

LUN23

Threephase Import-Export / Active - Reactive Meter

IP54

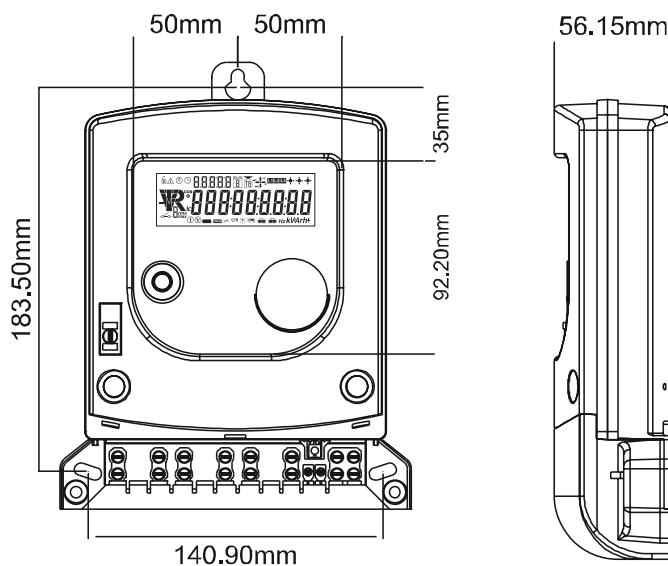


Technical Specifications

- Threephase 4 wire meter
- Active-Reactive / Import-Export
- Active Class: B/C Reactive Class:2
- Direct connected
- 5(100)A current
- 3 x 230/400VAC reference voltage
- 1000imp/kWh - 1000imp/kVArh
- -40°C...+70°C temp. range
- Optical port communication

Optional Features

- RS485 communication port
- Anti magnetic (AML)
- Detection and record magnetic interventions
- LCD backlight
- Export energy measurement
- Total Harmonic Distortion (THD) measurement



AB UYGUNLUK BEYANI

EU DECLARATION OF CONFORMITY

(No 0002)

1. **Cihaz modeli/Cihaz**
Instrument model/Instrument

: LUN23

Sayacın seri numarası
Meters' Serial Number (count by)

:

2. **Üretici adı ve adresi**
Name and address of the manufacturer

: LUNA A.S. 10001 Str.
No: 9 Ataturk O.S.B.
Cigli-Izmir-TURKEY

3. **Uygunluk beyanı üreticinin sorumluluğu altında verilir.**
This declaration of conformity is issued under the sole responsibility of the manufacturer.

4. **Beyanın konusu:**
Object of declaration:

5.

Yukarıda belirtilmiş olan uygunluk beyanı aşağıdaki ilgili AB uyumlandırma mevzuatı ile uyumludur:	The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
Üye devletlerin ölçü aletleri pazarındaki uyumluluğu gerçekleştirmek üzere yasalarının uyumluluğu hakkındaki Avrupa Parlamentosu ve Konseyi'nin 2014/32/EU direktifi - WELMEC Kılavuzu 11.1, Sayı 4 - WELMEC Kılavuzu 7.2, Sayı 5 - OIML R 46 -1/-2 Sürüm 2012 (E) Direktif 2015/13/EU	Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the member states relating to the making available on the market of measuring instruments. - Welmec Guide 11.1, Issue 4 - Welmec Guide 7.2, Issue 5 - OIML R 46 -1/-2 Edition 2012 (E) Directive 2015/13/EU

6. **Uyumluluğun beyan edildiği ilgili standart referansları:**
References to the relevant harmonised standards to which conformity is declared:
EN 50470-1, EN 50470-3

7. **İlgili MODÜL B ve MODÜL D uygunluk değerlendirme prosedürlerini gerçekleştiren ve yayınlayan 1432 sayılı onaylanmış kuruluş (Slovenska legalna metrologia n.o.)**
The notified body No. 1432 (Slovenska legalna metrologia n.o.) performed conformity assessment procedures MODULE B and MODULE D and issued:

AB Tip Onayı Belge No
EC type-approval certificate No

: SK18 – 082 MI-003

Kalite Yönetim Sistemi Onay No
Approval on a Quality Management System No

: SK-09-015D

8. **Firma adına imza:**
Signed for and on behalf of:

Mustafa KARABAGLI

Yönetim Kurulu Başkanı
(Chairman of the Board)

Tarih:

Date: 04.02.2020

3. COMPLETAREA

Contor de energie electrică 1 buc.
Ambalaj 1 buc.
Pașaport 1 buc.

4. GARANȚIILE PRODUCĂTORULUI ȘI TERMENUL DE EXPLOATARE

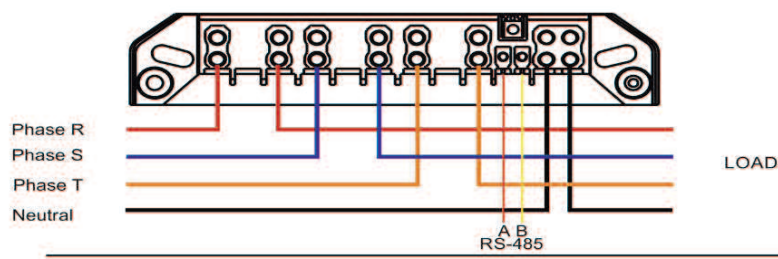
Producătorul garantează corespunderea contorului de energie electrică cerințelor documentației tehnice doar în cazul respectării condițiilor de transportare, păstrare, montare și exploatare.

Termenul de garanție constituie 24 luni de la data livrării.

Condițiile de garanție pe teritoriul Republicii Moldova sunt asigurate de către Techno Retail SRL. mun.Chisinau, str.Ginta Latină 12/6, tel.0-22-903-000.

Termenul de exploatare 24 ani.

5. SCHEMA DE CONECTARE



Instalarea contoarelor de energie electrică va fi efectuată numai de către persoane calificate (licențiate în acest domeniu).

6. VERIFICAREA METROLOGICĂ

Contor static trifazat de energie electrică tip LUN23 ... este supus verificării metrologice periodice cu perioada de verificare - 48 luni .

Data	Tipul verificării	Rezultatele verificării	Semnătura verificatorului	Amprenta mărcii metrologice de verificare	Buletin de verificare

Contor static trifazat de energie electrică
tip LUN23

PAȘAPORT TEHNIC

Producător: LUNA ELECTRIK SAN. VE TIC. A.Ş.
10001 Sokak No:9 Atatürk O.S.B.; 35620 Çiğli / İzmir - TÜRKİYE;
Tel: +90 232 472 15 45 Fax: +90 232 472 15 50
www.lunatr.com

Certificat de acceptare:

№ de fabricare,
Data, ora,

Mustafa KARABAGLI

Yönetim Kurulu Başkanı
(Chairman of the Board)

corespunde parametrilor tehnici indicați în manualul de exploatare.

L.Ş. (secție de control tehnic)

L.Ş. (verificator de stat)

1. DESTINAȚIE

Mijloc de măsurare utilizat pentru măsurarea consumului de energie electrică în scopul decontării energiei electrice între furnizor și consumator.

Contor static trifazat de energie electrică tip LUN23 se încadrează în categoria dispozitivelor de măsurare cu tarif simplu de interes public. Principiul de funcționare al contorului se bazează pe utilizarea unor blocuri electronice de măsurare (elementul de măsurare este construit în bază de transformator de curent), care realizează conversia tensiunilor și curenților aplicate la intrare în impulsuri de ieșire, proporționale cu energia electrică. Integrarea și arhivarea se efectuează de către microprocesor.

2. CARACTERISTICELE TEHNICE DE BAZĂ

Clasa de exactitate la măsurarea energiei C Import / Export
Valori de referință ale tensiunii nominale 3×230/400 V
Valori nominale pentru curentul de bază 5 A
Curent maxim 100 A
Valori nominale ale frecvenței 50 Hz
Constanta contorului 1000 imp/kWh
Puterea absorbită activă circuit de tensiune nu mai mult 0,75 VA / 0,4W
Puterea absorbită aparentă pentru circuit de curent nu mai mult 0,1 VA
Temperatura de funcționare nominală de la -40°C până la +70°C
Clasa de protecție IP 54
Mărimi de gabarit, max: Înălțimea 220 mm
Lungimea 168 mm
Lățimea 50 mm

AB UYGUNLUK BEYANI
EU DECLARATION OF CONFORMITY

(No 0002)

1. **Cihaz modeli/Cihaz** : LUN23
Instrument model/Instrument
- Sayacın seri numarası** :
Meters' Serial Number (count by)
2. **Üretici adı ve adresi** : LUNA A.S. 10001 Str.
Name and address of the manufacturer
No: 9 Atatürk O.S.B.
Cigli-Izmir-TURKEY

3. **Uygunluk beyanı üreticinin sorumluluğu altında verilir.**
This declaration of conformity is issued under the sole responsibility of the manufacturer.

4. **Beyanın konusu:**
Object of declaration:

Yukarıda belirtilmiş olan uygunluk beyanı aşağıdaki ilgili AB uyumlandırma mevzuatı ile uyumludur:	The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
Üye devletlerin ölçü aletleri pazarındaki uyumluluğu gerçekleştirmek üzere yasalarının uyumluluğu hakkındaki Avrupa Parlamentosu ve Konseyi'nin 2014/32/EU direktifi - WELMEC Kılavuzu 11.1, Sayı 4 - WELMEC Kılavuzu 7.2, Sayı 5 - OIML R 46 -1/-2 Sürüm 2012 (E) Direktif 2015/13/EU	Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the member states relating to the making available on the market of measuring instruments. - Welmec Guide 11.1, Issue 4 - Welmec Guide 7.2, Issue 5 - OIML R 46 -1/-2 Edition 2012 (E) Directive 2015/13/EU

6. **Uyumluluğun beyan edildiği ilgili standart referansları:**
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EN 50470-1, EN 50470-3

7. **İlgili MODÜL B ve MODÜL D uygunluk değerlendirme prosedürlerini gerçekleştiren ve yayınlayan 1432 sayılı onaylanmış kuruluş (Slovenska legalna metrologia n.o.)**
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AB Tip Onayı Belge No
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: SK18 – 082 MI-003

Kalite Yönetim Sistemi Onay No
Approval on a Quality Management System No

: SK-09-015D

8. **Firma adına imza:**
Signed for and on behalf of:

Mustafa KARABAGLI

Yönetim Kurulu Başkanı
(Chairman of the Board)

Tarih:
Date: 04.02.2020

**WARRANTY
CERTIFICATE**



WARRANTY PERIOD : 5 YEARS
TERM OF REPAIR : 20 BUSINESS DAYS

25

Cutomer	Brand LUNA Type Electronic Electricity Meter Model LUN 23 Serial Number
Manufacturer	Name: LUNA ELEKTRİK ELEKTRONİK SAN. VE TİC. A.Ş. Address: 10001 Sokak No:9 A.O.S.B. 35620 Çiğli / İZMİR Tel & Fax: +90 (0 232) 472 15 45 & +90 (0 232) 472 15 50 e-mail: info@lunatr.com
Vendor	Name Address Tel & Fax Invoice Date & Number
APPROVAL	LUNA ELEKTRİK ELEKTRONİK SAN. VE TİC. A.Ş. SANAYİ VE TİCARET A.Ş. 10001 Sokak No:9 A.O.S.B. Çiğli / İZMİR Çiğli V.D. 609 047 2390
Stamp - Signature	

3. COMPLETAREA

Contor de energie electrică 1 buc.
Ambalaj 1 buc.
Pașaport 1 buc.

4. GARANȚIILE PRODUCĂTORULUI ȘI TERMENUL de EXPLOATARE

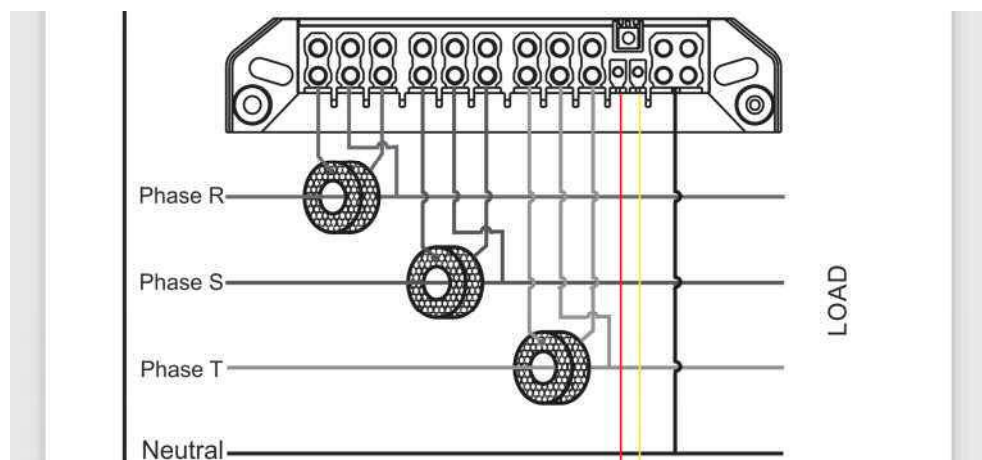
Producătorul garantează corespunderea contorului de energie electrică cerințelor documentației tehnice doar în cazul respectării condițiilor de transportare, păstrare, montare și exploatare.

Termenul de garanție constituie 24 luni de la data livrării.

Condițiile de garanție pe teritoriul Republicii Moldova sunt asigurate de către Techno Retail SRL mun.Chisinau str.Ginta Latina 12/6, tel.0-22-903-000.

Termenul de exploatare 24 ani.

Instalarea contoarelor de energie electrică va fi efectuată numai de către persoane calificate (licențiate în acest domeniu).



1. SCHEMA DE CONECTARE

6. VERIFICAREA METROLOGICĂ

Contor static trifazat de energie electrică tip LUN 51 ... este supus verificării metrologice periodice cu perioada de verificare - 48 luni .

Data	Tipul verificării	Rezultatele verificării	Semnătura verificatorului	Amprenta mărcii metrologice de verificare	Buletin de verificare

Contor static trifazat de energie electrică
tip **LUN51, conectarea prin transformatoare de curent**

PAȘAPORT TEHNIC

Producător: LUNA ELECTRIK SAN. VE TIC. A.Ș.
10001 Sokak No:9 Atatürk O.S.B.; 35620 Çiğli / İzmir - TÜRKİYE;
Tel: +90 232 472 15 45 Fax: +90 232 472 15 50
www.lunatr.com

Certificat de acceptare:

№ de fabricare,
Data, ora,

corespunde parametrilor tehnici indicați în manualul de exploatare.

1. DESTINAȚIE

Mijloc de măsurare utilizat pentru măsurarea consumului de energie electrică în scopul decontării energiei electrice între furnizor și consumator.

Contor static trifazat de energie electrică tip LUN51 se încadrează în categoria dispozitivelor de măsurare cu multe tarife de interes public. Principiul de funcționare al contorului se bazează pe utilizarea unor blocuri electronice de măsurare (elementul de măsurare este construit în bază de transformator de curent și/sau sunt), care realizează conversia tensiunilor și curenților aplicate la intrare în impulsuri de ieșire, proporționale cu energia electrică. Integrarea și arhivarea se efectuează de către microprocesor.

2. CARACTERISTICILE TEHNICE DE BAZĂ

Clasa de exactitate la măsurarea energiei B(activ), 2(reactiv)
Valori de referință ale tensiunii nominale 3×57.7/100-230/400 V
Valori nominale pentru curentul de bază 5 A
Curent maxim 10 A
Valori nominale ale frecvenței 50 Hz
Constanta contorului 10 000 imp/kWh
Puterea absorbită activă circuit de tensiune nu mai mult 0,75 VA / 0,4W
Puterea absorbită aparentă pentru circuit de curent nu mai mult 0,1 VA
Temperatura de funcționare nominală de la -40°C până la +70°C
Clasa de protecție IP 54
Mărimi de gabarit, max: Înălțimea 220 mm
Lungimea 168 mm
Lățimea 50 mm



Declaration of Conformity Uygunluk Beyanı

Identification number of the notified body that has carried out the EC surveillance referred to in the 2004/22/EC MID 2004/22/EC Ölçüm Cihazları direktifinde atfedilen AB denetimini yürütmüş olan yetkili kuruluşun kimlik numarası:	
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Name and address of manufacturer or his authorised representative:
İmalatçı veya yetkili temsilcisinin adı ve adresi:

LUNA ELEKTRİK ELEKTRONİK SAN. VE TİC. A.Ş.
10001 SOKAK NO:9 ATATÜRK O.S.B. 35620 ÇİĞLİ / İZMİR TURKEY

The Electronic Electricity Meter Class

Elektronik Elektrik Sayacı - Sınıf

C

We declare that production at under mentioned meets MID directive requirements as determined in MI-003 and D module (Quality Assurance of the Production Process) and we also declare to give this conformity declaration to our costumer for each production

Aşağıdaki ürünlerimizi, MID direktifinde belirtilen MI-003 ve modül D (Üretim Prosesleri için Kalite Güvence) gereklerini yerine getirecek şekilde üreteceğimizi ve bu belgeyi ürettiğimiz her ürün ile birlikte müşterimize vereceğimizi beyan ederiz.

Manufacturer : İmalatçı :	LUNA ELEKTRİK ELEKTRONİK SANAYİ VE TİCARET A.Ş.
Type/ Model: Tip/ Model :	LUN51
Number of the EC type- approval certificate : AB tip onay belgesinin numarası :	
Serial number(s) : Seri numarası :	
Number of Approval on a Quality Management System : Kalite Yönetim Sistemi Onay Numarası :	
Notified bodie: Yetkili kuruluş:	SLM (Slovenská Legálna Metrologia)

to which this declaration relates is in conformity with the following standard(s) other normative document(s) following provisions of

Aşağıda belirtilen yürürlükteki ilgili standart ve yönetmeliklerin hükümlerine uygun olduğunu bildiriniz.

Directive: (Yönetmelik)
2004/22/EC (MID)
2004/108/EC (EMC)
2006/95/EC (LVD)

Related Standard(s): (İlgili Standartlar)
EN 50470

Normative Document(s): (Normatif dokümanlar)

Name and signature or equivalent
marking authorized person
(Yetkili isim ve imza)

Date - Tarih

2016

MUSTAFA KARABAĞLI

LUNA

GARANTİ BELGESİ

BELGE NO :
BELGE ONAY TARİHİ :
BELGE GEÇERLİLİK TARİHİ:

Müşteri Adı

Markası

LUNA

Cinsi

Elektronik Elektrik Sayacı

Modeli

LUN51

Seri Numarası

Ürün

Üretici
Firma

Ünvan LUNA ELEKTRİK ELEKTRONİK SAN. VE TİC. A.Ş.

Adresi 10001 Sokak No: 9 Atatürk O.S.B.
35620 ÇİĞLİ / İZMİR

Tel & Faks (0 232) 472 15 45 & (0 232) 472 15 50

Ünvan

Adresi

Fatura Tarih & No

Satıcı
Firma

FİRMA ONAYI

LUNA ELEKTRİK ELEKTRONİK
SANAYİ VE TİCARET A.Ş.
10001 Sokak No: 9 Atatürk O.S.B.
ÇİĞLİ / İZMİR
Çiğli V.D. 609 047 2390

Kaşe - İmza

Bu belgenin kullanılmasına 4077 sayılı Tüketicinin Korunması Hakkında Kanun ve Kanun'a dayanarak yürürlüğe konulan Garanti Belgesi Uygulama Esaslarına Dair Tebliğ uyarınca, T.C. Gümrük ve Ticaret Bakanlığı Tüketicinin Korunması ve Piyasa Gözetimi Genel Müdürlüğü tarafından izin verilmiştir.



EU - TYPE EXAMINATION CERTIFICATE



No. SK 18 - 082 MI-003 Rev. 0

Issued by **Slovenská legálna metrologia, n. o.**
Hviezdoslavova 31
974 01 Banská Bystrica
Slovak Republic

Notified Body number **1432**

In accordance with Annex II, Module B to Government Ordinance of the Slovak Republic No. 145/2016 Coll. relating to the making available on the market of measuring instruments, which implements, in Slovakia, the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments as later amended (MID).

Applicable essential requirements Annex I and Annex V to MID

Manufacturer **LUNA ELEKTRİK ELEKTRONİK SANAYİ ve TİCARET A.Ş.**
A.O.S.B. 10001 Sokak No:9
Çiğli - İzmir, Turkey

Applicant **Manufacturer**

Measuring instrument **Active electrical energy meter**

Type	LUN23
Trade mark	see Descriptive annex
SW version	10.01

Environment classes	
- climatic	(-40 to +70) °C
- mechanical	M1
- electromagnetic	E2

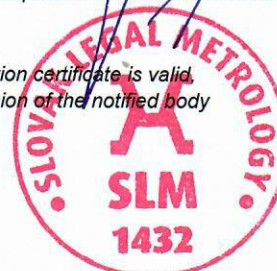
Description and documentation The principal technical and metrological data, characteristics, instrument description and approval conditions are set out in the Descriptive annex to this EU - type examination certificate (9 pages), which is part of this EU - type examination certificate. The test reports, designs, schematic diagrams and documentation used during certification process are recorded under reference folder LUNA_LUN23_0_00.

Valid until **10 May 2028**

Date of issue **10 May 2018**



Ing. Štefan Král, PhD.
Representative of Notified Body



Where the instrument is subject to other Directives covering other aspects, this EU - type examination certificate is valid, assuming that the instrument conforms to the provisions of those Directives. Without written permission of the notified body this certificate may be reproduced only as a whole.

1. Designation

Three-phase static active electrical energy meter type **LUN23** (Fig. 1 and 2) is intended for the measurement of the active electrical energy in three-phase 4-wires power network in residential (households), commercial, light industrial; indoor and outdoor use.

The meter is intended for *direct connection* to the distribution network. It measures the active energy in the class B or C as per harmonized standards EN 50470-1 and EN 50470-3 in the import and export direction.

2. Description

Essential parts of the electricity meter (Fig. 3):

- Measurement sensors;
- Main PCB, MCU, supply circuit;
- terminal block and terminal cover;
- LCD;
- housing of the meter.

Non-essential parts of the electricity meter:

- communication modules (see section 4);
- latching relay (optional).

2.1 Metrological functions

2.1.1 Essential functions

- measuring, memorizing and displaying of the active electrical energy (import and export separately);
- multi-tariff (8 tariff-rates) measurement of the active electrical energy (optional).

2.1.2 Non-essential functions

- simultaneous measurement of active and reactive electrical energy fully-compatible as a whole;
- measuring, memorizing and displaying of the reactive electrical energy (import and export separately);
- measurement of electrical parameters (V_{rms} , I_{rms}^* , neutral current, Power Factor, Frequency);
- real time clock and calendar;
- manual or automatic ending the billing period;
- automatic daylight saving on RTC;
- harmonic measurement;
- recording date and time of last 32 supply interruptions;
- event logs of: main cover and terminal cover tampering, low battery, real time clock failure, magnetic intervention, phase interruption, etc.;
- maximum demand recording (monthly report; date and time of occurrence);
- load profile recording;
- battery operation.

Detailed descriptions and operation of the meter, block and connections schemes, wiring diagrams and values of parameters may be found in manufacturer's documentations stored in folder LUNA_LUN23_0_00.

* Note: rms – root mean square

2.2 Software

Software version *	10.01
CRC checksum	0x2B4C24AB

Note:

*): Software version is shown on a display by pressing the meter's button (displaying OBIS code 96.97).

2.3 Optional equipment and functions subject to MID requirements

- not applicable.

2.4 Integrated equipment and functions not subject to MID

- function button;
- terminal and main cover sensors;
- Real Time Clock;
- internal non-volatile memory (EEPROM or SPI Flash, optional);
- see also section 2.1.2 and section 4.

The above mentioned parts (section 2.4) are outside the scope of Annex V to Directive 2014/32/EU.

3. Technical and metrological data

Parameter	Unit	Value
Reference voltage U_n	V	3 x 230/400
Reference frequency f_n	Hz	50
Reference current I_{ref}	A	5
Maximum current I_{max}	A	100
Accuracy class (index)	-	B or C
Transitional current I_{tr}	A	0,5
Minimum current I_{min}	A	0,15
Meter constant	imp/kWh	1000
Mechanical class	-	M1
Electromagnetic class	-	E2
Climatic environment	°C	-40 to 70
Protection degree	-	IP54
Installation conditions	-	outdoors (humidity without moisture condensation)

4. Interfaces and compatibility conditions (optional)

- Optical Communication Port;
- Serial Interface RS-485;
- PLC communication interface;
- RF communication interface;



- GSM/GPRS communication interface;
- Demand reset button;
- RF-ID module;
- relay output;
- magnetic field detection sensor;
- audible alarm ("buzzer").

5. Marking and inscriptions

The following data shall be marked on the electricity meter (Fig. 4):

- a) manufacturer's mark or name;
- b) manufacturer's postal address (article 8, point 6 of Directive 2014/32/EU);
- c) type of the meter;
- d) serial number and year of production;
- e) reference voltage (U_n);
- f) reference current (I_{ref});
- g) minimum current (I_{min});
- h) maximum current (I_{max});
- i) reference frequency (f_n);
- j) class index (B or C);
- k) temperature range of operation;
- l) electromagnetic and mechanical class;
- m) the connection mode for which the meter is specified;
- n) meter constant;
- o) meter directionality type;
- p) EU-type examination certificate number SK 18 – 082 MI-003;
- q) CE marking and supplementary metrology marking according to Article 21 and Article 22 of Directive 2014/32/EU (CE marking and supplementary metrology marking following with number of a notified body).

Any inscriptions on the meter must be in the official language; the international abbreviations are admitted. Markings on the measuring instrument shall comply with the requirements of Article 9, Annex 1 to Directive 2014/32/EU.

5.1 Designation of trademarks on the electricity meters

Manufacturer may use the following trademark on its electricity meters:



6. Security measures

The electricity meter shall be protected against unauthorised manipulation by two sealing marks which secure the connection of the front cover to the base of the meter (Fig. 5).

A.) meter cover 2 x

After the installation the meter should be sealed by *service* seals according to national requirements:

B.) terminal cover 2 x



7. Requirements on production, putting into use and utilization

7.1 Requirements on production

- no special requirements identified.

7.2 Requirements on putting into use

- electricity meters must be installed in accordance with requirements listed in installation and user manual issued by the manufacturer (see documentation folder LUNA_LUN23_0_00).

7.3 Requirements for utilization

- in accordance with requirements of the manufacturer's documentation.

8. Documentation used for assessment purposes

- evaluation report No. 048/1432/17 MI-003 of 09/05/2018, issued by SLM NB 1432;
- manufacturer's technical documentation is stored in documentation folder LUNA_LUN23_0_00.

9. Standards and regulations used for assessment purposes

9.1 Regulations, harmonized standards and normative documents

- Government Ordinance of the Slovak Republic No. 145/2016 Coll. relating to the making available on the market of measuring instruments, which implements in Slovakia, the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments as later amended;
- EN 50470-1:2006;
- EN 50470-3:2006;
- EN 62058-31:2010.

9.2 Further applied standards and documents

- WELMEC Guide 11.1, Issue 4;
- WELMEC Guide 7.2 2015.



10. Final provisions on electricity meter

Construction, technical and metrological parameters of the meter must comply with the documentation presented within the process of type certification. All the characteristics of the measuring instrument (including those not mentioned) shall meet the respective requirements of Government Ordinance of the Slovak Republic No 145/2016 Coll. relating to the marking available on the market of measuring instruments, which implements, in Slovakia, the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the marking available on the market of measuring instruments as later amended (MID).

11. Figures



Fig. 1: Electricity meter LUNA type LUN23



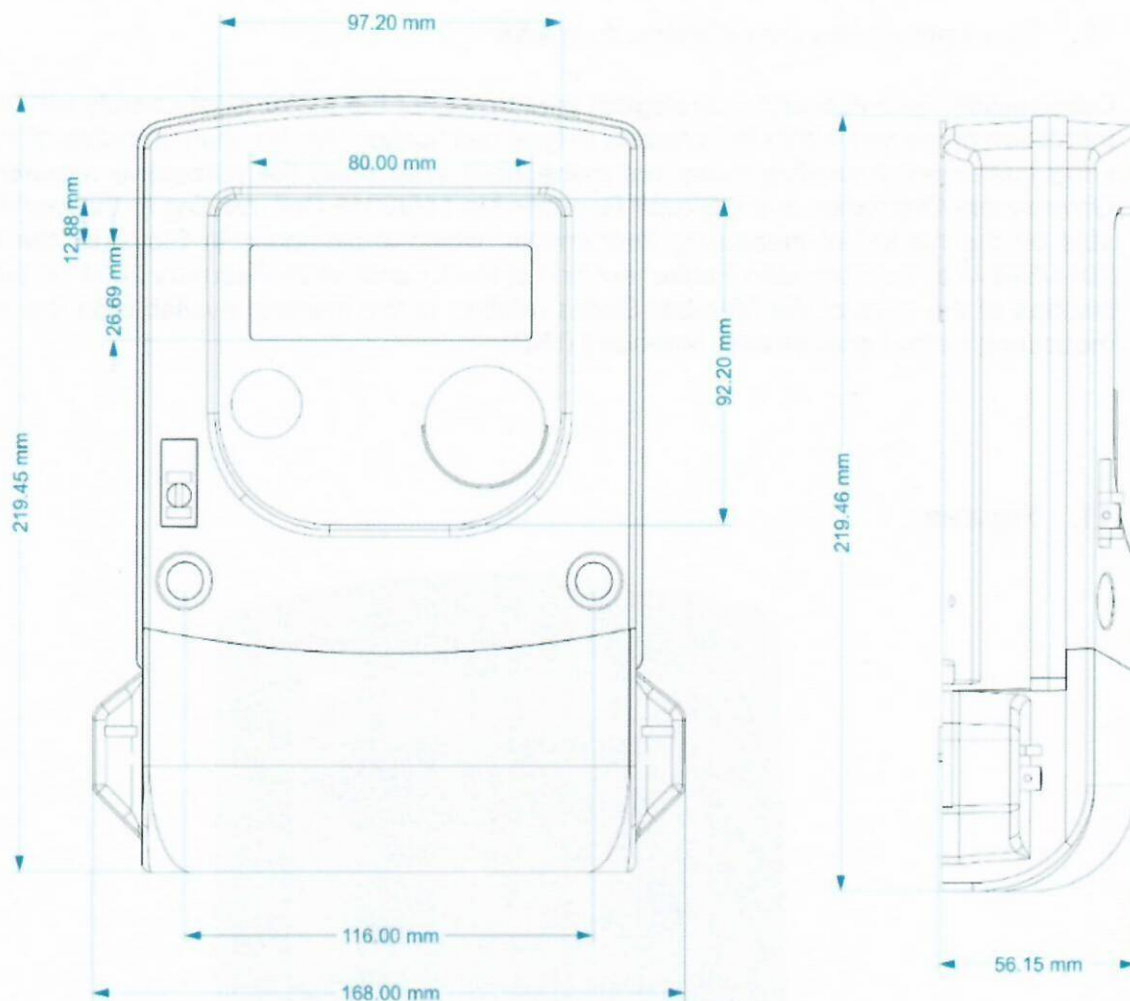


Fig. 2: View and main dimensions of electricity meter LUNA type LUN23

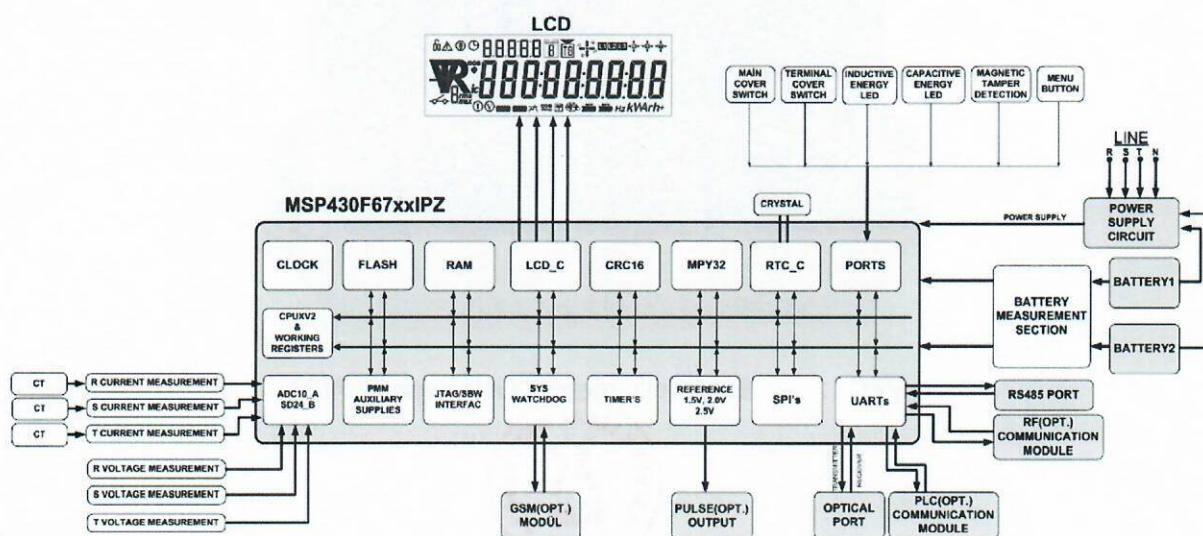


Fig. 3: Block diagram of electricity meter LUNA type LUN23





Fig. 4: Example of the name-plate of the LUNA type LUN23 meter

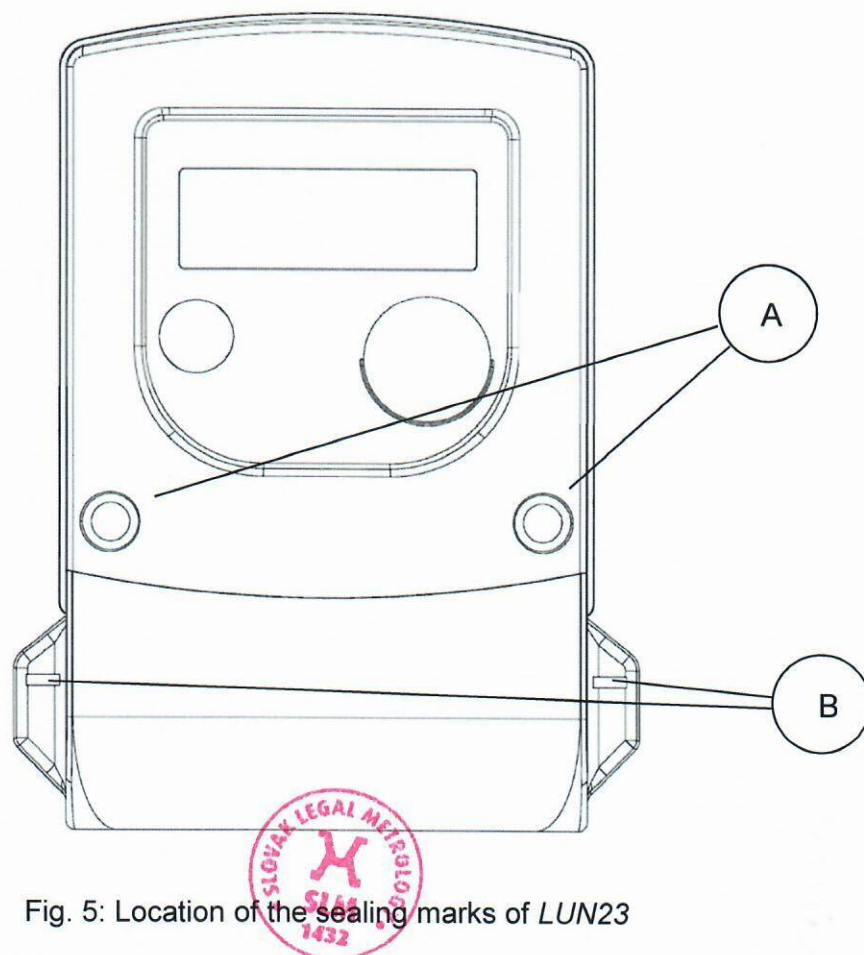


Fig. 5: Location of the sealing marks of LUN23

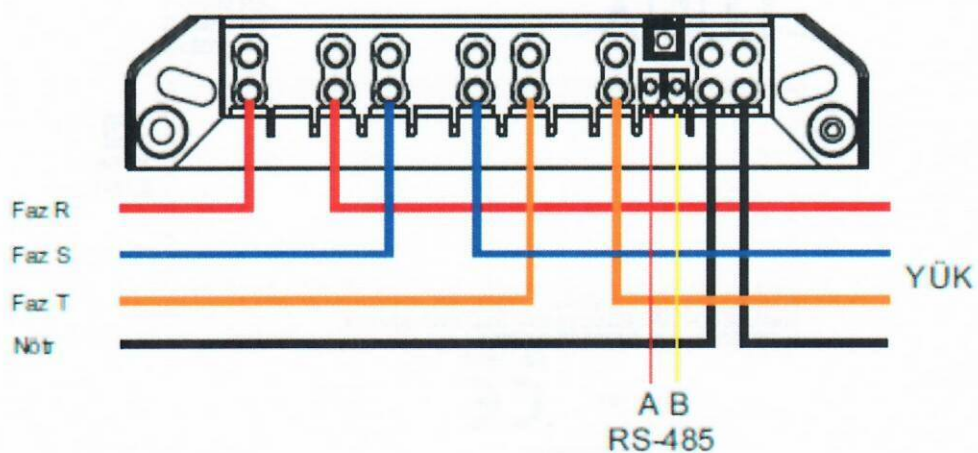


Fig. 6 Connection diagram of LUN23



12. Influence factors for temperature, frequency and voltage variation

During the type examination the influence factors for temperature, frequency and voltage are determined at each load. The sum of square values (δ) at tested loads has been calculated from the following formula:

$$e_c = \sqrt{e^2(I, \cos \varphi) + \delta^2(T, I, \cos \varphi) + \delta^2(U, I, \cos \varphi) + \delta^2(f, I, \cos \varphi)}$$

with

$e(I, \cos \varphi)$	the intrinsic error of the meter at a certain load
$\delta(T, I, \cos \varphi)$	additional percentage error due to the variation of the temperature at certain load
$\delta(U, I, \cos \varphi)$	additional percentage error due to the variation of the voltage at certain load
$\delta(f, I, \cos \varphi)$	additional percentage error due to the variation of the frequency at certain load

Data of the specimen representative of the type:

Type of the measuring instrument	-	LUN23
Serial number of the sample	-	170815-02/1
Test report no.	-	EL17-0029/R1 09-17
Reference current I_{ref}	A	5
Minimum current I_{min}	A	0,15
Transitional current I_{tr}	A	0,5
Maximum current I_{max}	A	100
Reference voltage U_n	V	3 x 230/400
Reference frequency f_n	Hz	50
Accuracy class	-	C

Values of error $\delta(T, U, f)$:

Ambient Temperature Range								
Current	PF cos	55 to 70 °C	40 to 55 °C	30 to 40 °C	5 to 30 °C	-10 to 5 °C	-25 to -10 °C	-40 to -25 °C
I_{min}	1	0,37	0,26	0,17	0,14	0,27	0,44	0,59
I_{tr}	1	0,29	0,22	0,11	0,07	0,25	0,39	0,51
$10I_{tr}$	1	0,32	0,20	0,08	0,08	0,22	0,29	0,42
I_{max}	1	0,33	0,22	0,14	0,09	0,23	0,29	0,43
I_{tr}	0,5 ind	0,26	0,19	0,11	0,11	0,28	0,39	0,50
$10I_{tr}$	0,5 ind	0,31	0,26	0,20	0,14	0,18	0,26	0,38
I_{max}	0,5 ind	0,49	0,48	0,48	0,35	0,33	0,35	0,43
I_{tr}	0,8 cap	0,29	0,19	0,11	0,09	0,26	0,37	0,50
$10I_{tr}$	0,8 cap	0,26	0,16	0,08	0,07	0,24	0,34	0,46
I_{max}	0,8 cap	0,37	0,26	0,20	0,13	0,18	0,40	0,49





EC - TYPE EXAMINATION CERTIFICATE

SK 15 - 057 MI-003

Rev. 0 Add. 0

Issued by **Slovenská legálna metrologia, n. o.** Notified body **1432**
Hviezdoslavova 31
974 01 Banská Bystrica
Slovak Republic

In accordance with Government Ordinance of the Slovak Republic No 294/2005 Coll. on measuring instruments as amended by Government Ordinance No 445/2010 Coll., which implements, in the Slovakia, the Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on measuring instruments as later amended (MID).

Applicable essential requirements Annex I and Annex MI-003 to MID

Manufacturer **LUNA ELEKTRİK ELEKTRONİK SANAYİ ve TİCARET A.Ş.**
10001 Sokak No: 9 A.O.S.B.
Çiğli - İzmir, Turkey

Applicant Manufacturer

Measuring instrument **active electrical energy meter**

Type	LUN51
Trade mark	see Descriptive Annex
SW version	10.80
Environment classes	
- climatic	-40 to + 70
- mechanical	M1
- electromagnetic	E2

Description and documentation The principal technical and metrological data, characteristics, instrument description and approval conditions are set out in the Final Protocol to this EC - type examination certificate (16 pages), which is part of this EC - type examination certificate. The test reports, designs, schematic diagrams and documentation used during certification process are recorded under reference folder LUNA_Lun51_0_00.

Valid until **23 January 2025**

Date of issue **9 February 2015**



Ing. Stefan Král, PhD.
Representative of Notified Body

Where the instrument is subject to other Directives covering other aspects, this EC - type examination certificate is valid, assuming that the instrument conforms to the provisions of those Directives. Without written permission of the notified body this certificate may be reproduced only as a whole.



1. Designation

Three-phase static, current transformer connected active electrical energy meter type **LUN51** (Fig. 1 and 2) is intended for the metering of active electrical energy in residential (households), commercial, light industrial; indoor and outdoor use.

2. Description

Essential parts of the electricity meter (Fig. 3a and 3b):

- analog front end;
- main PCB with MCU, LCD, power supply, optical port, pulse LED;
- housing of the meter.

Non-essential parts of the electricity meter:

- communication modules (e.g. for communication with smart metering systems - see p. 4);
- latching relay.

2.1 Metrological functions

2.1.1 Essential functions

- measurement, storing and displaying of the active electrical energy;
- multi-tariff (4 tariff-rates) measurement of active electrical energy.

2.1.2 Non-essential functions

- simultaneous measurement of active and reactive electrical energy fully-compatible as a whole;
- manual or automatic ending the billing period;
- storing the metering data for 8 billing periods;
- date of the last 10 supply interruption;
- number of supply interruptions;
- register of the meter errors;
- signalization of measuring circuits malfunction;
- event logs of: main cover and terminal cover tampering, low battery, real time watch failure, magnetic intervention, phase interruption, latching relay action, etc.;
- maximum demand recording (date and time of occurrence);
- load profile recording;
- bidirectional measuring (export + import) of the active and reactive electrical energy;
- displaying of the power factor ($\cos \varphi$).

Detailed descriptions and operation of the meter, block and connections schemes, wiring diagrams and values of parameters may be found in manufacturer's documentations stored in folder LUNA_Lun51_0_00.

2.2 Software

Software version *	10.80
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Notes:

*): Software version is shown on a display by pressing the meter's button (displaying OBIS code 96.97).

2.3 Optional equipment and functions subject to MID requirements

- not applicable.

2.4 Integrated equipment and functions not subject to MID

- function button;
- terminal and main cover sensors;
- real time clock;
- external non-volatile memory;
- see also p. 2.1.2 and p. 4.

The above mentioned alternative parts are outside the scope of Annex MI-003 of MID.

3. Technical and metrological data

Parameter	Unit	Value
Reference voltage U_n	V	3x57,7/100, 3x230/400
Reference frequency f_n	Hz	50
Reference current* I_{ref}	A	1
Maximum current I_{max}	A	10
Accuracy class (index)	-	B
Transitional current I_{tr}	A	0,05
Minimum current I_{min}	A	0,01
Starting current I_{st}	A	0,001
Meter constant	imp/kWh	10.000
Mechanical class	-	M1
Electromagnetic class	-	E2
Climatic environment	°C	-40 to 70
Protection degree	-	IP54
Installation conditions	-	outdoors (humidity without moisture condensation)

* Note: reference current $I_{ref} = 10 \times I_{tr} = I_b$ for direct connected meters according to EN 62052-11

4. Interfaces and compatibility conditions (optional)

- serial interface RS-485;
- PLC communication interface;
- RF communication interface;
- GPRS communication interface;
- relay output.

5. Marking and inscriptions

The following data shall be marked on the electricity meter (Fig. 4):

- a) manufacturer's mark or name;
- b) type of the meter;
- c) serial number and year of production;
- d) reference voltage (U_n);
- e) reference current (I_{ref});
- f) minimum current (I_{min});
- g) maximum current (I_{max});
- h) reference frequency (f_n);
- i) class index (B);
- j) temperature range of operation;
- k) electromagnetic and mechanical class;
- l) the connection mode for which the meter is specified;
- m) meter constant;
- n) meter directionality type;
- o) EC-type examination certificate number SK 15 - 057 MI-003 Rev.0;
- p) conformity mark according to § 7 of Government ordinance on measuring instruments (CE marking with supplementary metrological marking).

All inscriptions on the electricity meter shall be in the EC official language; the international abbreviations are admitted. The electricity meter's inscriptions and marking shall comply with the requirement of Article 9, Annex 1 to Government ordinance.

5.1 Designation of trademarks on the electricity meters

Manufacturer may use the following trademark on its electricity meters:



6. Security measures

The electricity meter shall be protected against unauthorised manipulation by two sealing marks which secure the connection of the front cover to the base of the meter (Fig. 5).

Service seals are used for securing of

- a) terminal cover 2 x
- b) meter cover..... 2 x

7. Requirements on production, putting into use and utilization

7.1 Requirements on production

- no special requirements identified.

7.2 Requirements on putting into use

- electricity meters must be installed in accordance with requirements listed in installation and user manual issued by the manufacturer;
- initial verification tests of electricity meters can be carried out with the technical requirements in line with EN 62058-31:2010.

7.3 Requirements for utilization

Upon the request of the notified body carrying out the verification (in case of module F only), the applicant applying for the electricity meter conformity assessment shall submit declaration on conformity to the certified type and the operation instruction in EC official language.

8. Documentation used for assessment purposes

- evaluation report No. 037/1432/14 MI-003, of 18/07/2014, issued by SLM NB 1432;
- manufacturer's technical documentation is stored in documentation folder LUNA_Lun51_0_00.

9. Standards and regulations used for assessment purposes

9.1 Regulations, harmonized standards and normative documents

- The Government Ordinance of the Slovak Republic No. 294/2005 Coll. on measuring instruments as amended by the government ordinance No. 445/2010 Coll.;
- EN 50470-1;
- EN 50470-3;
- EN 62058-31.

9.2 Further applied standards and documents

- WELMEC Guide 11.1, Issue 4;
- WELMEC Guide 7.2, Issue 5;
- OIML R 46 -1/-2 Edition 2012 (E).

10. Final provisions on electricity meter

Construction, technical and metrological parameters of the meter must comply with the documentation presented within the process of type certification. All the characteristics of the measuring instrument (including those not mentioned) shall meet the respective requirements of the Government Ordinance.

11. Figures



Fig. 1: Electricity meter LUNA type LUN51

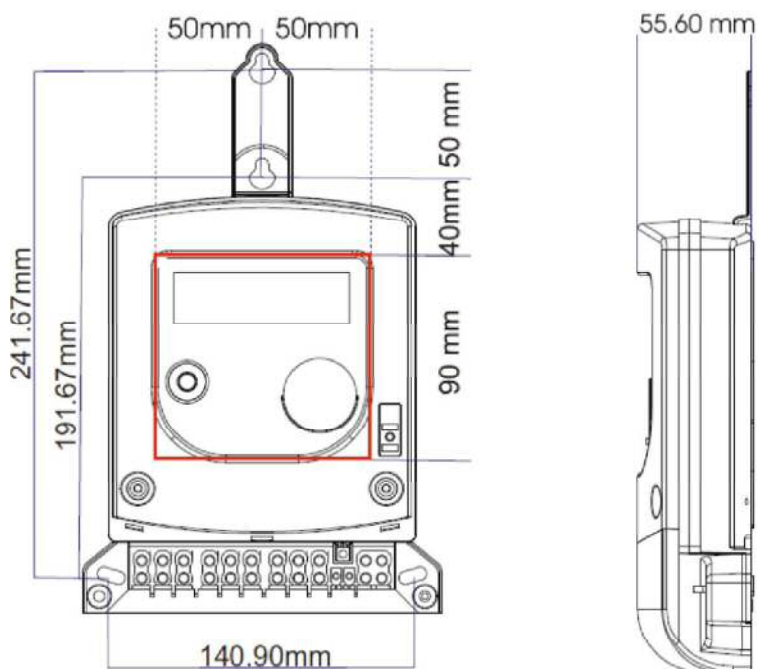


Fig. 2: View and main dimensions of electricity meter LUNA type LUN51

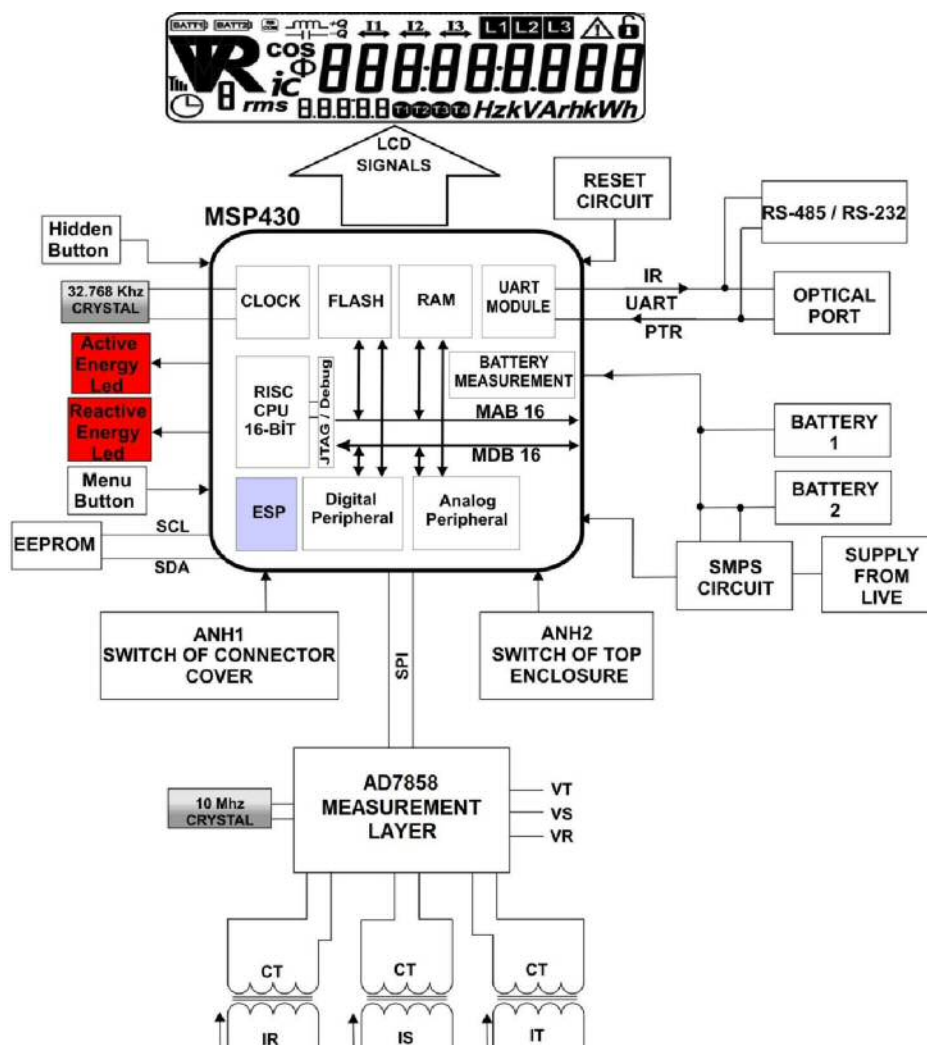


Fig. 3a: Block diagram of electricity meter LUNA type LUN51 (alternative 1)

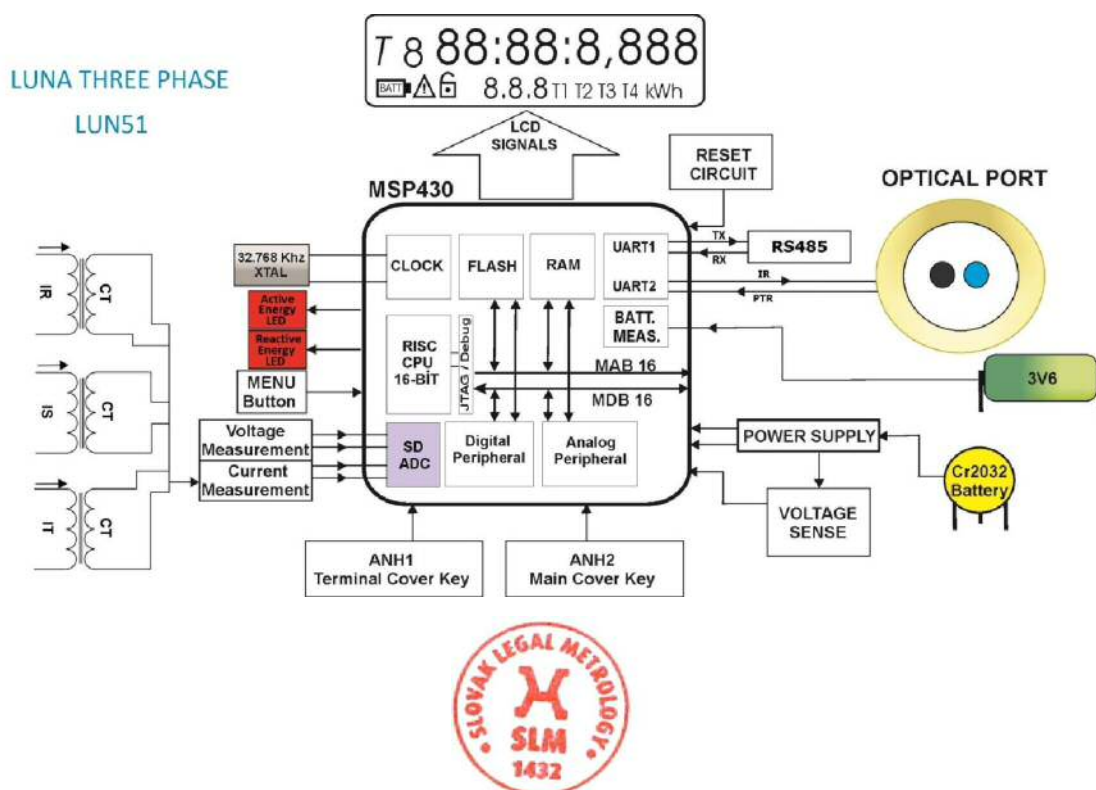


Fig. 3b: Block diagram of electricity meter LUNA type LUN51 (alternative 2)

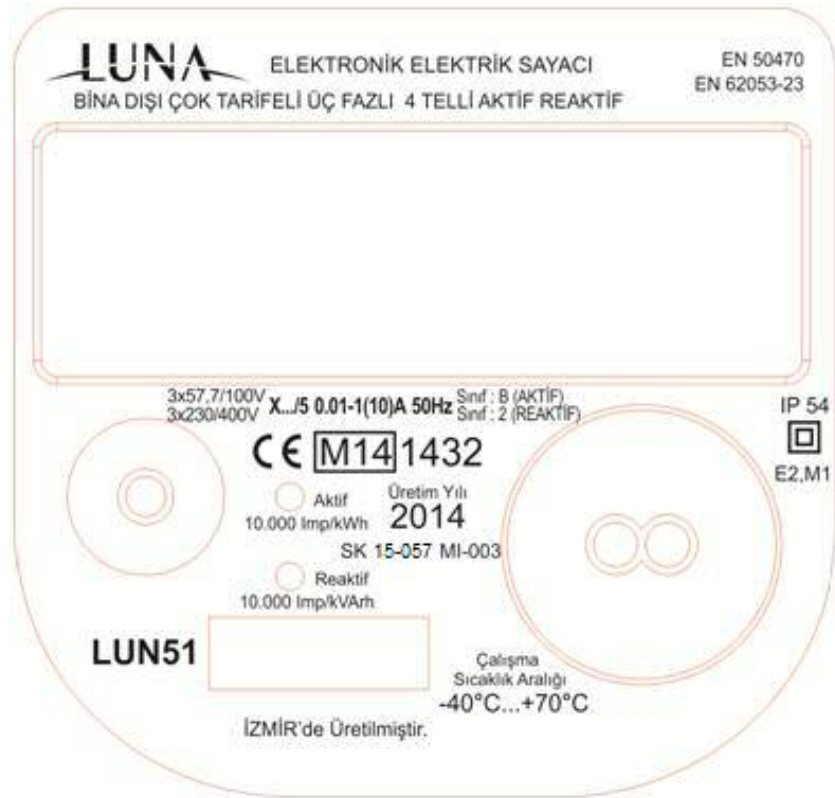


Fig. 4: Example of marking on the LUNA type LUN51 meter name-plate

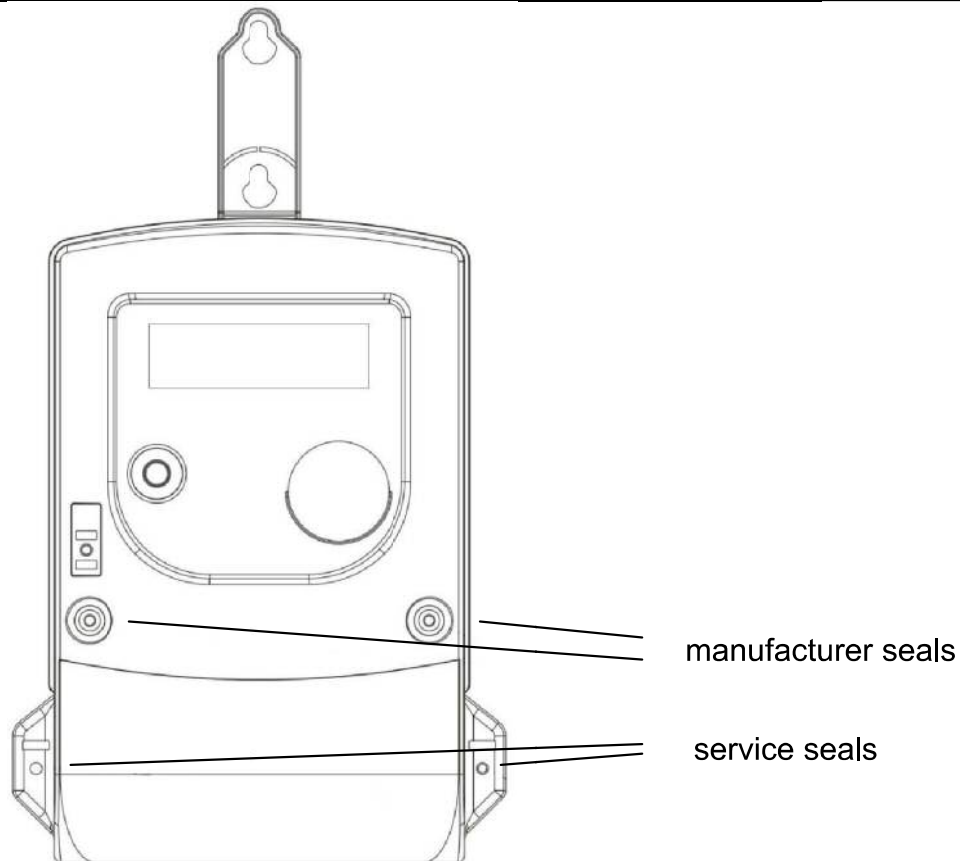


Fig. 5: Location of the sealing marks of the LUNA type LUN51

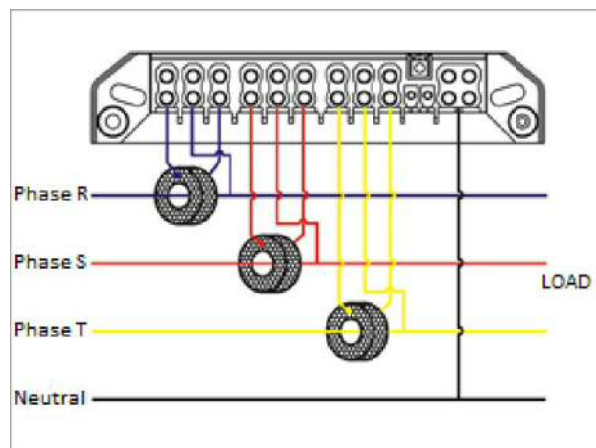


Fig. 6 Connection diagram

12. Influence factors for temperature, frequency and voltage variation

During the type examination the influence factors for temperature, frequency and voltage are determined at each load. The sum of square values (δ) at tested loads has been calculated from the following formula:

$$e_c = \sqrt{e^2(I, \cos \varphi) + \delta^2(T, I, \cos \varphi) + \delta^2(U, I, \cos \varphi) + \delta^2(f, I, \cos \varphi)}$$

with

$e(I, \cos \varphi)$	the intrinsic error of the meter at a certain load
$\delta(T, I, \cos \varphi)$	additional percentage error due to the variation of the temperature at certain load
$\delta(U, I, \cos \varphi)$	additional percentage error due to the variation of the voltage at certain load
$\delta(f, I, \cos \varphi)$	additional percentage error due to the variation of the frequency at certain load

Data of the specimen representative of the type:

Type of the measuring instrument	-	LUN 51
Serial number of the sample	-	001-003
Test report no.	-	ES-0710 02-14
Reference current I_{ref}	A	3x1
Minimum current I_{min}	A	3x0,01
Transitional current I_{tr}	A	3x0,05
Maximum current I_{max}	A	3x10
Reference voltage U_n	V	3x57,7/100, 3x230/400
Reference frequency f_n	Hz	50
Accuracy class	-	B

Values of error $\delta(T, U, f)$:

Ambient Temperature Range								
Current	PF cos	55 to 70 °C	40 to 55 °C	30 to 40 °C	5 to 30 °C	-10 to 5 °C	-25 to -10 °C	-40 to -25 °C
I_{min}	1	- 0,40	0,21	0,04	- 0,24	- 0,34	- 0,58	- 0,59
I_{tr}	1	- 0,42	- 0,29	0,06	- 0,14	- 0,36	- 0,49	- 0,59
20I_{tr}	1	- 0,45	- 0,27	0,07	- 0,39	- 0,40	- 0,54	- 0,6
I_{max}	1	- 0,40	- 0,25	0,01	- 0,29	- 0,41	- 0,60	- 0,65
I_{tr}	0,5 ind	0,38	0,21	- 0,06	- 0,07	- 0,50	- 0,99	- 0,75
20I_{tr}	0,5 ind	0,11	- 0,04	- 0,16	- 0,29	- 0,79	- 0,97	- 1,00
I_{max}	0,5 ind	0,44	0,20	0,03	- 0,15	- 0,60	- 0,72	- 0,76
I_{tr}	0,8 cap	0,46	0,31	- 0,11	- 0,25	- 0,37	- 0,5	- 0,58
20I_{tr}	0,8 cap	0,57	0,46	0,02	- 0,16	- 0,26	- 0,54	- 0,46
I_{max}	0,8 cap	- 0,35	0,18	0,07	- 0,34	- 0,40	- 0,62	- 0,59