Anexa 2

Utilajul, echipamentul tehnologic: Debitmetru electromagnetic

Nr. crt.	Specificații tehnice impuse prin caietul de sarcini	Corespondența propunerii tehnice cu specificațiile tehnice impuse prin caietul de sarcini	Producător
1	**Parametri tehnici și funcționali** Debitmetru electromagnetic: 2 bucati Model: tip insertie Tehnica de masurare electromagnetica Lungime de insertie 200 mm Kit de accesorii montaj: inclus (robinet cu sfera, stut de sudura, ansamblu de etansare) Senzor IP67 Controller cu afisor local, taste de configurare locala Convertor IP67 Carcasa plastic - optional carcasa aluminiu Constructie compacta (convertor montat pe senzor) Alimentare 220 V ca Iesire analogica 4....20mA iesire de impuls	Model: Debitmetru electromagnetic tip insertie **MS3810 1A2A0A+MV110 B0A1B1A0A0A0 +MAN 01 (insertie la 1/8D sau 1/2D)** Tehnica de masurare electromagnetica Lungime de insertie 200 mm Kit de accesorii montaj: inclus (robinet cu sfera, stut de sudura, ansamblu de etansare) Senzor IP67 Controller cu afisor local, taste de configurare locala Convertor IP67 Carcasa plastic - optional carcasa aluminiu Constructie compacta (convertor montat pe senzor) Alimentare 220 V ca Iesire analogica 4....20mA iesire de impuls - Connectiunea: 1'' G or NPT prin insertie - Corp: SS316 - Electrod: Hastelloy C276 - Presiune: PN25 – Temperatura mediului: Up to 0÷100°C – - Afisaj: Graphic LCD - Corpul: Nylon PA6 / Aluminiu vopsit / SS304 - Iesire Analog OUT: Up to 2x 0/4...20/22 mA - Digital IN/OUT: Up to 1x IN/ 2x OUT - Marja de Eroare: ± 0,25% of read value	**ISOIL INDUSTRIA S.p.A.**

Digitally signed by Grecov Andrei
Date: 2021.05.24 18:18:43 EEST
Reason: MoldSign Signature
Location: Moldova

IMPUTERNICIRE PRODUCATOR

Data: **24.05.2021**

Ref.Licitatie: **Construcția rețelei de aducțiune, stației de pompare, rezervoarelor de apă, sat. Ghidighici, str. Ștefan cel Mare, str. B. Glavan, str. D. Cantemir, str. 9 Mai, str. Victoriei, str. Fundul Văii, str. Sărăturii, str. Frunze, str. Ponoare, str. P. Bulgaru, str. Viilor. (Etapa I)**

Catre: **Primaria Ghidighici**

Noi Axima Grup SRL, reprezentati legal prin Andrei Prijilevschi, in calitate de Director General fiind Distribuitor Oficial al SC NIVELCO TEHNICA MĂSURĂRII SRL , imputernicim pe SC Foremcons SRL cu sediul in Republica Moldova,municipiul Chisinau, str.Padurii 8, oficiu 308 sa depuna o oferta completa al carei scop este furnizarea urmatoarelor produse, al caror producatori suntem:

Debitmetru electromagnetic tip insertie MS3810 1A2A0A+MV110 B0A1B1A0A0A0 +MAN 01 (insertie la 1/8D sau 1/2D)

De asemenea suntem de acord ca SC Foremcons SRL sa prezinte la prezenta licitatie documentatia tehnica, certificarile si avizarile sanitare, agrementarile si avizarile tehnice specifice si sa puna in opera produsele mentionate mai sus.

Semnat de: Andrei Prijilevschi

In calitate de: Director General

Semnatura:

Tel: 022 84 44 01

fax: 022 84 40 05

www.axima.md

Adresa poştală:

Republica Moldova, mun. Chişinău,

str. Gh. Asachi 19 B.

SC Nivelco Tehnica Măsurării SRL ▪ 547530, Sângeorgiu de Mureş, str. Narciselor nr. 17 ▪ Tel. / fax: (00-40) 265-306192 ▪ E-mail: romania@nivelco.com

REPREZENTANT UNIC ÎN ROMÂNIA AL PRODUCĂTORULUI

SC NIVELCO TEHNICA MĂSURĂRII SRL

România, jud. Mureș, 547530

Sângeorgiu de Mureș, str. Narciselor nr.17

J26/1211/2005

RO17748333

ÎMPUTERNICIRE NR.79/24.05.2021

Către **SC AXIMA GRUP SRL**

cu sediul în Republica Moldova, Chișinău – 2065,

Bd. Constantin Negruzzi nr. 2/3, ap.25

Noi **SC NIVELCO TEHNICA MĂSURĂRII SRL** cu sediul România, jud. Mureș, 547530 - Sângeorgiu de Mureș, str. Narciselor nr.17 având cod de înregistrare fiscală CUI RO17748333 în calitate de reprezentant unic în România al producătorilor de instrumente de măsurare nivel și debit respectiv **NIVELCO PROCESS CONTROL LTD** și **ISOIL INDUSTRIA SPA**, având capacităţile de producţie în **Ungaria, 1043-Budapesta, Dugonics u. 43** respectiv **Italia, 35044 –Montagnana, Via Piemonte nr.2** îl împuternicim prin prezenta pe clientul **SC AXIMA GRUP SRL** cu sediul în Republica Moldova, Chișinău – 2065, Bd. Constantin Negruzzi nr. 2/3, ap.25 să comercializeze produsele mai sus menţionate. Prin prezenta garantăm calitatea şi performanţele produselor oferite şi îl împuternicim pe clientul **SC AXIMA GRUP SRL** să asigure pentru produsele respective îndeplinirea obligaţiilor care decurg din contractul de furnizare, referitoare la serviciile de instalare şi punere în funcţiune, de întreţinere şi de asistenţă tehnică.

Data completării **24.05.2021**

REPREZENTANT UNIC ÎN ROMÂNIA AL PRODUCĂTORULUI

SC NIVELCO TEHNICA MĂSURĂRII SRL

Director comercial,

Modi Attila

SOCIETATEA COMERCIALA NIVELCO TEHNICA MĂSURĂRII S.R.L. CIF: RO17748333 J-26-1211-05 SÂNG. DE MUREŞ

30 YEARS

ISOMAG

DEBITMETRE CU INDUCȚIE MAGNETICĂ

TOTDEAUNA ÎN TOP

DEBITMETRE CU INDUCȚIE MAGNETICĂ ISOIL

CARACTERISTICI

- *Principu de măsură magnetică*
- *Versiune compactă sau separată*
- *Cu inserție pentru diametre mari*
- *Căptușeală polipropilenă, cauciuc, teflon,poliuretan*
- *Conexiune mecanică cu flanșă, „sandwich”, sau industria alimentară*
- *Versiune cu acumlator*
- *Comunicație GPRS*
- *Funcție datalogger*
- *Domeniu mare de temperatură și presiune*
- *Fără piese în mișcare*
- *Pierdere de presiune minimă*
- *Clasă de protecție IP 67 / IP 68*
- *Certificat de decontare fiscală*

APLICAȚII

- *Pentru măsurarea materialelor cu conductivitate min. 5 µS/cm*
- *Măsurare apă, chimicale, acid, baze, apă uzată*
- *Măsurare cu decontare fiscală*
- *Utilizare specială în industria alimentară, prepararea hârtiei etc*

PREZENTARE GENERALĂ

Debitmetrele cu inducție magnetică ISOMAG Millenium păstrând principiul clasic al măsurării de debit – datorită tehnologiei moderne, hardverului și softverului inteligent, respectiv formei moderne – sunt echipamente ușor de utilizat. Exploarea debitmetrului este susținut de afișajul grafic mare, care afișează mai multe informații utile din proces: valoarea instantaneu digital, valoare instantaneu procentual, grafice, valori limită și mesaje de eroare, valoare cumulată etc. Datorită principiului electromagnetic echipamentele ISOMAG pot fi utilizate pentru măsurarea de debit a lichidelor cu conductivitate min. 5 µS/cm în secțiuni pline. Versiunile separate pot fi comandate cu lungime de cablu max 20m. Cu ajutorul modulelor opționale echipamentul poate fi configurat pentru aplicația noastră. Echipamentul satisface standardele referitor la apă potabilă, respectiv posedă de certificatele OIML R49, ISO 14154 și MID 001.

Echipamente dozare

Automatizare servicii comunale

Industria alimentară

Apă/apă uzată

Sisteme de irigații

COMBINAȚIA SENZORILOR ȘI A CONTROLELELOR

Controlere aplicabile						
Seria	**Microflow**	**Sandwich**	**Industr.aliment.**	**Flanșă**	**Inserție**	**CIAO**
ML 51	■	■	■	■	■	■
ML 110	■	■	■	■	■	■
ML 210	■	■	■	■	■	–
ML 211	■	■	■	■	■	–
ML 212	■	■	■	■	■	–
ML 252	■	■	■	■	■	■
ML 255	■	■	■	■	■	■
ML 4F1	■	■	■	■	–	–

DATE TEHNICE

SENZORI							
Tip		 MS 501 – MS 600	 MS 1000	 MS 2410	 MS 2500	 MS 3770 – MS 3800	 MS 5000
Serie		Microflow	Sandwich	Industrie alimentară	Flanșă	Inserție	CIAO
Material carcasă		Oțel inox, polipropilenă	Oțel carbon, Oțel inox	Oțel inox	Oțel carbon, Oțel inox	Oțel inox	Poliuretan
Diametru (mm)		DN3 – DN20	DN25 – DN400	DN3 – DN100	DN25 – DN2000	DN80 – DN2000	DN20 – DN80
Temperatură mediu							
Material căptușeală	PE	–					0…50 °C
	PP	0…60 °C		–			
	Cauciuc	–	–5…80 °C	–	–5…80 °C	–	–
	PTFE	Versiune compactă: –20…100 °C, Versiune separată: –20…130 °C					–
Presiune mediu		16 / 40 bar		16 / 25 bar		16 / 20 bar	6 bar
Conexiune mecanică		Filet, flanșă, sanitar, Triclamp, Tri-clover, SMS, etc.	Sandwitch	Sanitar, Triclamp, Tri-clover, SMS, etc.	Flanșe: UNI, ANSI, DIN, JIS, stb.	Conexiune Filet de 1”	Colier
Material electrodă		Oțel inox, Hastelloy C, Platina, Tantal, Titan, etc.				Oțel inox	
Clasă de protecție		Compact: IP 67, Separat: IP 68					
Precizie *		În funcție de controler				±2 %	

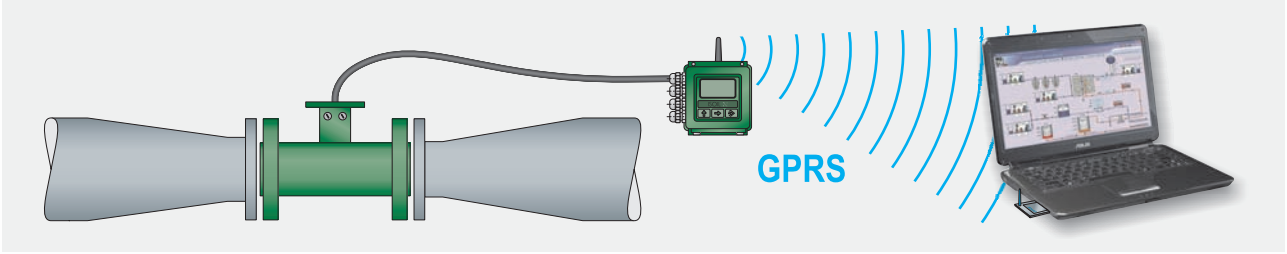
** La debite mici cu calibrare specială se pot obține precizii mai mari*

DOMENII DE APLICAȚII

ISOIL / ISOMAG		CONTROLER								SENZOR							
		ML 51	ML 110	ML 210	ML 211	ML 212	ML 250	ML 252	ML 4F 1	MS 501	MS 600	MS 1000	MS 2410	MS 2500	MS 3770	MS 3800	MS 5000
Apă și apă uzată	Rețele de apă	■	■	■		■	■	■				■		■		■	
	Tratare apă uzată		■	■			■	■				■		■			
	Sisteme de irigații	■	■	■			■	■		■	■	■		■	■	■	■
Industria chimică		■		■					■	■	■	■	■	■			
Producere hârtie				■								■		■			
Industria alimentară	Aplicații sanitare		■	■					■				■				
	Sisteme de dozaj			■					■	■	■	■	■	■			
	Refilare		■	■					■	■			■				
Automatizări comunale			■	■	■					■		■		■	■		

DATE TEHNICE

CONTROLER						
Tip						
	ML 4F-1	ML 51	ML 110	ML 210	ML 211 – ML 212	ML 150 – ML 255
Caracteristici principale	Convertor cu eșantionare rapidă (400 Hz)	2-fire, legat în buclă curent 4/20 mA	Convertor digital	Convertor grafic	Regulator termic, PID	Alimentare acumulator, comunicație GPRS
Funcții speciale	Măsurare debit în ambele direcții, detectare conductă goală					
	■	■	■	■	■	■
	Mod de lucru "power save"					
	■	–	■	■	■	■
	Funcție de dozaj					
	■	–	–	■	–	–
	Data logger					
	–	–	–	■	■	■
	Măsurare temperatură și căldură					
	–	–	–	–	■	–
Carcasă	Oțel inox	Aluminiu sau fibră de sticlă		Aluminiu sau oțel inox		
Afișaj	fără	2-linii, 16 caractere		8-linii, 16 caractere, iluminat		2-linii, 16 caractere
Ieșiri / Intrări	Ieșire digitală (max. 1250 Hz), 5 intrări/ieșiri digitale	Intrare/ieșire digitală + curent in/out 4-20 mA	2 buc ieșiri digitale (max. 1250 Hz)			2 buc ieșiri digitale
	Modulele de extensie opționale vezi în tabel					
Alimentare	10–33 V DC		90–265 V AC, 10–63 V DC, 15–45 V AC	90–265 V AC, 10–63 V DC, 15–45 V AC, 10–35 V DC		Baterii Lítiu
Conexiune electrică	Prestupă Pg11					
Clasă de prot. electrică	Calsa I. / III.					
Protecție mecanică	IP 67	IP 65 / IP 67		IP 67		IP 68 / IP 67
Precizie	±0,2 %	±0,5 %	±0,8 % / ±0,4 %	±0,2 %		±0,5 %
Repetabilitate	0,1 %	±0,5 %	±0,2 %	0,1 %		±0,5 %
Temperatura ambiantă	–20...60 °C					



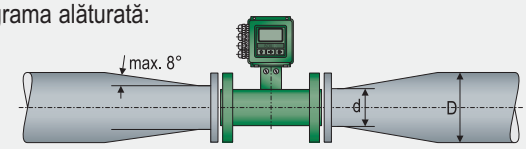
MODULE DE EXTENSIE

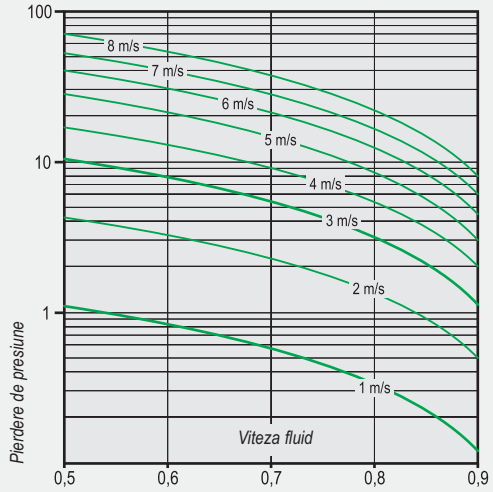
Module de extensie opționale	ML 51	ML 110	ML 210	ML 211	ML 212	ML 252	ML 255	ML 4F1
2 ieșiri de impuls			■		■			■
Interfață RS485		■	■	■	■			■
Interfață RS232			■		■		■	
Modul GPRS							■	
Profibus DP			■	■				■
HART			■					
MODBUS		■	■	■	■			
0/4-20 mA + 2 buc ON/OFF ieșire + ON/OFF intrare			■		■			
Interfață RS232 + 0/4–20 mA + 2 buc ieșire ON/OFF			■		■			
2 buc releu cu contact 1-1 NO/NC (2 A - 60 VAC, 60 W 125 VA)			■		■			
2 buc releu cu contact 1-1 NO/NC (2 A - 250 VAC, 60 W 125 VA)			■		■			
Intrare Pt100 + ON/OFF + Ieșire 0/4-20 mA + ON/OFF				■				
Ceas în timp real + Data Logger + interfață RS232 & RS485 + Intrare pasiv 0/4-20 mA			■	■	■			
Ieșire ON/OFF open colector + Intrare ON/OFF + ieșire 0/4-20 mA sau 0/5-10 V					■			

INSTALARE

Debitmetrele ISOIL sunt utilizate pentru secțiuni pline. Condiția pentru o măsurare precisă este porțiuni liniare de țeavă atât la intrare cât și la ieșire, respectiv o distanță corespunzătoare de la pompe sau vane. În perioada măsurării țeava trebuie să fie sau plină sau goală. În cazul montării verticale lichidul trebuie să scurgă de jos în sus.

Debitmetrul poate fi montat între două reducții. La o reducție de maximum 8° și în funcție de raportul d/D pierderea de presiune se vede din diagrama alăturată:





DOMENIU DE MĂSURĂ

Pentru a selecta diametrul în funcție de viteza de scurgere utilizați tabelul de mai jos:

Diametru nominal	Domeniu de măsură (cu precizia între ±0,2%)		Unitate de măsură
	Q_k V<2 m/s	Q_{max} V<2 – 10 m/s	
3	10,0	0 – 250	liter / h
6	40,0	0 – 1000	
10	120,0	0 – 3000	
15	240,0	0 – 6000	
20	500,0	0 – 12500	
25	0,72	0 – 18	m^3 / h
32	1,60	0 – 29	
40	1,80	0 – 45	
50	2,88	0 – 72	
65	4,80	0 – 120	
80	7,20	0 – 180	
100	11,20	0 – 280	
150	25,60	0 – 640	
200	45,20	0 – 1130	
250	70,80	0 – 1770	
300	100,80	0 – 2520	
350	138,00	0 – 3450	
400	180,00	0 – 4500	
450	228,00	0 – 5720	
500	284,00	0 – 7100	
600	408,00	0 – 10200	
700	560,00	0 – 14000	
800	720,00	0 – 18000	
900	920,00	0 – 23000	
1000	1140,00	0 – 28500	
1200	1600,00	0 – 40000	
1400	2200,00	0 – 55000	
1600	2280,00	0 – 72000	
1800	3640,00	0 – 91000	
2000	4520,00	0 – 113000	

NIVELCO

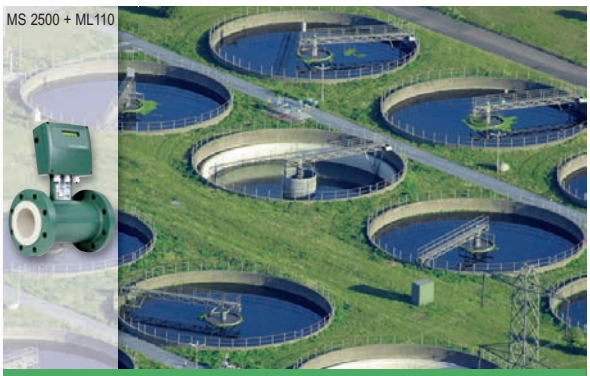
RoHS OIML OMH CE

gi10g12r0601b

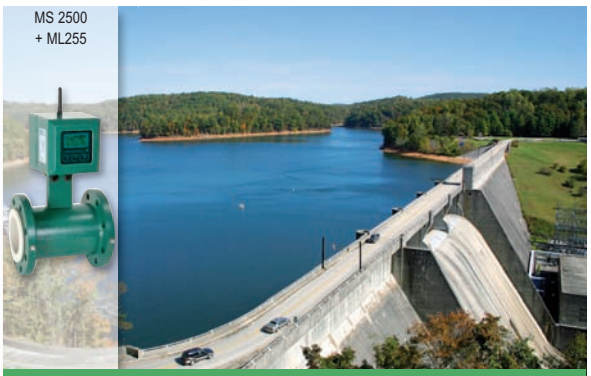
APLICAȚII

Agricultură

Industria hârtiei



Apă uzată



Rețele comunale

Industria chimică

Industria alimentară

Sisteme de dozaj

Sector energetic

SC NIVELCO TEHNICA MĂSURĂRII SRL.
540014 Tg-Mureş, str.Tudor Vladimirescu nr.56A
TEL.: 40-265-306192 ◆ FAX: 40-265-306192
E-mail: romania@nivelco.com http://www.nivelco.ro

ISOIL INDUSTRIA

ISOIL INDUSTRIA electromagnetic flowmeters

Water is precious. Every drop counts.

ISOMAG®

The friendly magmeter

ISOMAG® KEY FEATURES

- **Alkaline / Lithium** batteries or Mains powered systems
- **BIV**: Built In Verificator for self diagnostic
- **UMTS/GPRS wireless communication**
- **Wide DN range, between 3 and 3000 mm**
- High Pressure **up to 250 bar**
- High temperature **up to 180°C**
- Full bore meters have been certified to work with **zero upstream and downstream straight DNs**, under ISO4064 test conditions
- **IP68 protection rate** available on all sensors and most converters

ELECTROMAGNETIC FLOWMETER CHARACTERISTICS

An **electromagnetic flowmeter is made of a sensor**, installed in the pipeline, **and a converter**, energizing the coils and detecting the electrical signal.

FLOWMETER

- **SENSOR** *pag. 4* **+ CONVERTER** *pag. 5*
  - Full-bore in compact version
  - Full-bore in separate version
- **COMPACT FLOWMETER** *pag. 6*

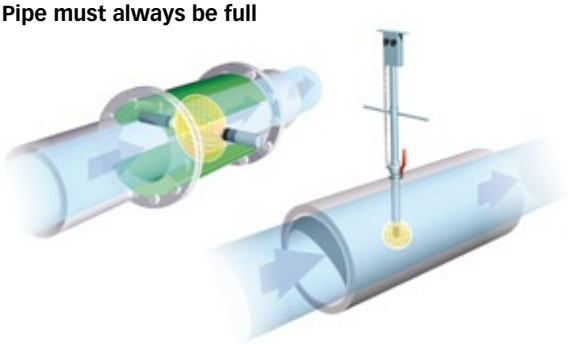
A FEW EXAMPLES

Compact full-bore | Separate full-bore | Compact insertion

The **operating principle** of magnetic flowmeter is based **upon Faraday's Law** of electromagnetic induction, stating that a «voltage will be induced in a conductor moving through a magnetic field».

Full bores and insertion electromagnetic flowmeters need **2 fundamental conditions** to operate accurately:

- **Medium must be conductive**
- **Pipe must always be full**



The main advantages of magmeters are:

- **obstructionless design** causing practically **no pressure loss**
- **corrosion-resistant wetted parts**
- **high accuracy**
- **linear signal output**

ISOMAG® CERTIFICATIONS AND COMPLIANCES

MATERIALS & PROCESSES	NSF, ICIM, ICIM, WRAS, A3, DM 174, PED
COMMUNICATION	HART, Modbus, WI-FI, 3G, M-Bus
METROLOGY	MID MI-001, MID MI-004, OIML

THE RIGHT SOLUTION FOR YOUR APPLICATION

WATER

- Distribution and leak detection
- District metering (DMAs, SMAs, Zones)
- Commercial metering
- Non revenue water (NRW)
- Well water metering
- Supply management

WASTEWATER

- Water treatment
- Landfill leachate monitoring
- Additive mixing
- First flush water monitoring

IRRIGATION

- Irrigation monitoring
- Dosing of fertilizers
- Water billing

HVAC & R

- Energy measurement and distribution
- Energy efficiency
- Custody Transfer
- Co and Tri-generation
- Superheated and chilled water
- Data Center
- District heating
- Building Automation

FOOD & BEVERAGE

- Filling machines
- Dosing/Batching
- Blending
- Beverage transfer measurement

GENERAL INDUSTRY

- Mining
- Pulp & Paper
- Chemical
- Additive mixing
- Shipbuilding
- Cement production

MATERIAL RECOMMENDATION CHART

		FULLBORE SENSOR LINING						SENSOR ELECTRODES				
		PTFE	Ebonite	Polypropylene	Rilsan	Abral	PFA	AISI316L	Hastelloy C276	Titanium	Tantalum	Platinum
Drinking water		o	+	+	+	o	o	+	+	o	o	o
Sea water		+	+	+	o	o	o	–	+	o	o	o
Wastewater		o	+	+	–	o/+	o	+	+	o	o	o
Abrasives liquids		o	o	o	–	+	o	+	+	o	–	–
Pulp & Paper		+	–	o	–	–	+	o	+	–	+	–
Food & Beverage		+	o	o	o	o	o	+	+	o	o	o
Chemicals	**Strong acids**	+	–/o	–/o	–/o	–/o	+	–	–	–/o	o/+	+
	Weak acids (no HF)	+	–/o	o/+	–/o	–/o	+	–	–/o	–/o	+	o/+
	Strong bases	+	o	o/+	–/o	o	+	–/o	–/o	o/+	–/o	+
	Weak bases	+	o	o/+	o	o	+	o	o	o/+	o/+	+

"–" Not compatible "o" Compatible "+" Recommended

OUR RANGE OF MEASURING SENSORS

Choose your combination OR +

FULL-BORE

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	MS2500 	- ***DN***: 25 to 3000 mm - ***Connection***: Flanges UNI / ANSI / DIN / JIS - ***Liner***: Polypropylene / Ebonite / Rilsan / PTFE / PFA - ***Body***: Carbon steel / SS316 / SS304 - ***Electrodes***: SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium - ***Pressure***: Up to PN250 - ***Medium temperature range***: Up to -20÷180°C	
	MS1000 	- ***DN***: 25 to 400 mm - ***Connection***: Wafer - ***Liner***: Polypropylene / Ebonite / PTFE - ***Body***: Carbon steel / SS316 / SS304 - ***Electrodes***: SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium - ***Pressure***: Up to PN40 - ***Medium temperature range***: Up to -20÷110°C	
	MS2410 **MS2420** 	- ***DN***: 03 to 100 mm - ***Connection***: DIN11851 / Tri-clamp / Tri-clover / SMS - ***Liner***: PTFE - ***Body***: SS316 / SS304 - ***Electrodes***: SS316 - ***Pressure***: PN16 - ***Medium temperature range***: Up to -20÷150°C	
	MS501 **MS600** 	- ***DN***: 3 to 20 mm - ***Connection***: Threaded / DIN11851 / Tri-clamp / Tri-clover / SMS / Flanges UNI / ANSI / JIS - ***Liner***: Polypropylene / PTFE - ***Body***: SS304 (MS501) / Polypropylene (MS600) - ***Electrodes***: SS316 / Hastelloy C276 / Platinum / Tantalum / Titanium - ***Pressure***: Up to PN40 - ***Medium temperature range***: Up to -20÷130°C	**MS501** **MS600** —
	MS5000 	- ***DN***: 25 to 80 mm - ***Connection***: Metallic wrapper - ***Liner***: Polyurethane - ***Body***: Polyurethane - ***Electrodes***: SS316 - ***Pressure***: PN6 - ***Medium temperature range***: Up to 0÷50°C	

INSERTION

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	MS3810 	- ***DN***: 80 to 8000 mm - ***Connection***: 1'' G or NPT Threaded end - ***Liner***: PEEK - ***Body***: SS316 - ***Electrodes***: Hastelloy C276 - ***Pressure***: Up to PN25 - ***Medium temperature range***: Up to 0÷100°C	
	MS3780 	- ***DN***: 80 to 2000 mm - ***Connection***: 1'' G or NPT Threaded end - ***Liner***: PEEK - ***Body***: SS316 - ***Electrodes***: Hastelloy C276 - ***Pressure***: Up to PN40 - ***Medium temperature range***: Up to -20÷130°C	

Please refer to the online datasheet for detailed information

OUR RANGE OF CONVERTERS

Check-out our tutorials on

MAINS POWERED

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	MV210 	- ***Display***: Graphic LCD back light display / Blind version - ***Housing***: Nylon PA6 with fiber glass / Painted aluminum / SS304 - ***Analog OUT***: Up to 2x 0/4...20/22 mA - ***Digital IN/OUT***: Up to 1x IN / 2x OUT - ***Accuracy***: ±0,2% of read value - ***Special features***: High performance; Batching function; Data logger; Built-in-Verificator; Anticondense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	HART Modbus WI-FI
	MV110 **MV110W** 	- ***Display***: Graphic LCD back light display / Blind version - ***Housing***: Nylon PA6 with fiber glass / Painted aluminum / SS304 - ***Analog OUT***: Up to 2x 0/4...20/22 mA - ***Digital IN/OUT***: Up to 1x IN/ 2x OUT - ***Accuracy***: Up to ± 0,25% of read value (better on request) - ***Special features***: Data logger; Built-in-Verificator; Anti-condense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	HART Modbus MID MI-001 MID MI-004 WI-FI
	MV800 	- ***Display***: LCD Display / Blind version - ***Housing***: Painted aluminum / AISI 304 Raw or Polished - ***Analog OUT***: Up to 1x 0/4...20/22 mA - ***Digital IN/OUT***: Up to 1x IN / 1x OUT - ***Accuracy***: ± 0,5% of read value detection - ***Special features***: Bi-directional; Diagnostic; Empty Pipe	MID MI-001 MID MI-004

BATTERY POWERED

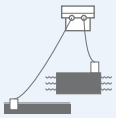
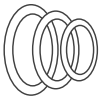
APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	CERTIFICATIONS & COMPLIANCE
	FLOWIZ **MV255** 	- ***Display***: Graphic LCD back light display / Blind version - ***Housing***: Nylon PA6 with fiber glass / Painted aluminum / SS304 - ***Analog IN/OUT***: Up to 2x IN (pressure or level) / 1x OUT active or passive - ***Digital IN/OUT***: Up to 3x IN / 4x OUT insulated - ***Accuracy***: Up to ±0,25% of read value - ***Special features***: Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verificator; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function, UMTS/GPRS Transmission	(3G) MID MI-001 ISOD@M
	FLOWIZ **MV145** 	- ***Display***: Graphic LCD back light display / Blind version - ***Housing***: Nylon PA6 with fiber glass / Painted aluminum / SS304 - ***Analog IN/OUT***: Up to 2x IN (pressure or level) / 1x OUT active or passive - ***Digital IN/OUT***: Up to 3x IN / 4x OUT insulated - ***Accuracy***: Up to ±0,25% of read value - ***Special features***: Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verificator; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	MID MI-001 Modbus

OUR RANGE OF COMPACT FLOWMETERS

FULL-BORE AND INSERTION

APPLICATIONS	MODEL	KEY TECHNICAL CHARACTERISTICS	
	CS8100 	- ***DN***: - ***Housing***: - ***Electrodes***: - ***Analog OUT***: - ***Digital OUT***: - ***Accuracy***: - ***Medium temperature range***: - ***Special features***:	10 mm (Connection 1/2" or 3/4") Noryl +30% Fiber Glass Hastelloy C276 1x 0/4...20/22 mA 2x on/off for pulses or Volume or Alarms ±1% of read value Up to -20÷85°C Diagnostic funcion; Bi-directional, PN10
	CS3900 	- ***DN***: - ***Housing***: - ***Electrodes***: - ***Analog OUT***: - ***Digital OUT***: - ***Accuracy***: - ***Medium temperature range***: - ***Special features***:	10 to 50 mm PTFE coated Zinked Steel SS316L 1x 0/4...20/22 mA 2x on/off or pulses or Volume or Alarms Up to ±0,5 of read value Up to -10÷100°C Temperature measurement; Diagnostic function; Bi-directional, PN16
	CS3795 	- ***DN***: - ***Sensor body***: - ***Electrodes***: - ***Analog OUT***: - ***Digital OUT***: - ***Accuracy***: - ***Medium temperature range***: - ***Special features***:	80 to 2000 mm SS316 (lining Peek) Hastelloy C276 1x 0/4...20/22 mA 2x for volume/pulse ±2% of read value Up to -10÷100°C Diagnostic function; Bi-directional, PN16
	CS3820 	- ***DN***: - ***Sensor body***: - ***Electrodes***: - ***Connection***: - ***Digital OUT***: - ***Accuracy***: - ***Medium temperature range***: - ***Special features***:	80 to 8000 mm SS316 (lining Peek) Hastelloy C276 1" G or NPT threated end 1x on/off ±2% of read value Up to 0÷60°C Battery powered; Bi-directional; Data Logger; IP68; Built-In-Verificator; Up to PN25

VERIFICATION TOOLS & ACCESSORIES

	WHAT IS IT?	HOW CAN IT BE HELPFUL?
BIV 	**Built-In-Verificator**, available on request on MV110, MV145 and MV255 converters, is an **internal verification tool**.	This innovative device makes a **periodical measure of the main electrical parameters** of the flowmeter, **sends alarms** in case of results outside specification and allows users to generate and **print a report** stating the meter's conditions (PC needed for printing).
ISOBIV 	**External Verificator tool** for the MV converters. Comes with its own hardware.	The ISOBIV allows **onsite verification of the main electrical parameters of the flowmeter** and allows users to generate and print a report stating the meter's conditions.
MCP 	**Interface software** for MV converters.	Allows user friendly and easy **access to all meters programmable functions**. A mini USB cable is required to connect the instrument to the a PC, alternatively a Wifi connection can be used.
CPM 	**Corrosion Protection Module** for MV battery converters.	Additional measuring module that is able to continuously **monitor the electrical potential of the line**, providing the user with real time information on cathodic protection efficiency.
GROUNDING RINGS 	Metal rings to be installed between sensor and pipeline.	Used to **ground unwanted electrical signals** and **provide a grounding pathway around the flowmeter** to safely eliminate accumulated voltage or induced current in the flowing conductive fluid. Helpful in presence of non conductive pipelines materials.

Please refer to the online datasheet for detailed information

TEST BENCH AND ISO17025 CALIBRATION LABORATORY LIBRA

All ISOMAG® meters are subject to wet calibration on ISO17025 certified benches before leaving our factory.

The original accuracy is granted over the life time of the meter when is working within its specifications.

Thanks to the **Accredited Calibration Laboratory LIBRA, conforming to UNI EN ISO/IEC17025** (ACCREDIA Certificate LAT237), ISOIL Industria can also offer a calibration service for liquid flowmeters in volume, flow and mass.

Instruments of manufacturers other than ISOIL can also be tested and calibrated by LIBRA Laboratory.

Production Center with Calibration tower in the background.

Pipes at the base of Calibration tower.

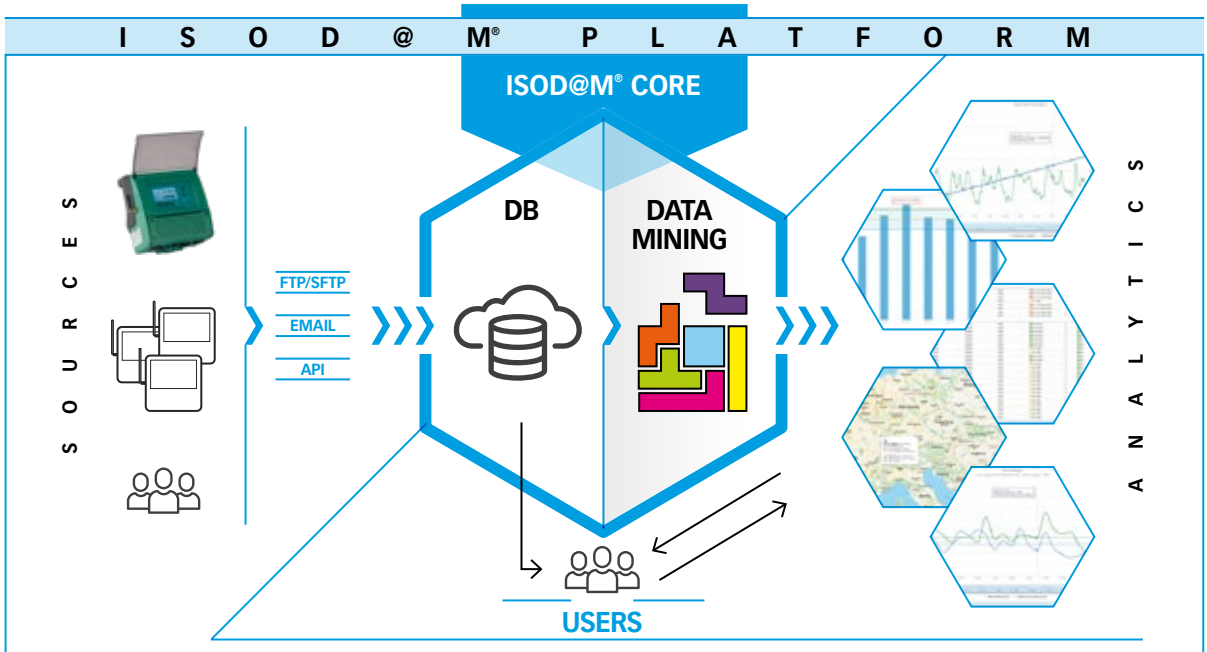
The 45 meters high piezometric tower makes Libra **one of the biggest calibration laboratories worldwide**.

The laboratory consists of 8 fully automated calibration lines running on static weight based method (Lines 1 to 6), direct comparison with a master meter (Lines 1 to 7) or with a master volume (Line 8).

Currently, **Libra calibrates sensors up to DN3000 with an impressive max flow of 4 m³/s**.

ISOD@M®: DATA ACQUISITION AND MANAGEMENT SOFTWARE

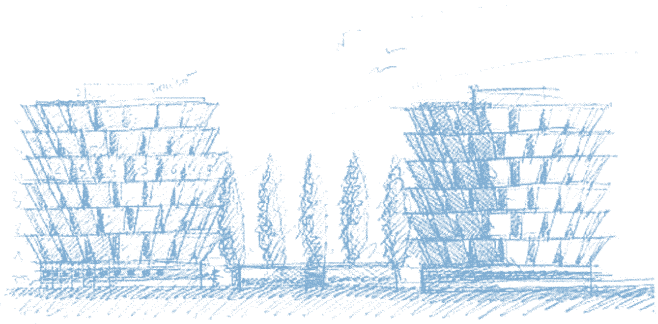
ISOD@M® allows users to **easily retrive data from field devices**, reducing time and efforts for data analysis. Based on the latest technological architecture, the platform provides high level results thanks to **advanced data mining capabilities**. Users can create their own target to improve system knowledge and control, **enhancing accuracy and diagnostic**.



ISOD@M® Key features

- Acquisition Platform System (SaaS)
- Cloud and Local installation
- Responsive software
- Multi User and Multi Level Access
- Full Data Protection
- Water Loss and District Analysis
- Preventive Maintenance Management
- Geo-Localization
- Graphic and Analytic Data Analysis

BRO ISMG UK - 01/2021 – gandini communication



ISOIL Industria is a worldwide leading supplier of electromagnetic flowmeters.
On the market since 1958, the company has been concentrating its efforts and expertise through the years towards the evolution of the electromagnetic flowmeters technology.
It is worldwide recognized and present in all Countries through distributors and agents, and with branch offices in Brazil and Hong Kong.

ISOIL Industria s.p.a.

Head Office

20092 Cinisello Balsamo
(Milan) Italy
27, via F.lli Gracchi
Tel. +39 02 66027.1

Brazil Branch

ISOIL Lamon

110, Rua Crepuscolo – B. California
30,421-260 – Belo Horizonte
MG – Brazil

Hong Kong Branch

ISOIL Industria Hong Kong

Unit D4, 4th floor,
Efficiency House
35 Tai Yau Str. – San Po Kong
Kowloon – Hong Kong

Production and Warehouse

ISOIL Industria - Hemina s.p.a.

1, via Piemonte
35044 – Montagnana
(Padua) – Italy

sales@isoil.it

www.isoil.it

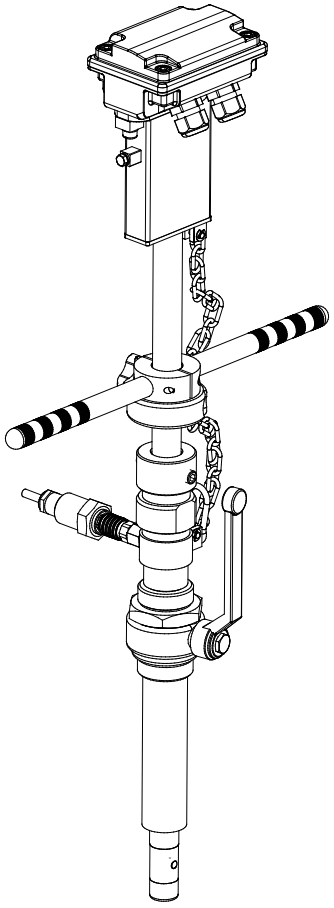
ISOIL INDUSTRIA
The solutions that count

ISOMAG

The friendly magmeter

DATA SHEET

MS3810



Certified to NSF/ANSI 61

WRAS APPROVED MATERIAL

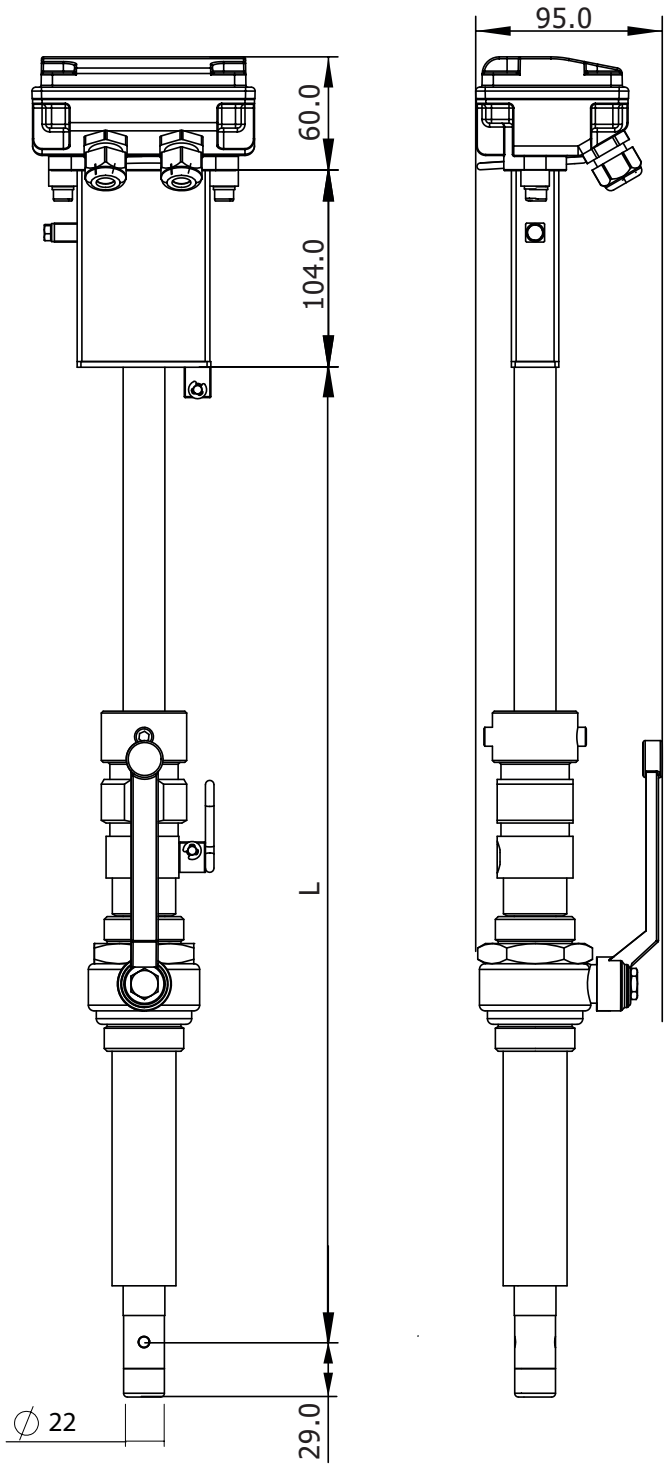
ISOIL INDUSTRIA

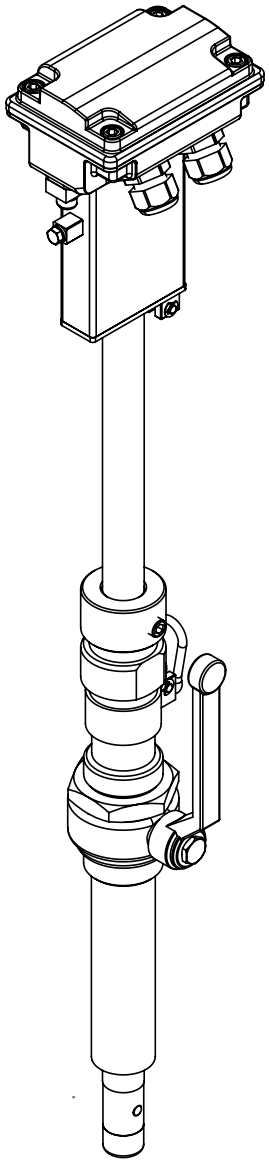
INDEX

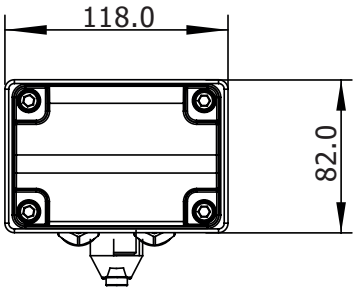
TECHNICAL DATA

OVERALL FEATURES	
Size for pipe line Ø	❑ Size 0 max insertion depth 150 mm ❑ Size 1 max insertion depth 300 mm ❑ Size 2 max insertion depth 500 mm ❑ Size 3 max insertion depth 700 mm ❑ Size 4 max insertion depth 1000 mm ❑ Size 5 max insertion depth 2000 mm ❑ Size 9 max insertion depth 80 mm
Minimum conductivity	❑ 5 μS/cm (20 μS/cm for MV145/MV255)
Minimum pipe diameter	❑ 80 mm
Humidity Range	❑ 0÷100% (IP 68)
Accuracy	❑ See table at page 10
CE Certification	❑ Yes
STANDARD FEATURES	
Body material	❑ Stainless steel AISI 316
Nominal pressure	❑ 2500 kPa
Process connection	❑ 1" Threaded
Version – protection rating	❑ According To Converter Version
Connection material	❑ Stainless steel AISI 304
Head material	❑ PEEK
Gasket material	❑ FPM (O-ring)
Liquid temperature	❑ 0 °C to 100 °C
Electrodes material	❑ Hastelloy C276 / AISI 316L
OPTIONAL FEATURES (CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)	
Size for pipe line Ø	❑ Other on request
Body material	❑ Others on request
Process connection	❑ Others on request
Electrodes material	❑ Others on request
Version – protection rating	❑ Separate version (max 20m) – IP 68 ❑ Separate version (max 500 m), with preamplifier – IP 67 (OPT. IP 68)
Accessories	❑ Pressure sensor

OVERALL DIMENSIONS



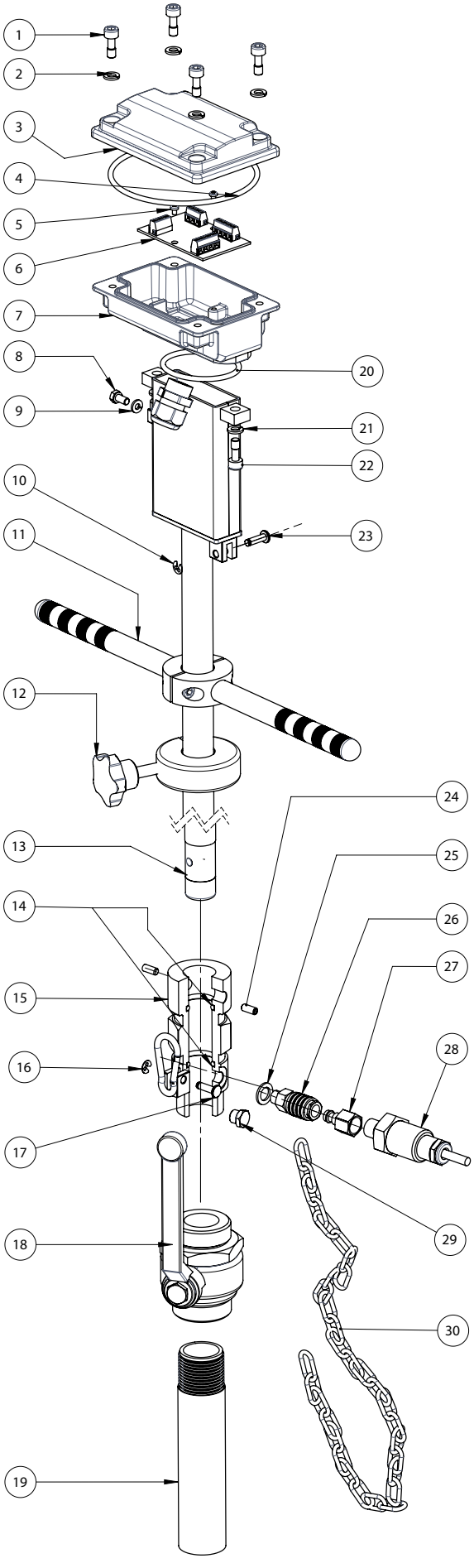




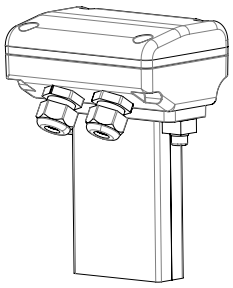
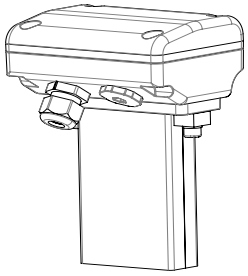
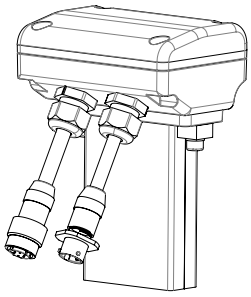
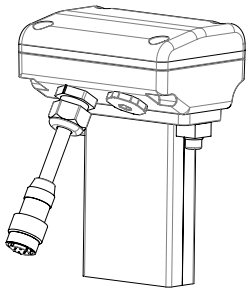
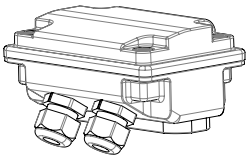
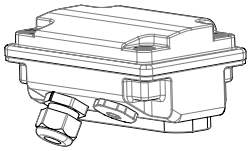
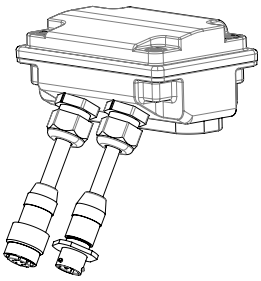
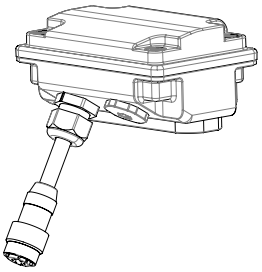
SIZE	MAX. DEPTH	L
SIZE 0	150mm	515
SIZE 1	300mm	665
SIZE 2	500mm	865
SIZE 3	700mm	1065
SIZE 4	1000mm	1365
SIZE 5	2000mm	2365
SIZE 9	80mm	330

MS3810 LAYOUT

POS.	DESCRIPTION
1	SCREW 6X16
2	GROWER Ø6
3	JUNCTIONS BOX COVER
4	O-RING 4400
5	SCREW M4x6
6	PCB FOR SEPARATE VERSION (NORMAL OR PREAMPLIFIER)
7	JUNCTIONS BOX MAIN HOUSING
8	SCREW M5x10
9	GROWER Ø5
10	SEGGER 4X9 (RING 4 7434-75)
11	HANDLE PUSH
12	FIXING KNOB
13	SENSOR MS3810
14	O-RING 4087
15	CYLINDER LINER
16	SEGGER 4X9 (RING 4 7434-75)
17	PIN FOR INSERT
18	BALL VALVE
19	WELDED PIPE 1”
20	O-RING 155
21	GROWER Ø6
22	SCREW 6X16 WORKED
23	PIN FOR INSERT
24	GRUB SCREW M10X12
25	WASHER
26	QUICK FEMALE
27	QUICK MALE
28	PRESSURE SENSOR
29	CUP PRESSURE HOLE
30	SAFETY CHAIN

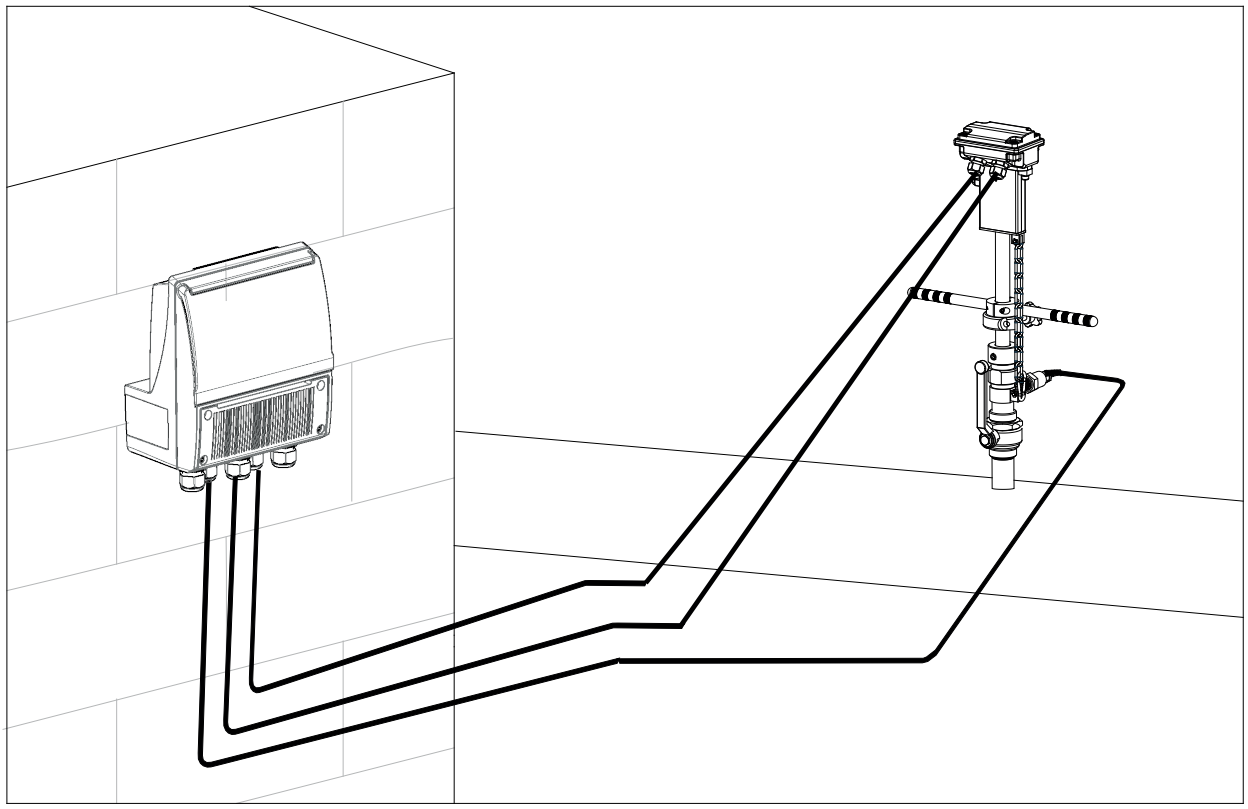


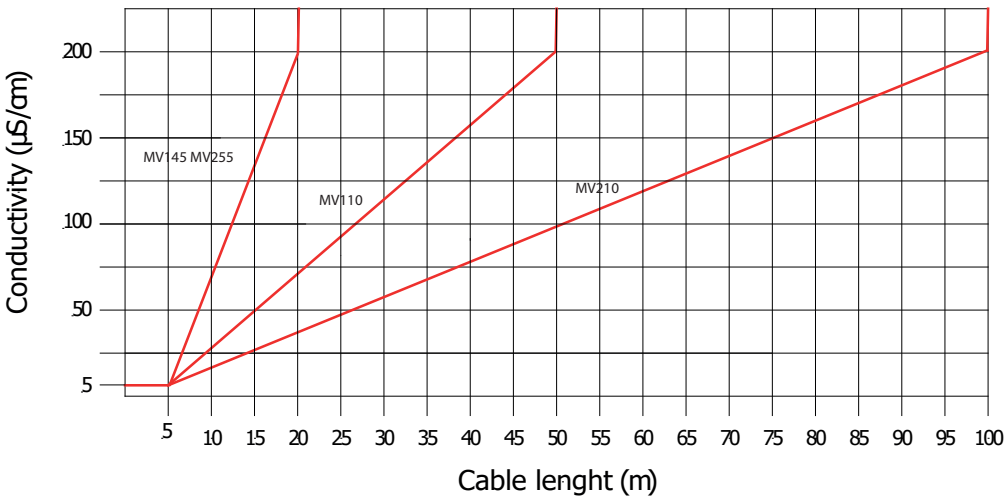
SENSOR VERSIONS / JUNCTIONS BOX

	1	2	3	4
A PAINTED ALUMINIUM				
B AISI 304				

PRICE LIST OPTIONS	JUNCTION BOX TYPE (surface finish)
A	Without junction box, converter connected on the connections box
B	A-1 A-2 only for MV110
G	A-4
F	A-3
N	A-2 with preamplifier
Q	A-4 with preamplifier
U	B-1 (raw) B-2 only for MV110 (raw)
S	B-4 (raw)
T	B-3 (raw)
P	B-2 with preamplifier (raw)
R	B-4 with preamplifier (raw)
K	B-1 (polished) B-2 only for MV110 (polished)
Y	B-4 (polished)
W	B-3 (polished)
V	B-2 with preamplifier (polished)
J	B-4 with preamplifier (polished)

SEPARATE VERSION



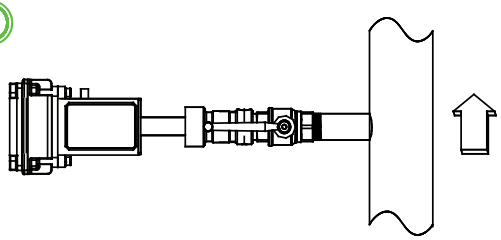


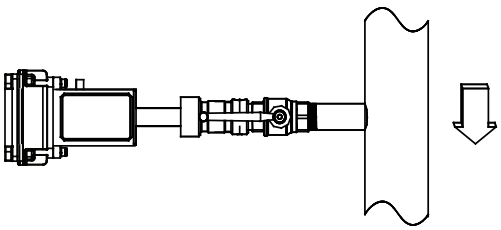
Notes:

- It is recommended to install the connection cables away from, or protect against sources of electromagnetic noise.
- The minimum conductivity of the liquid medium to ensure correct functionality of the empty pipe detection is 20 µS/cm

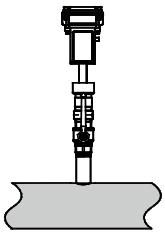
INSTALLATION RECOMMENDATIONS

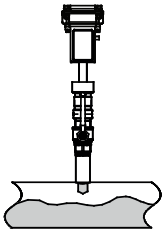
In vertical installations an ascending flow is preferable.
For vertical installations with descending flow direction contact the manufacturer



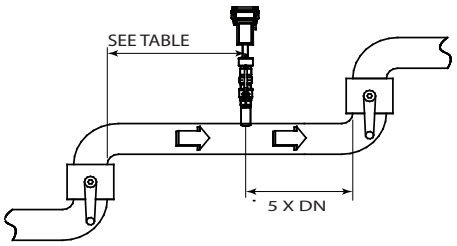


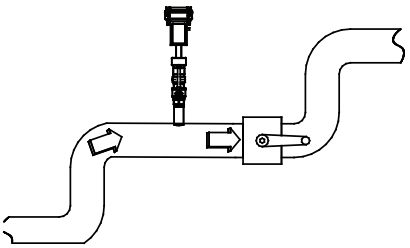
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



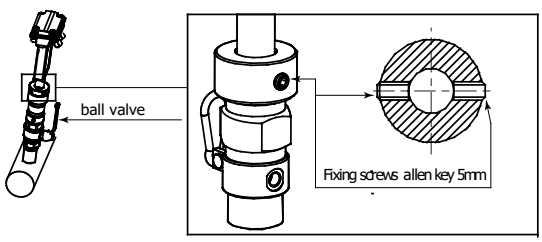


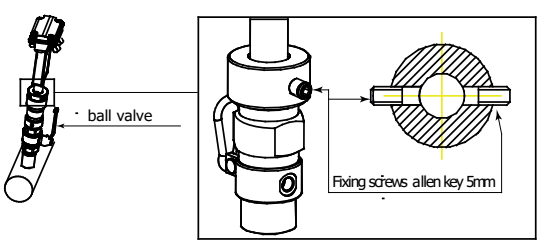
Install the sensor away from bends and hydraulic accessories



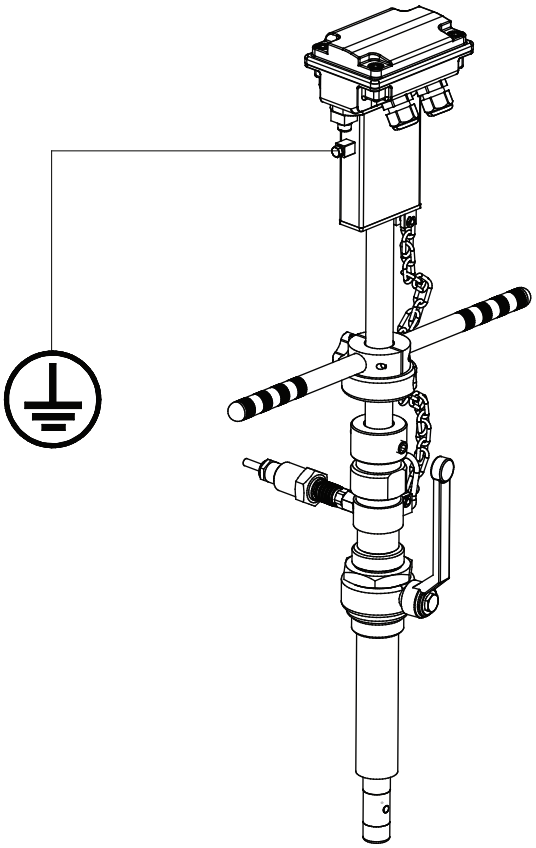


Tighten the two fixing screws before opening the ball valve

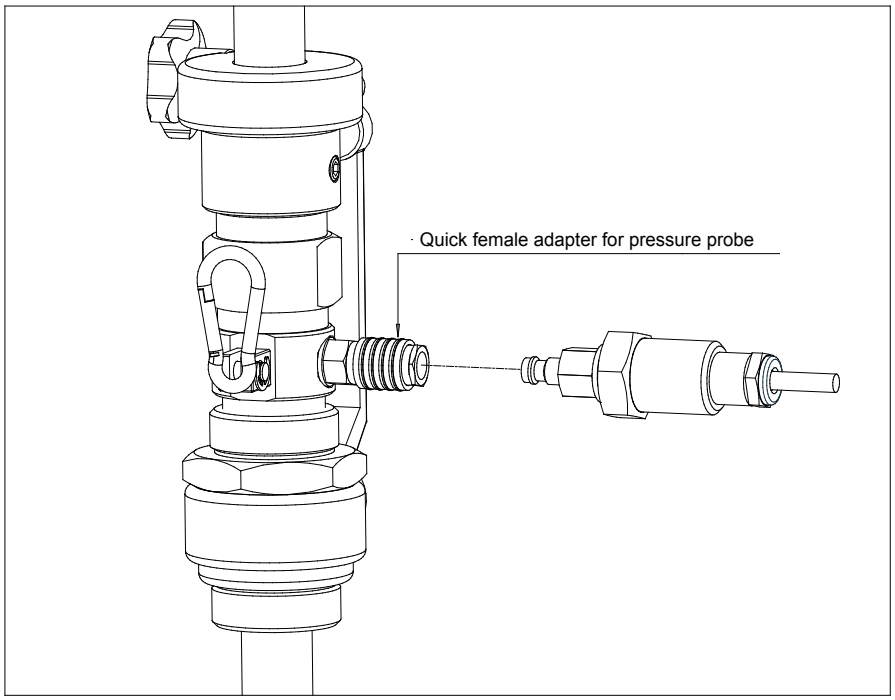




SENSOR GROUNDING



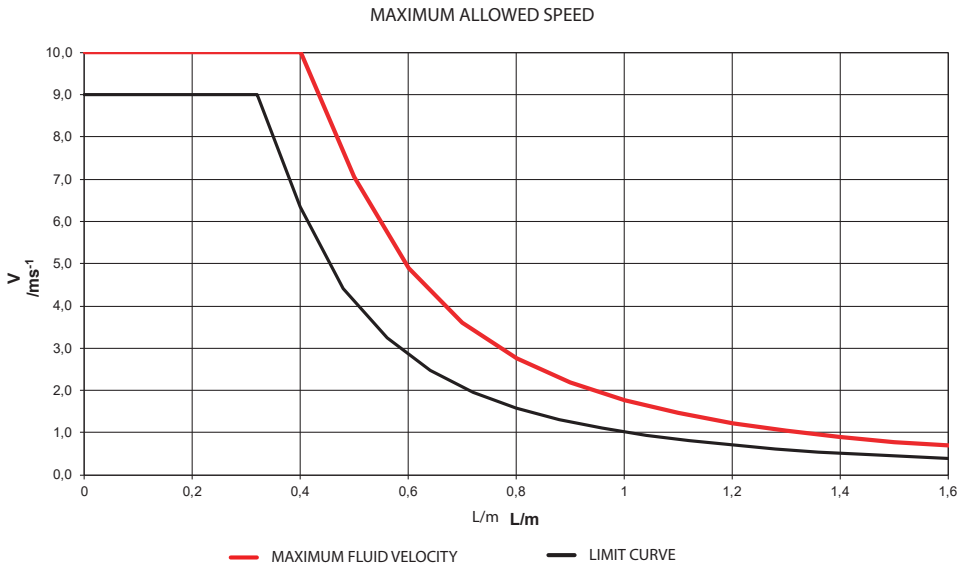
MS3810 PRESSURE SENSOR INSTALLATION



MAXIMUM ALLOWED SPEED

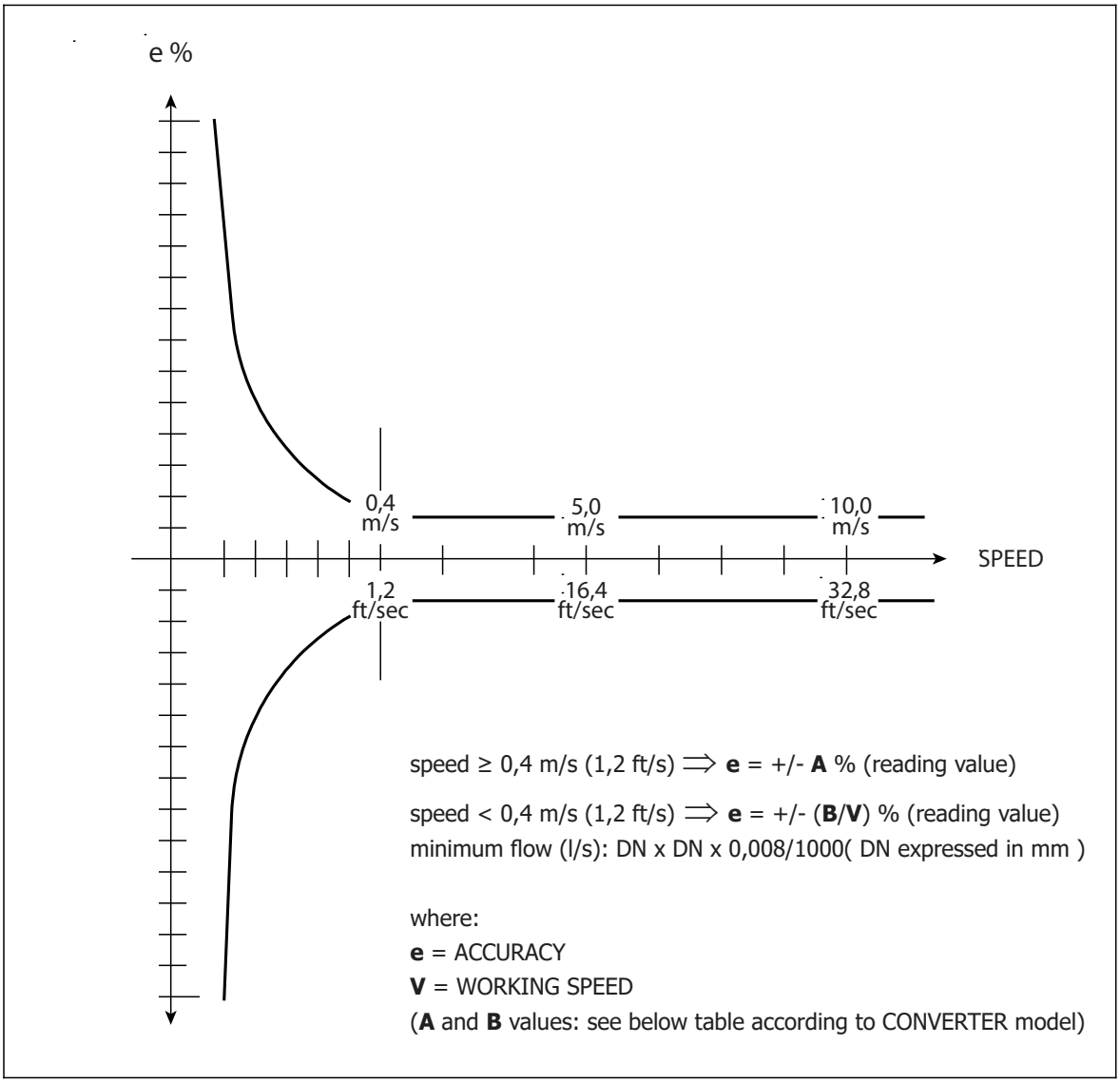
WARNING! The insertion and extraction operations of the insertion instruments are operations that can be dangerous when working with a pressure tube.
The pressure inside the tube apply a significant force on the probe that can be ejected violently, creating dangerous situations for the operators. However, the protection chain provided by the instrument does not allow it to completely exaction from the cylinder linear.
It is recommended to perform the insertion or extraction operations of the insertion instrument in safe conditions, if possible with reduced safe working pressure.
The extraction operations can be dangerous as well as for the risk connected to the ejection forces of the probe, also due to the possible leakage of liquid from the piping caused by incorrect operation or defect in the shut-off valve. The following are the indicative values of expulsion force at different pressure values:

Internal Pressure probe [bar]	Expulsion force [kg]
6	30
10	50
16	80
25	125



Insertion depth	Maximum fluid velocity
L	V
m	ms-1
0.10	10.0
0.20	10.0
0.30	10.0
0.40	10.0
0.50	7.06
0.60	4.91
0.70	3.60
0.80	2.76
0.90	2.18
1.00	1.77
1.10	1.46
1.20	1.23
1.30	1.04
1.40	0.90
1.50	0.78
1.60	0.69

ACCURACY TABLE



A	B (speed m/s)	B (speed ft/s)
2	0,8	0,24

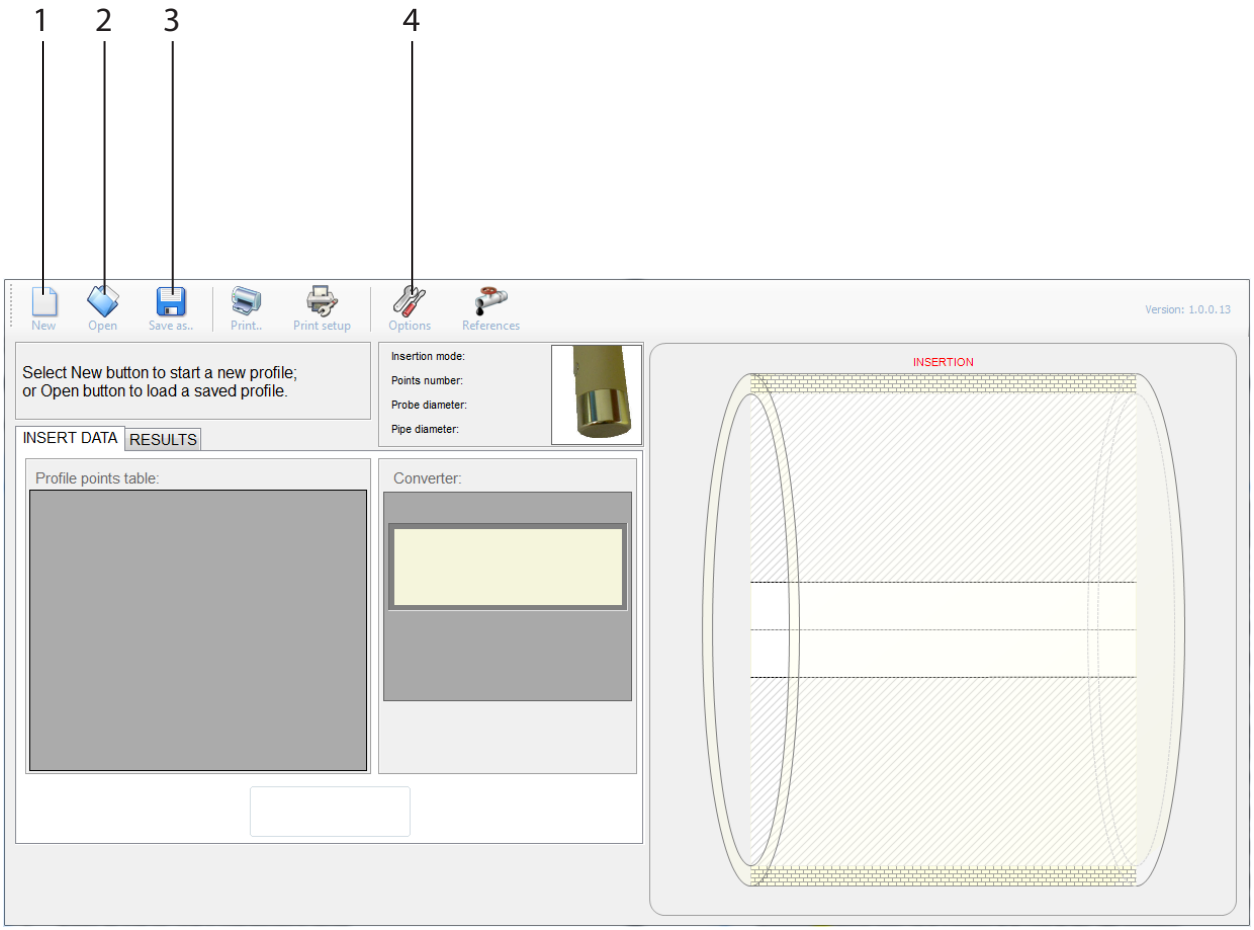
Reference conditions:

- Constant flow rate during the test
- Pressure: >30 kPa
- Flow condition : fully developed flow profile
- Zero stability +/- 0,005 %
- ID accuracy: mean value better than 1%, IDmin/IDmax>0,98

ISOFLOW PROFILER

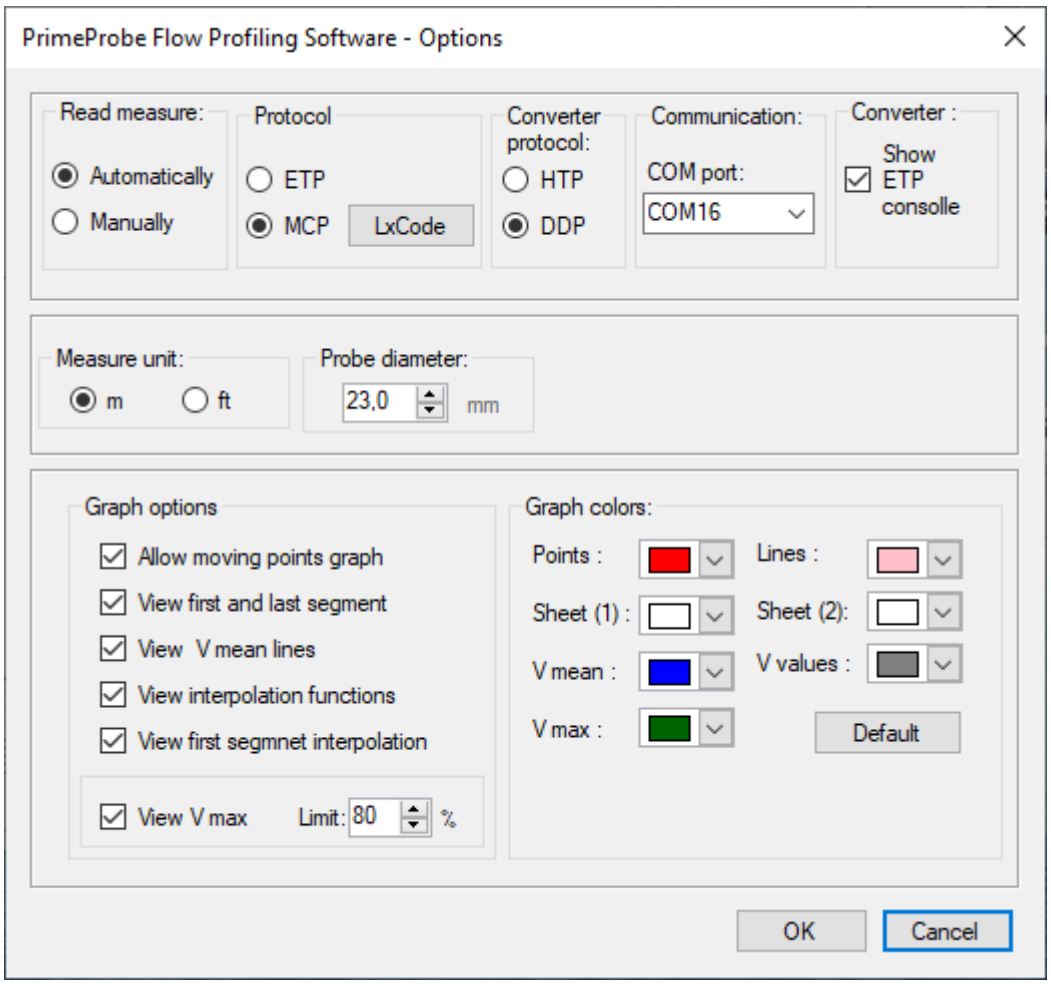
Flow Profiler is an application designated to calculate the value of the correction coefficients Ki and Kp when the flow profile in not fully developed. This is achieved by measuring the flow velocity at different insertion depths along pipe diameter.

Main page



At program start-up appears the above window appears in addition to the normal print functions is possible:

- Load a profile previously saved by Profiler program from a text file (rif. 1)
- Open the form to insert a new profile (rif. 2)



By the button "Options" is possible to insert the basic parameters used in the calculations including:

- ❑ Diameter of the pipe in which the sensor probe is inserted
- ❑ Diameter of the sensor probe (this is usually 23 mm)
- ❑ Number of points in which the flow velocity is measured
- ❑ Type of point spacing that is correlated to the probe insertion depth at which measures are taken

Possible choices for the point spacing parameter are:

- ❑ • Automatic: the point spacing will be automatically calculated by the program
- ❑ • Manual: the insertion depth of every point will be inserted by the user.

For the program to operate correctly it is necessary to insert at least one point on the pipe axis and to insert the same number of points above and below the center line. The points must be inserted in the insertion depth order.

HOW TO ORDER

Code Example	Code/Description	
Suitable for piping diameter		
0	0	maximum insertion depth 150 mm
	1	maximum insertion depth 300 mm
	2	maximum insertion depth 500 mm
	3	maximum insertion depth 700 mm
	4	maximum insertion depth 1000 mm
	5	maximum insertion depth 2000 mm
	9	maximum insertion depth 80 mm
Sensor and electrodes material / lining		
A	A	Sensor material AISI316, head in PEEK, electrodes in Hastelloy C276, gasket in FKM
	B	Sensor material AISI316, head in PEEK, electrodes in AISI316, gasket in FKM
	Z	Sensor material: to be specified
Accessory for mounting in pressurised pipe line		
1	1	Mounting in pipe without pressure (installed using manual pressure); connection 1" UNI338 (GAS)
	2	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to weld on the pipe) and 1" ball valve (Bronze material); all connections 1" UNI 338 (GAS)
	3	Mounting in pipe without pressure (installed using manual pressure); connection 1" NPT
	4	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to weld on the pipe) and 1" ball valve (Bronze material); all connections 1" NPT
	6	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to weld on the pipe) and 1" ball valve (Bronze material); all connections 1" UNI 338 (GAS) + QUICK CONNECTIONS 1/8" for pressure sensor
	7	Accessory kit, suitable for mounting in pressurised line, composed by: 1" hose-coupling (to weld on the pipe) and 1" ball valve (Bronze material); all connections 1" NPT + QUICK CONNECTIONS 1/8" for pressure sensor
	8	Accessory kit, suitable for mounting in pressurised line, composed by: 1" UNI 338 (GAS) hose-coupling + QUICK CONNECTIONS 1/8" for pressure sensor
	9	Special connection: to be specified
Suitable for Pipe Size		
A	A	> 150 mm
	B	< 150 mm
Number and electrodes material		
0	0	Standard (V>0,5 m/s = 2% ; V<0,5 m/s = 1/Vmeasured) ; V = fluid velocity
	1	Special
Number and electrodes material		
	A	Compact version , IP67 protection rate
	B	Separate version, Painted Aluminum JB, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE LENGHT - ADD THE COST)
	G	Separate version, Painted Aluminum JB, N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	F	Separate version, Painted Aluminum JB, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	N	Separate version, Painted Aluminum JB , PREAMPLIFIER*, protection rate IP67 - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)
	Q	Separate version, Painted Aluminum JB, PREAMPLIFIER*, N° 1 connectors IP 68 suitable for fast cable connection - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)

A	U	Separate version, AISI 304 JB RAW, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE LENGHT - ADD THE COST)
	S	Separate version, AISI 304 JB RAW, with N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	T	Separate version, AISI 304 JB RAW, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	P	Separate version, AISI 304 JB RAW, PREAMPLIFIER*, protection rate IP67 - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)
	R	Separate version, AISI 304 JB RAW, PREAMPLIFIER* N° 1 connectors IP 68 suitable for fast cable connections to - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)
	K	Separate version, AISI 304 JB POLISHED, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE LENGHT - ADD THE COST)
	Y	Separate version, AISI 304 JB POLISHED, with N° 1 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	W	Separate version, AISI 304 JB POLISHED, N° 2 connectors IP 68 suitable for fast cable connections - (DEFINE THE LENGHT - ADD THE COST)
	V	Separate version, AISI 304 JB POLISHED, PREAMPLIFIER*, protection rate IP67 - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)
	J	Separate version, AISI 304 JB POLISHED, PREAMPLIFIER* N° 1 connectors IP 68 suitable for fast cable connections to - (DEFINE THE LENGHT MAX 500 m-ADD THE COST)

Complete code example for order → MS3810-0A1A0A

ISOIL INDUSTRIA S.p.A.

HEAD OFFICE	SERVICE
Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax +39 02 6123202 sales@isoil.it	isomagservice@isoil.it

If you want to find the complete list of our distributors access at the following link:
http://www.isoil.com/en

Due to the constant technical development and improvement of its products, the manufacturer reserves the right to make changes and/or modify the information contained in this document without notice.

ISOIL INDUSTRIA
The solutions that count