecte și poate fi instalat pe amplasament fără a fi nevoie de unelte speciale.

- Etanșarea primară: Carbură de siliciu/carbură de siliciu (SiC/SiC)
- Etanșarea secundară: Carbon/ceramic

Etanșarea arborelui este bidirecțională, însemnând că funcționează corect în caz de reflux prin pompă.

Flanșa de refulare a pompei este montată cu garnitura de cuplare automată Grundfos SmartSeal, care asigură o conexiune completă anti-scurgere între pompă și unitatea de bază a sistemului de cuplare automată. Aceasta optimizează eficiența întregului sistem de pompare și menține costurile de exploatare la minim.

Motor

Motorul este etanș, complet capsulat, livrat cu un cablu de alimentare 10 m. O intrare etanșă din oțel inoxidabil a cablului, cu inele de etanșare moi pentru a preveni deteriorarea cablului sau scurgerile.

Construcția motorului este compactă cu arbore scurt care reduce vibrațiile rezultând eficiență crescută și durată de viață mai lungă a etanșării arborelui și a rulmenților cu bile.

În înfășurările motorului sunt încorporate întrerupătoare termice pentru a proteja motorul împotriva supraîncălzirii.

Pompa este proiectată pentru exploatare controlată de turație pentru a menține consumul de energie la minim.

Pentru a evita riscul sedimentării în conducte, vă recomandăm să exploatați pompa cu turație controlată la o turație în intervalul de la 30 % to 100 % și la o viteză de curgere mai mare de 1 m/s.

Control:

Senzor de umiditate: cu senzori umiditate

Lichid:

Gama temperaturii lichidului: 0 .. 40 °C

Densitate: 998.2 kg/m³

Tehnic:

Debitul curent calculat: 29.3 l/s

Debit maxim: 45 l/s

Înălțimea de pompare rezultată pentru pompă: 25.29 m

Tip rotor: S-TUBE

Dimensiunea maximă a particulelor: 75 mm

Aprobări: CE,EAC,RCM

Toleranța curbei: ISO9906:2012 3B

Cooling jacket (Yes/No): N

Materiale:

Corpul pompei (stator): Fontă

Carcasă pompă: EN 1561 EN-GJL-250

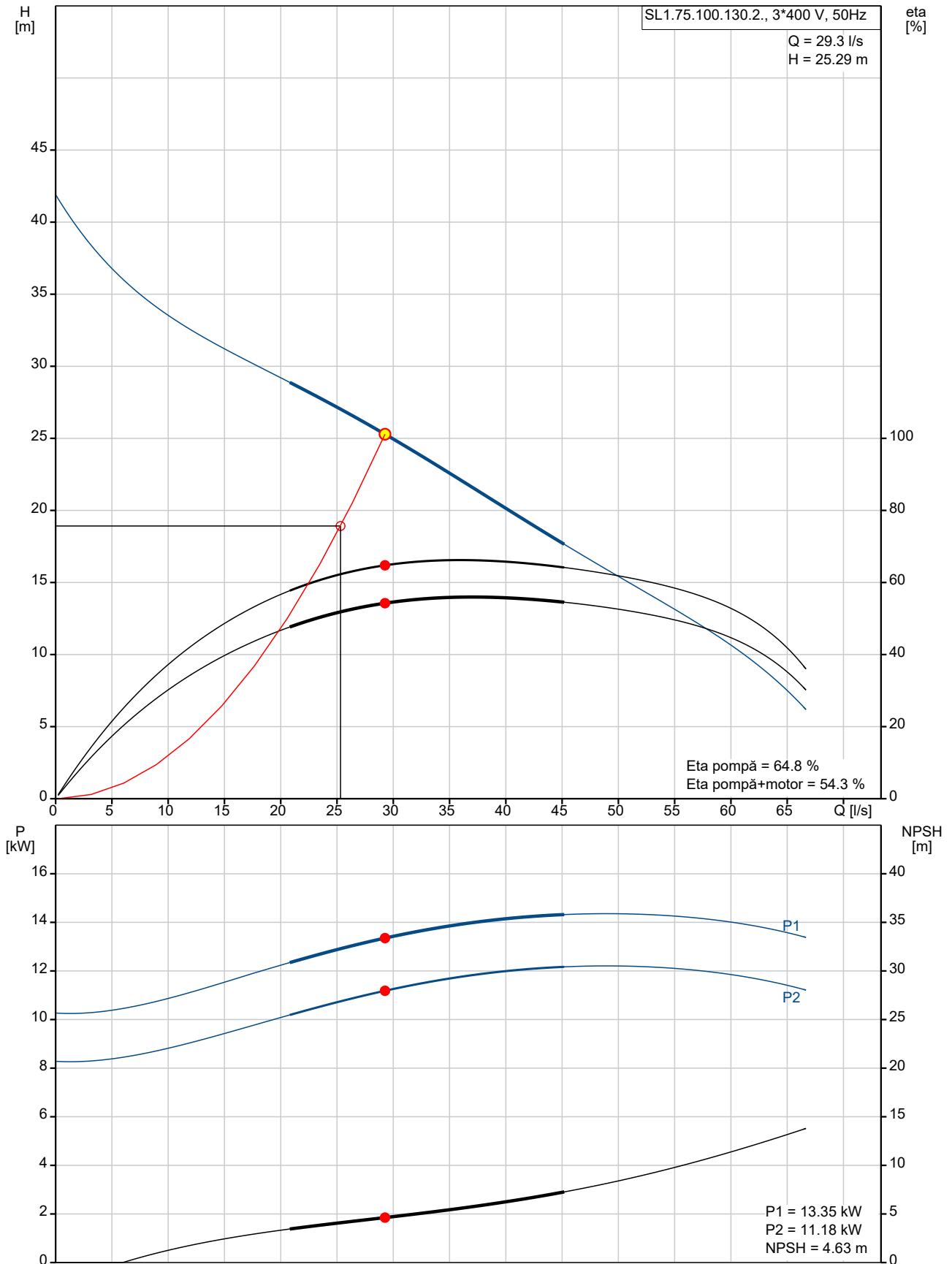
Rotor: Cast iron

EN 1561 EN-GJL-250

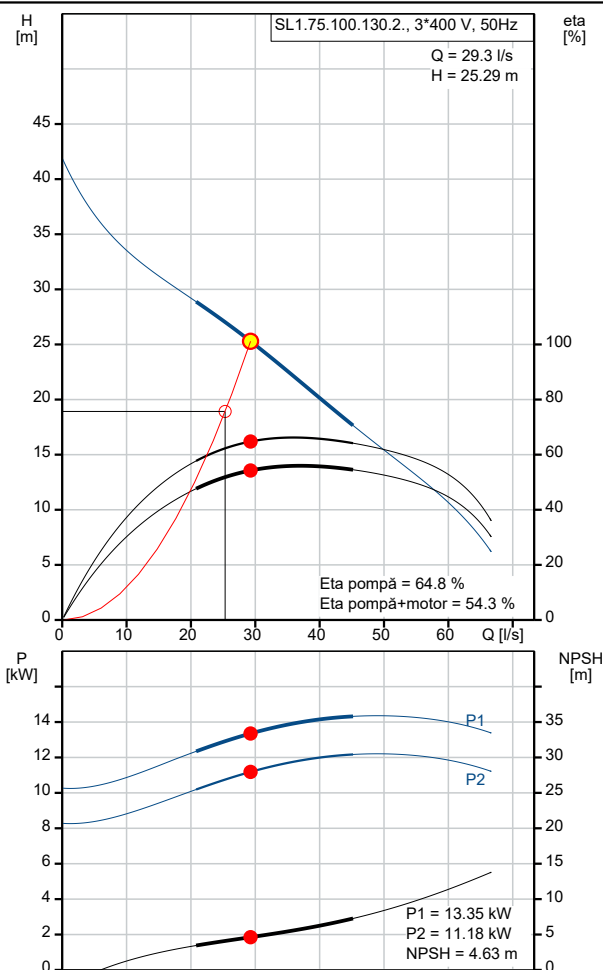
ASTM A48-35B

Cant.	Descriere
	Motor: Fontă EN 1561 EN-GJL-250
	Etanșare arbore: SIC-SIC
	Secondary shaft seal: SIC-CARBON
	Instalație:
	Gama temperaturii ambientale: -20 .. 40 °C
	Presiune de funcționare maximă: 8 bar
	Flanșă standard: DIN
	Dimensiune racord aspirație: DN 100
	Dimensiune racord de refulare: DN 100
	Evaluare presiune: PN 10
	Maximum installation depth: 20 m
	Auto-cuplaj: 96090994
	Suport de bază: 96102255
	Domeniu cadru: 52
	Date electrice:
	Intrare putere P1: 15.2 kW
	Putere nominală - P2: 13 kW
	Frecvența rețelei electrice: 50 Hz
	Tensiune nominală: 3 x 380-415/660-690 V
	Toleranță tensiune: +10/-10 %
	Nr. max. de porniri pe oră: 20
	Curent nominal: 27-25/16-15 A
	Curent consumat maxim: 26 A
	Curent de pornire: 245/138 %
	Curent nominal la nici-o încărcare: 10.7 A
	Turație nominală: 2973 rpm
	Randamentul motorului la o încărcare maximă: 86 %
	Randament motor la 3/4 sarcină: 82 %
	Randament motor la 1/2 sarcină: 79 %
	Numărul de poli: 2
	Metodă de pornire: Y/D
	Grad de protecție (IEC 34-5): IP68
	Clasa de izolare (IEC 85): H
	Protecție la explozie: N
	Lungime cablu de alimentare: 10 m
	Tip cablu: S1BN8-F
	Winding resistance: 0.572 Ohm
	Cos phi 1/1: 0.86
	Cos phi 1/2: 0.72
	Cos phi 3/4: 0.81
	Altele:
	Greutate netă: 267 kg
	Greutate brută: 295 kg
	Volum de livrare: 1.04 m ³
	Țara de origine: HU
	Nr. tarif: 84137021

99622471 SL1.75.100.130.2.52S.S.N.51D.A 50 Hz

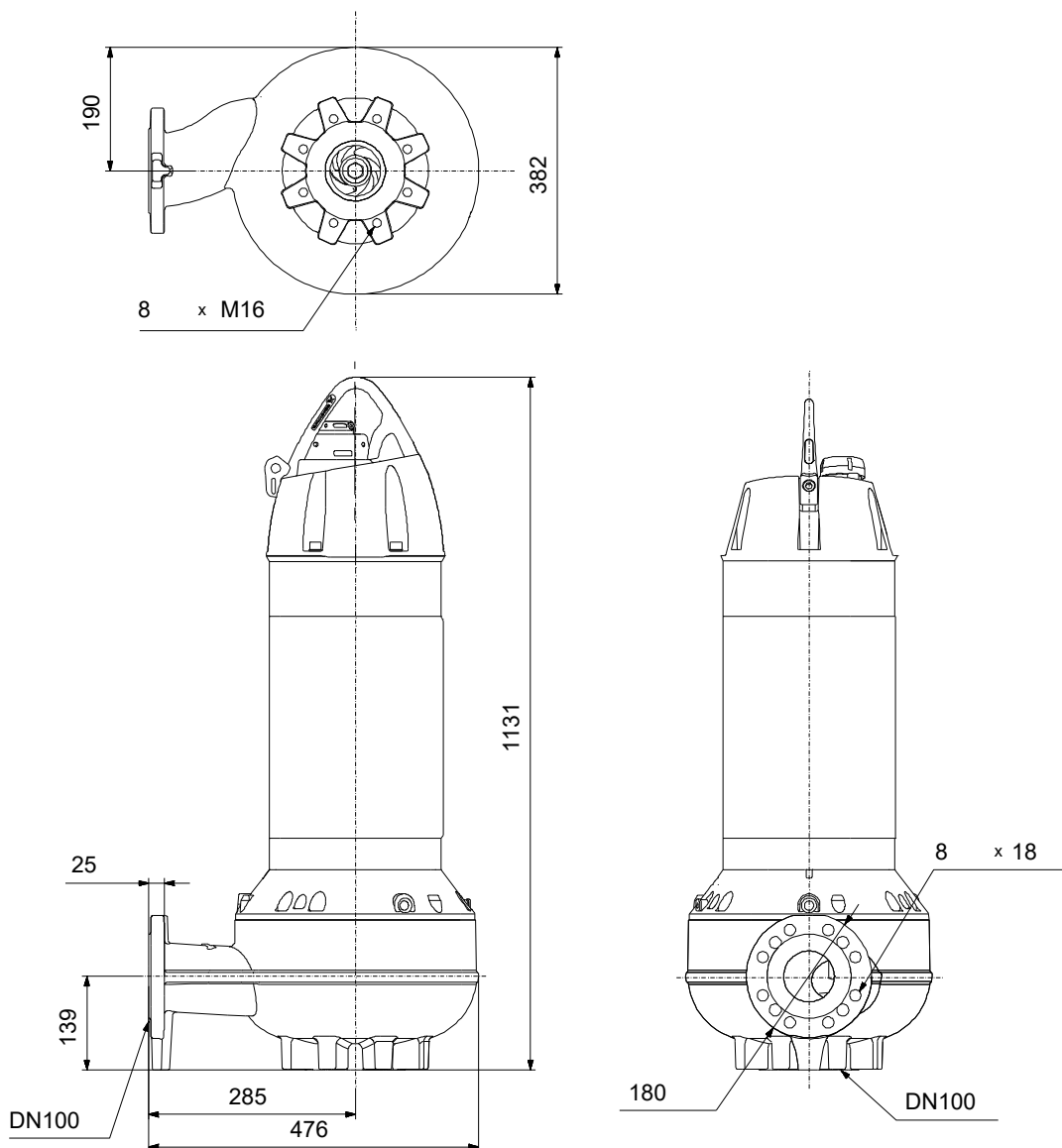


Descriere	Valori și tipuri
Informații generale:	
Nume produs:	SL1.75.100.130.2.52S.S.N.5 1D.A
Cod produs:	99622471
Numărul EAN:	5713832074921
Preț:	EUR 6174.97
Tehnic:	
Debitul curent calculat:	29.3 l/s
Debit maxim:	45 l/s
Înălțimea de pompare rezultată pentru pompă:	25.29 m
Înălțime de pompare maximă:	29 m
Tip rotor:	S-TUBE
Dimensiunea maximă a particulelor:	75 mm
Aprobări:	CE,EAC,RCM
Toleranța curbei:	ISO9906:2012 3B
Cooling jacket (Yes/No):	N
Materiale:	
Corpul pompei (stator):	Fontă
Carcasă pompă:	EN 1561 EN-GJL-250
Rotor:	Cast iron
Rotor:	EN 1561 EN-GJL-250
Rotor:	ASTM A48-35B
Motor:	Fontă
Motor:	EN 1561 EN-GJL-250
Etanșare arbore:	SIC-SIC
Secondary shaft seal:	SIC-CARBON
Instalație:	
Gama temperaturii ambientale:	-20 .. 40 °C
Presiune de funcționare maximă:	8 bar
Flanșă standard:	DIN
Dimensiune racord aspirație:	DN 100
Dimensiune racord de refulare:	DN 100
Evaluare presiune:	PN 10
Maximum installation depth:	20 m
Instalație:	S
Instalare uscată/umedă:	SUBMERGED
Instalație:	vertical
Auto-cuplaj:	96090994
Suport de bază:	96102255
Domeniu cadru:	52
Lichid:	
Gama temperaturii lichidului:	0 .. 40 °C
Densitate:	998.2 kg/m ³
Date electrice:	
Intrare putere P1:	15.2 kW
Putere nominală - P2:	13 kW
Frecvența rețelei electrice:	50 Hz
Tensiune nominală:	3 x 380-415/660-690 V
Toleranță tensiune:	+10/-10 %
Nr. max. de porniri pe oră:	20
Curent nominal:	27-25/16-15 A
Curent consumat maxim:	26 A
Curent de pornire:	245/138 %
Curent nominal la nici-o încărcare:	10.7 A
Turație nominală:	2973 rpm
Randamentul motorului la o încărcare maximă:	86 %
Randament motor la 3/4 sarcină:	82 %



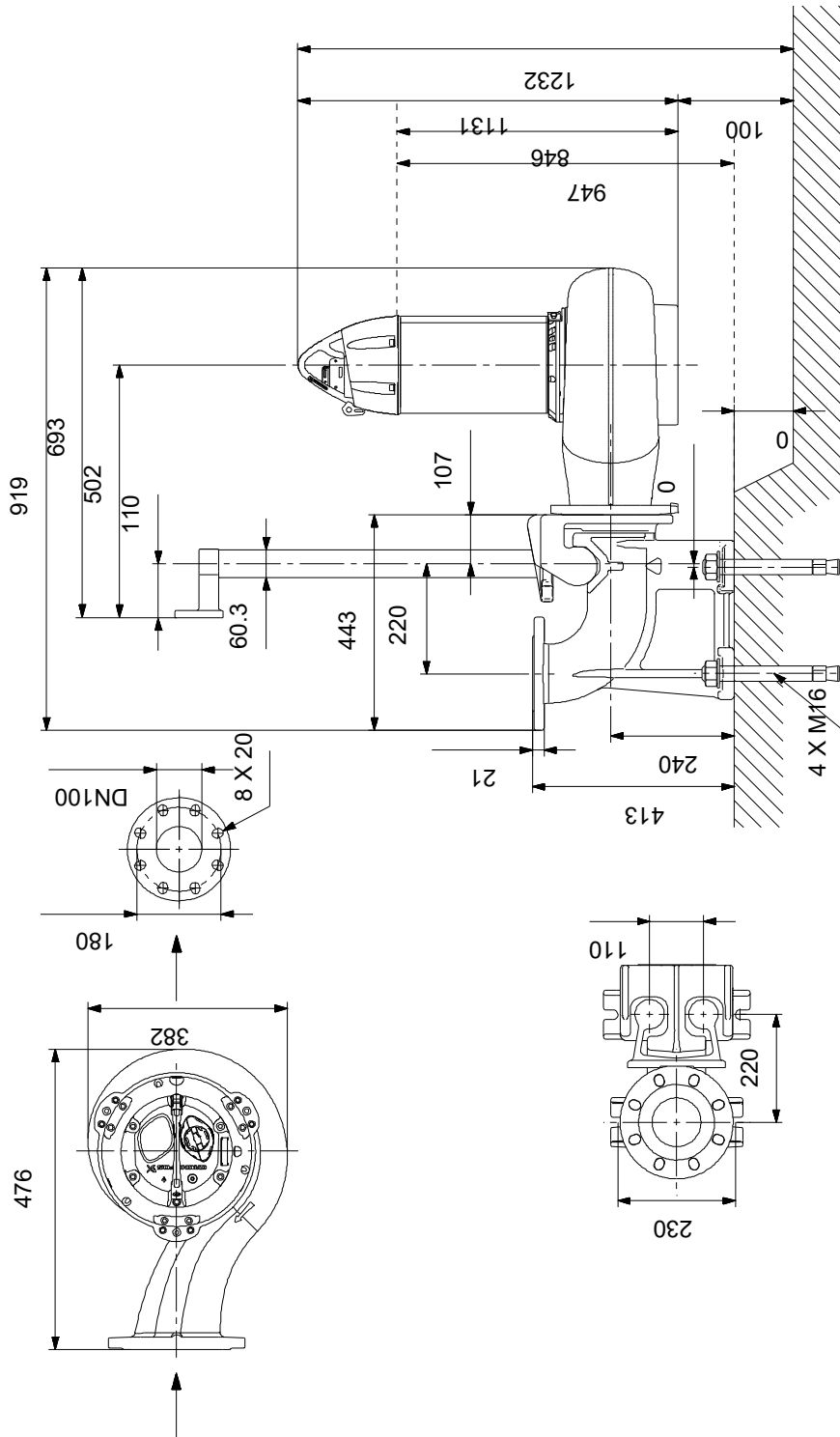
Descriere	Valori și tipuri
Randament motor la 1/2 sarcină:	79 %
Numărul de poli:	2
Metodă de pornire:	Y/D
Grad de protecție (IEC 34-5):	IP68
Clasa de izolare (IEC 85):	H
Protecție la explozie:	N
Protecție încorporată în motor:	KLIXON
Lungime cablu de alimentare:	10 m
Tip cablu:	S1BN8-F
Dimensiune cablu:	7G4+5X1.5ST
Rezistența cablului:	4.95 mOhm/m
Rezistență bobinaj:	0.572 Ohm
Cos phi 1/1:	0.86
Cos phi 1/2:	0.72
Cos phi 3/4:	0.81
Control:	
Senzor de umiditate:	cu senzori umiditate
Altele:	
Greutate netă:	267 kg
Greutate brută:	295 kg
Volum de livrare:	1.04 m ³
Țara de origine:	HU
Nr. tarif:	84137021

99622471 SL1.75.100.130.2.52S.S.N.51D.A 50 Hz



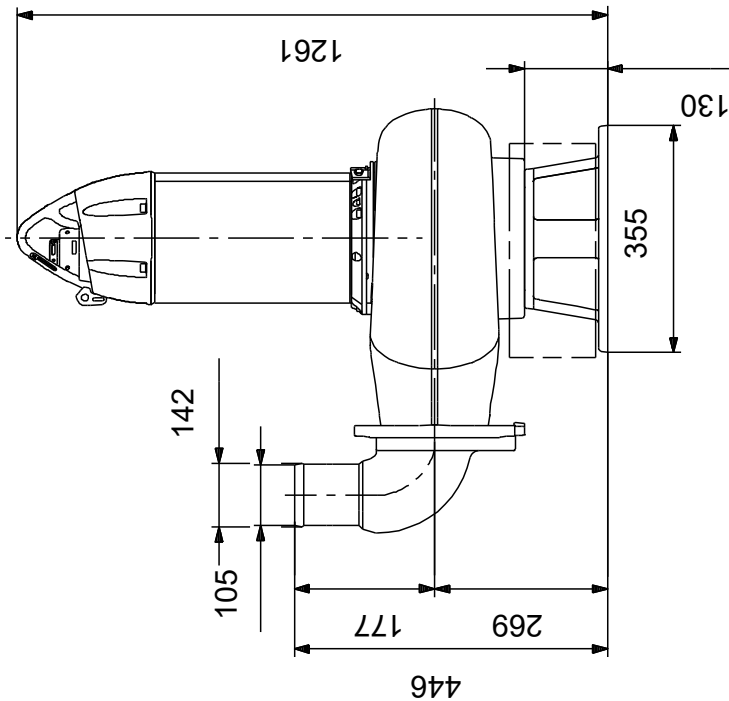
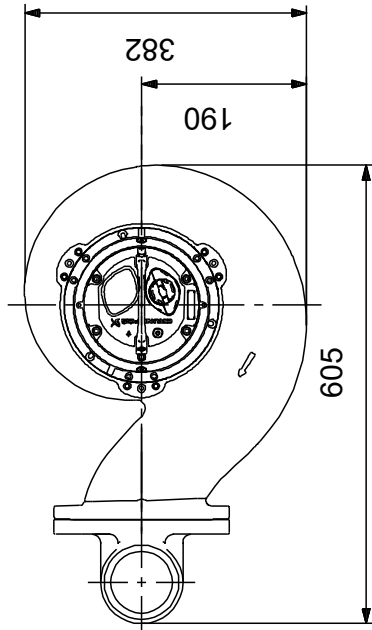
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99622471 SL1.75.100.130.2.52S.S.N.51D.A 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99622471 SL1.75.100.130.2.52S.S.N.51D.A 50 Hz




Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

**Piese de schimb SL1.75.100.130.2., Nr. Produs 99622471
Produs După 2049 (anul de producție și numărul săptămânii)**

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-	Kit, Bracket			99744139	1	pcs
59	Înveliș				1	
153	Lagăr cu contact unghiular				1	
155	Bearing bracket, lower				1	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucla șaibei				1	
239	Hex head screw		Lungime (mm): 30		3	
			Filet: M10			
-	Set, cablu			99954786	1	pcs
	Flat Washer				4	
	Socket head cap screw				2	
-	Cable assembly				1	
	Flex insulation					
	Connector plug					
	Clemă cablu					
168a	Intrarea cablului					
168	Intrarea cablului					
181	Power cable					
198c	Disc elastic					
198b	Spălător					
198	Etanșare inel					
248	Hex socket head cap screw					
	Flex insulation				1	
	Cable tie				7	
	Cable tie				2	
	Clemă cablu				2	
27	Bucla șaibei				1	
36	Hex socket head cap screw				4	
39	Inel O		Diametru: 209 MM		1	
			Tip material: NBR			
			Grosime: 5,7 MM			
157d	Inel O				1	
-	Kit, cable entry			99743743	1	pcs
	Connector plug				5	
	Connector plug				1	
	Clemă cablu				2	
	Bracket				1	
157d	Inel O				1	
168a	Intrarea cablului				1	
168	Intrarea cablului				1	
176a	Cutie de conexiuni				1	
198c	Disc elastic				4	
198b	Spălător				1	
254	Hex socket head cap screw				2	
-	Kit, Cable harness			99743750	1	pcs
	Wiring harness				1	
84c	Disc elastic				4	
524	Amortizor de cauciuc				1	
-	Set, rotor			98119533	1	pcs
49	Rotor				1	
66	Spălător				1	

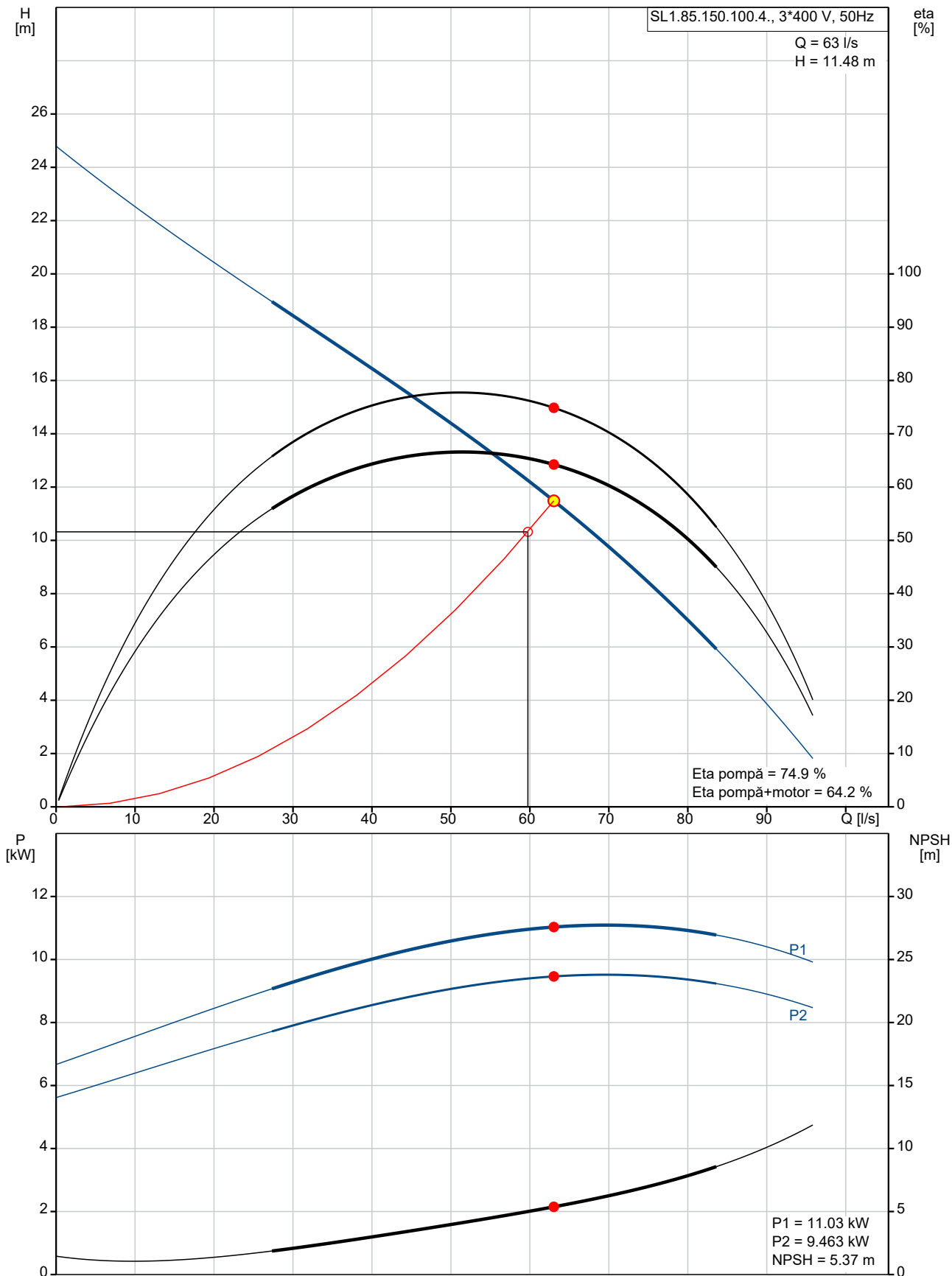
Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
67	Hex head screw				1	
-	Kit, Impeller fastening			98120686	1	pcs
66	Spălător				1	
67	Hex head screw				1	
-	Kit, Leakage switch			98794478	1	pcs
521	Switch				1	
-	Set, lagăr inferior			99718779	1	pcs
105a	Formed wire spring				1	
153	Lagăr cu contact unghiular				1	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucla șaibei				1	
-	Kit, senzor umiditate			96256056	1	pcs
	Gauge				1	
	Connector				2	
	Connector				2	
520	Senzor de umiditate				1	
890	Connector				2	
-	Kit, Motor cover			99743754	1	pcs
39	Inel O		Diametru: 209 MM		1	
			Tip material: NBR			
			Grosime: 5,7 MM			
164a	Motor top cover				1	
193	Priză				1	
250	Hex socket head cap screw				1	
-	Kit, Open S-Tube conversion			99971683	1	pcs
12a	Apărătoare aspirație				1	
26c	Spălător				6	
26	Hex socket head cap screw				6	
37b	Inel O				1	
49	Rotor				1	
50	Carcasa pompei				1	
66	Spălător				1	
67	Hex head screw				1	
77	Seal housing				1	
107	Inel O				1	
184b	Hex socket head cap screw				3	
383	Hex socket head cap screw				3	
-	Kit, O-ring for motor			98119448	1	pcs
-	37b Inel O				1	
72a	Inel O					
72	Inel O					
107	Inel O					
157d	Inel O					
157	Inel O		Diametru: 209 MM			
			Tip material: NBR			
			Grosime: 5,7 MM			
182d	Inel O					
37b	Inel O				1	
37b	Inel O				1	
-	Kit, Plug			98142061	1	pcs
193	Priză				5	
-	Set, carcasa pompei			98120701	1	pcs
26c	Spălător				6	
26	Hex socket head cap screw				6	
-	50 Volute casing				1	
-	Volute casing					

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-	Pump housing cpl.					
	Volute casing					
49c	Inel de uzură					
49b	Hex socket head cap screw					
19	Priză					
-	Set, șuruburi			98638261	1	pcs
12c	Socket set screw				3	
-	Kit, Seal housing lower			98638609	1	pcs
37b	Inel O				1	
77	Seal housing				1	
184b	Hex socket head cap screw				3	
-	Kit, Seal housing upper			98638630	1	pcs
58	Seal housing				1	
72a	Inel O				1	
107	Inel O				1	
182d	Inel O				3	
182c	Spălător				3	
182b	Hex head bolt				3	
193	Priză				2	
-	Set, etanșare			99718741	1	pcs
105a	Formed wire spring				1	
105	Etanșare				1	
-	Set, etanșare			99718778	1	pcs
105a	Formed wire spring				1	
105	Etanșare				1	
153	Lagăr cu contact unghiular				1	
182d	Inel O				3	
182c	Spălător				3	
182b	Hex head bolt				3	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucla șaibei				1	
-	Kit, Shaft w/rotor			98119139	1	pcs
172	Shaft w/rotor				1	
-	Kit, Upper bearing			98119104	1	pcs
154	Rulmenți				1	
-	Kit, Upper bearing bracket			98119248	1	pcs
61	Bearing bracket, upper				1	
183	Hex socket head cap screw		Marcare: M 10		3	
			Lungime (mm): 30			
-	Kit, Wear ring			99226924	1	pcs
49c	Inel de uzură				1	
49b	Hex socket head cap screw				3	
+	Motor				1	pcs
19	Priză			98163028	1	pcs
37b	Inel O			98576480	1	pcs
184b	Hex socket head cap screw			99376087	3	pcs

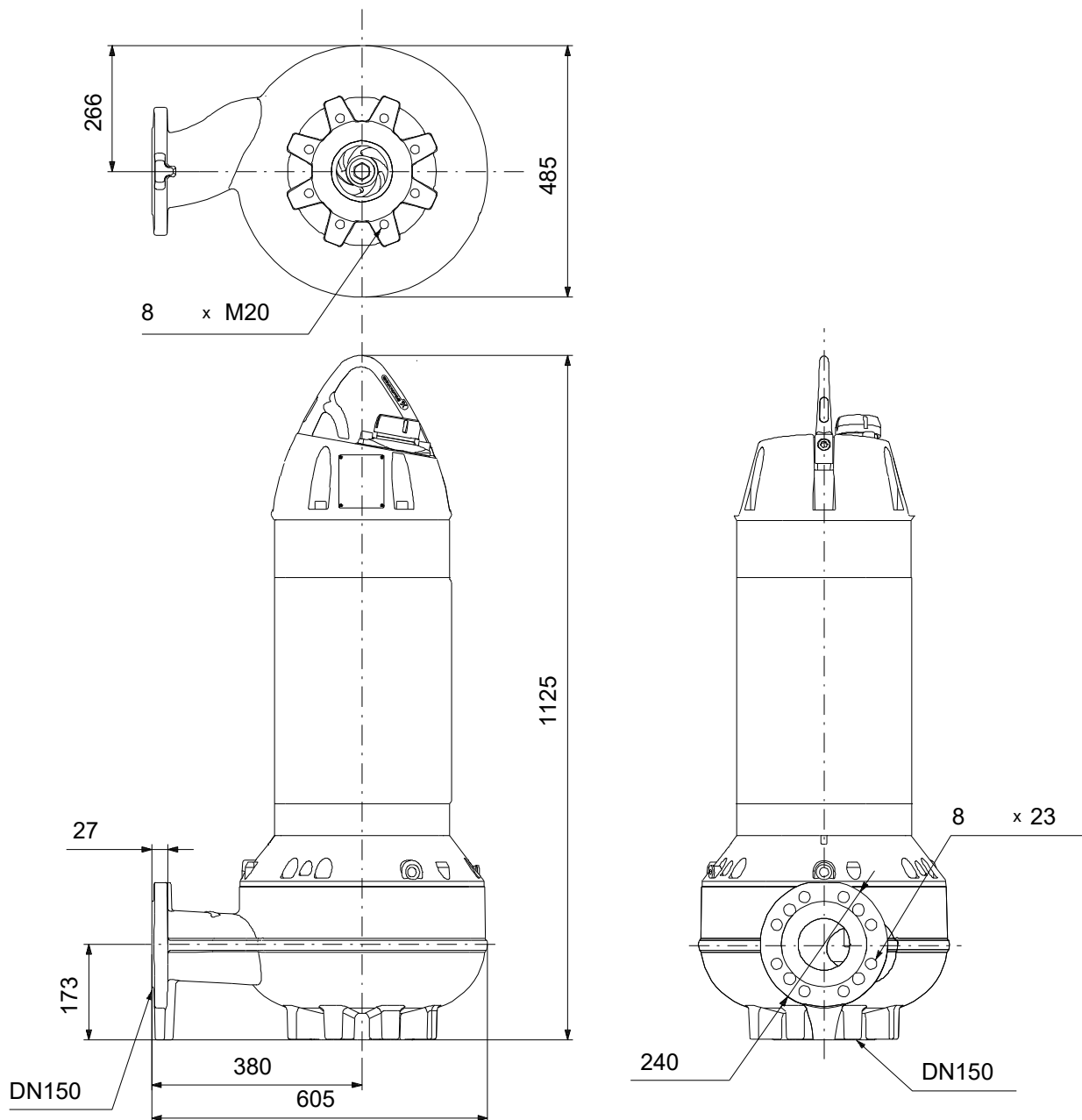
Cant.	Descriere
1	<p>SL1.85.150.100.4.52H.S.N.51D</p>  <p style="text-align: center;">Notă! Poza de produs poate diferi de produsul actual</p> <p>Nr. Produs: 98179809</p> <p>Pompă centrifugă monoetajată, fără autoamorsare, destinat vehiculării apelor reziduale, apelor de proces și materialelor de vidanjare brute necernute.</p> <p>Pompa este destinată exploatarei intermitente și continue cu instalare submersă. Rotorul revoluționar S-tube® asigură un pasaj sferic liber al solidelor de până la 85 mm și este adecvat pentru apele reziduale cu un conținut de substanță uscată de până la 3 %.</p> <p>Sistemul SmartTrim de potrivire a jocului rotorului face posibilă menținerea performanței maxime. Pentru instalarea pe cuplă automată, sistemul de garnituri Grundfos SmartSeal asigură o racordare etanșă.</p> <p>Control:</p> <p>Senzor de umiditate: cu senzori umiditate</p> <p>Lichid:</p> <p>Lichid pompat: Orice lichid newtonian</p> <p>Gama temperaturii lichidului: 0 .. 40 °C</p> <p>Densitate: 998.2 kg/m³</p> <p>Tehnic:</p> <p>Debitul curent calculat: 63 l/s</p> <p>Debit maxim: 83.1 l/s</p> <p>Înălțimea de pompare rezultată pentru pompă: 11.48 m</p> <p>Tip rotor: S-TUBE</p> <p>Dimensiunea maximă a particulelor: 85 mm</p> <p>Toleranța curbei: ISO9906:2012 3B2</p> <p>Cooling jacket (Yes/No): N</p> <p>Materiale:</p> <p>Corpul pompei (stator): Fontă</p> <p>Carcasă pompă: EN 1561 EN-GJL-250</p> <p>Carcasa pompei: ASTM A48 35B</p> <p>Rotor: Cast iron</p> <p> EN 1561 EN-GJL-250</p> <p> ASTM A48 35B</p> <p>Motor: Fontă</p> <p> EN 1561 EN-GJL-250</p> <p>Etanșare arbore: SIC-SIC</p> <p>Secondary shaft seal: SIC-CARBON</p> <p>Instalație:</p> <p>Temp. max. ambientală: 40 °C</p> <p>Flanșă standard: DIN</p> <p>Dimensiune racord aspirație: DN 150</p> <p>Dimensiune racord de refulare: DN 150</p> <p>Evaluare presiune: PN 10</p> <p>Maximum installation depth: 20 m</p> <p>Auto-cuplaj: 97695489</p>

Cant.	Descriere
	Suport de bază: 96102256
	Domeniu cadru: 52
	Date electrice:
	Intrare putere P1: 11.6 kW
	Putere nominală - P2: 10 kW
	Frecvența rețelei electrice: 50 Hz
	Tensiune nominală: 3 x 380-415/660-690 V
	Toleranță tensiune: +10/-10 %
	Nr. max. de porniri pe oră: 20
	Curent nominal: 23-21/13-13 A
	Curent consumat maxim: 21 A
	Curent de pornire: 210/116 %
	Curent nominal la nici-o încărcare: 10.4 A
	Turație nominală: 1482 rpm
	Randamentul motorului la o încărcare maximă: 86 %
	Randament motor la 3/4 sarcină: 85 %
	Randament motor la 1/2 sarcină: 84 %
	Numărul de poli: 4
	Metodă de pornire: Y/D
	Grad de protecție (IEC 34-5): IP68
	Clasa de izolare (IEC 85): H
	Protecție la explozie: N
	Protecție Ex standard: N
	Lungime cablu de alimentare: 10 m
	Tip cablu: S1BN8-F
	Winding resistance: 0.690 Ohm
	Cos phi 1/1: 0.80
	Cos phi 1/2: 0.69
	Cos phi 3/4: 0.74
	Altele:
	Greutate netă: 292 kg
	Țara de origine: HU
	Nr. tarif: 84137021

98179809 SL1.85.150.100.4.52H.S.N.51D 50 Hz

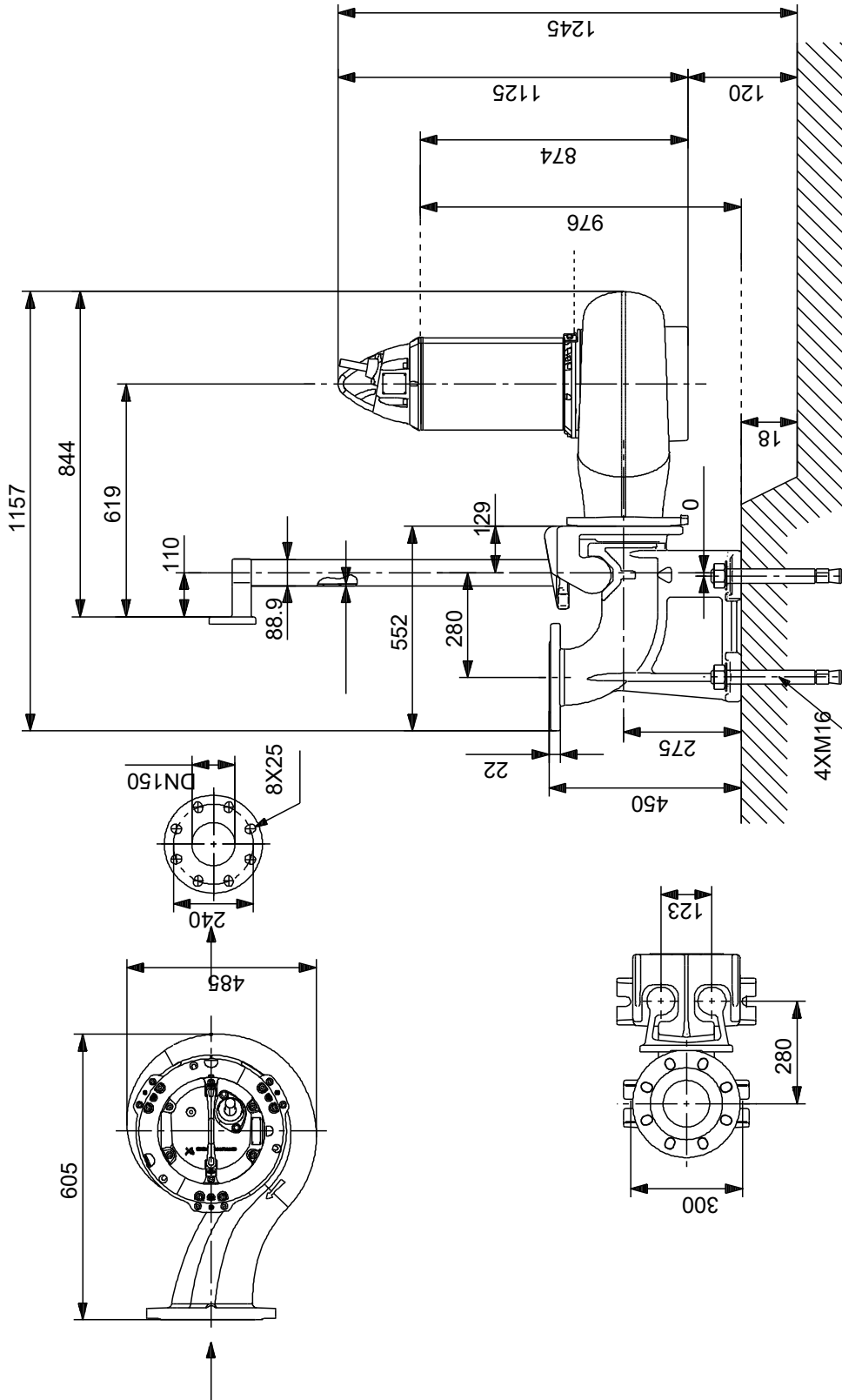


98179809 SL1.85.150.100.4.52H.S.N.51D 50 Hz



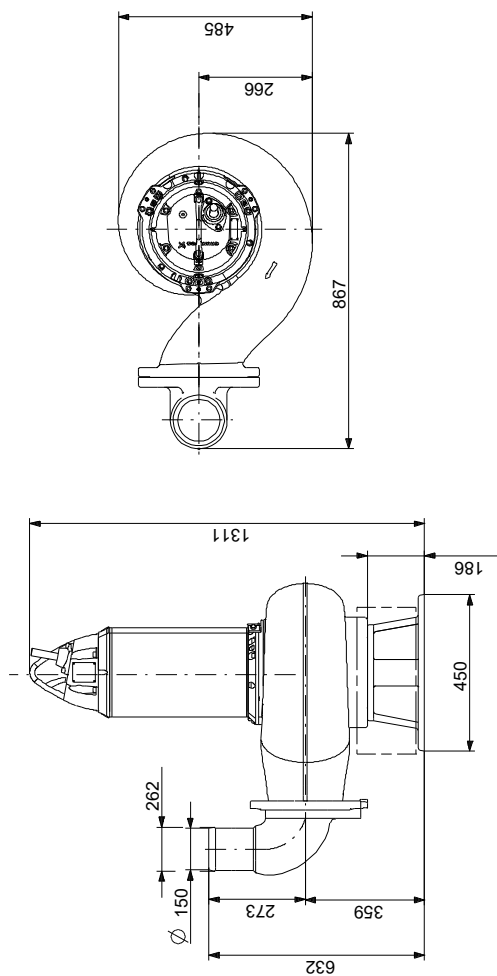
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

98179809 SL1.85.150.100.4.52H.S.N.51D 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
 Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

98179809 SL1.85.150.100.4.52H.S.N.51D 50 Hz

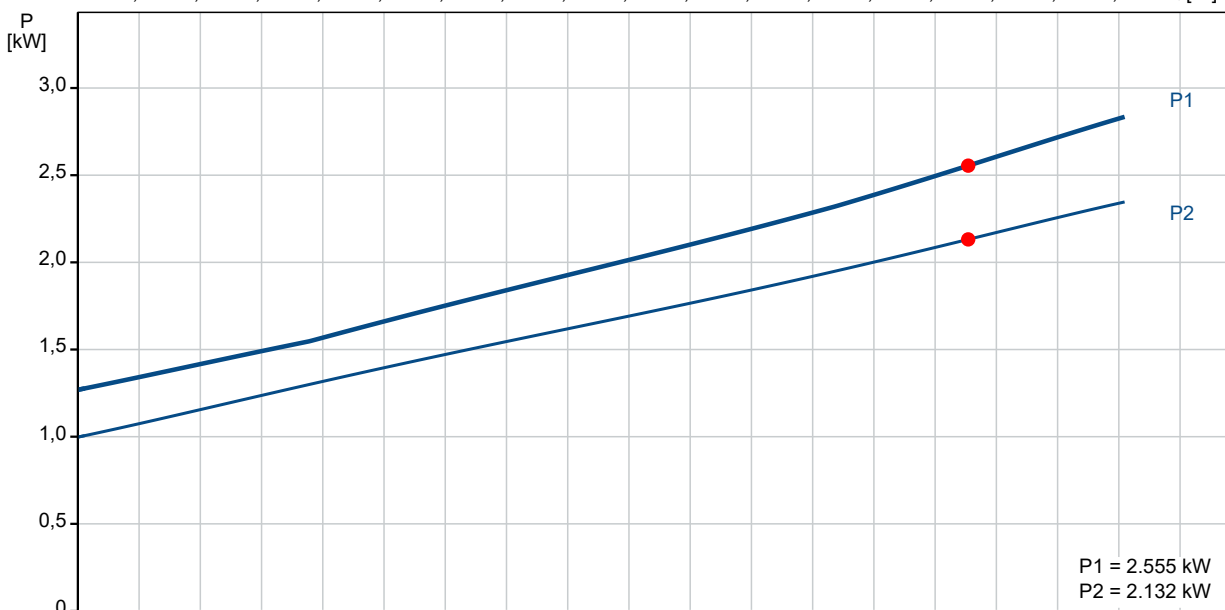
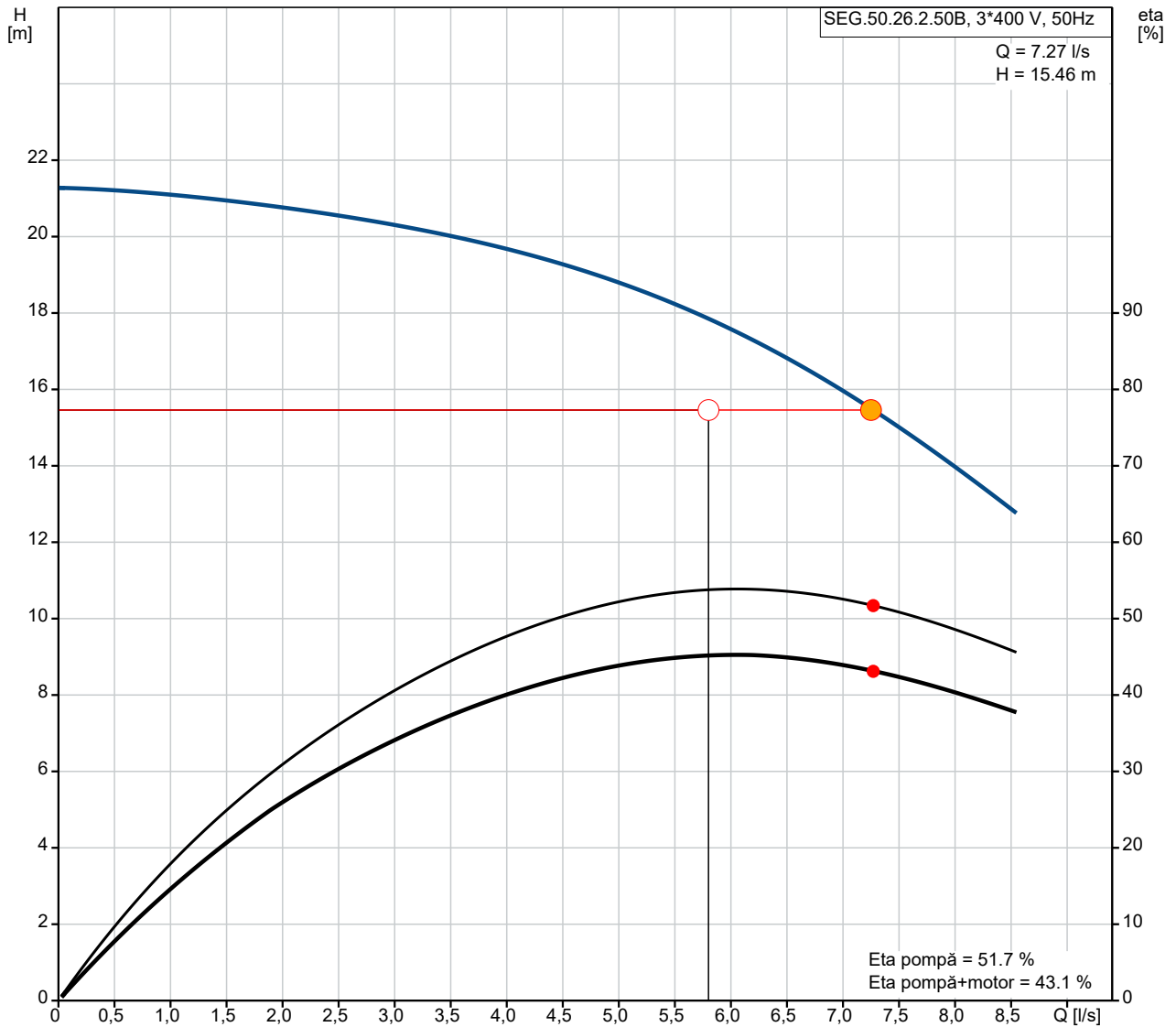


Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

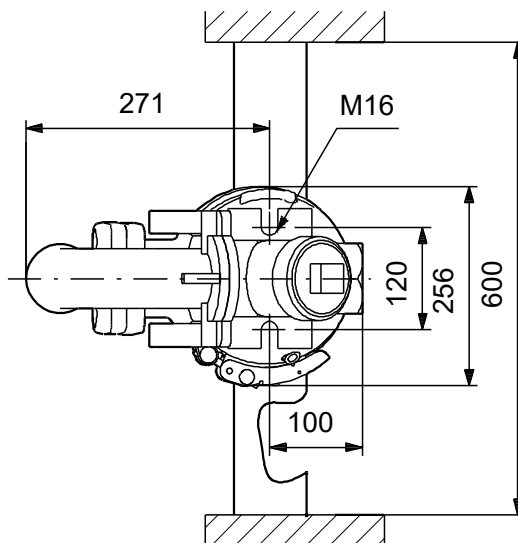
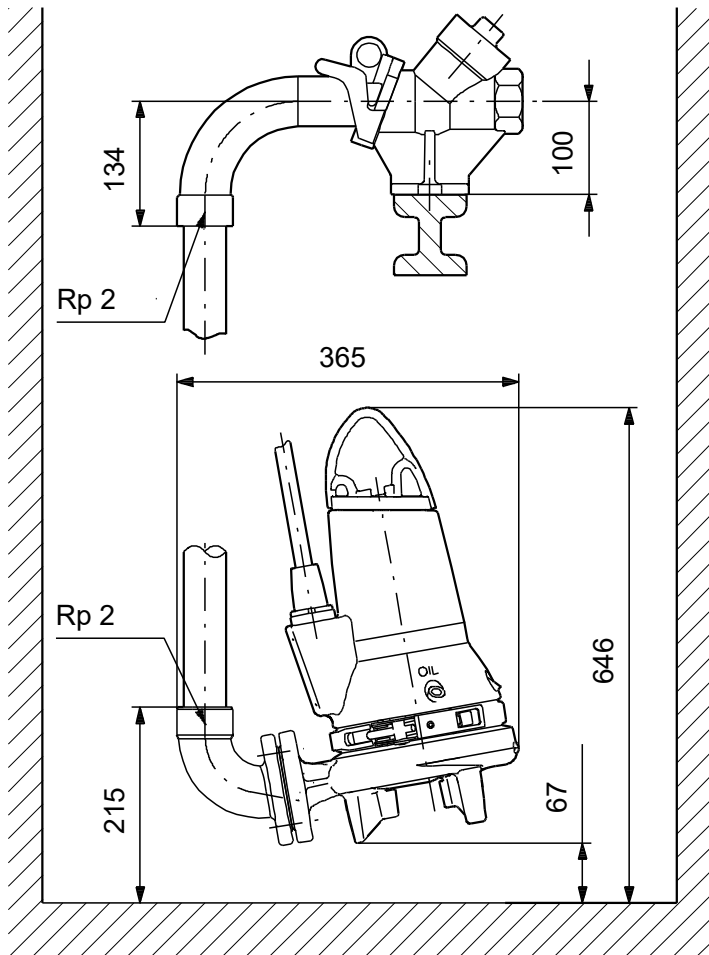
Cant.	Descriere
1	<p>SEG.50.26.2.50B</p>  <p style="text-align: center;">Notă! Poza de produs poate diferi de produsul actual</p> <p>Nr. Produs: 99274384</p> <p>Pompele cu tocător Grundfos SEG sunt pompe centrifugale fără autoamorsare, cu o singură treaptă, cu orificiu de evacuare orizontală, proiectate special pentru pomparea apei uzate conținând reziduuri din toalete.</p> <p>Pompa este echipată cu un sistem tocător care macină particulele solide destructibile în bucăți mici pentru a le conduce prin conducte cu un diametru relativ mic.</p> <p>Pompele cu tocător SEG sunt ideale pentru utilizarea în zone slab populate, unde sistemele de canalizare gravitaționale nu sunt disponibile. Exemple includ sate, zone agricole și zone cu diferențe mari de nivel de teren, unde un sistem presurizat prezintă avantaje.</p> <p>Pompa este disponibilă pentru două tipuri de instalare:</p> <ul style="list-style-type: none"> • instalare submersă pe sisteme de cuplare automată • instalare submersă, autonomă. <p>Pompa este fabricată din materiale rezistente la uzură, precum fontă și oțel inoxidabil. Aceste materiale asigură o funcționare de durată. Suprafața pompei este netedă pentru a preveni depunerea murdăriei și impurităților. Clema din oțel inoxidabil rezistent la coroziune fixează motorul de carcasa pompei și permite deservirea ușoară a pompei.</p> <p>Sistemul SmartTrim permite reglarea ușoară a jocului rotorului pentru a asigura eficiență maximă pe durata de viață a pompei.</p> <p>Gama este proiectată să reducă semnificativ consumul de energie și să mențină costurile implicate de timpii de nefuncționare la minim, menținând în același timp performanța maximă pe toată durata de viață a sistemului.</p> <p>Control:</p> <p>Senzor de umiditate: fără senzori umiditate</p> <p>AUTOADAPT: NU</p> <p>Lichid:</p> <p>Gama temperaturii lichidului: 0 .. 40 °C</p> <p>Densitate: 1000 kg/m³</p> <p>Tehnic:</p> <p>Debitul curent calculat: 7.27 l/s</p> <p>Înălțimea de pompare rezultată pentru pompă: 15.46 m</p> <p>Tip de rotor: SISTEM POLIZOR</p> <p>Etanșare primară a arborelui: SIC/SIC</p> <p>Aprobări pe etichetă: PA-I</p> <p>Toleranța curbei: ISO9906:2012 3B2</p> <p>Materiale:</p> <p>Corpul pompei (stator): Fontă EN1561 EN-GJL-200</p> <p>Rotor: Fontă EN1561 EN-GJL-200</p> <p>Instalație:</p> <p>t max amb: 40 °C</p> <p>Presiune de funcționare maximă: 6 bar</p> <p>Flanșă standard: DIN</p>

Cant.	Descriere
	Conexiune conducte: DN 50
	Refulare pompă: DN 50
	Evaluare presiune: PN 10
	Adâncime maximă de instalare: 10 m
	Auto-cuplaj: 97695874
	Date electrice:
	Puterea de intrare - P1: 3.2 kW
	Putere motor: 2.6 kW
	Frecvența rețelei electrice: 50 Hz
	Tensiune nominală: 3 x 400-415 V
	Toleranță tensiune: +6/-10 %
	Nr. max. de porniri pe oră: 30
	Curent nominal: 6 A
	Curent de pornire: 33 A
	Curent nominal la nici-o încărcare: 2.8 A
	Cos fi - factor de putere: 0.87
	Cos fi - f.p. la sarcină 3/4: 0.81
	Cos fi - f.p. la sarcină 1/2: 0.68
	Turație nominală: 2870 rpm
	Momentul de inerție: 0.0093 kg m ²
	Randamentul motorului la o încărcare maximă: 82 %
	Randamentul motorului la o încărcare de 3/4: 84 %
	Randamentul motorului la o încărcare de 1/2: 84 %
	Numărul de poli: 2
	Metodă de pornire: direct
	Grad de protecție (IEC 34-5): IP68
	Clasă de izolare (IEC 85): F
	Protecție la explozie: N
	Lungimea cablului: 10 m
	Tip cablu: 07RN8-F
	Tip de conectare cablu: No plug
	Altele:
	Greutate netă: 65.2 kg
	Danish VVS No.: 391342201
	Țara de origine: HU
	Nr. tarif: 84137021

99274384 SEG.50.26.2.50B 50 Hz

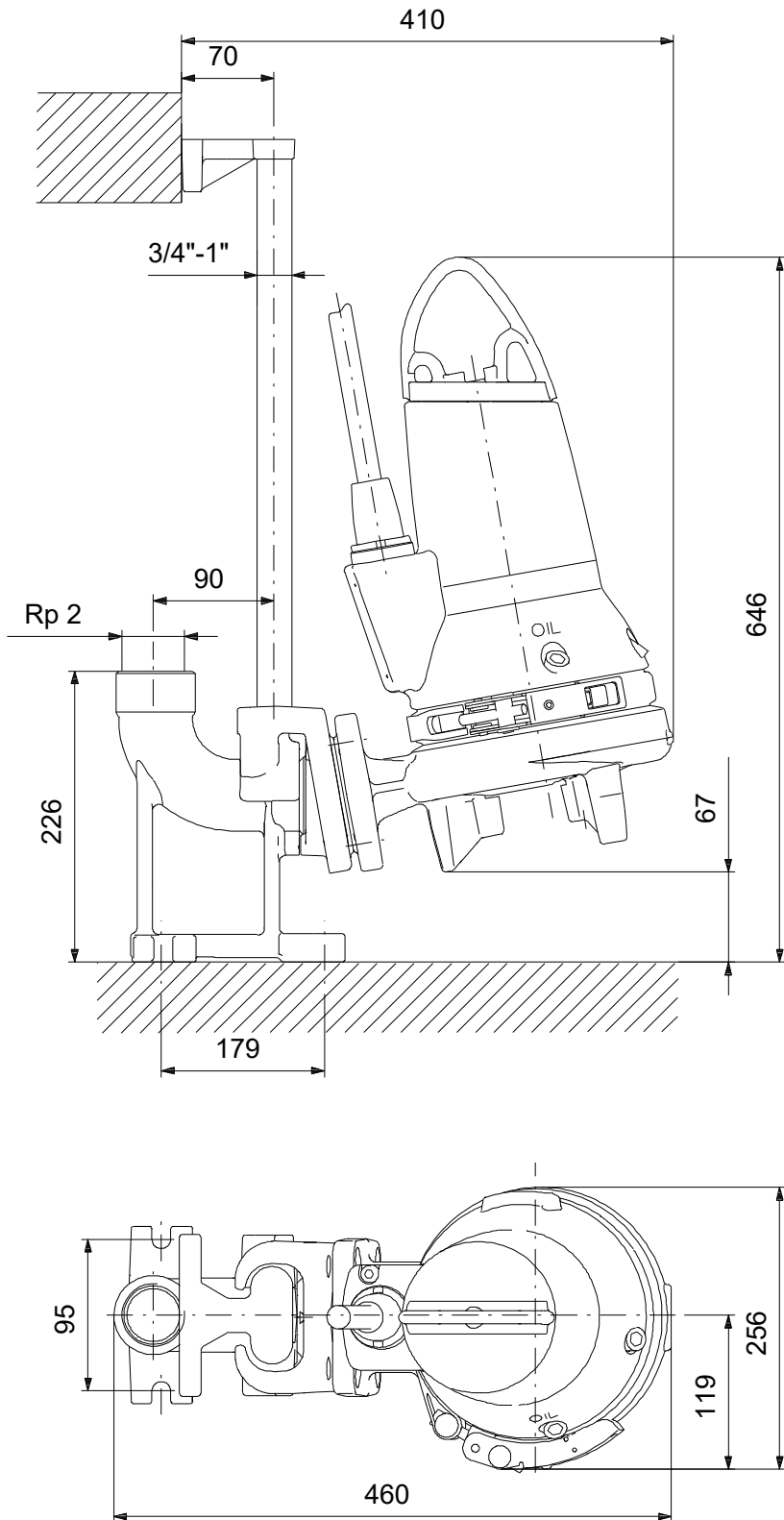


99274384 SEG.50.26.2.50B 50 Hz



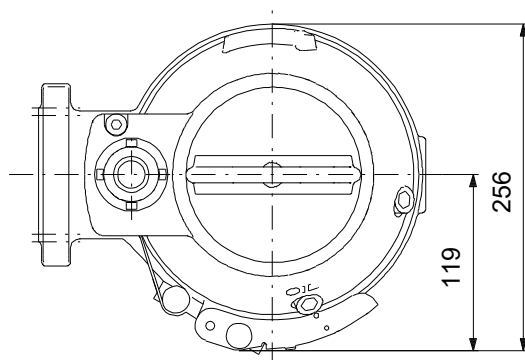
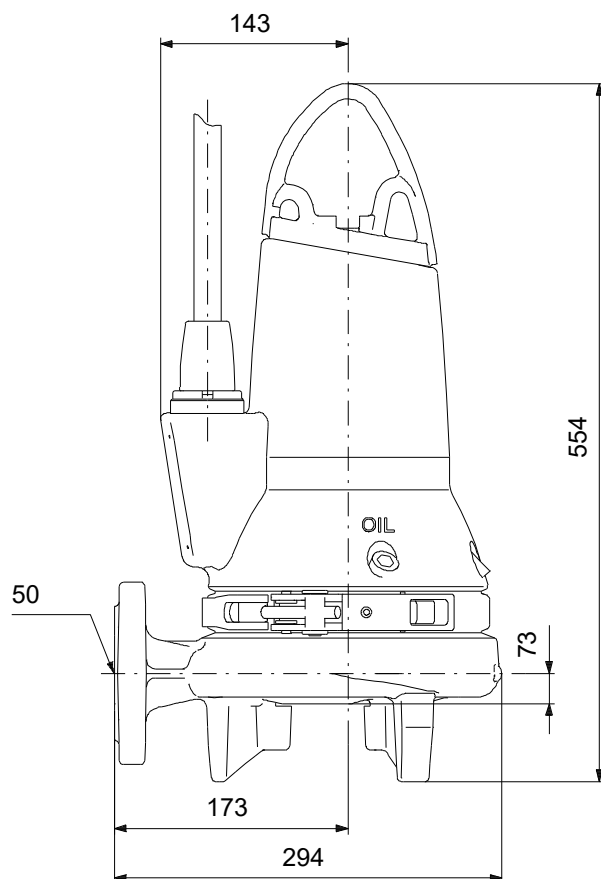
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99274384 SEG.50.26.2.50B 50 Hz



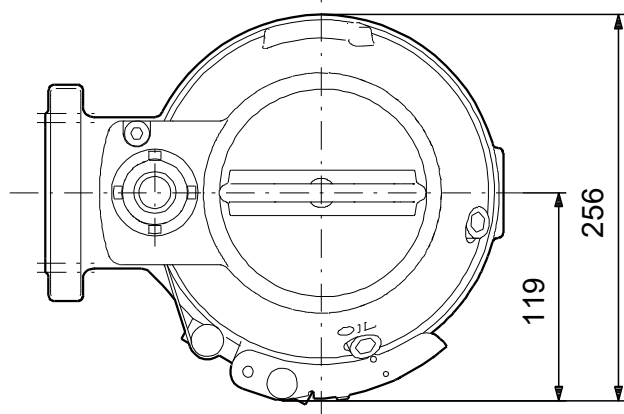
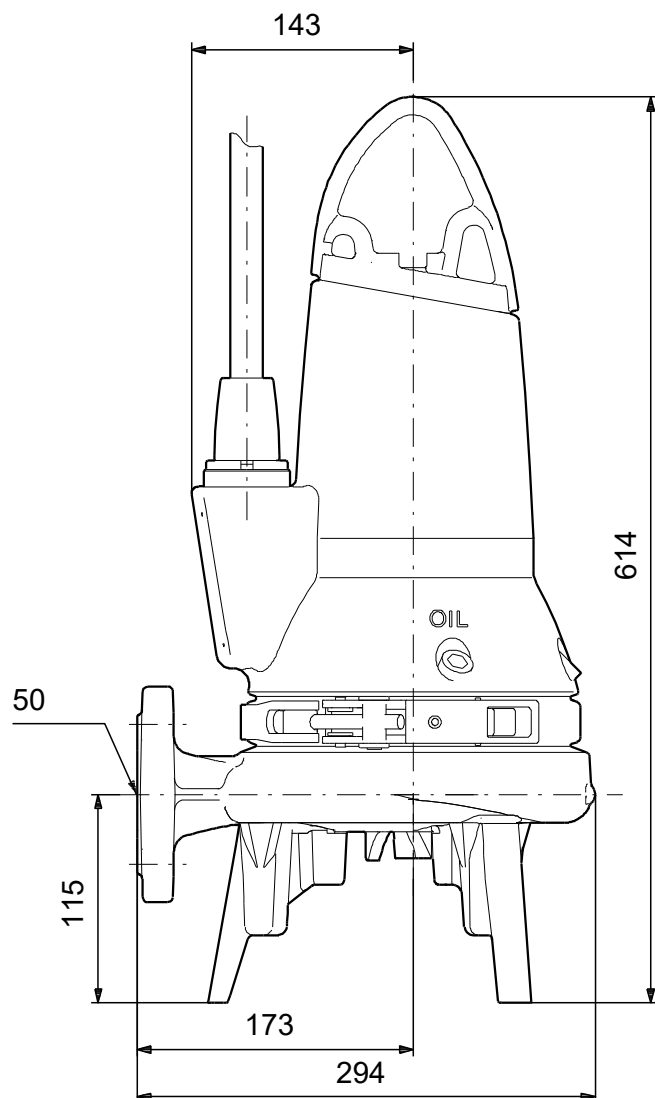
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99274384 SEG.50.26.2.50B 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99274384 SEG.50.26.2.50B 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

Cant. Descriere1 **SL1.110.200.110.4.52M.S.N.51D.A**

Notă! Poza de produs poate diferi de produsul actual

Nr. Produs: [99776473](#)

Pompă centrifugă monoetajată, fără autoamorsare, destinat vehiculării apelor reziduale, apelor de proces și materialelor de vidanjare brute necernute.

Pompa este destinată exploatarei intermitente și continue cu instalare submersă. Rotorul revoluționar S-tube® asigură un pasaj sferic liber al solidelor de până la 110 mm și este adecvat pentru apele reziduale cu un conținut de substanță uscată de până la 3 %.

Sistemul SmartTrim de potrivire a jocului rotorului face posibilă menținerea performanței maxime. Pentru instalarea pe cuplă automată, sistemul de garnituri Grundfos SmartSeal asigură o racordare etanșă.

Detalii suplimentare despre produs

Aplicațiile tipice sunt transferul de lichide cum ar fi:

- drenaj și apă de suprafață
- apă uzată menajeră
- ape uzate municipale
- ape uzate industriale
- apă de proces și de răcire.

Pompele sunt ideale pentru pomparea lichidelor de mai sus din locuri precum:

- stații de pompare a rețelei municipale
- stații de pompare de intrare în stațiile de epurare ape uzate
- puțuri primare de limpezire în stațiile de epurare ape uzate
- puțuri secundare de limpezire în stațiile de epurare ape uzate
- stații de pompare pentru ape pluviale
- clădiri publice
- clădiri rezidențiale
- fabrici și industrie.

Pompa este adecvată atât pentru instalare permanentă, cât și pentru instalare temporară. Consolele de ridicare montate pe pompe permit transportul și instalarea ușoară la locație.

Pompă

Carcasa pompei și partea de sus a motorului sunt confecționate din fontă (EN-GJL-250) iar rotorul este confecționat din fontă ductilă (EN-GJS-500).

Carcasa pompei, partea de sus a motorului și rotorul sunt confecționate din fontă (EN-GJL-250).

Toate suprafețele ale pieselor din fontă sunt protejate cu acoperire prin cataforeză.

Suprafața pieselor din fontă ale pompei sunt apoi vopsite prin acoperire ecologică cu pulbere (de tip NCS 9000N (negru), cod de luciuri 30, grosime 100 μm), care asigură o protecție superioară la șoc și împotriva coroziunii.

Pompa finală este asamblată din piese deja vopsite, asigurându-se că în canalele dintre piese nu se poate forma rugină sau cruste.

Rotorul S-tube® asigură pasajul sferic liber prin rotor și carcasa pompei și creează o extensie naturală a conductelor conectate la pompa.

Cheia designului S-tube® este simplitatea, fără funcții de tăiere sau deplasare, care se pot uza în timp, asigurând astfel o eficiență constantă, superioară. Designul simplu înseamnă costuri mai mici cu ciclul de viață întrucât uzura abrazivă este redusă și există mai puține incidente de înfundare.



This pump is equipped with the unique SmartTrim impeller clearance adjustment system that enables easy restoring of factory-set impeller clearance.

By tightening the adjustment screws on the exterior of the pump housing, peak pumping efficiency can be maintained.

This can be done on site, quickly and easily, without dismantling the pump and without using special tools.

Etanșările arborelui pompei constă din două etanșări mecanice care asigură o etanșare fiabilă între lichidul pompat și motor. Etanșarea arborelui este un cartuș de etanșare care permite deservirea ușoară.

Combinatia etanșărilor primare și secundare într-un sistem de cartuș de etanșare a arborelui are drept rezultat o lungime mai mică a ansamblului, în comparație cu etanșările convenționale. În plus, acest design minimizează riscul instalării incorecte și poate fi instalat pe amplasament fără a fi nevoie de unelte speciale.

- Etanșarea primară: Carbură de siliciu/carbură de siliciu (SiC/SiC)
- Etanșarea secundară: Carbon/ceramic

Etanșarea arborelui este bidirecțională, însemnând că funcționează corect în caz de reflux prin pompă.

Flanșa de refulare a pompei este montată cu garnitura de cuplare automată Grundfos SmartSeal, care asigură o conexiune completă anti-scurgere între pompă și unitatea de bază a sistemului de cuplare automată. Aceasta optimizează eficiența întregului sistem de pompare și menține costurile de exploatare la minim.

Motor

Motorul este etanș, complet capsulat, livrat cu un cablu de alimentare 10 m. O intrare etanșă din oțel inoxidabil a cablului, cu inele de etanșare moi pentru a preveni deteriorarea cablului sau scurgerile.

Construcția motorului este compactă cu arbore scurt care reduce vibrațiile rezultând eficiență crescută și durată de viață mai lungă a etanșării arborelui și a rulmenților cu bile.

În înfășurările motorului sunt încorporate întrerupătoare termice pentru a proteja motorul împotriva supraîncălzirii.

Pompa este proiectată pentru exploatare controlată de turație pentru a menține consumul de energie la minim.

Pentru a evita riscul sedimentării în conducte, vă recomandăm să exploatați pompa cu turație controlată la o turație în intervalul de la 30 % to 100 % și la o viteză de curgere mai mare de 1 m/s.

Control:

Senzor de umiditate: cu senzori umiditate

Lichid:

Gama temperaturii lichidului: 0 .. 40 °C

Densitate: 998.2 kg/m³

Tehnic:

Debitul curent calculat: 77.4 l/s

Debit maxim: 103 l/s

Înălțimea de pompare rezultată pentru pompă: 10.95 m

Tip rotor: S-TUBE

Dimensiunea maximă a particulelor: 110 mm

Aprobări: CE,EAC,RCM

Toleranța curbei: ISO9906:2012 3B

Cooling jacket (Yes/No): N

Materiale:

Corpul pompei (stator): Fontă

Carcasă pompă: EN 1561 EN-GJL-250

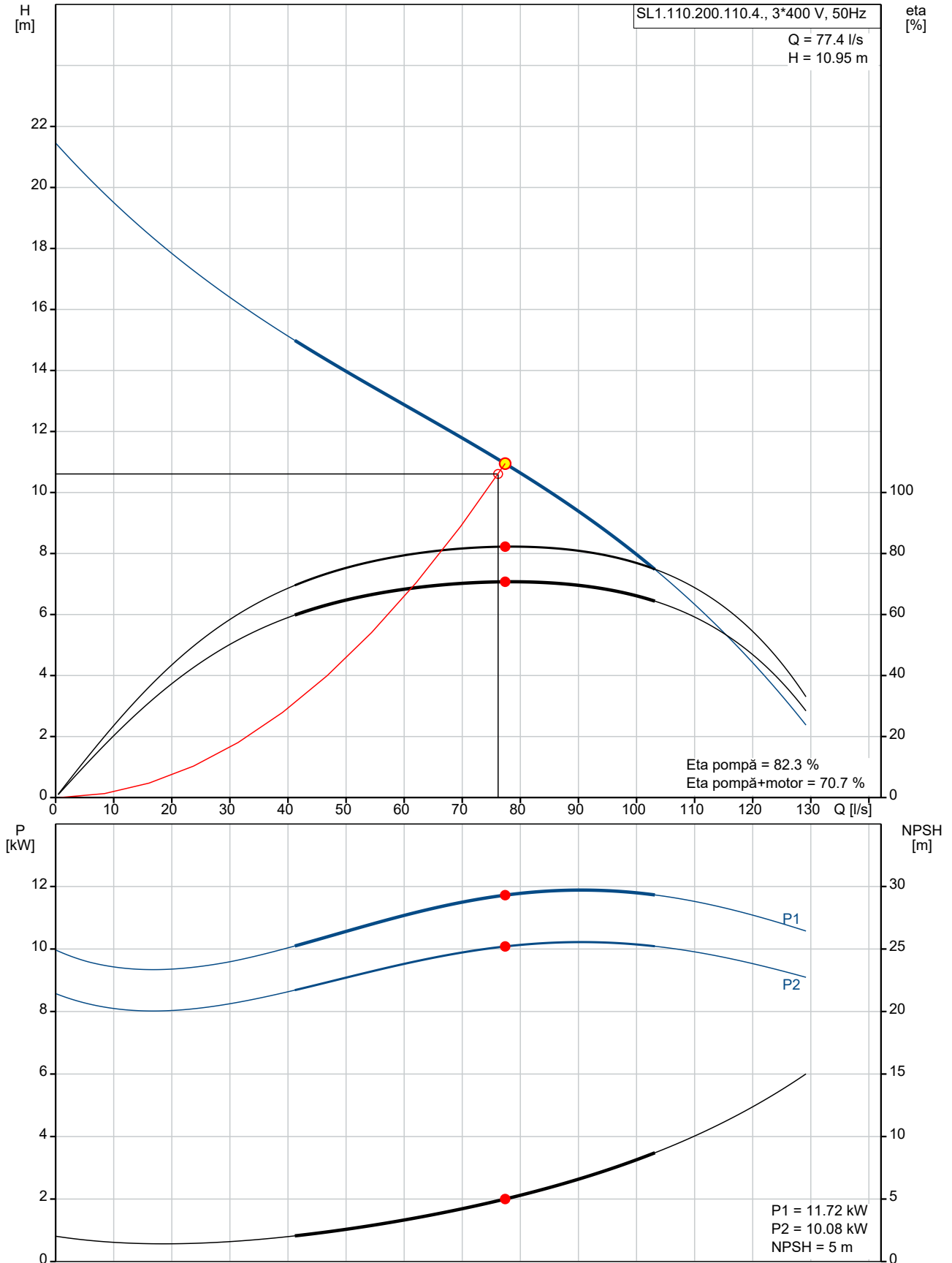
Rotor: Cast iron

EN 1561 EN-GJL-250

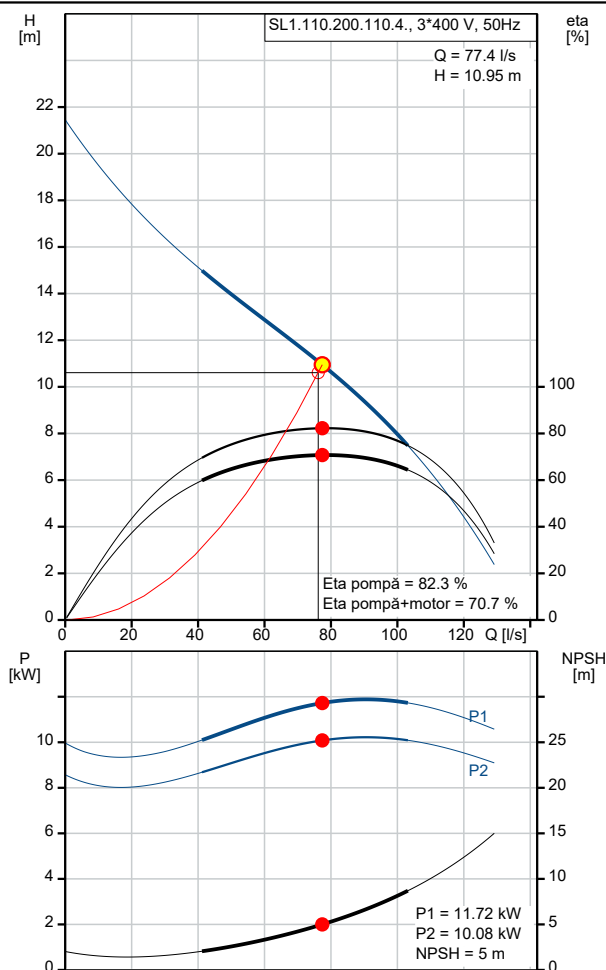
ASTM A48-35B

Cant.	Descriere
	Motor: Fontă EN 1561 EN-GJL-250
	Etanșare arbore: SIC-SIC
	Secondary shaft seal: SIC-CARBON
	Instalație:
	Gama temperaturii ambientale: -20 .. 40 °C
	Presiune de funcționare maximă: 8 bar
	Flanșă standard: DIN
	Dimensiune racord aspirație: DN 200
	Dimensiune racord de refulare: DN 200
	Evaluare presiune: PN 10
	Maximum installation depth: 20 m
	Auto-cuplaj: 96641489
	Suport de bază: 96789480
	Domeniu cadru: 52
	Date electrice:
	Intrare putere P1: 12.7 kW
	Putere nominală - P2: 11 kW
	Frecvența rețelei electrice: 50 Hz
	Tensiune nominală: 3 x 380-415/660-690 V
	Toleranță tensiune: +10/-10 %
	Nr. max. de porniri pe oră: 20
	Curent nominal: 24-22/14-13 A
	Curent consumat maxim: 23 A
	Curent de pornire: 210/116 %
	Curent nominal la nici-o încărcare: 10.4 A
	Turație nominală: 1481 rpm
	Randamentul motorului la o încărcare maximă: 86 %
	Randament motor la 3/4 sarcină: 86 %
	Randament motor la 1/2 sarcină: 84 %
	Numărul de poli: 4
	Metodă de pornire: Y/D
	Grad de protecție (IEC 34-5): IP68
	Clasa de izolare (IEC 85): H
	Protecție la explozie: N
	Lungime cablu de alimentare: 10 m
	Tip cablu: S1BN8-F
	Winding resistance: 0.690 Ohm
	Cos phi 1/1: 0.82
	Cos phi 1/2: 0.70
	Cos phi 3/4: 0.76
	Altele:
	Greutate netă: 318 kg
	Greutate brută: 346 kg
	Volum de livrare: 1.04 m ³
	Țara de origine: HU
	Nr. tarif: 84137021

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz

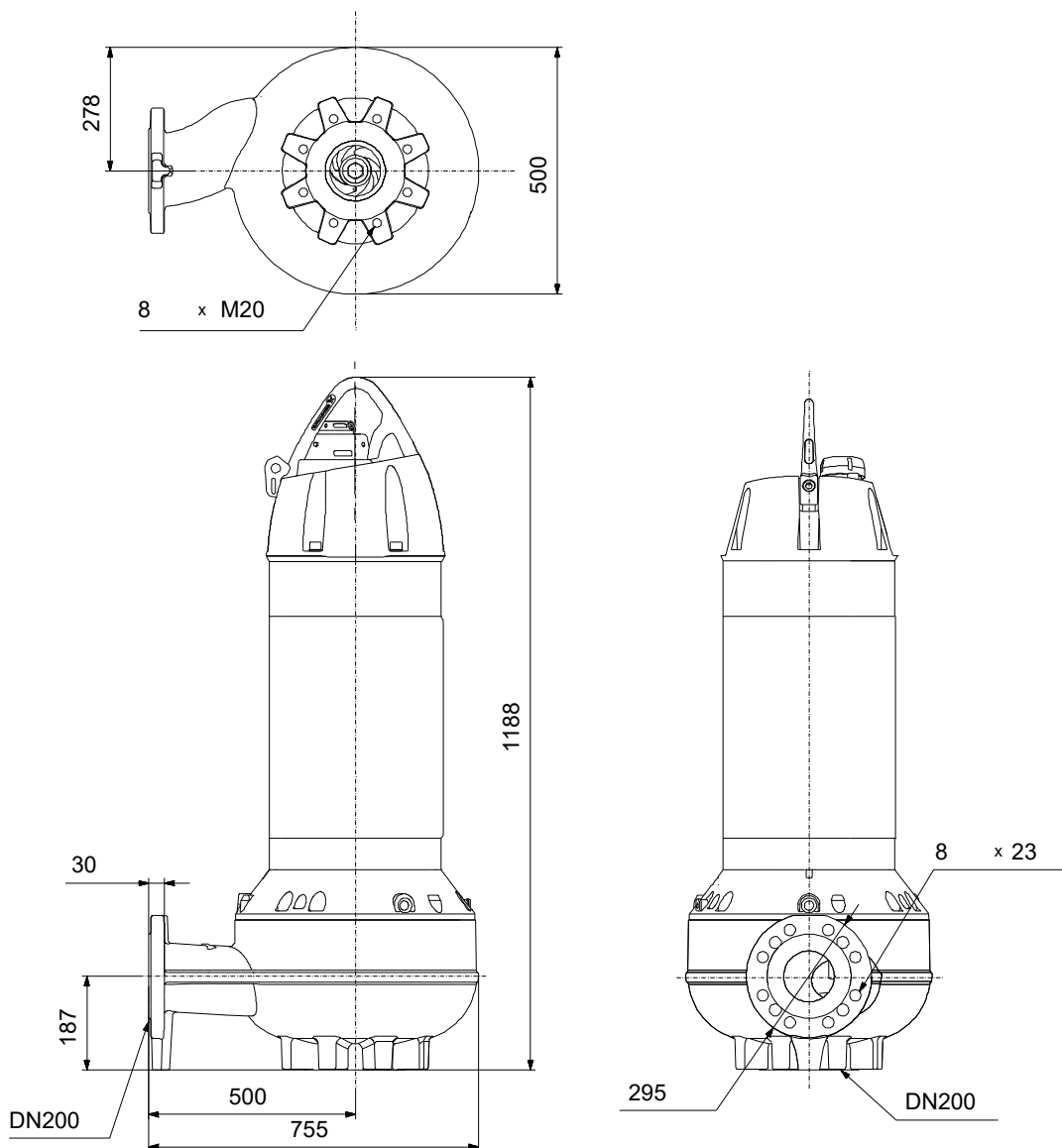


Descriere	Valori și tipuri
Informații generale:	
Nume produs:	SL1.110.200.110.4.52M.S.N. 51D.A
Cod produs:	99776473
Numărul EAN:	5713834112393
Preț:	EUR 10291.26
Tehnic:	
Debitul curent calculat:	77.4 l/s
Debit maxim:	103 l/s
Înălțimea de pompare rezultată pentru pompă:	10.95 m
Înălțime de pompare maximă:	15 m
Tip rotor:	S-TUBE
Dimensiunea maximă a particulelor:	110 mm
Aprobări:	CE,EAC,RCM
Toleranța curbei:	ISO9906:2012 3B
Cooling jacket (Yes/No):	N
Materiale:	
Corpul pompei (stator):	Fontă
Carcasă pompă:	EN 1561 EN-GJL-250
Rotor:	Cast iron
Rotor:	EN 1561 EN-GJL-250
Rotor:	ASTM A48-35B
Motor:	Fontă
Motor:	EN 1561 EN-GJL-250
Etanșare arbore:	SIC-SIC
Secondary shaft seal:	SIC-CARBON
Instalație:	
Gama temperaturii ambientale:	-20 .. 40 °C
Presiune de funcționare maximă:	8 bar
Flanșă standard:	DIN
Dimensiune racord aspirație:	DN 200
Dimensiune racord de refulare:	DN 200
Evaluare presiune:	PN 10
Maximum installation depth:	20 m
Instalație:	S
Instalare uscată/umedă:	SUBMERGED
Instalație:	vertical
Auto-cuplaj:	96641489
Suport de bază:	96789480
Domeniu cadru:	52
Lichid:	
Gama temperaturii lichidului:	0 .. 40 °C
Densitate:	998.2 kg/m ³
Date electrice:	
Intrare putere P1:	12.7 kW
Putere nominală - P2:	11 kW
Frecvența rețelei electrice:	50 Hz
Tensiune nominală:	3 x 380-415/660-690 V
Toleranță tensiune:	+10/-10 %
Nr. max. de porniri pe oră:	20
Curent nominal:	24-22/14-13 A
Curent consumat maxim:	23 A
Curent de pornire:	210/116 %
Curent nominal la nici-o încărcare:	10.4 A
Turație nominală:	1481 rpm
Randamentul motorului la o încărcare maximă:	86 %
Randament motor la 3/4 sarcină:	86 %



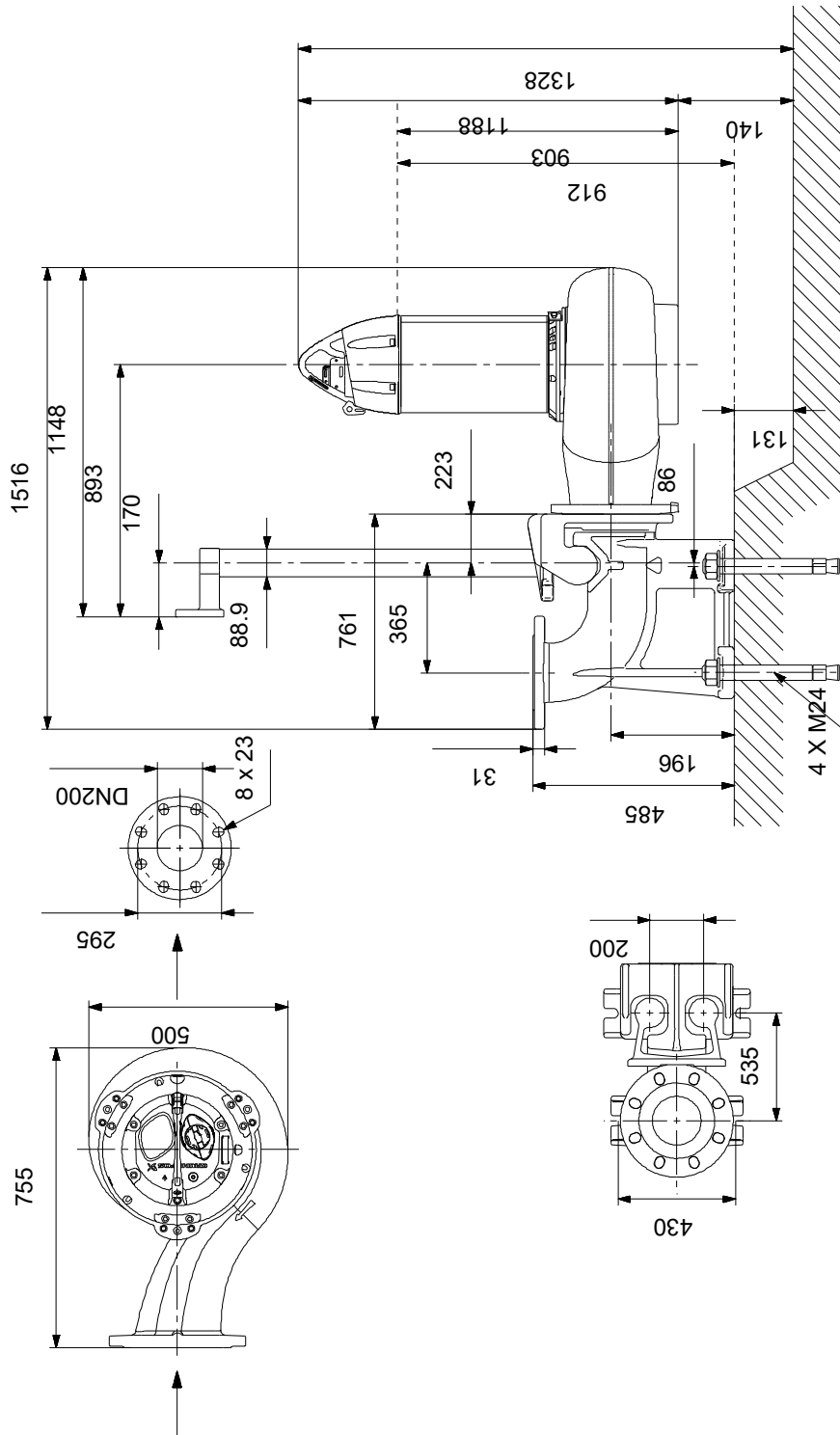
Descriere	Valori și tipuri
Randament motor la 1/2 sarcină:	84 %
Numărul de poli:	4
Metodă de pornire:	Y/D
Grad de protecție (IEC 34-5):	IP68
Clasa de izolare (IEC 85):	H
Protecție la explozie:	N
Protecție încorporată în motor:	KLIXON
Lungime cablu de alimentare:	10 m
Tip cablu:	S1BN8-F
Dimensiune cablu:	7G4+5X1.5ST
Rezistența cablului:	4.95 mOhm/m
Rezistență bobinaj:	0.690 Ohm
Cos phi 1/1:	0.82
Cos phi 1/2:	0.70
Cos phi 3/4:	0.76
Control:	
Senzor de umiditate:	cu senzori umiditate
Altele:	
Greutate netă:	318 kg
Greutate brută:	346 kg
Volum de livrare:	1.04 m ³
Țara de origine:	HU
Nr. tarif:	84137021

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz



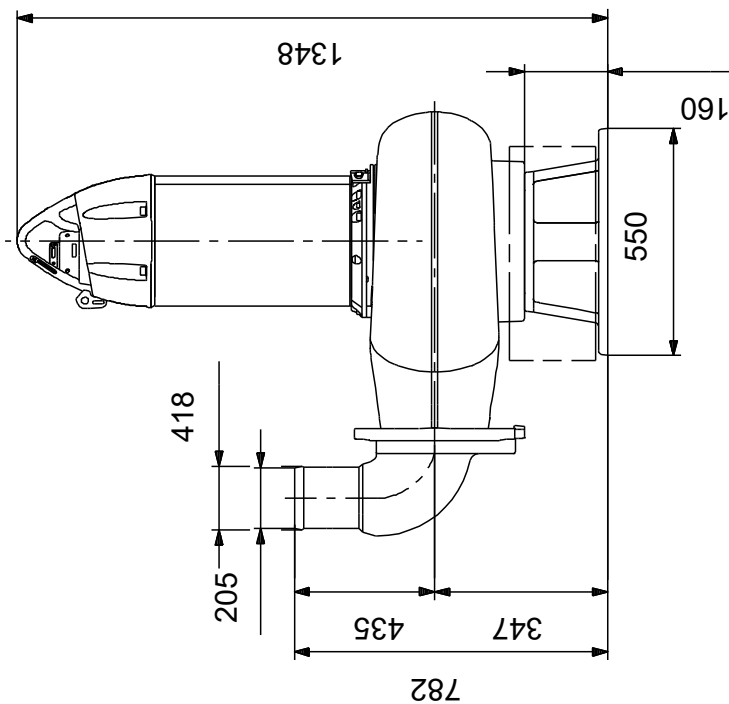
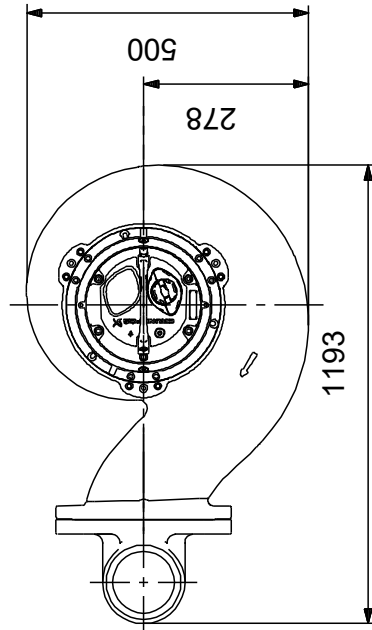
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
 Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz




Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

Piese de schimb SL1.110.200.110.4., Nr. Prods 99776473
Prods După 2049 (anul de producție și numărul săptămânii)

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-	Kit, Bracket			99744139	1	pcs
59	Înveliș				1	
153	Lagăr cu contact unghiular				1	
155	Bearing bracket, lower				1	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucla șaibei				1	
239	Hex head screw		Lungime (mm): 30		3	
			Filet: M10			
-	Set, cablu			99954786	1	pcs
	Flat Washer				4	
	Socket head cap screw				2	
-	Cable assembly				1	
	Flex insulation					
	Connector plug					
	Clemă cablu					
168a	Intrarea cablului					
168	Intrarea cablului					
181	Power cable					
198c	Disc elastic					
198b	Spălător					
198	Etanșare inel					
248	Hex socket head cap screw					
	Flex insulation				1	
	Cable tie				7	
	Cable tie				2	
	Clemă cablu				2	
27	Bucla șaibei				1	
36	Hex socket head cap screw				4	
39	Inel O		Diametru: 209 MM		1	
			Tip material: NBR			
			Grosime: 5,7 MM			
157d	Inel O				1	
-	Kit, cable entry			99743743	1	pcs
	Connector plug				5	
	Connector plug				1	
	Clemă cablu				2	
	Bracket				1	
157d	Inel O				1	
168a	Intrarea cablului				1	
168	Intrarea cablului				1	
176a	Cutie de conexiuni				1	
198c	Disc elastic				4	
198b	Spălător				1	
254	Hex socket head cap screw				2	
-	Kit, Cable harness			99743750	1	pcs
	Wiring harness				1	
84c	Disc elastic				4	
524	Amortizor de cauciuc				1	
-	Set, rotor			98120615	1	pcs
49	Rotor				1	
66	Spălător				1	

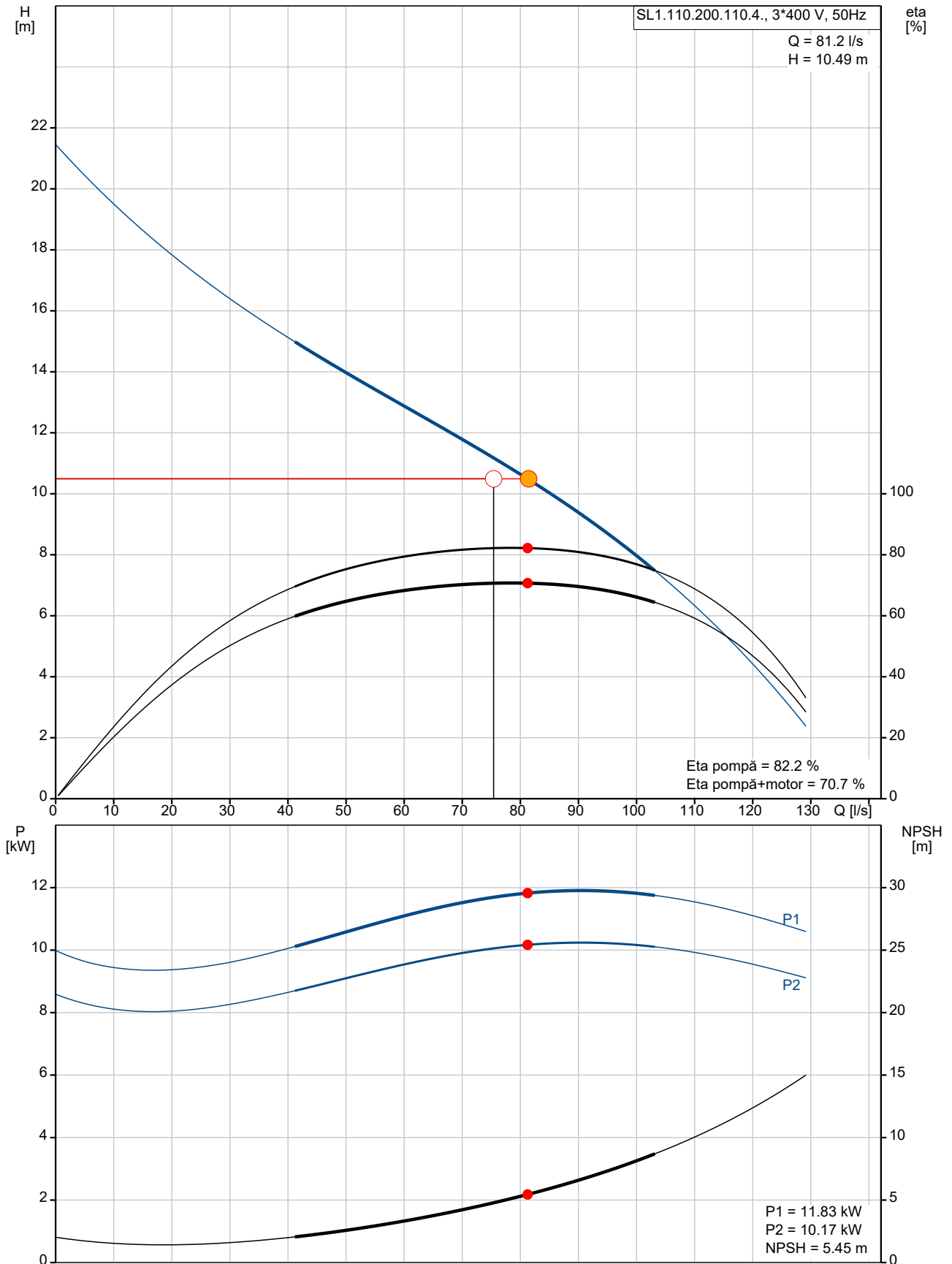
Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
67	Hex head screw				1	
-	Kit, Impeller fastening			98120686	1	pcs
66	Spălător				1	
67	Hex head screw				1	
-	Kit, Leakage switch			98794478	1	pcs
521	Switch				1	
-	Set, lagăr inferior			99718779	1	pcs
105a	Formed wire spring				1	
153	Lagăr cu contact unghiular				1	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucă șaibei				1	
-	Kit, senzor umiditate			96256056	1	pcs
	Gauge				1	
	Connector				2	
	Connector				2	
520	Senzor de umiditate				1	
890	Connector				2	
-	Kit, Motor cover			99743754	1	pcs
39	Inel O		Diametru: 209 MM		1	
			Tip material: NBR			
			Grosime: 5,7 MM			
164a	Motor top cover				1	
193	Priză				1	
250	Hex socket head cap screw				1	
-	Kit, O-ring for motor			98119448	1	pcs
-	37b Inel O				1	
72a	Inel O					
72	Inel O					
107	Inel O					
157d	Inel O					
157	Inel O		Diametru: 209 MM			
			Tip material: NBR			
			Grosime: 5,7 MM			
182d	Inel O					
37b	Inel O				1	
37b	Inel O				1	
-	Kit, Plug			98142061	1	pcs
193	Priză				5	
-	Set, șuruburi			98638261	1	pcs
12c	Socket set screw				3	
-	Kit, Seal housing lower			98638610	1	pcs
37b	Inel O				1	
77	Seal housing				1	
184b	Hex socket head cap screw				3	
-	Kit, Seal housing upper			98638630	1	pcs
58	Seal housing				1	
72a	Inel O				1	
107	Inel O				1	
182d	Inel O				3	
182c	Spălător				3	
182b	Hex head bolt				3	
193	Priză				2	
-	Set, etanșare			99718739	1	pcs
105a	Formed wire spring				1	
105	Etanșare				1	
-	Set, etanșare			99718777	1	pcs

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
105a	Formed wire spring				1	
105	Etașare				1	
153	Lagăr cu contact unghiular				1	
182d	Inel O				3	
182c	Spălător				3	
182b	Hex head bolt				3	
187a	Spălător		Diametrul interior: 60		1	
			Diametru exterior: 75			
			Grosime: 3			
187	Bucla șaibei				1	
-	Kit, Shaft w/rotor			98119125	1	pcs
172	Shaft w/rotor				1	
-	Kit, Upper bearing			98119104	1	pcs
154	Rulmenți				1	
-	Kit, Upper bearing bracket			98119248	1	pcs
61	Bearing bracket, upper				1	
183	Hex socket head cap screw		Marcare: M 10		3	
			Lungime (mm): 30			
-	Kit, Volute			98120718	1	pcs
26c	Spălător				6	
26	Hex socket head cap screw				6	
-	50	Volute casing			1	
-		Volute casing				
-		Pump housing cpl.				
		Volute casing				
49c		Inel de uzură				
49b		Hex socket head cap screw		Marcare: ALLEN		
				Lungime (mm): 40		
				Filet: M6		
19	Priză					
-	Kit, Wear ring			99226928	1	pcs
49c		Inel de uzură			1	
49b		Hex socket head cap screw		Marcare: ALLEN	4	
				Lungime (mm): 40		
				Filet: M6		
+	Motor				1	pcs
19	Priză			98163028	1	pcs
37b	Inel O			98576480	1	pcs
184b	Hex socket head cap screw			99376087	3	pcs

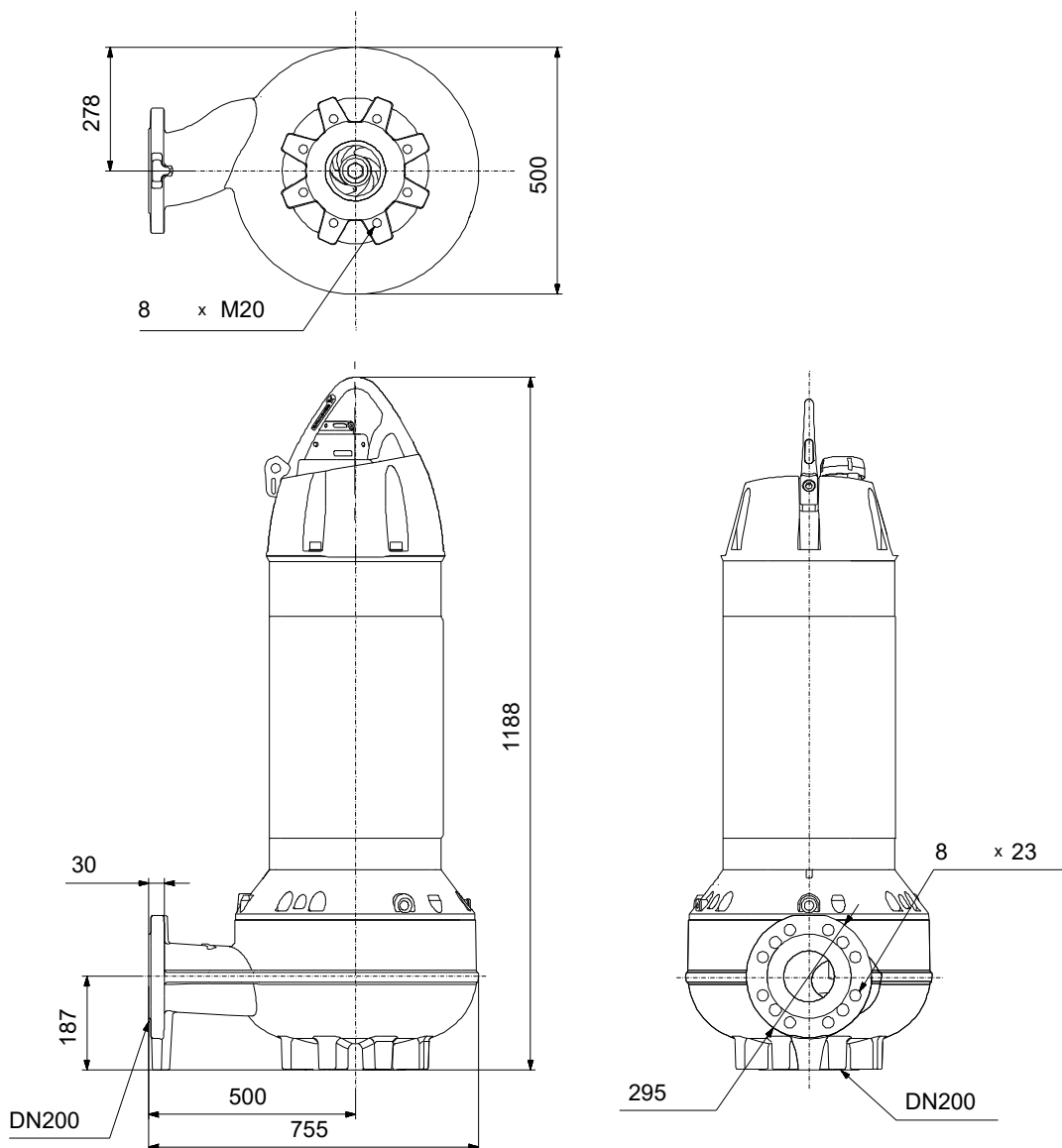
Cant.	Descriere
1	<p>SL1.110.200.110.4.52M.S.N.51D.A</p>  <p>Notă! Poza de produs poate diferi de produsul actual</p> <p>Nr. Produs: 99776473</p> <p>Pompă centrifugă monoetajată, fără autoamorsare, destinat vehiculării apelor reziduale, apelor de proces și materialelor de vidanjare brute necernute.</p> <p>Pompa este destinată exploatării intermitente și continue cu instalare submersă. Rotorul revoluționar S-tube® asigură un pasaj sferic liber al solidelor de până la 110 mm și este adecvat pentru apele reziduale cu un conținut de substanță uscată de până la 3 %.</p> <p>Sistemul SmartTrim de potrivire a jocului rotorului face posibilă menținerea performanței maxime. Pentru instalarea pe cuplă automată, sistemul de garnituri Grundfos SmartSeal asigură o racordare etanșă.</p> <p>Control:</p> <p>Senzor de umiditate: cu senzori umiditate</p> <p>Lichid:</p> <p>Gama temperaturii lichidului: 0 .. 40 °C</p> <p>Densitate: 1000 kg/m³</p> <p>Tehnic:</p> <p>Debitul curent calculat: 81.2 l/s</p> <p>Debit maxim: 103 l/s</p> <p>Înălțimea de pompare rezultată pentru pompă: 10.49 m</p> <p>Tip rotor: S-TUBE</p> <p>Dimensiunea maximă a particulelor: 110 mm</p> <p>Aprobări: CE,EAC,RCM</p> <p>Toleranța curbei: ISO9906:2012 3B</p> <p>Cooling jacket (Yes/No): N</p> <p>Materiale:</p> <p>Corpul pompei (stator): Fontă</p> <p>Carcasă pompă: EN 1561 EN-GJL-250</p> <p>Rotor: Cast iron EN 1561 EN-GJL-250 ASTM A48-35B</p> <p>Motor: Fontă EN 1561 EN-GJL-250</p> <p>Etanșare arbore: SIC-SIC</p> <p>Secondary shaft seal: SIC-CARBON</p> <p>Instalație:</p> <p>Gama temperaturii ambientale: -20 .. 40 °C</p> <p>Presiune de funcționare maximă: 8 bar</p> <p>Flanșă standard: DIN</p> <p>Dimensiune racord aspirație: DN 200</p> <p>Dimensiune racord de refulare: DN 200</p> <p>Evaluare presiune: PN 10</p> <p>Maximum installation depth: 20 m</p> <p>Auto-cuplaj: 96641489</p>

Cant.	Descriere
	Suport de bază: 96789480
	Domeniu cadru: 52
	Date electrice:
	Intrare putere P1: 12.7 kW
	Putere nominală - P2: 11 kW
	Frecvența rețelei electrice: 50 Hz
	Tensiune nominală: 3 x 380-415/660-690 V
	Toleranță tensiune: +10/-10 %
	Nr. max. de porniri pe oră: 20
	Curent nominal: 24-22/14-13 A
	Curent consumat maxim: 23 A
	RequestedVoltage: 400 V
	RatedCurrentAtThisVoltage: 22.9 A
	Curent de pornire: 210/116 %
	Curent nominal la nici-o încărcare: 10.4 A
	Turație nominală: 1481 rpm
	Randamentul motorului la o încărcare maximă: 86 %
	Randament motor la 3/4 sarcină: 86 %
	Randament motor la 1/2 sarcină: 84 %
	Numărul de poli: 4
	Metodă de pornire: Y/D
	Grad de protecție (IEC 34-5): IP68
	Clasa de izolare (IEC 85): H
	Protecție la explozie: N
	Lungime cablu de alimentare: 10 m
	Tip cablu: S1BN8-F
	Winding resistance: 0.690 Ohm
	Cos phi 1/1: 0.82
	Cos phi 1/2: 0.70
	Cos phi 3/4: 0.76
	Altele:
	Greutate netă: 318 kg
	Greutate brută: 346 kg
	Volum de livrare: 1.04 m ³
	Țara de origine: HU
	Nr. tarif: 84137021

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz

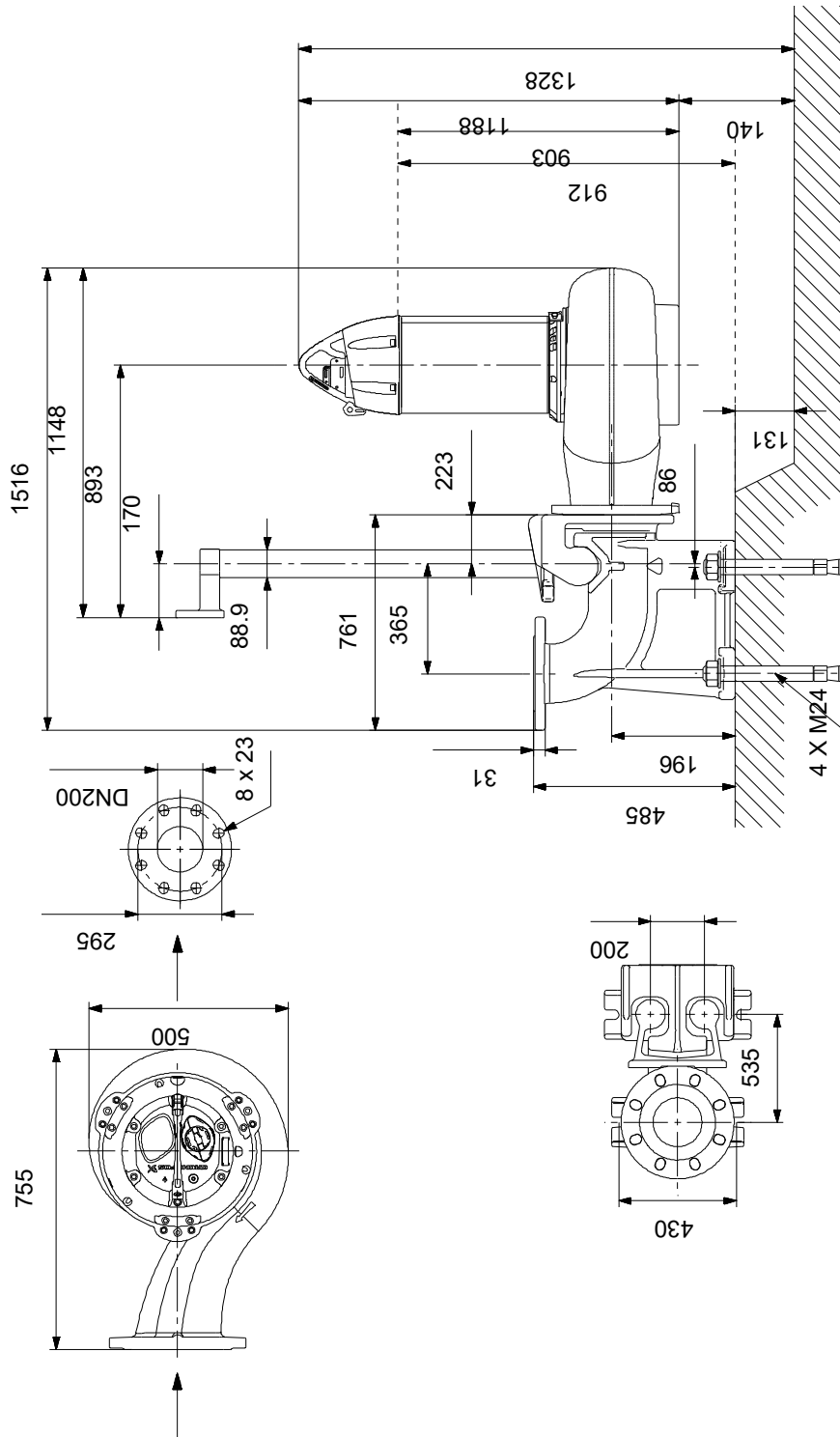


99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz



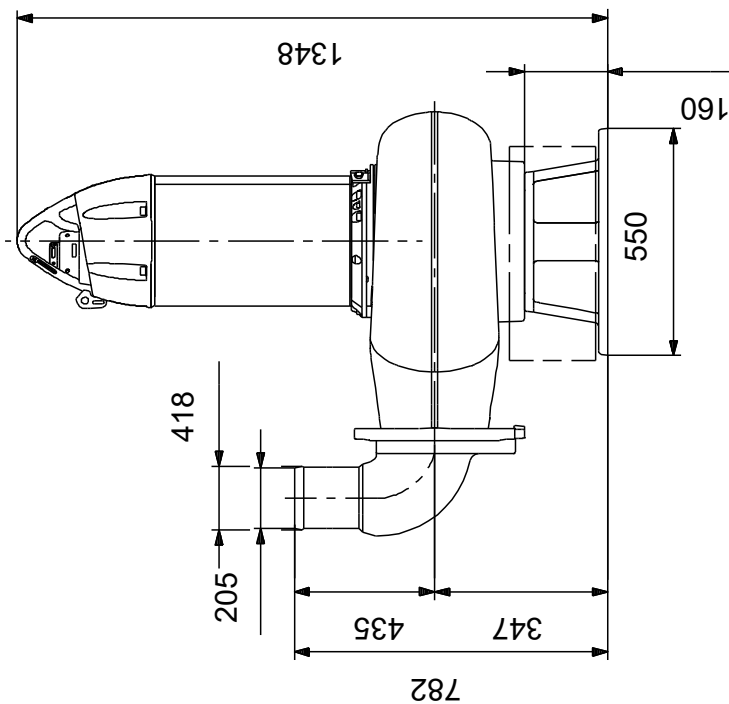
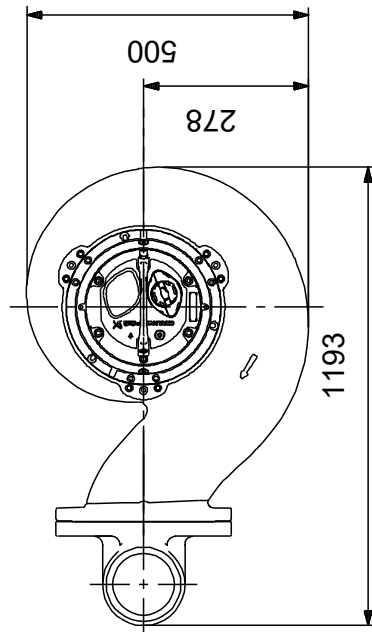
Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
 Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

99776473 SL1.110.200.110.4.52M.S.N.51D.A 50 Hz



Notă: Toate unitățile sunt în [mm] dacă nu sunt altele specificate.
Negare: Acest desen dimensional simplificat nu prezintă toate detaliile.

acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 004



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

EATON ELECTRIC S.R.L.

Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București

**pentru următoarele activități/
for the following fields of activities**

*Comercializare echipamente și componente electrice de joasă și medie tensiune.
Instalare, service, mentenanță, suport tehnic și reparații pentru echipamente electrice*

*Sale of low and medium voltage electrical equipment and components. Installation,
service, maintenance. technical support and repairs for electrical equipment*

că are implementat și menține un
sistem de managementul calității
conform condițiilor din standardul

which has implemented and maintains a
quality management system
which fulfils the requirements of the standard

SR EN ISO 9001:2015 (ISO 9001:2015)



Valabilitatea certificatului este condiționată de
efectuarea supravegheților anuale până la data de:



10-
2020

10-
2021

nr. certificat/ certificate registration no. **2249**
data inițială a certificării/ initial certification date **22 octombrie 2004**
data recertificării/ reissuing date **07 octombrie 2019**
data ultimei actualizări/ last update -
valabil până la/ valid until **08 octombrie 2022** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea





THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SRAC as an IQNet Partner hereby states that the organization:

EATON ELECTRIC S.R.L.

Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București

for the following scope:

Sale of low and medium voltage electrical equipment and components. Installation, service, maintenance, technical support and repairs for electrical equipment

has implemented and maintains a

Quality Management System

which fulfils the requirements of the following standard:

ISO 9001 : 2015

Issued on: 2019 - 10 - 07

First issued on: 2004 - 10 - 22

for the validity date, please refer to the original certificate* issued by SRAC

Registration Number: RO - 2249



Alex Stoichitoiu
President of IQNet

eng. Mihaela Cristea
SRAC General Manager



IQNet Partners:**

AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany FCAV Brazil
FONDONORMA Venezuela ICONTEC Colombia Inspecta Certification Finland INTECO Costa Rica
IRAM Argentina JQA Japan KPQ Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland PCBC Poland
Quality Austria Austria RR Russia SIGE México SII Israel SIQ Slovenia SIRIM QAS International Malaysia
SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey Vinçotte Belgium YUQS Serbia
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.

* This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

** The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 004



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

EATON ELECTRIC S.R.L.

*Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București*

***pentru următoarele activități/
for the following fields of activities***

*Comercializare echipamente și componente electrice de joasă și medie tensiune.
Instalare, service, mentenanță, suport tehnic și reparații pentru echipamente electrice*

*Sale of low and medium voltage electrical equipment and components. Installation,
service, maintenance, technical support and repairs for electrical equipment*

că are implementat și menține un **sistem de management de mediu** conform condițiilor din standardul **SR EN ISO 14001:2015 (ISO 14001:2015)** **which has implemented and maintains a environmental management system** which fulfils the requirements of the standard

SR EN ISO 14001:2015 (ISO 14001:2015)



Valabilitatea certificatului este condiționată de efectuarea supravegheților anuale până la data de:



10-
2020

10-
2021

nr. certificat/ certificate registration no. **275**
data inițială a certificării/ initial certification date **01 aprilie 2005**
data recertificării/ reissuing date **07 octombrie 2019**
data ultimei actualizări/ last update -
valabil până la/ valid until **08 octombrie 2022** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea





THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SRAC as an IQNet Partner hereby states that the organization:

EATON ELECTRIC S.R.L.

Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București

for the following scope:

Sale of low and medium voltage electrical equipment and components. Installation, service, maintenance, technical support and repairs for electrical equipment

has implemented and maintains a

Environmental Management System

which fulfils the requirements of the following standard:

ISO 14001 : 2015

Issued on: 2019 - 10 - 07

First issued on: 2005 - 04 - 01

for the validity date, please refer to the original certificate* issued by **SRAC**

Registration Number: RO - 275



Alex Stoichitoiu
President of IQNet

eng. Mihaela Cristea
SRAC General Manager



IQNet Partners:**

AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany FCAV Brazil
FONDONORMA Venezuela ICONTEC Colombia Inspecta Certification Finland INTECO Costa Rica
IRAM Argentina JQA Japan KTFQ Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland PCBC Poland
Quality Austria Austria RR Russia SIGE México SII Israel SIQ Slovenia SIRIM QAS International Malaysia
SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey Vinçotte Belgium YUQS Serbia
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.

* This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

** The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

EATON ELECTRIC S.R.L.

*Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București*

***pentru următoarele activități/
for the following fields of activities***

*Comercializare echipamente si componente electrice de joasă și medie tensiune.
Instalare, service, mentenanță, suport tehnic și reparații pentru echipamente electrice*

*Sale of low and medium voltage electrical equipment and components. Installation,
service, maintenance, technical support and repairs for electrical equipment*

că are implementat și menține un
**sistem de management al sănătății
și securității ocupaționale**
conform condițiilor din referențialul

which has implemented and maintains an
**occupational health and safety
management system**
which fulfils the requirements of the reference standard

SR ISO 45001:2018 (ISO 45001:2018)



Va abilitatea certificatului este condiționată de
efectuarea supravegheților anuale până la data de:



10-
2020

10-
2021

nr. certificat/ certificate registration no. **1299**
data inițială a certificării/ initial certification date **09 ianuarie 2009**
data recertificării/ reissuing date **07 octombrie 2019**
data ultimei actualizări/ last update -
valabil până la/ valid until **08 octombrie 2022** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea





THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

SRAC as an IQNet Partner hereby states that the organization:

EATON ELECTRIC S.R.L.

Șos. București - Ploiești, nr. 42 - 44, Băneasa Business & Technology Park,
Clădirea B, et. 3, Aripa B2, sector 1, București

for the following scope:

Sale of low and medium voltage electrical equipment and components. Installation, service, maintenance, technical support and repairs for electrical equipment

has implemented and maintains a

Occupational Management System

which fulfils the requirements of the following standard:

ISO 45001:2018

Issued on: 2019 - 10 - 07

First issued on: 2009 - 01 - 09

for the validity date, please refer to the original certificate issued by SRAC*

Registration Number: RO - 1299



Alex Stoichitoiu
President of IQNet

eng. Mihaela Cristea
SRAC General Manager



IQNet Partners:**

AFNOR Spain, AFNOR Certification France, APCER Portugal, CCC Cyprus, CISQ Italy, CQC China, CQM China, CQS Czech Republic, Cro Cert, Croatia, DQS Holding GmbH Germany, FCAV Brazil, FONDONORMA Venezuela, ICONTEC Colombia, Inspecta Certification Finland, INTECO Costa Rica, IRAM Argentina, JQA Japan, KIQ Korea, MIRTEC Greece, MSZT Hungary, Nemko AS Norway, NSAI Ireland, PCBC Poland, Quality Austria Austria, RR Russia, SIGE México, SII Israel, SIQ Slovenia, SIRIM QAS International Malaysia, SQS Switzerland, SRAC Romania, TEST St Petersburg Russia, TSE Turkey, Vincotte Belgium, YUQS Serbia
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.

* This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

** The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

EU-Konformitätserklärung Nr. 2700458.CE.02
EU-Declaration of Conformity No.

Hersteller / *Manufacturer:* PHOENIX CONTACT GmbH & Co. KG
Anschrift / *Address:* Flachsmarktstraße 8, 32825 Blomberg, Germany

Produktbezeichnung / *Product description:* **IB IL AI 4/I-PAC**
(Artikelbezeichnung, / *Article description,*
Artikel-Nr. / *Article-/Part no.:*) **2700458**

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) und deren Änderungsrichtlinien übereinstimmt / *The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s) and their delegated directive(s):*

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
For evaluation of the conformity following relevant standards were consulted:

EN 61000-6-2:2005+AC:2005 EN 61000-6-4:2007+A1:2011 * EN 61131-2:2007
EN 50581:2012

Ergänzende Informationen (z. B. Anmerkungen, Einschränkungen, etc.) zur Konformitätsbewertung:
Supplementary information (eg comments, restrictions, etc.) on conformity assessment:

Zertifikate einer benannten Stelle / *Certificates by a notified body:*


Anschrift / *Address:* _____
Referenz / *Reference:* _____
Anschrift / *Address:* _____
Referenz / *Reference:* _____

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Blomberg, 2018-11-03


Klaus Brand
Business Unit Control Systems
Manager Development Analog I/O
Ansprechpartner / *contact person*¹


Dr. Tobias Frank
Business Unit Control Systems
Vice President
Zeichnungsberechtigter / *authorized signatory*

Warnung: Dies ist ein Klasse A-Erzeugnis. In Wohngebieten kann es zu Störungen des Funkempfanges kommen. Der Betreiber soll entsprechende Schutzmaßnahmen treffen.
Warning: This is a Class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures.

¹ Ansprechpartner ist auch für die technische Unterlagen verantwortlich. / *Contact person is also responsible for the technical documentation.*

EU-Konformitätserklärung Nr. 1046666.CE.00 EU-Declaration of Conformity No.

Hersteller / Manufacturer: **PHOENIX CONTACT Development and Manufacturing Inc.**
 Anschrift / Address: **586 Fulling Mill Road, Middletown, PA 17057-2966, USA**

Produktbezeichnung / Product description: **BTP 2070W**

(Artikelbezeichnung, / Article description,
 Artikel-Nr. / Article no.)

1046666

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) übereinstimmt / The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s):

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
 For evaluation of the conformity following relevant standards were consulted:

EN 55011:2009+A1:2010	EN 61000-6-2:2005+AC:2005	EN 61000-6-4:2007+A1:2011 *
EN 61131-2:2007	EN 50581:2012	

Weitere Informationen (z. B. Dokumente, Prüfberichte, Einschränkungen, etc.) zur Konformitätsbewertung:
 Additional information (for example documents, test reports, restrictions etc.,) of the conformity assessment:

Zertifikate einer benannten Stelle / Certificates by a notified body:

Anschrift / Address: _____

Referenz / Reference: _____

Anschrift / Address: _____

Referenz / Reference: _____

Die letzten beiden Ziffern des Jahres in dem die CE-Kennzeichnung angebracht wurde:
 The last two figures of the year in which the CE marking was applied: _____
 (nur einzutragen, bei der Niederspannungsrichtlinie / only to be entered on the low voltage directive)

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
 This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
 This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Middletown, 2017-10-31


 Michael Rothwell
 Business Unit Control Systems
 Vice President
 Ansprechpartner / contact person


 David Skelton
 Development & Manufacturing
 Vice President & General Manager
 Zeichnungsberechtigter / authorized signatory

Warnung: Dies ist ein Klasse A-Erzeugnis. In Wohngebieten kann es zu Störungen des Funkempfanges kommen. Der Betreiber soll entsprechende Schutzmaßnahmen treffen.
 Warning: This is a Class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures.

EU Declaration of Conformity

NO. OF PAGES

1 (1)

We: nVent HOFFMAN
Pº de la Finca 1, Ed 3
Madrid 28223

declare under our sole responsibility that the product ranges

MCS, Mild steel floor standing combinable single door enclosure
MCD, Mild steel floor standing combinable double door enclosure
MCI, Mild steel floor standing IP protected ICT Rack
MCM, Mild steel floor standing industrial computer enclosure
MCF, Mild steel floor standing flange mount disconnect
MKS, Mild steel floor standing compact single door enclosure
MKD, Mild steel floor standing compact double door enclosure
MCSS, Stainless s. floor standing combinable single door enclosure
MCDS, Stainless s. floor standing combinable double door enclosure
EKSS, Stainless s. floor standing compact single door enclosure
EKDS, Stainless s. floor standing compact double door enclosure
ECOM, Aluminium floor standing combinable outdoor enclosure
EKOM, Aluminium floor standing outdoor enclosure
MCSE, EMC floor standing combinable single door enclosure

to which this declaration relates, are in conformity with the following standards or other normative document(s):

EN 62208, Empty enclosures for low voltage switchgear and control gear assemblies – General requirements

Following the provisions of Directive
2014/35/EU, Low Voltage Directive



Madrid, 13th November 2018

David Ramos, HPM

Measuring instrument - EEM-MA400 - 2901364

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)




Energy measurement device to measure electrical parameters in low voltage installations up to 500 V, acquisition of total harmonic oscillations - can be extended with RS-485 communication module

Your advantages

- Can be extended with RS-485 communication module (JBUS/MODBUS)
- Acquisition of total harmonics up to 51st harmonic



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 585804
GTIN	4046356585804
Weight per Piece (excluding packing)	704.200 g
Custom tariff number	90303100
Country of origin	Tunisia
Note	Made to Order (non-returnable)

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
-------------------------	---------------------------------------------------------------------------

Dimensions

Width	96 mm
Height	96 mm
Depth	82 mm
Installation depth with extension module	80 mm
Installation depth without extension module	60 mm

Ambient conditions

Ambient temperature (operation)	-10 °C ... 55 °C (14 °F to 131 °F)
---------------------------------	------------------------------------

Measuring instrument - EEM-MA400 - 2901364

Technical data

Ambient conditions

Ambient temperature (storage/transport)	-20 °C ... 85 °C (-4 °F ... 185 °F)
Max. permissible relative humidity (operation)	≤ 95 %
Max. salt spray content	≤ 2.5 %
Degree of protection	IP52 (Front)
	IP30 (Back side)

Input data

Measuring principle	True r.m.s. value measurement
Acquisition of harmonics	up to 51st harmonic
Measured value	AC sine (50/60 Hz)
Input name	Voltage measuring input V1, V2, V3
Input voltage range	50 V AC ... 500 V AC (Phase/Phase)
	28 V AC ... 289 V AC (Phase/neutral conductor)
Precision	0.2 %
Input name	Current measurement I1, I2, I3
Input current range	via external transformers
Input current	9999 A (primary)
	5 A (secondary)
Current measuring range	0 A ... 9999 A
Overload capacity	6 A (Permanent)
Response threshold from measuring range nominal value	5 mA
Precision	0.2 %
Current overload	10 x I _N for 1 s
Messbereich_Leistung	0 MW ... 11 MW
	0 Mvar ... 11 Mvar
	0 MVA ... 11 MVA
Precision	0.5 %
Active energy (IEC 62053-22)	Class 0.5 S
Reactive power (IEC 62053-23)	Class 2

Output data

Output description	Via function module
--------------------	---------------------

Interfaces

Designation	via communication module
-------------	--------------------------

General

Display	LCD display, backlighting
Measuring rate	approximately
Supply voltage range	110 V AC ... 400 V AC ±10 %
	120 V DC ... 350 V DC (# 20 %)
Nominal power consumption	5 VA
Power consumption	10 VA (with max. number of extension modules)

Measuring instrument - EEM-MA400 - 2901364

Technical data

General

Mains type	3-phase (3 or 4-wire), 2-phase (2-wire), and single-phase (1-wire)
Color	black
Conformance	CE-compliant
Rated insulation voltage	300 V AC (EN 61010-1)
Test voltage	3.5 kV AC (50 Hz, 1 min.)
	2.2 kV AC (50 Hz, 1 min.)

UL data

Supply voltage	300 V AC
Nominal supply voltage range	110 V AC ... 240 V AC ±10 %
	120 V DC ... 250 V DC ±10 %
Power consumption	10 VA
Operating mode	Indoor use
Surge voltages	Transient overvoltage according to installation classes
Overvoltage category	I, II, III
Overvoltage category of the supply	Min. II
Altitude	≤ 2000 m
Ambient temperature (operation)	0 °C ... 40 °C
Max. permissible relative humidity (operation)	80 % (up to 31 °C)
	50 % (at 40 °C)

Standards and Regulations

Conformance	CE-compliant
UL, USA/Canada	UL 61010-1
	CSA-C22.2 No. 61010-1
	cULus

Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

Classifications

eCl@ss

eCl@ss 4.0	27210900
eCl@ss 4.1	27210900
eCl@ss 5.0	27210900
eCl@ss 5.1	27210900
eCl@ss 6.0	27142300
eCl@ss 7.0	27142330
eCl@ss 8.0	27142330
eCl@ss 9.0	27142330

Measuring instrument - EEM-MA400 - 2901364

Classifications

ETIM

ETIM 4.0	EC002301
ETIM 5.0	EC002301
ETIM 6.0	EC002301
ETIM 7.0	EC002301

UNSPSC

UNSPSC 6.01	30211916
UNSPSC 7.0901	39121535
UNSPSC 11	39121535
UNSPSC 12.01	39121535
UNSPSC 13.2	39121535

Accessories

Accessories

Assembly adapter

DIN rail adapter - EEM-MKT-DRA - 2902078



DIN rail adapter for EEM-MA600 and EEM-MA400 energy meters

Communication module

Communication module - EEM-RS485-MA400 - 2901365



RS-485 JBUS/MODBUS communication module for EEM-MA400

Function module

Special function module - EEM-IMP-MA400 - 2904314



Function module with a pulse or alarm output for the EEM-MA400



Product Service

CERTIFICATE

No. Q4B 029429 0007 Rev. 00

Holder of Certificate: **PHOENIX CONTACT GmbH & Co. KG**
Flachsmarktstr. 8
32825 Blomberg
GERMANY

Factory(ies): **PHOENIX CONTACT Electronics GmbH**
Industry Management and Automation
Business Unit Control Systems
Dringenauer Strasse 30, 31812 Bad Pyrmont, GERMANY

PHOENIX CONTACT Software GmbH
Langenbruch 6, 32657 Lemgo, GERMANY

Certification Mark:



Scope of Certificate: **Secure Product Development Lifecycle**

Applied Standard(s): IEC 62443-4-1:2018
PPP 15002A:2018 (IEC 62443-4-1 Full Process Profile)

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

Report No.: 18CR01S007

Valid until: 2021-07-29

Date, 2018-08-01

(Andreas Bärwald)

Zertifizierungsvertrag

Grundlage für die Zertifikatserteilung ist die Prüf- und Zertifizierungsordnung von TÜV SÜD Product Service.

Mit Erhalt des Zertifikates erkennt der Zertifikatsinhaber die jeweils gültige Fassung der Prüf- und Zertifizierungsordnung an (www.tuev-sued.de/ps_regulations) und wird somit Partner im Zertifizierungssystem von TÜV SÜD Product Service.

Prinzipielle Voraussetzung für die Gültigkeit des Zertifikates:

- Gültigkeit der zitierten normativen Prüfgrundlage(n) ist gegeben und zusätzlich bei Zertifikaten mit Berechtigung zur Verwendung eines Prüfzeichens bzw. bei Zertifikaten für QM-Systeme:
- Voraussetzungen für vorschriftsmäßige Fertigung werden eingehalten.
- Die Fertigungs- bzw. Betriebsstätten werden regelmäßig überwacht.

Certification contract

Certification is based on the TÜV SÜD Product Service Testing and Certification Regulations. On receipt of the certificate the certificate holder agrees to the current version of the Testing and Certification Regulations (www.tuv-sud.com/ps_regulations) and thus becomes partner in the TÜV SÜD Product Service Certification System.

Requirements for the validity of the certificate in principle:

- Validity of the quoted test standard(s) In addition, for certificates with the right to use a certification mark and for QM certificates:
- Conditions for an adequate manufacturing are maintained
- Regular surveillance of the facility is performed

认证合约

认证基于 TÜV SÜD 产品服务《测试及认证准则》。获得证书即表明证书持有者接受当前版本的《测试及认证准则》(见 www.tuv-sud.com/ps_regulations) 并成为 TÜV SÜD 产品服务认证系统内的合作伙伴。

维持证书有效性的原则要求：

- 认证所依据标准的有效性
- 此外，对于授权可使用认证标志的证书和质量管理体系证书：
- 保持充分的生产条件
 - 生产场地通过定期的监督

認証契約

認証は TÜV SÜD Product Service の試験認証規約に基づく。認証書保持者は認証書を受領することにより最新の試験認証規約(www.tuv-sud.com/ps_regulations)に同意したものとします。その結果、TÜV SÜD Product Service 認証システムのパートナーとなる。

認証書の有効性に関する原則的な要求事項

- 引用している試験規格が有効である
- さらに認証マークの使用を許諾された認証書や品質マネジメント認証書は：
- 適切な製造の条件を維持している
 - 定期的な工場監査を実施している

Contrato de certificação

A certificação se baseia nos Regulamentos de Testes e Certificação do Grupo TÜV SÜD. Ao receber o certificado, o Fornecedor, titular do certificado concorda com a versão atual dos Regulamentos de Testes e Certificação do Grupo TÜV SÜD (www.tuv-sud.com/ps_regulations) e assim, torna-se parceiro no Sistema de Certificação de Produtos e Serviços TÜV SÜD.

Requisitos para a validade do certificado (em princípio):

- Validade da(s) norma(s) de ensaio(s) referenciada(s).
- Adicionalmente, para os certificados com o direito ao uso da marca de certificação e para certificados de SG:
- Condições de fabricação adequada estão mantidas.
 - Auditoria de monitoração realizada regularmente.

Zertifizierungsvertrag

Grundlage für die Zertifikatserteilung ist die Prüf- und Zertifizierungsordnung von TÜV SÜD Product Service.

Mit Erhalt des Zertifikates erkennt der Zertifikatsinhaber die jeweils gültige Fassung der Prüf- und Zertifizierungsordnung an (www.tuev-sued.de/ps_regulations) und wird somit Partner im Zertifiziersystem von TÜV SÜD Product Service.

Certification contract

Certification is based on the TÜV SÜD Product Service Testing and Certification Regulations. On receipt of the certificate the certificate holder agrees to the current version of the Testing and Certification Regulations (www.tuv-sud.com/ps_regulations) and thus becomes partner in the TÜV SÜD Product Service Certification System.

认证合约

认证基于 TÜV SÜD 产品服务《测试及认证准则》。获得证书即表明证书持有者接受当前版本的《测试及认证准则》（见 www.tuv-sud.com/ps_regulations）并成为 TÜV SÜD 产品服务认证系统内的合作伙伴。

認証契約

認証は TÜV SÜD Product Service の試験認証規約に基づく。認証書保持者は認証書を受領することにより最新の試験認証規約(www.tuv-sud.com/ps_regulations)に同意したものとする。その結果、TÜV SÜD Product Service 認証システムのパートナーとなる。

Contrato de certificação

A certificação se baseia nos Regulamentos de Testes e Certificação do Grupo TÜV SÜD. Ao receber o certificado, o Fornecedor, titular do certificado concorda com a versão atual dos Regulamentos de Testes e Certificação do Grupo TÜV SÜD (www.tuv-sud.com/ps_regulations) e assim, torna-se parceiro no Sistema de Certificação de Produtos e Serviços TÜV SÜD.

Prinzipielle Voraussetzung für die Gültigkeit des Zertifikates:

- Gültigkeit der zitierten normativen Prüfgrundlage(n) ist gegeben und zusätzlich bei Zertifikaten mit Berechtigung zur Verwendung eines Prüfzeichens bzw. bei Zertifikaten für QM-Systeme:
- Voraussetzungen für vorschriftsmäßige Fertigung werden eingehalten.
- Die Fertigungs- bzw. Betriebsstätten werden regelmäßig überwacht.

Requirements for the validity of the certificate in principle:

- Validity of the quoted test standard(s) In addition, for certificates with the right to use a certification mark and for QM certificates:
- Conditions for an adequate manufacturing are maintained
- Regular surveillance of the facility is performed

维持证书有效性的原则要求：

- 认证所依据标准的有效性
- 此外，对于授权可使用认证标志的证书和质量管理体系证书：
- 保持充分的生产条件
 - 生产场地通过定期的监督

認証書の有効性に関する原則的な要求事項

- 引用している試験規格が有効である
- さらに認証マークの使用を許諾された認証書や品質マネジメント認証書は：
- 適切な製造の条件を維持している
 - 定期的な工場監査を実施している

Requisitos para a validade do certificado (em princípio):

- Validade da(s) norma(s) de ensaio(s) referenciada(s).
- Adicionalmente, para os certificados com o direito ao uso da marca de certificação e para certificados de SG:
- Condições de fabricação adequada estão mantidas.
 - Auditoria de monitoração realizada regularmente.

Confirmation on quality assurance according to nuclear standard KTA 1401

On behalf of the German nuclear power plant operators,
PreussenElektra GmbH as a partner of the VGB PowerTech e.V.
working group Assessment of Contractors confirms

VGB
POWERTECH

Phoenix Contact Group

valid for the sites

Phoenix Contact GmbH & Co. KG
Flachsmarktstraße 8, D-32825 Blomberg
Phoenix Contact Electronics GmbH
Dringenauer Straße 30, D-31812 Bad Pyrmont
Phoenix Contact Deutschland GmbH
Flachsmarktstraße 8, D-32825 Blomberg
Phoenix Contact Power Supplies GmbH
Oberes Feld 1, D-33106 Paderborn

and the scope of supply and services

**Design, Manufacturing and Sale of Electrical and
Electronic Connecting Elements, Power Supply and
Surge Voltage Protection Modules, as well as
Electronic Interface Systems**

the qualification for system- and product related quality assurance.

The assessment was performed on 25 June 2019 by

Dr.-Ing. Götz Berenbrock Ingenieurbüro

based on the standard **KTA 1401** as well as on the assessment documents of the VGB PowerTech e.V. working group Assessment of Contractors in consideration of product related requirements.

Details of the assessment are given in the report DGBI 2019/011.

This confirmation is valid until **08 March 2022** provided that the conditions on which the assessment was based have not been changed.

Hanover, 27 June 2019



PreussenElektra GmbH



— **EnBW**

 **Preussen
Elektra**

RWE

**Vattenfall Europe
Nuclear Energy**

VATTENFALL

EU-Konformitätserklärung Nr. 2901362.CE.01 EU-Declaration of Conformity No.

Hersteller / Manufacturer: **PHOENIX CONTACT GmbH & Co. KG**
 Anschrift / Address: **Flachsmarktstraße 8, 32825 Blomberg, Germany**

Produktbezeichnung / Product description: **EEM-MA200**
(Artikelbezeichnung, / Article description, Artikel-Nr. / Article no.) **2901362**

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) übereinstimmt / *The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s):*

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)
2014/35/EU	Niederspannungs-Richtlinie Low Voltage Directive (LVD)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
For evaluation of the conformity following relevant standards were consulted:
 EN 61557-12:2008

Weitere Informationen (z. B. Dokumente, Prüfberichte, Einschränkungen, etc.) zur Konformitätsbewertung:
Additional information (for example documents, test reports, restrictions etc.,) of the conformity assessment:

Zertifikate einer benannten Stelle / *Certificates by a notified body:*

Anschrift / Address: _____
 Referenz / Reference: _____
 Anschrift / Address: _____
 Referenz / Reference: _____

Die letzten beiden Ziffern des Jahres in dem die CE-Kennzeichnung angebracht wurde: 17
The last two figures of the year in which the CE marking was applied:
 (nur einzutragen, bei der Niederspannungsrichtlinie / *only to be entered on the low voltage directive*)

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Blomberg, 2017-07-27

i. A.

 Martin Jankowski
 Business Unit Interface Components
 Development Analog Interface, Monitoring
Ansprechpartner / contact person

i. V.

 Carsten Thörner
 Business Unit Interface Components
 Vice President
Zeichnungsberechtigter / authorized signatory

Warnung: Dies ist ein Klasse A-Erzeugnis. In Wohngebieten kann es zu Störungen des Funkempfanges kommen. Der Betreiber soll entsprechende Schutzmaßnahmen treffen.
Warning: This is a Class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures.

Anhang zur EU-Konformitätserklärung Nr. 2901362.CE.01
Annex on EU Declaration of Conformity No.
vom / dated 2017-07-27

Produktbezeichnung / *Product description*: EEM-MA200

(Artikelbezeichnung, / *Article description*,
Artikel-Nr. / *Article no.*)

2901362

Die Konformität mit den wesentlichen Anforderungen der Richtlinie(n) wird auch für folgende Produkte bescheinigt:
The conformity with the essential requirements of the directive(s) is also certified by the declaration for following products.

Artikel-Nr. / Article no.	Artikelbezeichnung / Article description
2901363	EEM-MA250
2901364	EEM-MA400
2901365	EEM-RS485-MA400
2901366	EEM-MA600
2901367	EEM-RS485-MA600
2901370	EEM-MEMO-MA600
2901371	EEM-2DIO-MA600
2901373	EEM-ETH-MA600
2901374	EEM-ETH-RS485-MA600
2901418	EEM-PB 12-MA600
2901475	EEM-2AO-MA600
2901949	EEM-TEMP-MA600
2902352	EEM-MA600-24DC
2904313	EEM-IMP-MA600
2904314	EEM-IMP-MA400

Communication module - EEM-RS485-MA400 - 2901365

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RS-485 JBUS/MODBUS communication module for EEM-MA400




Your advantages

- RS-485 (JBUS/MODBUS)



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 584265
GTIN	4046356584265
Weight per Piece (excluding packing)	123.700 g
Custom tariff number	85176200
Country of origin	Hungary
Note	Made to Order (non-returnable)

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
-------------------------	---------------------------------------------------------------------------

Dimensions

Width	22.5 mm
Height	65 mm
Depth	48 mm

Ambient conditions

Ambient temperature (operation)	-10 °C ... 55 °C (14 °F to 131 °F)
Ambient temperature (storage/transport)	-20 °C ... 85 °C (-4 °F ... 185 °F)
Max. permissible relative humidity (operation)	≤ 95 %
Max. salt spray content	≤ 2.5 %

Communication module - EEM-RS485-MA400 - 2901365

Technical data

Interfaces

Designation	Modbus RTU/JBUS
Interface	RS-485
Connection method	COMBICON plug-in screw terminal block
Connection technology	2, 3-wire
Transmission length	≤ 1200 m
Termination resistor	120 Ω (switchable via DIP switches)
Operating mode	semiduplex
Serial transmission speed	2,4 ... 38.4 kbps

General

Supply voltage	9 V (Via EEM-MA600/EEM-MA400)
Color	black
Conformance	CE-compliant
Rated insulation voltage	300 V AC (EN 61010-1)
Test voltage	3.5 kV AC (50 Hz, 1 min.)
	2.2 kV AC (50 Hz, 1 min.)

Standards and Regulations

Conformance	CE-compliant
UL, USA/Canada	UL 61010-1
	CSA-C22.2 No. 61010-1
	cULus

Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

Classifications

eCl@ss

eCl@ss 4.0	27371100
eCl@ss 4.1	27371100
eCl@ss 5.0	27371800
eCl@ss 5.1	27371800
eCl@ss 6.0	27149200
eCl@ss 7.0	27149223
eCl@ss 8.0	27149223
eCl@ss 9.0	27142336

ETIM

ETIM 4.0	EC002295
ETIM 5.0	EC002295

Communication module - EEM-RS485-MA400 - 2901365

Classifications

ETIM

ETIM 6.0	EC002295
ETIM 7.0	EC002295

UNSPSC

UNSPSC 6.01	30211916
UNSPSC 7.0901	39121535
UNSPSC 11	39121535
UNSPSC 12.01	39121535
UNSPSC 13.2	32151602
UNSPSC 19.0	32151602

Controller - ILC 151 GSM/GPRS - 2700977

Rețineți că datele furnizate aici sunt luate din catalogul online. Pentru informații și date complete, consultați documentația de utilizare. În cazul descărcărilor de pe internet se aplică Termenii și condițiile de utilizare generale. (<http://download.phoenixcontact.de>)



Inline Controller with Ethernet interface and GSM modem for coupling to other controllers and systems, with programming options according to IEC 61131-3, complete with plug and labeling field.

Descriere articol

The ILC 151 GSM/GPRS combines the options of class 100 controllers with wireless communication via mobile phone networks. A GSM/GPRS modem is integrated in the controller. This enables SMS messages to be sent and received and supports packet-oriented (IP) communication via GPRS.

The controller itself offers 16 digital inputs and 4 digital outputs for various control tasks. The 512 kB program memory and 512 kB data memory complete the functions of the controller, thereby providing plenty of space to accommodate larger applications as well.


The Inline controller (ILC) range covers a wide performance range. From entry-level versions to high-end controllers, users can choose the right controller for their application.

Caracteristici articol

- Numerous protocols supported such as: HTTP, FTP, SNMP, SMTP, SQL, MySQL, etc.
- Free engineering with PC Worx Express (IEC 61131-3)
- Complete INTERBUS master (4096 I/O points)
- Integrated web server for visualization with WebVisit
- FTP server
- Flash file system



Date comerciale

Unitate de ambalare	1 buc
GTIN	 4 046356 665537
Greutate pe bucată (fără ambalaj)	350.0 g
Cod tarif vamal	85371091
#ara de origine	Germany

Date tehnice

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
-------------------------	---------------------------------------------------------------------------

Controller - ILC 151 GSM/GPRS - 2700977

Date tehnic

Dimensions

Width	85 mm
Height	119.8 mm
Depth	71.5 mm

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 55 °C
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (according to DIN EN 61131-2)
Permissible humidity (storage/transport)	10 % ... 95 % (according to DIN EN 61131-2)
Air pressure (operation)	70 kPa ... 106 kPa (up to 3000 m above mean sea level)
Air pressure (storage/transport)	70 kPa ... 106 kPa (up to 3000 m above mean sea level)
Shock	25g, Criterion 1, according to IEC 60068-2-27
Vibration (operation)	5g

Control system

Programming tool	PC WORX / PC WORX EXPRESS
Diagnostics tool	DIAG+
Configuration tool	Config+ Version 1.01 or later

Mechanical design

Weight	285 g
Diagnostics display	No
Controller redundancy	No

Data interfaces

Interface	INTERBUS local bus (master)
Connection method	Inline data jumper
Transmission speed	500 kBaud / 2 MBaud umschaltbar
Interface	Ethernet 10Base-T/100Base-TX
Connection method	RJ45 socket
Transmission speed	10/100 MBit/s
Interface	GSM / GPRS
Connection method	SIM card, SMA antenna connection

Power supply

Typical current consumption	210 mA
Max. current consumption	860 mA (360 mA communications power + 500 mA analog voltage supply)
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC
Residual ripple	± 5 %
Power dissipation	max. 5 W

Controller - ILC 151 GSM/GPRS - 2700977

Date tehnice

Fieldbus function

Amount of process data	max. 4096 Bit (INTERBUS)
Number of supported devices	max. 128
Number of local bus devices that can be connected	max. 63 (observe current consumption)
Number of devices with parameter channel	max. 16
Number of supported branch terminals with remote bus branch	max. 3

Direct I/Os

Input name	Digital inputs
Number of inputs	16
Connection method	Inline potential distributor
Description of the input	EN 61131-2 type 1 NPN/PNP
Output name	Digital outputs
Number of outputs	4
Connection method	2, 3, 4-wire
Maximum output current per channel	500 mA
Without analog input	yes
Without analog output	yes
Without pulse direction output	yes
Without counter input	yes

IEC 61131 runtime system

Programming tool	PC WORX / PC WORX EXPRESS
Program memory	512 kByte (43 K instructions (IL))
Mass storage	512 kByte
Retentive mass storage	48 kByte (NVRAM)
Number of control tasks	8
Realtime clock	Yes

General data

Processor	Altera Nios II 64 MHz
Diagnostics display	No

Clasificări

eCl@ss

eCl@ss 4.0	27240490
eCl@ss 4.1	27240490
eCl@ss 5.0	27242208
eCl@ss 5.1	27242208
eCl@ss 6.0	27242208
eCl@ss 7.0	27242208
eCl@ss 8.0	27242207

Controller - ILC 151 GSM/GPRS - 2700977

Clasificări

ETIM

ETIM 3.0	EC001423
ETIM 4.0	EC000236
ETIM 5.0	EC000236

UNSPSC

UNSPSC 6.01	43172015
UNSPSC 7.0901	43201404
UNSPSC 11	43172018
UNSPSC 12.01	43201404
UNSPSC 13.2	43201404

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

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Uninterruptible power supply with integrated power supply unit, 5A, in combination with MINI-BAT/24/DC/1.3 AH, QUINT-BAT/24DC 3,4AH, 7,2AH or 12 AH

Product Description

The TRIO UPS module with integrated power supply is particularly space-saving: UPS module and power supply in one housing. Only one energy storage is required to complete the UPS system.

Energy storage with lead AGM technology buffers failures lasting up to two hours with 5 A load current.

Your advantages

- Autonomous – in the event of AC mains failure the industrial PC continues operating without interruption
- Time saving – when the supply voltage is restored, the industrial PC starts automatically



Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4046356311809
Weight per Piece (excluding packing)	1,147.000 g
Custom tariff number	85371091
Country of origin	China

Technical data

Dimensions

Width	60 mm
Height	130 mm
Depth	118 mm

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating : 2.5%/K)
Ambient temperature (storage/transport)	-40 °C ... 80 °C

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Technical data

Ambient conditions

Max. permissible relative humidity (operation)	95 % (at 25 °C, non-condensing)
Climatic class	3K3 (in acc. with EN 60721)
Degree of pollution	2

Input data

Nominal input voltage range	100 V AC ... 240 V AC
AC input voltage range	85 V AC ... 264 V AC (Derating < 90 V AC: 2.5%V)
Input voltage range DC	100 V DC ... 350 V DC (UL508: 100 ... 250 V)
Buffer time	adjustable: 0.5 min; 1 min; 2 min; 3 min; 5 min; 10 min; 15 min; 20 min; PC-Mode
Current consumption	1.1 A (230 V AC, maximum) 1.8 A (120 V AC, maximum)
Inrush current limiting/I ² t	< 1.3 A ² s
Mains buffering time	see diagram
Typical response time	150 ms (230 V AC) 200 ms (120 V AC)
Power factor (cos phi)	approx. 0.5
Protective circuit	Transient surge protection Varistor
Input fuse, integrated	6.3 A (slow-blow, internal)

Output data

Nominal output voltage	24 V DC
Setting range of the output voltage (U _{Set})	22.5 V DC ... 29.5 V DC (Network operation; in the buffer mode, dependent on the battery voltage of 27.9 V DC ... 19.2 V DC)
Nominal output current (I _N)	5 A (-25 °C ... 55 °C)
Derating	55 °C ... 70 °C (2.5%/K)
Output current limit	max. 6 A (Mains operation)
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
Efficiency	> 88 % (230 V AC, network operation) > 86 % (120 V AC, network operation) > 86 % (Battery operation)
Residual ripple	< 10 mV _{PP}
Peak switching voltages nominal load	< 25 mV _{PP}
Connection in parallel	Yes, 2
Surge protection against internal surge voltages	< 35 V DC
Feedback voltage resistance	35 V DC

General

IQ technology	no
Net weight	1.1 kg
Memory medium	External, battery 1.3 Ah / 3.4 Ah / 7.2 Ah / 12 Ah
Insulation voltage input/output	4 kV (type test) 2 kV (routine test)

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Technical data

General

Protection class	I
	> 596000 h (40 °C)
Mounting position	horizontal DIN rail NS 35, EN 60715
Assembly instructions	alignable: horizontally 0 mm, vertically 50 mm

Connection data, input

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Screw thread	M3

Connection data, output

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Stripping length	8 mm
Screw thread	M3

Connection data for signaling

Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Screw thread	M3

Charging process

Charge characteristic curve	I/U characteristic curve
Battery presence check/time interval	60 s
Charge current	0.2 A ... 1.5 A (Default 1.0 A)
End-of-charge voltage	25 V DC ... 30 V DC (Default 27.6 V DC)
Temperature compensation	0 mV/K ... 200 mV/K (42 mV/K by default)
Quality check of battery	4 h ... 200 h (Default 12 h)
Deep discharge protection	18 V DC ... 21 V DC (Default 19.2 V DC)

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Technical data

Charging process

Alarm signaling threshold	18 V DC ... 30 V DC (Default 20.4 V DC)
---------------------------	-----------------------------------------

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011 (EN 55022)
Noise immunity	EN 61000-6-2:2005
Connection in acc. with standard	CUL
Standards/regulations	EN 61000-4-2
Contact discharge	6 kV
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 2 GHz
Test field strength	10 V/m
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-6-3
	EN 61000-4-6
Frequency range	10 kHz ... 80 MHz
Voltage	10 V
Standards/regulations	EN 61000-4-11
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
Standard - Electrical safety	EN 60950-1/VDE 0805 (SELV)
Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)
Standard – Safety extra-low voltage	EN 60950-1 (SELV)
	EN 60204 (PELV)
Standard - Safe isolation	DIN VDE 0100-410
Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment	EN 50178
Standard – Limitation of mains harmonic currents	EN 61000-3-2
Shipbuilding approval	DNV GL (EMC B)
UL approvals	UL/C-UL listed UL 508
	UL/C-UL Recognized UL 60950-1
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6)
	15 Hz ... 150 Hz, 2.3g, 90 min.
Rail applications	EN 50121-4

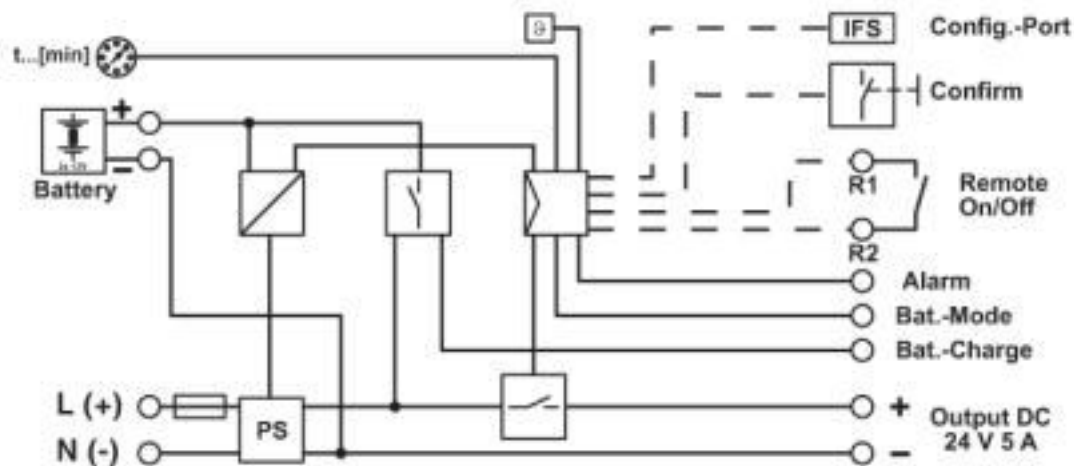
Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 25;
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

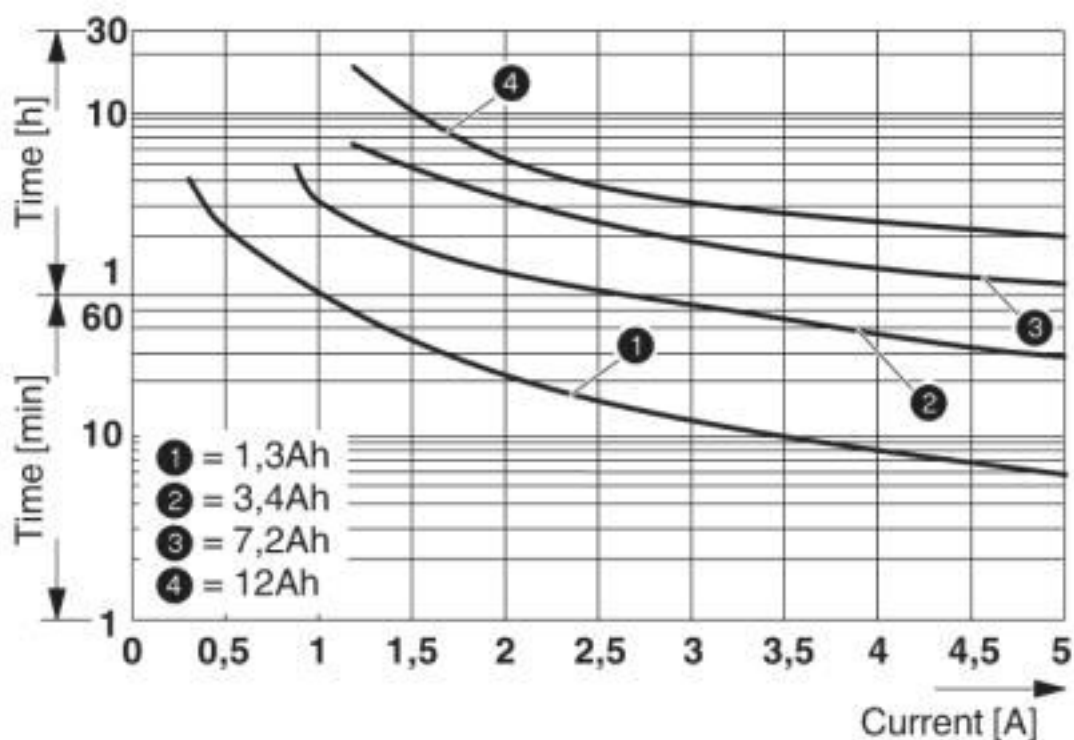
Drawings

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Block diagram



Diagram



Classifications

eCl@ss

eCl@ss 4.0	27040600
eCl@ss 4.1	27040600
eCl@ss 5.0	27040600
eCl@ss 5.1	27040600

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Classifications

eCl@ss

eCl@ss 6.0	27040600
eCl@ss 7.0	27040603
eCl@ss 8.0	27040603
eCl@ss 9.0	27040705

ETIM

ETIM 2.0	EC000382
ETIM 3.0	EC000382
ETIM 4.0	EC000382
ETIM 5.0	EC000382
ETIM 6.0	EC000382
ETIM 7.0	EC000382

UNSPSC

UNSPSC 6.01	30211510
UNSPSC 7.0901	39121011
UNSPSC 11	39121011
UNSPSC 12.01	39121011
UNSPSC 13.2	39121011
UNSPSC 18.0	39121011
UNSPSC 19.0	39121011
UNSPSC 20.0	39121011
UNSPSC 21.0	39121011

Approvals

Approvals

Approvals

DNV GL / PRS / UL Listed / UL Recognized / cUL Recognized / cUL Listed / EAC / EAC / cULus Recognized / cULus Listed

Ex Approvals

Approval details

DNV GL		https://approvalfinder.dnvgl.com/	TAA00000A2
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Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Approvals

PRS		http://www.prs.pl/	TE/2104/880590/16
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UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 123528
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UL Recognized		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 211944
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cUL Recognized		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 211944
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 123528
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EAC			EAC-Zulassung
-----	--	--	---------------

EAC			RU*DE*08.B.01873/19
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cULus Recognized			
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cULus Listed			
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Accessories

Accessories

Assembly adapter

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Accessories

Assembly adapters - QUINT-PS-ADAPTERS7/2 - 2938206



Assembly adapter for QUINT POWER 10A on S7-300 rail

Assembly adapters - UWA 182/52 - 2938235



Universal wall adapter for securely mounting the device in the event of strong vibrations. The device is screwed directly onto the mounting surface. The universal wall adapter is attached on the top/bottom.

Battery unit

Energy storage - MINI-BAT/24DC/1.3AH - 2866417



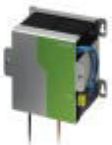
Energy storage device, lead AGM, VRLA technology, 24 V DC, 1.3 Ah.

Energy storage - QUINT-BAT/24DC/ 3.4AH - 2866349



Energy storage device, lead AGM, VRLA technology, 24 V DC, 3.4 Ah. Connection via pin cable lug, 14 mm.

Energy storage - QUINT-BAT/24DC/ 7.2AH - 2866352



Energy storage device, lead AGM, VRLA technology, 24 V DC, 7.2 Ah. Connection via pin cable lug, 14 mm.

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Accessories

Energy storage - QUINT-BAT/24DC/12AH - 2866365



Energy storage device, lead AGM, VRLA technology, 24 V DC, 12 Ah. Connection via pin cable lug, 14 mm.

Energy storage - UPS-BAT/VRLA/24DC/1.3AH - 2320296



Energy storage device, lead AGM, VRLA technology, 24 V DC, 1.3 Ah, tool-free battery replacement, automatic detection, and communication with QUINT UPS-IQ

Energy storage - UPS-BAT/VRLA/24DC/3.4AH - 2320306



Energy storage device, lead AGM, VRLA technology, 24 V DC, 3.4 Ah, tool-free battery replacement, automatic detection, and communication with QUINT UPS-IQ

Energy storage - UPS-BAT/VRLA/24DC/7.2AH - 2320319



Energy storage device, lead AGM, VRLA technology, 24 V DC, 7.2 Ah, tool-free battery replacement, automatic detection, and communication with QUINT UPS-IQ

Energy storage - UPS-BAT/VRLA/24DC/12AH - 2320322



Energy storage device, lead AGM, VRLA technology, 24 V DC, 12 Ah, tool-free battery replacement, automatic detection, and communication with QUINT UPS-IQ

Data cable preassembled

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Accessories

Data cable - IFS-USB-DATACABLE - 2320500



Used for communicating between industrial PCs and Phoenix Contact devices with the 12-pos. IFS data port, such as QUINT UPS or TRIO UPS.

Fuse

Fuse - SI FORM C 15 A DIN 72581 - 0913676



Flat-type plug-in fuse, type C, color code: light blue, nominal current: 15 A

Fuse - SI FORM C 25 A DIN 72581 - 0913757



Flat-type plug-in fuse, type C, color code: white, nominal current: 25 A

Memory block

Memory block - IFS-CONFSTICK-L - 2901103



Multi-functional memory block with handle for the INTERFACE system; for easy storage and back up of the configuration.

Memory block - IFS-CONFSTICK - 2986122



Multi-functional memory block for the INTERFACE systemf for easy storage and backup of the configuration.

Mounting rail adapter

Uninterruptible power supply - TRIO-UPS/1AC/24DC/5 - 2866611

Accessories

DIN rail adapter - UTA 107 - 2853983

Universal DIN rail adapter, for screwing on switchgear



Programming adapter

Programming adapter - IFS-USB-PROG-ADAPTER - 2811271



Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

Touch panel - BTP 2043W - 1050387

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)



Touch panel with 10,92 cm / 4,3"-TFT-display (analog resistive (polyester)), 480 x 272 pixel(s) (WQVGA), 262144 colors, Arm9™ i.MX28, 454 MHz, 2x COM (RS-232/422/485), 1x USB 2.0, Typ A, 1x USB 2.0, Typ B, 1 x Ethernet (10/100 Mbps), RJ45, Windows® CE 6.0 and user software: Visu+. (bus system: without)


Similar figure

Your advantages

- Visu+ RT integrated as standard in all BTP 2000 devices
- Connection to all relevant control systems, thanks to a large number of available drivers
- Developed for basic applications with attractive price/performance ratio
- 3 display sizes in 16:9 format



Key Commercial Data

Packing unit	1 pc
GTIN	 4 0 5 5 6 2 6 6 6 6 5 8 7
GTIN	4055626666587

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
-------------------------	---------------------------------------------------------------------------

Dimensions

Outer dimensions: width, height, depth	120 mm x 89 mm x 5 mm (Dimensions of the front plate)
Installation dimensions: width, height, depth	111 mm x 80 mm x 31.5 mm (Installation cutout)

Display

Display	10,92 cm / 4,3"-TFT
Screen resolution	480 x 272 Pixel(s) (WQVGA)
Touch technology	analog resistive (polyester)
Brightness	400 cd/m ² , typical (adjustable)
Backlighting	LED

Touch panel - BTP 2043W - 1050387

Technical data

Display

Display backlight MTBF	20000 h
Colors	262144 colors
Reading angle left	70 °
Reading angle right	70 °
Reading angle top	50 °
Reading angle bottom	70 °

Computer data

Processor	Arm9™ i.MX28, 454 MHz
Operating system	Windows® CE 6.0
User software	Visu+
RAM	128 MB DDR2 SDRAM
Mass storage	Flash, 512 MB
Network	1 x Ethernet (10/100 Mbps), RJ45
Interfaces	2x COM (RS-232/422/485)
	1x USB 2.0, Typ A
	1x USB 2.0, Typ B
Bus system	without
Slots	1x SD

General

Material front plate	Plastic
Housing material	Plastic
Mounting type	Front installation
Weight	200 g

Ambient conditions

Degree of protection	IP66 (on the front), IP20 (on the back)
Ambient temperature (operation)	0 °C ... 50 °C
Ambient temperature (storage/transport)	-20 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Vibration (operation)	DIN EN 60068-2-6
Shock	DIN EN 60068-2-27

Device supply

Typical current consumption	0.17 A
Power supply unit	24 V DC ±15 %

Standards and Regulations

Shock	DIN EN 60068-2-27
Vibration (operation)	DIN EN 60068-2-6

Environmental Product Compliance

Touch panel - BTP 2043W - 1050387

Technical data

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Approvals

Approvals

Approvals


EAC / EAC

Ex Approvals

UL Listed / cUL Listed / cULus Listed

Approval details

EAC		RU*- DE*08.B.00004/18
-----	-------------------------------------------------------------------------------------	--------------------------

EAC		RU*- DE*35.B.00394/20
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Accessories

Accessories

Data plug

D-SUB gender changer - VS-09-GC-ST/ST - 1652651



D-SUB contact insert, shell size 1, with nine signal contacts, type of contact pin, gender changer, fixing with 4-40 UNC thread

Operating stylus

Touch panel - BTP 2043W - 1050387

Accessories

Touch pen - TOUCH PEN - 2701379



Touch pen for analog-resistive HMI's, silver coated. Delivery includes self-adhesive pen holder.

PCB plug

Printed-circuit board connector - MSTB 2,5/ 3-STF-5,08 - 1777992



PCB connector, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm², number of positions: 3, pitch: 5.08 mm, connection method: Screw connection with tension sleeve, color: green, contact surface: Tin

Storage medium

USB memory stick - USB FLASH DRIVE - 2402809



USB memory stick, 8 GB

Disk drive - MICROSDHC-16GB - 1154696



Industrial grade 16 GB MicroSDHC 3DTLC

Disk drive - MICROSDHC-32GB - 1154699



Industrial grade 32 GB MicroSDHC 3DTLC

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EU-Konformitätserklärung Nr. 2700977.CE.04 EU-Declaration of Conformity No.

Hersteller / Manufacturer: PHOENIX CONTACT GmbH & Co. KG
 Anschrift / Address: Flachsmarktstraße 8, 32825 Blomberg, Germany

Produktbezeichnung / Product description: **ILC 151 GSM/GPRS**
(Artikelbezeichnung, / Article description, Artikel-Nr. / Article-/Part no.) **2700977**

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) und deren Änderungsrichtlinien übereinstimmt / *The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s) and their delegated directive(s):*

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)
2014/34/EU	Geräte in explosionsgefährdeten Bereichen Equipment for explosive atmospheres (ATEX)
2014/53/EU	Funkanlagen Radio equipment (RED)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
For evaluation of the conformity following relevant standards were consulted:

EN 61131-2:2007	EN 61000-6-2:2005+AC:2005	EN 61000-6-4:2007+A1:2011 *
EN 60079-0:2012+A11:2013	EN 60079-15:2010	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
EN 62311:2008	EN 301 489-01 V2.1.1	EN 301 489-52 V1.1.0
EN 301 511 V12.5.1	EN 50581:2012	

Ergänzende Informationen (z. B. Anmerkungen, Einschränkungen, etc.) zur Konformitätsbewertung:
Supplementary information (eg comments, restrictions, etc.) on conformity assessment:

Zertifikate einer benannten Stelle / *Certificates by a notified body:*

Anschrift / Address: _____

Referenz / Reference: _____

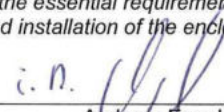

Anschrift / Address: _____

Referenz / Reference: _____

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Blomberg, 2019-09-17

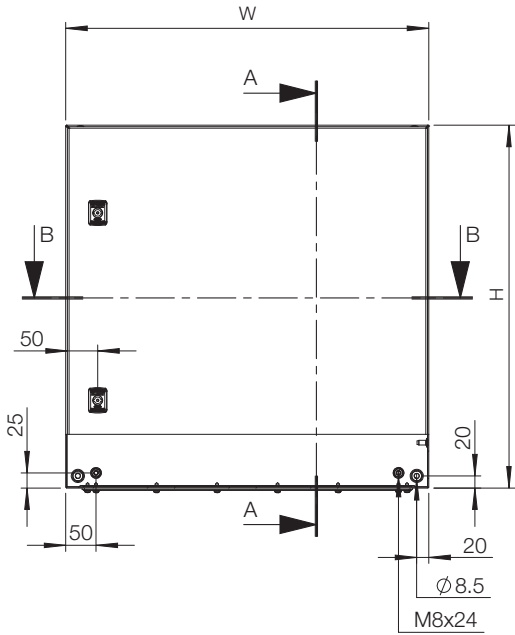
 _____ Andreas Engel Business Unit Automation Systems Manager Hardware SSC und PN Device Ansprechpartner / contact person ¹	 _____ Dr. Tobias Frank Business Unit Automation Systems Vice President Zeichnungsberechtigter / authorized signatory
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Warnung: Dies ist ein Klasse A-Erzeugnis. In Wohngebieten kann es zu Störungen des Funkempfanges kommen. Der Betreiber soll entsprechende Schutzmaßnahmen treffen.

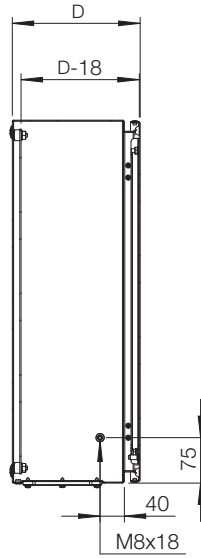
Warning: This is a Class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures.

¹ Ansprechpartner ist auch für die technische Unterlagen verantwortlich. / Contact person is also responsible for the technical documentation.

Front view

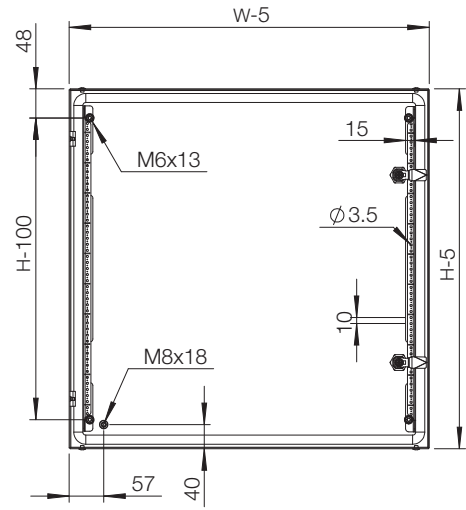


Sectional side view

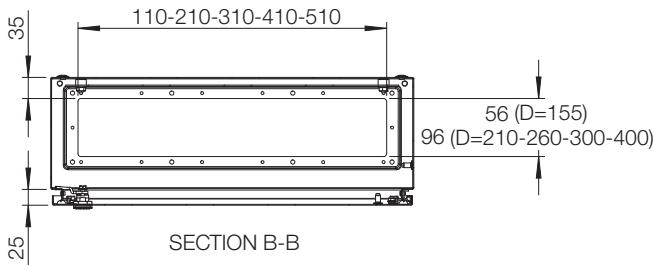


SECTION A-A

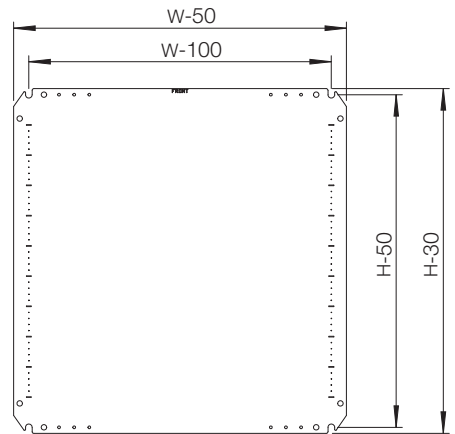
Inside door view



Sectional top view



Mounting plate view



LZM

xEnergy



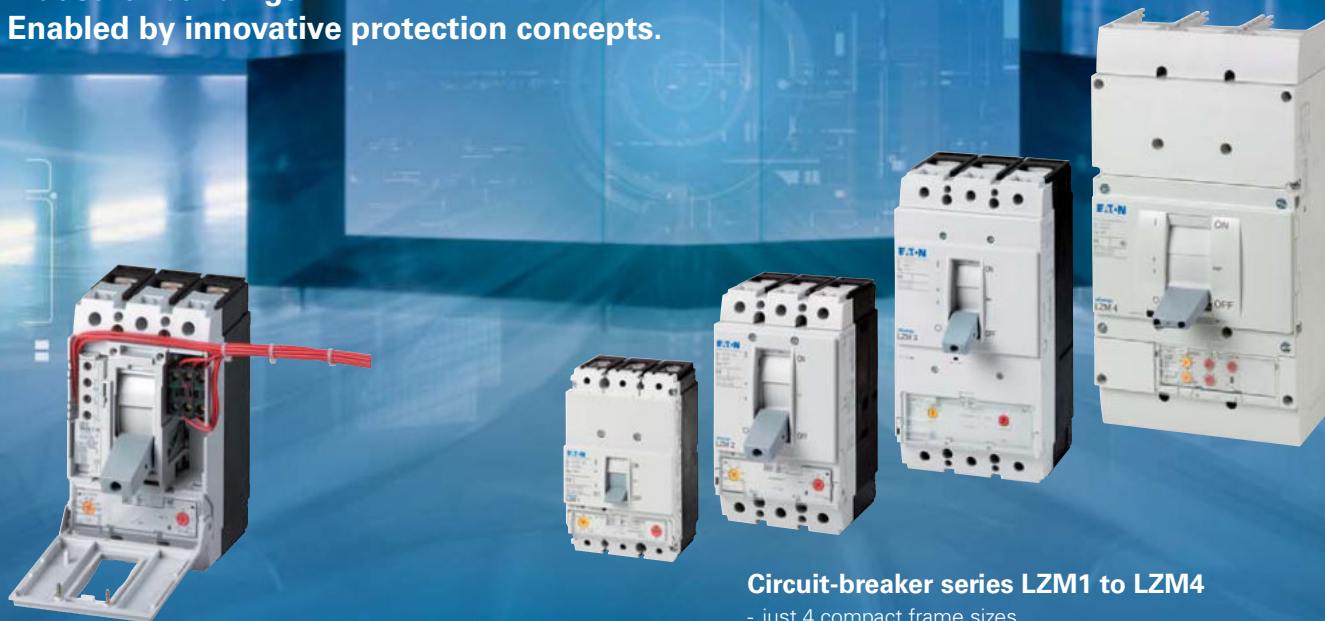
Product catalogue LZM-I
Circuit breaker
Switch disconnecter
Switching and protection up to 1000A

EATON

Powering Business Worldwide

Circuit breaker LZM series up to 1000A

Reliable, safe and simple products for energy distribution systems in high density residential, commercial and industrial buildings. Enabled by innovative protection concepts.



Standard/trip-indicating auxiliary contact from the Titan range

- reduced number of variants and stockholding requirement
- simple front installation at the same position
- simple clip-on feature saves mounting costs
- attractively priced identical parts from the control circuit device range

Page 26

Circuit-breaker series LZM1 to LZM4

- just 4 compact frame sizes
- available as 3 and 4-pole device up to 1000A
- equal dimension as NZM range
- flexible mounting using modular function groups
- suitable for 50°C according derating table
- switch suitable for world-wide use

Page 4



Remote operators

- common functional concept of all variants
- low closing delays 60 ms to 100 ms
- locking and sealing features provide security

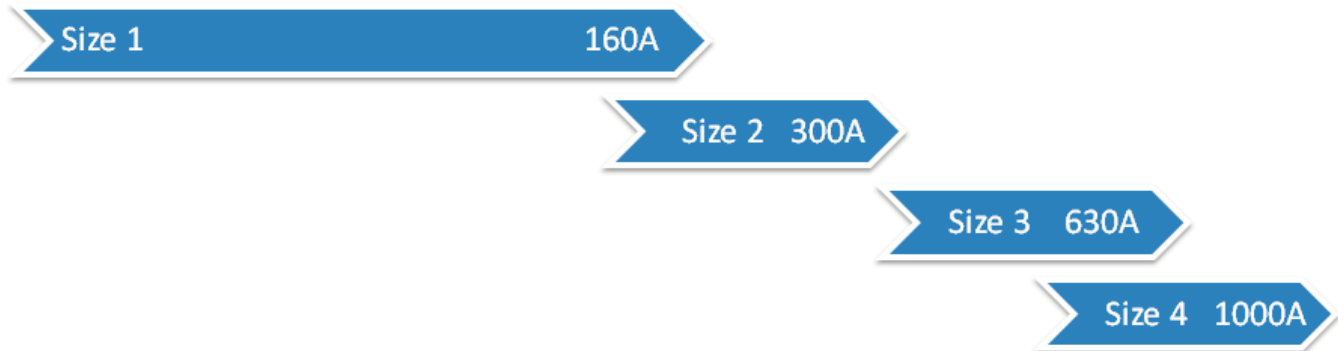
Page 35

Door coupling rotary handles

- identical drilling template for all variants
- innovative automatic centring
- axis support for long-term reliable operation

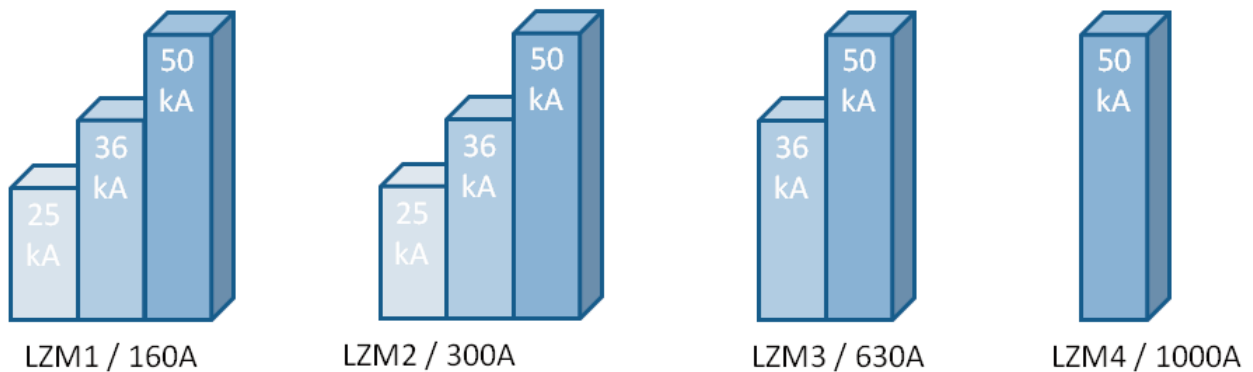
Page 30

Rated Current (A)



Only 4 frame sizes with nominal current up to 1000 A reduce time and effort to design and build up energy distribution boards.

Rated ultimate short-circuit breaking capacity (kA at 400/415V)



Continuous short-circuit breaking capacity from frame 1 up to frame 4 to ensure easy project planning for application oriented projects.

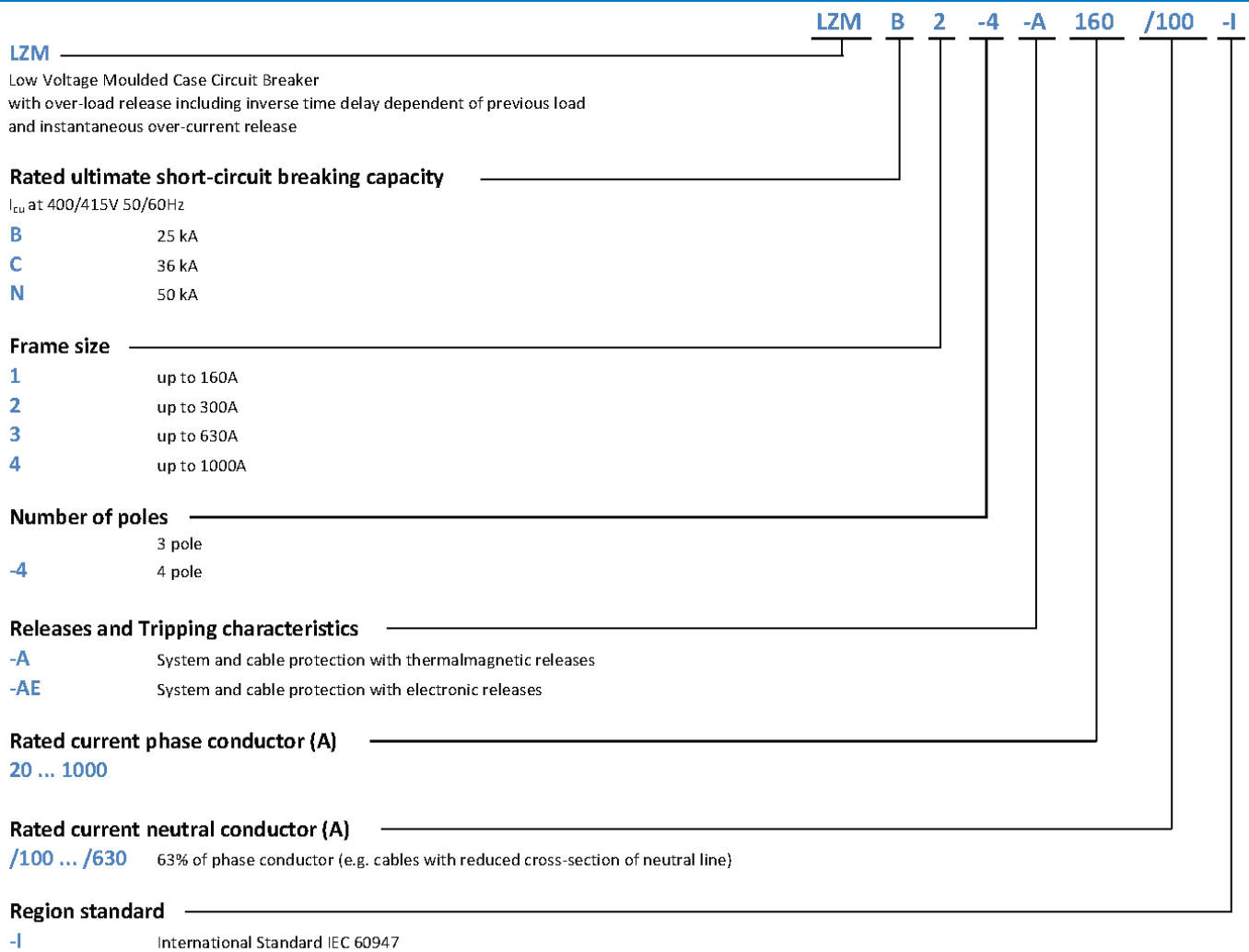
Complete offer to cover basic requirements and standard applications up to complex high end energy distribution boards.

Thermomagnetic and electronic trip unit

	Type code	Overload release	Short circuit release	
Thermo-magnetic	A	$0.8 \dots 1 \times I_n$	$6 \dots 10 \times I_n$	Standard application cable and system protection
Electronic	AE	$0.5 \dots 1 \times I_n$	$2 \dots 12 \times I_n$	Standard application cable and system protection

With each release type the LZW range provides adjustability for every nominal current to protect your application accordingly.

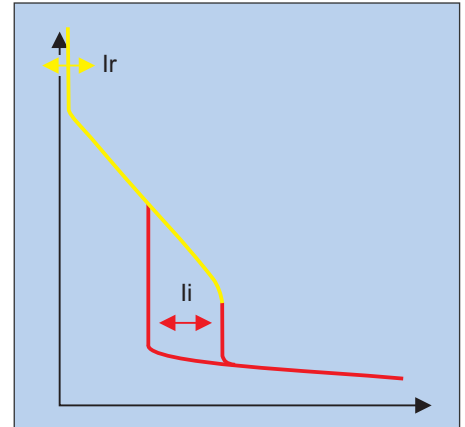
Type code for LZM-I MCCBs



The description of the type code is a logic sequence of short circuit level, frame size, number of poles, trip unit and nominal current.

Over-current releases

Thermomagnetic release A



1 Overload protection

$$I_r = 0,8 - 1 \times I_n$$

Neutral protection

The neutral pole is protected by the thermal device featuring an I_{rn} tripping threshold of 100% or 60% of the I_r threshold adjusted with respect to the phases.

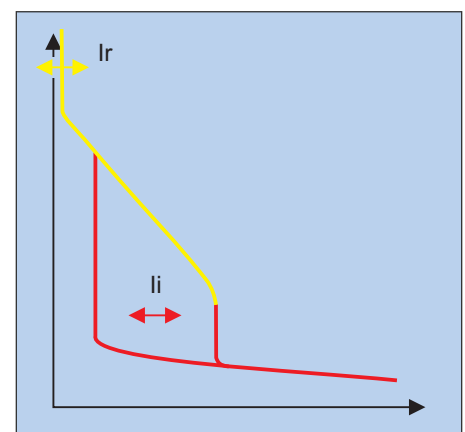
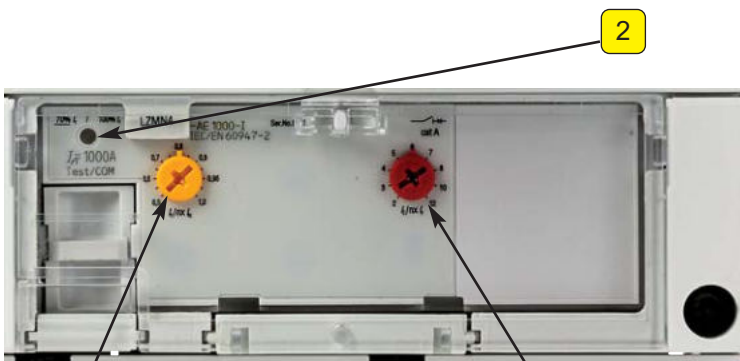
In this way, conductors, which may have a smaller section on the less charged neutral pole as in the phases, may be dimensioned effectively.

2 Short-circuit protection

Device with instantaneous tripping and adjustable I_i threshold

$$I_i = 6 - 10 \times I_n$$

Electronic release without delay AE



1 Overload protection

Device featuring microprocessor with inverse time tripping and adjustable threshold

$$I_r = 0,5 - 1 \times I_n$$

Neutral protection

The neutral pole is protected by the thermal device featuring an I_{rn} tripping threshold of 100% or 60% of the I_r threshold adjusted with respect to the phases.

The protection featuring advance threshold is intended for high I_n rated currents ($\geq 160A$): in these cases, the statutory provision allows the use of cables with a smaller section than in the phases.

2 Led for indication of overload

The LED starts to light when the charge value approaches the I_n value or exceeds it:

Charge	<70% I_r	$\geq 70\% I_r$	$\geq 100\% I_r$
LED	off	steady	on intermittent

3 Short-circuit protection

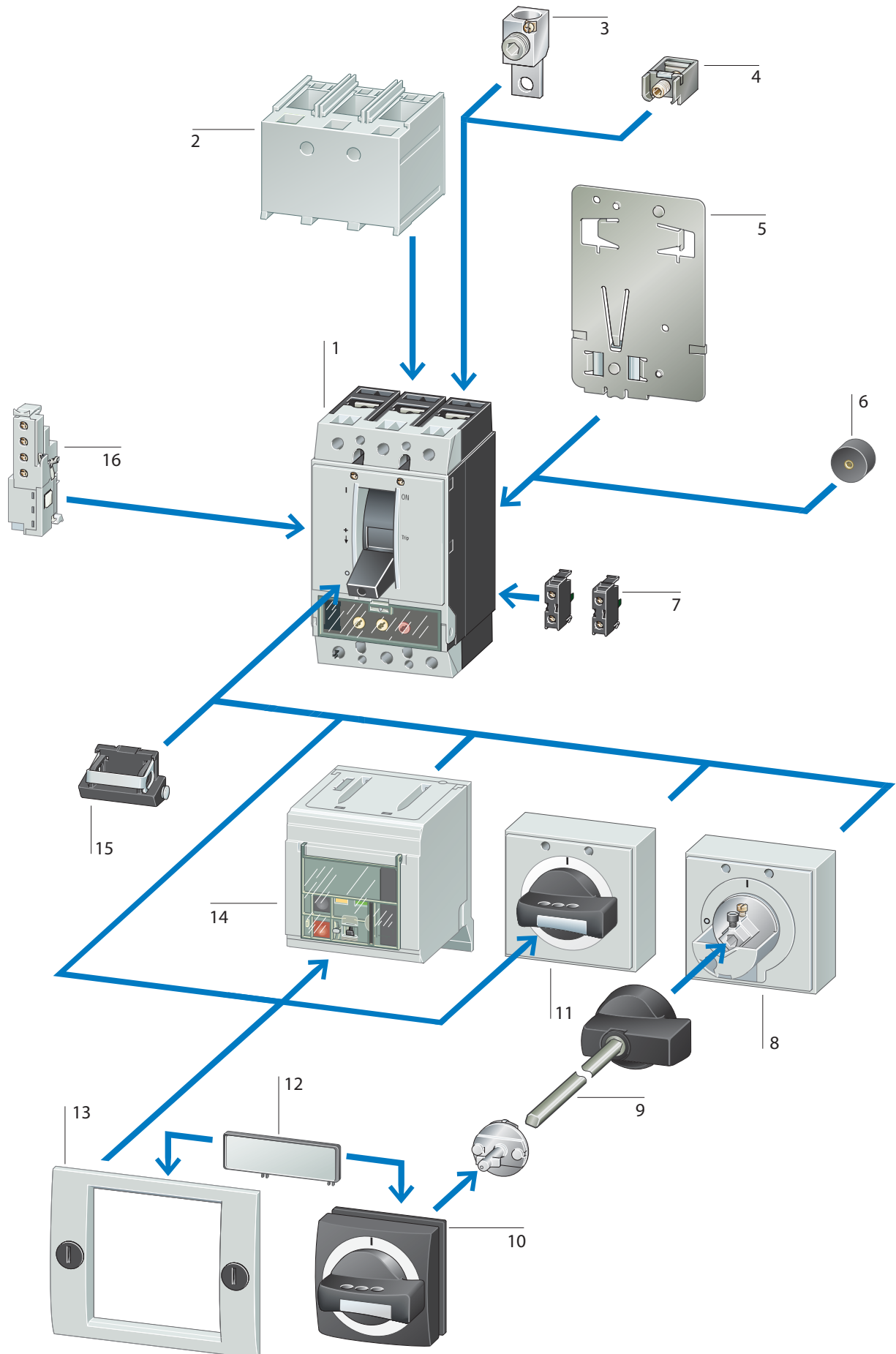
Device featuring instantaneous tripping and adjustable I_i threshold

$$I_i = 2 - 8/12 \times I_n$$

**Circuit-breakers, switch-disconnectors
from 15 to 1000 A**



	Page		Page		Page
System overview		Engineering		Technical data	
Circuit-breakers, switch-disconnectors	3	Selectivity: incoming circuit-breaker, outgoing circuit-breaker	38	Circuit-breakers	52
Technical overview		MCB, backup protection	42	Switch-disconnectors	54
Ordering	4	Direction of blow-out, minimum clearances, tube cable lugs	43	Temperature influence	55
Circuit-breaker thermo-magnetic release, 3-pole	6	Auxiliary switches, trip-indicating auxiliary contacts	44	Effective power loss	56
Circuit-breaker, electronic releases, 3 pole	6	Mechanical interlock for (door-coupling) rotary handle	45	Terminal capacities	57
Circuit-breaker thermo-magnetic release, 4-pole	8	Mechanical interlock for remote operator, Sizes 1, 2, 3: tripping characteristics	46	Auxiliary contact	59
Circuit-breakers, electronic releases, 4 pole	10	Size 4: tripping characteristics	48	Equipping with auxiliary contacts, time differences	60
Switch-disconnectors, 3 pole, 4 pole	12	Size 4: let-through characteristics	49	Undervoltage release, shunt release, Remote operator, capacitor unit	61
Connection types	14		50		62
Auxiliary contact	26			Dimensions	
Undervoltage release	28			Size 1: basic units	63
Shunt release	29			Size 1: accessories	64
Door coupling rotary handles	30			Size 2: basic units	67
Rotary handles on breaker	31			Size 2: accessories	68
Accessories	32			Size 3: basic units	73
Mechanical interlock	34			Size 3: accessories	74
Remote operators	35			Size 4: basic units	78
				Size 4: accessories	79



Basic units

Circuit-breaker 1

Rated uninterrupted current up to 1000 A

Switching capacity 25, 36, 50kA at 415V

Adjustable releases for overload and short-circuit

Protection of systems, cables, motors, generators

3 and 4 pole versions, IEC/EN60947

→ page 6

Switch-disconnector 1

Rated uninterrupted current up to 1000 A

Remotely tripped switch-disconnector with undervoltage or shunt release

3 and 4 pole versions, IEC/EN60947

→ page 12

Add-on functions

Standard auxiliary contact (HIN) 7

Switching with the main contacts. Used for indication and interlock functions.

→ page 26

Trip-indicating auxiliary contact (HIA) 7

General trip indication '+', when tripped by voltage release, overload release or short-circuit release

→ page 26

Voltage release 16

Undervoltage release

Shunt release

→ page 28

Door coupling rotary handle 8+10

Lockable

With door interlock

→ page 30

Extension shaft 9

Can be cut to required length.

→ page 30

Rotary handle 11

Lockable

→ page 31

Remote operator 14

For remote switching of circuit-breakers and switch-disconnectors

→ page 35

Toggle lever interlock device 15

→ page 33

Mounting accessories

Tunnel terminals for Al and Cu cable 3

Standard with control circuit terminal

LZM1 → page 14

LZM2 → page 16

LZM3 → page 18

LZM4 → page 22

Box terminals 4

Standard version of frame size 1 assembled within the circuit-breaker enclosure

LZM1 → page 14

LZM2 → page 16

LZM3 → page 18

Terminal cover 2

Protection against direct contact where cable lugs, busbars or tunnel terminals are used

LZM1 → page 14

LZM2 → page 16

LZM3 → page 20

LZM4 → page 24

Clip plate 5

NZM1-XC35 for 35 mm top-hat rail

NZM2-XC75 for 75 mm top-hat rail

→ page 33

Insulating surround 13

For use with toggle lever, rotary drive and remote operator protruding from the enclosure

→ page 33

External warning plate/designation label 12

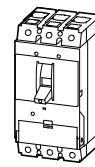
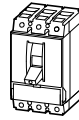
→ page 32

Spacer 6

→ page 33

Circuit-breaker

With main switch characteristics to IEC/EN 60204
and isolating characteristics to IEC/EN60947



Rated uninterrupted current I_U = Rated current I_n
Adjustable overload release I_r
Adjustable short-circuit release I_i

**Thermomagnetic releases
System and cable protection**

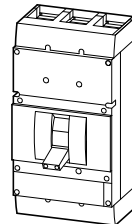
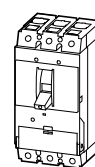
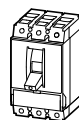
	I_U A	I_U A	I_r A	I_i A
Ambient temperature at 100% I_U min./max. -25/+50°C	20		0.8 - 1 x I_n	350
	25			
	32			
	40			8 - 10 x I_n
	50			6 - 10 x I_n
	63			
	80			
	100			
	125			
	160	160		LZM1: 8 x I_n
		200		6 - 10 x I_n
		250		
		300	320	
			400	
			500	

Basic switching capacity		LZMB1-A...	LZMB2-A...		
400/415 V	kA	25	25		
440V	kA	12.5	12.5		
Comfort switching capacity		LZMC1-A...	LZMC2-A...	LZMC3-A...	
400/415 V	kA	36	36	36	
440 V	kA	18	18	18	
Normal switching capacity		LZMN1-A...	LZMN2-A...	LZMN3-A...	
400/415 V	kA/cos φ	50	50	50	
440 V	kA	25	25	25	

Notes The stated switching capacity values are rated ultimate short-circuit breaking capacities (I_{CU})

Switch-disconnector

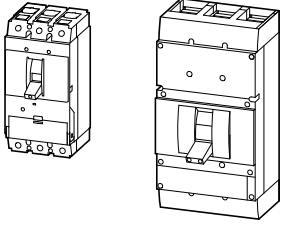
With main switch characteristics to IEC/EN 60204
and VDE 0113 isolating characteristics to IEC/EN 60947,
VDE 0660 without overload and short-circuit release



Rated uninterrupted current I_U = rated current I_n		63 – 160	160 – 250	400 – 630	630 – 1600
Can be triggered with U/A voltage release		LN1-...	LN2-...	LN3-...	LN4-...
Rated short-circuit making capacity I_{cm}	kA	2.8	5.5	25	53
Rated short-time withstand current I_{cw} (1s)	kA	2	3.5	12	25

xEnergy

LZM1, LZM2, LZM3, LZM4



Electronic releases
Systems, cable, selectivity and generator protection

I_U	I_U	I_r	I_i
A	A	A	A

		$0.5 - 1 \times I_n$	
630			$2 - 8 \times I_n$
	800		$2 - 12 \times I_n$
	1000		



LZMC3-...E...	
36	
18	
LZMN3-...E...	LZMN4-...E...
50	50
25	25

6 Circuit-breaker, 3 pole

Ordering

LZM...1, LZM...2, LZM...3

xEnergy

<p>Rated current = rated uninterrupted current</p> <p>$I_n = I_u$</p> <p>A</p>	<p>Setting range</p>		<p>Basic switching capacity 25 kA at 415 V 50/60 Hz</p>	<p>Comfort switching capacity 36 kA at 415 V 50/60 Hz</p>
	<p>Overload releases</p> <p>I_r</p> <p>A</p> 	<p>Short-circuit releases</p> <p>I_i</p> <p>A</p> 		

Protection of systems and cables

3 pole with thermo-magnetic release

Terminals standard, terminal screws as accessories



20	15...20	350
25	20...25	350
32	25...32	350
40	32...40	320...400
50	40...50	300...500
63	50...63	380...630
80	63...80	480...800
100	80...100	600...1000
125	100...125	750...1250
160	125...160	1280

LZMB1-A20-I 111848
LZMB1-A25-I 111849
LZMB1-A32-I 111850
LZMB1-A40-I 111851
LZMB1-A50-I 111852
LZMB1-A63-I 111853
LZMB1-A80-I 111854
LZMB1-A100-I 111855
LZMB1-A125-I 111856
LZMB1-A160-I 111857

LZMC1-A20-I 111888
LZMC1-A25-I 111889
LZMC1-A32-I 111890
LZMC1-A40-I 111891
LZMC1-A50-I 111892
LZMC1-A63-I 111893
LZMC1-A80-I 111894
LZMC1-A100-I 111895
LZMC1-A125-I 111896
LZMC1-A160-I 111897

Terminal screws standard, terminals as accessories



160	125...160	960...1600
200	160...200	1200...2000
250	200...250	1500...2500
300	240...300	1500...2500
320	250...320	1920...3200
400	320...400	2400...4000
500	400...500	3000...5000

LZMB2-A160-I 111922
LZMB2-A200-I 111923
LZMB2-A250-I 111924
LZMB2-A300-I 111925

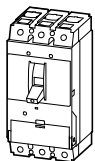
LZMC2-A160-I 111938
LZMC2-A200-I 111939
LZMC2-A250-I 111940
LZMC2-A300-I 111941
LZMC3-A320-I 111954
LZMC3-A400-I 111955
LZMC3-A500-I 111956

Notes

Notes for terminals → 15

3 pole with electronic release

Terminals screws standard, terminals as accessories



630	315...630	1260...5040
800	400...800	1600...9600
1000	500...1000	2000...12000

LZMC3-AE630-I 111957

Notes

Notes for terminals → 19

xEnergy





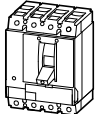
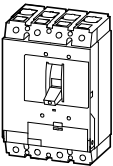
Normal switching capacity
50 kA at 415 V 50/60 Hz

Part no. Article no.	Price see price list	Std. pack	Notes
LZMN1-A20-I 174414		1 off	IEC/EN 60947-2 Adjustable overload releases I_r <ul style="list-style-type: none"> • 0.8 – 1 x I_n (ex-works 0.8 x I_n) Adjustable short-circuit releases I_i <ul style="list-style-type: none"> • 6 – 10 x I_n (ex-works 6 x I_n) – LZM...-A40: 8 – 10 x I_n (ex-works 8 x I_n) Fixed short-circuit release I_f <ul style="list-style-type: none"> • 350 A at $I_n = 20 – 32$ A • 1280 A at $I_n = 160$ A (LZM1)
LZMN1-A25-I 174415			
LZMN1-A32-I 174416			
LZMN1-A40-I 174417			
LZMN1-A50-I 174418			
LZMN1-A63-I 174419			
LZMN1-A80-I 174420			
LZMN1-A100-I 174421			
LZMN1-A125-I 174422			
LZMN1-A160-I 174423			
LZMN2-A160-I 174442			
LZMN2-A200-I 174443			
LZMN2-A250-I 174444			
LZMN2-A300-I 174445			
LZMN3-A320-I 111966			
LZMN3-A400-I 111967			
LZMN3-A500-I 111968			
LZMN3-AE630-I 111969		1 off	IEC/EN 60947-2 Adjustable overload releases I_r <ul style="list-style-type: none"> • 0.5 – 1 x I_n (ex-works 0.8 x I_n) R.m.s. value measurement and “thermal memory” Adjustable short-circuit releases I_i <ul style="list-style-type: none"> • LZM...3-AE630-I: 2 – 8 x I_n (ex-works 6 x I_n) • LZM...4-AE...-I: 2 – 12 x I_n (ex-works 6 x I_n)
LZMN4-AE800-I 111978			
LZMN4-AE1000-I 111979			

Ordering

LZM...1, LZM...2, LZM...3

xEnergy

Rated current = rated uninterrupted current	Setting range Overload releases	Neutral conductor	Short-circuit releases	Basic switching capacity 25 kA at 415 V 50/60 Hz		Comfort switching capacity 36 kA at 415 V 50/60 Hz	
				Part no. Article no.	Price see price list	Part no. Article no.	Price see price list
$I_n = I_u$ A	I_r A 	I_r A 	I_i A 				
Protection of systems and cables							
4 pole							
Terminals standard, terminal screws as accessories							
	20	15...20	15...20	350	LZMB1-4-A20-I 111868		LZMC1-4-A20-I 111908
	25	20...25	20...25	350	LZMB1-4-A25-I 111869		LZMC1-4-A25-I 111909
	32	25...32	25...32	350	LZMB1-4-A32-I 111870		LZMC1-4-A32-I 111910
	40	32...40	32...40	320...400	LZMB1-4-A40-I 111871		LZMC1-4-A40-I 111911
	50	40...50	40...50	300...500	LZMB1-4-A50-I 111872		LZMC1-4-A50-I 111912
	63	50...63	50...63	380...630	LZMB1-4-A63-I 111873		LZMC1-4-A63-I 111913
	80	63...80	63...80	480...800	LZMB1-4-A80-I 111874		LZMC1-4-A80-I 111914
	100	80...100	80...100	600...1000	LZMB1-4-A100-I 111875		LZMC1-4-A100-I 111915
	125	100...125	100...125	750...1250	LZMB1-4-A125-I 111876		LZMC1-4-A125-I 111916
	160	125...160	125...160	1280	LZMB1-4-A160-I 111877		LZMC1-4-A160-I 111917
Terminals standard, terminal screws as accessories							
	160	125...160	125...160	960...1600	LZMB2-4-A160-I 116431		LZMC2-4-A160-I 116435
		125...160	80...100	960...1600	LZMB2-4-A160/100-I 111930		LZMC2-4-A160/100-I 111948
	200	160...200	160...200	1200...2000	LZMB2-4-A200-I 116432		LZMC2-4-A200-I 116436
		160...200	100...125	1200...2000	LZMB2-4-A200/125-I 111931		LZMC2-4-A200/125-I 111949
	250	200...250	200...250	1500...2500	LZMB2-4-A250-I 116433		LZMC2-4-A250-I 116437
		200...250	125...160	1500...2500	LZMB2-4-A250/160-I 111932		LZMC2-4-A250/160-I 111950
	300	240...300	250...320	1500...2500	LZMB2-4-A300-I 116434		LZMC2-4-A300-I 116438
		240...300	160...200	1500...2500	LZMB2-4-A300/200-I 111933		LZMC2-4-A300/200-I 111951
	320	250...320	320...400	1920...3200			LZMC3-4-A320-I 116439
		250...320	200...250	1920...3200			LZMC3-4-A320/200-I 111960
	400	320...400	320...400	2400...4000			LZMC3-4-A400-I 116470
		320...400	250...250	2400...4000			LZMC3-4-A400/250-I 111961
	500	400...500	400...500	3000...5000			LZMC3-4-A500-I 116471
		400...500	250...320	3000...5000			LZMC3-4-A500/320-I 111962
Notes	Notes for terminals → 15+19						

xEnergy

Normal switching capacity
50 kA at 415 V 50/60 Hz

Part no.	Price Article no. list	Std. pack see price	Notes
LZMN1-4-A20-I 174424		1 off	IEC/EN 60947-2 Adjustable overload releases I_f • 0.8 – 1 x I_n (ex-works 0.8 x I_n) Setting on neutral pole implemented via the main pole setting I_f of the main pole. Adjustable short-circuit releases I_f • 6 – 10 x I_f (ex-works 6 x I_n) – LZM...A40-I: 8 – 10 x I_n (ex-works 8 x I_n) Fixed short-circuit release I_f • 350 A at $I_n = 20 - 32$ A • 1280 A at $I_n = 160$ A (8 x I_n) LZM..1-4-A... • With 100 % overload and short-circuit protection in 4 th pole LZM..2-4-A... • With 100 % or 60 % overload and short-circuit protection in 4 th pole
LZMN1-4-A25-I 174425			
LZMN1-4-A32-I 174426			
LZMN1-4-A40-I 174427			
LZMN1-4-A50-I 174428			
LZMN1-4-A63-I 174429			
LZMN1-4-A80-I 174430			
LZMN1-4-A100-I 174431			
LZMN1-4-A125-I 174432			
LZMN1-4-A160-I 174433			
LZMN2-4-A160-I 174435		1 off	
LZMN2-4-A160/100-I 174434			
LZMN2-4-A200-I 174437			
LZMN2-4-A200/125-I 174436			
LZMN2-4-A250-I 174439			
LZMN2-4-A250/160-I 174438			
LZMN2-4-A300-I 174441			
LZMN2-4-A300/200-I 174440			
LZMN3-4-A320-I 116473		1 off	
LZMN3-4-A320/200-I 111974			
LZMN3-4-A400-I 116474			
LZMN3-4-A400/250-I 111975			
LZMN3-4-A500-I 116475			
LZMN3-4-A500/320-I 111976			

Ordering

LZM...2, LZM...3, LZM...4

xEnergy

Comfort switching capacity
36 kA at 415 V 50/60 Hz
Part no.
 Article no.
Price
 see price list

Rated current =
 rated uninterrupted
 current

$I_n = I_u$
 A

Setting range
 Overload
 releases

I_r
 A



Neutral
 conductor

I_r
 A



Short-circuit
 releases
 Non-delayed

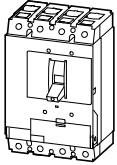
I_r
 A



Protection of systems and cables

4 pole

Terminals screws standard, terminals as accessories



630

315...630

315...630

1260...5040

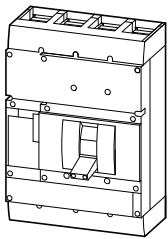
LZMC3-4-AE630-I
 116472

315...630

200...400

1260...5040

LZMC3-4-AE630/400-I
 111963



800

400...800

400...800

1600...9600

400...800

250...500

1600...9600

1000

500...1000

500...1000

2000...12000

500...1000

315...630

2000...12000

Notes

Notes for terminals → 19+22

xEnergy

Normal switching capacity
50 kA at 415 V 50/60 Hz

Part no.
 Article no. **Price**
 see price list

Std. pack

Notes

LZMN3-4-AE630-I
 116476

LZMN3-4-AE630/400-I
 111977

LZMN4-4-AE800-I
 116477

LZMN4-4-AE800/500-I
 111986

LZMN4-4-AE1000-I
 116478

LZMN4-4-AE1000/630-I
 111987

1 off

IEC/EN 60947-2

Adjustable overload releases I_r

- $0.5 - 1 \times I_n$ (ex-works $0.8 \times I_n$)

Setting on neutral pole implemented via the main pole setting I_r of the main pole.

R.m.s. value measurement and "thermal memory"

Adjustable short-circuit releases I_s

- LZM...3-4-AE630-I: $2 - 8 \times I_n$ (ex-works $6 \times I_n$)
- LZM...4-4-AE...-I: $2 - 12 \times I_n$ (ex-works $6 \times I_n$)

i^2t constant function (ex-works OFF)

- LZM3, LZM4 switched (ex-works OFF)


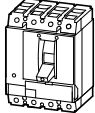

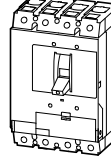
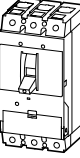
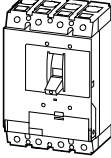
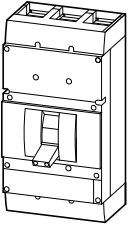
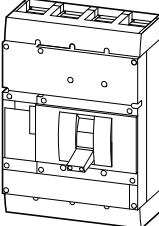
LZM...3-AE630/400, LZM...4-AE.../...-I

- With 60 % or 100 % overload and short-circuit protection in 4th pole

Ordering


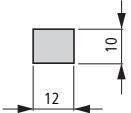
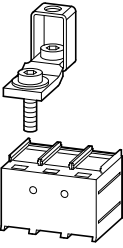
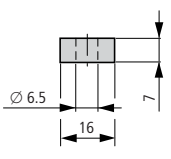
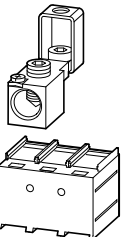
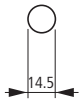
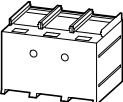
LN1..., LN2..., LN3..., LN4...

xEnergy

		Rated current = rated uninterrupted current	Short-circuit protection max. fuse gL-characteristic	3pole Part no. Article no.	Price see price list	4pole Part no. Article no.	Price see price list	Std. pack
		$I_n=I_u$ A	A					
Switch-disconnectors								
Can be tripped remotely with shunt- or undervoltage release								
Terminals standard, terminal screws as accessories								
 	63	125	LN1-63-I 111994		LN1-4-63-I 111998	1 off		
	100	125	LN1-100-I 111995		LN1-4-100-I 111999			
	125	125	LN1-125-I 111996		LN1-4-125-I 112000			
	160	160	LN1-160-I 111997		LN1-4-160-I 112001			
Terminals screws standard, terminals as accessories								
 	160	250	LN2-160-I 112002		LN2-4-160-I 112005	1 off		
	200	250	LN2-200-I 112003		LN2-4-200-I 112006			
	250	250	LN2-250-I 112004		LN2-4-250-I 112007			
 	400	630	LN3-400-I 112008		LN3-4-400-I 112010			
	630	630	LN3-630-I 112009		LN3-4-630-I 112011			
 	800	1600	LN4-800-I 112012		LN4-4-800-I 112016			
	1000	1600	LN4-1000-I 112013		LN4-4-1000-I 112017			

Notes Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113
 Isolating characteristics to IEC/EN 60947-3 and VDE 0660
 Protection against accidental contact according to IEC 100
 Notes for terminals → 16

xEnergy

	Max. cable connection area	For use with	Terminal capacities	Type of conductor		
				mm ²	AWG/kcmil	
Box terminal						
Standard equipment						
		LZM1(-4) LN1(-4)	Three- and four-pole	Cu cable	1 x 10 – 70 ¹⁾ 2 x 6 – 25	1 x 8 – 2/0 2 x 9 – 4
Screw connection						
		LZM1(-4) LN1(-4)	Three- and four-pole	Copper cable lugs Aluminium cable lug	1 x 10 – 70 2 x 6 – 25 1 x 10 – 35 2 x 10 – 35	1 x 8 – 2/0 2 x 9 – 4 1 x 8 – 2 2 x 8 – 2
Tunnel terminal						
		LZM1(-4) LN1(-4)	Three- and four-pole	Copper cable Al cable	1 x 16 – 95 2 x 6 – 25	1 x 6 – 3/0 –
Cover						
	–	LZM1(-4) LN1(-4)	3 pole	–	–	–
	–		4 pole	–	–	–


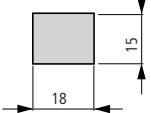
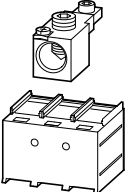
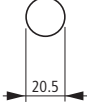
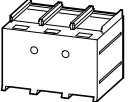

Notes

¹⁾ Up to 95 mm² can be connected depending on the cable manufacturer.

xEnergy

LZM1

Terminal capacities		Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Cu strip (number of segments x width x segment thickness)	Copper busbar width x thickness				
mm	mm				
2 x 9 x 0.8 9 x 9 x 0.8		NZM1-XKC 260015		1 off	Standard connection with all switches LZM1 and LN1. Conversion kit for circuit-breaker with screw connection. Type contains parts for a 3 or 4-pole switch side. Fitted within the switch housing
		NZM1-4-XKC 267075		1 off	
	min. 12 x 5 max. 16 x 5	NZM1-XKS 260019		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Fitted outside the switch housing. Mounting of the cover NZM1(-4)-XKSA obligatory (supplied).
	min. 12 x 5 max. 16 x 5	NZM1-4-XKS 266725		1 off	
		NZM1-XKA 266730		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. A standard with control circuit terminal for 1 x 0.75 – 2.5 mm ² (18 – 14 AWG) or 2 x 0.75 – 1.5 mm ² (18 – 14 AWG) copper conductors. Fitted outside the switch housing. Use with flexible and highly flexible conductors ferrules. Maximum specified cross-section can only be connected when stranded and without ferrules. Mounting of the cover NZM1(-4)-XKSA obligatory (supplied).
		NZM1-4-XKA 266731		1 off	
		NZM1-XKSA 260021		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Protection against direct contact where cable lugs, busbars or tunnel terminals are used. Contained in kit with tunnel terminals or screw connection terminals. Degree of protection IP1X on the connection side when using insulated conductor material.
		NZM1-4-XKSA 266741		1 off	

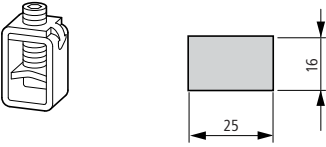
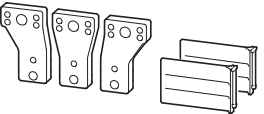
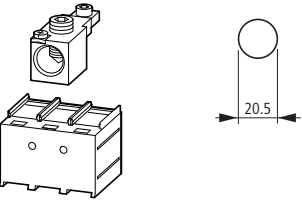
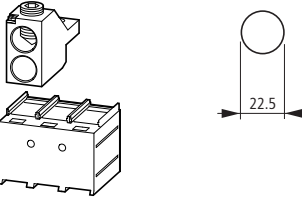
	Max. cable connection area	For use with	Terminal capacities Type of conductor	Terminal capacities ¹⁾		Terminal capacities Cu strip (number of segments x width x segment thickness)	
				mm ²	AWG/kcmil		
Box terminal							
		LZM2(-4) LN2(-4)	3pole	Copper conductors Cu cable	1 x 4 – 185 2 x 4 – 70	1 x 11 – 350 2 x 12 – 2/0	≥ 2 x 9 x 0.8
			4pole				
Tunnel terminal							
		LZM2(-4) LN2(-4)	3pole	Copper cable all cable	1 x 16 ... 185 ¹⁾ 1 x 16 ... 185 ¹⁾	1 x 6 – 350 –	
			4pole				
Cover							
	–	LZM2	3 pole				
	–	LZM2(-4) LN2-4	4 pole				
Copper cable lug							
When using cable lugs without NZM3(-4)-XKSA cover, they must be insulated.							
	95 mm ²	LZM2(-4) LN2(-4)	3 and 4 pole				
	120 mm ²						
	150 mm ²						
	185 mm ²						

Notes

¹⁾ Up to 240 mm² can be connected depending on the cable manufacturer.

xEnergy

Copper busbar width x thickness	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
mm				
	NZM2-160-XKC 262240		1 off	Type suffix and type contain parts for a circuit-breaker side at top or bottom for 3 or 4 pole circuit-breakers. Conversion kit for circuit-breaker with screw connection. Fitted within the switch housing. O = for fitting at the top U = for fitting at the bottom $U_g \geq 525$ V AC: • Use cover NZM2(4)-XKSA. Use ferrules with flexible and highly flexible conductors. Max. cross section shown can only be connected when flexible and without ferrules.
	NZM2-250-XKC 262244			
	NZM2-4-160-XKC 266755			
	NZM2-4-250-XKC 266756			
	NZM2-XKA 271457		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. A standard with control circuit terminal for 1 x 0.75 – 2.5 mm ² (18 – 14 AWG) or 2 x 0.75 – 1.5 mm ² (18 – 16 AWG) copper conductors. Fitted outside the switch housing. Use with flexible and highly flexible conductors ferrules. Maximum specified cross-section can only be connected when stranded and without ferrules. Mounting of the cover NZM2(-4)-XKSA obligatory (supplied).
	NZM2-4-XKA 271458		1 off	
	NZM2-XKSA 260038		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Protection against direct contact where cable lugs, busbars or tunnel terminals are used. Degree of protection IP1X on the connection side when using insulated conductor material.
	NZM2-4-XKSA 266770		1 off	
	KS95-NZM7 059775		3 off	Type contains a cable lug for 3-pole or 4-pole switches. Special cable lug, narrow style.
	KS120-NZM7 059776			
	KS150-NZM7 059777			
	NZM2-XKS185 260032			

	Max. cable connection area	Rated current ¹⁾	For use with	Terminal capacities			
				Type of conductor	Terminal capacities		
		I_n A			mm ²	AWG/kcmil	
Box terminal							
		max. 500	LZM3(-4) LN3(-4)	3pole	Copper conductors Cu cable	1 x 35 – 240 2 x 16 – 120	1 x 2 – 350
		630		4pole			
Connection width extension							
		630	LZM3(-4) LN3(-4)	3pole	Copper cable lugs	2 x 300	2 x 500 1 x 600
				4pole			
Tunnel terminal							
		max. 350	LZM3(-4) LN3(-4)	3pole	Copper conductors Cu cable conductors Al cable	1 x 16 – 185 ²⁾	1 x 6 – 350
		max. 630		3pole		1 x 50 – 240 2 x 50 – 240	1 x 0 – 500 2 x 0 – 500

Notes

¹⁾ The following applies for the rated current: The values have been determined conform to IEC/EN 60947 (switchgear standard) and generally relate to the max. defined cross-sections and are intended for the purpose of orientation.

The engineering standards which apply in each case must be observed.

²⁾ Up to 240mm² can be connected depending on the cable manufacturer.

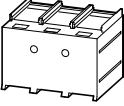
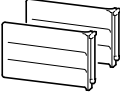

xEnergy

Terminal capacities		Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Cu strip (number of segments x width x segment thickness)	Copper busbar width x thickness				
mm	mm				
min. 6 x 16 x 0.8 max. 20 x 24 x 0.5 or max. 11 x 21 x 1		NZM3-XKC 260042		1 off	Type suffix and type contain parts for a circuit-breaker side at top or bottom for 3 or 4-pole circuit-breakers. Conversion kit for circuit-breaker with screw connection. Fitted within the switch housing O = for fitting at the top U = for fitting at the bottom $U_e \geq 525$ V AC: • Use NZM3(-4)-XKSA cover. Use with flexible and highly flexible conductors ferrules, note the max. terminal capacity when using ferrules.
		NZM3-4-XKC 266783			
(2 x) 10 x 50 x 1.0	(2 x) 10 x 50	NZM3-XKV70 100514		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4 pole circuit-breakers. Central drill holes, e.g. for up to 2 cable lugs per phase. Can be fitted to circuit-breaker with screw termination. Phase isolator supplied. Distance between pole centres with NZM3(-4)-XKV70: 70 mm. Drill hole available for control cable.
		NZM3-4-XKV70 100515		1 off	
		NZM3-XKA1 271459		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. A standard with control circuit terminal for 1 x 0.75 – 2.5 mm ² (18 – 14 AWG) or 2 x 0.75 – 1.5 mm ² (18 – 16 AWG) copper conductors. Fitted outside the switch housing. Use with flexible and highly flexible conductors ferrules. Maximum specified cross-section can only be connected when stranded and without ferrules. Mounting of the cover NZM3(-4)-XKSA obligatory (supplied). Please note a maximum diameter of 20.5 mm resp. 22.5 mm.
		NZM3-4-XKA1 271460		1 off	
		NZM3-XKA2 271461		1 off	
		NZM3-4-XKA2 271462		1 off	

Ordering

LZM3

xEnergy

	Max. cable connection area	For use with	Part no. Article no. when ordered separately	Price see price list
Cover				
	—	LZM3(-4) LN3(-4)	3 pole	NZM3-XKSA 260045
	—		4 pole	NZM3-4-XKSA 266801
Phase isolator				
	—	LZM3(-4) LN3(-4)	3 pole	NZM3-XKP 100512
	—		4 pole	NZM3-4-XKP 100513
Copper cable lug				
When using cable lugs without NZM3(-4)-XKSA cover, they must be insulated.				
	185 mm ²	LZM3(-4), LN3(-4) LZM4(-4), LN4(-4)	3 and 4 pole	NZM3-XKS185 260040
	240 mm ²			NZM3-XKS240 260041
	300 mm ²			NZM3-XKS300 153186

xEnergy

Std. pack **Notes**

1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Insulation/protection against direct contact where cable lugs, busbars or tunnel terminals are used.
1 off	Included in set with tunnel terminals. Degree of protection IP1X on the connection side when using insulated conductor material.

1 off	Type contains parts for a terminal located at top or bottom for 3 or 4 pole circuit-breakers. Included with the connection width extension.
1 off	Cannot be combined with the NZM3(-4)-XKA tunnel terminal, NZM3(-4)-XKR connection on rear. Insulation protection with connection of cable lugs, busbars or braid.

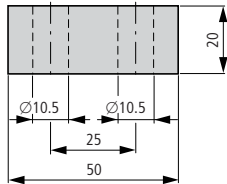
1 off	Type contains a cable lug for 3-pole or 4-pole switches. Special cable lug, narrow style
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Max. cable connection area	Rated current ¹⁾	For use with	Terminal capacities		
			Type of conductor	Terminal capacities	AWG/kcmil
	I_n A			mm ²	

Screw connection

Standard equipment

2-hole with stud bolts and nuts.



max. 1600	LZM4(-4) LN4(-4)	Three- and four-pole	Cu cable lugs	1 x 120 – 185 4 x 50 – 185	1 x 250 – 350 4 x 0 – 350
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Module plate



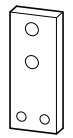
Single hole

max. 1250	LZM4 LN4	3 pole	Copper cable lugs	1 x 120 – 300 2 x 95 – 300	1 x 250 – 600 2 x 000 – 600
	LZM4-4 LN4-4	4 pole			



Double hole

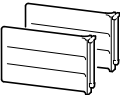
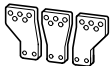
max. 1400	LZM4 LN4	3 pole	Copper cable lugs	2 x 95 – 185 4 x 35 – 185 4 x 50	2 x 000 – 350 4 x 2 – 350
	LZM4-4 LN4-4	4 pole			



Double hole

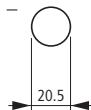
max. 1250	LZM4 LN4	3 pole	Copper cable lugs	2 x 95 – 300	2 x 000 – 600
	LZM4-4 LN4-4	4 pole			
max. 1600	LZM4 LN4	3 pole	Copper cable lugs	2 x 95 – 300	2 x 000 – 500
	LZM4-4 LN4-4	4 pole			

Connection width extension



max. 1600	LZM4 LN4	3 pole	Cu cable lugs	4 x 300 6 x 95 – 240	4 x 600 6 x 000 ... 500
	LZM4-4 LN4-4	4 pole			

Tunnel terminal



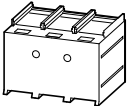
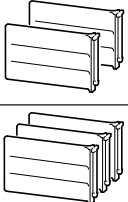

max. 1400	LZM4 LN4	3 pole	Copper conductors	1 x 50 – 240 4 x 50 – 240	1 x 0 – 500 4 x 0 – 500
	LZM4-4 LN4-4	4 pole			
			Cu cable	1 x 50 – 240	1 x 0 – 500
			Al conductors	4 x 50 – 240	4 x 0 – 500
			Al cable		

Notes

¹⁾ The following applies for the rated current: The values have been determined conform to IEC/EN 60947 (switchgear standard) and generally relate to the max. defined cross-sections and are intended for the purpose of orientation.

xEnergy

Terminal capacities		Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Cu strip (number of segments x width x segment thickness)	Copper busbar width x thickness				
mm	mm				
(2 x) 10 x 50 x 1.0	(2 x) 50 x 10			off	Double hole fitting for M10 stud bolts with 25 mm clearance. Use special cable lug narrow version.
(2 x) 10 x 40 x 1.0 (2 x) 10 x 50 x 1.0	(2 x) 40 x 10 (2 x) 50 x 10	NZM4-XKM1 266814		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. For M10 screws. Can be enlarged for M12 screws. Use special cable lug narrow version. Can be fitted to circuit-breaker with screw termination. Insulation through NZM4(-4)-XKSA cover necessary.
		NZM4-4-XKM1 266815		1 off	
		NZM4-XKM2 266820		1 off	
		NZM4-4-XKM2 266821		1 off	
		NZM4-XKM2S-1250 284471		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Insulation through cover NZM4(-4)-XKSA necessary.
		NZM4-4-XKM2S-1250 284472		1 off	
		NZM4-XKM2S-1600 284473		1 off	
		NZM4-4-XKM2S-1600 284474		1 off	
min. 10 x 50 x 1.0	max. (2 x) 80 x 10	NZM4-XKV95 281591		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers.F ive way holes, e.g. for up to 9 cable lugs per phase. Can be fitted to circuit-breaker with screw termination. Phase isolator supplied.Distance between pole centres with NZM4(-4)-XKV95: 95 mm. Installation conditions for current transformer up to 130 mm width with 80 mm busbar width. Distance between pole centres with NZM4-XKV110: 107.5 mm. Installation conditions for current transformer up to 135 mm width with 80 mm busbar width. Distance between pole centres with NZM4-4-XKV120: 122 mm. Installation conditions for current transformer up to 164 mm width with 80 mm busbar width. 4 mm drilled holes for control circuit terminal available.
		NZM4-XKV110 281593		1 off	
		NZM4-4-XKV95 281592		1 off	
		NZM4-4-XKV120 281594		1 off	
		NZM4-XKA 266836		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4 pole circuit-breakers. A standard with control circuit terminal for 1 x 0.75 ... 2.5 mm ² (18 ... 14 AWG) or 2 x 0.75 ... 1.5 mm ² (18 ... 16 AWG) copper conductors. Can be fitted to circuit-breaker with screw termination. Use ferrules with flexible and highly flexible conductors. Max. cross section shown can only be connected when flexible and without ferrules. Use of the NZM4(-4)-XKSA cover obligatory(supplied).
		NZM4-4-XKA 266837		1 off	

	Max. cable connection area	For use with	Terminal capacities		
			Type of conductor	Terminal capacities	AWG/kcmil
		I_n		mm ²	
Cover					
	-	LZM4 LN4	3 pole		
	-	LZM4-4 LN4-4)	4 pole		
Phase isolators					
	-	LZM4 LN4	3 pole		
	-	LZM4-4 LN4-4)	4 pole		
Cable lug					
	185 mm ²	LZM3(-4) LZM4(-4) LN3(-4) LN4(-4)	3 and 4 pole		
	240 mm ²				
	300 mm ²				

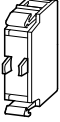


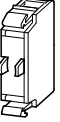






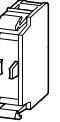


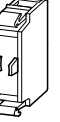






xEnergy

Part no.	Price	Std. pack	Notes
Article no. when ordered separately	see price list		
NZM4-XKSA 266846		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4 pole circuit-breakers. Protection against direct contact where cable lugs, busbars, flat cable terminals or tunnel terminals are used. With module plates, flat braid terminals and tunnel terminals included in the kit. When using insulated conductor material to degree of protection: IP1X.
NZM4-4-XKSA 266847			
NZM4-XKP 281595		1 off	Type contains parts for a terminal located at top or bottom for 3 or 4-pole circuit-breakers. Included with the connection width extension. Cannot be combined with the tunnel terminal NZM4(-4)-XKA, connection NZM4-XKR on rear. Insulation protection where cable lugs, busbars, module plates or flat cable terminals are used.
NZM4-4-XKP 281596			
NZM3-XKS185 260040		3 off	Type contains a cable lug for 3-pole or 4-pole switches. Special cable lug, narrow style.
NZM3-XKS240 260041			
NZM3-XKS300 153186			

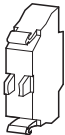
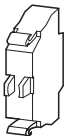
Ordering

LZM, M22-...

xEnergy

		For use with	Auxiliary contacts: = safety function, by positive opening to IEC/EN 60947-5-1		Contact sequence	Part no. Article no. when ordered separately	Price see price
			N/O = Normally open	N/C = Normally closed			
Auxiliary contacts							
Standard auxiliary contact (HIN) Switching with the main contacts Used for indicating and interlocking tasks							
		LZM1(-4), 2(-4), 3(-4), 4(-4) LN1(-4), 2(-4), 3(-4), 4(-4)	1 N/O			M22-K10 216376	
				1 N/C		M22-K01 216378	
	With 3 m connection cable instead of screw termination.	LZM1(-4), 2(-4), 3(-4), 4(-4) LN1(-4), 2(-4), 3(-4), 4(-4)	1 N/O	1 N/C			
			2 N/O				
				2 N/C			
							
							
							
Trip indicating auxiliary contact (HIA) General trip indication '+', when tripped by voltage release, overload release or short-circuit release							
		LZM1(-4), 2(-4), 3(-4), 4(-4) LN1(-4), 2(-4), 3(-4), 4(-4)	1 N/O			M22-K10 216376	
				1 N/C		M22-K01 216378	
	With 3 m connection cable instead of screw termination.	LZM1(-4), 2(-4), 3(-4), 4(-4) LN1(-4), 2(-4), 3(-4), 4(-4)	1 N/O	1 N/C			
			2 N/O				
							
							
				2 N/C			
							

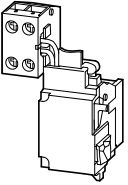

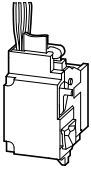

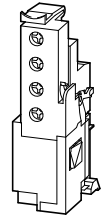

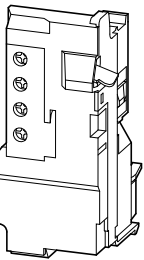

xEnergy

	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes	Notes
	M22-CK10 216384		20 off	For Std. pack: M22-(C)K... : Std. pack = 20 off	The following can be clipped into the switches: •LZM1- one standard auxiliary contact •LZM2 - up to 2 standard auxiliary contacts M22-(C)K... •LZM3 and LZM4 - up to 3 standard auxiliary contacts M22-(C)K... Any combinations of the auxiliary contact types is possible. Marking on switch: HIN
	M22-CK01 216385		20 off		
	M22-CK11 107940		20 off		
	M22-CK20 107898				
	M22-CK02 107899				
	M22-CK10 216384		20 off	For Std. pack: M22-(C)K... : Std. pack = 20 off	The following can be clipped into the switches: •LZM1 - one trip-indicating auxiliary switch •LZM2 - one M22-(C)K... trip-indicating auxiliary switch •LZM3 - one M22-(C)K... trip-indicating auxiliary switch •LZM4 - up to two M22-(C)K... trip-indicating auxiliary switches Any combinations of the auxiliary contact types is possible. Marking on switch: HIA If the trip-indicating auxiliary contact in the fault-current block is used, the N/C contacts operates as a N/O contact and the N/C contact operates as an N/O contact (circuit symbol).
	M22-CK01 216385				
	M22-CK11 107940				
	M22-CK20 107898				
	M22-CK02 107899				

Ordering

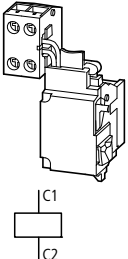
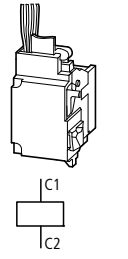
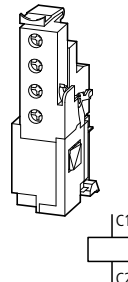
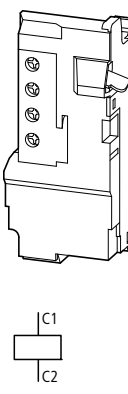
LZM1, LZM2/3, LZM4

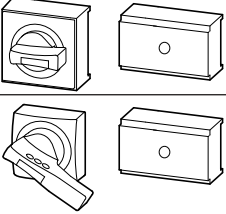
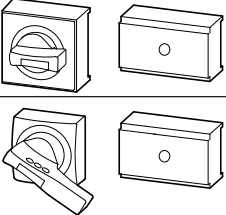
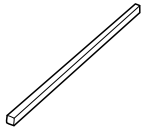
xEnergy

	For use with	Rated control voltage U_s V	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Undervoltage releases						
Without auxiliary contact Non-delayed disconnection of LZM circuit-breakers or LN switch-disconnectors when the control voltage sinks below 35 – 70% U_s . For use with Emergency-Stop devices in conjunction with Emergency-Stop button.						
 	With clamp terminal on the left-hand switch side.	LZM1(-4)	24 V 50/60 Hz	NZM1-XU24AC 259434	1 off	When the undervoltage release is de-energized, accidental contact with the main contacts of the switch during attempts to switch on, is safely prevented. Undervoltage release cannot be installed simultaneously with NZM...XHIV... early-make auxiliary contact or NZM...XA... shunt release.
		LN1(-4)	208 V 240 V 50/60 Hz	NZM1-XU208-240AC 259442		
			380 V – 440 V 50/60 Hz	NZM1-XU380-440AC 259444		
			24 V DC	NZM1-XU24DC 259452		
 	With 3 m connection cable instead of screw termination.	LZM1(-4)	24 V 50/60 Hz	NZM1-XUL24AC 259462	1 off	
		LN1(-4)	208 V 240 V 50/60 Hz	NZM1-XUL208-240AC 259471		
			380 V – 440 V 50/60 Hz	NZM1-XUL380-440AC 259473		
			24 V DC	NZM1-XUL24DC 259481		
 	With clamp terminal on the left-hand switch side.	LZM2(-4)	24 V 50/60 Hz	NZM2/3-XU24AC 259491	1 off	
		LN2(-4)	208 V 240 V 50/60 Hz	NZM2/3-XU208-240AC 259499		
		LZM3(-4)	380 V – 440 V 50/60 Hz	NZM2/3-XU380-440AC 259501		
		LN3(-4)	24 V DC	NZM2/3-XU24DC 259509		
 	With clamp terminal on the left-hand switch side.	LZM4(-4)	24 V 50/60 Hz	NZM4-XU24AC 266189	1 off	
		LN4(-4)	208 V 240 V 50/60 Hz	NZM4-XU208-240AC 266193		
			380 V – 440 V 50/60 Hz	NZM4-XU380-440AC 266194		
			24 V DC	NZM4-XU24DC 266204		

LZM1, LZM2/3, LZM4











xEnergy

	For use with	Rated control voltage U_s V	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Shunt releases						
Without auxiliary contact Switches are tripped by a voltage pulse or by the application of uninterrupted voltage.						
	With clamp terminal on the left-hand switch	LZM1(-4) LN1(-4)	24 V AC/DC NZM1-XA24AC/DC 259708			When the undervoltage release is de-energized, accidental contact with the main contacts of the switch during attempts to switch on, is safely prevented. Shunt release cannot be installed simultaneously with NZM...-XHIV... early-make auxiliary contact or NZM...-XU... undervoltage release.
			208 V – 250 V AC/DC NZM1-XA208-250AC/DC 259726			
			380 V – 440 V AC/DC NZM1-XA380-440AC/DC 259728			
	With 3 m connection cable instead of screw termination.	LZM1(-4) LN1(-4)	24 V AC/DC NZM1-XAL24AC/DC 259736		1 off	
			208 V – 250 V AC/DC NZM1-XAL208-250AC/DC 259744			
			380 V – 440 V AC/DC NZM1-XAL380-440AC/D 259746			
		LZM2(-4) LZM3(-4)	24 V AC/DC NZM2/3-XA24AC/DC 259754		1 off	
		LN2(-4) LN3(-4)	208 V – 250 V AC/DC NZM2/3-XA208-250AC/DC 259763			
			380 V – 440 V AC/DC NZM2/3-XA380-440AC/DC 259766			
		LZM4(-4) LN4(-4)	24 V AC/DC NZM4-XA24AC/DC 266447		1 off	
			208 V – 250 V AC/DC NZM4-XA208-250AC/DC 266451			
			380 V – 440 V AC/DC NZM4-XA380-440AC/DC 266452			

		For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Door coupling rotary handle						
Complete including rotary drive and coupling parts An additional extension shaft is necessary with the NZM...-XT(V)D(V)(R)(-60) types. Degree of protection IP66						
Standard, black/grey						
	Lockable on the 0 position on the handle using up to 3 padlocks. With door interlock	LZM1(-4), LN1(-4)	NZM1-XTVD 260166		1 off	Door interlock <ul style="list-style-type: none"> • Not defeated in the locked OFF and ON positions • Can be modified such that it can be defeated from the outside using a screwdriver, when it is in the unlocked ON position. • Door can be opened in OFF NZM...-XTVD(V) • External warning plate/designation label can be clipped on
		LZM2(-4), LN2(-4)	NZM2-XTVD 260168			
		LZM3(-4), LN3(-4)	NZM3-XTVD 260170			
		LZM4(-4), LN4(-4)	NZM4-XTVD 266614			
Red-yellow for Emergency-Stop						
	Lockable on the handle on the switch using up to 3 padlocks. Lockable in 0 position on the handle. With door interlock. Lockable in the 0 position	LZM1(-4), LN1(-4)	NZM1-XTVDVR 260178		1 off	Door interlock <ul style="list-style-type: none"> • Not defeated in the locked OFF position. • Can be modified such that it can be defeated from the outside using a screwdriver, when it is in the unlocked ON position. • Door can be opened in OFF NZM...-XTVDVR • External warning plate/designation label can be clipped on
		LZM2(-4), LN2(-4)	NZM2-XTVDVR 260180			
		LZM3(-4), LN3(-4)	NZM3-XTVDVR 260182			
		LZM4(-4), LN4(-4)	NZM4-XTVDVR 266618			
Extension shaft						
	Max. mounting depth: 400 mm	LZM1(-4), LN1(-4)	NZM1/2-XV4 261232		1 off	Length 290 mm
		LZM2(-4), LN2(-4)	NZM3/4-XV4 261234			
		LZM3(-4), LN3(-4)	NZM1/2-XV6 260191			Length 490 mm
		LZM4(-4), LN4(-4)	NZM3/4-XV6 260193			
	Max. mounting depth: 600 mm	LZM1(-4), LN1(-4)				
		LZM2(-4), LN2(-4)				
		LZM3(-4), LN3(-4)				
		LZM4(-4), LN4(-4)				

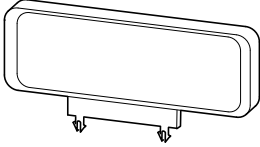




Notes

Circuit-breaker can also be installed in a lying position 90 ° left/right, with the handle still in the same position.

	For use with	Part no. Article no.	Price see price list	Std. pack	Notes
Rotary handle on circuit-breaker					
Complete with rotary drive					
Standard, black/grey					
	Lockable on the 0 position on the handle using up to 3 padlocks	LZM1(-4), LN1(-4)	NZM1-XDV 260125	1 off	NZM1(2)(3)-X...: Can also be combined with insulating surround. MODAN handle position detection by wire release can be retrofitted.
		LZM2(-4), LN2(-4)	NZM2-XDV 260127		
		LZM3(-4), LN3(-4)	NZM3-XDV 260129		
		LZM4(-4), LN4(-4)	NZM4-XDV 266608		
	Lockable on the on position on the handle using up to 3 padlocks.	LZM1(-4), LN1(-4)	NZM1-XDVG 285247		Can also be combined with insulating surround.
		LZM2(-4), LN2(-4)	NZM2-XDVG 285248		
Rotary handle on circuit breaker with door interlock					
Complete with rotary drive and insulating surround					
Standard, black/grey					
	Lockable on the 0 position on the handle using up to 3 padlocks, can also be modified to the I position. Also available with door interlock e.g. for MCC service distribution.	LZM1(-4), LN1(-4)	NZM1-XDTV 260131	1 off	Door interlock <ul style="list-style-type: none"> • In the ON position, can be defeated from the outside using a 1 mm pin • Not defeated in the locked OFF and ON positions • Door can be opened in OFF • Can only be switched ON when the door is closed
		LZM2(-4), LN2(-4)	NZM2-XDTV 260133		
Red-yellow for Emergency-Stop					
	Lockable on the 0 position on the handle using up to 3 padlocks. Also available with door interlock e.g. for MCC service distribution	LZM1(-4), LN1(-4)	NZM1-XDTVR 260142	1 off	
		LZM2(-4), LN2(-4)	NZM2-XDTVR 260144		

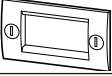
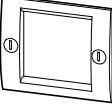
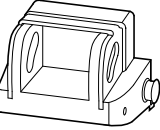

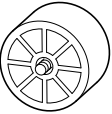
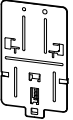

Ordering

NZM...-XRAV..., ZFS..., BPF...

For use with	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes	
External warning plate/designation label					
					
German/English	LZM1(-4), LN1(-4)	ZFS61/62-NZM7 272525	1 off	A bilingual external warning plate/designation label in German/English is already included in the main switch assembly kit.	
German	LZM2(-4), LN2(-4)	ZFS61-NZM7 051089			
English	LZM3(-4), LN3(-4)	ZFS62-NZM7 065957			
French	LZM4(-4), LN4(-4)	ZFS63-NZM7 065958			
Blank (for engraving or printing)		ZFS60-NZM7 065896			
Further languages		ZFS*-NZM7 999978		External warning plates are available in the following languages: 64 Bulgarian 73 Romanian 65 Danish 74 Russian 66 Finnish 75 Swedish 67 Dutch 76 Serbo-Croatian 68 Italian 77 Spanish 69 Greek 78 Czech 70 Norwegian 79 Turkish 71 Polish 80 Hungarian 72 Portuguese 81 Afrikaans To obtain the order number, insert the language code number into the type reference required. Ordering example External warning plate in Finnish: ZFS66-NZM7	
Lightning symbol Including terminal marking for main switch					
Small	 	LZM1(-4), LN1(-4) LZM2(-4), LN2(-4)	BPF-NZM7 217294	10 off	Included as standard in main switch assembly kit
Large	 	LZM3(-4), LN3(-4) LZM4(-4), LN4(-4)	BPF-NZM10 231363	10 off	

xEnergy

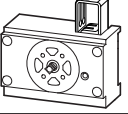
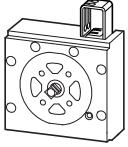
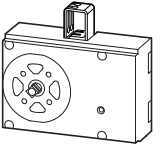

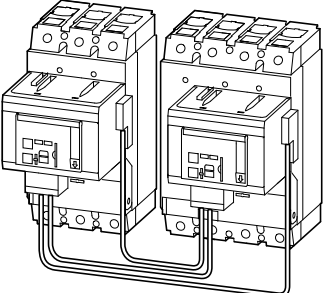
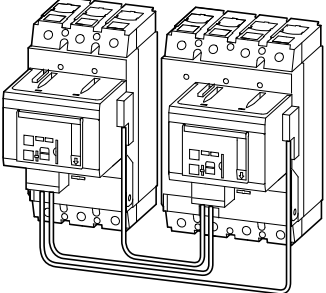
NZM...-XDZ, NZM...-XBR, NZM...-X...

	For use with	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Insulating surrounds					
For toggle lever, rotary handle with rotary drive and remote operator. Degree of protection IP40					
	LXM1(-4), LN1(-4)	NZM1-XBR 260195		1 off	For oblong cut-out on doors and enclosures with material thicknesses of 1.5 – 5 mm. External warning plate/designation label can be clipped on NZM4-XBR cannot be combined with rotary handle with rotary drive.
	LXM2(-4), LN2(-4)	NZM2-XBR 260197			
	LXM3(-4), LN3(-4)	NZM3-XBR 284645			
	LXM4(-4), LN4(-4)	NZM4-XBR 284646			
Toggle lever locking device					
Off position lockable using up to 3 padlocks (hasp thickness 4 – 8 mm)					
	LXM1(-4), LN1(-4)	NZM1-XKAV 260199		1 off	Cannot be combined with insulating surround.
	LXM2(-4), LN2(-4)	NZM2/3-XKAV 260201		1 off	
	LXM3(-4), LN3(-4)				
Spacers					
Enables fast and low-priced adjustment of differing frame sizes with/without rotary handle to the same front depth					
	LXM1(-4), LN1(-4) LXM2(-4), LN2(-4)	NZM1/2-XAB 260203		1 set	Grid depth 17.5 mm, M4 thread Type contains 4 off spacer Maximum component capacity: LXM1: 4 units per fixing screw, LXM2: 2 units per fixing screw 2 (LXM1) or 4 (LXM2) fixing screws contained per circuit-breaker
	LXM3(-4), LN3(-4) LXM4(-4), LN4(-4)	NZM3-XAB 260211		1 set	
Clip plate					
Enables snap-fit of the circuit-breaker to a DIN rail					
	LXM1(-4), LN1(-4)	NZM1-XC35 260213		1 off	For top-hat rail 35 mm
	LXM2, LN2	NZM2-XC75 260215		1 off	For top-hat rail 75 mm Not suitable for circuit-breakers with remote operator.

Ordering

NZM...XMV(R)(L), NZM-XBZ...

xEnergy

	For use with	Part no. Article no. when ordered separately	Price see price list	Std. pack	Notes
Mechanical interlocking of (door coupling) rotary handles					
	LZM1(-4), LN1(-4)	NZM1-XMV 281581		1 off	Rotary handles on switches or door coupling rotary handles are additionally required. Cannot be combined with paralleling mechanisms, side wall operators and remote operator as well as NZM4-XBR insulating surrounds. In order to establish a mechanical interlock at least 2 interlock modules are required. Possible combinations and interlock variants → engineering. Order Bowden cable separately.
	LZM2(-4), LN2(-4)	NZM2-XMV 281582			
	LZM3(-4), LN3(-4)	NZM3-XMV 281583			
	LZM4(-4), LN4(-4)	NZM4-XMV 281584			
Bowden cables					
	LZM1(-4), LN1(-4)	NZM-XBZ225 281585		1 off	
	LZM2(-4), LN2(-4)	NZM-XBZ600 281586			
	LZM3(-4), LN3(-4)	NZM-XBZ1000 281587			
	LZM4(-4), LN4(-4)				
Mechanical interlock for remote operator					
For 2 switches of the same or next frame size with each other. Mounting beside one another.					
	LZM2(-4), LN2(-4) +LZM2(-4), LN2(-4)	NZM2-XMVR 104543		1 off	Type contains parts for both switches. Remote operator also required. Maximum switching distance → engineering. Cannot be combined with rotary handles, door coupling rotary handles and early-make auxiliary contacts.
	LZM2(-4), LN2(-4) +LZM3(-4), LN3(-4)	NZM2/3-XMVR 104544			
	LZM3(-4), LN3(-4) +LZM3(-4), LN3(-4)	NZM3-XMVR 104545			
	LZM3(-4), LN3(-4) +LZM4(-4), LN4(-4)	NZM3/4-XMVR 104546			
	LZM4(-4), LN4(-4) +LZM4(-4), LN4(-4)	NZM4-XMVR 104547			
For 2 switches of the same or different type with opposed operation. Extra long Bowden cable for mounting one above the other or in adjacent enclosures.					
	LZM2(-4), LN2(-4) +LZM2(-4), LN2(-4)	NZM2-XMVRL 104548		1 off	Type contains parts for both switches. Remote operator also required. Maximum switching distance → engineering. Cannot be combined with rotary handles, door coupling rotary handles and early-make auxiliary contacts.
	LZM2(-4), LN2(-4) +LZM3(-4), LN3(-4)	NZM2/3-XMVRL 104549			
	LZM3(-4), LN3(-4) +LZM3(-4), LN3(-4)	NZM3-XMVRL 104550			
	LZM3(-4), LN3(-4) +LZM4(-4), LN4(-4)	NZM3/4-XMVRL 104551			
	LZM4(-4), LN4(-4) +LZM4(-4), LN4(-4)	NZM4-XMVRL 104552			

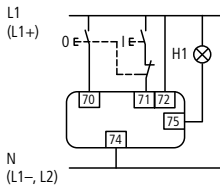
LZM2, LZM3, LZM4

xEnergy

	For use with	Rated control voltage	Part no. Article no. when ordered separately	Price see price list	Std. pack
		U_s V			
Remote operator					
For remote switching of circuit-breakers and switch-disconnectors. ON and OFF switching and resetting by means of two-wire or three-wire control Local switching by hand possible. Lockable in the 0 position of the remote operator with up to 3 padlocks (hasp thickness: 4 – 8 mm)					
Closing delay 110 - 170 ms, opening delay 110 - 170 ms					
	LZM2(-4) LN2(-4)	208 – 240 V 50/60 Hz	NZM2-XRD208-240AC 115391		1 off
		380 – 440 V 50/60 Hz	NZM2-XRD380-440AC 115392		
		24 – 30 V DC	NZM2-XRD24-30DC 115393		
Closing delay 60 - 100 ms, opening delay 300 - 3000 ms					
Can be synchronized					
	LZM2(-4) LN2(-4)	208 – 240 V 50/60 Hz	NZM2-XR208-240AC 259832		1 off
		380 – 440 V 50/60 Hz	NZM2-XR380-440AC 259834		
		24 – 30 V DC	NZM2-XR24-30DC 259836		
	LZM3(-4) LN(-4)	208 – 240 V 50/60 Hz	NZM3-XR208-240AC 259850		
		380 – 440 V 50/60 Hz	NZM3-XR380-440AC 259852		
		24 – 30 V DC	NZM3-XR24-30DC 259854		
	LZM4(-4) LN4(-4)	208 – 240 V 50/60 Hz	NZM4-XR208-240AC 266685		
		380 – 440 V 50/60 Hz	NZM4-XR380-440AC 266686		
		24 – 30 V DC	NZM4-XR24-30DC 266691		
Shroud for 4th pole					
Additional shroud for mounting the NZM2-XR... and NZM3-XR... on a 4-pole switch.					
	LZM2(-4), LN2-4		NZM2-XAVPR 266677		1 off
	LZM3-4, LN3-4		NZM3-XAVPR 266678		1 off
Protective cover for door cutout					
Transparent protective shroud to increase the degree of protection to IP54					
			RTR-NZM10 034825		1 off
Notes					
Two- and three-wire control, circuit diagram Engineering, Page 36					

2/3-wire control remote operator

Three-wire control



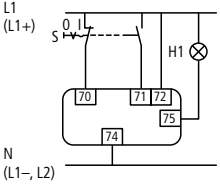
Terminal 70/71:

NZM-XR: Contact loading according to technical data

NZM2-XRD: Full current flows through the contact during make and break!

RMQ series contact elements can be used for the remote operators NZM2(3,4)-XR...

Two-wire control



Terminal 75:

NZM-XR: Operational readiness signal when the cover is closed, and not locked.

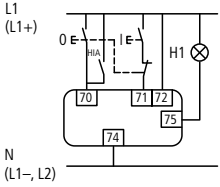
NZM2-XRD: Operational readiness signal when sliding switch set to Auto.

Sliding switch with three positions: Manual/Auto/Locked for reliable differentiation of operating positions.

AC-15: 400 V; 2 A

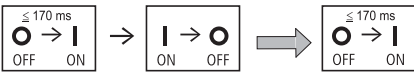
DC-13: 220 V; 0.2 A

Three-wire control with automatic reset to the 0 position after the switch has tripped



Switching cycle:

NZM2-XRD



NZM2-XR



NZM3-XR



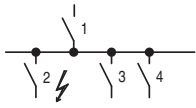
NZM4-XR



The time interval between OFF and ON is 3 seconds.

On commands received during the time interval are ignored within the first 3 seconds after switch off.

xEnergy



Incoming circuit-breaker

Selectivity 415 V AC

between circuit-breakers enables separate shut-down of faulty system sections.

Selectivity (discrimination) exists between incoming breaker 1 and outgoing breaker 2 if, only outgoing breaker 2 trips at position 2 during a short-circuit. System sections 3 and 4 continue to operate.

Incoming circuit-breaker (S1)

LZM...1-A...

Incoming circuit-breaker (S1)

LZM...2-A...

Outgoing circuit-breaker (S2)	I_n [A]	$I_{cu}(415V)$ [kA]	Incoming circuit-breaker (S1) LZM...1-A...								Incoming circuit-breaker (S1) LZM...2-A...			
			25(36)(50)								25(36)(50)			
			20...40	50	63	80	100	125	160	160	200	250	300	
Selectivity threshold I_s [kA] for selectivity between S2 and S1, overload and short-circuit release set to max. value														
FAZ-B(C)	0.5	15	T	T	T	T	T	T	T	T	T	T	T	T
	1	15	T	T	T	T	T	T	T	T	T	T	T	T
	2	15	2	T	T	T	T	T	T	T	T	T	T	T
	3	15	1.2	2	3	3	10	T	T	T	T	T	T	T
	4	15	1.2	2	3	3	8	T	T	T	T	T	T	T
	6	15	1.2	2	2.5	3	5	10	10	T	T	T	T	T
	10	15	1.2	1.5	2	2	4	10	10	10	10	10	10	10
	13	15	1	1.5	2	2	4	10	10	10	10	10	10	10
	16	15	1	1.2	1.5	2	3	8	8	10	10	10	10	10
	20	15	0.8	1.2	1.5	1.5	3	8	8	10	10	10	10	10
	25	15	0.7	1.2	1.5	1.5	3	7	7	10	10	10	10	10
	32	15	–	1.2	1	1.5	2	6	6	8	8	10	10	10
	40	15	–	–	1	1.5	2	5	5	7	7	10	10	10
	50	15	–	–	–	1.2	1.5	4	4	6	6	10	10	10
	63	15	–	–	–	–	1.5	3	3	6	6	10	10	10
PKZM0-...	0.16	100	T	T	T	T	T	T	T	T	T	T	T	T
	0.25	100	T	T	T	T	T	T	T	T	T	T	T	T
	0.4	100	T	T	T	T	T	T	T	T	T	T	T	T
	0.63	100	T	T	T	T	T	T	T	T	T	T	T	T
	1	100	T	T	T	T	T	T	T	T	T	T	T	T
	1.6	100	T	T	T	T	T	T	T	T	T	T	T	T
	2.5	100	T	T	T	T	T	T	T	T	T	T	T	T
	4	100	T	T	T	T	T	T	T	T	T	T	T	T
	6.3	100	4	5	5	T	T	T	T	T	T	T	T	T
	10	100	3	4	5	6	25	T	T	T	T	T	T	T
	12	50	3	4	5	6	25	T	T	T	T	T	T	T
	16	50	1.5	1.5	2	3	5	7	T	T	T	T	T	T
	20	50	0.8	1.5	1.5	2	3	5	T	T	T	T	T	T
	25	50	–	1	1.5	1.5	2.5	4	T	T	T	T	T	T
	32	50	–	–	1	1	2	3.5	T	T	T	T	T	T
PKE12/XTU(A)-...	1.2		0.4	0.5	0.6	0.8	1	1.2	T	T	T	T	T	T
	4.0		0.4	0.5	0.6	0.8	1	1.2	1.5	1.8	5	6	15	15
	12.0		0.4	0.5	0.6	0.8	1	1.2	1.3	1.6	3.5	4	9	9
PKE32/XTU(A)-...	4.0		–	0.5	0.6	0.8	1	1.2	1.3	1.8	5	6	15	15
	12		–	0.5	0.6	0.8	1	1.2	1.3	1.6	3.5	4	9	9
	32		–	0.5	0.6	0.8	1	1.2	1.3	1.6	2	2.5	3	3
PKE65/XTU(W)(A)-...	32		–	–	–	–	1	1.2	1.3	1.6	2	2.5	3	3
	65		–	–	–	–	1	1.2	1.3	1.6	2	2.5	3	3
PKE32/XTUCP(A)-...	36		–	0.5	0.6	0.8	1	1.2	1.3	1.6	2	2.5	3	3
PKE65/XTUCP(A)-...	65		–	–	–	–	1	1.2	1.3	1.6	2	2.5	3	3
PKZM4	16	100	0.5	0.8	0.8	0.8	2	5	5	5	5	5	5	5
	25	100	–	0.7	0.8	0.8	1.5	5	5	5	5	5	5	5
	32	50	–	–	0.8	0.8	1.5	4	4	4	4	4	4	4
	40	50	–	–	–	0.8	1.5	3	3	3	3	3	3	3
	50	50	–	–	–	–	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	58	50	–	–	–	–	–	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	63	50	–	–	–	–	–	2	2	2	2	2	2	2

Notes T: full selectivity

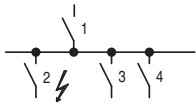
Incoming circuit-breaker (S1)

LZM...3-A...			LZM...3-AE...	LZM...4-AE...	
36(50)			36(50)	50	
320	400	500	630	800	1000

Selectivity threshold Is [kA] for selectivity between S2 and S1, overload and short-circuit release set to max. value

T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
T	T	T	T	T	T
6	17	T	T	T	T
4	11	T	T	T	T
6	17	T	T	T	T
4	11	T	T	T	T
2.5	3.2	5.2	35	T	T
2.5	3.2	5.2	9.5	25	T
2.5	3.2	5.2	9.5	25	T
2.5	3.2	5.2	35	T	T
2.5	3.2	5.2	9.5	25	T
10	13	30	45	T	T
6	10	15	25	42	T
5	7	12	18	30	45
5	7	12	18	30	45
5	7	10	18	30	45
4	6	10	18	25	40
4	6	10	18	25	40

Notes T: full selectivity



Incoming circuit-breaker
Outgoing circuit-breaker

Selectivity 415 V AC

between circuit-breakers enables separate shut-down of faulty system sections. Selectivity (discrimination) exists between incoming breaker 1 and outgoing breaker 2 if, only outgoing breaker 2 trips at position 2 during a short-circuit. System sections 3 and 4 continue to be operational.

**Incoming circuit-breaker (S1)
LZM...1-A...**

**Incoming circuit-breaker (S1)
LZM...2-A...**

		Incoming circuit-breaker (S1) LZM...1-A...							Incoming circuit-breaker (S1) LZM...2-A...				
		25(36)(50)							25(36)(50)				
		I_{cu} [kA]	20...40	50	63	80	100	125	160	160	200	250	300
		I_n [A]	Prospective short-circuit current (kA). Set the overload and short-circuit release of the incoming circuit-breaker to the max. value.										
Outgoing circuit-breaker (S2)	I_n [A]	$I_{cu}(415V)$ [kA]											
LZM...1-A...	20...40	25...50	–	–	0.5	0.7	0.8	1.5	1.5	1.5	2	3	3
	50	25...50	–	–	–	0.6	0.8	1.5	1.5	1.5	2	3	3
	63	25...50	–	–	–	–	0.8	1.5	1.5	1.5	2	3	3
	80	25...50	–	–	–	–	–	1.5	1.5	1.5	2	3	3
	100	25...50	–	–	–	–	–	–	1.5	1.5	2	3	3
	125	25...50	–	–	–	–	–	–	–	–	2	3	3
	160	25...50	–	–	–	–	–	–	–	–	–2	3	3
LZM...2-A...	160	25...50	–	–	–	–	–	–	–	–	–	2	2
	200	25...50	–	–	–	–	–	–	–	–	–	–	–
	250	25...50	–	–	–	–	–	–	–	–	–	–	–
	300	25...50	–	–	–	–	–	–	–	–	–	–	–
LZM...3-AE...	630	50...50	–	–	–	–	–	–	–	–	–	–	
LZM...4-AE...	800	50...50	–	–	–	–	–	–	–	–	–	–	
	1000	50...50	–	–	–	–	–	–	–	–	–	–	

Notes T: full selectivity

LZM...3-A...			LZM...3-AE...			LZM...4-AE...		
36(50)			36(50)			50		
320	400	500	630			800	1000	
Prospective short-circuit current (kA). Set the overload and short-circuit release of the incoming circuit-breaker to the max. value.								
4	6	7	20			T	T	
4	6	7	20			T	T	
4	6	7	15			T	T	
4	6	7	15			T	T	
4	6	7	15			T	T	
4	6	7	15			T	T	
4	6	7	15			T	T	
4	5	6	10			T	T	
-	5	6	10			T	T	
-	5	6	10			T	T	
-	5	6	10			T	T	
-	-	-	-			T	T	
-	-	-	-			-	-	
-	-	-	-			-	-	

Notes T: full selectivity

Protection of PVC insulated cables against thermal overload with short-circuits

According to VDE 0100 part 430 cables and conductors must be protected against short-circuit and overload. The overload protection is obtained by using LZM circuit-breakers with settable, current-dependent, delayed overload release.

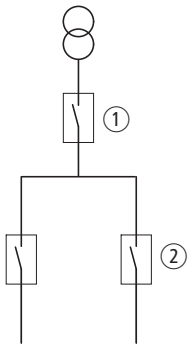
Short-circuit protection is provided by adjustable instantaneous releases, which open the main contacts in less than 25ms. The short-circuit total opening time restricts the temperature rise of the cable to a minimum.

The tables indicate the minimum conductor cross-section reliably protected by circuit-breakers during a short-circuit. (Operating voltage $U_N=415V$)

	Min. protected cross-section mm ² copper
LZM...1(-4)-...20	6
LZM...1(-4)-...25 ... 160	10
LZM...2(-4)-...20 ... 300	10
LZM...3(-4)-...250 ... 630	16
LZM...4(-4)-...630 ... 1000	95

Back-up protection

between LZM(N)(S) incoming circuit-breaker and LZM(B)(C)(N) outgoing circuit-breaker



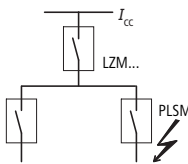
		Incoming circuit-breaker ①					
		LZM1		LZM2		LZM3	
		up to 160 A 25 kA		up to 300 A 25 kA		up to 630 A 50 kA	
		36 kA		36 kA			
Outgoing circuit-breaker ②							
	$I_{cu}(415V)$	I_n					
LZMB1	36 kA	up to 160 A	25	36	25	36	50
LZMC1	50 kA	up to 160 A	–	36	–	36	50
LZMB2	25 kA	up to 300 A	25	36	25	36	50
LZMC2	36 kA	up to 300 A	–	36	–	36	50
LZMC3	36 kA	up to 630 A	–	–	–	–	50
LZMN3	50 kA	up to 630 A	–	–	–	–	50

Where the prospective fault current at the point of installation of circuit-breakers is very high, it is conventional to use LZMN current-limiting circuit-breakers. An attractively priced alternative is to fit a LZMN current-limiting circuit-breaker upstream of LZMB(C) standard circuit-breakers, if the fault level is too high for LZMB(C) switches.

The table shows which current-limiting circuit-breaker LZMN in combination with LZMB(C) are to be used to provide protection at the network locations with high short-circuit capacities.

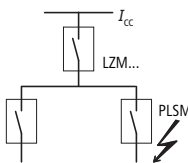
The selectivity limit is determined by the response current of the non-delayed short-circuit release in the upstream incoming circuit-breaker. In many applications this is sufficient.

between LZM...1-A... incoming circuit-breaker and FAZ-B(C)/PLSM-B(C)... outgoing circuit-breaker



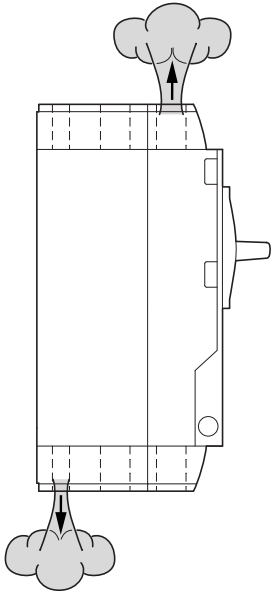
Outgoing circuit-breaker	Outgoing circuit-breaker	
	LZMB2-A...	LZMC(N)1-A...
FAZ-B(C)...		
0,5–16	25kA	30kA
20–40	20kA	20kA
50, 63	15kA	15kA
PLSM-B(C)...(/...)		
0,5–16	25kA	30kA
20–40	20kA	20kA
50, 63	15kA	15kA

between LZM...2-A... incoming circuit-breaker and FAZ-B(C)/PLSM-B(C)... outgoing circuit-breaker



Outgoing circuit-breaker	Incoming circuit-breaker	
	LZMB2-A...	LZMN2-A...
FAZ-B(C)...		
0,5–10	25 kA	50 kA
13–32	25 kA	30 kA
40–63	20 kA	20 kA
PLSM-B(C)...(/...)		
0,5–10	25 kA	50 kA
13–32	25 kA	30 kA
40–63	20 kA	20 kA

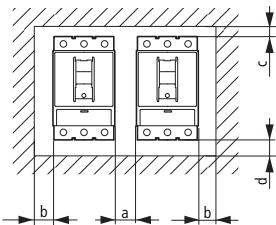
Direction of blow-out



	Top, front	Bottom, rear
LZM1	X	–
LZM2 ¹⁾	X	X
LZM3	X	X
LZM4	X	–

¹⁾ LZM2B(C) – A ... as LZM1

Minimum clearances



between two adjacently mounted switches

Minimum clearance a in mm

	LZM1	LZM2	LZM3	LZM4
LZM1	0	5	5	15
LZM2	5	5	5	15
LZM3	5	5	5	15
LZM4	15	15	15	15

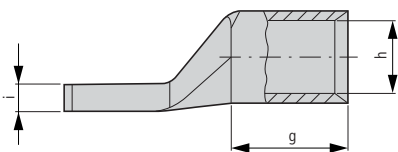
between switch and other parts

Minimum clearances in mm

	b	c	d
	≤ 440 V	≤ 440 V	≤ 440 V
LZM1	0	30	0
LZM2 ¹⁾	5	20	35
LZM3	5	30	60
LZM4	15	50	0

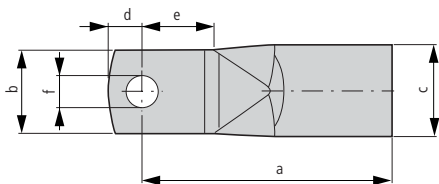
¹⁾ LZM2B(C) – A ... c = 20 mm, d = 0 mm

Dimensions



For pressing the cable lugs a press tool K22, HK60/22 or EK22 from the company Klauke is necessary with the following press inserts:

- R22/95 for 95 mm²
- R22/120 for 120 mm²
- R22/150 for 150 mm²
- R22/185 for 185 mm²
- R22/240 for 240 mm²

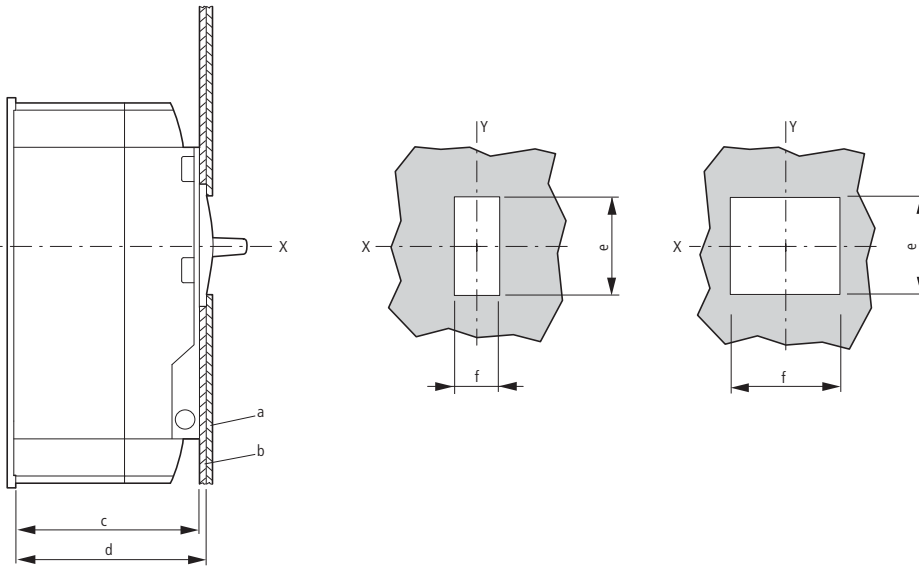


Cable lug	For use with	Rated cross section mm ²	Terminal bolt ø	Dimensions in mm									
				a	b	c	d	e	f	g	h	i	
KS95-NZM7	LZM2	95	M8	53 ⁺²	23 ^{±0.5}	18 ^{±0.2}	10 ^{±1}	19	8,5	25	13,5	4,4	
KS120-NZM7	LZM2	120	M8	56 ⁺²	23 ^{±0.5}	19.5 ^{±0.2}	10 ^{±1}	19	8,5	26	15	4,4	
KS150-NZM7	LZM2	150	M8	61 ⁺²	23 ^{±0.5}	21 ^{±0.2}	10 ^{±1}	19	8,5	30	16,5	4,4	
NZM2-XKS185	LZM2	185	M8	65 ^{±1.5}	22 ^{±1}	24 ^{±0.3}	9 ^{+1.5} _{-0.5}	19 ^{+2.5} _{-0.5}	8.5 ^{+0.05} _{-0.1}	30 ^{±2}	19 ^{±0.4}	7	
NZM3-XKS185	LZM3, LZM4	185	M10	65	24,5	24	11,5	18	10,5	30	19	7.0 ^{±0.8}	
NZM3-XKS240	LZM3, LZM4	240	M10	72	31	26	11,5	19	10,5	35	21	5.0 ^{±0.8}	

Front cut-out

Cut-out a
toggle lever

Cut-out b
rotary handle,
remote operator

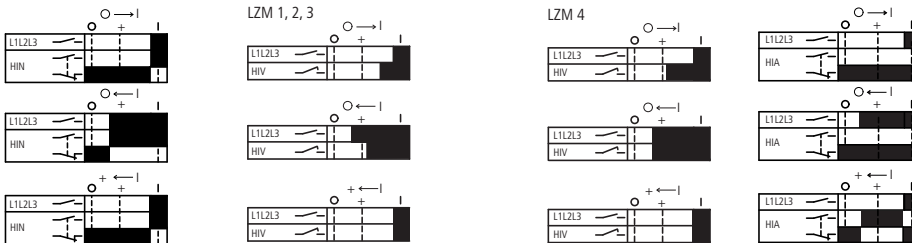


	Distance from mounting plate and door cutout		Cut-out a		Cut-out b	
	c mm	d mm	e mm	f mm	e mm	f mm
LZM1	68	73	40	23	46	91
LZM2	103	108	79	36	96	101
LZM3	120.5	125.5	79	36	96	136
LZM4	138	146	101	105	118	204

Standard auxiliary contact (HIN)

Early-make auxiliary contact (HIV)

Trip-indicating auxiliary contact (HIA)



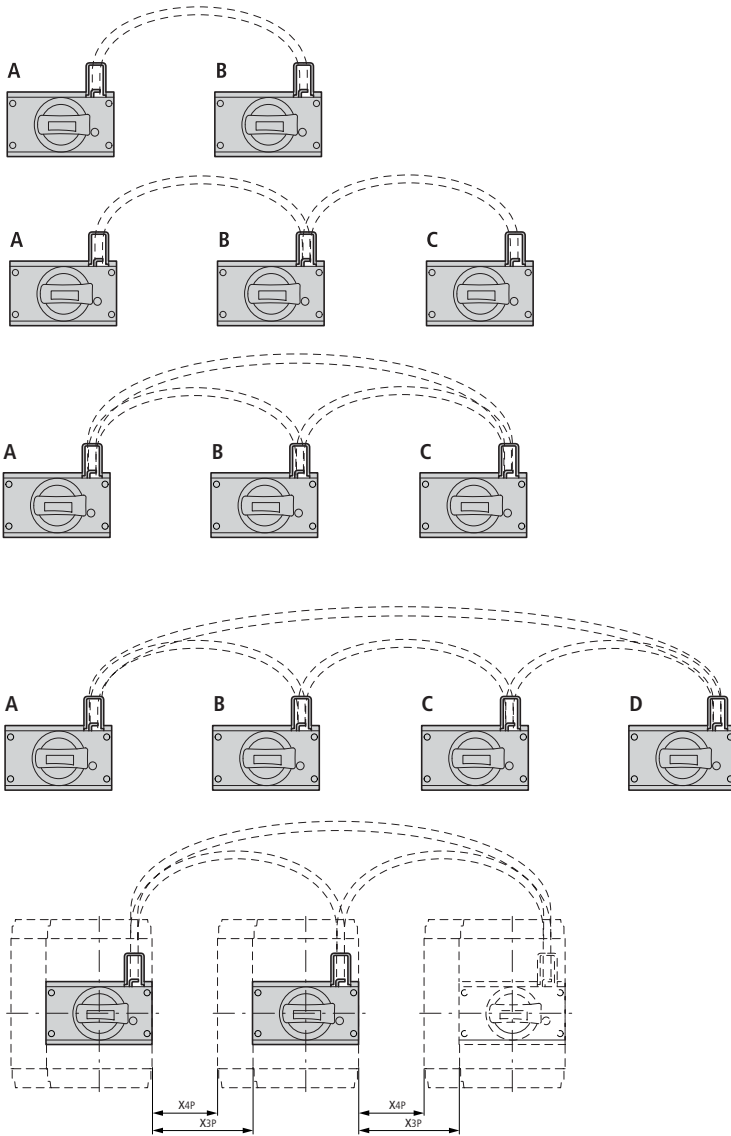
- 0 → I Switching on
- 0 ← I Switching off
- + ← I Trip

- Contact closed
- Contact open

Notes

If early-make contacts are required in combination with shunt or undervoltage releases, please select the combination type in the "Release" section.

Interlocking variants and combination options



A	B
OFF	OFF
ON/TRIP	ON
ON	ON/TRIP

A	B	C
OFF	OFF	OFF
ON	ON/TRIP	ON
ON/TRIP	ON	ON/TRIP

A	B	C
OFF	OFF	OFF
ON/TRIP	ON	ON
ON	ON/TRIP	ON
ON	ON	ON/TRIP

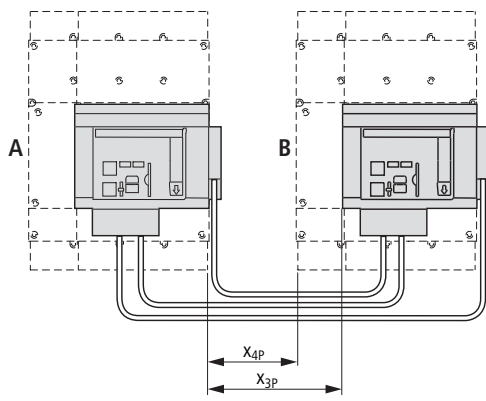
A	B	C	D
OFF	OFF	OFF	OFF
ON/TRIP	ON	ON/TRIP	ON
ON	ON/TRIP	ON	ON/TRIP

= Switch clearance 3 pole
 = Switch clearance 4 pole

NZM-XBZ225		right switch							
max. switch clearance		LZM1		LZM2		LZM3		LZM4	
left switch		X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}
		mm	mm	mm	mm	mm	mm	mm	mm
LZM1	3/4 pole	135	105	120	85	135	90	125	80
LZM2	3/4 pole	135	105	120	85	135	90	125	80
LZM3	3/4 pole	90	75	75	35	85	40	80	45
LZM4	3/4 pole	50	35	40	15	25	-	15	-

NZM-XBZ600		right switch							
max. switch clearance		LZM1		LZM2		LZM3		LZM4	
left switch		X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}
		mm	mm	mm	mm	mm	mm	mm	mm
LZM1	3/4 pole	510	480	495	460	510	465	475	405
LZM2	3/4 pole	510	480	495	460	510	465	475	405
LZM3	3/4 pole	460	430	450	410	460	415	460	390
LZM4	3/4 pole	400	370	380	340	400	375	390	320

NZM-XBZ1000		right switch							
max. switch clearance		LZM1		LZM2		LZM3		LZM4	
left switch		X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}	X _{3P}	X _{4P}
		mm	mm	mm	mm	mm	mm	mm	mm
LZM1	3/4 pole	910	880	895	860	910	865	865	795
LZM2	3/4 pole	910	880	895	860	910	865	865	795
LZM3	3/4 pole	820	790	850	810	860	815	860	790
LZM4	3/4 pole	750	720	730	700	800	775	790	720

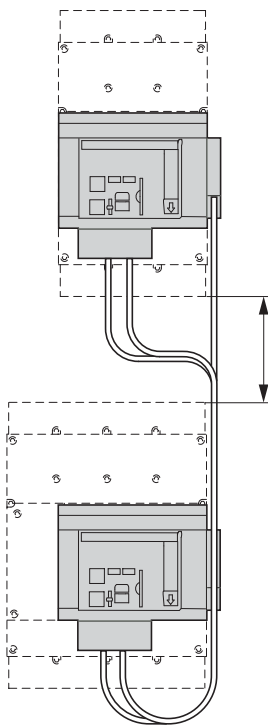


XMVR mechanical interlock (Mounting adjacent)

NZM...-XMVR		right switch					
max. switch clearance		LZM2	LZM3		LZM4		
		X _{3p}	X _{4p}	X _{3p}	X _{4p}	X _{3p}	X _{4p}
left switch		mm	mm	mm	mm	mm	mm
LZM2	3/4 pole	130	95	95	50	–	–
LZM3	3/4 pole	–	–	135	90	155	85
LZM4	3/4 pole	–	–	–	–	120	50

X_{3P} = max. switch clearance 3 pole

X_{4P} = max. switch clearance 4 pole



XMVRL mechanical interlock (Mounting in adjacent enclosures)

NZM...-XMVRL		right switch					
max. switch clearance		LZM2	LZM3		LZM4		
		X _{3p}	X _{4p}	X _{3p}	X _{4p}	X _{3p}	X _{4p}
left switch		mm	mm	mm	mm	mm	mm
LZM2	3/4 pole	350	315	420	385	–	–
LZM3	3/4 pole	–	–	400	365	460	390
LZM4	3/4 pole	–	–	–	–	420	350

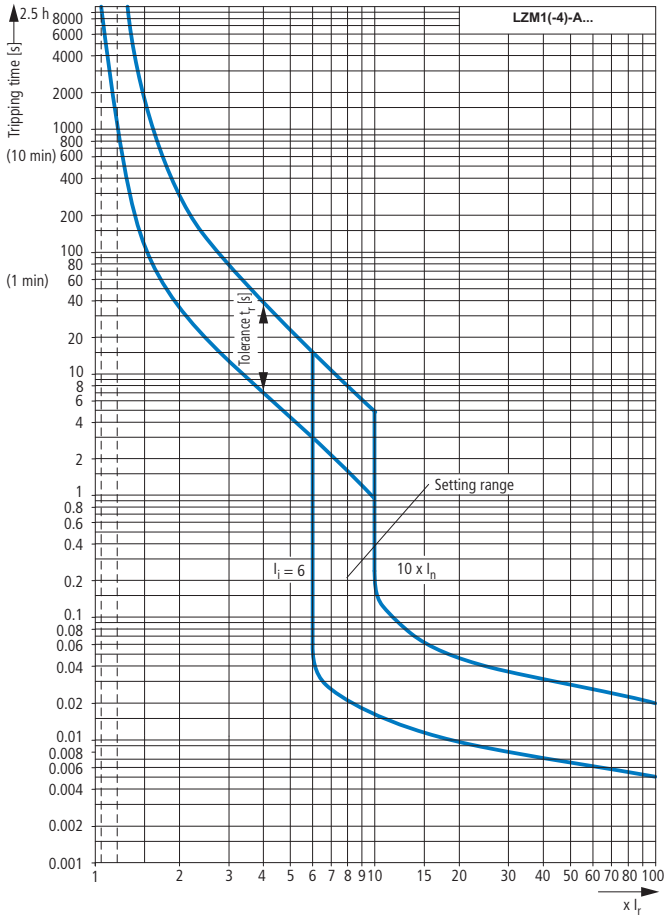
XMVRL mechanical interlock (Mounting one above the other)

NZM...-XMVRL		Switch top		
max. switch clearance		LZM2	LZM3	LZM4
		3/4 pole	3/4 pole	3/4 pole
Switch bottom		mm	mm	mm
LZM2	3/4 pole	220	225	–
LZM3	3/4 pole	–	220	230
LZM4	3/4 pole	–	–	230

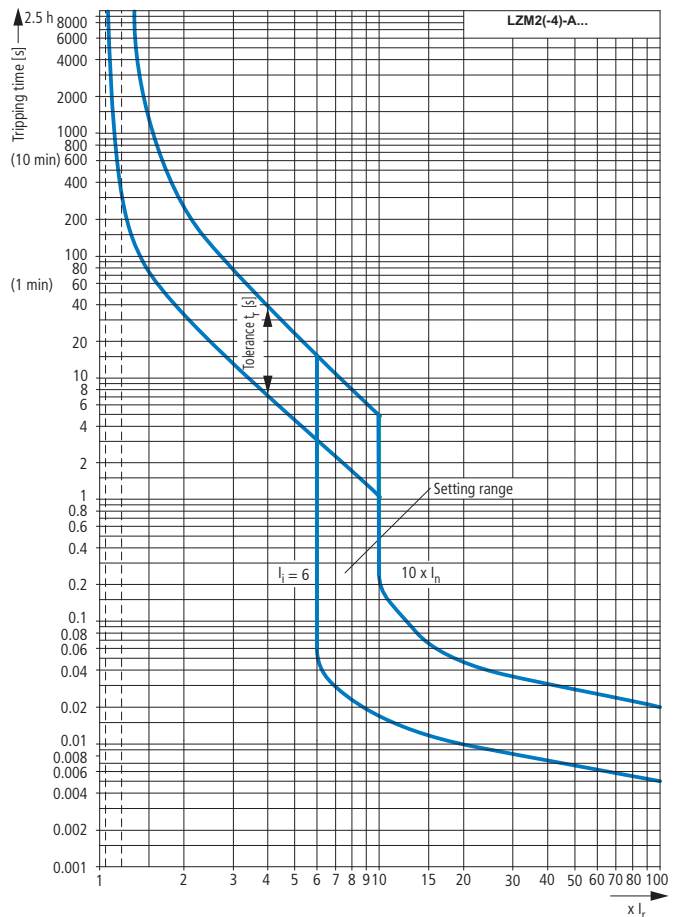
Y = max. switch clearance

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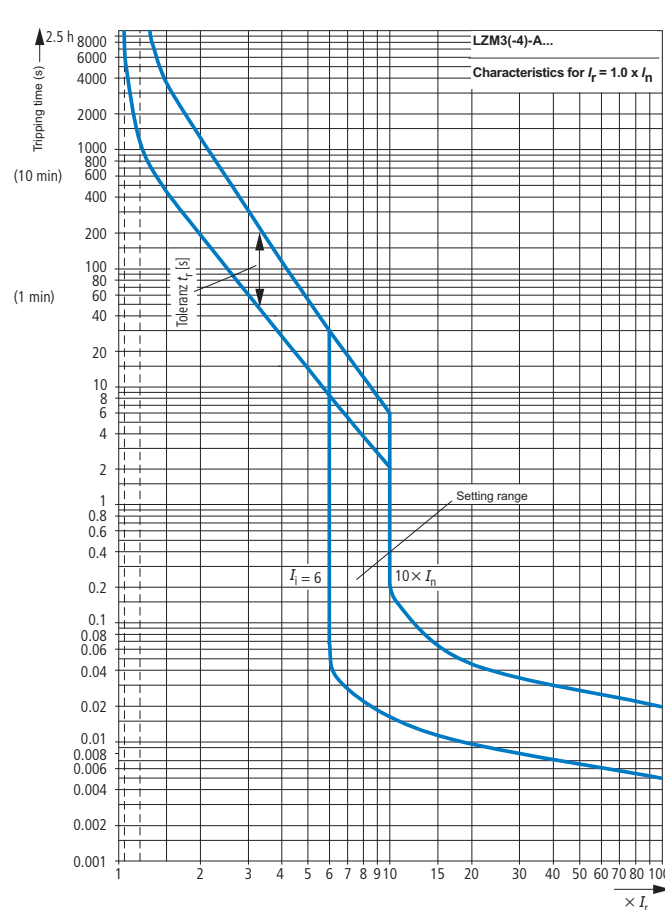
System and line protection with LZM1



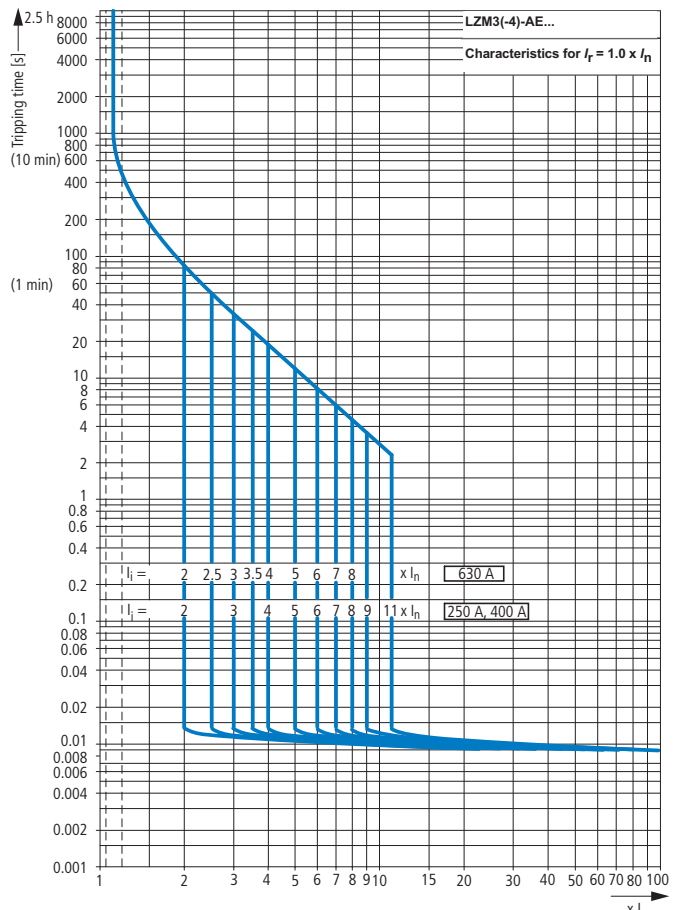
System and line protection with LZM2



System and line protection with LZM3...-A...

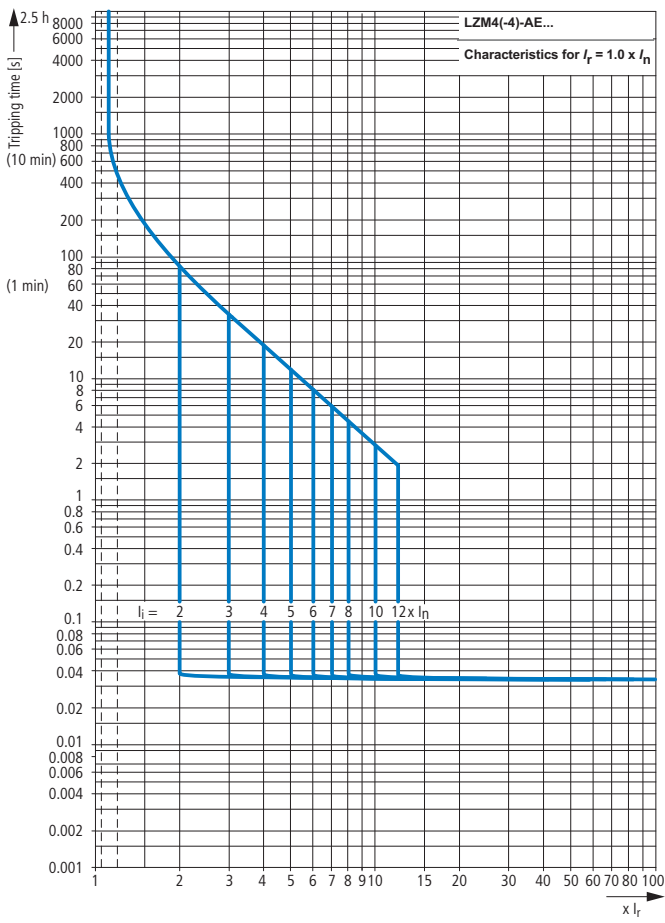


System and line protection with LZM3...-AE...

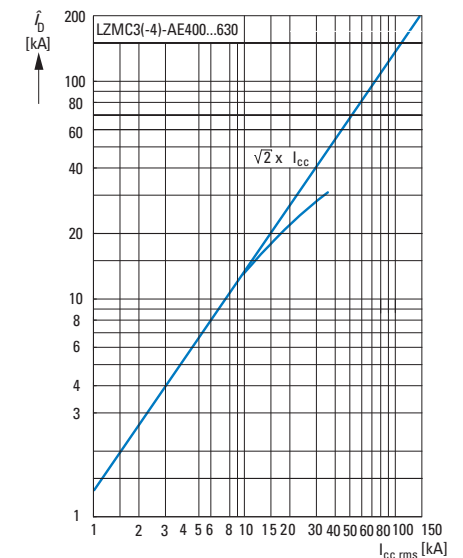
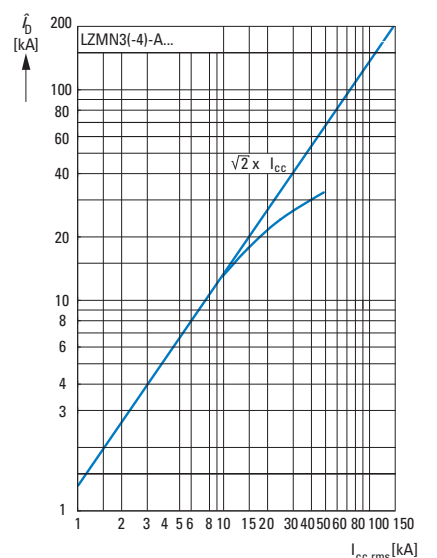
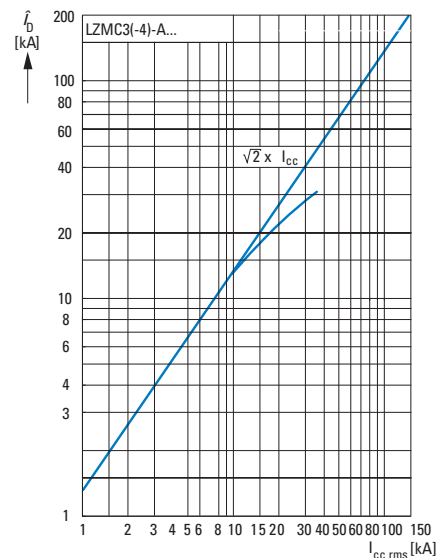
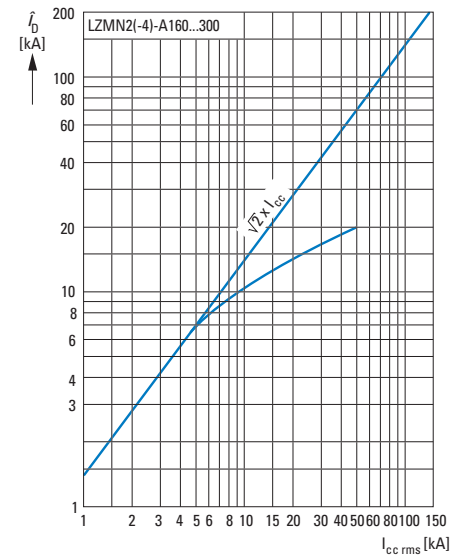
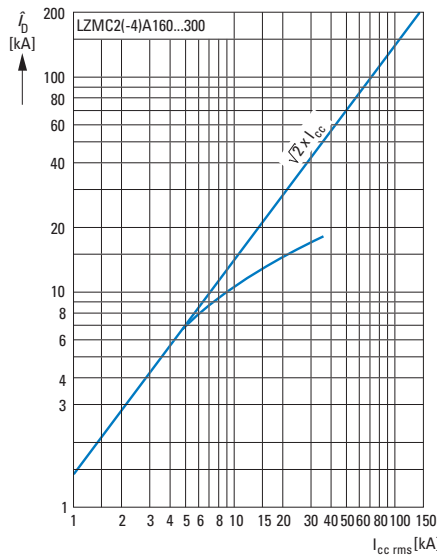
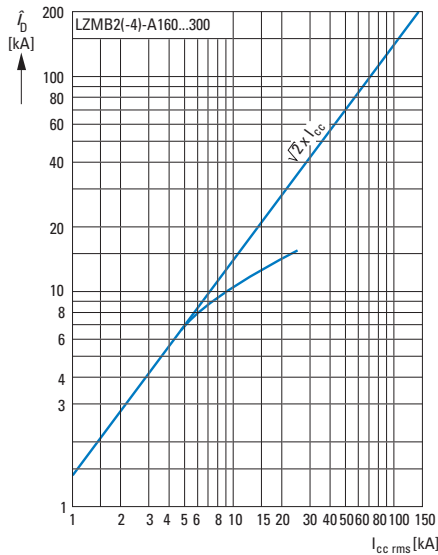
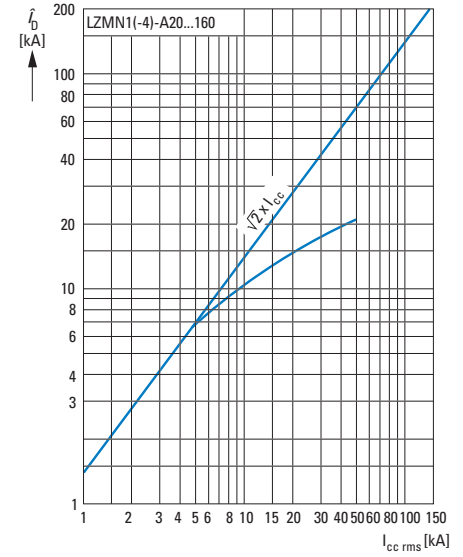
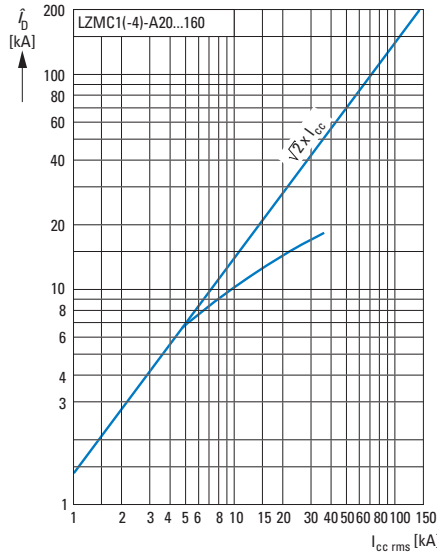
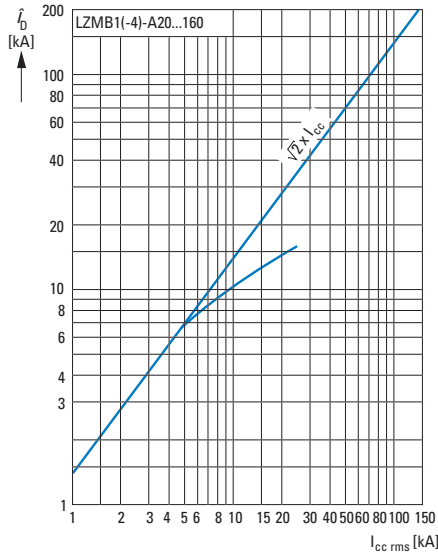


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System and line protection with LZM4

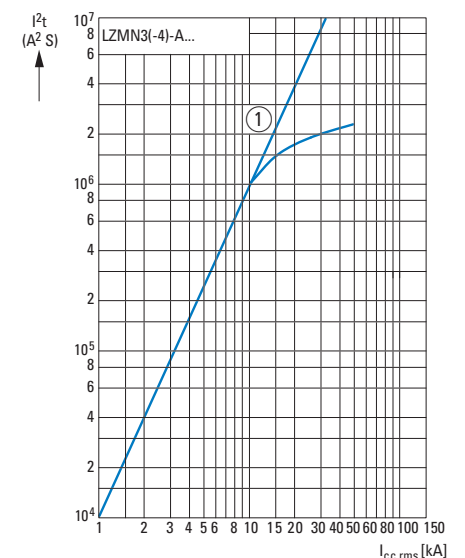
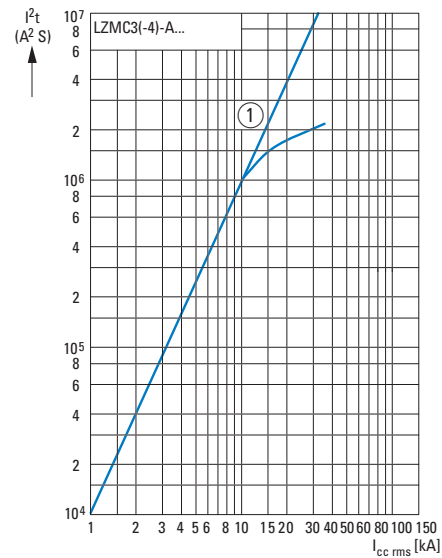
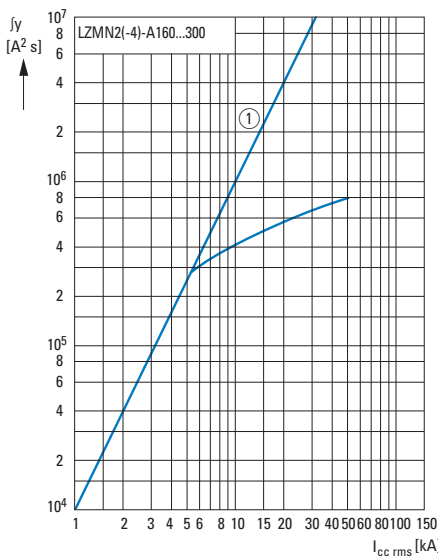
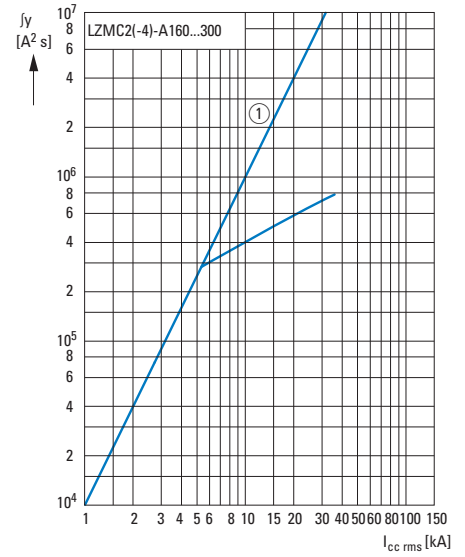
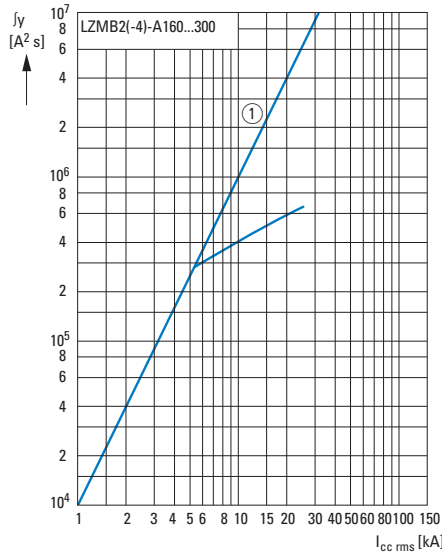
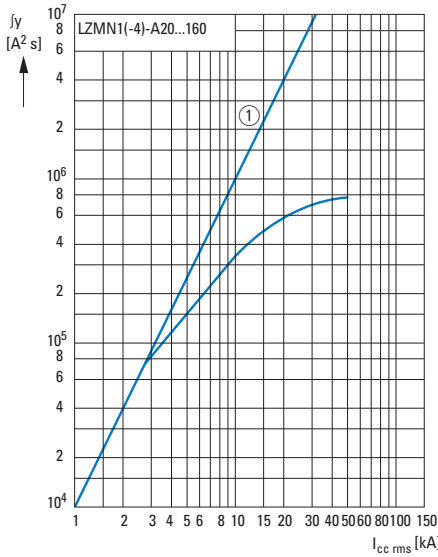
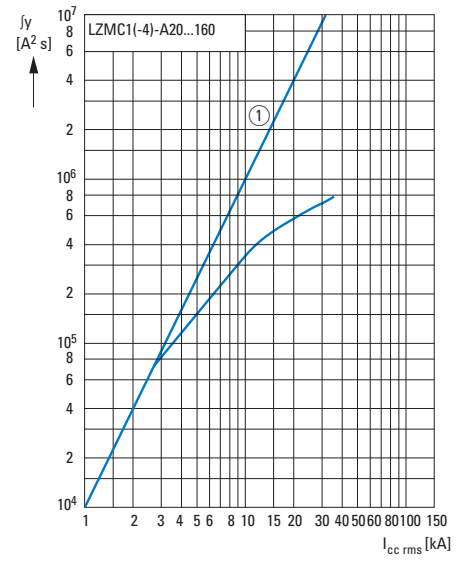
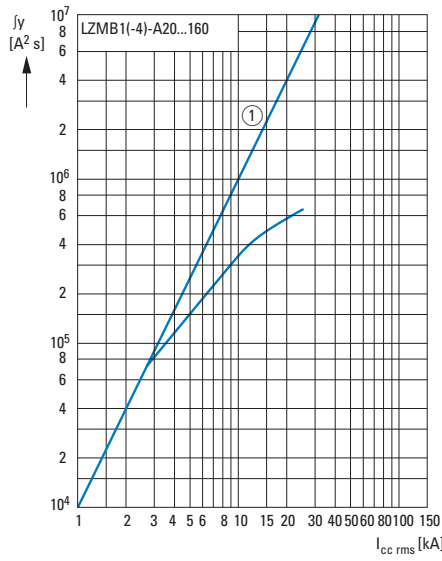
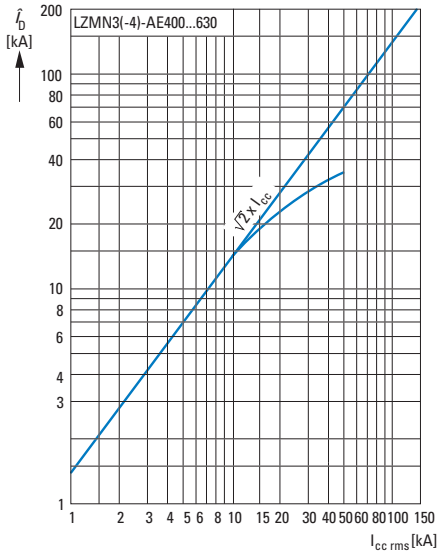


Let-through current \hat{i}_D



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Let-through energy \hat{I}^2t



				Rated uninterrupted current max. 160 A		
				LZMB1	LZMC1	LZMN1
General						
Standards				IEC/EN 60947		
Protection against direct contact				Finger and back of hand proof to VDE 0106 Part 100		
Climatic proofing				Damp heat, constant, according to IEC 60068-2-78 Damp heat, cyclical to IEC 60068-2-30		
Ambient temperature						
Storage				°C -25...+70		
Operation				°C -25...+70		
Mechanical shock resistance (IEC/EN 60068-2-27)				20 (half-sinusoidal shock 20 ms)		
Safe isolation to VDE 0106 Part 101 and Part 101/A1						
Between auxiliary contacts and main contacts				V AC 500		
between the auxiliary contacts				V AC 300		
Mounting position				Vertical and 90° in all directions		
Direction of incoming supply				As required		
Degree of protection						
Device				In the operating controls area: IP20 (basic degree of protection)		
Enclosures				With insulating surround: IP40, with door coupling rotary handle: IP66		
Terminals				Tunnel terminal: IP10 Phase isolator and strip terminal: IP00		
Circuit-breakers						
Rated impulse withstand voltage U_{imp}						
Main contacts				V 6000		
Auxiliary contacts				V 6000		
Rated operational voltage				U_e V AC 440		
Overvoltage category/pollution degree				III/3		
Rated insulation voltage				U_i V 690		
Switching capacity						
Rated short-circuit making capacity						
240 V				I_{cm} kA 63		
400/415 V				I_{cm} kA 53		
440 V				I_{cm} kA 53		
Rated short-circuit breaking capacity I_{cn}						
I_{cu} to IEC/EN 60947 operating sequence O-t-CO				240 V 50/60 Hz I_{cu} kA 30		
				400/415 V 50/60 Hz I_{cu} kA 25		
				440 V 50/60 Hz I_{cu} kA 12,5		
I_{cs} to IEC/EN 60947 operating sequence O-t-CO-t-CO				240 V 50/60 Hz I_{cs} kA 30		
				400/415 V 50/60 Hz I_{cs} kA 25		
				440 V 50/60 Hz I_{cs} kA 9		
Maximum low-voltage h.b.c. fuse ¹⁾				A gG/gL LZM.1-...20...100: 200 LZM.1-...125, 160: 315		
Utilization category to IEC/EN 60947-2				A		
Rated short-time withstand current						
t = 0,3 s				I_{cw} kA -		
t = 1 s				I_{cw} kA -		
Rated making and breaking capacity						
Rated operational current				AC-1 400/415 V 50/60 Hz I_e A 160		
Lifespan, mechanical				Operations 10000		
Maximum operating frequency				Ops/h 120		
Lifespan, electrical						
				AC-1 400/415 V 50/60 Hz Operations 5000		
Current heat loss at I_U ²⁾				W 36.1		
Total opening delay at short-circuit				ms < 10		

Notes¹⁾ Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker²⁾ For current heat loss the specification refers to the maximum nominal current of the frame size

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LZM...1, LZM...2, LZM...3, LZM...4

Rated uninterrupted current max. 300 A			Rated uninterrupted current max. 630 A		Rated uninterrupted current max. 1000 A
LZMB2	LZMC2	LZMN2	LZMC3	LZMN3	LZMN4
IEC/EN 60947,					
Finger and back of hand proof to VDE 0106 Part 100					
Damp heat, constant, according to IEC 60068-2-78					
Damp heat, cyclical to IEC 60068-2-30					
-25...+70					
-25...+70					
20 (half-sinusoidal shock 20 ms)					
500					
300					
Vertical and 90° in all directions					
As required					
In the operating controls area: IP20 (basic degree of protection)					
With insulating surround: IP40, with door coupling rotary handle: IP66					
Tunnel terminal: IP10					
Phase isolator and strip terminal: IP00					
8000	8000	8000	8000	8000	8000
6000	6000	6000	6000	6000	6000
440	440	440	440	440	440
III/3	III/3	III/3	III/3	III/3	III/3
690	690	690	690	1000	1000
63	121	187	121	187	105
53	76	105	76	105	105
53	63	74	63	74	74
30	55	85	55	85	50
25	36	50	36	50	50
12.5	18	25	18	25	25
30	55	85	55	85	37
25	36	50	36	50	37
9	13	18	13	18	18
355	355	355	LZMN3-...250, 400: 400 LZMN3-...500, 630: 630		
A	A	A	A	A	B
-	-	1.9	3.3	3.3	19.2
-	-	1.9	3.3	3.3	19.2
300	300	300	630	630	1000
10000	10000	10000	7500	7500	5000
120	120	120	60	60	60
5000	5000	7500	2500	2500	1500
58.3	58.3	58.3	119	119	111
< 10	< 10	< 10	< 10	< 10	< 25

			LN1(-4) max. 160 A	LN2(-4) max. 250 A	LN3(-4) max. 630 A	LN4(-4) max. 1000 A
Switch-disconnectors						
Rated impulse withstand voltage						
Main contacts	U_{imp}	V	6000	8000	8000	8000
Auxiliary contacts	U_{imp}	V	6000	6000	6000	6000
Rated operational voltage						
	U_e	V AC	690	690	690	690
Rated uninterrupted current max.						
IEC/EN 60947-2 annex L	I_u	A	160	250	630	1000
Overvoltage category/pollution degree						
			III/3	III/3	III/3	III/3
Rated Insulation voltage						
	U_i	V AC	690	690	1000	1000
For use in IT electrical power networks						
		V	690	690	690	525
Switching capacity						
Rated short-circuit making capacity						
	I_{cm}	kA	2.8	5.5	25	53
Rated short-time withstand current						
t = 0.3 s	I_{cw}	kA	2	3.5	12	25
t = 1 s	I_{cw}	kA	2	3.5	12	25
Rated conditional short-circuit current						
With back-up fuse		A gG/gL	PN1(N1)63...125: 125 PN1(N1)-160: 160	PN2(N2)-160...250: 250	PN3(N3)-400...630: 630	N4-630...1000: 2 x 500
400 ... 415 V		kA	100	100	100	100
With downstream fuse		A gG/gL	LN1-63...125: 125 LN1-160: 160	LN2-160...250: 250	LN3-400...630: 630	LN4-630...1000: 2 x 500
400 ... 415 V		kA	100	100	100	100
Rated making and breaking capacity						
Rated operational current, AC-23B						
415 V	I_e	A	160	250	630	1000
Lifespan, mechanical						
	Operations		10000	10000	7500	5000
Maximum operating frequency						
	Ops./h		120	120	60	60
Lifespan, electrical to IEC/EN 60947-4-1 section B						
AC-1						
	400/415 V	Operations	5000	5000	2500	1500
AC-23B						
	400/415 V	Operations	200	200	200	100
Current heat loss at I_u ¹⁾						
		W	29.2	48	107	111

Notes

¹⁾ The current heat loss ratings refer to the maximum current rating of the frame size.

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Device Type	Release Type	Response values of the overload release at temperatures deviating from the reference temperatures						
		Temperature compensation coefficient						
		20 °C	30 °C	40 °C	50 °C	60 °C	65 °C	70 °C
Thermomagnetic release (TM)								
System protection		Protection of systems (reference temperature 40 °C)						
LZM...1(-4)-A15...80	TM	1.14	1.07	1	0.93	0.86	0.83	0.79
LZM...1(-4)-A90...125	TM	1.14	1.07	1	0.93	0.86	0.83	0.79
LZM...1(-4)-A160	TM	1.08	1.04	1	0.96	0.92	0.90	0.88
LZM...2(-4)-A15...200	TM	1.04	1.02	1	0.98	0.96	0.95	0.94
LZM...2(-4)-A250	TM	1.04	1.02	1	0.98	0.96	0.95	0.94
LZM...3(-4)-A250...500	TM	1.12	1.06	1	0.94	0.88	0.85	0.82

Notes With temperatures which deviate from the reference temperature, a slight change of the overload protection properties occurs. In order to determine the release time using the tripping characteristics the temperature compensation coefficient in accordance with the table must be considered.
 Example: An LZM1-A100 is calibrated for a reference temperature of 40 °C.
 What happens when it is operated at an ambient temperature of 60 °C?
 At 60 °C, the temperature compensation coefficient of 0.86 results in a reduced operating current of $I_r = 100 \text{ A} \times 0.86 = 86 \text{ A}$.
 In other words at an ambient temperature of 60 °C the LZM1-A100 trips as if it were set to 86 A.

Device Type	Release Type	Reduction of the rated operational current (derating) under particular ambient conditions (according to IEC 947)						
		Derating coefficient						
		20 °C	30 °C	40 °C	50 °C	60 °C	65 °C	70 °C
Thermomagnetic release (TM)								
System protection		Protection of systems (reference temperature 40 °C)						
LZM...1(-4)-A15...80	TM	1	1	1	1	1	1	1
LZM...1(-4)-A90...125	TM	1	1	1	1	0.86	0.83	0.80
LZM...1(-4)-A160	TM	1	1	1	0.95	0.90	0.85	0.80
LZM...2(-4)-A15...200	TM	1	1	1	1	1	1	1
LZM...2(-4)-A250	TM	1	1	1	1	0.90	0.85	0.80
LZM...3(-4)-A250...500	TM	1	1	1	0.94	0.88	0.85	0.82
Electronic release (E)								
System protection								
LZM...3(-4)-AE630	E	1	1	1	1	0.90	0.85	0.80
LZM...4(-4)-AE800...1000	E	1	1	1	1	1	1	1

Notes The derating coefficient must be considered in accordance with the following table in order to determine the maximum permissible current loading at different ambient temperatures.
 Example: An LZM2-A250 should be operated at an ambient temperature of 65 °C.
 How high is the permissible rated operational current I_b ?
 At 65 °C the derating coefficient is 0.85, this means $I_b = 250 \text{ A} \times 0.85 = 212.5 \text{ A}$.
 The LZM2-A250 may be operated at an ambient temperature of 65 °C with a maximum $I_b = 212.5 \text{ A}$.

Weight	kg
Circuit-breaker	
LZM...1-...	1.046
LZM...1-4-...	1.325
LZM...2-...	2.345
LZM...2-4-...	3.5
LZM...3-...	6.34
LZM...3-4-...	8.4
LZM...4-...	21
LZM...4-4-...	27

LZM1, LZM2, LZM3, LZM4

LZM up to 500 A with thermomagnetic release (3- and 4-pole)

I_n [A]	LZM1-A...		LZM2-A...		LZM3-A	
	P [W]	R [μ Ohm]	R [W]	P [μ Ohm]	R [W]	P [μ Ohm]
20	9.8	8180	5.1	4250	–	–
25	8.8	4680	8	4250	–	–
26	–	–	–	–	–	–
30	–	–	–	–	–	–
32	9.3	3030	9.6	3140	–	–
33	–	–	–	–	–	–
35	–	–	–	–	–	–
40	10.7	2220	14	2800	–	–
45	–	–	–	–	–	–
50	13.2	1760	17	2270	–	–
60	–	–	–	–	–	–
63	14.2	1190	20.2	1700	–	–
70	–	–	–	–	–	–
80	16.3	850	20.5	1070	–	–
90	–	–	–	–	–	–
100	21.9	730	25.7	855	–	–
110	–	–	–	–	–	–
125	26.7	570	27.8	589	–	–
150	–	–	–	–	–	–
160	36.1	460	38.4	427	–	–
175	–	–	–	–	–	–
200	–	–	48	332	–	–
225	–	–	–	–	–	–
250	–	–	58.1	310	68	384
300	–	–	83.7	310	79	256
400	–	–	–	–	72	151
500	–	–	–	–	93	124

Notes

The values stated in the table apply for 3- and 4-pole fixed mounted devices with an equal load distribution.
 On 4-pole devices the current in the N-conductor is equal to zero.
 The total resistive load is the measured value for a 3-pole or a 4-pole switch.
 The total heat dissipation is the value measured at I_n , 50/60Hz for a 3-pole or 4-pole switch.
 The heat dissipation can be calculated with the formula: $P = 3 \times R \times I^2$

LZM up to 1000 A with electronic release (3- and 4-pole)

LZM3		LZM4	
R [μ Ohm]		R [μ Ohm]	
100		37	

Notes

The values stated in the table apply for 3- and 4-pole devices with an equal load distribution.
 On 4-pole devices the current in the N-conductor is equal to zero.
 The total resistive load is the measured value for a 3-pole or a 4-pole switch (independent of I_n and the type of release).
 The heat dissipation can be calculated with the formula: $P = 3 \times R \times I^2$

				LZM1 160 A	$I_n^{(1)}$ A	LZM2 300 A	$I_n^{(1)}$
Terminal capacities							
Standard equipment				Box terminal		Screw terminal	
Accessories				Screw connection Tunnel terminal Connection on rear		Box terminal Tunnel terminal Connection on rear	
Rated power of coil							
Box terminal	Solid	mm ²		1 x (10 – 16) 2 x (6 – 16)	160	1 x (4 – 16) 2 x (4 – 16)	300
		mm ²		1 x (25 – 70) 2 x 25	160	1 x (25 – 185) 2 x (25 – 70)	300
Tunnel terminal	Solid	mm ²		1 x 16	160	1 x 16	300
		Stranded	Single hole	mm ²	1 x (25 – 95)	160	1 x (25 – 185)
	Double hole fitting		mm ²	–	–	–	–
	4-hole		mm ²	–	–	–	–
Bolt terminal and rear-side connection							
Direct on the switch	Solid	mm ²		1 x (10 – 16) 2 x (6 – 16)	160	1 x (4 – 16) 2 x (4 – 16)	300
		mm ²		1 x (25 – 70) ³⁾ 2 x 25	160	1 x (25 – 185) 2 x (25 – 70)	300
Module plate	Single hole	min.	mm ²	–	–	–	–
		max.	mm ²	–	–	–	–
Module plate	Double hole	min.	mm ²	–	–	–	–
		max.	mm ²	–	–	–	–
Connection width extension				mm ²			
Al conductors, Al cable							
Tunnel terminal	Solid	mm ²		1 x 16	160	1 x 16	250
		Stranded	Single hole	mm ²	1 x (25 – 95)	160	1 x (25 – 185) ²⁾
	Double hole fitting		mm ²	–	–	–	–
	4-hole		mm ²	–	–	–	–
Bolt terminal and rear-side connection							
Direct on the switch	Solid	mm ²		1 x (10 – 16) 2 x (10 – 16)	160	1 x (10 – 16) 2 x (10 – 16)	250
		mm ²		1 x (25 – 35) 2 x (25 – 35)	160	1 x (25 – 50) 2 x (25 – 50)	250
Module plate	Single hole	min.	mm ²	–	–	–	–
		max.	mm ²	–	–	–	–
Module plate	Double hole	mm ²		–	–	–	–
Connection width extension				mm ²			
Cu strip (number of segments x width x segment thickness)							
Box terminal	min.		mm	2 x 9 x 0.8	160	2 x 9 x 0.8	300
	max.		mm	9 x 9 x 0.8	160	10 x 16 x 0.8	300
Flat conductor terminal	min.		mm	–	–	–	–
	max.		mm	–	–	–	–
Module plate	Single hole		mm	–	–	–	–
Bolt terminal and rear-side connection							
Flat copper strip, with holes		min.	mm	–	–	2 x 16 x 0.8	300
Flat copper strip, with holes		max.	mm	–	–	10 x 16 x 0.8	300
Connection width extension				mm ²	–	–	–
Copper busbar (width x thickness)							
Bolt terminal and rear-side connection							
Screw connection				M6		M8	
Direct on the switch	min.		mm	12 x 5	160	16 x 5	300
	max.		mm	16 x 5	160	20 x 5	300
Module plate	Single hole	min.	mm	–	–	–	–
		max.	mm	–	–	–	–
Module plate	Double hole		mm	–	–	–	–
Connection width extension	min.		mm	–	–	–	–
	max.		mm	–	–	–	–

Notes

¹⁾ The rated currents I_n have been determined conform to IEC/EN 60947 (switchgear standard) and generally relate to the max. defined cross-sections and are intended for the purpose of orientation. The engineering standards which apply in each case must be observed.

²⁾ depending on the cable manufacturer up to 240 mm² can be connected.

³⁾ depending on the cable manufacturer up to 95 mm² can be connected.

				LZM3 630 A	$I_n^{(1)}$ A	LZM4 1000 A	$I_n^{(1)}$
Terminal capacities							
Standard equipment				Screw terminal		Screw terminal	
Accessories				Box terminal Tunnel terminal Connection on rear		Tunnel terminal Connection on rear Strip terminal	
Rated power of coil							
Box terminal	Solid		mm ²	2 x 16	500	–	–
			mm ²	1 x (1 x (35 – 240) 2 x (25 – 120)	500	–	–
Tunnel terminal	Stranded	Single hole	mm ²				
			mm ²	1 x (25 – 185)	350	–	–
			mm ²	1 x (50 – 240) 2 x (50 – 240)	630 2 x 185	–	–
			mm ²	–	–	4 x (50 – 240)	1000
4-hole			mm ²	–	–	–	–
			mm ²	–	–	–	–
Bolt terminal and rear-side connection							
Direct on the switch	Solid		mm ²	1 x 16 2 x 16	630 2 x 185		
			mm ²	1 x (25 – 240) 2 x (25 – 240)	630 2 x 185	1 x (120 ... 185) 4 x (50 ... 185)	1000
Module plate	Single hole	min.	mm ²	–	–	1 x (120 – 300)	1000
		max.	mm ²	–	–	2 x (95 – 300)	1000
Module plate	Double hole	min.	mm ²	–	–	2 x (95 – 185)	1000
		max.	mm ²	–	–	4 x (35 – 185)	1000
Connection width extension			mm ²	2 x 300	630 2 x 185	4 x 300 6 x (95 – 240)	1000 4 x 240
Al conductors, Al cable							
Tunnel terminal	Stranded	Single hole	mm ²	1 x 16	350	–	–
			mm ²	1 x (25 – 185) ²⁾	350	–	–
			mm ²	1 x (50 – 240) 2 x (50 – 240)	630	–	–
			mm ²	–	–	4 x (50 – 240)	1000
4-hole			mm ²	–	–	–	–
			mm ²	–	–	–	–
Bolt terminal and rear-side connection							
Direct on the switch	Solid		mm ²	1 x 16 2 x (10 – 16)	400	–	–
			mm ²	1 x (25 – 120) 2 x (25 – 120)	400	–	–
Module plate	Single hole	min.	mm ²	–	–	1 x (185 – 240)	pleaes inquire
		max.	mm ²	–	–	2 x (70 – 185)	pleaes inquire
Module plate	Double hole	min.	mm ²	–	–	4 x 50	–
		max.	mm ²	–	–	–	–
Connection width extension			mm ²	–	2 x 240 6 x (70 – 240)	–	pleaes inquire
Cu strip (number of segments x width x segment thickness)							
Box terminal		min.	mm	6 x 16 x 0.8	630	–	–
		max.	mm	10 x 24 x 1.0 + 5 x 24 x 1.0 (2 x) 8 x 24 x 1.0	630	–	–
Flat conductor terminal		min.	mm	–	–	6 x 16 x 0.8	1000
		max.	mm	–	–	(2 x) 10 x 32 x 1.0	1000
Module plate	Single hole	min.	mm	–	–	(2 x) 10 x 50 x 1.0	1000
		max.	mm	–	–	(2 x) 10 x 40 x 1.0	1000
Bolt terminal and rear-side connection							
Flat copper strip, with holes		min.	mm	6 x 16 x 0.8	630	(2 x) 10 x 50 x 1.0	1000
		max.	mm	10 x 32 x 1.0 + 5 x 32 x 1.0	630	(2 x) 10 x 50 x 1.0	1000
Connection width extension			mm ²	(2 x) 10 x 50 x 1.0	630	(2 x) 10 x 80 x 1.0	1000 2 x (10 x 50 x 1.0)
Copper busbar (width x thickness)							
Bolt terminal and rear-side connection							
Screw connection				M10		M10	
Direct on the switch		min.	mm	20 x 5	630	25 x 5	1000
		max.	mm	30 x 10 +30 x 5	630	2 x (50 x 10) 2 x (80 x 10)	1000
Module plate	Single hole	min.	mm	–	–	25 x 5	1000
		max.	mm	–	–	2 x (50 x 10)	2 x (40 x 10)
Module plate	Double hole	min.	mm	–	–	2 x (50 x 10)	1000
		max.	mm	–	–	–	–
Connection width extension			mm	–	630	60 x 10	1000
			mm	2 x (10 x 50)	10 x 40	2 x (80 x 10)	2 x (50 x 10)

Notes

¹⁾ The rated currents I_n have been determined conform to IEC/EN 60947 (switchgear standard) and generally relate to the max. defined cross-sections and are intended for the purpose of orientation. The engineering standards which apply in each case must be observed.

²⁾ depending on the cable manufacturer up to 240 mm² can be connected.

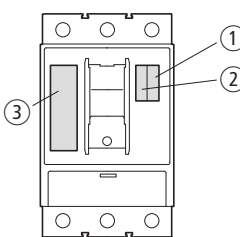
³⁾ depending on the cable manufacturer up to 95 mm² can be connected.

xEnergy

M22-K...

			at AC = 50/60 Hz		M22-K...	NZM-CK...
Auxiliary contacts						
Rated operational voltage						
AC	Ue	V AC	500		230	
DC	Ue	V DC	220		220	
Conventional thermal current						
	I _{th} = I _e	A	4		4	
Rated operational current						
AC-15	115 V	I _e	A	4	4	
	230 V	I _e	A	4	4	
	400 V	I _e	A	2	–	
	500 V	I _e	A	1	–	
DC-13	24 V	I _e	A	3	3	
	42 V	I _e	A	1.7	1	
	60 V	I _e	A	1.2	0.8	
	110 V	I _e	A	0.8	0.5	
	220 V	I _e	A	0.3	0.2	
Short-circuit protection						
max. fuse		A gG/gL	10		10	
Max. miniature circuit-breaker		A	PKZM0-10/FAZ-B6		FAZ-B6/B1	
Terminal capacities						
Solid or flexible conductor with ferrule		mm ²	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)		1 x (0.5 – 1.5) 2 x (0.5 – 0.75)	
		AWG	1 x (18 – 14) 2 x (18 – 14)		1 x (18 – 14) 2 x (18 – 14)	

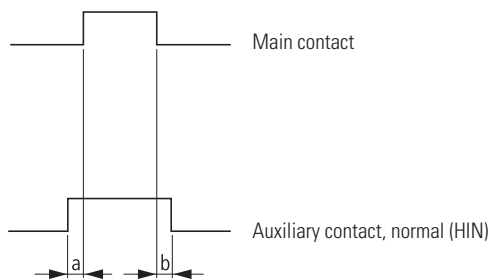
Maximum equipment and position of the internal accessories

		③	②	①	Contacts per slot with HIA and HIN
		-XHIV(2S) or -XA or -XU	HIA	HIN ¹⁾	
	LZM1, LN1	1	1	1	1 N/O
	LZM2, LN2	1	1	2	1 N/C
	LZM3, LN3	1	1	3	2 N/O
	LZM4, LN4	1	2	3	2 N/C

N/O = normally open contact
N/C = normally closed contact

¹⁾ On combination with remote operator NZM-XR..., the right slot for standard auxiliary contacts HIN can be equipped only with single contacts.

Time differences ON-OFF



	Time difference a (ms)				Time difference b (ms)			
	Manual operation		Motor operators		Manual operation		Motor operators	
	HIN		HIN		HIN		HIN	
	K10	K01	K10	K01	K10	K01	K10	K01
LZM1	0	2.5	–	–	0	2.5	–	–
LZM2	3.5	6.5	2.5	4.5	3	4.5	3	4
LZM3	4	8	2	4	3.5	8	3	6.5
LZM4	7	11	on request	on request	12	15	on request	on request

xEnergy

NZM...-XU, NZM...-XA...

			NZM1(2/3)-XU...	NZM4-XU...		
Undervoltage release						
Rated control voltage						
Alternating voltage at 50/60 Hz	U_s	V AC	24...440	24...440		
DC	U_s	V DC	24	24		
Operating range						
Drop-out voltage		$x U_s$	0.35 – 0.7	0.35 – 0.7		
Pick-up voltage		$x U_s$	0.85 – 1.1	0.85 – 1.1		
Power consumption						
AC						
Pick-up AC		VA	1.5	3.6		
Sealing AC		VA	1.5	3.6		
DC						
Pick-up DC		W	0.8	2.5		
Sealing DC		W	0.8	2.5		
Max. opening delay (response time until the main circuits open)		ms	19	23		
Minimum command time		ms	10 – 15	10 ... 15		
Terminal capacities						
Solid or flexible conductor with ferrule		mm ²	1 x (0.75 ... 2.5) 2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5) 2 x (0.75 ... 2.5)		
		AWG	1 x (18 ... 14) 2 x (18 ... 14)	1 x (18 ... 14) 2 x (18 ... 14)		
			NZM1(2/3)-XA...	NZM4-XA...		
Shunt release						
Rated control voltage						
AC	U_s	V AC	24...440	24...440		
DC	U_s	V DC	24	24		
Frequency range						
Operating range		Hz	0 – 400	0 – 400		
Operating range						
AC		$x U_s$	0.7...1.1	0.7...1.1		
DC		$x U_s$	0.7...1.1	0.7...1.1		
Power consumption						
Pick-up AC/DC		VA/W	2.5	2.5		
Sealing AC/DC		VA/W	2.5	2.5		
Max. opening delay (response time until the main circuits open)		ms	20	22		
Duty factor		ms	∞	∞		
Minimum command time		ms	10 ... 15	10 ... 15		
Terminal capacities						
Solid or flexible conductor with ferrule		mm ²	21 x (0.75 ... 2.5) 2 x (0.75 ... 2.5)	1 x (0.75 ... 2.5) 2 x (0.75 ... 2.5)		
		AWG	1 x (18 ... 14) 2 x (18 ... 14)	1 x (18 ... 14) 2 x (18 ... 14)		

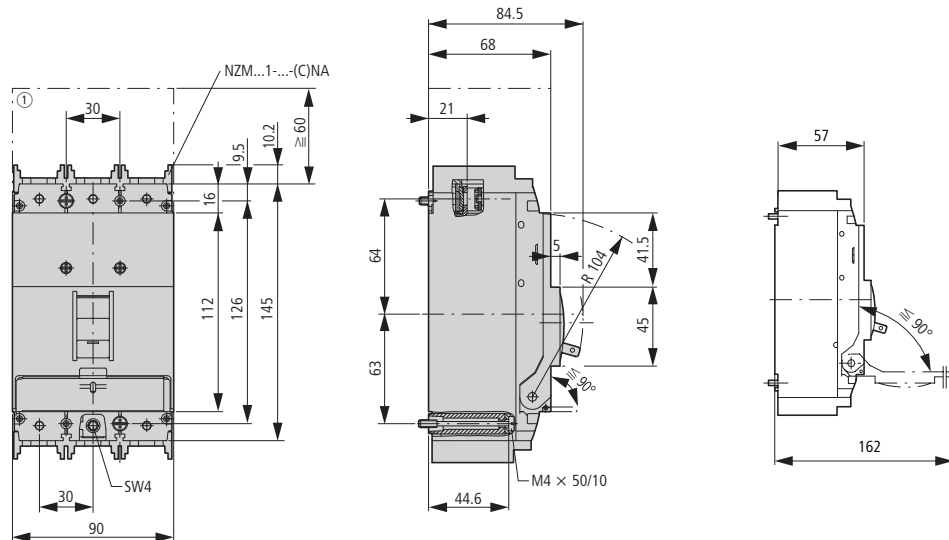
			NZM2-XR...	NZM3-XR...	NZM4-XR...	
Remote operator						
Rated control voltage						
AC	U_s	V AC	208...440	208...440	208...440	
DC	U_s	V DC	24	24	24	
Operating range						
AC	U_s		0.85...1.1	0.85...1.1	0.85...1.1	
DC	U_s		0.85...1.1	0.85...1.1	0.85...1.1	
Motor rating						
AC	208 ... 240 V AC	VA	350	350	350	
	380 ... 440 V AC	VA	350	350	350	
DC	24 ... 30 V DC	W	250	250	250	
Rated power of coil						
AC	208 ... 240 V AC	VA	270	270	270	
	380 ... 440 V AC	VA	270	270	270	
DC	24 ... 30 V DC	W	210	210	210	
Total make time		ms	60	80	100	
Total opening delay		ms	300	1000	3000	
Minimum signal duration						
with switch on		ms	30	30	30	
with switch off		ms	150	250	500	
Lifespan, mechanical		Operations	20000	15000	10000	
Maximum operating frequency		Ops./h	120	60	20	
Terminal capacities						
Solid or flexible conductor with ferrule		mm ²	0.75 ... 2.5	0.75 ... 2.5	0.75 ... 2.5	
		AWG	18 ... 14	18 ... 14	18 ... 14	

xEnergy

Circuit-breaker

3 pole

- LZMB1
- LZMC1
- LZMN1
- LN1

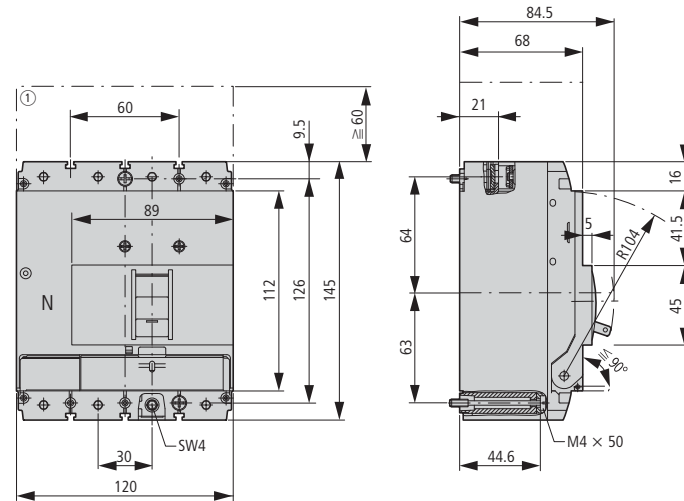


① Blow out area, minimum clearance to other parts > 60 mm

Circuit-breaker

4 pole

- LZMB1-4
- LZMC1-4
- LZMN1-4
- LN1-4



① Blow out area, minimum clearance to other parts > 60 mm

Covers

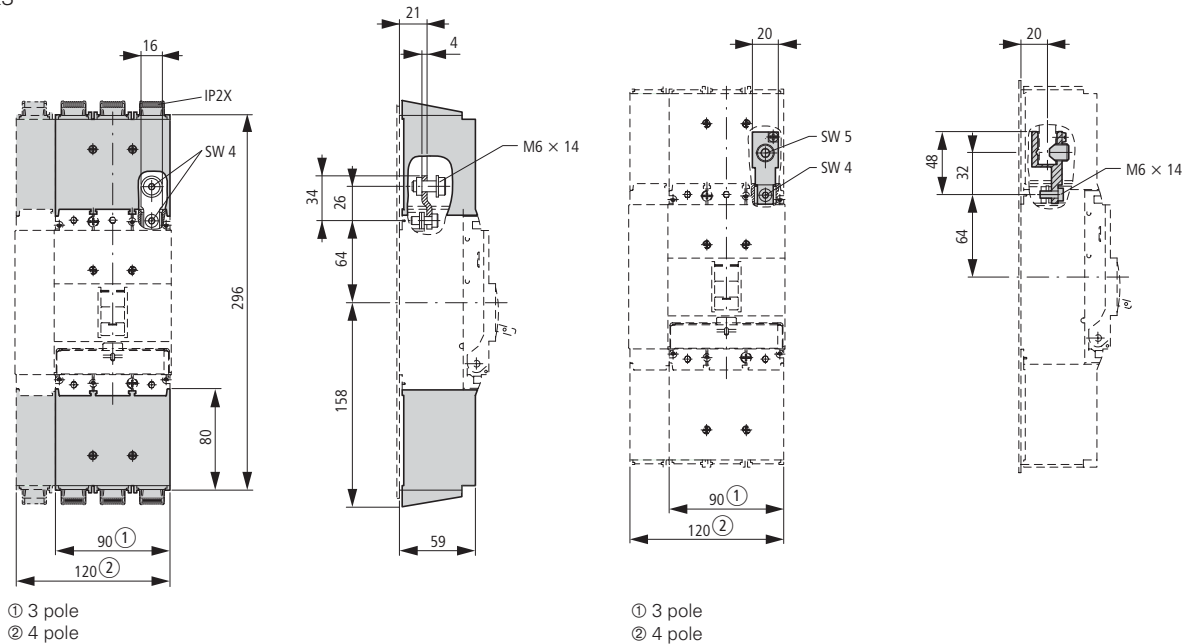
NZM1(-4)-XKSA

Screws connection

NZM1(-4)-XKS

Tunnel terminal

NZM1(-4)-XKA



① 3 pole
② 4 pole

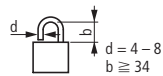
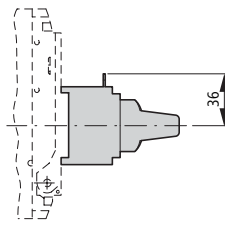
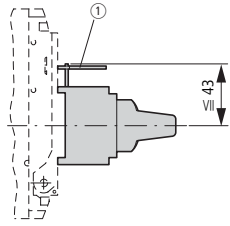
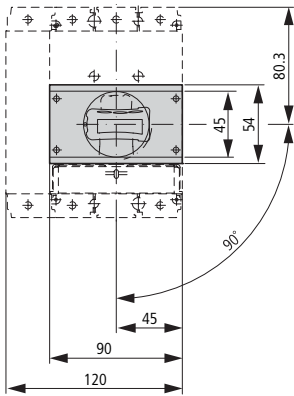
① 3 pole
② 4 pole

Rotary drive

Rotary handle on circuit-breaker

NZM1-XDV
NZM1-XDVR

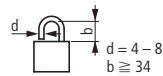
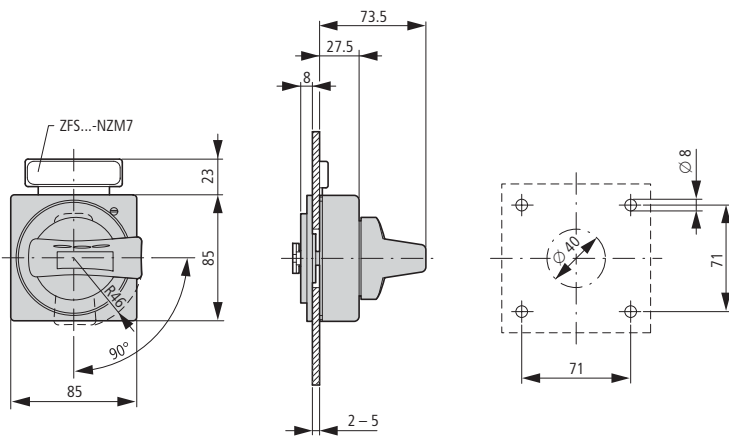
NZM1-XDTV



① Up to 3 padlocks

Door coupling rotary handle

NZM1-XTVD(R)

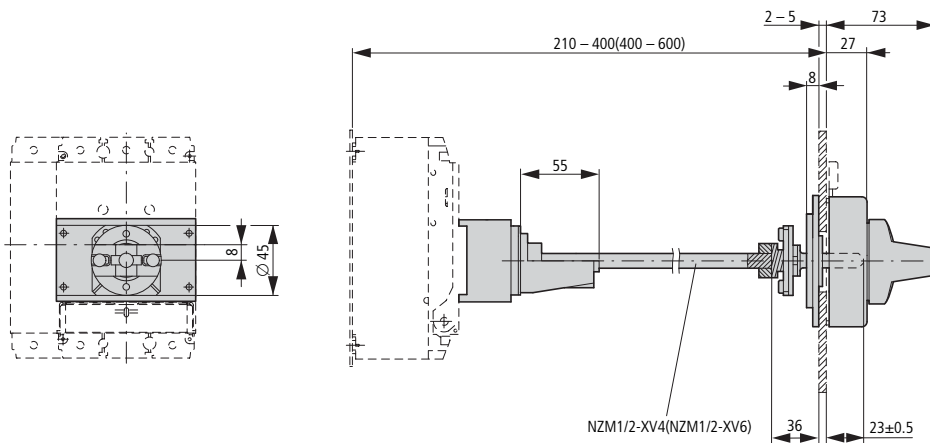


① Up to 3 padlocks

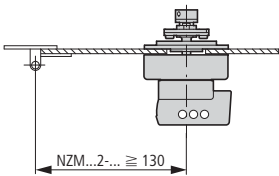
xEnergy

Door coupling rotary handle with extension shaft

NZM1-XTVD(V)(R)
NZM1/2-XV4(6)



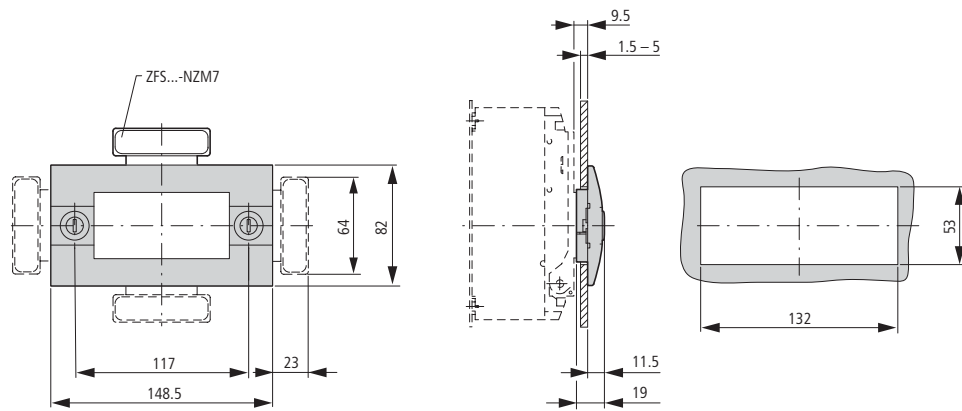
Minimum door coupling rotary handle clearance from door pivot point



Insulating surrounds

NZM1-XBR

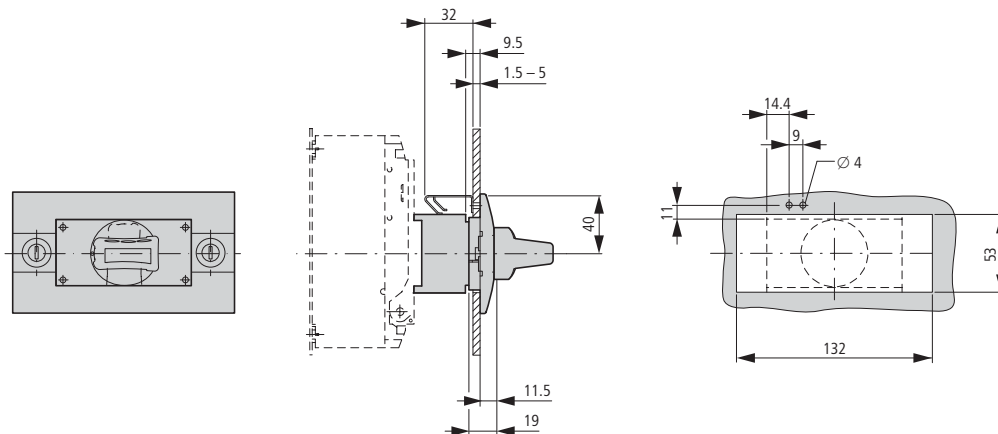
Ⓞ Mounting aperture



Rotary handle on switch with door interlock

NZM1-XDTV(R)

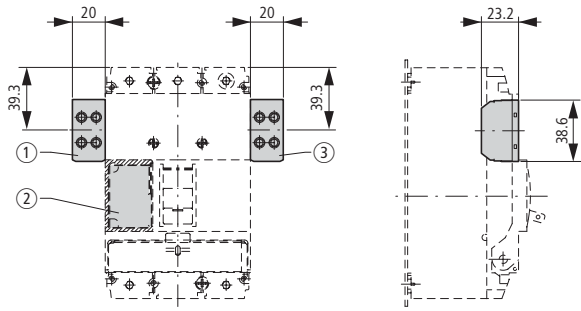
Ⓞ Mounting aperture



Dimensions

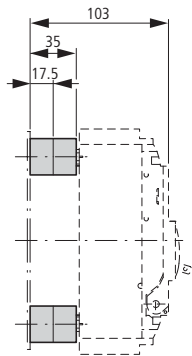
NZM1...HIV, NZM1-XMV

Undervoltage release
Shunt release
Early-make auxiliary contacts

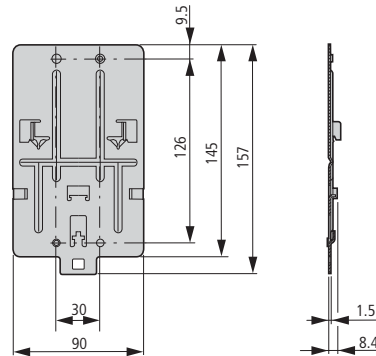


- ① NZM1-XA(HIV)
NZM1-XU(HIV)(20)
NZM1-XHIV
- ② NZM1-XA(HIV)(L)
NZM1-XU(V)(HIV)(L)(20)
NZM1-XHIV(L)
- ③ NZM1-XHIVR

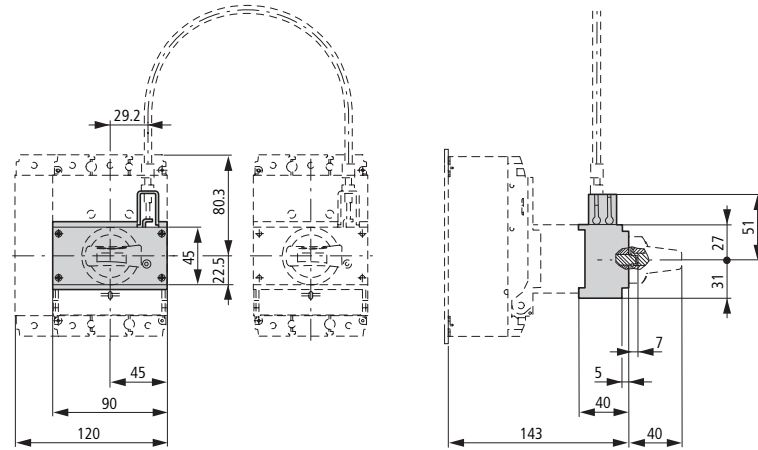
Spacers
 NZM1/2-XAB



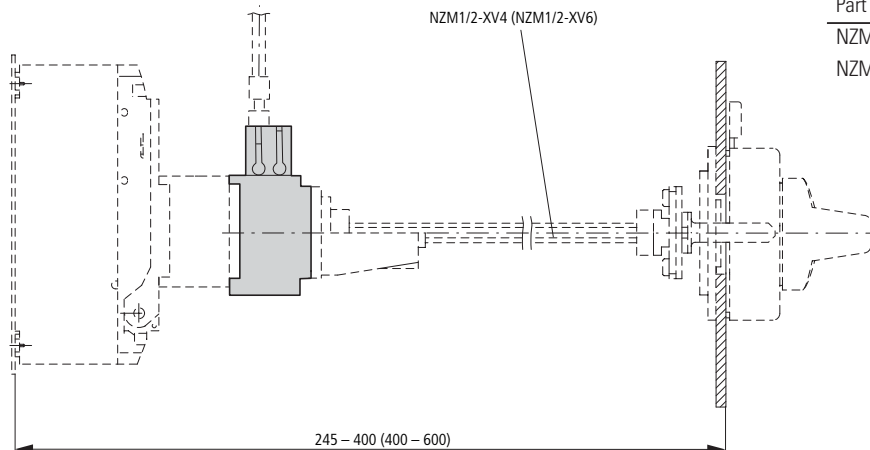
Clip plate
 NZM1-XC35



Mechanical interlock
 NZM1-XMV + NZM1-XDV(R)



NZM1-XMV + NZM1-XTVD(V)(R)

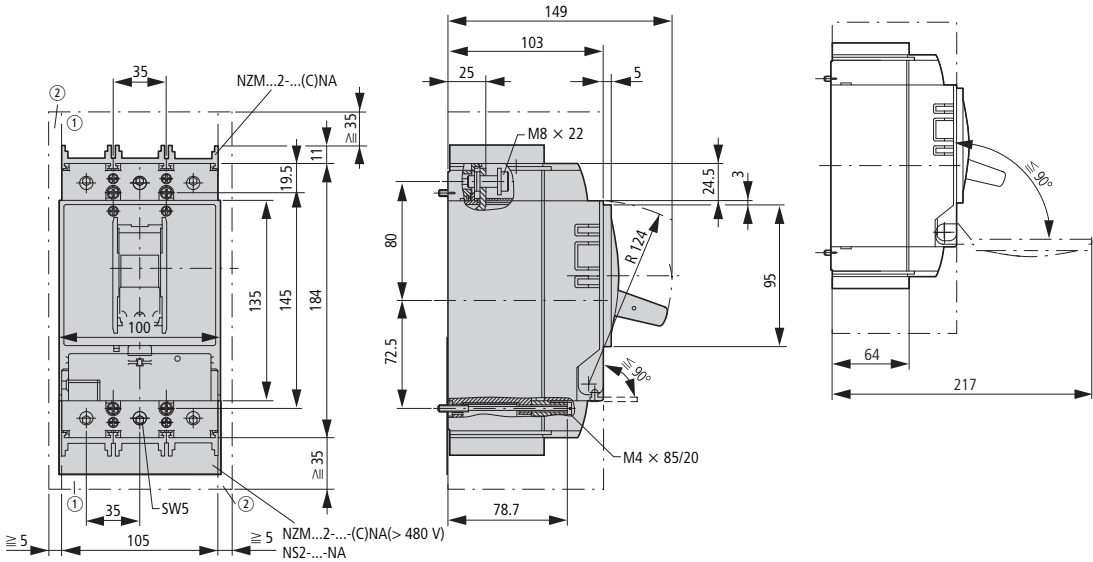


Part no.	x
NZM1/2-XV4	245 - 400
NZM1/2-XV6	400 - 600

xEnergy

Circuit-breaker

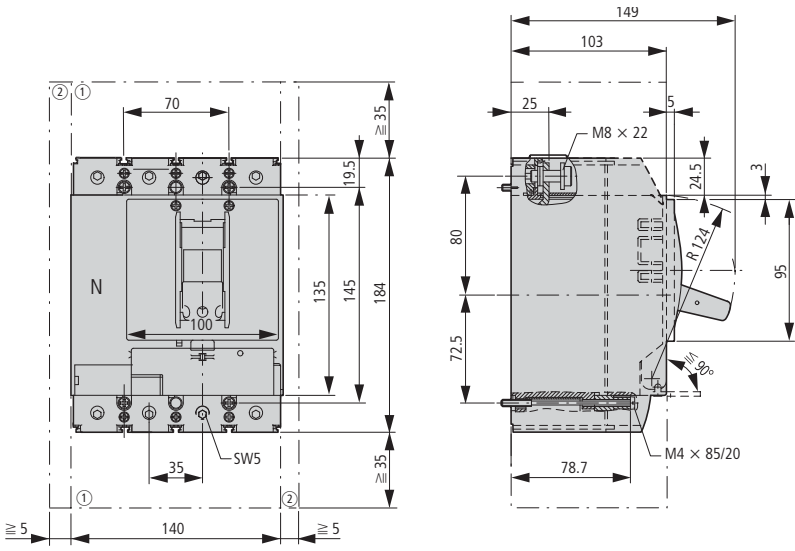
3 pole
 LZMB2
 LZMC2
 LZMN2
 LN2



- ① Blow out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

Circuit-breaker

4 pole
 LZMB2-4
 LZMC2-4
 LZMN2-4
 LN2-4



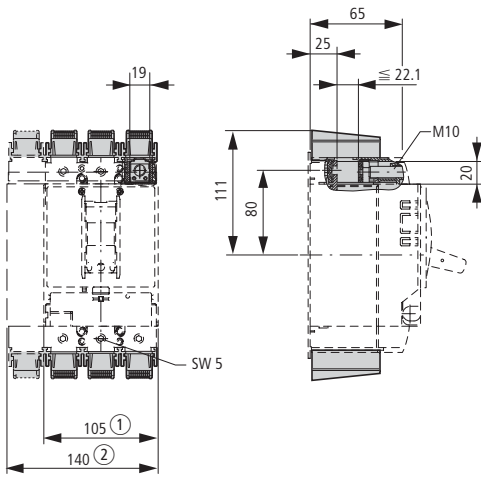
- ① Blow out area, minimum distance to other parts ≥ 35 mm
- ② Minimum distance to adjacent parts ≥ 5 mm

Dimensions

NZM2...-XK..., Rotary drive

Box terminal

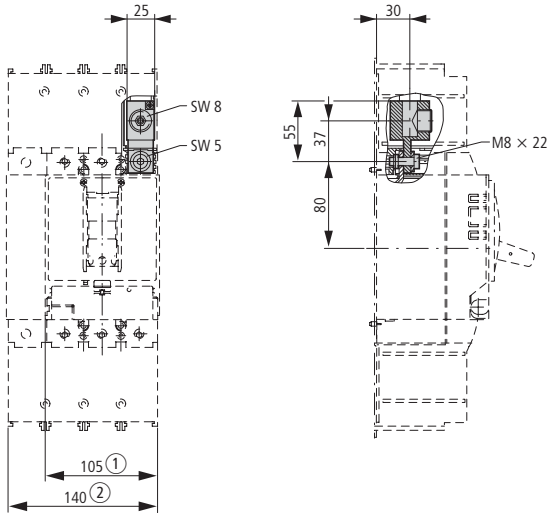
(+)NZM2(-4)...-XKC(O)(U)



① 3 pole
② 4 pole

Tunnel terminal

NZM2(-4)-XKA



Covers

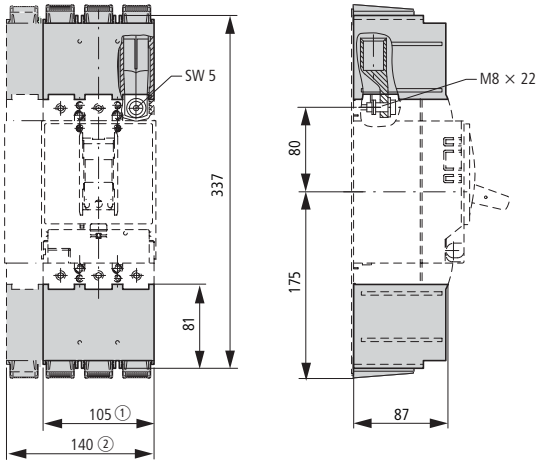
NZM2(-4)-XKSA

Cable lug

NZM2-XKS185

IP2X protection against contact with a finger for shroud

NZM2(-4)-XIPA

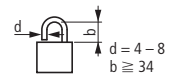
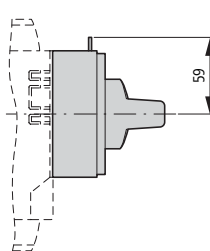
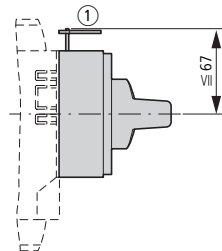
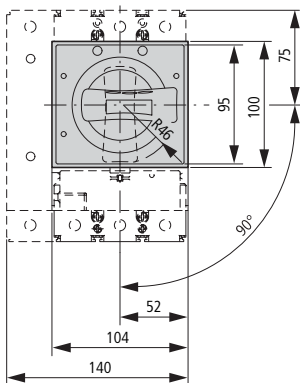


Rotary drive

Rotary handle on circuit-breaker

NZM2-XDV

NZM2-XDTV



$d = 4 - 8$
 $b \geq 34$

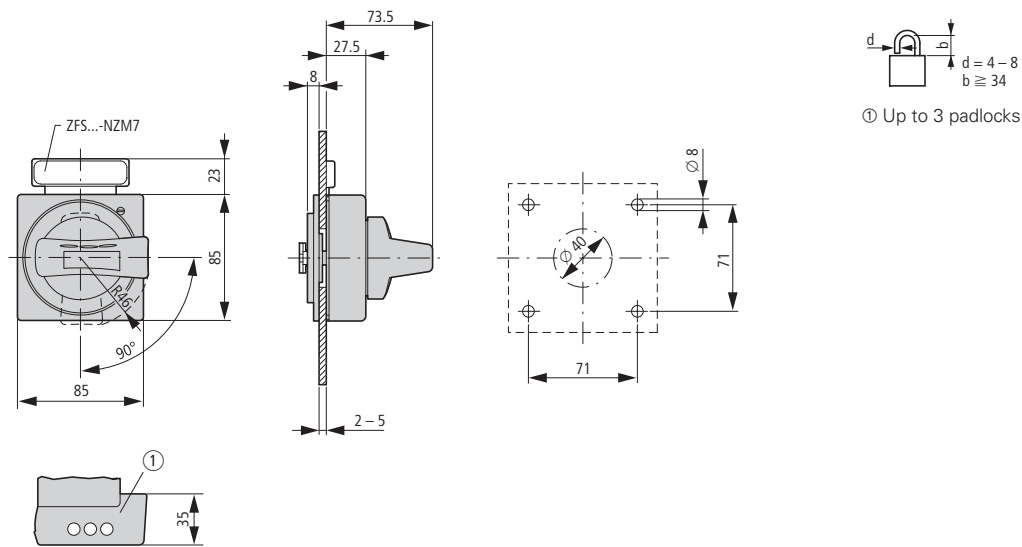
① Up to 3 padlocks

xEnergy

NZM2-XTV..., NZM1/2-XV4(6)

Door coupling rotary handle

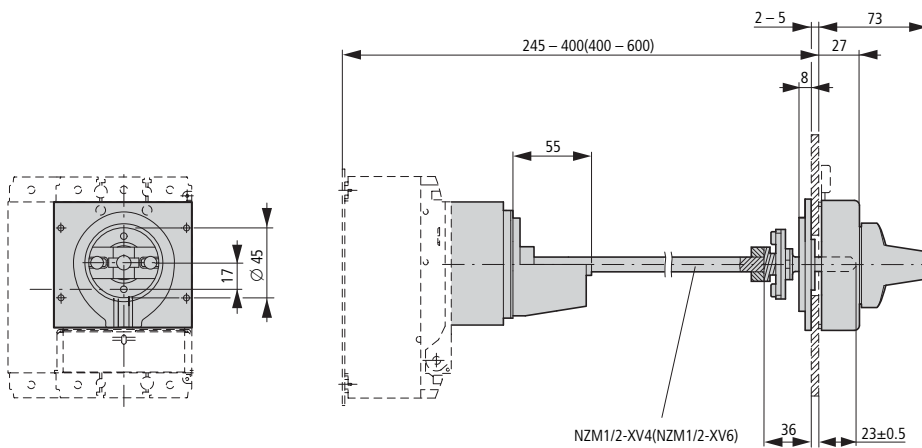
NZM2-XTVD(V)(R)...



Door coupling rotary handle with extension shaft

NZM2-XTVD(V)(R)

NZM1/2-XV4(6)

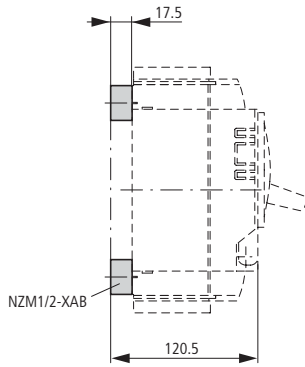


Dimensions

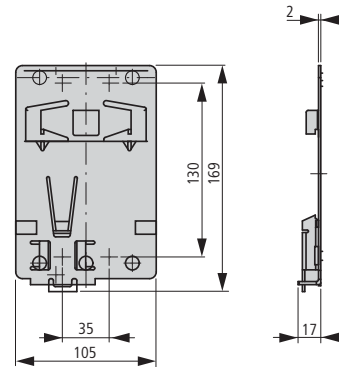
NZM...-XAB, NZM2-XBR, NZM2-XDTV...

Spacers

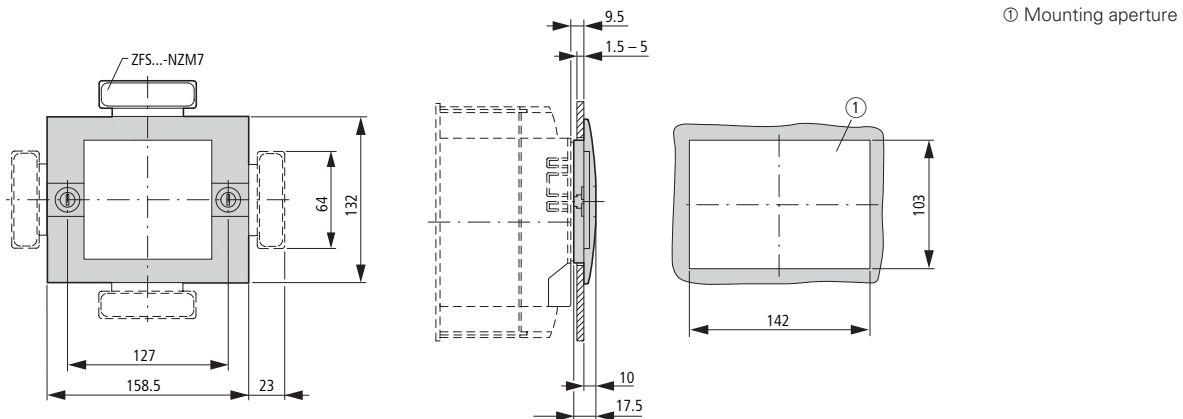
NZM1/2-XAB

**Clip plate**

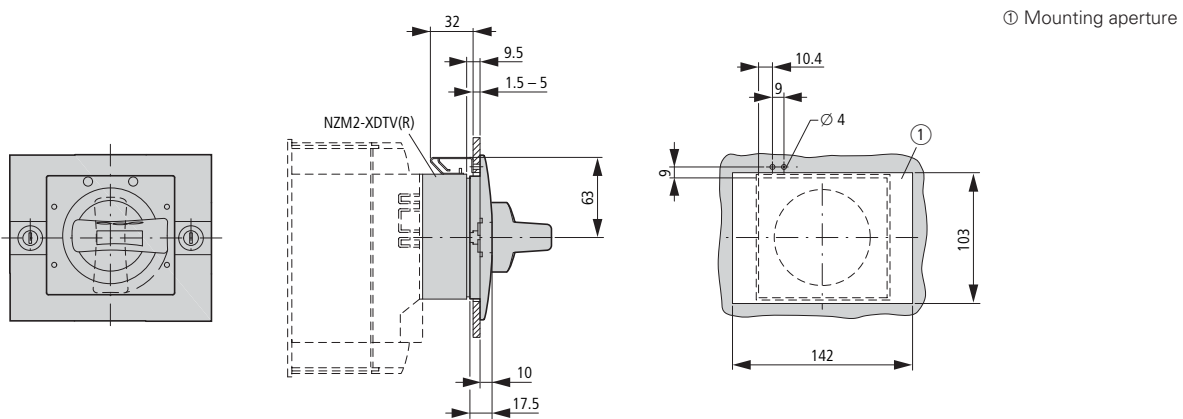
NZM2-XC75

**Insulating surrounds**

NZM2-XBR

**Rotary handle on switch with door interlock**

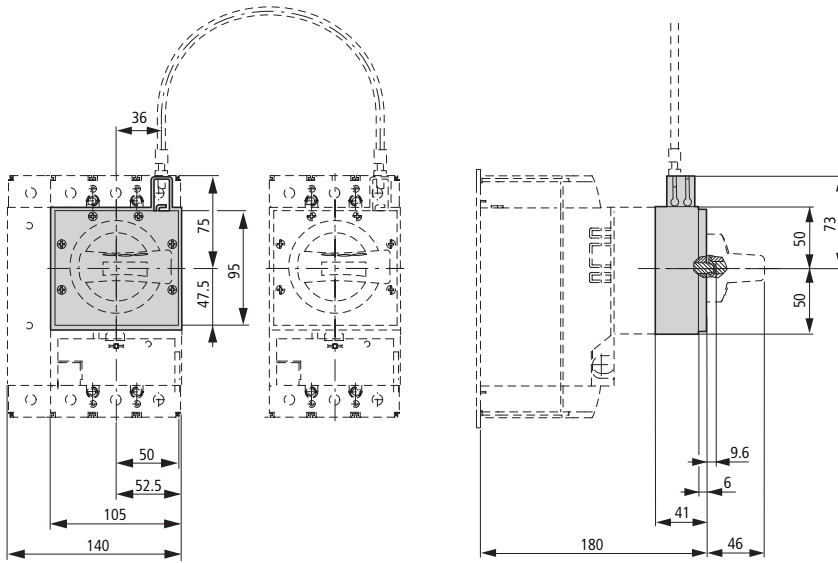
NZM2-XDTV(R)



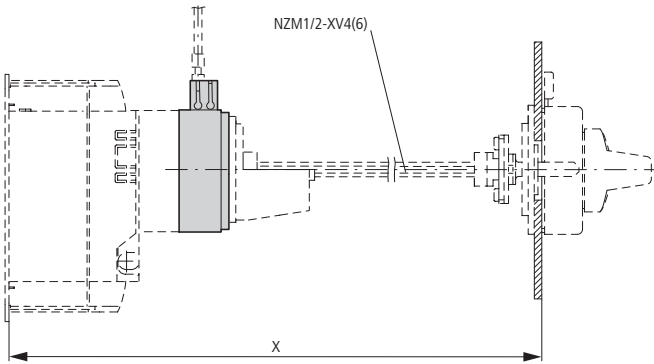
xEnergy

Mechanical interlock

NZM2-XMV + NZM2-XD

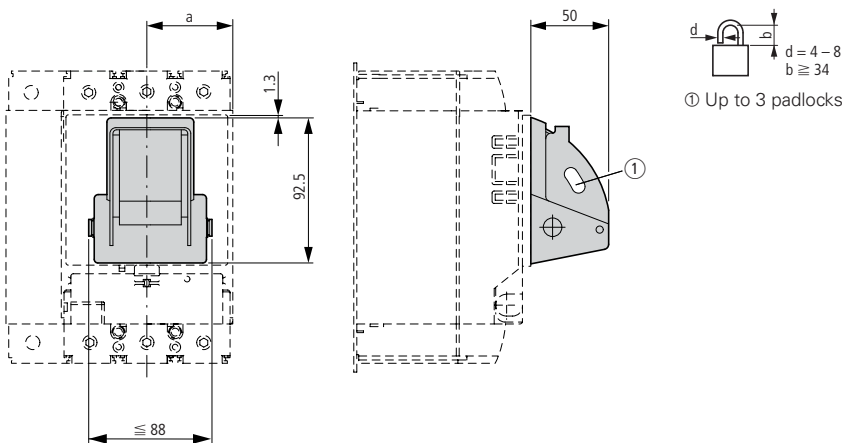


NZM2-XMV + NZM2-XTVD(V)(R)



Toggle lever locking device

NZM2/3-XKAV



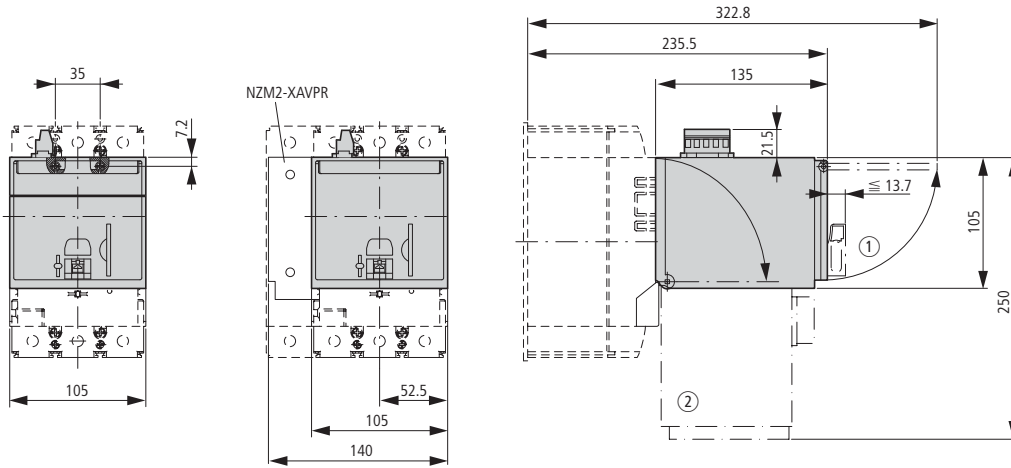
Part no.	a
LZM2	52.5
LZM3	70

Dimensions

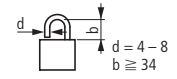
NZM2-XR..., -XAD...

Remote operator

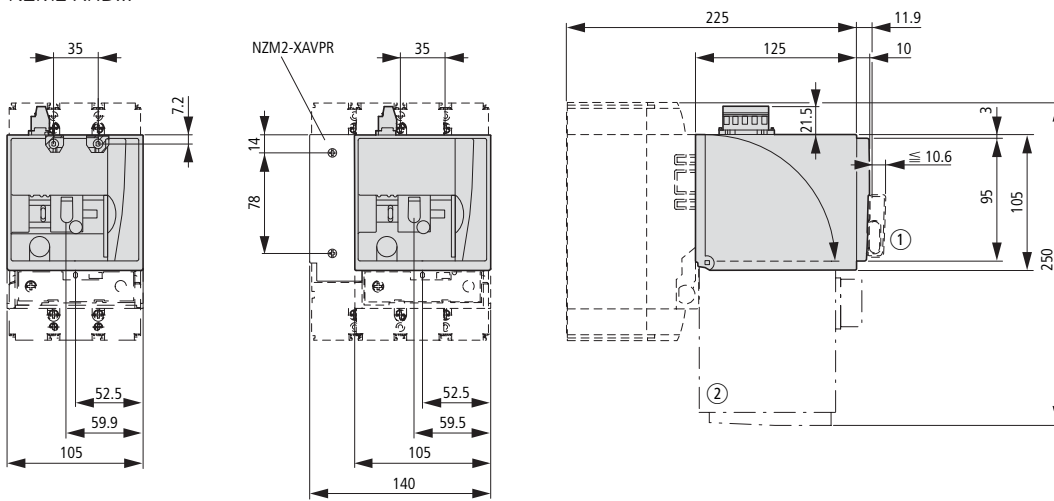
NZM2-XR...



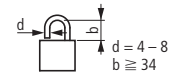
- ① Up to 3 padlocks
- ② Remote operator hinged



NZM2-XRD...

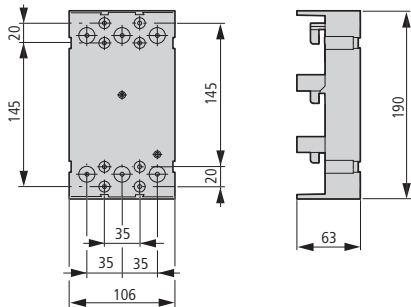


- ① Up to 3 padlocks
- ② Remote operator hinged



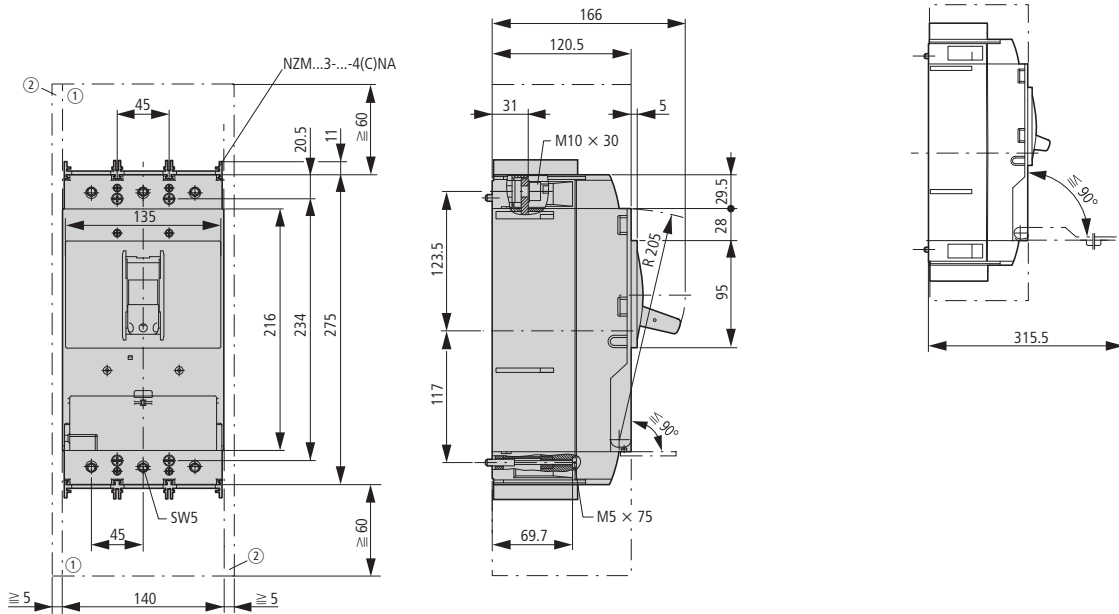
Component adapter

NZM2-XAD250



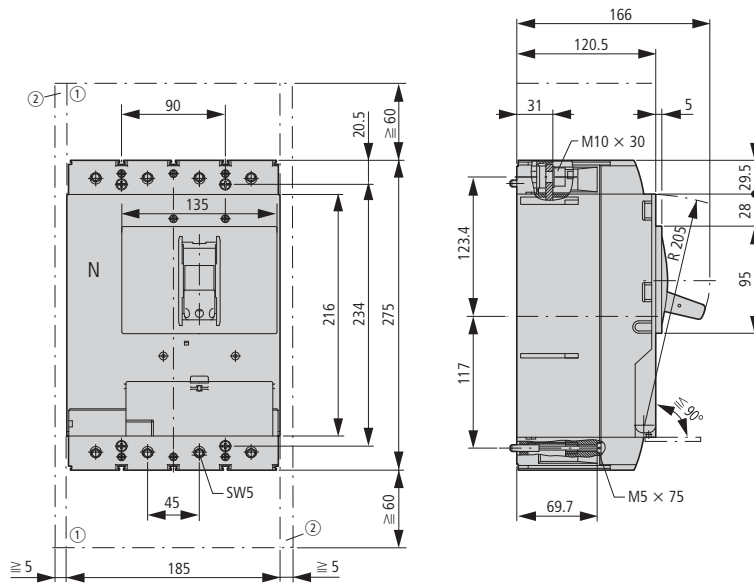
xEnergy

Circuit-breaker
3 pole
LZMC3
LZMN3
LN3



① Blow-out space, minimum distance to other parts ≥ 60 mm
② Minimum distance to adjacent parts ≥ 5 mm

Circuit-breaker
4 pole
LZMC3-4
LZMN3-4
LN3-4



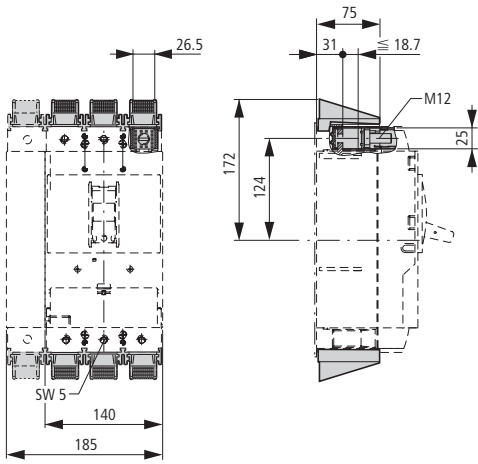
① Blow out area, minimum distance to other parts ≥ 35 mm
② Minimum distance to adjacent parts ≥ 5 mm

Dimensions

NZM2...-XK...

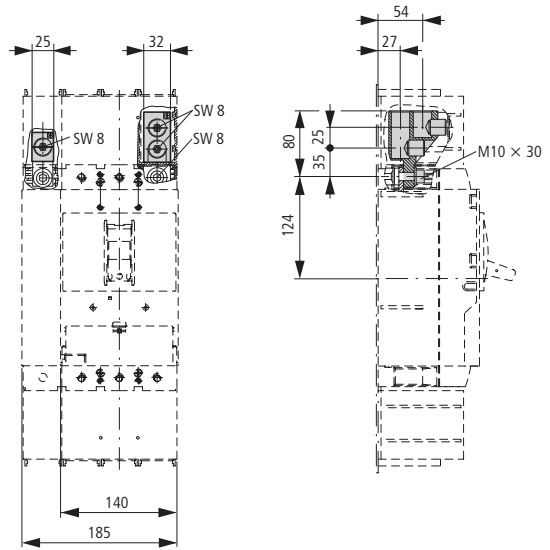
Box terminal

(+)NZM3(-4)-XKC(O)(U)



Tunnel terminal

NZM3(-4)-XKA1(2)

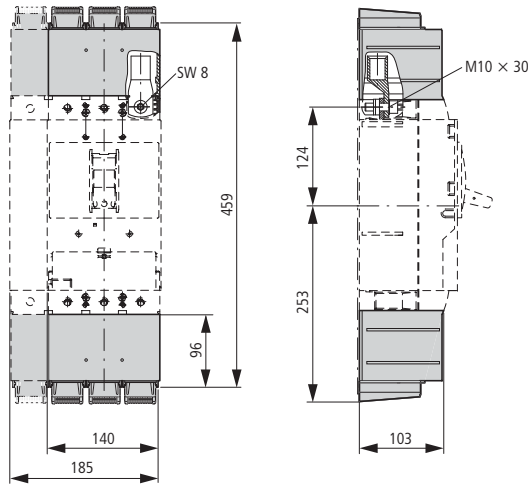


Covers

NZM3(-4)-XKSA

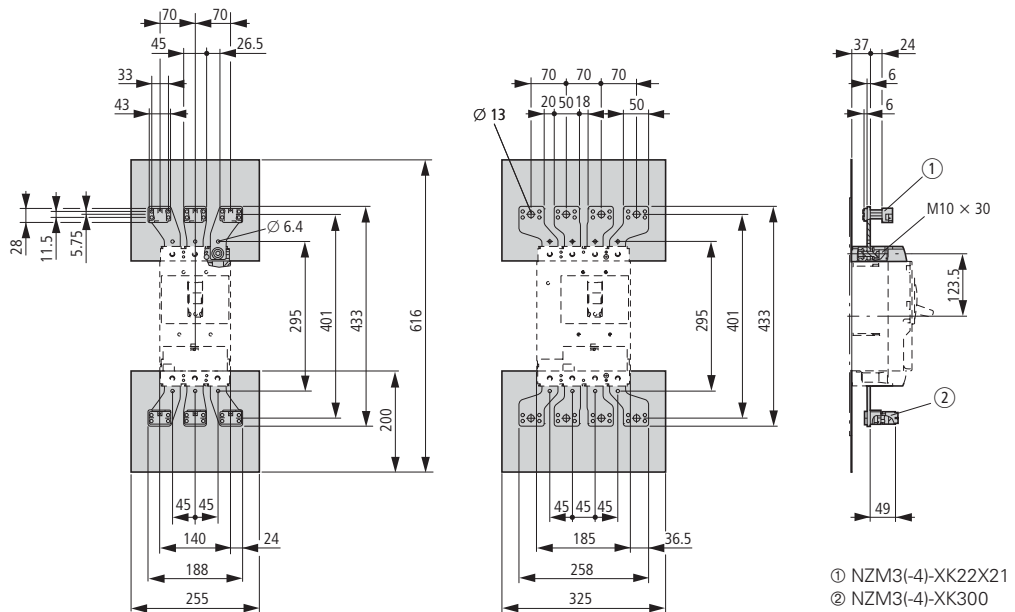
Cable lug

NZM3-XKS185



Connection width extension

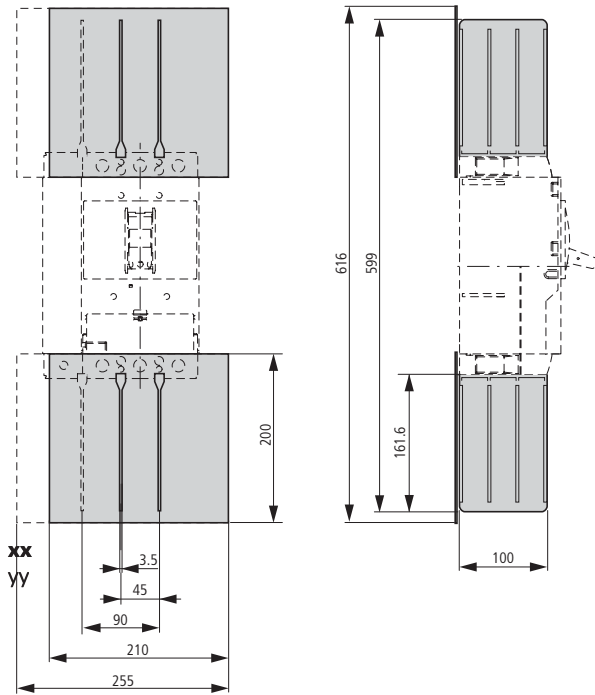
NZM3(-4)-XKV70



xEnergy

Phase isolators

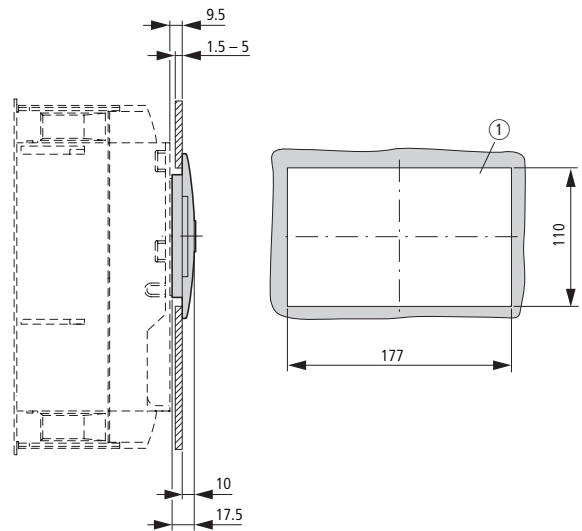
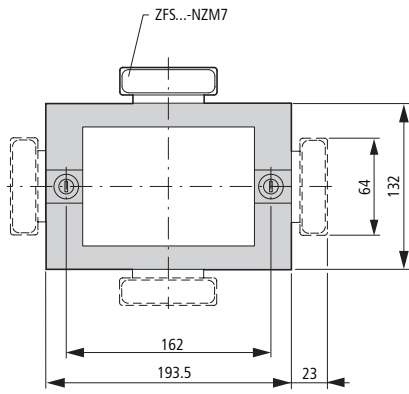
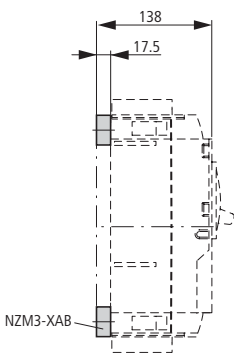
NZM3-4-XKP



Spacers
NZM3-XAB

Insulating surrounds
NZM3-XBR

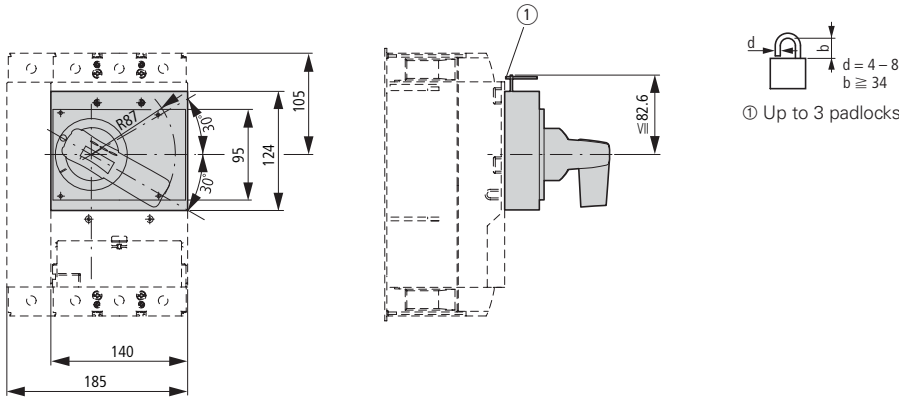
① Mounting aperture



Rotary drive

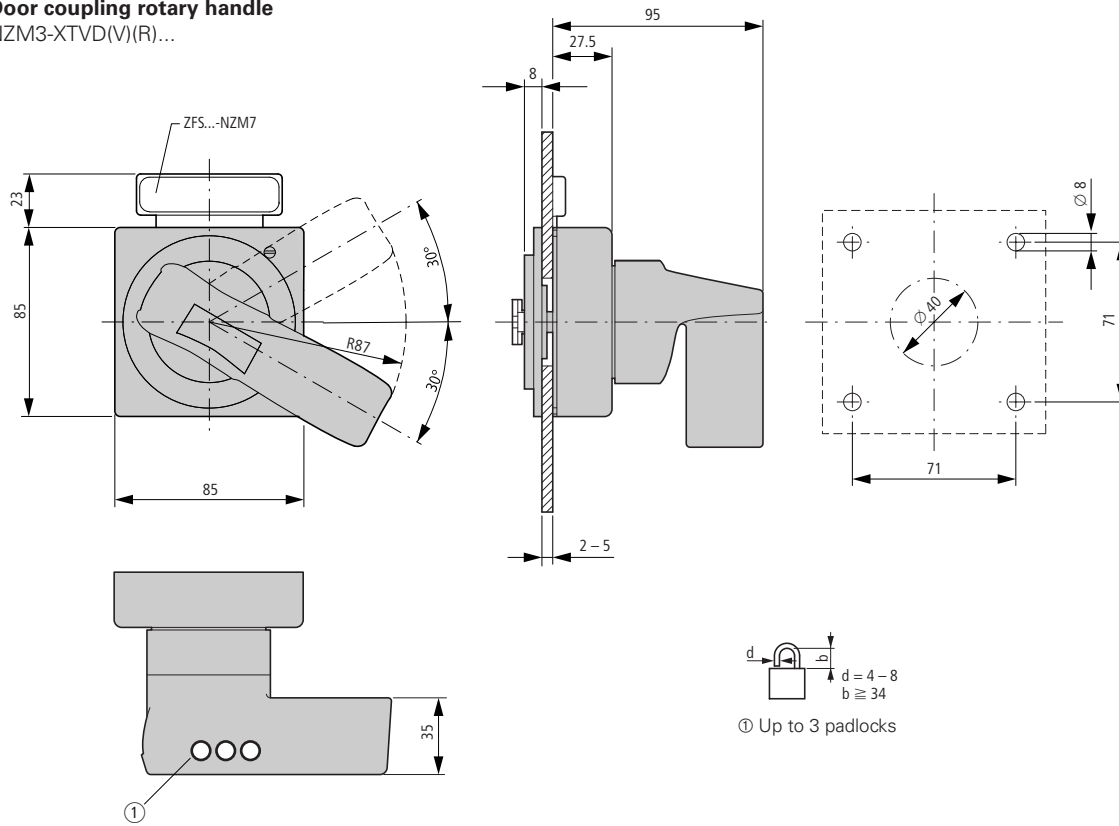
Rotary handle on circuit-breaker

NZM3-XDV



Door coupling rotary handle

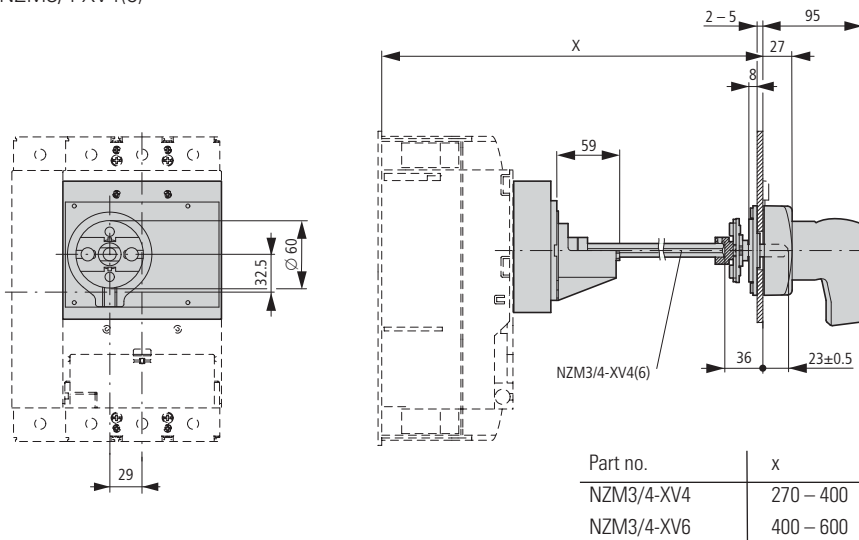
NZM3-XTVD(V)(R)...



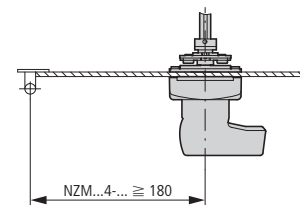
Door coupling rotary handle with extension shaft

NZM3-XTVD(V)(R)

NZM3/4-XV4(6)



Minimum door coupling rotary handle clearance from door pivot point

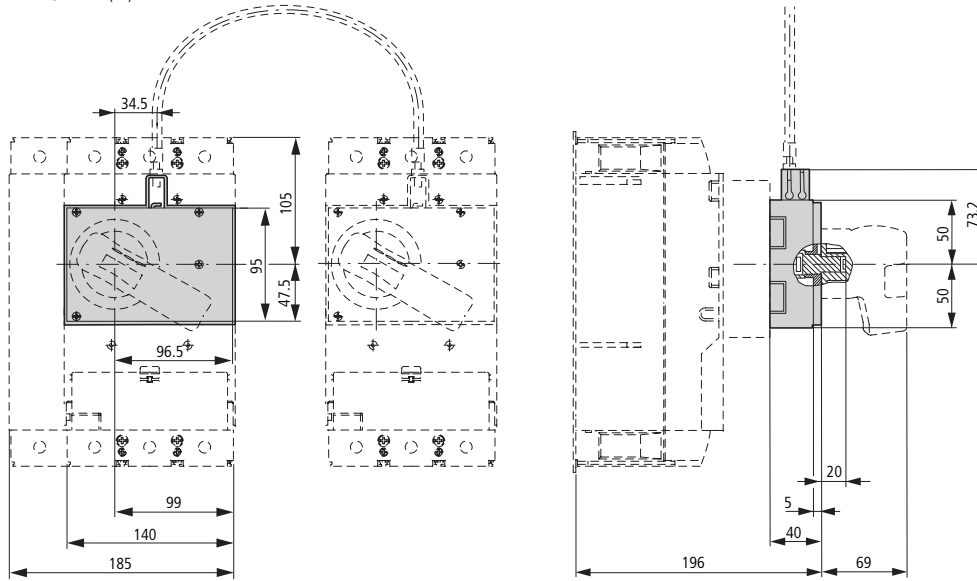


xEnergy

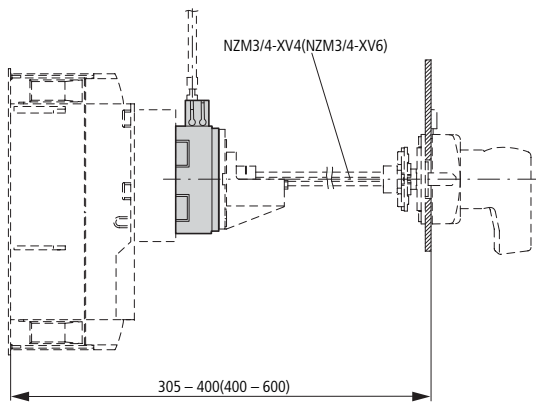
NZM3-XMV, NZM3-XAD..., NZM3-XR...

Mechanical interlock

NZM3-XMV + NZM3-XDV(R)

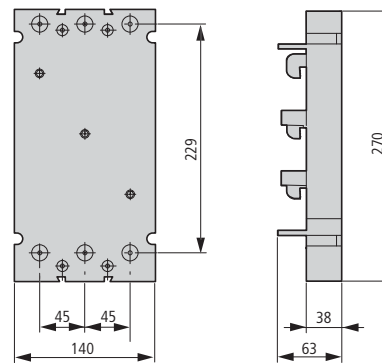


NZM3-XMV + NZM3-XTVD(V)(R)



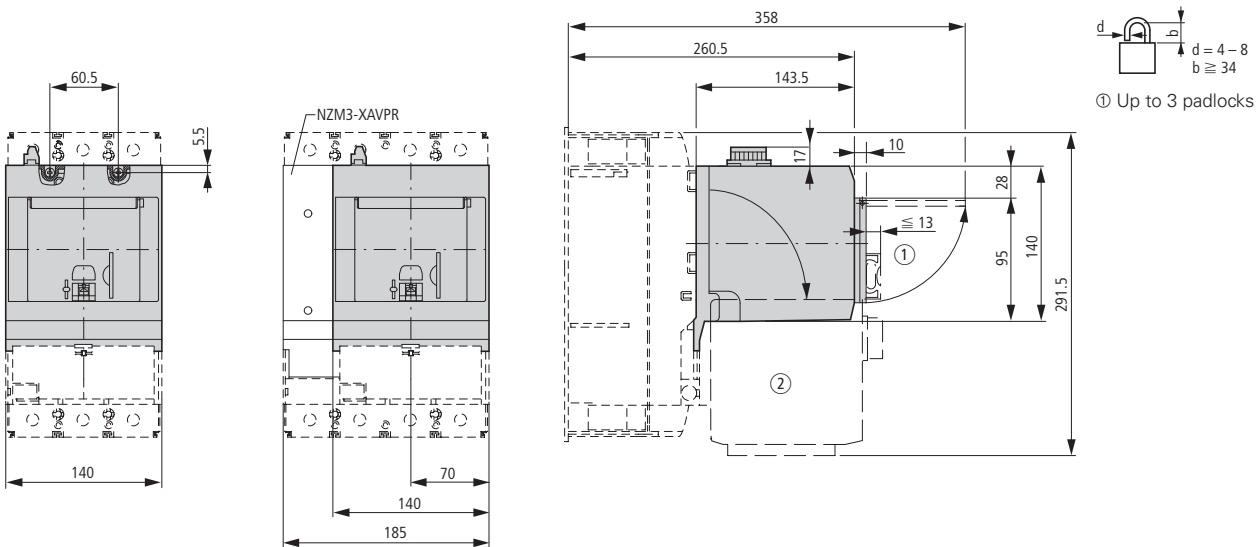
Component adapter

NZM3-XAD550



Remote operator

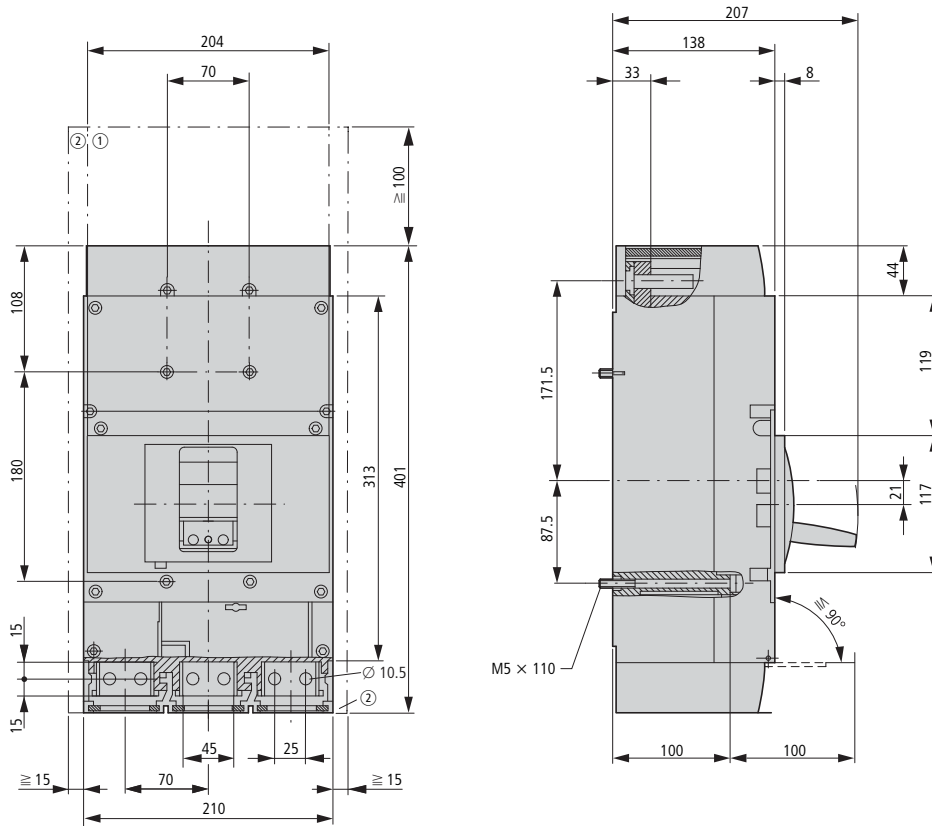
NZM3-XR...



Circuit-breaker**3 pole**

LZMN4

LN4

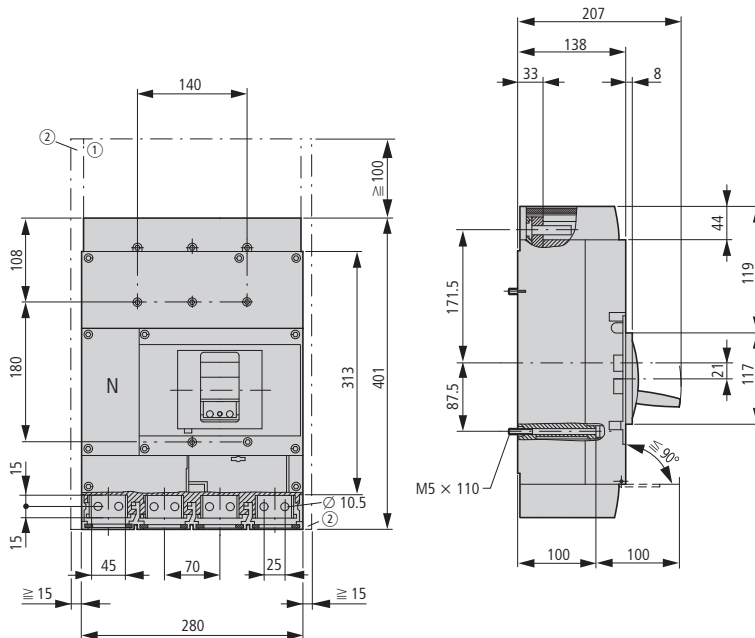


- ① Blow out area, minimum distance to other parts ≥ 100 mm up to 690 V
 ② Minimum distance to adjacent parts ≥ 5 mm

Circuit-breaker**4 pole**

LZMN4-4

LN4-4

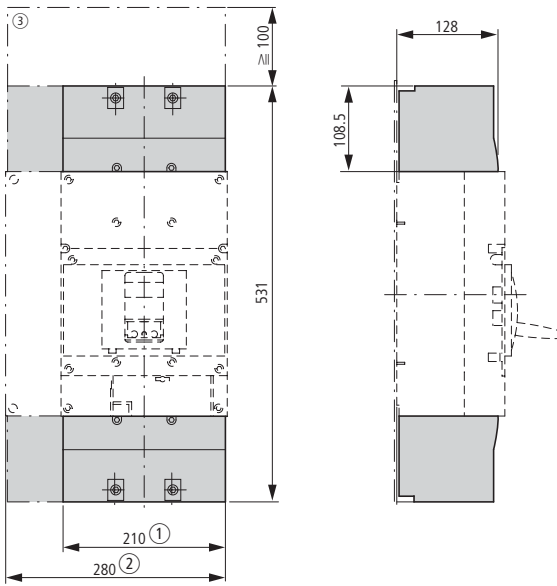


- ① Blow out area, minimum distance to other parts ≥ 100 mm up to 690 V
 ② Minimum distance to adjacent parts ≥ 5 mm

xEnergy

Covers

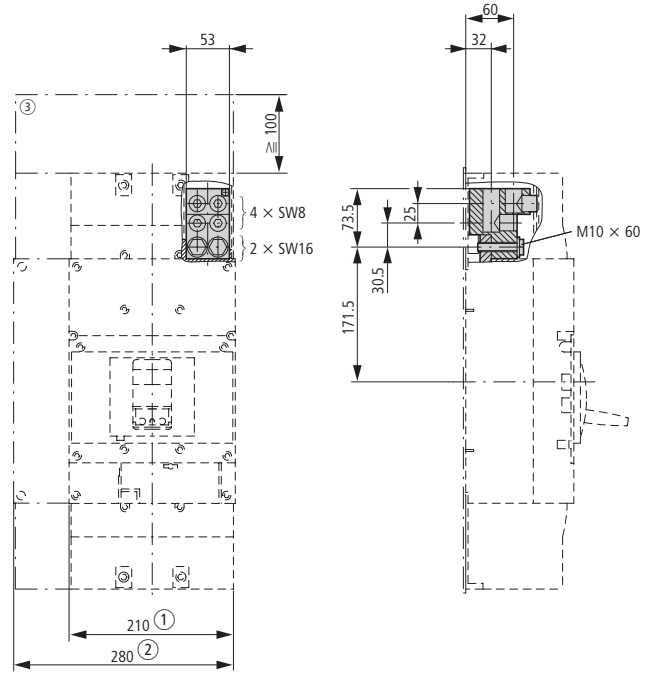
NZM4(-4)-XKSA



- ① 3 pole
- ② 4 pole
- ③ Clearance from conductive parts ≥ 100 mm up to 690 V

Tunnel terminal

NZM4-4-XKA



Screw connection

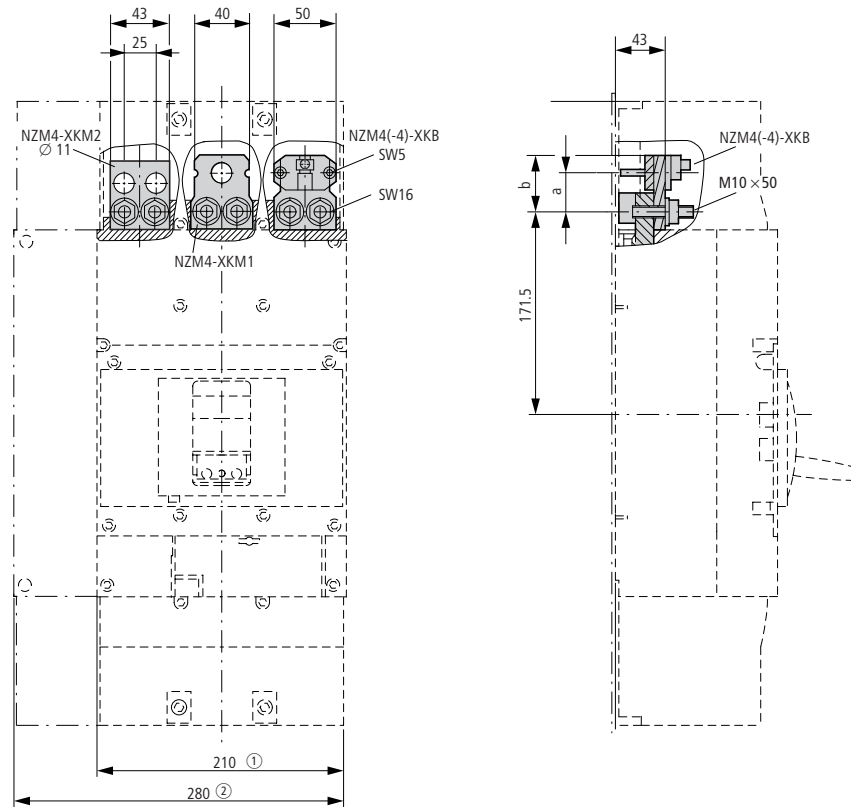
Module plate

Single hole
NZM4(-4)-XKM1
2-hole
NZM4(-4)-XKM2

Flat cable terminal

NZM4(-4)-XKB

Part no.	a	b
NZM4(-4)-XKM	136	47
NZM4(-4)-XKM	232	40
NZM4(-4)-XKB	-	47

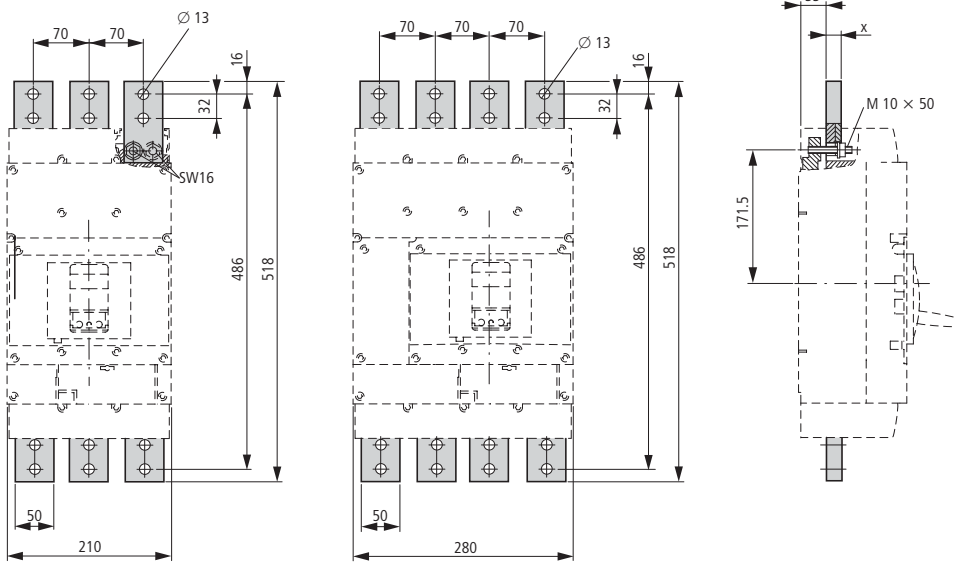


- ① 3 pole
- ② 4 pole
- ③ Clearance from conductive parts ≥ 100 mm up to 690 V

Module plate

2 holes, vertical

NZM4(-4)-XKM2S...

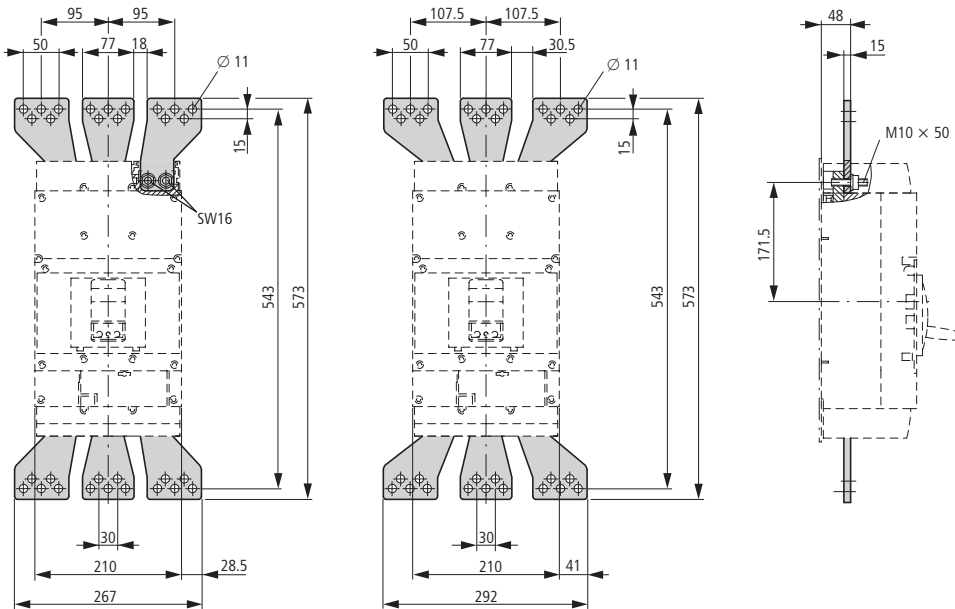


Part no.	x
NZM4(-4)-XKM2S-1250	12
NZM4(-4)-XKM2S-1600	20

Connection width extension

NZM4-XKV95

NZM4-XKV110

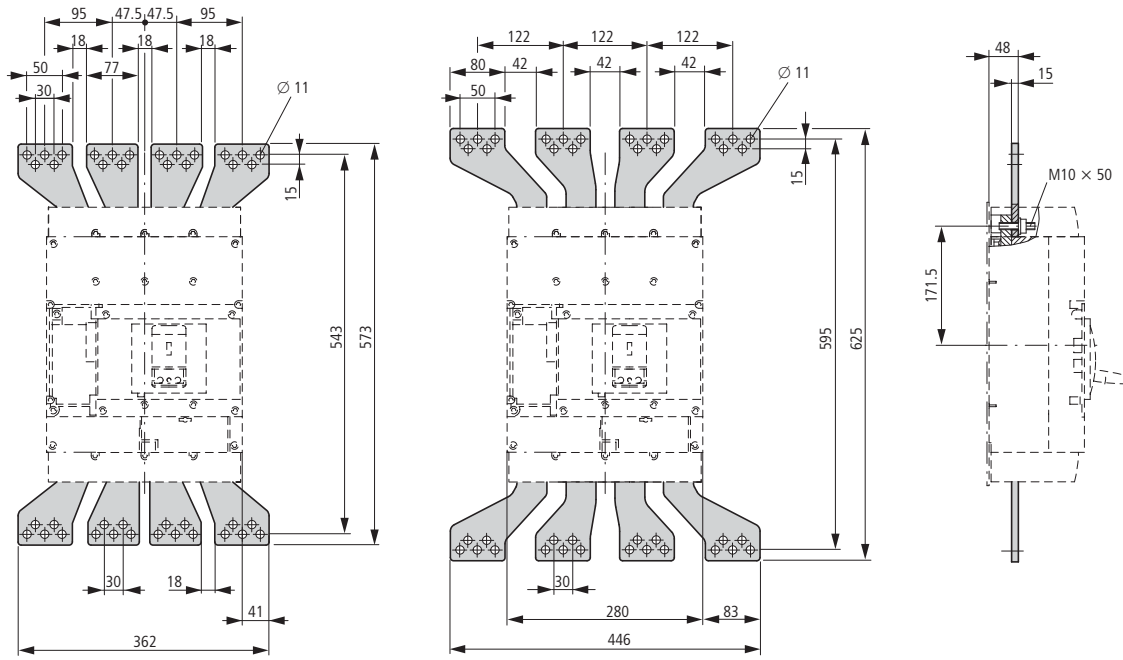


NZM4-XKV..., NZM4(4)-XKP

xEnergy

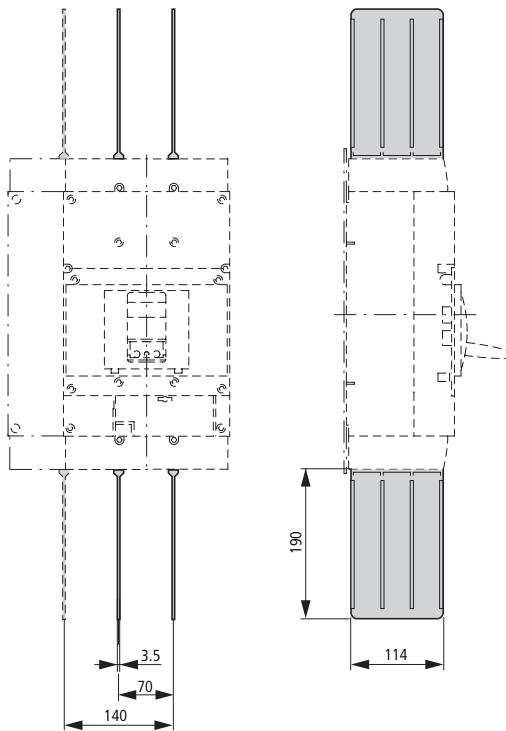
NZM4-4-XKV95

NZM4-4-XKV120



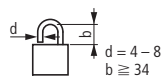
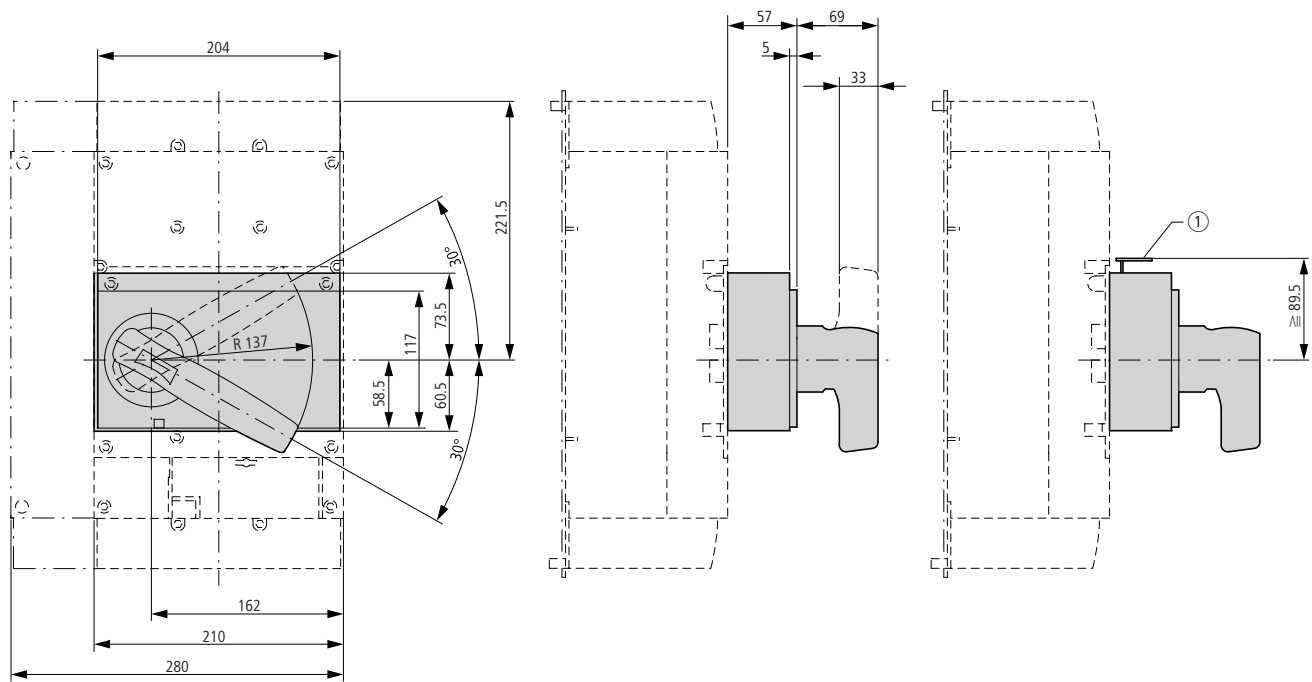
Phase isolators

NZM4-4-XKP



Rotary handle on circuit-breaker

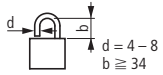
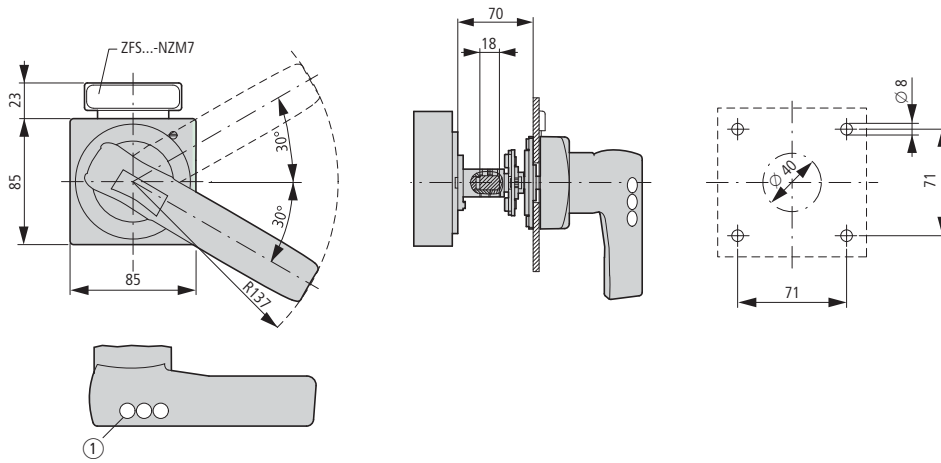
NZM4-XDV(R)



① Up to 3 padlocks

Door coupling rotary handle

NZM4-XTVD(V)(R)...



① Up to 3 padlocks

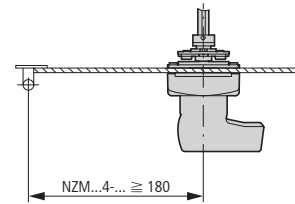
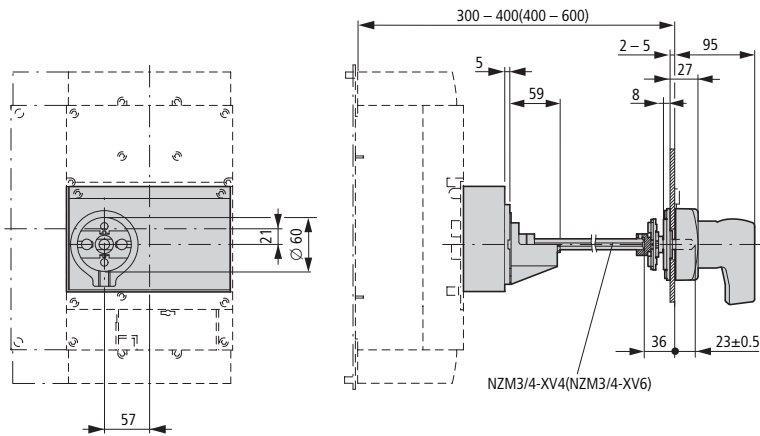
xEnergy

NZM4-XTVD..., NZM4...MV

Door coupling rotary handle with extension shaft

NZM4-XTVD(V)(R)
NZM3/4-XV4(6)

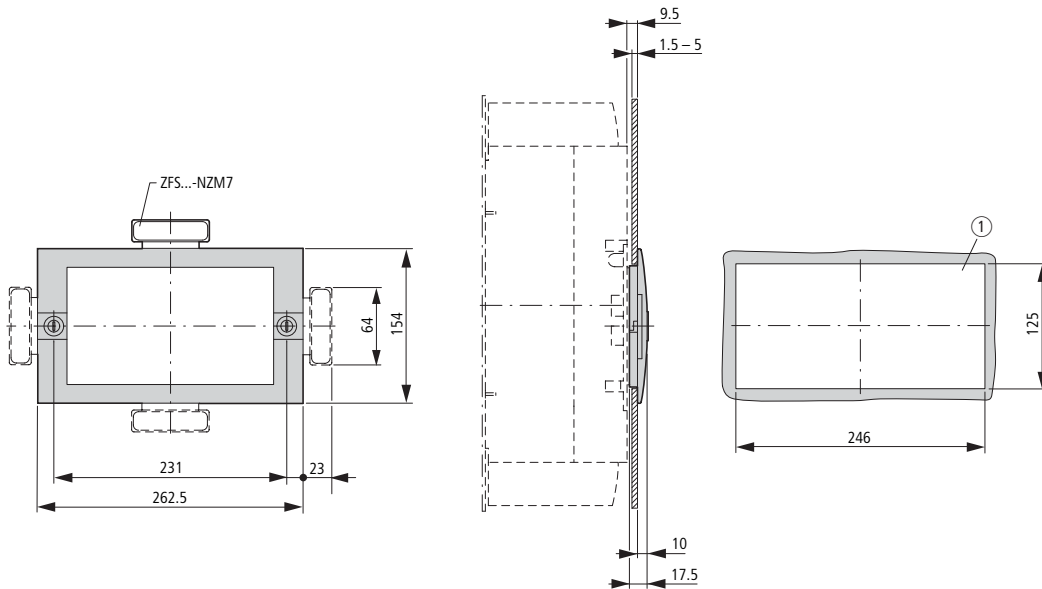
Minimum door coupling rotary handle clearance from door pivot point



Insulating surrounds

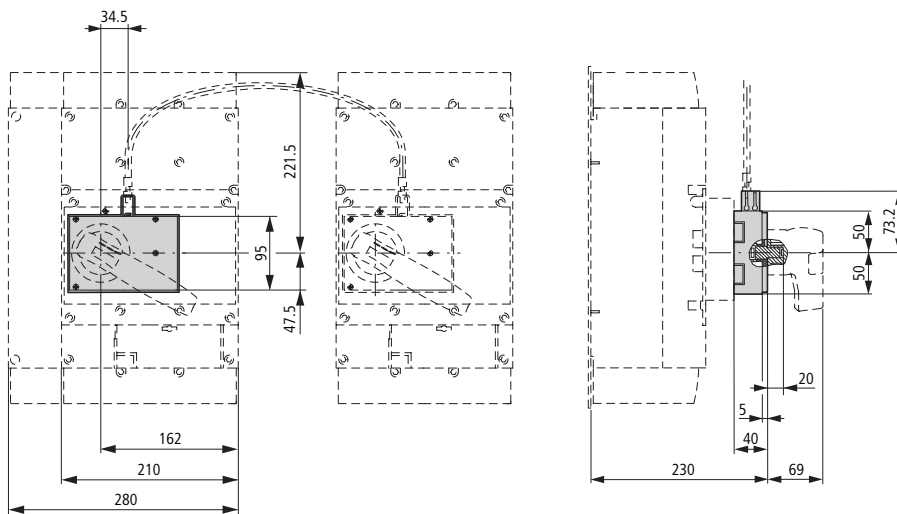
NZM4-XBR

① Mounting aperture



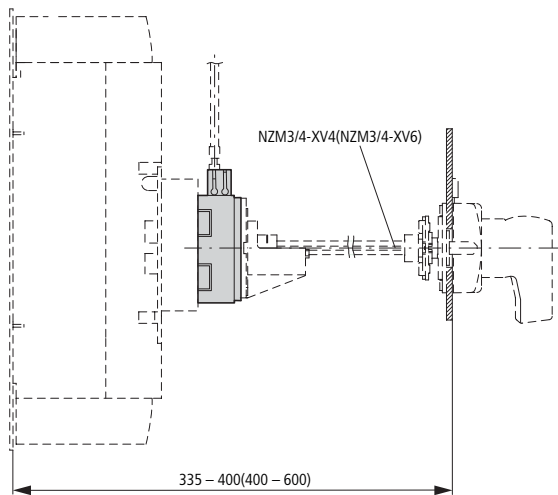
Mechanical interlock

NZM4-XMV + NZM4-XDV(R)



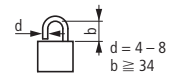
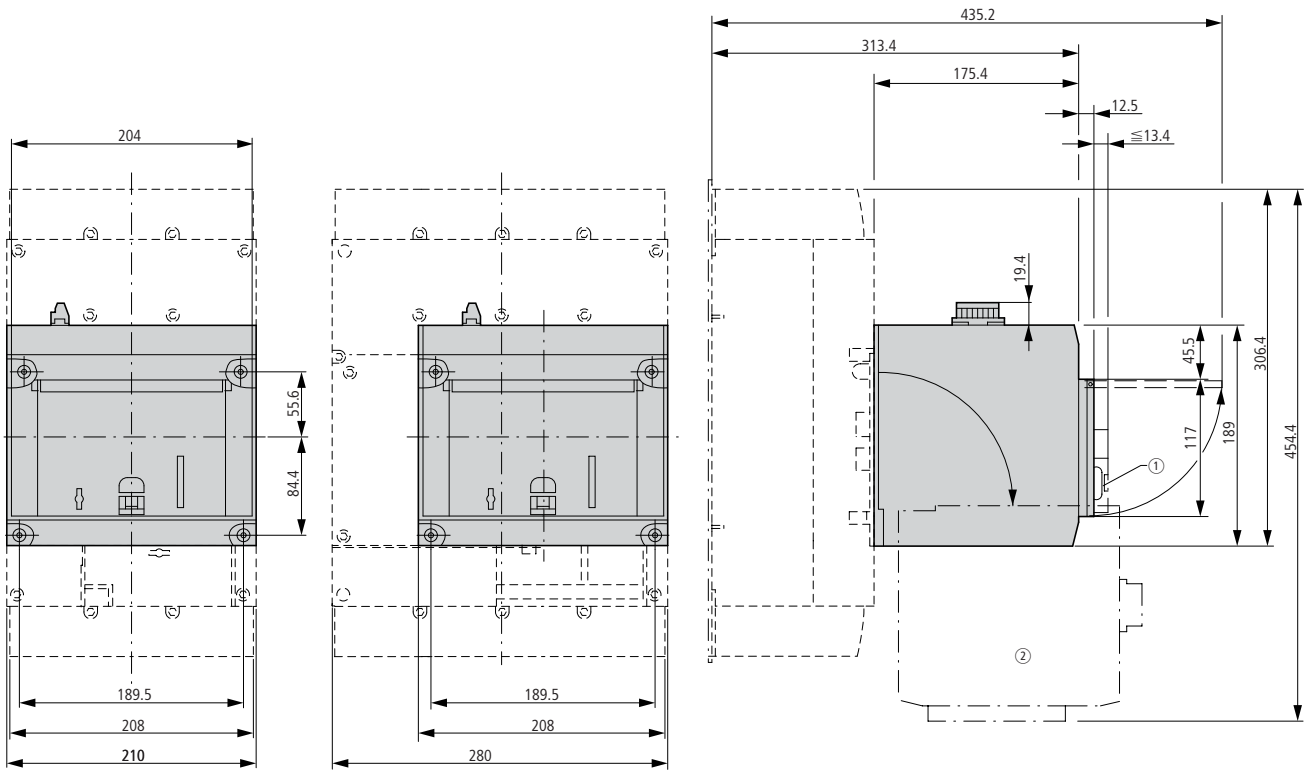
Mechanical interlock

NZM4-XMV + NZM4-XTVD(V)(R)



Remote operator

NZM4-XR...



① Up to 3 padlocks
Remote operator folded

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EU-Konformitätserklärung Nr. 2891001.CE.08 EU-Declaration of Conformity No.

Hersteller / Manufacturer: **PHOENIX CONTACT Development and Manufacturing Inc.**
 Anschrift / Address: **586 Fulling Mill Road, Middletown, PA 17057-2966, USA**

Produktbezeichnung / Product description: **FL SWITCH SFNB 5TX**
 (Artikelbezeichnung, / Article description,
 Artikel-Nr. / Article-/Part no.) **2891001**

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) und deren Änderungsrichtlinien übereinstimmt / *The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s) and their delegated directive(s):*

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
For evaluation of the conformity following relevant standards were consulted:

EN 55032:2012+AC:2013	EN 55032:2015+AC:2016	EN 61000-6-4:2007+A1:2011 *
EN 61000-3-2:2014	EN 61000-3-3:2013	EN 61000-6-2:2005+AC:2005
EN 50581:2012		

Ergänzende Informationen (z. B. Anmerkungen, Einschränkungen, etc.) zur Konformitätsbewertung:
Supplementary information (eg comments, restrictions, etc.) on conformity assessment:

Zertifikate einer benannten Stelle / *Certificates by a notified body:*

Anschrift / Address: _____

Referenz / Reference: _____

Anschrift / Address: _____

Referenz / Reference: _____

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Middletown, 2019-06-07

 _____ Davis Mathews Business Unit Automation Infrastructure Vice President <small>Ansprechpartner / contact person ¹</small>	 _____ David Skelton Development & Manufacturing Vice President & General Manager <small>Zeichnungsberechtigter / authorized signatory</small>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Warnung: Dies ist ein Klasse A-Erzeugnis. In Wohngebieten kann es zu Störungen des Funkempfanges kommen. Der Betreiber soll entsprechende Schutzmaßnahmen treffen.
Warning: This is a Class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures.

¹ Ansprechpartner ist auch für die technische Unterlagen verantwortlich. / *Contact person is also responsible for the technical documentation.*

Anhang zur EU-Konformitätserklärung Nr. 2891001.CE.08
Annex on EU Declaration of Conformity No.
vom / dated 2019-06-07

Produktbezeichnung / *Product description*: **FL SWITCH SFNB 5TX**
(Artikelbezeichnung, / *Article description*,
Artikel-Nr. / *Article no.*) **2891001**

<i>Artikel-Nr. / Article no.</i>	<i>Artikelbezeichnung / Article description</i>
2891014	FL SWITCH SFNB 5TX-50PK
2891154	FL SWITCH SFN 5TX-DM
1071801	FL SWITCH SFNB 5TX-PNE

EU-Konformitätserklärung Nr. 2866611.CE.04
EU-Declaration of Conformity No.

Hersteller / Manufacturer: **PHOENIX CONTACT GMBH & CO. KG**
 Anschrift / Address: **Flachmarktstraße 8, D-32825 Blomberg, Germany**

Produktbezeichnung / Product description: **TRIO-UPS/1AC/24DC/ 5**
 (Artikelbezeichnung, / Article description, Artikel-Nr. / Article no.) **2866611**

Der obige Hersteller erklärt in alleiniger Verantwortung, dass das/die hier bezeichnete(n) Produkt(e) mit den wesentlichen Anforderungen der nachfolgend genannten Richtlinie(n) übereinstimmt / The above manufacturer declares in sole responsibility, that the here specified product(s) is/are in line with the essential requirements of the following directive(s):

2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe Restriction of the use of certain hazardous substances (RoHS)
2014/30/EU	EMV-Richtlinie (Elektromagnetische Verträglichkeit) Electromagnetic Compatibility Directive (EMC)
2014/35/EU	Niederspannungs-Richtlinie Low Voltage Directive (LVD)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
 For evaluation of the conformity following relevant standards were consulted:

EN 60950-1:2006+A11:2009+ A1:2010+A12:2011+A2:2013	EN 61000-6-2:2005	EN 61000-6-3:2007+A1:2011
EN 61000-3-2:2014	EN 50581:2012	

Weitere Informationen (z. B. Dokumente, Prüfberichte, Einschränkungen, etc.) zur Konformitätsbewertung:
 Additional information (for example documents, test reports, restrictions etc.,) of the conformity assessment:

Zertifikate einer benannten Stelle / Certificates by a notified body:

Anschrift / Address: _____
 Referenz / Reference: _____
 Anschrift / Address: _____
 Referenz / Reference: _____

Die letzten beiden Ziffern des Jahres in dem die CE-Kennzeichnung angebracht wurde: 09
 The last two figures of the year in which the CE marking was applied:
 (nur einzutragen, bei der Niederspannungsrichtlinie / only to be entered on the low voltage directive)

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
 This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
 This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Blomberg, 2018-01-08

 Werner Meyer Business Unit Power Supplies Manager Quality Engineering & Testing Ansprechpartner / contact person	 Hartmut Henkel Business Unit Power Supplies Head of Marketing & Sales Zeichnungsberechtigter / authorized signatory
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

EU-Konformitätserklärung Nr. 951194.00
EU-Declaration of Conformity No.

Hersteller / Manufacturer: **PHOENIX CONTACT GmbH & Co. KG**
 Anschrift / Address: **Flachsmarktstraße 8, 32825 Blomberg, Germany**

Produktbezeichnung / Product description: **UT 10**
(Artikelbezeichnung, / Article description, Artikel-Nr. / Article no.) **3044160**

Das vorstehend bezeichnete Produkt stimmt mit den wesentlichen Anforderungen der nachfolgenden Richtlinie(n) und deren Änderungsrichtlinien überein / The above mentioned product is in line with the essential requirements of the below directive(s) and their modification directive(s):

2014/35/EU Niederspannungs-Richtlinie
Low Voltage Directive (LVD)

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
 For evaluation of the conformity following relevant standards were consulted:
 EN 60947-7-1:2009

Weitere Informationen (z. B. Dokumente, Prüfberichte, Einschränkungen, etc.) zur Konformitätsbewertung:
 Additional information (for example documents, test reports, restrictions etc.,) of the conformity assessment:

Zertifikate einer benannten Stelle / Certificates by a notified body:

Anschrift / Address: _____
 Referenz / Reference: _____
 Anschrift / Address: _____
 Referenz / Reference: _____

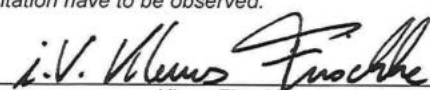
Die letzten beiden Ziffern des Jahres in dem die CE-Kennzeichnung angebracht wurde: 05
 The last two figures of the year in which the CE marking was applied:
 (nur einzutragen, bei der Niederspannungsrichtlinie / only to be entered on the low voltage directive)

Diese Erklärung gilt auch für die im Anhang aufgelisteten Produkte. (wenn angekreuzt)
 This declaration also applies for the products listed in the annex. (if marked with a cross)

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
 This declaration certifies the conformity with the essential requirements of the indicated directive(s), it does not, however, covenant any characteristics. The instructions for safety and installation of the enclosed product documentation have to be observed.

Blomberg, 2016-06-15


 Alessandro Alberani
 Business Unit Industrial Cabinet Connectivity
 Head of Development & Quality Laboratory


 Klaus Firschke
 Business Unit Industrial Cabinet Connectivity
 Head of Product Marketing

Ansprechpartner / contact person

Zeichnungsberechtigter / authorized signatory

Anhang zur EU-Konformitätserklärung Nr. 951194.00
Annex on EU Declaration of Conformity No.
vom / dated 2016-06-15

Produktbezeichnung / Product description: UT 10

(Artikelbezeichnung, / Article description,
Artikel-Nr. / Article no.)

3044160

Die Konformität mit den wesentlichen Anforderungen der Richtlinie(n) wird auch für folgende Produkte bescheinigt:
The conformity with the essential requirements of the directive(s) is also certified by the declaration for following products.

Artikel-Nr. / Article no.	Artikelbezeichnung / Article description
3046320	UT 10 BK
3044188	UT 10 BU
3046333	UT 10 GN
3046281	UT 10 OG
3046304	UT 10 RD
3064247	UT 10 SL
3046317	UT 10 WH
3046294	UT 10 YE
3047660	UT 10-FE
3044199	UT 16
3044197	UT 16 BK
3044209	UT 16 BU
3044211	UT 16 GN
3047468	UT 16 OG
3044207	UT 16 RD
3044198	UT 16 YE
3047663	UT 16-FE
3044076	UT 2,5
3045088	UT 2,5 BK
3044077	UT 2,5 BN
3044089	UT 2,5 BU
3045091	UT 2,5 GN
3045046	UT 2,5 OG
3045062	UT 2,5 RD
3044078	UT 2,5 VT
3045075	UT 2,5 WH
3045059	UT 2,5 YE
3245121	UT 2,5-FE
3064085	UT 2,5-MTD
3064108	UT 2,5-MTD BU
3064098	UT 2,5-MTD P/P
3064111	UT 2,5-MTD P/P BU

3044225	UT 35
3044226	UT 35 BK
3044238	UT 35 BU
3047727	UT 35 IB
3047730	UT 35 IB BU
3044227	UT 35 RD
3044102	UT 4
3045143	UT 4 BK
3045224	UT 4 BN
3044115	UT 4 BU
3045156	UT 4 GN
3045101	UT 4 OG
3045127	UT 4 RD
3044607	UT 4 VT
3045130	UT 4 WH
3045114	UT 4 YE
3044623	UT 4-CB
3044611	UT 4-CB BN
3044610	UT 4-CB OG
3047617	UT 4-FE
3046184	UT 4-MTD
3047691	UT 4-MTD BK
3047714	UT 4-MTD BN
3046197	UT 4-MTD BU
3047688	UT 4-MTD RD
3047701	UT 4-MTD WH
3044131	UT 6
3045208	UT 6 BK
3044144	UT 6 BU
3045211	UT 6 GN
3045169	UT 6 OG
3045185	UT 6 RD
3045198	UT 6 WH
3045172	UT 6 YE
3047647	UT 6-FE

Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

Phoenix Contact GmbH & Co. KG
Prüflabor TRABTECH
Flachmarktstraße 8, 32825 Blomberg

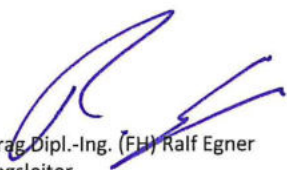
die Kompetenz nach DIN EN ISO/IEC 17025:2018 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

**Überspannungsschutzgeräte für Niederspannung, Stecker, Steckdosen,
Fahrzeugkupplungen und Fahrzeugstecker**

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 12.04.2019 mit der Akkreditierungsnummer D-PL-12161-03. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 4 Seiten.

Registrierungsnummer der Urkunde: **D-PL-12161-03-00**

Frankfurt am Main, 12.04.2019


Im Auftrag Dipl.-Ing. (FH) Ralf Egnér
Abteilungsleiter

Die Urkunde samt Urkundenanlage gibt den Stand zum Zeitpunkt des Ausstellungsdatums wieder. Der jeweils aktuelle Stand des Geltungsbereiches der Akkreditierung ist der Datenbank akkreditierter Stellen der Deutschen Akkreditierungsstelle GmbH (DAkkS) zu entnehmen. <https://www.dakks.de/content/datenbank-akkreditierter-stellen>

Deutsche Akkreditierungsstelle GmbH

Standort Berlin
Spittelmarkt 10
10117 Berlin

Standort Frankfurt am Main
Europa-Allee 52
60327 Frankfurt am Main

Standort Braunschweig
Bundesallee 100
38116 Braunschweig

Die auszugsweise Veröffentlichung der Akkreditierungsurkunde bedarf der vorherigen schriftlichen Zustimmung der Deutsche Akkreditierungsstelle GmbH (DAkKS). Ausgenommen davon ist die separate Weiterverbreitung des Deckblattes durch die umseitig genannte Konformitätsbewertungsstelle in unveränderter Form.

Es darf nicht der Anschein erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt, die über den durch die DAkKS bestätigten Akkreditierungsbereich hinausgehen.

Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung im Zusammenhang mit der Vermarktung von Produkten (Abl. L 218 vom 9. Juli 2008, S. 30). Die DAkKS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:

EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.nu

Deutsche Akkreditierungsstelle GmbH

Anlage zur Akkreditierungsurkunde D-PL-12161-03-00 nach DIN EN ISO/IEC 17025:2018

Gültig ab: 12.04.2019

Ausstellungsdatum: 12.04.2019

Urkundeninhaber:

Phoenix Contact GmbH & Co. KG
Prüflabor TRABTECH
Flachmarktstraße 8, 32825 Blomberg

Prüfungen in den Bereichen:

Überspannungsschutzgeräte für Niederspannung, Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker

Dem Prüflaboratorium ist, ohne dass es einer vorherigen Information und Zustimmung der DAkkS bedarf, die Anwendung der hier aufgeführten genormten oder ihnen gleichzusetzenden Prüfverfahren mit unterschiedlichen Ausgabeständen gestattet.

Das Prüflaboratorium verfügt über eine aktuelle Liste aller Prüfverfahren im flexiblen Akkreditierungsbereich.

Fachbereich	Norm / Hausverfahren / Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Normverfahren angeben)	Prüfbereich / Einschränkung
	DIN EN 61643-11, VDE 0675-6-11 Ausgabedatum: 2019	Überspannungsschutzgeräte für Niederspannung - Teil 11: Überspannungsschutzgeräte für den Einsatz in Niederspannungsanlagen - Anforderungen und Prüfungen (IEC 61643-11:2011, modifiziert); Deutsche Fassung EN 61643-11:2012 + A11:2018	Überspannungsschutzgeräte

verwendete Abkürzungen: siehe letzte Seite

Anlage zur Akkreditierungsurkunde D-PL-12161-03-00

Fachbereich	Norm / Hausverfahren / Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Normverfahren angeben)	Prüfbereich / Einschränkung
	EN 61643-11 Ausgabedatum: 2012	Überspannungsschutzgeräte für Niederspannung - Teil 11: Überspannungsschutzgeräte für den Einsatz in Niederspannungsanlagen - Anforderungen und Prüfungen (IEC 61643- 11:2011, modifiziert)	Überspannungs- schutzgeräte
	EN 61643- 11/A11 Ausgabedatum: 2018	Überspannungsschutzgeräte für Niederspannung - Teil 11: Überspannungsschutzgeräte für den Einsatz in Niederspannungsanlagen - Anforderungen und Prüfungen	Überspannungs- schutzgeräte
	IEC 61643-11, Ausgabedatum: 2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power distribution systems - Requirements and testing methods	Surge protection devices
	DIN EN 61643- 21, VDE 0845- 3-1 Ausgabedatum: 2013	Überspannungsschutzgeräte für Niederspannung - Teil 21: Überspannungsschutzgeräte für den Einsatz in Telekommunikations- und signalverarbeitenden Netzwerken - Leistungsanforderungen und Prüfverfahren (IEC 61643-21:2000 + Corrigendum 2001 + A1:2008, modifiziert + A2:2012); Deutsche Fassung EN 61643-21:2001 + A1:2009 + A2:2013	Überspannungs- schutzgeräte
	IEC 61643-21, Ausgabedatum: 2012	Low voltage surge protective devices - Part 21: Surge protective devices connected to telecommunications and signalling networks - Performance requirements and testing methods (Note: Combines IEC 61643-21 (2000-09), Corrigendum 1 (2001-03), AMD 1 (2008-04) and AMD 2 (2012-07) or IEC 61643-21 Edition 1.1 (2009-04) and AMD 2 (2012-07))	Surge protection devices
	DIN EN 61643- 12, VDE 0675- 6-12 Ausgabedatum: 2017	Überspannungsschutzgeräte für Niederspannung - Teil 12: Überspannungsschutzgeräte für den Einsatz in Niederspannungsanlagen - Auswahl und Anwendungsgrundsätze (IEC 37A/287/CD:2016)	Überspannungs schutzgeräte Prüfung nach Anhang J
	IEC 61643-12 Ausgabedatum: 2008	Low-voltage surge protective devices - Part 12: Surge protective devices connected to low-voltage power distribution systems - Selection and application principles	Surge protection devices Tests according Annex J

Anlage zur Akkreditierungsurkunde D-PL-12161-03-00

Fachbereich	Norm / Hausverfahren / Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Normverfahren angeben)	Prüfbereich / Einschränkung
	IEC 37A/305A/CD, Ausgabedatum: 2017	Low-voltage surge protective devices - Part 12: Surge protective devices connected to low-voltage power distribution systems - Selection and application principles	Surge protection devices Tests according Annex J
	DIN CLC/TS 61643-12, VDE V0675-6-12 Ausgabedatum: 2010	Überspannungsschutzgeräte für Niederspannung - Teil 12: Überspannungsschutzgeräte für den Einsatz in Niederspannungsanlagen -Auswahl und Anwendungs-grundsätze (IEC 61643-12:2008, modifiziert); Deutsche Fassung CLC/TS 61643- 12:2009	Überspannungs- schutzgeräte Prüfung nach Anhang J
	E DIN EN 61643-31, VDE 0675-6-31 Ausgabedatum: 2015	Überspannungsschutzgeräte für Niederspannung - Teil 31: Anforderungen und Prüfungen für Überspannungsschutzgeräte in Photovoltaik- Installationen (IEC 37A/255/CD:2014)	Überspannungs- schutzgeräte
	FprEN 61643- 31 Ausgabedatum: 2017	Low-voltage surge protective devices - Part 31: Requirements and test methods for SPDs for photovoltaic installations	Surge protection devices
	IEC 61643-31 Ausgabedatum: 2018	Low-voltage surge protective devices - Part 31: Requirements and test methods for SPDs for photovoltaic installations	Surge protection devices
	EN 50539-11 Ausgabedatum: 2013	Low-voltage surge protective devices - Surge protective devices for specific application including d.c. - Part 11: Requirements and tests for SPDs in photovoltaic applications	Surge protection devices
	DIN EN 50539- 11, VDE 0675- 39-11 DIN EN 50539- 11/A1, VDE 0675-39-11/A1 Ausgabedatum: 2015	Überspannungsschutzgeräte für Niederspannung - Überspannungsschutzgeräte für besondere Anwendungen einschließlich Gleichspannung - Teil 11: Anforderungen und Prüfungen für Überspannungsschutzgeräte für den Einsatz in Photovoltaik-Installationen; Deutsche Fassung EN 50539-11:2013/A1:2014	Überspannungs- schutzgeräte

Ausstellungsdatum: 12.04.2019

Gültig ab: 12.04.2019

Anlage zur Akkreditierungsurkunde D-PL-12161-03-00

Fachbereich	Norm / Hausverfahren / Version	Titel der Norm oder des Hausverfahrens (ggf. Abweichungen / Modifizierungen von Normverfahren angeben)	Prüfbereich / Einschränkung
	UL 1449 Ausgabedatum: 2014	UL 1449 Surge protective devices Part: 40: Surge Testing 43: Operational Voltage Test 44: Current Testing 48: Grounding Continuity Test 49: Fault Current Test 50: Overcurrent Test 51: Withstand Test 52: Instrumentation and Calibration of High-Capacity Circuits	Surge protection devices
	DIN EN 62196-1, VDE 0623-5-1 Ausgabedatum: 2015	Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker - Konduktives Laden von Elektrofahrzeugen - Teil 1: Allgemeine Anforderungen (IEC 62196-1:2014, modifiziert); Deutsche Fassung EN 62196-1:2014 Teile 12. Vorkehrung für die Schutzerdung 22: Schaltleistung 23: Normalbetrieb 31: Beständigkeit gegen bedingten Kurzschlussstrom	Stecker, Steckdosen, Fahrzeugkupplungen und Fahrzeugstecker
	IEC 62196-1 Ausgabedatum: 2014	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements Teile 12 Provisions for protective earthing 22 Breaking capacity 23 Normal operation 31 Conditional short-circuit current withstand test	Plugs, socket-outlets, vehicle connectors and vehicle inlets

PORTA-DAVIT[®] QUANTUM



600KG
WLL



1
person



From
18.5KG



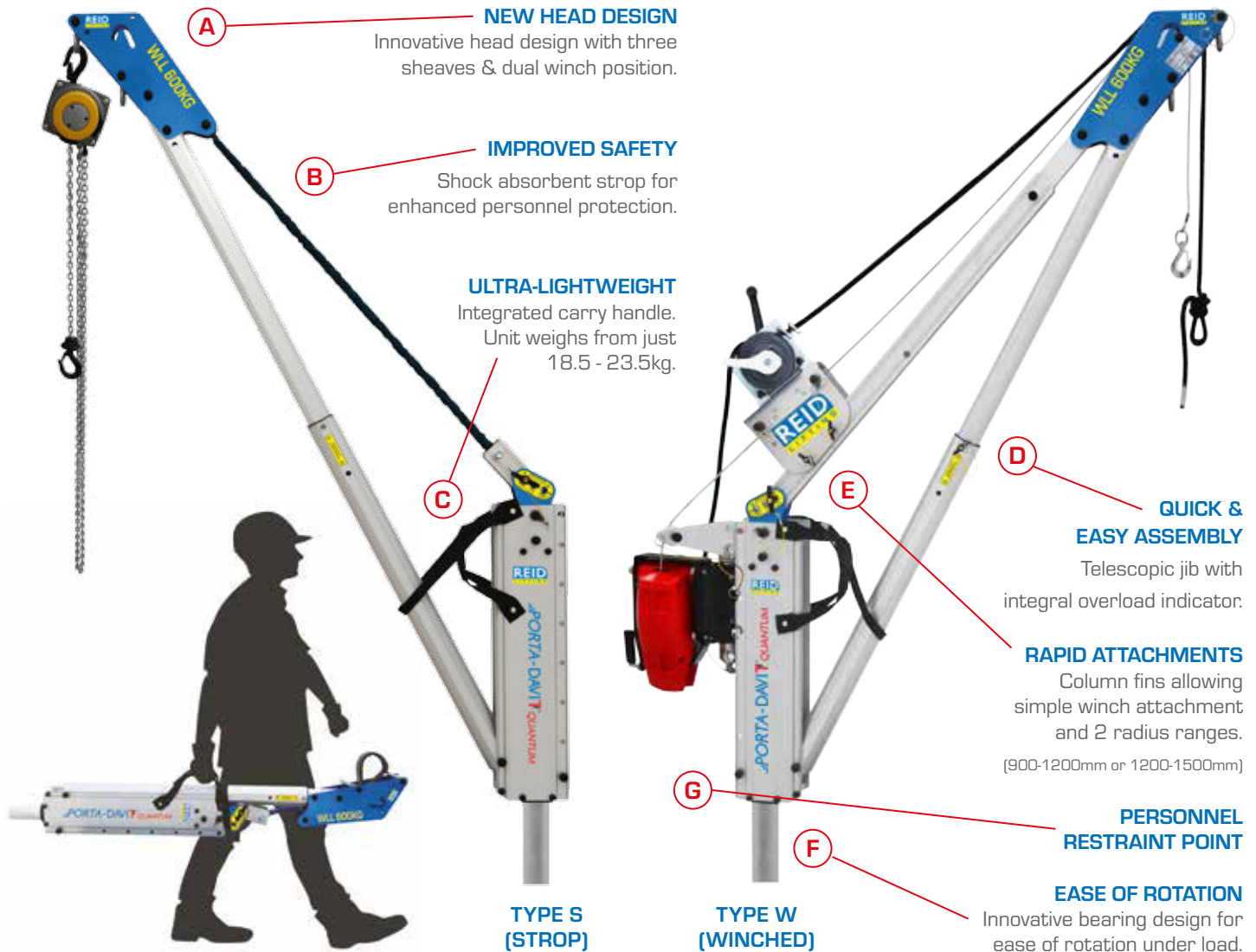
EN795

Strong yet ultra-light system with integrated carry handle, capable of lifting up to 600kg.

This unique, ultra-light and rapidly deployable system is the latest innovation to come from REID Lifting. With a WLL 600kg and weighing from just 18.5kg with an integrated carry-handle, the *PORTA-DAVIT QUANTUM* is easily transported and suitable for a range of applications.



ASSEMBLY
VIDEO



A **NEW HEAD DESIGN**
Innovative head design with three sheaves & dual winch position.

B **IMPROVED SAFETY**
Shock absorbent stropp for enhanced personnel protection.

C **ULTRA-LIGHTWEIGHT**
Integrated carry handle. Unit weighs from just 18.5 - 23.5kg.

D **QUICK & EASY ASSEMBLY**
Telescopic jib with integral overload indicator.

E **RAPID ATTACHMENTS**
Column fins allowing simple winch attachment and 2 radius ranges. (900-1200mm or 1200-1500mm)

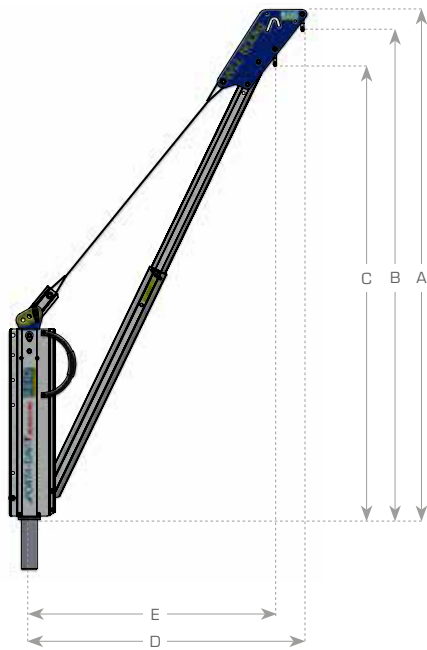
F **PERSONNEL RESTRAINT POINT**

G **EASE OF ROTATION**
Innovative bearing design for ease of rotation under load.

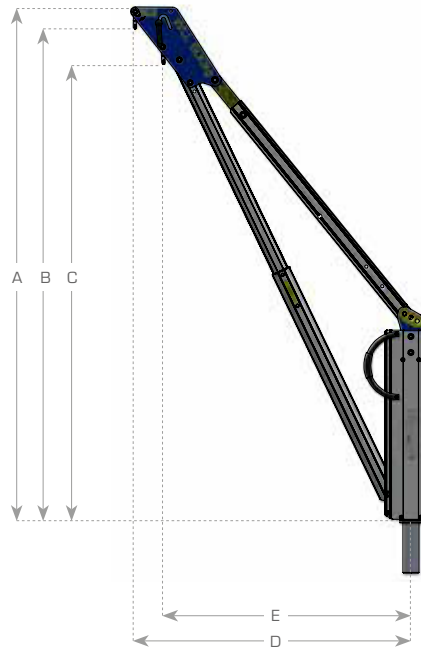
PORTA-DAVIT QUANTUM Information

- **GOODS WLL**
 - *PORTA-DAVIT QUANTUM 1* - up to 600kg at 1200mm radius
 - *PORTA-DAVIT QUANTUM 2* - up to 500kg at 1500mm radius
- **PERSONNEL WLL** Up to 150kg at all configurations
- **1 PERSON FALL ARREST** EN795:2012 certified - as part of an EN363 compliant system
- **ATEX** Suitable for use in ATEX Zone 2 explosive atmospheres. ATEX Zone 1 is available as an upgrade
- **LIGHTWEIGHT & PORTABLE** Manual handling compliant - fully assembled weight from just 18.5kg
 - Integrated carry handle
 - Bagged for easy transportation and storage
- **RAPID ASSEMBLY** No tools needed, assembles on just 1 pin (2 for winched)
- **RADIUS ADJUSTMENT** 900mm -1200mm or 1200mm -1500mm as standard
- **EASE OF ROTATION** 360° rotation under full load with fingertip control
- **CORROSION RESISTANT** Clean anodised finish to increase wear resistance
- **UNIVERSAL KINGPIN** Mates with all 65mm REID sockets (or sleeves for existing sockets)
 - Also suitable for use with socket extensions

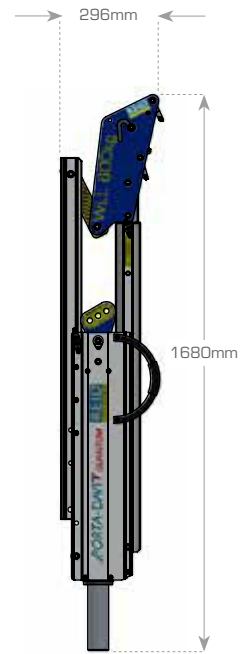
PORTA-DAVIT QUANTUM Dimensions



Type S (Strop)

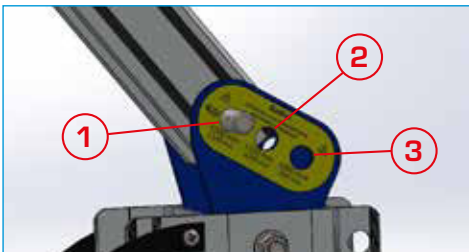


Type W (Winched)



Folded Dimensions

Radius Adjustment Points



	WLL	Radius Adjustment Points	Dimensions (mm)				
			A	B	C	D	E
PDQ 1	600kg	1	2007	1935	1799	1200	1100
		2	2061	1989	1848	1100	1000
		3	2111	2039	1892	1000	900
PDQ 2	500kg	1	1837	1766	1647	1500	1400
		2	1899	1827	1703	1400	1300
		3	1957	1885	1755	1300	1200

SOCKETS & EXTENSIONS:

Socket Extensions

The PORTA-DAVIT QUANTUM has been designed to fit all existing and new REID Lifting sockets and socket extensions.

Sockets



SOCKETS & EXTENSIONS



1 person



7-31KG



EN795



ATEX Certified

No. 1 in lightweight, portable, safe lifting solutions

ALUMINIUM SOCKETS

Aluminium sockets provide the lightest and most cost effective solution for socket installation. The lightweight sockets are available in 65mm diameter weighing just 7-9kg.



Top Mount



Side Mount



Bridge Mount

M16 anchors/ bolts

ALUMINIUM PEDESTALS

Aluminium pedestal sockets are available in three standard sizes or can be customised. The pedestal sockets are similar to top mount sockets with additional height.



500 mm



800 mm



1100 mm

Suitable for M16 or M20 anchors

PORTA-BASE™

A truly innovative extension to the REID socket family to further support the flexible use of the PORTA-DAVIT 500 range. The most convenient socket without any need for a fixed socket installation.

- **GOODS WLL** Up to 500kg at a max. 1000mm radius
- **PERSONNEL WLL** Up to 120kg
- **PORTABLE** Packed in heavy duty protective bags for easy transportation and storage
- **SPECIFICATIONS**
 - Adjustable feet for uneven surfaces with spirit level fitted to each leg
 - For use with 65mm socket diameter
 - Suitable for clean environments



STAINLESS/GALVANISED STEEL SOCKETS

Stainless steel sockets are made from passivated 316L stainless steel. Galvanised sockets are made from mild steel. Both types are available in 65mm and 95mm diameter.



Top Mount



Side Mount



Bridge Mount

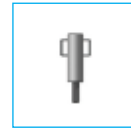


Flush Mount

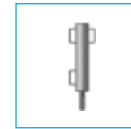
NEW 2018 M16 anchors/ bolts for lower cost installation

ALUMINIUM SOCKET EXTENSIONS

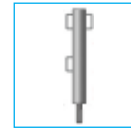
Aluminium socket extensions provide increased height of lift when using REID davits with 65mm diameter fixed sockets. Three standard sizes are available.



500 mm



800 mm



1100 mm

DIMENSIONS

Socket Type	Diameter mm	Weight		
		Galvanised Steel Kg	Aluminium Kg	Stainless Steel Kg
Bridge Mount	65	19	7	19
Side Mount	65	17	6	17
Side Mount	95	31		31
Top Mount	65	13	9	13
Top Mount	95	30		31
Flush Mount	65	5		4
Flush Mount	95	9		9

Socket Type	Height mm	Galvanised Steel Kg	Aluminium Kg	Stainless Steel Kg
Pedestal	800		17	
Pedestal	1100		20	
Socket Extension	500		13	
Socket Extension	800		15	
Socket Extension	1100		19	

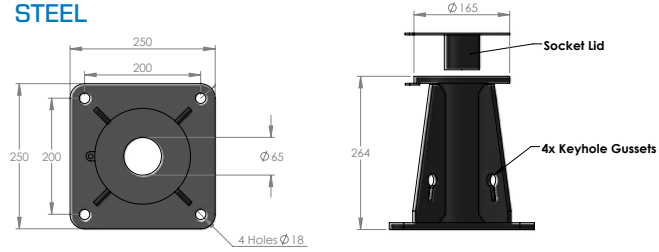


SOCKET DRAWINGS

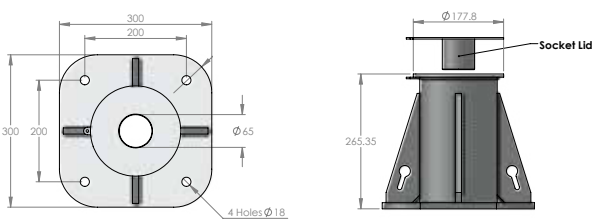
LIGHTWEIGHT | PORTABLE | SAFE

TOP MOUNT

STEEL

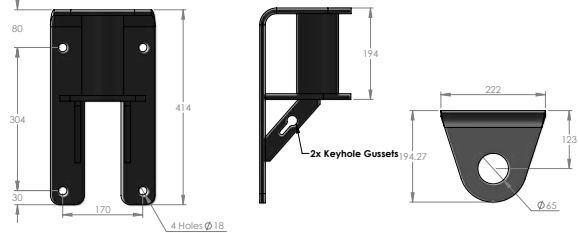


ALUMINIUM

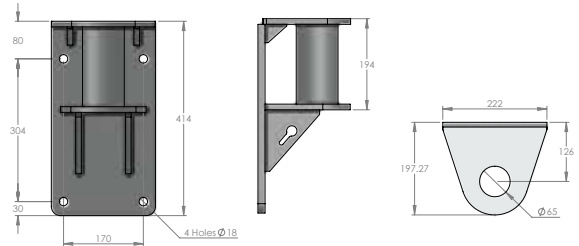


SIDE MOUNT

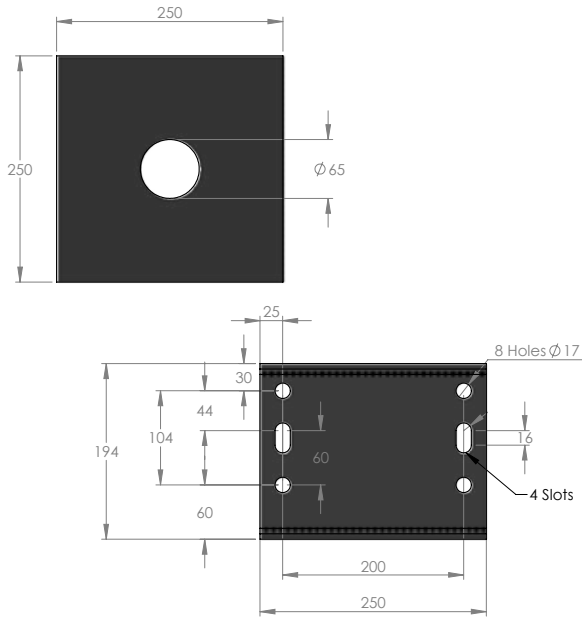
STEEL



ALUMINIUM

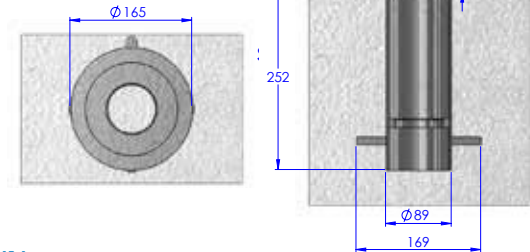


BRIDGE MOUNT

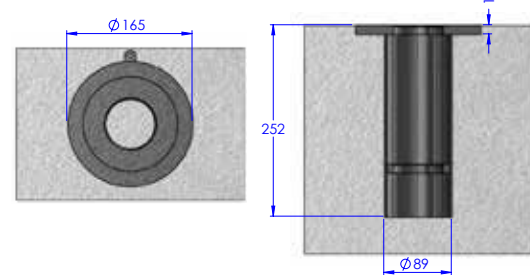


FLUSH MOUNT

CAST IN



RESIN



Socket Extensions

Sockets



SEPO/EN/V3/2018/04



**KONTI
HIDROPLAST®**



MANUFACTURER OF POLYETHYLENE AND POLYPROPYLENE PIPES AND MOULDED ACCESSORIES
ACC. Number: 21030000057483; IBAN CODE: MK0721030000057483; SWIFT: TUTNMK22 Tutunska Bank AD Skopje
str. "Industrijska" bb 1480 Gevgelija R. Macedonia Tel.: 00 389 34 212 064; 211 757; 211 757; fax.: 00 389 34 211 964
e-mail: contact@konti-hidroplast.com.mk www.konti-hidroplast.com.mk

DATA SHEET FOR PE SPIRAL PIPE

Description

Polyethylene (PE) spiral profiled welded pipe

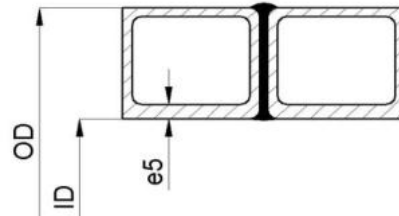
Application:

- Atmospheric and fecal sewerage
- Drainage

OD - Outside diameter of the pipe

ID - Inside diameter of the pipe

e5 - wall thicknesses



Specification

Standard	EN 13476-2		
Product appearance	Spirally profiled pipe		
Dimension DN /ID	2000 mm		
Dimension ID	≥ 1980 mm		
Dimension OD	2190 ± 20 mm		
Wall thicknesses	e5 min ≥ 7.0 mm		
PE Density	≥ 0.93 g/cm ³		
Ring stiffness	≥ SN 8 (kN /m ²)		
Modulus of elasticity	≥ 1000 (N/mm ²)		
Pipe flow index (MFR)	≤ 1,6 g/10 min (190 °C / 5.0 kg)		
Characteristics			
Dimensions	Requirements:	Table 6	Test method: EN ISO 3126
Ring stiffness	Requirements:	≥ SN 8	Test method: EN ISO 9969
Impact strenght 0 °C	Requirements:	No cracks	Test method: EN ISO 3127
Ring flexibility	Requirements:	30% deflexion without damages	Test method: EN ISO 13968
Pipe flow index (MFR)	Requirements:	≤ 20% of the material	Test method: EN ISO 1133-1
Creep ratio	Requirements:	≤ 4%	Test method: EN ISO 9967
Tightness of elastomeric ring seal joint	Requirements:	No leakage	Test method: ISO 13259

FLOW RATE TABLE PIPE FILLING 95 %

slope m/m	DN/ID	1300	1400	1500	1600	1800	2000
1/1000	Q(l/s)	1916.45	2335.20	2806.89	3334.02	4564.30	6044.97
0.001	v(m/s)	1.44	1.52	1.59	1.66	1.79	1.93

Quality control | Laboratory
Bachelor mech.eng. Zafir Stardelev



Series
VENTS TT PRO



Inline mixed-flow fans with the air flow up to **2050 m³/h**

Series
VENTS TT



Inline mixed-flow fans with the air flow up to **1850 m³/h**

■ **Application**

The **VENTS TT** and **VENTS TT PRO** fans are featured with wide capabilities and high performance of axial and centrifugal fans and are specifically designed for supply and exhaust ventilation of premises requiring high pressure, powerful air flow and low noise level. The fans are compatible with round air ducts from Ø 100 to 315 mm. Exhaust ventilation systems based on the **VENTS TT** fans are the best solution for ventilation of bathrooms and kitchens and other humid premises as well for ventilation of flats, cottages, shops, cafes, etc.

■ **Design**

The casing is made of high-quality durable plastic. The removable impeller and motor block with a terminal box is fixed to the casing assembled with the spigots by

means of special clamps with latches. This makes the fan maintenance fast and easy. The fan maintenance does



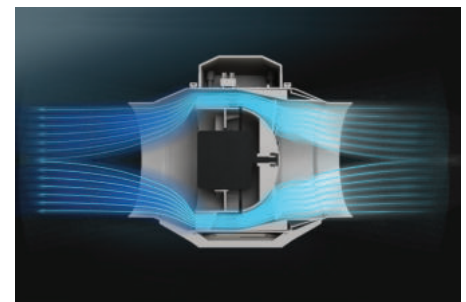
not require total disassembling. Just pull out the central block from the casing and perform required servicing. All the models may be equipped with a regulated timer with turn-off delay adjustable from 2 to 30 min.

■ **TT PRO design features:**

The **VENTS TT PRO** fan casing is made of low flammable polypropylene. The inlet spigot is equipped with a collector to enable smooth air inlet to the fan. The hemispheric impeller shape and specially profiled blades increase the air flow circular velocity and provide higher pressure and capacity as compared to standard axial fans. The diffuser, the specially profiled impeller and the directing vanes at outlet from the fan casing distribute air flow in such a way as to attain the best combination of high performance, enhanced pressure and low noise.

■ **Motor**

The models of **VENTS TT** series are equipped with a single phase motor and are available in single or two speed modifications. Some dimension types are available with a more powerful motor (**VENTS TT...S**). The models of

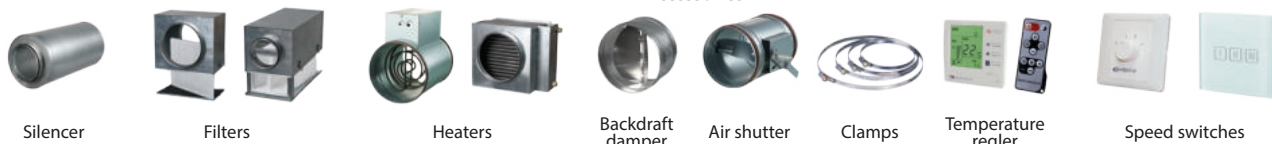


VENTS TT PRO series are equipped with single phased double-speed motors with low energy demand. The motors have thermal overheating protection to prevent the motor overload. The ball bearings extend the motor service life up to 40 000 hrs. at non-stop operation. The motor has IPX4 ingress protection rating.

Designation key

Series	Air duct diameter	Options	ErP data
VENTS TT PRO VENTS TT	100; 125; 150; 160; 200; 250; 315	<p>S: high-powered motor.</p> <p>T: adjustable timer from 2 to 30 minutes.</p> <p>U: speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic.</p> <p>Un: speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic.</p> <p>U1: speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic.</p> <p>U1n: speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic.</p> <p>R: power cord with IEC C14 electric plug.</p> <p>V: threeposition speed switch (for TT PRO series fans only).</p> <p>P: built-in smooth speed controller and power cord with IEC C14 electric plug.</p>	<p>Overall efficiency η, [%]</p> <p>Measurement category MC</p> <p>Efficiency category EC</p> <p>Efficiency grade N</p> <p>Variable speed drive VSD</p> <p>Power [kW]</p> <p>Current [A]</p> <p>Air flow [m³/h]</p> <p>Static pressure [Pa]</p> <p>Speed [n/min⁻¹]</p> <p>Specific ratio SR</p>

Accessories



■ Speed control



TT fan with a three-position speed switch

The double-speed motors are controlled with a built-in switch (V option) or an external switch for multi-speed fans (available upon separate order).

An integrated speed controller (option P), an external TRIAC or autotransformer speed controller (available upon separate order) are used for smooth speed control when connected to the maximum speed terminal.



TT fan with a built-in speed controller

■ Mounting

The fans are suitable for mounting at any angle and point of the system. Several fans may be installed inside one system. Several fans may be installed inside one system:

– **parallel mounting** to increase air flow;



TTP kit for parallel connection

– **in series mounting** to increase operating pressure; The fan case is equipped with a flat mounting plate to attach the fan to the wall. The mounting box may

be installed in any position to facilitate mounting and wiring.



TTS kit for series connection

■ The fan with electronic module of the temperature sensor and speed controller (U option).

The ideal solution for ventilation of the premises with high demands to permanent indoor temperature level, e.g. greenhouses.

The fan with the electronic module of the temperature sensor and the speed controller is used for automatic speed control (air flow regulation) depending on the air temperature in the ventilation duct or inside a room.



The electronic module of the front panel incorporates:

- the speed control knob for the setting the impeller speed;
- the thermostat control knob for setting the temperature set point.
- thermostat LED light.



Two modifications are possible:

- temperature sensor integrated inside a fan duct (U/ U1 option);
- external temperature sensor fixed on 4 m power cable (Un / U1n option).

■ Operating logic of the fan with the electronic module of the temperature sensor and speed controller

Set the desired air temperature (set point of the thermostat) with the thermostat control knob. Set the required minimum impeller speed (air flow) with the speed control knob. The motor switches to maximum speed (maximum air flow) as the temperature reaches and exceeds the set temperature set point. The motor switches to the pre-set speed as the temperature drops down below the set temperature point.

To avoid the frequent motor switching, e.g. when the temperature in the supply air duct is equal to the threshold value, the switching delay time is activated.

There are two switch delay patterns for various cases:

1. The temperature sensor-based switch delay (U option): the motor switches to higher speed as the air temperature exceeds 2 °C above the set thermostat set point. The motor reverts to the pre-set lower speed as the air temperature drops below the thermostat set point.

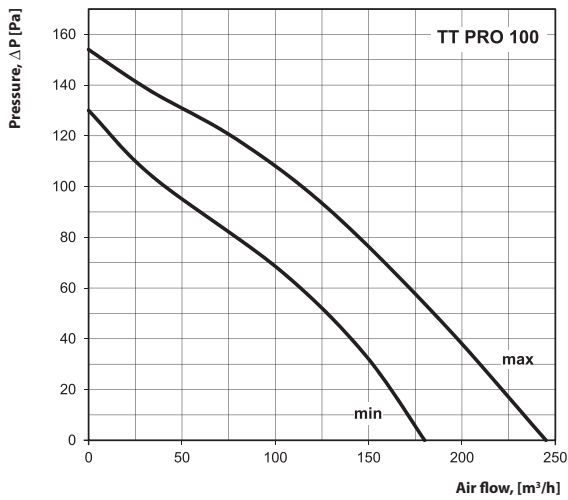
This pattern is used to keep air temperature to within 2 °C. In this case the fan switches are rare.

2. The timer-based switch delay (U1 option): as the air temperature exceeds the set thermostat set point, the motor switches to higher speed and the switch delay timer is activated for 5 min. The motor reverts to lower speed as the air temperature drops down below the thermostat set point and only after the timer countdown.

This pattern is used for exact air temperature control.

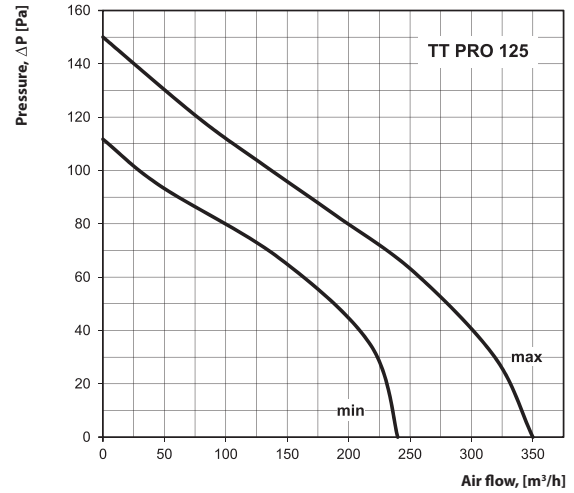
The fan changes its speed more often as compared to the temperature sensor-based switch delay, however the minimum timer interval is 5 minutes.

VENTS TT PRO



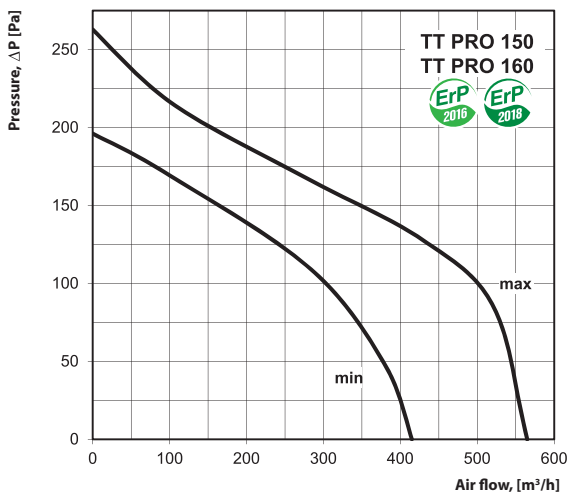
Sound-power level, A - weighted	Hz	Sound power level, A-filter applied								Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
		Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000			8000
Min speed												
L _{WA} to inlet	dBA	54	19	35	50	49	44	37	25	17	33	43
L _{WA} to outlet	dBA	53	17	34	50	49	43	36	24	17	32	42
L _{WA} to environment	dBA	47	14	29	43	43	39	33	22	15	27	37
Max speed												
L _{WA} to inlet	dBA	59	24	34	53	54	53	48	37	26	38	48
L _{WA} to outlet	dBA	57	23	33	52	52	52	47	37	26	37	47
L _{WA} to environment	dBA	52	18	29	46	48	47	43	33	23	32	42

VENTS TT PRO



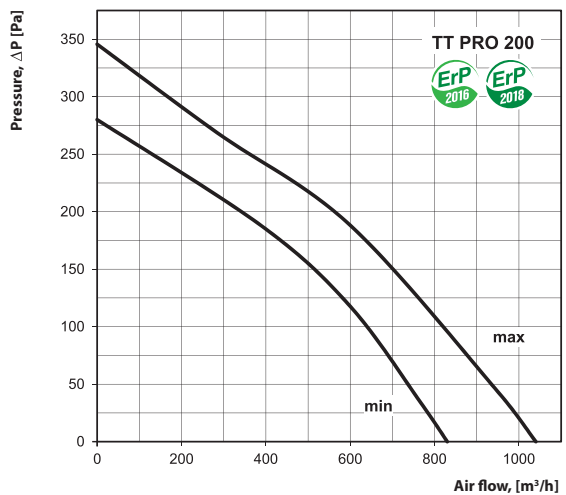
Sound-power level, A - weighted	Hz	Sound power level, A-filter applied								Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
		Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000			8000
Min speed												
L _{WA} to inlet	dBA	54	26	38	52	50	44	38	27	17	34	44
L _{WA} to outlet	dBA	54	25	37	51	49	43	38	28	18	33	43
L _{WA} to environment	dBA	49	21	32	46	45	40	35	25	16	29	39
Max speed												
L _{WA} to inlet	dBA	60	20	31	57	51	51	50	39	27	39	49
L _{WA} to outlet	dBA	59	20	31	56	51	51	49	39	26	38	48
L _{WA} to environment	dBA	54	16	27	51	46	47	45	36	24	34	44

VENTS TT PRO



Sound-power level, A - weighted	Hz	Sound power level, A-filter applied								Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
		Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000			8000
Min speed												
L _{WA} to inlet	dBA	59	31	45	54	52	54	48	35	29	38	48
L _{WA} to outlet	dBA	63	37	49	56	56	60	48	39	30	42	52
L _{WA} to environment	dBA	52	21	30	48	48	45	42	34	23	32	42
Max speed												
L _{WA} to inlet	dBA	69	38	51	57	62	60	66	49	44	48	58
L _{WA} to outlet	dBA	72	42	55	66	67	68	65	53	45	52	62
L _{WA} to environment	dBA	65	23	37	56	59	57	61	47	35	44	54

VENTS TT PRO

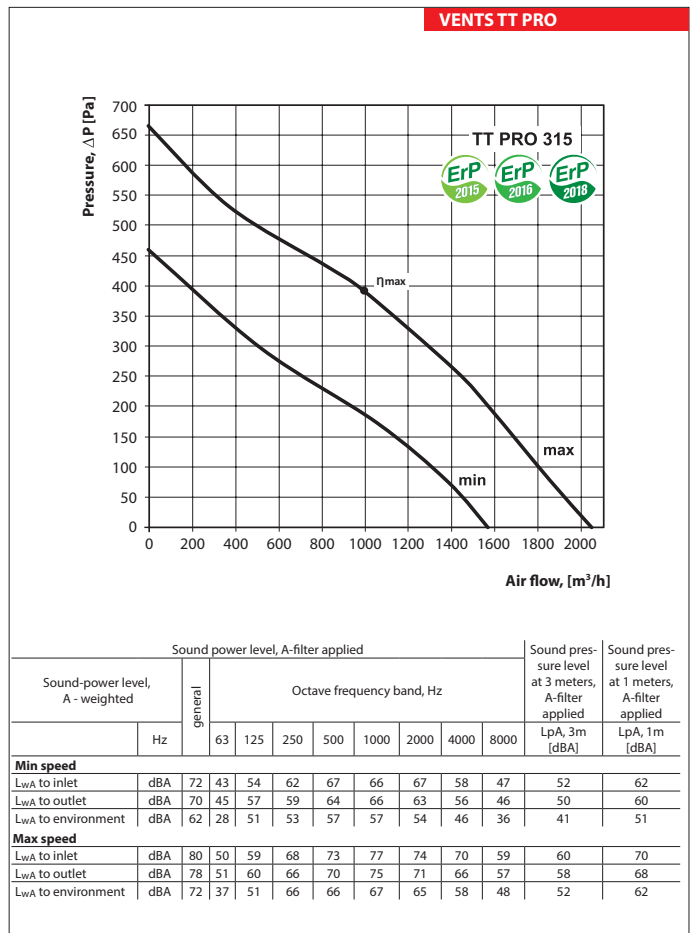
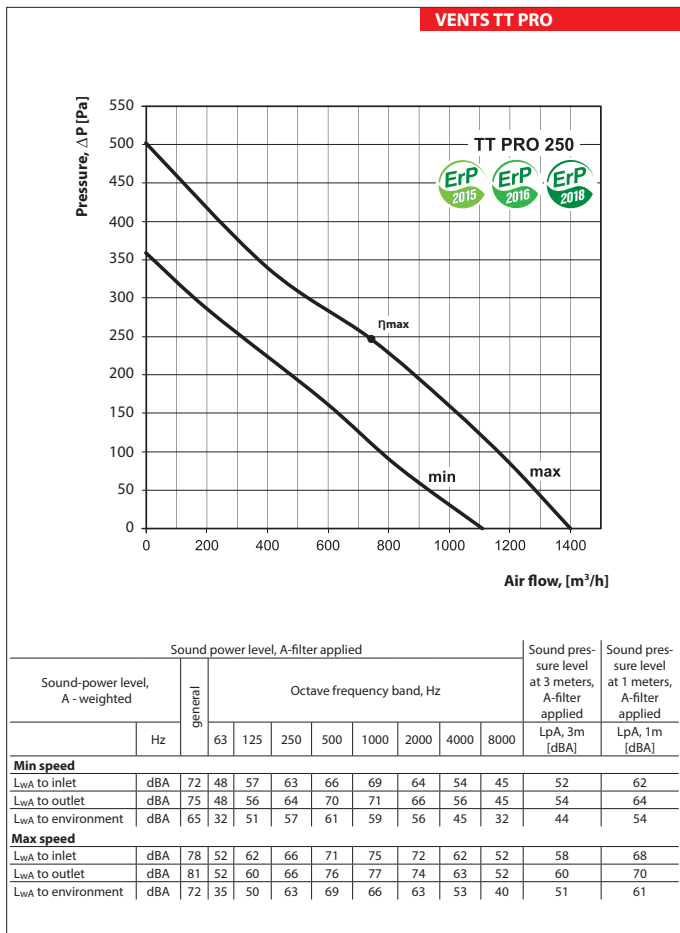


Sound-power level, A - weighted	Hz	Sound power level, A-filter applied								Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
		Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000			8000
Min speed												
L _{WA} to inlet	dBA	66	38	50	58	59	60	59	55	45	45	55
L _{WA} to outlet	dBA	64	40	50	54	58	59	57	51	44	43	53
L _{WA} to environment	dBA	60	27	42	49	54	55	54	46	34	39	49
Max speed												
L _{WA} to inlet	dBA	71	41	50	63	64	65	64	62	52	50	60
L _{WA} to outlet	dBA	70	43	52	61	66	64	63	58	51	50	60
L _{WA} to environment	dBA	65	34	43	54	60	60	60	53	41	45	55

Technical data

	TT PRO 100		TT PRO 125		TT PRO 150/TT PRO 160	
Speed	min	max	min	max	min	max
Voltage [V/50 (60) Hz]	1~230		1~230		1~230	
Power [W]	23	25	25	29	42	50
Current [A]	0.10	0.11	0.11	0.13	0.19	0.22
Max. air flow [m³/h]	180	245	240	350	415	565
RPM [min ⁻¹]	2050	2620	1630	2300	1940	2620
Noise level at 3 m [dBA]	27	32	29	34	32	44
Max. transported air temperature [°C]	60		60		60	
SEC class	C		B		B	
Protection rating	IPX4		IPX4		IPX4	

	TT PRO 200		TT PRO 250		TT PRO 315	
Speed	min	max	min	max	min	max
Voltage [V/50 (60) Hz]	1~230		1~230		1~230	
Power [W]	76	108	125	177	230	320
Current [A]	0.34	0.48	0.54	0.79	1.0	1.42
Max. air flow [m³/h]	830	1040	1110	1400	1570	2050
RPM [min ⁻¹]	1915	2380	1955	2440	1890	2430
Noise level at 3 m [dBA]	39	45	44	51	41	52
Max. transported air temperature [°C]	60		60		60	
SEC class	B		-		-	
Protection rating	IPX4		IPX4		IPX4	

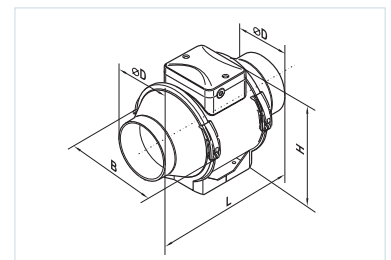


η _i [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
30.6	A	Static	49.2	No	0.171	0.79	742	247	2465	1

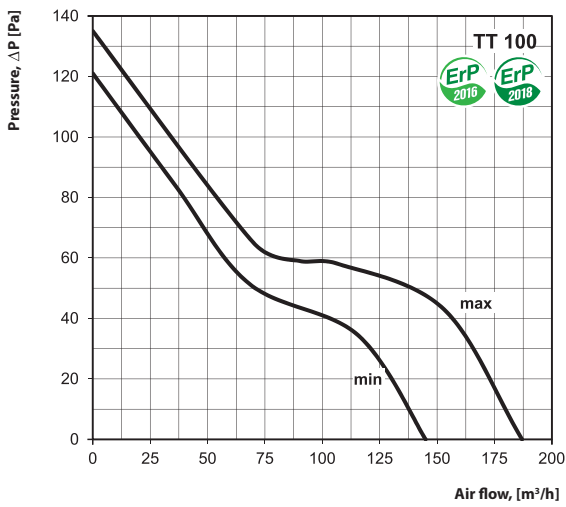
η _i [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
34.4	A	Static	50	No	0.322	1.45	996	392	2380	1

Fan overall dimensions

Type	Dimensions [mm]				Weight [kg]
	ØD	B	H	L	
TT PRO 100	97	195.8	226	302.5	1.75
TT PRO 125	123	195.6	226	258.5	2.15
TT PRO 150	148	220.1	247	289	2.3
TT PRO 160	158	220.1	247	289	3.25
TT PRO 200	199	239	261	295.5	3.95
TT PRO 250	247	287	323	383	7.8
TT PRO 315	310	362	408	445	11.95

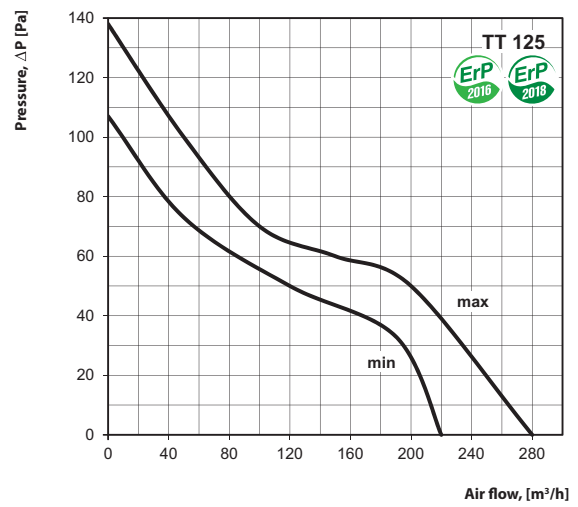


VENTS TT



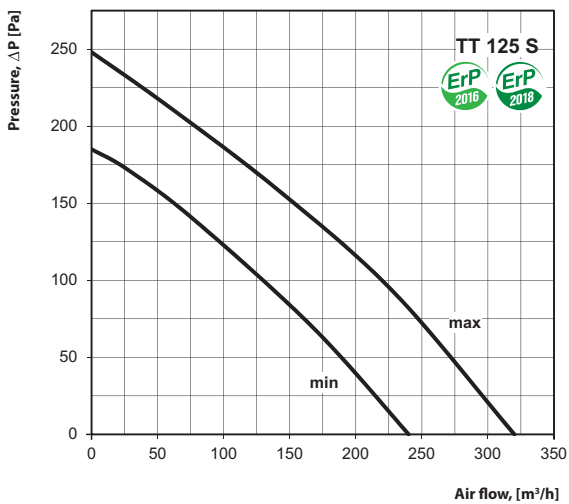
Sound power level, A-filter applied										Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
Sound-power level, A-weighted	Hz	Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000	8000		
Min speed												
L _{WA} to inlet	dBA	54	16	28	51	45	49	41	35	24	33	43
L _{WA} to outlet	dBA	53	15	27	50	44	48	40	35	23	32	42
L _{WA} to environment	dBA	48	11	23	44	40	43	36	31	21	27	37
Max speed												
L _{WA} to inlet	dBA	64	23	35	61	58	56	48	43	30	43	53
L _{WA} to outlet	dBA	63	22	34	60	57	55	48	42	29	42	52
L _{WA} to environment	dBA	56	17	29	53	51	50	43	38	26	36	46

VENTS TT



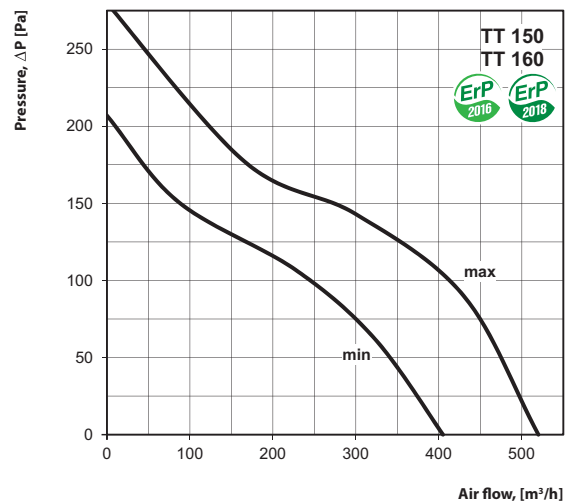
Sound power level, A-filter applied										Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
Sound-power level, A-weighted	Hz	Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000	8000		
Min speed												
L _{WA} to inlet	dBA	53	17	30	48	48	48	43	35	22	33	43
L _{WA} to outlet	dBA	52	16	29	47	47	47	43	34	21	32	42
L _{WA} to environment	dBA	49	13	26	43	44	44	40	32	20	28	38
Max speed												
L _{WA} to inlet	dBA	62	28	38	57	58	57	52	43	29	42	52
L _{WA} to outlet	dBA	61	27	37	55	57	56	51	42	29	41	51
L _{WA} to environment	dBA	58	23	33	51	53	52	48	40	27	37	47

VENTS TT



Sound power level, A-filter applied										Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
Sound-power level, A-weighted	Hz	Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000	8000		
Min speed												
L _{WA} to inlet	dBA	56	28	38	53	51	49	46	37	24	36	46
L _{WA} to outlet	dBA	55	27	37	52	50	48	45	37	23	35	45
L _{WA} to environment	dBA	52	23	33	47	46	44	42	34	21	31	41
Max speed												
L _{WA} to inlet	dBA	67	38	49	63	63	60	57	50	38	47	57
L _{WA} to outlet	dBA	66	38	48	61	62	59	56	48	37	46	56
L _{WA} to environment	dBA	63	34	45	58	58	56	53	46	35	42	52

VENTS TT

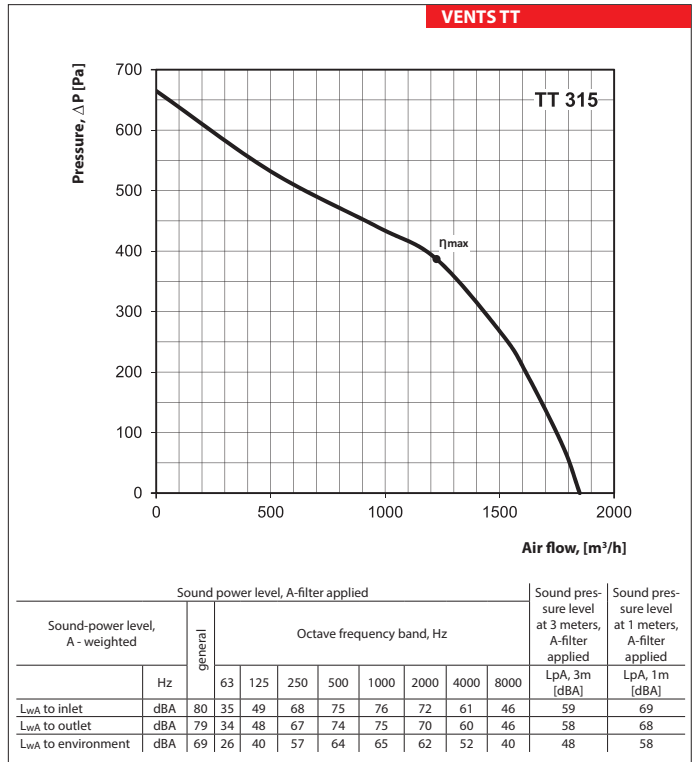
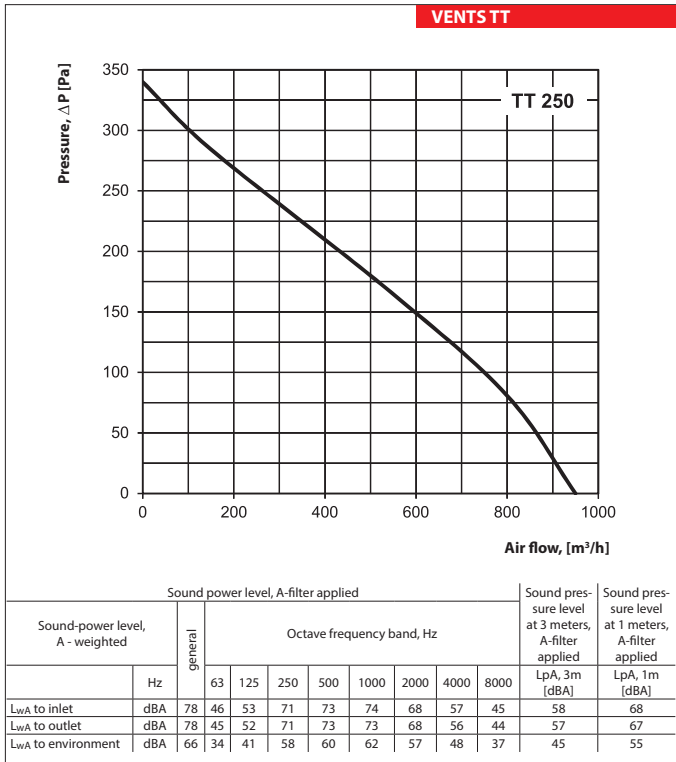


Sound power level, A-filter applied										Sound pressure level at 3 meters, A-filter applied LpA, 3m [dBA]	Sound pressure level at 1 meters, A-filter applied LpA, 1m [dBA]	
Sound-power level, A-weighted	Hz	Octave frequency band, Hz										
		general	63	125	250	500	1000	2000	4000	8000		
Min speed												
L _{WA} to inlet	dBA	66	35	46	63	60	57	53	43	28	45	55
L _{WA} to outlet	dBA	65	34	45	62	59	56	53	43	28	44	54
L _{WA} to environment	dBA	54	24	35	50	49	47	44	36	23	34	44
Max speed												
L _{WA} to inlet	dBA	75	42	52	71	69	67	64	56	43	54	64
L _{WA} to outlet	dBA	74	41	50	70	69	66	63	56	42	53	63
L _{WA} to environment	dBA	64	32	41	59	58	57	54	48	36	43	53

Technical data

	TT 100		TT 125		TT 125 S	
Speed	min	max	min	max	min	max
Voltage [V/50 (60) Hz]	1~ 230		1~ 230		1~ 230	
Power [W]	21	33	23	37	28	54
Current [A]	0.11	0.21	0.18	0.27	0.12	0.16
Max. air flow [m³/h]	145	187	220	280	240	320
RPM [min ⁻¹]	2180	2385	1950	2455	1850	2510
Noise level at 3 m [dBA]	27	36	28	37	31	42
Max. transported air temperature [°C]	60		60		60	
SEC class	C		B		C	
Protection rating	IPX4		IPX4		IPX4	

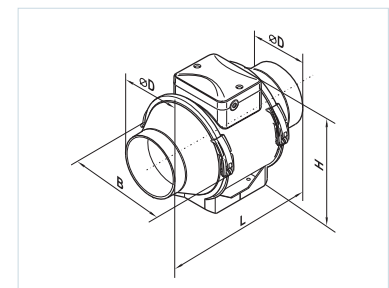
	TT 150 / TT 160		TT 250	TT 315
Speed	min	max	-	-
Voltage [V/50 (60) Hz]	1~ 230		1~ 230	1~ 230
Power [W]	30	60	120	314
Current [A]	0.17	0.27	0.52	1.42
Max. air flow [m³/h]	405	520	950	1850
RPM [min ⁻¹]	1680	2460	1840	2335
Noise level at 3 m [dBA]	33	44	45	48
Max. transported air temperature [°C]	60		60	60
SEC class	B		B	-
Protection rating	IPX4		IPX4	IPX4



Fan overall dimensions

Type	Dimensions [mm]				Weight [kg]
	∅D	B	H	L	
TT 100	96	167	190	246	1.45
TT 125	123	167	190	246	1.35
TT 125 S	123	223	250	295	3.14
TT 150	146	223	250	295	2.65
TT 160	158	233	250	295	2.65
TT 250	247	287	323	383	6.9
TT 315	310	362	408	445	10.35

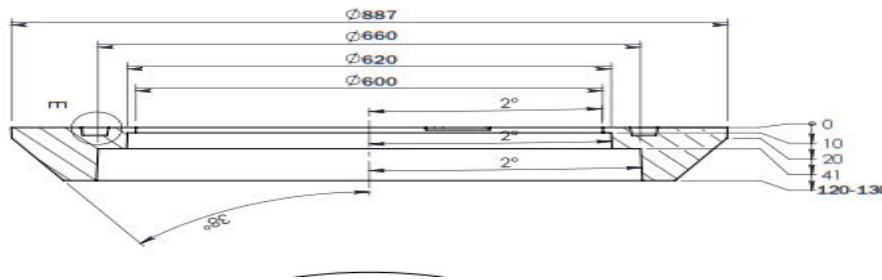
ηi [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
41.7	A	Static	57.4	No	0.310	1.43	1224	387	2350	1





DATA SHEET

Cover with polymer-composite frame with dimensions of the clear
RCFD400 - Φ600



NAME	MANHOLE COVER WITH RING
Standards	EN 124, DIN 1229, EN 1563, EN 1563 / A1, ISO 185, ISO 945, DIN 19583, DIN 19584, DIN 19596/1, DIN 19596/2, DIN 19596/3
Code	RCFD400 - Φ600
Type	Product type according to standard EN124, B125
Manufacturer	RECO PRODUCTION LTD
Futures	Two-point screw locking for increased general security of the cover in the frame
	Fully recyclable and have a low embodied energy when compared with other materials used for the same application
Raw Material	polymer-composite
Weight	70 kg
Color	Grey, Black
	On request another color
Other futures	Our unique composition of material allows for minimal to no vibrations. Ensuring the supporting area and structures are unaffected by the trafficking of the cover.
	The Unique composition of the eco cover range provides a high UV resistance value, ensuring the product a maintain a high level of aesthetics.



CERTIFICATE
VALID UNDER
THE CONDITION
OF ANNUAL VISA



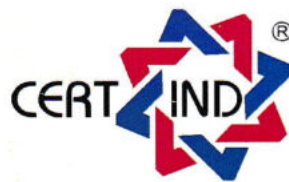
ANNUAL VISA UNTIL

JUNE
2022

ANNUAL VISA UNTIL

JUNE
2023

certification body
Details regarding the present certificate can be obtained by contacting CERTIND SA. Telephone: +4021.313.36.51/ E-mail: office@certind.ro
Counterfeiting of the present certificate is punished according to the applicable laws.



acreditat pentru

CERTIFICARE



SR EN ISO/CEI 17021-1 2015
CERTIFICAT DE ACREDITARE
SM 041

CERTIFICATE

CERTIND

Confirms that the management system of

HYDROGEO SYSTEMS Ltd

registration address: 86 Ralevitsa str., 1404 Sofia, Bulgaria

secondary address: Yana village, Sofia Area, Bulgaria

conforms to the requirements of

ISO 9001:2015

Certification scope:

Design and assembling of inspection chambers, sewage manholes,
water-metering shafts, pumping stations and waste water treatment plant.

- scope of certification related to annex -

Certificate no.: 21429 C

Current certification: 04.06.2021

Current certification cycle ends on: 03.06.2024 under condition of annual visa

Recertification shall be completed prior to the current certification cycle end date

GENERAL MANAGER

Violeta Sergentu



The certification body reserves the right to suspend or withdraw the present certificate if during surveillance audits it is identified that the organization does not continue to respect the specified requirements.

CERTIND SA - CERTIFICATION BODY
UGIR 1903 Palace, 27-29 George Enescu street, Bucharest 1



ANNEX

Annex to Certificate No. 21429 C from 04.06.2021

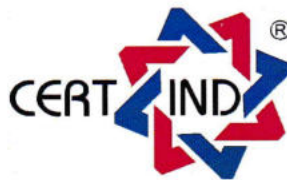
Locations	Location type	Activities
86 Ralevitsa str., 1404 Sofia, Bulgaria	Registration address	No activity.
Yana village, Sofia Area, Bulgaria	Secondary location	Office and base.

This annex is valid only accompanied by CERTIND certificate of conformity No. 21429 C

GENERAL MANAGER
Violeta Sergentu



CERTIFICATE
VALID UNDER
THE CONDITION
OF ANNUAL VISA



acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 041

CERTIFICATE

CERTIND

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HYDROGEO SYSTEMS Ltd

registration address: 86 Ralevitsa str., 1404 Sofia, Bulgaria

secondary address: Yana village, Sofia Area, Bulgaria

conforms to the requirements of

ISO 14001:2015

Certification scope:

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water-metering shafts, pumping stations and waste water treatment plant.

- scope of certification related to annex -

Certificate no.: 21429 M

Current certification: 04.06.2021

Current certification cycle ends on: 03.06.2024 under condition of annual visa

Recertification shall be completed prior to the current certification cycle end date

GENERAL MANAGER

Violeta Sergentu



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CERTIND SA - CERTIFICATION BODY

UGIR 1903 Palace, 27-29 George Enescu street, Bucharest 1

certification body

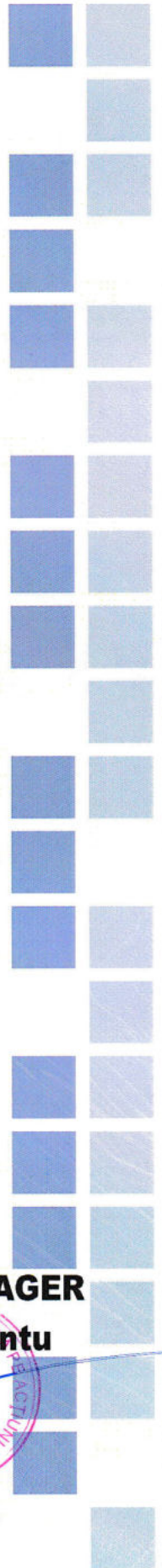
Details regarding the present certificate can be obtained by contacting CERTIND SA. Telephone: +4021.313.36.51/ E-mail: office@certind.ro
Counterfeiting of the present certificate is punished according to the applicable laws.

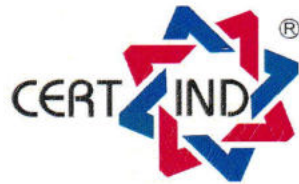
ANNUAL VISA UNTIL

**JUNE
2022**

ANNUAL VISA UNTIL

**JUNE
2023**





ANNEX

Annex to Certificate No. 21429 M from 04.06.2021

Locations	Location type	Activities
86 Ralevitsa str., 1404 Sofia, Bulgaria	Registration address	No activity.
Yana village, Sofia Area, Bulgaria	Secondary location	Office and base.

This annex is valid only accompanied by CERTIND certificate of conformity No. 21429 M

GENERAL MANAGER

Violeta Sergentu



CONCERNUL REPUBLICAN AL INDUSTRIEI
MATERIALELOR DE CONSTRUCȚII
"INMACOM"

SOCIETATEA CU RĂSPUNDERE LIMITATĂ
INSTITUTUL DE CERCETĂRI ȘTIINȚIFICE
ȘI PROIECTARE ÎN DOMENIUL
MATERIALELOR DE CONSTRUCȚII

РЕСПУБЛИКАНСКИЙ КОНЦЕРН
ПРОМЫШЛЕННОСТИ СТРОИТЕЛЬНЫХ
МАТЕРИАЛОВ "ИНМАКОМ"

ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕНО-
СТЬЮ НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ И
ПРОЕКТНО-КОНСТРУКТОРСКИЙ ИНСТИТУТ
СТРОИТЕЛЬНЫХ МАТЕРИАЛОВ

"INMACOMPROIECT"

www.inmacomproiect.md

2015, Republica Moldova, mun. Chișinău,
str. Sarmizegetusa nr.15, tel, fax 521-130, tel.52-20-86

2015, Республика Молдова, мун. Кишинэу,
ул. Сармизежетуса, 15, тел, факс 521-130,52-20-86

14.02.2022 nr. 01/02
la nr. _____ din _____

"DEMATEK WATER
MANAGEMENT" SRL

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Vă înaintăm prezentul Aviz la Evaluarea tehnică nr. 02/11-003:2022 care a fost aprobată în data de 11 februarie 2022 la ICȘP "INMACOMPROIECT" SRL. Avizul tehnic al Consiliului Tehnic Permanent pentru Construcții îl vom transmite după ce va fi semnat la Ministerul Infrastructurii și Dezvoltării Regionale al Republicii Moldova.

Director

A. Belousova



Ex. E. Proaspăt
+373 22 52 10 78

**MINISTERUL INFRASTRUCTURII ȘI DEZVOLTĂRII REGIONALE
AL REPUBLICII MOLDOVA**

CONSILIUL TEHNIC PERMANENT PENTRU CONSTRUCȚII



**Evaluare tehnică
Nr. 02/11-003:2022**

Valabilitate până la 30.04.2025

Cod NM MD 3917

STAȚII DE POMPARE A APELOR UZATE – HYDROPUMP

Titular: "DEMATEK WATER MANAGEMENT" SRL,
str. Preciziei Nr. 6M, sector 6, București, România,
tel.: +40 723 36 45 25.

Producător: "HYDROGEO SISTEMI" LTD, str. Ralevitsa
86, Sofia, Bulgaria, tel. 00359 882 625 883,
fax 00359 882 625 883.

Evaluarea tehnică a fost emisă de ICȘP „INMACOMPROIECT” SRL, MD 2015, or. Chișinău, str. Sarmizegetusa nr. 15, tel/fax 022 52-11-30, Grupa specializată 11 "Lucrări de gospodărie comunală, alimentări cu apă, canalizări, stații de tratare și epurare, transport urban și salubritate".

Prezenta evaluare tehnică conține 17 pagini și anexa 27 pagini care face parte integrantă din prezenta evaluare.

Prezenta evaluare tehnică este eliberată în conformitate cu Regulamentul cu privire la organizarea și funcționarea ghișeului unic de elaborare a evaluării tehnice în construcții, în baza anexei nr.1 la Hotărârea Guvernului nr. 913 din 06 noiembrie 2014.

***Prezenta Evaluare tehnică este valabilă numai însoțită de avizul tehnic al
Consiliului Tehnic Permanent pentru Construcții și nu ține loc de Certificat de calitate***

CONSILIUL TEHNIC PERMANENT PENTRU CONSTRUCȚII

Grupa specializată nr. 11 "Lucrări de gospodărie comunală, alimentări cu apă, canalizări, stații de tratare și epurare, transport urban și salubritate" a ICȘP „INMACOMPROIECT” SRL analizând Dosarul tehnic și documentele prezentate de firma "DEMATEK WATER MANAGEMENT" SRL, str. Preciziei Nr. 6M, sector 6, București, România, tel.: +40 723 36 45 25 referitor la: "Stații de pompare a apelor uzate – HYDROPUMP" fabricate de firma "HYDROGEO SISTEMI" LTD, str. Ralevitsa 86, Sofia, Bulgaria, tel. 00359 882 625 883, fax 00359 882 625 883 eliberează Evaluarea tehnică nr. 02/11-003:2022 în conformitate cu documentele tehnice valabile în Republica Moldova, aferente domeniului de referință și dosarul tehnic elaborat de "DEMATEK WATER MANAGEMENT" SRL.

1 Definierea succintă

1.1 Descrierea succintă

Stația de pompare este carosabilă, echipată cu instalații mecanice, hidraulice, electrice și de automatizare, care permit funcționarea automatizată, în condiții de eficiență și siguranță maximă. Este asigurat posibilitatea golirii conductei de refulare prin prevederea unei clapete antiretur în interiorul stației de pompare.

Stațiile de pompare subterană, controlate prin intermediul unui panou de control complet automatizat, utilizate ca punct de colectare și pompare a apelor uzate cu sau fără fecale și/sau a apelor pluviale, din zonele aflate sub nivelul canalului colector.

Stațiile de pompare pot fi de forma circulară, de tip prefabricat, din material plastic PEID, compatibile pentru instalarea în soluri cu pânza freatică aproape de suprafață. Stația de pompare ape uzate pot fi cu camera umedă, pompele fiind montate în bazinul de acumulare (în interiorul stației).

Stațiile de pompare pot fi echipate cu diferite pompe: cu tocător sau fără, produse de producători consacrați PEDROLO, GRUNDFOS, KSB, WILO SI ALTELE, modelele Pentax DTR 150-300, DTRT 400-1000, DTRT 400-1000/P, GARDEN, CH, 4CA/4CAT, 4CAX/ 4CATX, SUPERDOMUS, ASMH/ 4ASMH, 4MSV/ 4MSH, MPE/

4MPE/ 6MPE, 4MPEW/6MPEW, sau altele în funcție de cerințele proiectului.

Pompele din interiorul stației de pompare ape uzate sunt cu tocător și complet imersate. În interiorul stației de pompare, pentru a se reține plutitori sau suspensii de dimensiuni mari, este montat un cos cu orificii. De asemenea, atât pe intrarea în stație, cât și pe fiecare coloană de refulare a fiecărei pompe se află montată câte o vană (vana de intrare este montată pe exteriorul stației, deoarece amplasarea ei în interiorul stației împiedică intervenția curățirii coșului; vanele de ieșire sunt montate în interiorul stației, într-o poziție care permite macerarea lor cat mai ușoară).

Sistemul de extragere al coșului va fi prevăzut cu șine de ghidaj.

Principiul de instalare al stațiilor de pompare a apelor uzate – HYDROPUMP este reprezentat schematic în figura 10 din dosarul tehnic.

Caracteristicile funcționale ale stațiilor de pompare a apelor uzate HYDROPUMP:

Bazin stație pompare	Material PEID, tub cu clasa de rigiditate SN4, cu pereți în structură tip fagure, Înălțimea (H) poate varia între 1500 mm și 8000 mm, în funcție de caracteristicile sistemelor de pompare ce se montează în interiorul bazinului; Diametrul (D) poate de asemenea varia
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Capac carosabil	între 1000 mm și 2400 mm. Material fontă, D600, clasa D400, de culoare neagră, prevăzut cu sistem antifurt, fixat deasupra unei prelungiri din PE. Un capac este destinat manevrării coșului, iar celălalt pentru acces în interiorul stației și pentru manevrarea pompelor.	derea transportului Conducta de aerisire	O priza de intrare aer proaspăt + o priza evacuare aer viciat). Material PEID100 D90 SDR17, cu ieșire orizontală, prin peretele stației. Rolul sistemului de aerisire este acela de evacuare prin tiraj natural a acumulărilor de gaze din zona superioara a interiorului stației de pompare.
Conducta refulare Vana (refulare)	Material PEID D.90, SDR17, PN10. Cota ax, Hax= -1,3m. Vana sertar cu acționare manuală, DN80, cu prindere pe flanșa și etanșare cu garnitura.	Sistem de ventilație	Material PEID100 D160 SDR17, cu ieșire orizontală, prin peretele stației. Rolul sistemului de aerisire este acela de evacuare prin tiraj forțat al acumulărilor de gaze mai grele decât aerul situate în zona inferioara a interiorului stației de pompare. Ventilația se realizează prin intermediul unui ventilator în line D150, cu capacitate de reîmprospătare a aerului de 552m ³ /h. Consumul fiind de 150 W
Clapet anti-retur	Vana de reținere cu bila (vana antiretur), DN80, cu prindere pe flanșa și etanșare cu garnitura.		
Conducta de intrare	Capătul de flanșa este sudat pe interiorul și exteriorul bazinului, cu adaos de material.		
Conducta trecere cabluri electrice	Material PEID100, SDR17, D90. Conducta este sudata pe interiorul și exteriorul bazinului, cu adaos de material. Rolul ei este acela de a scoate cablurile în afara părții carosabile, în vederea conectării la tabloul electric.		
Pompa submersibila Dispozitiv susținere pompa submersibila	Pentax DTRT 300, cu tocător Qp=6 m ³ /h, Hp= 21.2 m. Pedestal DN80.	Coș de reținere din inox Consola Vana de intrare (colector)	Inox Inox Se face printr-o vană DN160, prinsă cu flanșe pe un capăt de flanșă din PEID100, DN160, SDR17, etanșată cu garnitura EPDM
Lanț de susținere pompa	Inox	Scara de acces în zona pompelor Sistem de iluminare interioara	Material: aluminiu. Coroziune zero. Lampa LED, alimentare 24V
Conducta de refulare Scara acces	Material PEID100, DE90 SDR17 PN10. Material aluminiu. Cu grad de coroziune zero.	Cutie stradală protecție kit acționare vana sertar	Fontă
Regulator de nivel cu contragreutăți pentru comanda pe nivele și rotire pompe	Cota minima de oprire pompe de la fundul bazinului: 0,29m; Cota nivel maxim de la fundul bazinului: se reglează funcție de specificația proiectantului, cu recomandarea ca aceasta cota să nu depășească nivelul colectorului.		
Platforma de lucru Brida de susținere în ve-	Material: INOX, prevăzut cu goluri de lucru. Material PEID100, 200x200x60mm		

1.2 Identificarea produselor

Elementele stațiilor de pompare a apelor uzate – HYDROPUMP sunt marcate din fabricație cu etichete adezive pe care sunt menționate – în original și în limba română – date referitoare la:

- denumirea producătorului;

- denumirea comercială a produsului;
- codul de identificare;
- seria instalației;
- debit;
- greutate;

- termen de garanție.

Fiecare lot de livrare este însoțit de evaluarea tehnică și de declarația de conformitate a calității conform Hotărârii Guvernului nr.913 din 25 iulie 2016.

2 EVALUARE TEHNICĂ

2.1 Domeniul de utilizare acceptat

Stațiile de pompare a apelor uzate – HYDROPUMP sunt destinate ca punct de colectare și pompare a apelor uzate cu sau fără fecale și/sau a apelor pluviale, din zonele aflate sub nivelul canalului colector.

Stațiile de pompare cuprinse în această evaluare tehnică se aplică numai urmare a unui proiect de execuție întocmit cu respectarea Legii 721-XIII din 02.02.1996 privind calitatea în construcții, cu modificările și completările ulterioare și a reglementărilor tehnice în vigoare.

2.2 Aprecierea asupra produsului

2.2.1 Aptitudinea de exploatare

Rezistență mecanică și stabilitate – Stațiile de pompare prezintă rezistențe corespunzătoare domeniilor de utilizare preconizate.

Rezistența și stabilitatea fiecărei construcții în parte se asigură prin proiectul întocmit și verificat în condițiile legii.

Securitatea la incendiu – Clasele de reacție la foc ale materialelor din care sunt fabricate echipamentele stațiilor de pompare sunt următoarele:

- metal (clasa de reacție la foc A1);
- echipamentele fabricate din PE se încadrează în clasa de reacție la foc F.

Securitatea incendiară conform NCM E.03.02.

Igienă, sănătate și mediu înconjurător – Echipamentele utilizate nu conțin substanțe radioactive sau cancerigene, deșeuri toxice, rebuturi industriale sau

alte substanțe ori elemente dăunătoare sănătății oamenilor sau integrității mediului înconjurător.

Siguranță și accesibilitate în exploatare – Stațiile de pompare nu prezintă riscul de accidente la utilizarea lor normală și în condițiile prevăzute în instrucțiunile tehnice date de producător.

Materialul din care este realizată stația nu reacționează cu agenții agresivi din sol și nici nu generează reacții care – în timp ar putea conduce la diminuarea sau pierderea caracteristicilor fizico-mecanice.

Caracteristicile funcționale și constructive ale Stațiilor de pompare corespund condițiilor impuse prin normativele și standardele europene aferente domeniului de utilizare.

Protecția împotriva zgomotului – Nu influențează această cerință.

Economia de energie – Nu influențează această cerință.

Izolare termică – Nu influențează această cerință.

Utilizare sustenabilă a resurselor naturale - Se va aplica conform Legii 721-XIII din 02.02.1996 privind calitatea în construcții, cu modificările și completările ulterioare.

2.2.2 Durabilitatea și întreținerea

Compoziția și calitatea materialelor utilizate la realizarea echipamentelor Stațiilor de pompare precum și calitatea

fabricației, controlată în mod regulat, permit realizarea unor echipamente cu o durabilitate ridicată fără măsuri speciale de întreținere. Garanția este de 2 ani.

2.2.3 Fabricația și controlul

Stațiile de pompare a apelor uzate – HYDROPUMP, se realizează la societatea HYDROGEO SISTEMI LTD, Bulgaria, în secțiile de producție proprii, dotate cu utilaje specifice și cu personal calificat pentru deservire. Stațiile de pompare se realizează pe baza normelor tehnice ale producătorului, în condiții care asigură reproductibilitatea performanțelor aferente domeniului de utilizare preconizat.

În vederea asigurării constantei calității, producătorul va urmări:

- **Intern unității:** controlul intern sever și eficient atât pentru materiile prime și respectarea parametrilor tehnologiei, cât și pentru produsul finit, control efectuat conform Manualului de Asigurare a Calității al producătorului.
- **Extern unității:** obținerea unei forme de certificare recunoscută pentru sistem și produs.

Evaluarea conformității produselor poate fi efectuată după sistemul 3 sau 4 din Regulamentul (UE) nr.305/2011 al Parlamentului European și al Consiliului din 9 martie 2011.

2.2.4 Punerea în operă

Punerea în operă se realizează conform instrucțiunilor producătorului și a reglementărilor în vigoare din domeniu. Ea se va face de către specialiști calificați și atestați în acest tip de lucrări care vor respecta instrucțiunile tehnice stabilite de producător și prezenta evaluare.

Instructajul va cuprinde obligatoriu norme de tehnica securității muncii și protecție contra incendiului.

Prevenirea noncalității în procesul executării lucrărilor se va asigura conform normativelor și legislației în vigoare.

2.3 Caietul de prescripții tehnice

2.3.1 Condiții de concepții

Executarea componentelor se realizează pe mașini și instalații automatizate.

Proiectarea lucrărilor de montaj a instalațiilor se va face conform reglementărilor tehnice în vigoare, ținând seama de recomandările producătorului.

Se vor avea în vedere, în principal, recomandările cuprinse în NCM A.08.02, CP G.03.02-2006, СНИП 2.04.02, СНИП 2.04.03, СНИП 3.05.04 precum și precizările din prezenta Evaluare Tehnică.

2.3.2 Condițiile de fabricare

Calitatea constantă a produsului va fi asigurată și garantată de producător și comerciant prin certificatul de calitate eliberat pentru fiecare lot livrat.

Controlul de inspecție se efectuează minimum o dată în an de grupa specializată care a elaborat Evaluarea tehnică pe bază de contract.

2.3.3. Condițiile de livrare

Stațiile de pompare nu se ambalează. Se livrează vrac.

Producătorul va furniza datele privind condițiile de depozitare (temperatură, umiditate, grad de pericolozitate, etc.).

2.3.4 Condițiile de punere în operă

Punerea în operă a produselor se va face conform documentelor tehnico-normative ale R. Moldova în vigoare aferente acestor produse, prevederilor și detaliilor de execuție din proiect, ținând cont de recomandările producătorului.

Controlul materialelor întrebuintate, al modului de execuție și al procesului tehnologic se va face pe toată durata lucrării.

Produsele vor fi puse în operă după ce s-a verificat că a fost livrat cu declarația de conformitate.

Punerea în operă a produselor se va face conform cu NCM E.03.02, NCM

A.08.02 și alte documente tehnico-normative care sunt în vigoare Republica Moldova.

3 Remarci complimentare ale grupei specializate

3.1. Grupa specializată nr. 11 a examinat produsele și remarcă că:

- stațiile de pompare a apelor uzate – HYDROPUMP sunt realizate pe linii tehnologice moderne (utilaje, mașini, instalații) și automatizate și fiind aplicate corect vor avea în continuare o comportare corespunzătoare în exploatare, în condițiile specific ale Republicii Moldova;
- constanta calității este asigurată prin autocontrol de producător și control exterior – Certificate EN ISO 9001:2015; EN ISO 14001:2015, eliberate pentru furnizorii de echipamente;
- sistemul necesită întreținere pe toată durata de funcționare.

3.2. Cerințe privind siguranța produsului asupra sănătății umane: nu conțin substanțe nocive, nu poluează și nu prezintă pericol pentru sănătatea oamenilor și mediul ambiant la utilizare cu respectarea condițiilor stabilite de "DEMATEK WATER MANAGEMENT" SRL.

Calitatea produselor va fi asigurată și garantată de producător și comerciant prin certificat de calitate eliberat pentru fiecare lot livrat.

Concluzii: Utilizarea în Republica Moldova a Stațiilor de pompare a apelor uzate – HYDROPUMP este apreciată favorabil, dacă se respectă prevederile prezentei Evaluări Tehnice.

Condiții

- Calitatea produselor și metodele de utilizare au fost examinate și găsite satisfăcătoare de ICȘP "INMACOMPROIECT" SRL.

- Controlul de inspecție asupra stabilității caracteristicilor confirmate prin evaluarea tehnică în cursul procesului de utilizare / comercializare se efectuează de către grupa specializată care a eliberat evaluarea tehnică cu încadrarea organelor de certificare sau laboratoarelor de încercări

prin evaluarea tehnică în cursul procesului de utilizare / comercializare se efectuează de către grupa specializată care a eliberat evaluarea tehnică cu încadrarea organelor de certificare sau laboratoarelor de încercări acreditate pentru acest domeniu de activitate.

- Oriunde se face referire în această evaluare la acte legislative sau reglementări tehnice, trebuie avut în vedere ca aceste acte să fie în vigoare la data elaborării acestei evaluări;
- Acordând această evaluare, Consiliul tehnic permanent pentru construcții nu se implică în prezența sau absența drepturilor de brevet conținute în produs și /sau drepturile legale ale firmei de a comercializa produsul;

- Trebuie menționat ca orice recomandare relativ la folosirea în condiții de siguranța a acestui produs, conținută în prezenta evaluare tehnică, reprezintă cerințele minime necesare la utilizarea lui;

- Acordând această evaluare, Consiliul tehnic permanent pentru construcții nu acceptă nici o responsabilitate față de vre-o persoană sau organism pentru orice pierdere sau daună survenită în legătură cu un rău personal ivit ca un rezultat direct sau indirect al folosirii acestui produs.

- Deținătorul Evaluării tehnice la folosirea produselor procurate va prezenta obligatoriu fiecărui agent economic care va folosi aceste produse copia evaluării tehnice și instrucțiunile de transport, depozitare și exploatare.

VALABILITATE:

30 martie 2025

NOTĂ:

1. Controlul de inspecție asupra produselor evaluate tehnic se efectuează de grupa specializată respectivă minimum o dată în an.
2. Prelungirea valabilității sau revizuirea Evaluării tehnice trebuie solicitată cu cel puțin trei luni înainte de data expirării termenului stabilit.
3. În cazul neprelungirii valabilității, Evaluarea tehnică se anulează de la sine.

DIRECTOR
ICȘP "INMACOMPROIECT" SRL



Anastasia BELOUSOVA



BULGARKONTROLA S.A.

**CARGO & DAMAGE SURVEYS, LABORATORY ANALYSES,
CONFORMITY ASSESSMENT & TECHNICAL INSPECTIONS,
MANAGEMENT SYSTEMS, ORGANIC CERTIFICATION**

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E-mail: sales@bulgarkontrola.bg, cert@bulgarkontrola.bg

CERTIFICATE OF CONFORMITY

14 – НУРВСИРСБ – 3346

Issued pursuant to Art. 14, par.1 and par.2 of the Regulation № ПД-02-20-1 on 05.02.2015 on the terms and conditions for use of construction products in the construction of the Republic of Bulgaria on Ministry of Regional Development and Public Works for the **construction product**

PE&PP „Konti Kan Spiral”

**made of Polyethylene and/or Polypropilene Structured –wall piping system
with smooth internal and external surface with spiral shaped hollow sectors Type ”A2”,**
are designed for non pressure underground drainage and sewerage for piping systems, ,
with dimensions **DN-OD 1000÷2000 mm, DN-ID 100÷1200 mm, SN 4/SN 8/SN 10/SN12/SN16**, with technical date
and evaluated characteristics in accordance with national requirements as per Supplement № 1

place on the market by
KONTI HIDROPLAST DOOEL
ul. Industriska b.b. 1480 Gevgelia
Republic of North Macedonia

manufactured by
KONTI HIDROPLAST DOOEL
ul. Industriska b.b. 1480 Gevgelia
Republic of North Macedonia

This certificate certifies that the product has been evaluated and meets national requirements set out in

BDS EN EN 13476-2:2008

BDS EN EN 13476-2:2008/NA: 2015

*and item 11 of Annex 2 to item 2 of Order № 02-14-1329 from 03.12.2015,
of the Minister of Regional Development and Public Works*

The Certificate was issued on **06.03.2020**, cancel the Certificate № **14-НУРВСИРСБ-3244** on **17/06/2019** and remains valid to **05/03/2023**, the provided that the manufacturer ensures consistency of product characteristics and the conditions of production or production control has not been changed significantly.

Place: Sofia

Date: 06/03/2020

Director of "Conformity Assessment" Dept.

[Signature]
/T. Lyubanova/

BULGARKONTROLA S.A.– Sofia with identification number 14 of register Ministry of Regional Development and Public Works
Permit № ПОСН-14 on 15.09.2016 , issued by Ministry of Regional Development and Public Works



Supplement № 1
to Certificate of Conformity № 14- НУРВСИРСРБ-3346

1. Nominal dimension and stiffness

Nominal dimension DN-OD	Nominal dimension DN-ID	Stiffness SN (kN/m ²)
1000 ÷ 2000	1000 ÷ 2000	SN 4/SN 8/SN 10/SN12/SN16

2. Evaluated characteristics in accordance with national requirements

Characteristics	Requirement to declare / border level
Appearance	Smooth and clean surface without pores, According item 5.1 BDS EN 13476-1:2008
Color	Pipes: External and internal layer : black
Geometrical characteristics, mm	DN-ID 1000÷2000 DN-OD 1000÷2000 According tabl. 5 and item 1 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Melt mass - flow rate (MFR), g/10min 210 °C/ 2,16 кг/10min	≤ 0,2 between MFR the raw material and the pipe of PP According tabl. NA 22 BDS EN 13476-2:2008/NA:2015
Melt mass - flow rate (MFR), g/10min 190 °C/ 5 кг/10min	± 20% between MFR the raw material and the pipe of PE According tabl. NA 22 BDS EN 13476-2:2008/NA:2015
Longitudinal reversion, % for PE spiral pipes	≤ 3%, without delamination, cracking and blisters According item 8.3.1., tabl. 13 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Longitudinal reversion, % for PP spiral pipes	≤ 2%, without delamination, cracking and blisters According item 8.2.1., tabl. 11 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Ring stiffness SN, κN/m ²	≥ declared value for SN According item 9.1. tabl. 15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Impact resistance (0 °C)	TIR ≤ 10 % without crashed According item 9.1 ,tabl. 15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015
Ring flexibility, κN	without damage , min. 30 % of d _{em} According item 9.1, tabl.15 BDS EN 13476-2:2008, BDS EN 13476-2:20078/NA:2015

Place: Sofia
Date: 06/03/2020

Director of "Conformity Assessment" Dept.


/T. Lyubenova/



- **HYDROGEO SISTEMI LTD**
- BULGARIA 1404 SOFIA, 86 RALEVITSA STR
- VAT NR: BG201931854

DECLARATION OF CONFORMITY

In conformity with the requirements of the Directive **EC 2014/68/UE**, applicable to pressure equipments, we declare that the **waste water pumping station** type:

COMPLET PEHD WASTE WATER PUMPING STATION

We issued this statement on our sole responsibility, responsibility for changes affecting the design or operation of the **COMPLET PEHD WASTE WATER PUMPING STATION** will not be accepted, once it has been provided without express acceptance of HYDROGEO SISTEMI. The design and manufacture of the the **COMPLET PEHD WASTE WATER PUMPING STATION**, is performed following the EU legislation, under our internal procedures of manufacture, and the European standards:

- SR EN 12050-1:2015
- SR EN 12050-2:2015
- SR EN 12050-3:2015
- SR EN 12050-4:2015
- SR EN 13564-1:2003

Signed : **Alexander Dimitrov**
Position : **General Manager**

Place and date

Sofia, 01/06/2019

Firma / Signature:

