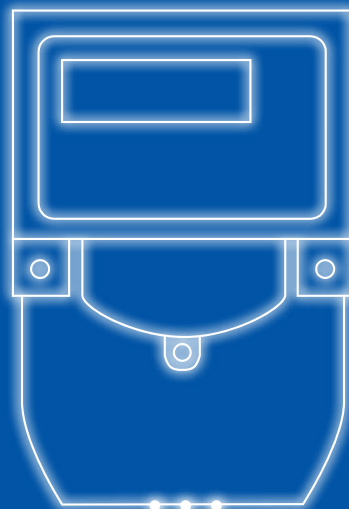




**ELECTRICAL ENERGY METERS  
AND SUPPLEMENTARY EQUIPMENT**

# MERCURY



**2020**



# CONTENTS

<b>ABOUT COMPANY</b>		2
<b>ELECTRONIC THREE-PHASE MULTI-TARIFF MULTI-FUNCTIONAL METERS</b>	Mercury 234 ARTM	4
	Mercury 234 ART	6
	Mercury 238 ART	8
	Mercury 230 ART	10
	Mercury 236 ART	12
	Mercury 231 ARTш	14
	Mercury 231 AT	15
<b>ELECTRONIC THREE-PHASE SINGLE-TARIFF METERS</b>	Mercury 230 AR	16
	Mercury 230 AM	18
	Mercury 231 AM	19
	Mercury 231 AMш	20
<b>ELECTRONIC SINGLE-PHASE MULTI-TARIFF MULTI-FUNCTIONAL METERS</b>	Mercury 204 ART	21
	Mercury 203.2 T	23
	Mercury 208 ART	25
	Mercury 206	27
	Mercury 201.8 TLO	29
	Mercury 200	30
<b>ELECTRONIC SINGLE-PHASE SINGLE-TARIFF METERS</b>	Mercury 201	31
	Mercury 201.7, 201.8	32
	Mercury 202.5	33
<b>DATA COLLECTION AND COMMUNICATION DEVICES, CONCENTRATORS AND GATEWAYS</b>	Mercury 250	34
	Mercury 225	35
	Mercury 228	36
<b>SUPPLEMENTARY EQUIPMENT</b>	Mercury 255	37
	Mercury 221	37

# INCOTEX Electronics Group is



4 plants in Russia



Offices in Russia, Germany and Dubai



Over **1200** product types



Over **200** patents inclusive over 60 international ones



Products export to more than **30 countries worldwide**



Implementation of solely state-of-the-art manufacturing technologies



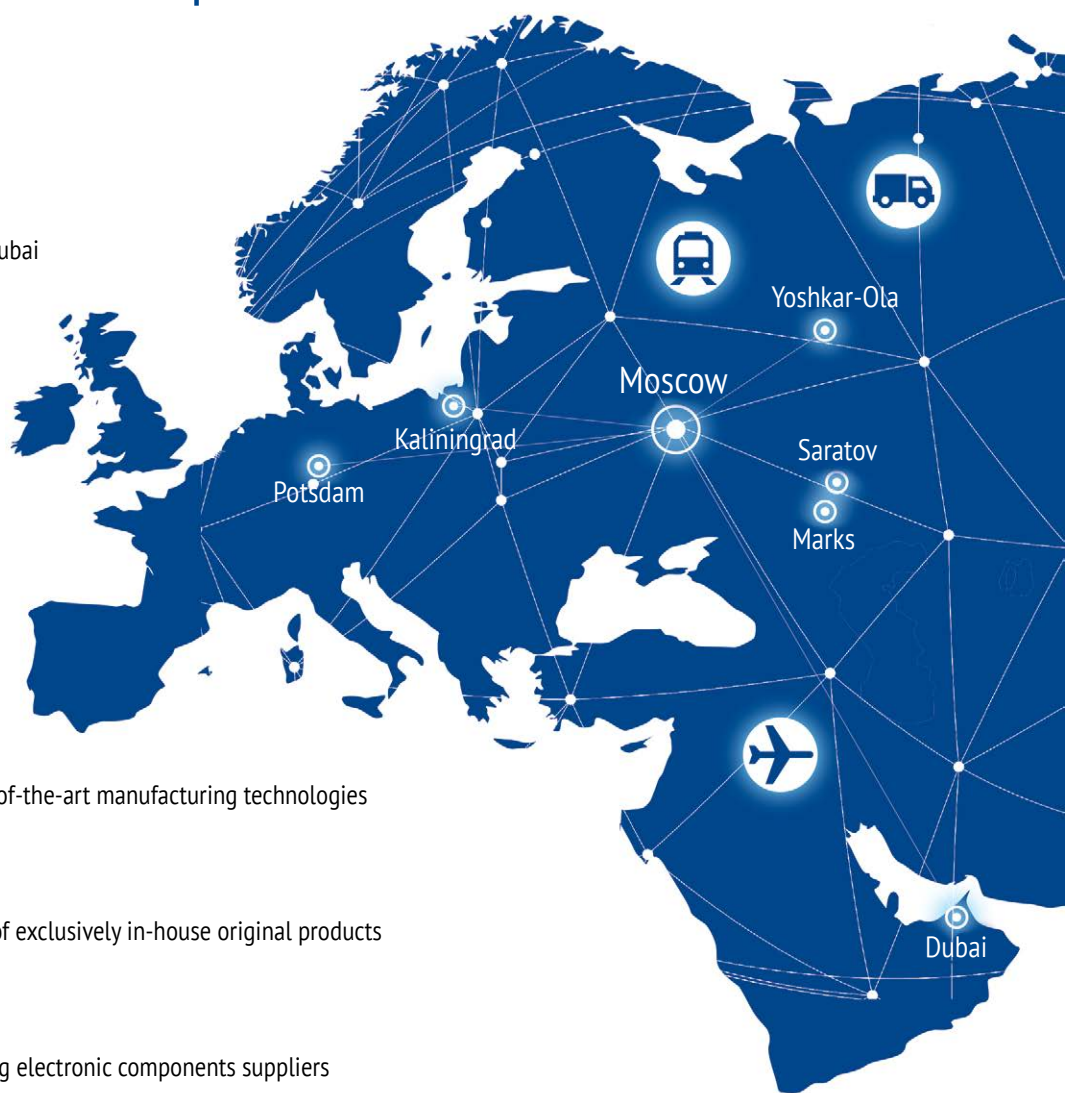
**Complete manufacturing cycle** of exclusively in-house original products



Cooperation with world's leading electronic components suppliers



Quality management system certificate of compliance with the international standard IQNet ISO 9001-2015 as well as certificates of compliance with the standards of Germany, Italy and Spain.



## Core business areas



Electric power metering systems



Electronic trading equipment



LED lighting



Video information display systems (video stands, video screens, display boards)



Video surveillance systems, digital IP cameras, digital recorders



Professional equipment for digital TV



High reliability power suppliers



"SafeTel" system

Research and Production Company Incotex as a part of INCOTEX Electronics Group occupies one of the leading positions in the sphere of development and manufacture of electronic energy metering devices and automated commercial metering systems incorporated under the MERCURY™ trademark.

We use exclusively cutting-edge technologies during development of our meters. All electronic components are supplied to us by global leading manufacturers. High-tech automated equipment from Juki, Fuji, Universal is used for assembly and mounting works. Over 4 mln. meters are manufactured annually.



The portfolio of MERCURY™ accounts for over 120 modifications from the simplest single-phase meters and up to multi-functional three-phase ones providing measurement of electric energy quality parameters, consumer distant disconnection and various data collection interfaces, such as PLC, RF, Wi-Fi, NB-IoT, RS-485, CAN, Ethernet, LoRaWAN, PRIME PLC. The meters are compatible with Russian and international communication protocols SPODES, DLMS/COSEM for integration into the AMR/AMI systems.



The company never stops its development following the tendencies of electric energy metering devices market. We integrate technologies which allow efficiently withstanding metering data fraud. The meters are equipped with crimped seals, solid housings, two measuring elements, multilevel password system, and unique manufacturer's seals with a number.



**Make your choice in favor of MERCURY™ the most recognizable and popular brand among electrical energy metering equipment in Russia.**



## Mercury 234 ARTM



### APPLICATION

The meters are designed for uni- and bidirectional multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in three-phase three- and four-wired AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers. The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated voltage, rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

**Mercury 234 ARTM2 - 0X DPOKxB RLxGxEFx.C. RLxGxEFx.C**

Functionalities      Type of built-in interface      Type of plug-in module

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU),
- M** – plug-in module housing,
- 2** – bidirectional measurement,
- 0X** – code of rated/peak current and voltage, accuracy class,
- D** – protocol available DLMS/COSEM, SPODES\*,
- P** – extended program functions,
- O** – built-in load control relay,
- Kx** – multifunctional inputs/outputs,
- B** – backlight LCD,

- R** – RS-485,
- Lx** – PLC (L2-PLC-II, L4-PRIME PLC, L5-G3-PLC, and other),
- Gx** – GSM modem (G – CSD/GSM/GPRS, G1 – GSM/GPRS, G3 – UMTS/3G, G4 – LTE/4G, G5 – NB-IOT, and other),
- E** – Ethernet 10/100 Base -TX,
- Fx** – RF modem (F03 – ZigBee, F04 – LoRaWAN Lartech, F05 – ISM868, F06 – Aura360, F07 – LoRaWAN Vega, F08 – Kometa, and other),
- C** – CAN interface.

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

**Table of commercially available meters modifications.  
Other modifications are available on request.**

Modification	Interfaces, relay
Mercury 234 ARTM-00 (D)PB.R*	optical port, 2*RS-485
Mercury 234 ARTM-01 (D)POB.R*	optical port, 2*RS-485, relay
Mercury 234 ARTM-02 (D)PB.R*	optical port, 2*RS-485
Mercury 234 ARTM-02 (D)POB.R*	optical port, 2*RS-485, relay
Mercury 234 ARTM-03 (D)PB.R*	optical port, 2*RS-485
Mercury 234 ARTM2-00 (D)PB.R*	optical port, 2*RS-485
Mercury 234 ARTM2-03 (D)PB.R *	optical port, 2*RS-485
Mercury 234 ARTM-01 PB.F04	optical port, RS-485, LoRaWAN
Mercury 234 ARTM-01 POB.F04	optical port, RS-485, LoRaWAN, relay
Mercury 234 ARTM-02 PB.F04	optical port, RS-485, LoRaWAN
Mercury 234 ARTM-02 POB.F04	optical port, RS-485, LoRaWAN, relay
Mercury 234 ARTM-03 PB.F04	optical port, RS-485, LoRaWAN
Mercury 234 ARTM2-03 PB.F04	optical port, RS-485, LoRaWAN

Modification	Interfaces, relay
Mercury 234 ARTM-01 (D)POB.L2*	optical port, RS-485, PLC-II, relay
Mercury 234 ARTM-02 (D)PB.L2*	optical port, RS-485, PLC-II
Mercury 234 ARTM-02 (D)POB.L2*	optical port, RS-485, PLC-II, relay
Mercury 234 ARTM-03 (D)PB.L2*	optical port, RS-485, PLC-II
Mercury 234 ARTM-00 (D)PB.G*	optical port, GSM, RS-485
Mercury 234 ARTM-01 (D)PB.G*	optical port, GSM, RS-485
Mercury 234 ARTM-01 (D)POB.G*	optical port, GSM, RS-485, relay
Mercury 234 ARTM-02 (D)POB.G*	optical port, GSM, RS-485, relay
Mercury 234 ARTM-03 (D)PB.G*	optical port, GSM, RS-485
Mercury 234 ARTM-02 (D)PB.G*	optical port, GSM, RS-485
Mercury 234 ARTM2-03 (D)PB.G*	optical port, GSM, RS-485

\*Two modifications are manufactured commercially  
 – 'D' – with DLMS/COSEM, SPODES and Mercury protocols support  
 – missing 'D' – only Mercury protocol support

# ELECTRONIC, THREE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## Rated/peak currents, voltages and accuracy classes

Code	Rated current, A	Rated voltage, V	Accuracy class
00	5/10	3 x 57.7/100	0.2S/ 0.5 or 0.5S/1
01	5/60	3 x 230/400	1/2
02	5/100	3 x 230/400	1/2
03	5/10	3 x 230/400	0.2S/ 0.5 or 0.5S/1
04	1/10	3 x 57.7/100	0.2S/ 0.5 or 0.5S/1
05	1/10	3 x 230/400	0.2S/ 0.5 or 0.5S/1
06	1/2	3 x 57.7/100	0.2S/ 0.5 or 0.5S/1
07	1/2	3 x 230/400	0.2S/ 0.5 or 0.5S/1
08	5/80	3 x 230/400	1/2
09	10/100	3 x 230/400	1/2

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive) • transformer connection • direct connection	0.2S / 0,5 and 0.5S / 1 1 / 2
Rated voltage, V • CT&VT connection • CT, direct connections	3*57,7 / 100 3*230 / 400
Base/peak current, A • CT, CT&VT connections • direct connection	1 / 2; 1 / 10; 5 / 10 5 / 60; 5/80; 5 / 100; 10/100
Peak current for direct connection meters during 10 ms	30*I max
Peak current for CT, CT&VT connection meters during 0.5 s	20*I max
Starting current, A • CT, CT&VT connections • direct connection	0.001 / 0.005 0.02

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1 / 9
Total power consumed by each current circuit, max, V*A	0.1
Plug-in interface module power consumption, max, W/V*A	3 / 14
Number of tariffs	4
Data retention during power outage, min, years:	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +75
Weight, max, kg	1.8
Dimensions (LxWxH), mm	174x78x300

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days;
  - energy at the beginning of the current month and 36 previous months;
  - energy at the beginning of the current year and previous year;
  - consumption for the current day and previous day;
  - consumption for the current month and 11 previous months.
- Metering of reactive energy by every quadrant in bidirectional meters.
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day (24 time zones per day in meters with a DLMS/COSEM). Individual tariffs schedule for every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of technical losses in power lines and power transformers.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase and the sum of phases with the total power vector direction indication;
  - RMS of phase currents and voltages including measurements at one period of frequency for power quality analysis;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum;
  - THD of sinusoidal phase lines.
- Two independent power profiles with integration period from 1 to 60 minutes, the second profile can be configured as a technical losses power profile.
- The storage period is 170 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power demand at a specified interval from 1 to 60 minutes with a monthly schedule.
- Event logging including power quality events.
- Built-in interfaces: optical port and RS-485 in all models.
- Optional interfaces on built-in and plug-in modules: RS-485, GSM, NB-IoT, PLC, Ethernet, RF, LoRaWAN, ZigBee.
- External backup power supply input(6 – 12 V DC).
- Multifunctional galvanically isolated pulse output including a load control function.
- Automatic self-diagnosis with error indication.
- Built-in 60A or 100A relay.
- Two nonvolatile electronic seals.
- Magnetic field sensor.
- Recording of unauthorized impacts to the indelible event log.
- Multifunctional LCD with backlight and OBIS-codes indication.
- LCD indication of data without main power.
- DLMS/COSEM and Mercury protocols support.
- Back-up power battery can be replaced without opening the meter housing.
- Meters have solid housing and transparent terminal cover to prevent tamper.

## Mercury 234 ART



### APPLICATION

The meters are designed for uni- and bidirectional multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in three-phase three- and four-wired AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, inside cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated voltage, rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

Mercury 234 ART2 - OX DPOKxB RLxGxEFxC

Functionalities Type of built-in interface

- A – active energy measurement
- R – reactive energy measurement,
- T – tariffs (TOU),
- 2 – bidirectional measurement ,
- OX – code of rated/peak current and voltage, accuracy class,
- D – protocol available DLMS/COSEM, SPODES\*,
- P – extended program functions,
- O – built-in load control relay,
- Kx – multifunctional input/output,
- B – backlight LCD,
- R – RS-485,
- Lx – PLC (L2-PLC-II, L4-PRIME PLC, L5-G3-PLC, and other),

#### Rated/peak currents, voltages and accuracy classes

Code	Rated (peak) current, A	Rated voltage, V	Accuracy class
00	5/10	3 x 57.7/100	0.2S/0.5 or 0.5S/1
01	5/60	3 x 230/400	1/2
02	5/100	3 x 230/400	1/2
03	5/10	3 x 230/400	0.2S/0.5 or 0.5S/1
04	1/10	3 x 57.7/100	0.2S/0.5 or 0.5S/1
05	1/10	3 x 230/400	0.2S/0.5 or 0.5S/1
06	1/2	3 x 57.7/100	0.2S/0.5 or 0.5S/1
07	1/2	3 x 230/400	0.2S/0.5 or 0.5S/1
08	5/80	3 x 230/400	1/2
09	10/100	3 x 230/400	1/2

Gx – GSM modem (G – CSD/GSM/GPRS, G1 – GSM/GPRS, G3 – UMTS/3G, G4 – LTE/4G, G5 – NB-IOT, and other),

E – Ethernet 10/100 Base –TX,

Fx – RF modem (F03 – ZigBee, F04 – LoRaWAN Lartech, F05 – ISM868, F06 – Aura360, F07 – LoRaWAN Vega, F08 – Kometa, and other),

C – CAN interface.

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

#### Table of commercially available meters modifications. Other modifications are available on request.

Modification	Interfaces, relay
Mercury 234 ART-00 (D)P*	optical port, RS-485
Mercury 234 ART-01 (D)PO*	optical port, RS-485, relay
Mercury 234 ART-01 (D)P*	optical port, RS-485
Mercury 234 ART-02 (D)P*	optical port, RS-485
Mercury 234 ART-02 (D)PO*	optical port, RS-485
Mercury 234 ART-03 (D)P*	optical port, RS-485
Mercury 234 ART2-00 (D)P*	optical port, RS-485
Mercury 234 ART2-03 (D)P*	optical port, RS-485
Mercury 234 ART-01 POF04	optical port, RS-485, relay, LoRaWAN
Mercury 234 ART-01 PF04	optical port, RS-485, LoRaWAN
Mercury 234 ART-02 PF04	optical port, RS-485, LoRaWAN
Mercury 234 ART-03 PF04	optical port, RS-485, LoRaWAN
Mercury 234 ART2-00 PF04	optical port, RS-485, LoRaWAN
Mercury 234 ART2-03 PF04	optical port, RS-485, LoRaWAN
Mercury 234 ART-01 OL1	optical port, RS-485, PLC-I, relay
Mercury 234 ART-02 L1	optical port, RS-485, PLC-I
Mercury 234 ART-03 L1	optical port, RS-485, PLC-I

\*Two modifications are manufactured commercially  
– 'D' – with DLMS/COSEM, SPODES and Mercury protocols support  
– missing 'D' – only Mercury protocol support



# ELECTRONIC, THREE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive) • transformer connection • direct connection	0.2S / 0.5 and 0.5S / 1 1 / 2
Rated voltage, V • CT & VT connection • CT, direct connections	3*57.7 / 100 3*230 / 400
Base/peak current, A • CT, CT & VT connections • direct connection	1 / 2; 1 / 10; 5 / 10 5 / 60; 5 / 80; 5 / 100
Peak current for direct connection meters during 10 ms	30*I max
Peak current for CT, CT & VT connection meters during 0.5 s	20*I max
Starting current, A • CT, CT & VT connections • direct connection	0.001 / 0.005 0.02

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1 / 9
Total power consumed by each current circuit, max, V*A	0.1
Plug-in interface module power consumption, max, W/V*A	1.5 / 24
Number of tariffs	4
Data retention during power outage, min, years:	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +75
Weight, max, kg	1.6
Dimensions (LxWxH), mm	174x65x300

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days;
  - energy at the beginning of the current month and 36 previous months;
  - energy at the beginning of the current year and previous year;
  - consumption for the current day and previous day;
  - consumption for the current month and 11 previous months.
- Metering of reactive energy by every quadrant in bidirectional meters.
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day (24 time zones per day (in meters with a DLMS/COSEM and SPODES protocol). Individual tariffs schedule for every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of technical losses in power lines and power transformers.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase with the total power vector direction indication;
  - RMS of phase currents and voltages including measurements at one period of frequency for power quality analysis;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum;
  - THD of sinusoidal phase lines.
- Two independent power profiles with integration period from 1 to 60 minutes, the second profile can be configured as a technical losses power profile.
- The storage period is 170 days for 30 minutes averaging time.

- Recording of morning and evening peaks of active and reactive power demand at a specified interval from 1 to 60 minutes with a monthly schedule.
- Event logging including power quality events.
- Built-in interfaces: optical port and RS-485 in all models.
- Optional built-in interfaces: PLC, RF, CAN, LoRaWAN, ZigBee.
- External backup power supply (6 – 12 V DC).
- Multifunctional galvanically isolated pulse output including the load control function.
- Automatic self-diagnosis with error indication.
- Built-in 60A or 100A relay.
- Two nonvolatile electronic crimped seals.
- Magnetic field sensor.
- Recording of unauthorized impacts into the indelible event log.
- Multifunctional LCD with backlight and OBIS-codes indication.
- LCD indication of data without main power.
- DLMS/COSEM and Mercury protocols support.
- Back-up power battery can be replaced without opening the meter housing.
- Meters have solid housing and transparent terminal cover for prevention from tamper.

## Mercury 238 ART



### APPLICATION

The meters are designed for uni- and bidirectional multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in three-phase three- and four-wired AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers. The meters are designed for indoor and outdoor operation including mounting onto pillars.

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 238 ART2 – 0X DPOW LxFx

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU),
- 2** – bidirectional measurement,
- 0X** – code of rated/peak current, accuracy class,
- D** – protocol available DLMS/COSEM, SPODES\*,
- P** – extended program functions,
- O** – built-in load control relay,
- W\*\*** – remote display,
- Lx** – embedded PLC module (L2 – PLC-II, L4 – PRIME PLC, L5 – G3-PLC, and other),
- Fx** – RF modem (F03 – ZigBee, F04 – LoRaWAN Lartech, F05 – ISM868, F06 – Aura360, F07 – LoRaWAN Vega, F08 – Kometa, and other).

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

\*\* - If the remote display is included into the delivery package, the 'W' symbol can be applied only on the package but not on the meter's housing.

### METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	3*230/400
Base/peak current, A	5/60, 5/80, 5/100, 10/100
Peak current for direct connection meters during 10 ms	30*I max
Starting current, A	0.02

### Rated/peak currents, voltages and accuracy classes

Code	Rated / peak current, A
01	5/60
02	5/100
08	5/80
09	10/100

# ELECTRONIC, THREE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2 / 9
Total power consumed by each current circuit, max, V*A	0.1
Plug-in interface module power consumption in each volt circuit, max, W/V*A	3 / 10
Number of tariffs	4
Data retention during power outage, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +75
Weight, max, kg	1.4
Dimensions (LxWxH), mm	218x68x182

## FUNCTIONS

- The meters have split architecture (split-meter) and are equipped with a remote display for remote reading.
- The remote display receives data from a meter via a radio channel simultaneously and independently of data exchange between the meter and an AMR/AMI system.
- Metering, storage and transfer via interfaces active and reactive electrical energy individually by every tariff and cumulatively for all tariffs for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days;
  - energy at the beginning of the current month and 36 previous months;
  - energy at the beginning of the current year and the previous year;
  - consumption for the current day and previous day;
  - consumption for the current month and 11 previous months.
- Metering of reactive energy by every quadrant in bidirectional meters.
- TOU with the option of setting individual schedule for every day of the week and month based on 4 tariffs, 16 time zones per day (24 time zones per day in meters with a DLMS/COSEM, SPODES protocol). Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of technical losses in power lines and power transformers.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase and the sum of phases with the total power vector direction indication;
  - RMS of phase currents and voltages including measurements at one period of frequency for power quality analysis;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum;
  - THD of sinusoidal phase lines.
- Two independent power profiles with integration period from 1 to 60 minutes, the second profile can be configured as a technical losses power profile.
- The storage period is 170 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power at a specified interval from 1 to 60 minutes with a monthly schedule.
- Event logging including power quality events.
- Built-in optical port in all models.
- Optional built-in interfaces: PLC, RF, LoRaWAN.
- Automatic self-diagnosis with error indication on remote display.
- Built-in 100A relay.
- Two nonvolatile electronic seals.
- Magnetic field sensor.
- Recording of unauthorized impacts into the indelible event log.
- DLMS/COSEM and Mercury protocols support.
- Meters have solid housing and transparent terminal cover for prevention from tamper.

## Mercury 230 ART



### APPLICATION

The meters are designed for unidirectional multi-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in three-phase three- and four-wired AC networks with subsequent accumulated data storage, generation of events and data transfer to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated voltage, rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 230 ART-0X P Q R (C I L) S D N

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU),
- 0X** – rated current (5/7.5, 5/60, 10/100),  
voltage (3\*57/100, 3\*230/400), accuracy class (0.5S/1, 1/2),
- P** – profile, events log, technical losses recording and other additional functions,

- Q** – power quality measurement,
- R** – interface RS-485 (C – CAN, I – IrDA, L – PLC-I),
- S** – internal power supply for RS-485 interface,
- D** – power backup input,
- N** – electronic seal.

Table of commercially available meters modifications. Other modifications are available on request.

Modification	Rated voltage, V	Rated (peak) current, A	Accuracy class	Interfaces
Mercury 230 ART-00 C(R)N	3*57.7/100	5(7.5)	0.5S/1.0	CAN (RS-485)
Mercury 230 ART-01 C(R)N	3*230/400	5(60)	1.0/2.0	CAN (RS-485)
Mercury 230 ART-02 C(R)N	3*230/400	10(100)	1.0/2.0	CAN (RS-485)
Mercury 230 ART-03 C(R)N	3*230/400	5(7.5)	0.5S/1.0	CAN (RS-485)
Mercury 230 ART-00 PQRSIDN	3*57.7/100	5(7.5)	0.5S/1.0	IrDA, RS-485
Mercury 230 ART-01 PQRSIN	3*230/400	5(60)	1.0/2.0	IrDA, RS-485
Mercury 230 ART-02 PQRSIN	3*230/400	10(100)	1.0/2.0	IrDA, RS-485
Mercury 230 ART-03 PQRSIDN	3*230/400	5(7.5)	0.5S/1.0	IrDA, RS-485
Mercury 230 ART-01 CLN	3*230/400	5(60)	1.0/2.0	CAN, PLC-I
Mercury 230 ART-02 CLN	3*230/400	10(100)	1.0/2.0	CAN, PLC-I
Mercury 230 ART-03 CLN	3*230/400	5(7.5)	0.5S/1.0	CAN, PLC-I

# ELECTRONIC, THREE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	
• transformer connection	0.5S / 1
• direct connection	1 / 2
Rated voltage, V	
• CT&VT connection	3*57.7 / 100
• CT, direct connections	3*230 / 400
Base/peak current, A	
• CT, CT&VT connections	5 / 7.5
• direct connection	5 / 60; 10 / 100
Peak current for direct connection meters during 10 ms	30*I max
Peak current for CT, CT&VT connection meters during 0.5 s	20*I max
Starting current, A	
• CT, CT&VT connections	0.005
• direct connection	0.02; 0.04

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2 / 10
Total power consumed by each current circuit, max, V*A	0.1
Supply voltage range of backup power input and interfaces RS-485 and CAN, V	5.5 – 12
Average current consumption from an external power supply of the interface RS-485, CAN, mA	30
Average current consumption by the backup power supply, mA	150
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	10
Warranty period, years	3
Mean time between failures, min, h	150,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	1.5
Dimensions (LxWxH), mm	170x74x258

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and the previous day;
  - energy at the beginning of the current month and 11 previous months;
  - energy at the beginning of the current year and the previous year;
  - consumption for the current day and the previous day;
  - consumption for the current month and 11 previous months.
- Energy measurement independently from current circuits phasing (measurement per module).
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute. Multi-tariff per-phase metering function.
- Measurement of technical losses in power lines and power transformers.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power per each phase and the total of all phases with the total power vector direction indication;
  - RMS of phase currents and voltages ;
  - phase angles values;
  - power frequency;
  - power factors of each phase and of their sum.

- Power profile and technical losses power profile with arbitrary integration period from 1 to 45 minutes. The storage period is 85 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power at a specified interval with a monthly schedule.
- Event logging including power quality events.
- External backup power supply.
- Multifunctional pulse outputs including load control function.
- Automatic self-diagnosis with error indication.
- Nonvolatile electronic crimped seal.
- Recording of unauthorized impacts to the indelible event log.

## Mercury 236 ART



### APPLICATIONS

The meters are designed for unidirectional multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in three-phase and four-phase AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, inside cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 236 ART-0X P Q R L S

- A – active energy measurement,
- R – reactive energy measurement,
- T – tariffs (TOU) , electronic seals,
- 0X – current (5/10, 5/60, 5/100) and accuracy class (0.5S/1, 1/2)
- P – extended program functions, profile, events log,

- Q – power quality measurement,
- R – interface RS-485,
- L – interface PLC-I,
- S – internal power supply for interface RS-485.

Table of commercially available meters modifications. Other modifications are available on request.

Modification	Rated (peak) current, A	Accuracy class	Interfaces
Mercury 236 ART-01 PQRS	5(60)	1.0/2.0	optical port, RS-485
Mercury 236 ART-02 PQRS	5(100)	1.0/2.0	optical port, RS-485
Mercury 236 ART-03 PQRS	5(10)	0.5S/1.0	optical port, RS-485
Mercury 236 ART-01 PQL	5(60)	1.0/2.0	optical port, PLC-I
Mercury 236 ART-02 PQL	5(100)	1.0/2.0	optical port, PLC-I
Mercury 236 ART-03 PQL	5(10)	0.5S/1.0	optical port, PLC-I

# ELECTRONIC, THREE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	0.5S / 1
• with rated / peak current 5/10 A	1 / 2
• with rated / peak current 5/60, 10/100 A	
Rated voltage, V	3*230 / 400
Base/peak current, A	5 / 10; 5 / 60; 5 / 100
Peak current for meters with rated / peak current 5/60,10/100 A during 10 ms	30*I max
Peak current for meters with rated / peak current 5/10 A during 0.5 s	20*I max
Starting current, A	
• CT, CT&VT connections	0.005
• direct connection	0.02

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1 / 9
Additional active/ total power consumption with available PLC modem in each meter voltage circuit at rated voltage, W/V*A	1.5 / 24
Total power consumed by each current circuit, max, V*A	0.1
Number of tariffs	4
Data retention during power outage, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.9
Dimensions (LxWxH), mm	158x72x154

## FUNCTIONS

- Multifunctional meters for AMR/AMI systems in small-size housing with DIN-rail mounting are similar in most functions to the multifunctional meters Mercury 234.
- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days (for meters with Q index);
  - energy at the beginning of the current month and 36 previous months (for meters with Q index);
  - energy at the beginning of the current year and previous year;
  - consumption for the current day and previous day;
  - consumption for the current month and 11 previous months.
- Energy measurement independently from current circuits phasing (measurement per module).
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute. Multi-tariff per-phase metering function.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase with total power vector direction indication;
  - RMS of phase currents and voltages ;
  - phase angles values;
  - power frequency;
  - power factors of each phase and of their sum;
  - THD of sinusoidal phase lines.

- Power profile and technical losses power profile with arbitrary integration period from 1 to 60 minutes. The storage period is 170 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power at a specified interval with a monthly schedule.
- Event logging including power quality events.
- Pulse output including a load control function.
- Automatic self-diagnosis with error indication.
- Nonvolatile electronic crimped seals.
- Recording of unauthorized impacts to the indelible event log.
- Multifunctional LCD with backlight and OBIS-codes indication.
- LCD indication of data without main power.

## Mercury 231 ARTш



### APPLICATION

The meters are designed for unidirectional multi-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in three-phase four-wired AC networks with subsequent accumulated data storage, generation of events and data transfer via optic port.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### METER MODIFICATION CODE STRUCTURE

#### Mercury 231 ART-01ш

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU), electronic seals,
- 01** – identification code of base/peak current (5/60 A),
- ш** – measuring elements – shunts.

### METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1 / 2
Rated voltage, V	3*230 / 400
Base/peak current, A	5 / 60
Peak current during 10 ms	30*1 max
Starting current, A	0.02

### FUNCTIONS

- Minimal overall dimensions in its class, DIN-rail mounting.
- Optical port for programming a tariff schedule and reading measured parameters and event logs.
- No magnet sensitive elements in measuring circuits and power supply system.
- All-in-one anti-tampering design, which breaks at attempt to be opened.
- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days;
  - energy at the beginning of the current month and 36 previous months;
  - energy at the beginning of the current year and the previous year;
  - consumption for the current day and the previous day;
  - consumption for the current month and 11 previous months.
- Energy measurement independently from current circuits phasing (measurement per module).

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1.5 / 9
Total power consumed by each current circuit, max, V*A	0,5
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.5
Dimensions (LxWxH), mm	120x90x65

- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase with the total power vector direction indication;
  - RMS of phase currents and voltages including those measured at one period of frequency for power quality analysis;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum;
  - THD of sinusoidal phase lines.
- Recording of morning and evening peaks of active and reactive power at a specified interval from 1 to 60 minutes with a monthly schedule.
- Event logging including power quality events.
- Automatic self-diagnosis with error indication.
- Nonvolatile electronic crimped seal.
- Recording of unauthorized impacts in the indelible event log.
- LCD indication of data without main power.



## Mercury 231 AT



### APPLICATION

The meters are designed for multi-tariff unidirectional measurement of active electric energy and power, as well as electrical parameters in three-phase four-wired AC networks with subsequent accumulated data storage, generation of events and data transfer via the IR port. The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### METER MODIFICATION CODE STRUCTURE

#### Mercury 231 AT-01 I

**A** - active energy measurement,  
**T** - tariffs (TOU), electronic seals,  
**01** - identification code of current (5/60 A)  
**I** - IR port IrDA.

### METROLOGICAL PERFORMANCE

Meter accuracy class	1
Rated voltage, V	3*230 / 400
Base/peak current, A	5 / 60
Peak current during 10 ms	30*1 max
Starting current, A	0.02

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2 / 10
Total power consumed by each current circuit, max, V*A	0.5
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	10
Warranty period, years	3
Mean time between failures, min, h	150,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.8
Dimensions (LxWxH), mm	157x65x142

### FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via IrDA of active electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and previous day;
  - energy at the beginning of the current month and 11 previous months;
  - energy at the beginning of the current year and the previous year;
  - consumption for the current day and the previous day;
  - consumption for the current month and 11 previous months.
- Energy measurement independently from current circuits phasing (measurement per module).

- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute. Measurement of electrical network parameters:
  - instantaneous values of active power and total power for each phase and their sum with total power vector direction indication;
  - RMS of phase currents and voltages;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum.
- Pulse output including the load control function.
- Automatic self-diagnosis with error indication.
- Small-size housing with DIN-rail mounting.

## Mercury 230 AR



### APPLICATION

The meters are designed for single-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in three-phase three- and four-wired AC networks with subsequent accumulated data storage and transfer to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated voltage, rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 230 AR-0X R (C L)

**A** – active energy measurement,

**R** – reactive energy measurement,

**0X** – identification code of current (5/7.5 , 5/60, 10/100), voltage (3\*57/100, 3\*230/400), accuracy class (0.5S/1, 1/2),

**R** – interface RS-485 (C – CAN, L – PLC).

Table of commercially available meters modifications. Other modifications are available on request.

Modification	Rated voltage, V	Rated (peak) current, A	Accuracy class	Interfaces
Mercury 230 AR-00 R	3*57.7/100	5(7.5)	0.5S/1.0	RS-485
Mercury 230 AR-01 R	3*230/400	5(60)	1.0/2.0	RS-485
Mercury 230 AR-02 R	3*230/400	10(100)	1.0/2.0	RS-485
Mercury 230 AR-03 R	3*230/400	5(7.5)	0.5S/1.0	RS-485
Mercury 230 AR-01 CL	3*230/400	5(60)	1.0/2.0	CAN, PLC-I
Mercury 230 AR-02 CL	3*230/400	10(100)	1.0/2.0	CAN, PLC-I
Mercury 230 AR-03 CL	3*230/400	5(7.5)	0.5S/1.0	CAN, PLC-I

# ELECTRONIC, THREE-PHASE, SINGLE-TARIFF METERS

## METROLOGICAL PERFORMANCE

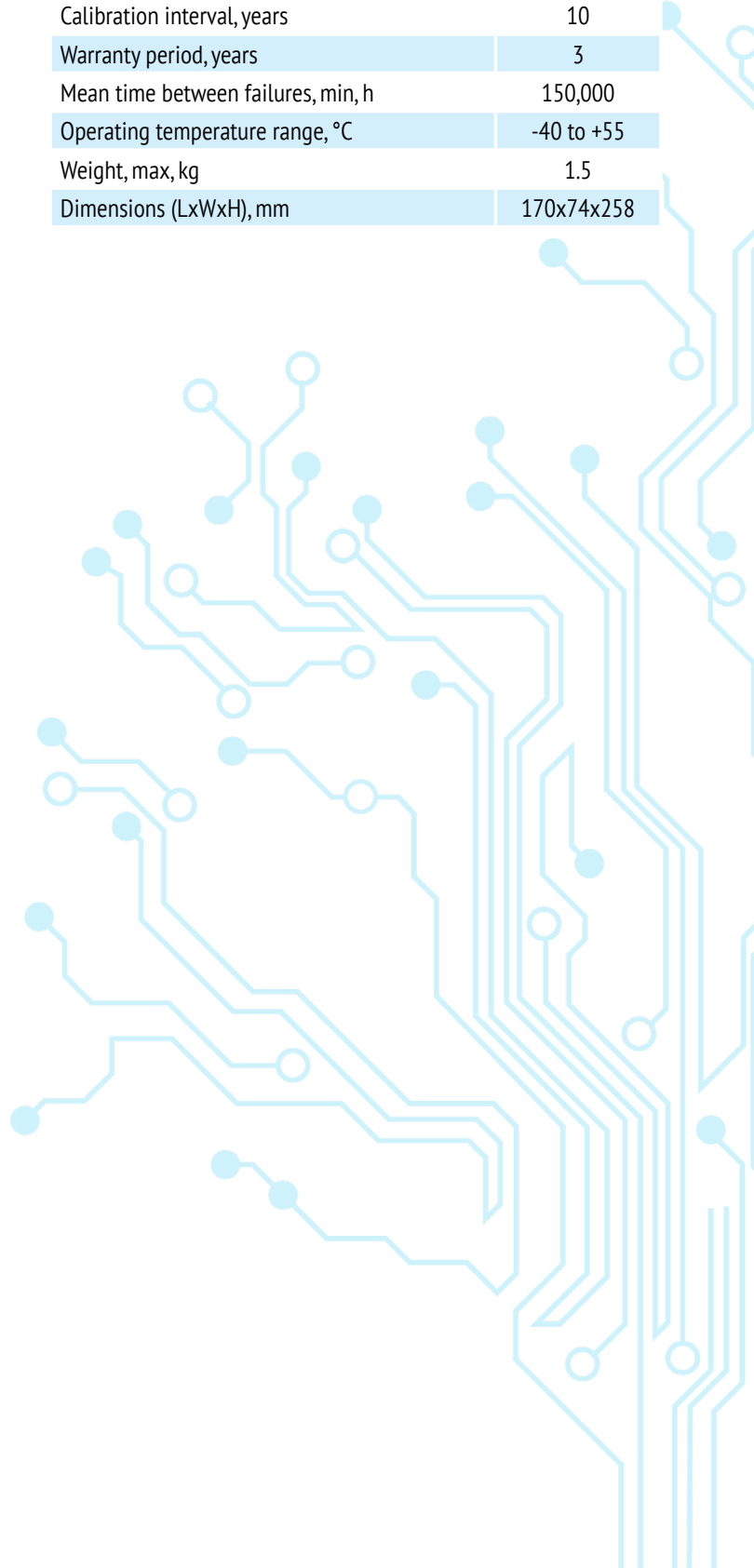
Meter accuracy class (active/reactive) • transformer connection • direct connection	0.5S / 1 1 / 2
Rated voltage, V • CT&VT connection • CT, direct connections	3*57.7 / 100 3*230 / 400
Base/peak current, A • CT, CT&VT connections • direct connection	5 / 7.5 5 / 60; 10 / 100
Peak current for direct connection meters during 10 ms	30*I max
Peak current for CT, CT&VT connection meters during 0.5 s	20*I max
Starting current, A • CT, CT&VT connections • direct connection	0.005 0.02; 0.04

## TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1.5 / 9
Total power consumed by each current circuit, max, V*A	0.1
Data retention during power outage, min, years	10
Calibration interval, years	10
Warranty period, years	3
Mean time between failures, min, h	150,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	1.5
Dimensions (LxWxH), mm	170x74x258

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy;
- Energy measurement independently from current circuits phasing (measurement per module).
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power for each phase and for the sum of all phases with the total power vector direction indication;
  - RMS of phase currents and voltages;
  - phase angles;
  - power frequency;
  - power factors of each phase and of their sum.
- Multifunctional pulse output including a load control function.
- Automatic self-diagnostics with error indication.



## Mercury 230 AM



### APPLICATION

The meters are designed for single-tariff measurement of active electric energy in three-phase three- and four-wired AC networks. The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated voltage, rated and peak current.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 230 AM-0X

A - active energy measurement,

M - electromechanical counter,

0X - identification code of base/peak current and rated voltage.

Table of commercially available meters modifications. Other modifications are available on request.

Modification	Rated voltage, V	Rated (peak) current, A	Accuracy class
Mercury 230 AM-00	3*57.7/100	5(7.5)	0.5S
Mercury 230 AM-01	3*230/400	5(60)	1.0
Mercury 230 AM-02	3*230/400	10(100)	1.0
Mercury 230 AM-03	3*230/400	5(7.5)	0.5S

### METROLOGICAL PERFORMANCE

Meter accuracy class	0.5S
• transformer connection	1
• direct connection	
Rated voltage, V	
• CT&VT connection	3*57 / 100
• CT, direct connection	3*230 / 400
Base/peak current, A	5 / 7.5
• CT, CT&VT connection	5 / 60; 10 / 100
• direct connection	
Peak current for direct connection meters during 10 ms	30*I max
Peak current for CT, CT&VT connection meters during 0.5 s	20*I max
Starting current, A	0.005
• CT, CT&VT connection	0.02 / 0.025
• direct connection	

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	1 / 8
Total power consumed by each current circuit, max, V*A	0.1
Calibration interval, years	10
Warranty period, years	3
Mean time between failures, min, h	140,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	1.5
Dimensions (LxWxH), mm	170x74x258

### FUNCTIONS

- Digital measurement of electrical energy.
- Energy measurement independently from current circuits phasing (measurement per module).
- Counter with anti-reverse mechanism and magnetic fields protection.

## Mercury 231 AM



### APPLICATION

The meters are designed for single-tariff measurement of active electric energy in three-phase four-wired AC networks. The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### METER MODIFICATION CODE STRUCTURE

#### Mercury 231 AM-01

**A** – active energy measurement,  
**M** – electromechanical counter,  
**01** – identification code of base/peak current and rated voltage.

### METROLOGICAL PERFORMANCE

Accuracy class	1
Rated voltage, W	3*230/400
Base/peak current, A	5/60
Peak current for direct connection meters during 10 ms	30*I max
Starting current, A	0.02

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	0.5/7.5
Total power consumed by each current circuit, max, V*A	0.1
Calibration interval, years	10
Warranty period, years	3
Mean time between failures, min, h	140,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.8
Dimensions (LxWxH), mm	157x65x142

### FUNCTIONS

- Electrical energy measurement by digital method.
- Energy measurement independently from current circuits phasing (measurement per module).
- Small-size housing with DIN-rail mounting.

## Mercury 231 AMш



### APPLICATION

The meters are designed for single-tariff measurement of active electric energy in three-phase four-wired AC networks. The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### METER MODIFICATION CODE STRUCTURE

#### Mercury 231 AM-01ш

**A** – active energy measurement,  
**M** – electromechanical counter,  
**01** – identification code of base/peak current and rated voltage,  
**ш** – measuring elements – shunts.

### METROLOGICAL PERFORMANCE

Accuracy class	1
Rated voltage, V	3*230/400
Base/peak current, A	5/60
Peak current for direct connection meters during 10 ms	30*1 max
Starting current, A • for meters with base current 5 A	0.02

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.5
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	150,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.4
Dimensions (LxWxH), mm	121x66x91

### FUNCTIONS

- Electrical energy measurement by digital method.
- Energy measurement independently from current circuits phasing (measurement per module).
- Minimal overall dimensions in its class, DIN-rail mounting.
- There are no magnet sensitive elements in measuring circuits and power supply system.
- All-in-one anti-tampering design.

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## Mercury 204



### APPLICATION

The meters are designed for uni- and bidirectional multi-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in two-wired AC networks with subsequent accumulated data storage, generation of events and data transfer to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

Mercury 204 ARTM2 – 0X DPOKxBH RLxFxC . RLxGxFxC

Functionalities    Type of built-in interface    Type of plug-in module

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU),
- M** – plug-in module housing,
- 2** – bidirectional measurement,
- 0X** – code of rated/peak current and voltage, accuracy class,
- D** – protocol DLMS/COSEM, SPODES,
- P** – extended program functions,
- O** – built-in load control relay,
- Kx** – multifunctional inputs/outputs,
- B** – backlight LCD,
- H** – measuring element in neutral circuit,
- R** – RS-485,
- Lx** – PLC (L2-PLC-II, L4-PRIME PLC, L5-G3-PLC, and other),
- Gx** – GSM modem (G – CSD/GSM/GPRS, G1 – GSM/GPRS, G3 – UMTS/3G, G4 – LTE/4G, G5 – NBIOT, and other),
- Fx** – RF modem (F03 – ZigBee, F04 – LoRaWAN Lartech, F05 – ISM868, F06 – Aura360, F07 – LoRaWAN Vega, F08 – Kometa, and other),
- C** – CAN interface.

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

### Codes of rated/peak currents, voltages and accuracy classes

Code	Rated/ peak current, A
01	5/60
02	5/100
08	5/80
09	10/100

### Table of commercially available meters modifications. Other modifications are available on request.

Modification	Interfaces, relay
Mercury 204 ARTM(2)-01 DPOBHR.L2	optical port, RS-485, relay, PLC-II
Mercury 204 ARTM(2)-02 DPOBHR.L2	optical port, RS-485, relay, PLC-II
Mercury 204 ARTM(2)-08 DPOBHR.L2	optical port, RS-485, relay, PLC-II
Mercury 204 ARTM(2)-09 DPOBHR.L2	optical port, RS-485, relay, PLC-II
Mercury 204 ARTM(2)-01 DPOBHR.L4	optical port, RS-485, relay, PRIME PLC
Mercury 204 ARTM(2)-02 DPOBHR.L4	optical port, RS-485, relay, PRIME PLC
Mercury 204 ARTM(2)-08 DPOBHR.L4	optical port, RS-485, relay, PRIME PLC
Mercury 204 ARTM(2)-09 DPOBHR.L4	optical port, RS-485, relay, PRIME PLC
Mercury 204 ARTM(2)-01 DPOBHR.G	optical port, RS-485, relay, GSM
Mercury 204 ARTM(2)-02 DPOBHR.G	optical port, RS-485, relay, GSM
Mercury 204 ARTM(2)-08 DPOBHR.G	optical port, RS-485, relay, GSM
Mercury 204 ARTM(2)-09 DPOBHR.G	optical port, RS-485, relay, GSM

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	230
Base/peak current, A	5/60; 5/80; 5/100; 10/100
Peak current during 10 ms	30*I max
Starting current, A	
• for meters with base current 5 A	0.02
• for meters with base current 10 A	0.04

## TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Additional active/total power consumption in meter voltage circuit at rated voltage if PLC interface is available, W/V*A	2/24
Additional active/total power consumption in meter voltage circuit at rated voltage if GSM interface is available, W/V*A	4/5
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.95
Dimensions (LxWxH), mm	130x73x210

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 or 180 previous days;
  - energy at the beginning of the current month and 36 or 48 previous months;
  - energy at the beginning of the current year and the previous year (only in meters with protocol DLMS/COSEM, SPODES);
  - consumption for the current day and the previous day (only in meters with protocol DLMS/COSEM, SPODES);
  - consumption for the current month and 11 previous months (only in meters with protocol DLMS/COSEM, SPODES).
- Metering of reactive energy by every quadrant in bidirectional meters (only for meters with DLMS/COSEM, SPODES protocols).
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day (24 time zones in meters with a DLMS/COSEM and SPODES protocol). Individual tariffs schedule is set every month. Minimal interval of each tariff is 1 minute.
- Measurement of technical losses in power lines and power transformers (only in meters with protocol DLMS/COSEM, SPODES).
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power with the total power vector direction indication;
  - RMS of current and voltage values including one period RMS for power quality analysis;
  - power frequency;
  - power factor;
  - THD of sinusoidal phase lines (only in meters with protocol DLMS/COSEM, SPODES).

- One or two independent power profiles with a 30-minute integration period or an arbitrary integration period from 1 to 60 minutes (only in meters with protocol DLMS/COSEM, SPODES), the second profile can be configured as technical losses power profile. The storage period is 170 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power at a specified interval from 1 to 3600 seconds with a monthly schedule.
- Event logging including power quality events.
- Plug-in interface modules: RS-485, GSM, NB-IoT, PLC, RF, CAN, LoRaWAN.
- Multifunctional galvanically isolated pulse output including the load control function.
- Automatic self-diagnosis with error indication.
- Built-in 60/80/100A relay.
- Two nonvolatile electronic seals.
- Magnetic field sensor.
- Recording of unauthorized impacts to the indelible event log.
- Multifunctional LCD with backlight and OBIS-codes indication (only in meters with protocol DLMS/COSEM, SPODES).
- LCD indication of data without main power.
- DLMS/COSEM and Mercury protocols support.
- Additional current sensor in neutral circuit.
- Meters have solid housing and transparent terminal cover to prevent tamper.



## Mercury 203.2 T



### APPLICATION

The meters are designed for unidirectional multi-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in two-wired AC networks with subsequent accumulated data storage, generation of events and data transfer to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 203.2 T R C L Gx K O B

- R – interface RS-485,
- C – CAN interface,
- L – PLC-II interface,
- Gx – GSM-modem (G-CSD/GSM/GPRS, G1 – GSM/GPRS, G3 – UMTS/3G, G4- LTE/4G, G5 – NB-IoT and other),
- K – load control (low-current output),
- O – load control (embedded latching relay),
- B – backlight LCD.

**Table of commercially available meters modifications. Other modifications are available on request.**

Modification	Interfaces, relay
Mercury 203.2 T RBO 5(60)	optical port, RS-485, relay
Mercury 203.2 T LBO 5(60)	optical port, PLC-II, relay
Mercury 203.2 T GBO 5(60)	optical port, GSM, relay
Mercury 203.2 T RB 10(100)	optical port, RS-485
Mercury 203.2 T LB 10(100)	optical port, PLC-II
Mercury 203.2 T GB 10(100)	optical port, GSM

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	230
Base/peak current, A	5/60; 10/100
Peak current for direct connection meters during 10 ms	30*I max
Starting current, A	
• for meters with base current 5 A	0.02
• for meters with base current 10 A	0.04

## TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Additional active/total power consumption in meter volt circuit at rated voltage if PLC interface is available, W/V*A	2/24
Additional active/total power consumption in meter voltage circuit at rated voltage if GSM interface is available, W/V*A	4/5
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.95
Dimensions (LxWxH), mm	130x73x210

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 180 previous days;
  - energy at the beginning of the current month and 48 previous months.
- TOU with the option of setting individual schedule for every day of the week and month based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power;
  - RMS of current and voltage values;
  - network frequency;
  - power factor.
- Power profile with a 30-minute integration period and storage period 6 months.
- Recording of current, voltage, active and reactive power peaks.
- Event logging.
- Plug-in interface modules: RS-485, GSM, NB-IoT, PLC, CAN.
- Multifunctional galvanically isolated pulse output including load control function.
- Automatic self-diagnosis with error indication.
- Built-in 60A relay.
- Two nonvolatile electronic seals.
- Magnetic field sensor.
- Recording of unauthorized impacts to the indelible event log.
- Multifunctional LCD with backlight.
- LCD indication of data without main power.
- No magnet sensitive elements in measurement circuits and power system.

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## Mercury 208 ART



### APPLICATION

The meters are designed for uni- and bidirectional multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in two-wired AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers.

The meters are designed for indoor and outdoor operation including mounting onto pillars.

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 208 ART2 – 0X DPOHW LxFx

- A** – active energy measurement,
- R** – reactive energy measurement,
- T** – tariffs (TOU),
- 2** – bidirectional measurement,
- 0X** – identification code of rated/ peak current, voltage, accuracy class,
- D** – protocol available DLMS/COSEM, SPODES\*,
- P** – extended program functions,
- O** – built-in load control relay,
- H** – measuring element within the neutral circuit,
- W\*\*** – remote display,
- Lx** – PLC modem (L2 – PLC-II, L4 – PRIME PLC, L5 – G3-PLC and other),
- Fx** – RF modem (F03 – ZigBee, F04 – LoRaWAN, Lartech;  
F05 – ISM868, F06 – Aura,  
F07 – LoRaWAN Vega, F08 – Kometa and other);

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

\*\* - If the remote display is included into the delivery package, the 'W' symbol can be applied only on the package but not on the meter's housing.

### METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	230
Base/peak current, A	5/60; 5/80; 5/100; 10/100
Peak current for direct connection meters during 10 ms	30*I max
Starting current, A	
• for meters with base current 5 A	0.02
• for meters with base current 10 A	0.04

### Rated/peak currents, voltages and accuracy classes

Code	Rated/ peak current, A
01	5/60
02	5/100
08	5/80
09	10/100

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## ✂ TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Additional active/total power consumption in meter voltage circuit at rated voltage if PLC interface is available, W/V*A	2/24
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.8
Dimensions (LxWxH), mm	182x154x57

## ⚙ FUNCTIONS

- The meters have split architecture (split-meters) and are equipped with a remote display for remote reading.
- The remote display receives data from a meter via a radio channel simultaneously and independently of data exchange between the meter and the AMR/AMI system.
- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative energy;
  - energy at the beginning of the current day and 123 previous days;
  - energy at the beginning of the current month and 36 previous months;
  - energy at the beginning of the current year and the previous year;
  - consumption for the current day and the previous day;
  - consumption for the current month and 11 previous months.
- Reactive energy metering per quadrant.
- TOU with the option of setting individual schedule for every day of the week and month based on 4 tariffs, 16 time zones per day (24 time zones in meters with a DLMS/COSEM, SPODES protocol). Individual tariffs schedule is set every month. Minimal interval of each tariff during 24 hours is 1 minute.
- Measurement of technical losses in power lines and power transformers.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power with the total power vector direction indication;
  - RMS of phase currents and voltages including measurements at one period of frequency for power quality analysis;
  - power frequency;
  - power factor;
  - THD of sinusoidal phase lines.
- Two independent power profiles with integration period from 1 to 60, the second profile can be configured as technical losses power profile. The storage period is 170 days for 30 minutes averaging time.
- Recording of morning and evening peaks of active and reactive power demand at a specified interval from 1 to 60 minutes with a monthly schedule.
- Event logging including power quality events.
- Additional built-in interfaces: PLC, RF, LoRaWAN.
- Automatic self-diagnosis with error indication.
- Built-in 100A relay.
- Two nonvolatile electronic seals.
- Magnetic field sensor.
- Recording of unauthorized impacts to the indelible event log.
- DLMS/COSEM and Mercury protocols support.
- Additional current sensor in neutral wire (optional).
- Meters have solid housing for tamper prevention.

\* - SPODES - PJSC Rosseti companion specification of DLMS/COSEM protocol.

## Mercury 206



### APPLICATION

The meters are designed for multi-tariff measurement of active and reactive electric energy and power, as well as electrical parameters in two-wired AC networks with subsequent accumulated data storage, generation of events and data transfer to the AMR/AMI system's data collection centers

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 206 PR(L) S N O Fx

- P** – extended program functions; power profile, events logs,
- R** – interface RS-485 with external power supply (L – PLC-I modem),
- S** – internal power supply for the interface RS-485,
- N** – electronic seal,
- O** – built-in load control relay,
- Fx** – radio modem-x (LoRaWAN, Zigbee) etc.

Table of commercially available meters modifications. Other modifications are available on request.

Modification	Interfaces, relay
Mercury 206 N	optical port
Mercury 206 RN	optical port, RS-485
Mercury 206 PRSN	optical port, RS-485 with internal power supply
Mercury 206 PRNO	optical port, RS-485, relay
Mercury 206 PRSNO	optical port, RS-485 with internal power supply, relay
Mercury 206 PLNO	optical port, PLC-I, relay
Mercury 206 PNOF03	optical port, RF (Zigbee), relay
Mercury 206 PNOF04	optical port, RF (LoRaWAN), relay

# ELECTRONIC, SINGLE-PHASE, MULTI-TARIFF, MULTI-FUNCTIONAL METERS

## METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	230
Base/peak current, A	5/60
Peak current during 10 ms	30*I max
Starting current, A	0.01

## TECHNICAL SPECIFICATIONS

Active/total power consumption in the meter voltage circuit at rated voltage, W/V*A	2.5/8
Total power consumed by each current circuit, max, V*A	0.5
Additional active/total power consumption in meter voltage circuit at rated voltage if PLC interface is available, W/V*A	1.5/24
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.6
Dimensions (LxWxH), mm	154x105x72

## FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative active and reactive energy;
  - active energy at the beginning of the current day and 180 previous days;
  - energy at the beginning of the current month and 48 (active) and 12 (reactive) previous months.
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power;
  - RMS of phase currents and voltages;
  - power frequency;
  - power factor.
- Power profile with a 30-minute integration period and a 6-month storage period.
- Recording of current, voltage, active and reactive power peaks.

- Event logging.
- External RS-485 interface power supply for a system cost optimization in a block of flats.
- Wireless interfaces LoRaWAN and Zigbee for AMR/AMI system design.
- Multifunctional galvanically isolated pulse output with the load control function.
- Built-in 60A relay.
- Nonvolatile electronic seal.
- Recording of unauthorized impacts to the indelible event log.
- LCD indication of data without main power.
- No magnet sensitive elements in measuring circuits and power supply system.
- Small-size housing with DIN-rail mounting.

## Mercury 201.8 TLO



### APPLICATION

The meters are designed for multi-tariff measurement of active and reactive electric energy and power, as well as measurement of electrical parameters in two-wire AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, inside cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### METER MODIFICATION CODE STRUCTURE

#### Mercury 201.8 TLO

T - tariffs (TOU), electronic seals,  
L - PLC-II modem,  
O - built-in load control relay.

### TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Additional active/total power consumption in meter voltage circuit at rated voltage if PLC interface is available, W/V*A	2/12
Number of tariffs	4
Data retention during power outage, min, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +75
Weight, max, kg	0.5
Dimensions (LxWxH), mm	128x90x65

- Recording of current, voltage, active and reactive power peaks.
- Event logging.
- Built-in 80A relay.
- Nonvolatile electronic seal.
- Recording of unauthorized impacts to the indelible event log.
- LCD indication of data without main power.
- No magnet sensitive elements in measuring circuits and power supply system.
- Small-size housing with DIN-rail mounting.

### METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1/2
Rated voltage, V	230
Base/peak current, A	5/80
Peak current during 10 ms	30*1 max
Starting current, A	0.02

### FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active and reactive electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:
  - total cumulative active and reactive energy;
  - active energy at the beginning of the current day and 180 previous days;
  - energy at the beginning of the current month and 48 (active) and 12 (reactive) previous months.
- TOU with the option of setting individual schedule for every day of the week based on 4 tariffs, 16 time zones per day. Individual tariffs schedule is set every month.
- Measurement of electrical network parameters:
  - instantaneous values of active, reactive and total power;
  - RMS of phase currents and voltages;
  - power frequency;
  - power factor.
- Power profile with a 30-minute integration period and a 6-month storage period.

## Mercury 200



### APPLICATION

The meters are designed for multi-tariff measurement of active electric energy and power, as well as measurement of electrical parameters in two-wire AC networks with subsequent accumulated data storage, generation of events and transmission of information to the AMR/AMI system's data collection centers.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, inside cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

### TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	2.5
Additional active/total power consumption in meter voltage circuit at rated voltage if PLC interface is available, W/V*A	3/30
Number of tariffs	4
Data retention during power outage, not less, years	10
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.6
Dimensions (LxWxH), mm	156x138x58

### METER MODIFICATION CODE STRUCTURE

#### Mercury 200.0x

02 - CAN interface,

04 - CAN interface and PLC-I modem.

### METROLOGICAL PERFORMANCE

Meter accuracy class (active/reactive)	1
Rated voltage, V	230
Base/peak current, A	5/60
Peak current during 10 ms	30*1 max
Starting current, A	0.02

### FUNCTIONS

- The meter measures, stores, displaying on LCD and communicate information via different interfaces of active electrical energy independently by every tariff zone and cumulatively for all tariff zones for the following periods of time:

- total cumulative energy;
- energy at the beginning of the current month and 12 previous months.

- TOU with the option of setting a separate monthly schedule for weekdays, weekends and holidays based on 4 tariffs, 8 segments per day. Each month of the year is set for an individual TOU schedule.

- Measurement of instantaneous values of active power.

- Multifunctional galvanically isolated pulse output including control function.

- There are no magnet sensitive elements in measuring circuits and power supply system.

- Event logging.

- Small-size housing with DIN-rail mounting.



## Mercury 201



### APPLICATION

The meters are designed for active electric energy measurement in two-wired AC networks.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated and peak current, and additional functionalities which are not related to metrological performance.

Table of commercially available meters modifications.

Modification	Indication device	Rated/peak current, A
Mercury 201.2	LCD	5/60
Mercury 201.4	LCD	10/80
Mercury 201.5	Stepper motor	5/60
Mercury 201.6	Stepper motor	10/80

### METROLOGICAL PERFORMANCE

Meter accuracy class	1
Rated voltage, V	230
Rated/peak current, A	5/60; 10/80
Peak current during 10 ms	30*1 max
Starting current, A	
• for meters with base current 5 A	0.02
• for meters with base current 10 A	0.04

### TECHNICAL SPECIFICATIONS

Active/total power consumption in each meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	150,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.35
Dimensions (LxWxH), mm	105x105x64

### FUNCTIONS

- Digital measurement of electrical energy.
- There are no magnet sensitive elements in measuring circuits and power supply system.
- Counter with anti-reverse mechanism and magnetic field protection.
- Electrical energy measurement 'per module', readings increase at any phasing of the connected circuits.
- Small-size housing with a universal bracket for DIN-rail mounting.

## Mercury 201.7, 201.8



### APPLICATION

The meters are designed for active electric energy measurement in two-wired AC networks.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### MODIFICATIONS

The meter modifications are available with different rated/peak current and indication device type.

### FUNCTIONS

- Electrical energy measurement by digital method.
- There are no magnet sensitive elements in measuring circuits and power supply system.
- Counter with anti-reverse mechanism and magnetic field sensor.
- Electrical energy measurement 'per module', readings increase at any phasing of the connected circuits.
- Minimal overall dimensions, DIN-rail mounting.
- Completed with an adapter bracket with mounting dimensions for induction meters.

Table of commercially available meters modifications.

Modification	Indication device	Rated/peak current, A
Mercury 201.7	Stepper motor	5 / 60
Mercury 201.8	LCD	5 / 80

### METROLOGICAL PERFORMANCE

Meter accuracy class	1
Rated voltage, V	230
Rated/peak current, A	5/60; 5/80
Peak current during 10 ms	30*I max
Starting current, A	
• for meters with base current 60 A	0.01
• for meters with base current 80 A	0.02

### TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	220,000
Operating temperature range, °C	-45 to +70
Weight, max, kg	0.25
Dimensions (LxWxH), mm	65x90x76

## Mercury 202.5



### APPLICATION

The meters are designed for active electric energy measurement in two-wired AC networks.

The meters are designed for indoor operation and can be installed in the areas with additional environmental protection (installed inside premises, cabinets or boards).

### METROLOGICAL PERFORMANCE

Meter accuracy class	1
Rated voltage, V	230
Rated/peak current, A	5/60
Peak current during 10 ms	30*I max
Starting current, A	0.02

### TECHNICAL SPECIFICATIONS

Active/total power consumption in meter voltage circuit at rated voltage, W/V*A	2/10
Total power consumed by each current circuit, max, V*A	0.1
Calibration interval, years	16
Warranty period, years	3
Mean time between failures, min, h	140,000
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.6
Dimensions (LxWxH), mm	119x56x202

### FUNCTIONS

- Electrical energy measurement by digital method.
- No magnet sensitive elements in measuring circuits and power supply system.
- Counter with anti-reverse mechanism and magnetic field protection.
- Electrical energy measurement 'per module', readings increase at any phasing of the connected circuits.

## Mercury 250



### APPLICATION

Mercury 250 is a data concentrator unit (DCU) designed for operation in AMR/AMI systems for automatic and automated collection from electricity meters of commercial and/or technical readings, electrical parameters measurement results, event logs, metering instruments and objects status data, collected data preprocessing and storage, maintaining the universal time, data exchange with the upper-level data-processing center and high end software (HES) and adjacent systems.

### MODIFICATIONS

Mercury 250 modifications are available with different number and type of communication channels with electricity meters.

Table of commercially available DCU modifications.

Modifications	Features
Mercury 250 GRL.12	Supports data collection from meters via PLC-II, RTU-325 communication protocols for operation in Mercury-AMI (Advanced Metering Infrastructure) systems.
Mercury 250 GRL.22	Supports data collection from meters via PLC-II, RTU-325 communication protocols and the protocols for operation in "Telescope +" systems and systems working with DLMS/COSEM, SPODES* protocol.
Mercury 250 GR.4R	RTU-325 data communication protocols and the protocols for operation in Mercury-AMI (Advanced Metering Infrastructure) systems. Data collection support via 4 RS-485 channels.

\* - specification for Data Communication Protocol of Energy Metering

### FUNCTIONS

- Supports data transmission modes via GPRS with a dynamic and static IP address.
- Supports data transmission via CSD.
- Supports data collection from external devices via RS-485 interfaces (most electricity meters represented in Russian market).
- Built-in modem for data transmission via power line (PLC)\*\*.
- Individual event logging.
- Server-to-meter connectivity via 'transparent tunnel' channel as an option.
- Supports exchange protocols with adjacent systems: IEC 60870-5-101/104, RTU 325.

\*\* - only in GRL.12 and GRL.22 modifications

### TECHNICAL SPECIFICATIONS

Meter communication channels	RS-485, PLC-II
Upper-level data-processing center communication channels	GSM, Ethernet
Number of RS-485 channels	up to 4
Supported number of meters, pcs	
• for GRL.12 and GRL.22 modifications	up to 3x1024
• for GR.4R modification	up to 4x256
Absolute error of clock rate per day without external synchronization, s	±0.5
Supply voltage, V	3*230
Calibration interval, years	4
Warranty period, years	3
Mean time between failures, min, h	90,000
Operating temperature range, °C	-40 to +70
Dimensions (LxWxH), mm	280x220x300

## CONCENTRATORS

## Mercury 225



### APPLICATION

Mercury 225 are data concentrator for data collection and transmission via the 0,4 kV power lines. The concentrator is the central node in PLC networks providing access to slave nodes from application programs. It performs meters network search, information packets routing, storage and transmission of data to the AMR/AMI system via a selected communication channel.

From technical point of view Mercury 225.11 and Mercury 225.21 concentrators are identical devices which differ only with embedded firmware implementing data transmission protocols of either PLC-I or PLC-II networks.

A module of three single-phase concentrators M225.11 or M225.21 is used in the three-phase network.

Modification	Features
Mercury 225.11	Single-phase concentrator PLC-I
Mercury 225.21	Single-phase concentrator PLC-II

### TECHNICAL SPECIFICATIONS

Supported PLC technologies	PLC-I , PLC-II
Serial interfaces	USB, RS-485
Transmission bitrate via USB or RS-485, bit/s	9,600 - 38,400
Working frequency range, kHz	9 - 95
Data communication rate via power mains in each phase, bit/s	100 – 10,000
Supply voltage, V	230 ±10%
Total power consumption, V*A	30
Active power consumption, W	30
Maximum number of connected electricity meters	1,024
Maximum output signal level In frequency band 9 kHz to 95 kHz, max dB (mkV)	134
Average daily clock tolerance, max, s	0.5
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.5
Dimensions (LxWxH), mm	140x110x35
DIN rail mounting	yes
Warranty period	3 years



### APPLICATION

Mercury 228 is a GSM-gateway designed to provide remote access to a device or a group of devices equipped with serial RS-485 interfaces. The gateway connects to the RS-485 network and provides remote access to each device in the network via the GSM channel. Moreover the devices can differ in types, protocols and communication parameters.

In order to make the full use of GSM-channel bandwidth capacity the gateway implements a packet mode of data communication with preliminary buffering of data packets transmitted and received by the control station software. Thus it is not 'transparent' for third-party software and requires software modification for proper commands system. However its application allows accelerating data exchange with remote devices 5-10 times compared to conventional GSM-terminals connected from the side of terminal devices. The GSM-gateway requires no configuration and it is ready for operation immediately after power supply and registration with a mobile operator.

In the Mercury-AMI (Advanced Metering Infrastructure) AMR/AMI system the GSM-gateways Mercury 228 are used for data communication from geographically distributed Mercury 225 concentrators and Mercury electricity meters to a control station as well as for concentrators remote configuration.

### TECHNICAL SPECIFICATIONS

Supply voltage, V	230+10%
Peak power consumption, W	5.0
Working frequency range GSM, MHz	900 / 1,800
Maximum number of devices connected via RS-485	128
Supported interfaces	RS-485 (CAN)
Transmission bitrate via interface, bit/s	300 to 115,200
Interface connector	2 *RG 11
External antenna connector	RP-SMA female
Dimensions (LxHxW), mm	110x140x35
Operating temperature range, °C	-40 to +55
Weight, max, kg	0.4
Dimensions, mm	140x110x35
DIN rail mounting	yes
Warranty period	3 years

OPTICAL PORT



Mercury-255 Bluetooth – optical port  
Mercury – 255.1 USB – optical port

## Mercury 255

### APPLICATION

The adapters Mercury 255 (Bluetooth-optical port) and Mercury 255.1 (USB-optical port) are designed for providing data exchange between electricity meters and PCs.

The adapters have a magnetic holder that provides for an easy operation and fast connection to meters.

The Mercury 255 (Bluetooth-optical port) adapter has a built-in battery and requires no external power supply for operation. The Mercury 255.1 (USB-optical port) adapter has a standard miniUSB connector for connection to a PC.

The optical port mechanical and optical parameters comply with the standard GOST R 61107-2001 and IEC62056-21.

### TECHNICAL SPECIFICATIONS

Maximum transmission bitrate, bit/sec	9,600
Battery operation time (for Bluetooth modification), hours	16
Operating temperature range, °C	0 to +50

ADAPTER USB/CAN/RS-485/RS-232



## Mercury 221

### APPLICATION

Adapter Mercury 221 is designed for conversion of USB interface signals into CAN/RS-485/RS-232 as well as for connection one or several Mercury electricity meters with integrated CAN/RS-485 interfaces or devices with 3-wire RS-232 interface to a PC. After installation a USB driver, the device will be identified as a virtual COM port. The USB drivers and installation instruction are available at [www.incotex.com](http://www.incotex.com).

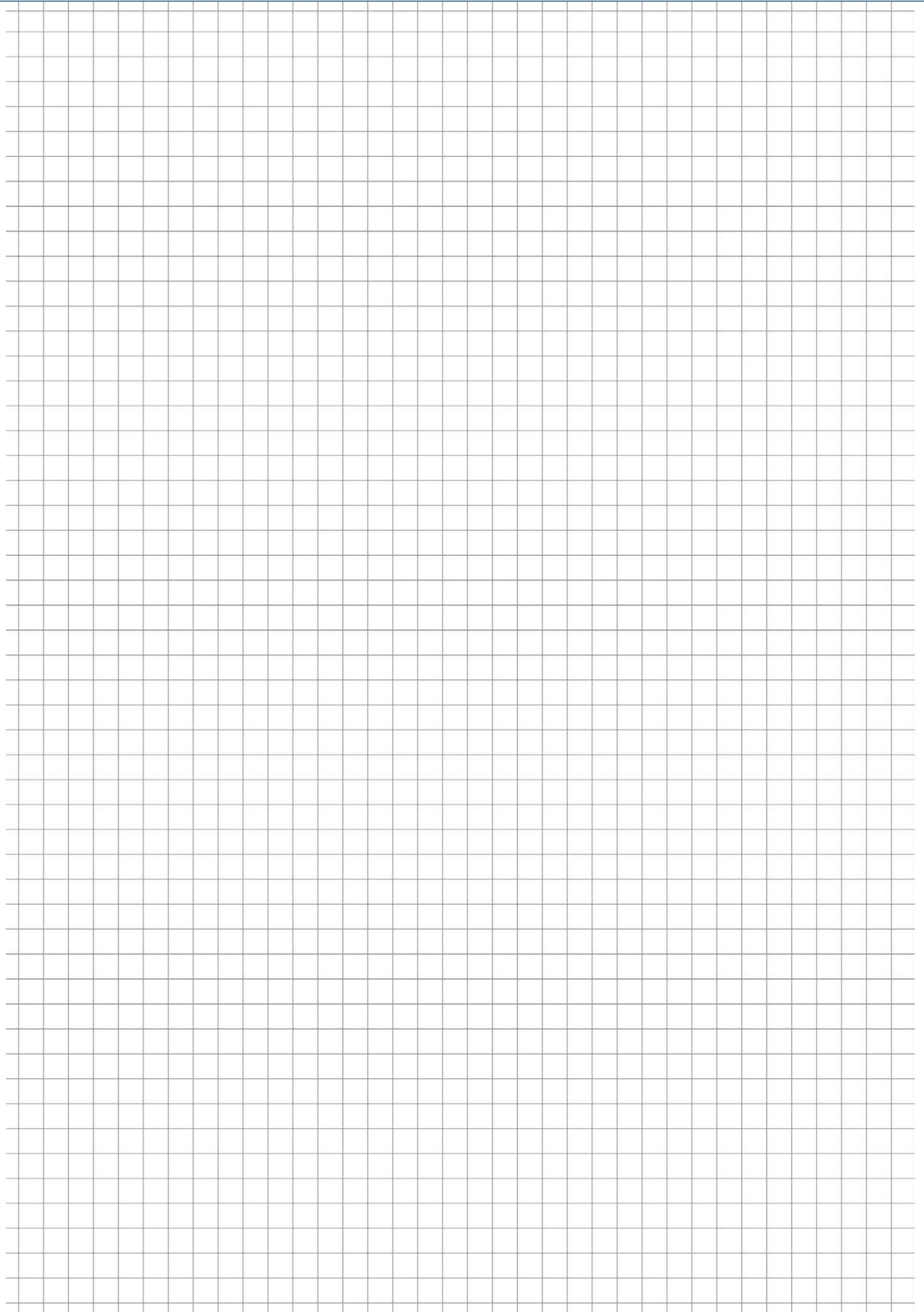
There is a jumper on the adapter board for selecting the adapter operation mode CAN/RS-485.

All adapter interface terminals are galvanically isolated from the USB interface.

### TECHNICAL SPECIFICATIONS

Maximum transmission bitrate, bit/sec	115,200
Connector for RS-232 connection	DB9
Maximum number of connected meters, provided that meters interface power supply is from an external power supply unit	256
Maximum number of meters connected to adapter, provided that meters interface power supply is from the adapter	10
Maximum line length (CAN, RS-485), m	1,000
Operating temperature range, °C	0 to +50

## FOR NOTES



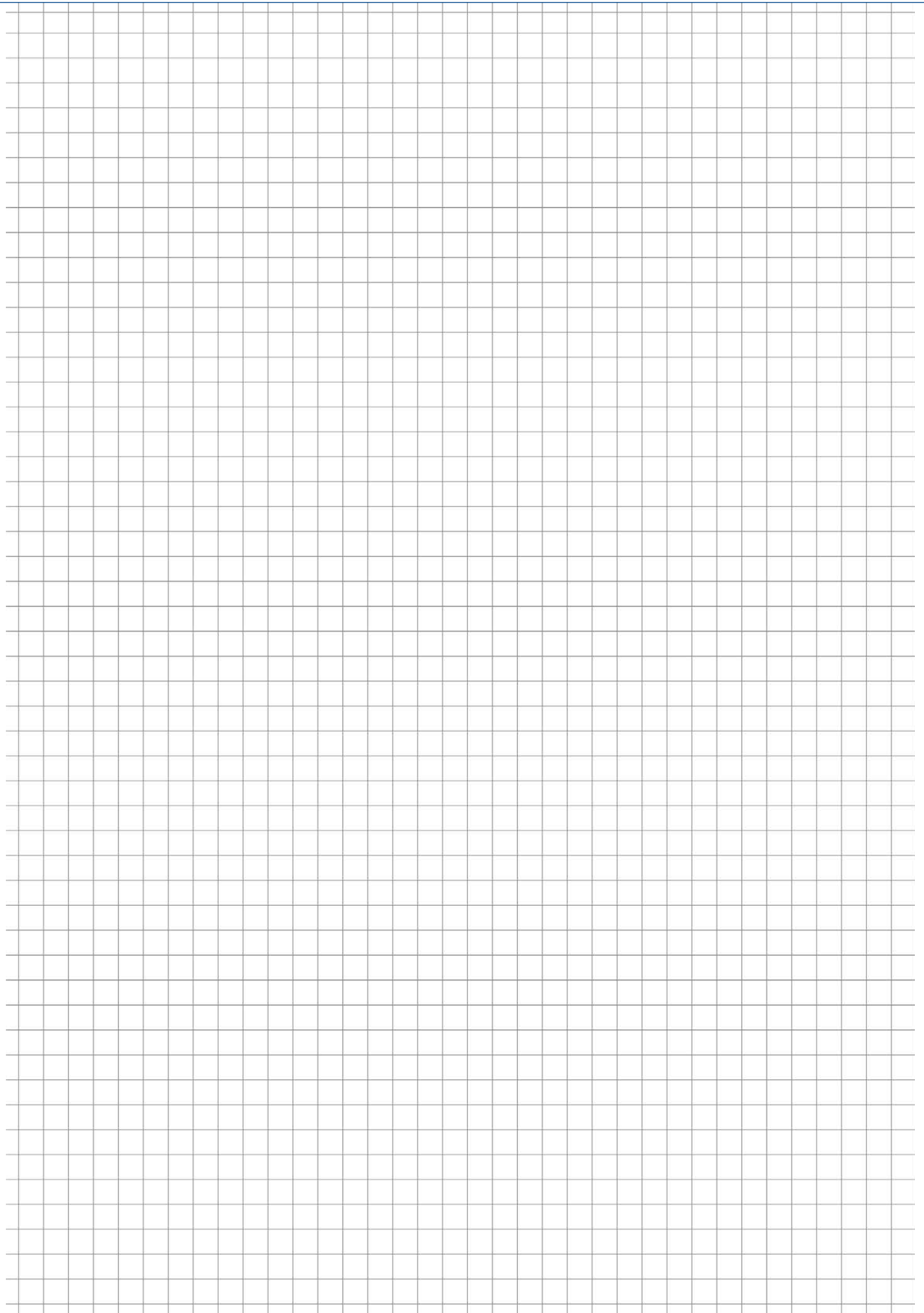


# FOR NOTES

A large grid of graph paper for taking notes, consisting of 20 columns and 40 rows of small squares. The grid is light gray and occupies most of the page.



## FOR NOTES





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