ISKRAEMECO

Sales programme

Our mission and vision
is to make efficient energy use easy. We aim to be the leading provider of reliable, innovative and flexible metering solutions.

The building blocks of our success
Our success is based on our experience, understanding our customers' needs, a professional and reliable staff, innovative and high quality devices and systems, and sound international experience.

Innovation is our tradition
The company has been known for technical innovation since its foundation in 1945. Six decades of success and growth have been marked by numerous milestones. We have supplied customers with more than 60 million devices so far. We are proud that all the devices and systems are based on our own knowledge and many patents.

Iskraemeco's expertise
Our research and development is primarily driven by the latest developments in metering technologies: new metering elements and systems, integrated communication, automatic meter reading, remote load control & supervision and smart house applications. Using the most recent developments in microelectronics, we develop "intelligent" flexible products with multiple functionalities. With a focus on customer needs we develop system software for support in electricity billing and demand management for both industrial and residential consumers.

Globalisation is our challenge
Our products and services are present in almost 100 countries worldwide. As well as the parent company in Kranj, the Iskraemeco Group includes production and trade companies in Europe and Asia. Our reliable and user-friendly system solutions are installed in the most demanding Scandinavian markets and are expanding in other demanding markets worldwide.

Teamwork is the basis of quality
The quality of our products is based on the total business management system determined in the ISO 9000:2000 standard. It unites systems ranging from quality management, approach to the environment, quality of laboratories to financial management, law, safety and health at work and security of assets and data. The total business management system is based on a process model of constant improvements, which enable us to improve efficiency and increase the satisfaction of customers, employees and owners.

Our devices and systems contribute to sustainable development
Iskraemeco's mission is to enable utilities and industry to improve performance while lowering the environmental impact. Providing metering products and systems that enable electricity management is Iskraemeco's contribution to sustainability. ISO 14001 is proof of our healthy attitude to the environment.

Our product quality is based on our own accredited laboratories
Investments made in modernisation of Iskraemeco's testing and metrology laboratories, with the aim of staying one step ahead of technological advances in a constantly changing market, allow us to develop state-of-the-art technology that incorporates our customers' future standards and needs. In 2002, the laboratories were accredited in accordance with ISO 17025.

Quality recognized by our customers
The quality of our business, which is reflected in the quality of our products and services, is also recognised by our customers and measuring institutions in many countries. National institutions in Italy, Great Britain, Austria, Switzerland, Slovenia, Sweden and the Benelux countries have already authorised us for initial verification of products.

Metering data is important
Iskraemeco is among the leading world companies in metering products, systems and services. The information about consumption we provide is of value for all energy market players: regulators, energy suppliers, utilities and consumers.

Partnership assures success and satisfaction
The design, development and marketing of metering devices are performed in cooperation with our customers and partners. We employ our expertise in partnership with our customers to assist them to achieve successful business results. A deep knowledge of metering and application of the latest technology guarantee that the devices work efficiently and reliably, both individually and as part of a system. From the simple electromechanical meter to the most sophisticated communication and load management systems, we guarantee the accuracy and reliability of the metering data. Our products and services meet the requirements of applicable international standards and legislation.

System solutions for the satisfaction of our customers
Quality, reliability and flexibility are the features that satisfy the needs of our customers in the field of measuring, collecting, billing, and managing electricity. Iskraemeco offers complete solutions for electricity metering and billing for all levels of electric energy consumption, transmission and production

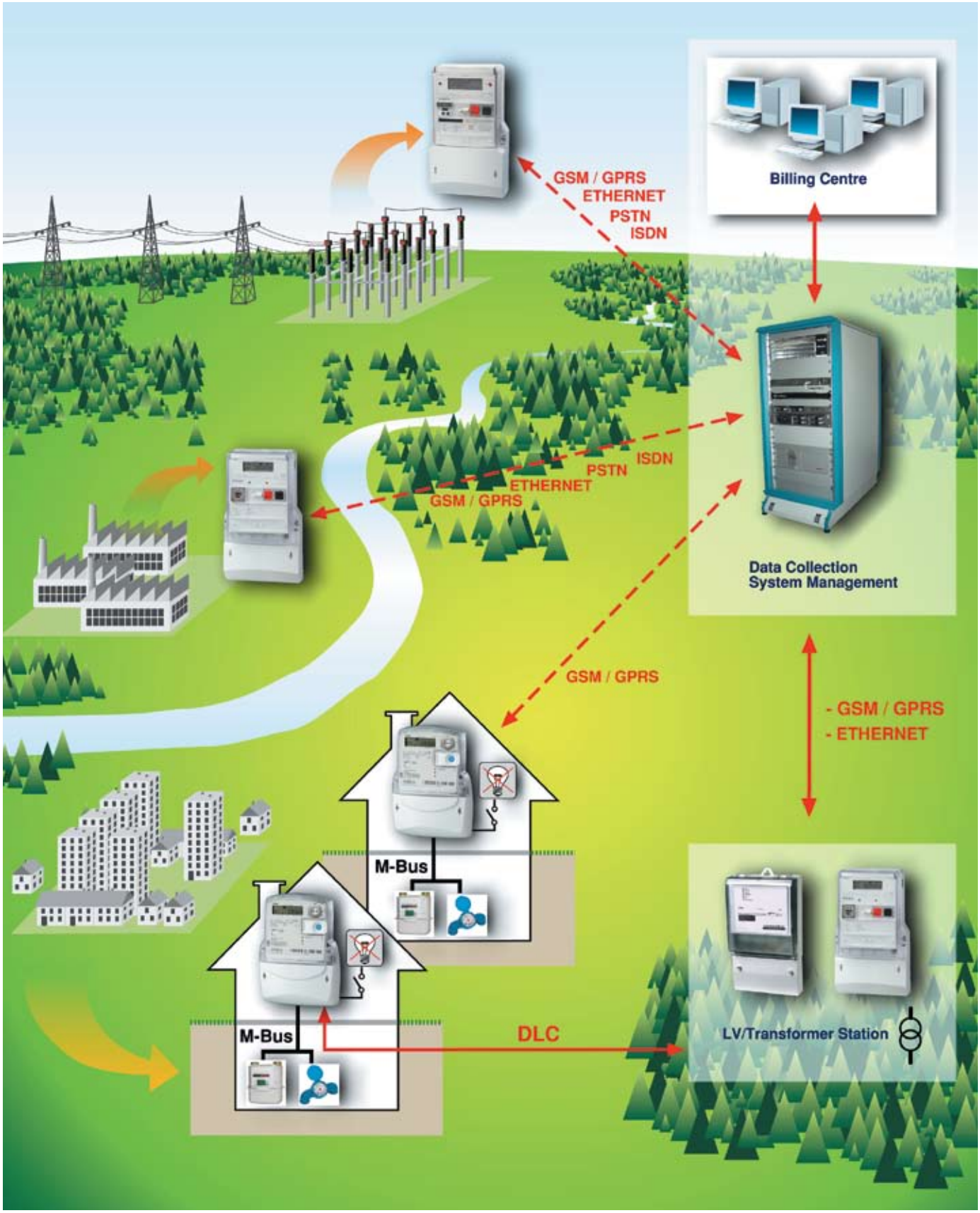
Residential metering
High quality, durable and reliable electricity meters are the foundation of any metering system. Total systems for metering and billing electricity and total systems of prepayment consumption meet contemporary market needs.

Industry, production and distribution
The systems of energy measurement and management are built from our own products, from the level of registration to software billing equipment. Electricity meters for industry and electric utilities correspond to various requirements of measuring accuracy and enable the measurement of active and reactive energy and power in four quadrants, registration of load curves and remote communication and data transmission.

Sales programme

Universal AMM system

The universal Iskraemeco AMM (Automated Meter Management) system enables collection, storing and processing of data on electric and other types of energy (heat, gas, water, etc.) at all levels of consumption, transmission and production. Its modular design enables application of different measuring and communication devices. The system supports different communication paths (a direct connection via RS232, RS485 or CS, DLC, PSTN, ISDN, GSM/GPRS modem connection, Ethernet, etc.) as well as different protocols (DLMS, IEC 62056-21, IEC 60870-5-102, FTP, NTP, SNMP, SOAP, etc.). User-friendly software enables simple data collection and processing, monitoring and network management.



Precision multifunction meters

MT860

The electronic multifunction three-element meter for CT or CT/VT connection is used for measurement of active, reactive and apparent energy and demand as well as analysis of energy quality.

TE855

The electronic multifunction two- or three-element meter for CT or CT/VT connection is used for measurement of active and reactive energy and demand.

Active	Reactive	Energy	Active	Reactive
0.2S	2 – calibrated to 0.5% or 1%	Accuracy class	0.2S	2 – calibrated to 0.2%, 0.5% or 1%
IEC 62053-22	IEC 62053-23	Standards	IEC 62053-22	IEC 62053-23
5(10) A, 5(6) A, 1(6) A, 1(1.2) A, 1(2) A		Current range	5(10) A, 5(6) A, 1(6) A, 1(1.2) A, 1(2) A	
CT or CT/VT connection; 3-phase 4- or 3-wire connection		Connection	CT or CT/VT connection; 3-phase 4- or 3-wire connection	
3 x 57.7/100 V ..... 3 x 240/415 V (voltage multi-range or specified for only one voltage range)		Reference voltage	3 x 57.7/100 V, 3 x 63/110 V, 3 x 115/200 V, 3 x 127/220 V, 3 x 220/380 V, 3 x 230/400 V	
-25°C to +60°C		Temp. range of operation	-25°C to +60°C	
• A+, A-, R+, R-, R1, R2, R3, R4, S+, S- • Cumulative energy and energy in the last billing period • Interval demand average, instantaneous demand value, average demand in the last measuring period, max. demand in the last billing period, cumulative demand value		Measuring values	• A+, A-, R+, R-, R1, R2, R3, R4 • Interval demand average, average demand in the last measuring period, max. demand in the last billing period, cumulative demand value	
• Max. 12 auxiliary terminals (functional inputs, functional outputs, external power supply, communication interface) • Input/output module • Communication modules • Internal and/or external power supply (50 V to 240 V AC/DC) – priority definition of power supply source • 20 x 4 matrix display		Hardware characteristics	• Max. 17 auxiliary terminals (functional inputs, functional outputs, external power supply, communication interface) • Internal and/or external power supply (50 V to 240 V AC/DC) – priority definition of power supply source • 20 x 4 matrix display	
Surface mounting (DIN 43857) or half-width 19" rack type		Housing	Surface mounting (DIN 43857) or half-width 19" rack type	
IEC 62056 – 21, IEC 60870-5-102, DLMS/COSEM		Protocols	IEC 62056 – 21, IEC 60870-5-102, SDT	
• TOU • Log-book (P.98, P.99) • Load profile (P.01, P.02) • Alarm output • Fraud detection (detection of meter cover and terminal cover opening) • Energy quality analysis (voltage, current, frequency, power factor, phase angles, over/under voltages, power failure, THD – up to 30 harmonic components in current and voltage • "No power reading/programming" option		Functions	•TOU • Log-book (P.98) • Load profile (P.01, P.02) • Alarm output	
• IR • RS232 • RS485		Comm. interface	• IR • RS232 • RS485 • CS	
• RS232 • RS485 • CS • PSTN • ISDN • GSM/GPRS • Ethernet		Comm. module		
• Functional inputs • Functional outputs		Input/output module		

A modular design of the MT860 meter offers a wide range of configurations. A wide voltage and current range enables simple application in the field. Available I/O and communication modules are Plug & Play type.

More information is given in the "Accessories/Communication and input/output modules" chapter.

Multifunction meters for industrial and small commercial users

MT831

The electronic modular designed multifunction three-element meter is used for whole current, CT or CT/VT connection for measurement of active, reactive, apparent energy and demand as well as analysis of energy quality.

MT830

The electronic multifunction three-element meter is used for whole current, CT or CT/VT connection for measurement of active, reactive, apparent energy and demand as well as analysis of energy quality.

Active		Reactive	Energy	Active		Reactive
2 or 1 or 0.5S	A or B or C	3 or 2 – calibrated to 1%	Accuracy class	2 or 1 or 0.5S	A or B or C	3 or 2 – calibrated to 1%
IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23	Standard	IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23
5 – 120 A	0.25 – 5(120) A	5 – 120 A	Current range	5 – 120 A	0.25 – 5(120) A	5 – 120 A
5 – 20 A 5 – 10 A 5//1 – 6 A	0.05 – 5(20) A 0.05 – 5(10) A 0.01 – 1(6) A	5 – 20 A 5 – 10 A 5//1 – 6 A		5 – 20 A 5 – 10 A 5//1 – 6 A	0.05 – 5(20) A 0.05 – 5(10) A 0.01 – 1(6) A	5 – 20 A 5 – 10 A 5//1 – 6 A
Whole current, CT or CT/VT connection; 3-phase 4- or 3-wire connection			Connection	Whole current, CT or CT/VT connection; 3-phase 4- or 3-wire connection		
3 x 57.7/100 V ... 3 x 240/415 V (voltage multi-range or specified for one voltage range only)			Reference voltage	3 x 57.7/100 V ... 3 x 240/415 V (voltage multi-range or specified for one voltage range only)		
-25°C to +60°C			Temp. range of operation	-25°C to +60°C		
• A+, A-, R+, R-, R1, R2, R3, R4, S+, S-. • Cumulative energy and energy in the last billing period • Interval demand average, instantaneous demand value, average demand in the last measuring period, max. demand in the last billing period, cumulative demand value			Measuring values	• A+, A-, R+, R-, R1, R2, R3, R4, S+, S-. • Cumulative energy and energy in the last billing period • Interval demand average, instantaneous demand value, average demand in the last measuring period, max. demand in the last billing period, cumulative demand value		
• Max. 6 auxiliary terminals (functional inputs, external power supply) • Input/output module • Communication module • Internal and/or external power supply (50 V to 240 V AC/DC) • LCD complies with VDEW requirements			Hardware characteristics	• Max. 6 auxiliary terminals (functional inputs and outputs, external power supply, communication interface) • Internal and/or external power supply (50 V to 240 V AC/DC) • LCD complies with VDEW requirements		
IEC 62056 – 21, IEC 60870-5-102			Protocols	IEC 62056 – 21, IEC 60870-5-102		
• TOU • Log-book (P.98, P.99) • Load profile (P.01, P.02) • Power excess • SMS alarm • Alarm output • Fraud detection (current measurement in a neutral conductor) • Detection of meter cover and terminal cover opening • Energy quality analysis (voltage, current, frequency, power factor, phase angles) • Over/under voltages, power failure • THD – up to 8 harmonic components in current and voltage • "No power reading/programming" option			Functions	• TOU • Log-book (P.98, P.99) • Load profile (P.01, P.02) • Power excess • SMS alarm • Alarm output • Fraud detection (current measurement in a neutral conductor) • Detection of meter cover and terminal cover opening • Energy quality analysis (voltage, current, frequency, power factor, phase angles, over/under voltages, power failure • THD – up to 8 harmonic components in current and voltage) • "No power reading/programming" option		
IR			Comm. interface	IR • RS232 • RS485		
RS232, RS485 • CS • PSTN • ISDN • GSM/GPRS • Ethernet			Comm. module			
• Functional inputs • Impulse inputs • Functional outputs			Input/output module			

A modular design of the MT831 meter offers a wide range of configurations. A wide voltage and current range enables simple application in the field. Available I/O and communication modules are Plug & Play type.

MT173

It is a three-phase multifunction active and reactive energy meter with a built-in RS485 or CS interface.

MT375

It is a three-phase transformer rated multifunction active, reactive and apparent energy meter with a built-in GSM/GPRS modem or an RS485 interface intended for AMM systems. Data transfer in the form of SMS messages is also supported at a version with a GSM/GPRS modem.

Active		Reactive	Energy	Active		Reactive
1 or 2	A or B	3 or 2	Accuracy class	1	B	2
IEC 62053-21	EN 50470-3	IEC 62053-23	Standard	IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23
5 – 120 A	0.25 – 5(120) A	5 – 120 A	Current range	5(6) A 1(6) A	0.05 – 5(6) A 0.01 – 1(6) A	5(6) A 1(6) A
5(6) A 5//1 (6) A	0.05 – 5(6) A 0.01 – 1(6) A	5(6) A 5//1 (6) A				
Whole current or CT connection; 3-phase 4- or 3-wire connection			Connection	CT connection; 3-phase 4- or 3-wire connection		
3 x 120/208 V ... 3 x 240/415 V			Reference voltage	3 x 240/415 V		
-25°C to +60°C			Temp. range of operation	-25°C to +60°C		
• A+, A-, R+, R-, R1, R2, R3, R4 • Voltage, current • Cumulative energy and energy in the last billing period • Instantaneous demand value, average demand in the last measuring period, max. demand in the last billing period			Measuring values	• A+, A-, R+, R-, S+, S- • Voltage, current, frequency • Cumulative energy and energy in the last billing period • Instantaneous demand value, average demand in the last measuring period, max. demand in the last billing period		
• Max. 6 auxiliary terminals (functional inputs and outputs) • LCD in compliance with VDEW requirements			Hardware characteristics	• Relay (6 A) • Opto-mos output (100 mA) • M-Bus interface • Alarm inputs (2x) • Impulse outputs (2x) • LCD in compliance with VDEW requirements • Rogowski coil measuring principle • CoP5		
IEC 62056 – 21			Protocols	IEC 62056 – 21, IEC 62056 – 46 (DLMS)		
•TOU • Log-book • Load profile • Fraud detection (detection of meter cover and terminal cover opening, external magnetic field) • Energy quality analysis (voltage, current) • "No-power reading" option			Functions	• TOU (max. 8 tariffs), DST • Load-profile (99.1.0, 99.2.0) • Log-book (99.97.0, 99.98.0) • Data transmission via SMS • Detection of meter cover and terminal cover opening • Energy quality analysis (voltage, current, frequency, number and time of breaks by phases) • Over/under voltage measurement • Date of the last parameters setting, a number of parameter settings • Four-level passwords • M-Bus micromaster interface for data acquisition from max. 4 external metering devices (water, gas, heat, temperature)		
• IR + option RS485 or CS			Comm. interface	• IR • GSM/GPRS or RS485		
2 tariff inputs, 2 impulse outputs, 2 tariff outputs (options)			Input/outputs			

Electronic meters for AMM systems

ME371

The single-phase multifunction meter for active and optionally also reactive energy with a built-in DLC modem is intended for integration into AMM systems. It enables limitation of consumption and remote load switch-off. It can also operate in a prepayment mode when connected with the SEP2W system software. The meter is provided with a micro master M-Bus interface for connection of max. four external metering devices.

ME372

The single-phase multifunction meter for active and optionally also reactive energy with an built-in GSM/GPRS modem or an RS485 interface is intended for integration into AMM systems. It enables limitation of consumption and remote load switch-off. It can also operate in a prepayment mode when connected with the SEP2W system software. The meter is provided with a micro master M-Bus interface for connection of max. four external metering devices.

Active		Reactive	Energy	Active		Reactive
1 or 2	A or B	3 or 2	Accuracy class	1 or 2	A or B	3 or 2
IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23	Standard	IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23
5 – 85 A	0.25 – 5(85) A	5 – 85 A	Current range	5 – 85 A	0.25 – 5(85) A	5 – 85 A
10 – 100 A	0.5 – 10(100) A	10 – 100 A		10 – 100 A	0.5 – 10(100) A	10 – 100 A
Whole current connection			Connection	Whole current connection		
230 V			Reference voltage	230 V		
-25°C to +60°C			Temp. range of operation	-25°C to +60°C		
• A+, A-, R+, R- • Voltage, current, frequency • Cumulative energy and energy in the last billing period • Instantaneous demand, average demand in the last measuring period, max. demand in the last billing period			Measuring values	• A+, A-, R+, R- • Voltage, current, frequency • Cumulative energy and energy in the last billing period • Instantaneous demand, average demand in the last measuring period, max. demand in the last billing period		
• Relay (6 A), M-Bus interface • LCD complies with VDEW requirements • »Shunt« measuring principle • DIN (85 A) and BS (100 A) housing			Hardware characteristics	• Alarm inputs (2x) • Relay (6 A), M-Bus interface • LCD complies with VDEW requirements • »Shunt« measuring principle • DIN (85 A) and BS (100 A) housing		
IEC 62056 – 21, IEC 62056 – 46 (DLMS)			Protocols	IEC 62056 – 21, IEC 62056 – 46 (DLMS)		
• TOU (up to 4 tariffs), DST • Log-book (99.97.0, 99.98.0) • Load-profile (99.1.0, 99.2.0) • Built-in switching device (manual or remote control) • Demand limitation function (code RED), prepayment function • Detection of meter cover and terminal cover opening • Measurement of energy quality analysis (voltage, current, number and duration of power failures for each phase) • Over/under voltage measurement • Number of parameter settings and date of last parameter setting • Four-level passwords • M-Bus micromaster interface for data acquisition from max. 4 external metering devices (water, gas, heat, temperature)			Functions	• TOU (up to 4 tariffs), DST • Log-book (99.97.0, 99.98.0) • Load-profile (99.1.0, 99.2.0) • Built-in switching device (manual or remote control) • Demand limitation function (code RED), prepayment function • Detection of meter cover and terminal cover opening • Measurement of energy quality analysis (voltage, current, number and duration of power failures for each phase) • Over/under voltage measurement • Number of parameter settings and date of last parameter setting • Four-level passwords • M-Bus micromaster interface for data acquisition from max. 4 external metering devices (water, gas, heat, temperature)		
IR • DLC			Communication interface	IR • GSM/GPRS or RS485		

MT371

The three-phase multifunction meter for active and optionally also reactive energy with a built-in DLC modem is intended for integration into AMM systems. It enables limitation of consumption and remote load switch-off. It can also operate in a prepayment mode when connected with the SEP2W system software. The meter is provided with a micro master M-Bus interface for connection of max. four external metering devices.

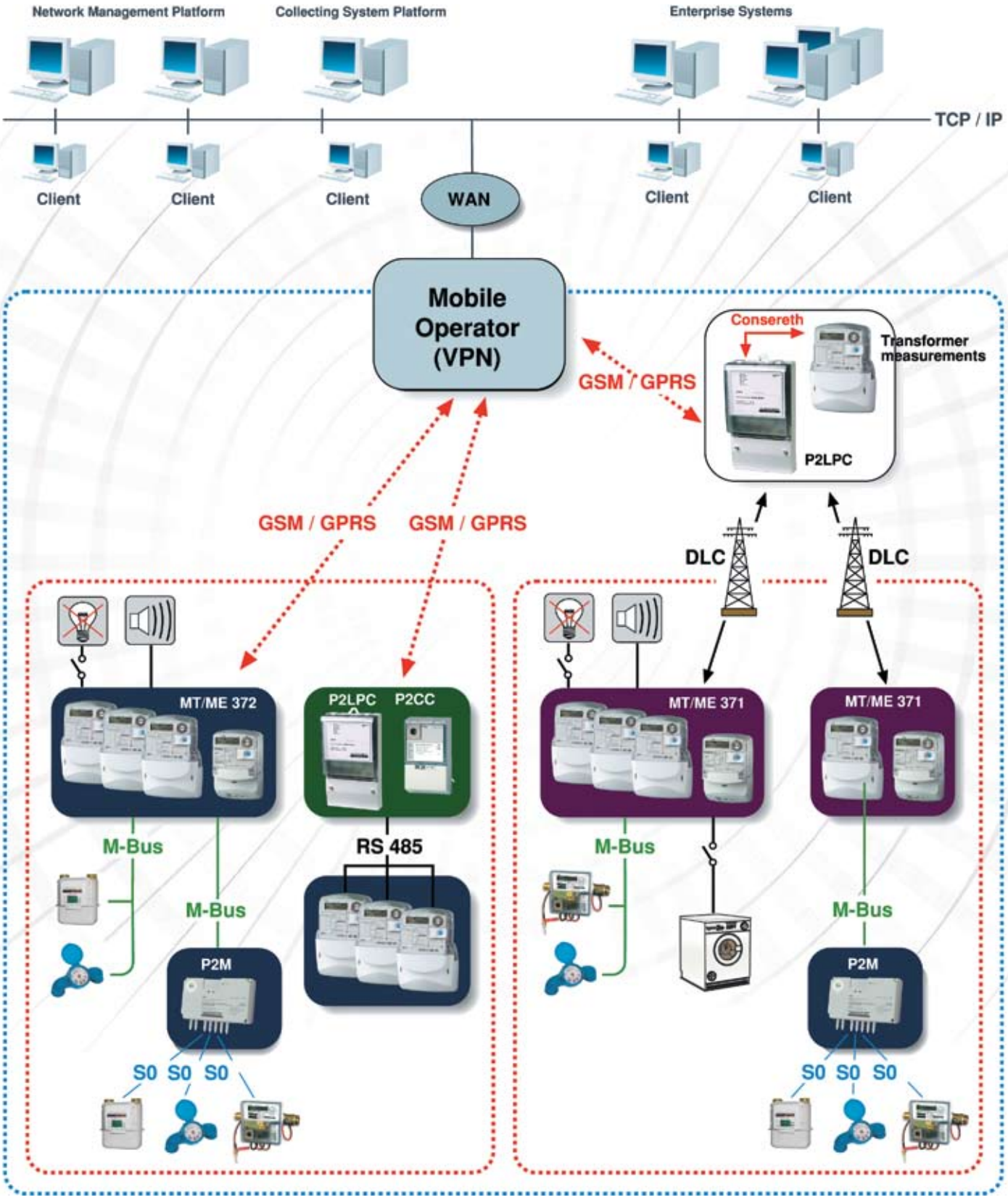
MT372

The three-phase multifunction meter for active and optionally also reactive energy with a built-in GSM/GPRS modem or an RS485 interface is intended for integration into AMM systems. It enables limitation of consumption and remote load switch-off. It can also operate in a prepayment mode when connected with the SEP2W system software. The meter is provided with a micro master M-Bus interface for connection of max. four external metering devices.

Active		Reactive	Energy	Active		Reactive
1 or 2	A or B	3 or 2	Accuracy class	1 or 2	A or B	3 or 2
IEC 62053-21, IEC 62053-22	EN 50470-3	IEC 62053-23	Standard	IEC 62053-21, IEC 62053-21	EN 50470-3	IEC 62053-23
5 – 85 A, 10 – 85 A 5 – 120 A, 10 – 120 A	0.25 – 5(85) A 0.5 – 10(100) A	5 – 85 A, 10 – 85 A 5 – 120 A, 10 – 120 A	Current range	5 – 85 A, 10 – 85 A 5 – 120 A, 10 – 120 A	0.25 – 5(85) A 0.5 – 10(100) A	5 – 85 A, 10 – 85 A 5 – 120 A, 10 – 120 A
Whole current connection 3-phase 4- or 3-wire connection			Connection	Whole current connection 3-phase 4- or 3-wire connection		
3 x 230/400 V			Reference voltage	3 x 230/400 V		
-25°C to +60°C			Temp. range of operation	-25°C to +60°C		
• A+, A-, R+, R- • Voltage, current, frequency • Cumulative energy and energy in the last billing period • Instantaneous demand, average demand in the last measuring period, max. demand in the last billing period			Measuring values	• A+, A-, R+, R- • Voltage, current, frequency • Cumulative energy and energy in the last billing period • Instantaneous demand, average demand in the last measuring period, max. demand in the last billing period		
• Relay (6 A) • Opto-mos output (100 mA) • M-Bus interface • LCD complies with VDEW requirements • Rogowski coil measuring principle			Hardware characteristics	• Relay (6 A) • Opto-mos output (100 mA) • M-Bus interface • Alarm inputs (2x) • Impulse outputs (2x) • LCD complies with VDEW requirements • Rogowski coil measuring principle		
IEC 62056 – 21, IEC 62056 – 46 (DLMS)			Protocols	IEC 62056 – 21, IEC 62056 – 46 (DLMS)		
• TOU (up to 4 tariffs), DST • Log-book (99.97.0, 99.98.0) • Load-profile (99.1.0, 99.2.0) • Add-on switching device (manual or remote control) • Demand limitation function (code RED), prepayment function • Detection of meter cover and terminal cover opening • Measurement of energy quality analysis (voltage, current, number and duration of power failures for each phase) • Over/under voltage measurement • Number of parameter settings and date of last parameter setting • Four-level passwords • M-Bus micromaster interface for data acquisition from max. 4 external metering devices (water, gas, heat, temperature)			Functions	• TOU (up to 4 tariffs), DST • Log-book (99.97.0, 99.98.0) • Load-profile (99.1.0, 99.2.0) • Add-on switching device (manual or remote control) • Demand limitation function (code RED), prepayment function • Detection of meter cover and terminal cover opening • Measurement of energy quality analysis (voltage, current, number and duration of power failures for each phase) • Over/under voltage measurement • Number of parameter settings and date of last parameter setting • Four-level passwords • M-Bus micromaster interface for data acquisition from max. 4 external metering devices (water, gas, heat, temperature)		
• IR • DLC			Comm. interface	• IR • GSM/GPRS or RS485		

AMM system for residential metering

The AMM system enables collection, storing and processing of data on electric and other types of energy (heat, gas, water, etc.), and also management at the level of residential metering. The application of open international standards and protocols (IEC 61334-5-1, HDLC, DLMS/COSEM, TCP/IP, FTP, SNMP) enables replacement of devices used in the system manufactured by other producers. Different communication paths are supported in the system (DLC, GSM/GPRS, RS485, M-Bus and Ethernet). A built-in Plug & Play operation and self adaptive repeater system enable simple installation, 'clean-up' procedures and maintenance. User-friendly software supports network monitoring, limitation of user's consumption, or switching it off. Prepayment operation mode is also supported.



Concentrators and communicators

P2LPC data concentrator

It is used for automatic reading of the ME/MT371 meter via 3 x 230/400 V low-voltage network. Readout data are stored in a non-volatile memory. On request, they are transferred to the AMM centre via a built-in GSM/GPRS modem or Ethernet interface. Up to 1024 meters can be connected to one concentrator. A built-in algorithm enables automatic recognition and installation of new meters, and automatic configuration of DLC network.

Communication protocols	Between meters and P2LPC	DLMS/COSEM
	Between AMM centre and P2LPC	TCP/IP and FTP

P2CA communicator

It is a transparent modem that is used for data transmission between multifunction meters and the AMM centre.

Interface to meters	RS232, RS485 and CS (active or passive)
Interface to AMM centre	PSTN, ISDN, GSM modem or Ethernet interface
Protocol	IEC 62056-21, mode C without rate changeover
Power supply	Single-phase 100 V AC or 230 V AC
Assembly	Surface mounting or on a meter terminal block

P2CC communicator

It is used for data transmission between ME/MT372 meters with a built-in RS485 interface and the AMM centre.

Interface to meters	RS485
Interface to AMM centre	GSM/GPRS modem
Protocol	DLMS
Power supply	Single-phase or three-phase, 100 – 230 V AC
Assembly	Surface mounting

P2CBT communicator

It is used for data transmission between multifunction meters and the AMM centre.

Interface to meters	RS232, RS485 and CS
Interface to AMM centre	PSTN, ISDN or GSM modem
Protocol	IEC 62056-21, modes A, B, C or D, DIN 19244 Slave
Power supply	Single-phase 100 – 230 V AC
Assembly	Surface mounting or on a meter terminal block

P2S communicator

It is intended for data reading, local processing, storing and data transmission between the meters and the AMM centre.

Inputs / Interface to meters	4 programmable inputs (impulse inputs / CS), RS485
Interface to AMM centre	PSTN, ISDN, GSM modem or RS485
Protocol	DIN 19244 Slave, IEC 62056-21 (on CS)
Power supply	Single or three-phase, 100 – 230 V AC
Assembly	Surface mounting or on a meter terminal block

P2W communicator

It is used for collecting and recording impulses from water meters. Remote data transmission is provided in a form of SMS messages. A sturdy housing assures IP 68 protection degree.

Inputs	2 impulse inputs
Interface to AMM centre	GSM modem
Communication protocol	SMP (Iskraemeco SMS Meter Protocol)
Optical interface	IEC 62056-21
Power supply	Li-battery

P2G communicator

It is used for collecting and recording impulses from electrical, gas or water meters. Remote data transmission is provided in a form of SMS messages. The device is provided with the ATEX certificate (intrinsic safety design).

Inputs	4 impulse inputs or 2 impulse inputs + 2 tamper inputs
Outputs	Max. 4 isolated impulse outputs
Interface to AMM centre	GSM modem
Communication protocol	SMP (Iskraemeco SMS Meter Protocol)
Optical interface	IEC 62056-21
Power supply	Li-battery

P2M converter

It is an AMM meter extension unit used for collecting and storing impulses from electrical, gas or water meters. The converter is connected to the meter via an M-Bus.

Impulse inputs	4 potential-free or S0 inputs
Alarm inputs	2
Type	M-Bus slave unit
Power supply	Via M-Bus
Auxiliary power supply	Li-battery

Meters for residential and small commercial users

ME160

It is a single-phase single rate electronic active energy meter with a seven-digit mechanical register (6 + 1 decimal).

Standard	IEC 62053-21	EN 50470-3
Current range	5 – 85 A (DIN)	0.25 – 5(85) A
	10 – 100 A (BS)	0.5 – 10(100) A
Accuracy class	2 or 1	A or B
Temperature range	-40°C to +60°C	
Options	• Terminal block complies with DIN 43857 or BS 7856 standard • Impulse output • Coded decimal reel	

ME162i

It is a single-phase multirate electronic meter of active energy and demand. It measures current and voltage. The internal clock enables changeover of max. four tariffs. A seven-segment LCD and an optical interface are provided.

Standard	IEC 62053-21
Current range	5 – 30 A
Accuracy class	2 or 1
Temperature range	-25°C to +60°C
Standards	• Optical interface IEC 62056-21 • Internal clock IEC 62054-21 • Terminal block complies with IS 13779 standard
Options	• Data display in no-power state available • Two measuring systems for energy measurement in phase and neutral conductors • Detector of external magnetic field

ME162

It is a single-phase multi-rate electronic active energy meter with an internal clock or two inputs for changeover of max. four tariffs. A seven-segment LCD and an optical interface are built-in.

Standard	IEC 62053-21	EN 50470-3
Current range	5 – 85 A (DIN)	0.25 – 5(85) A
	10 – 100 A (BS)	0.5 – 10(100) A
Accuracy class	2 or 1	A or B
Temperature range	-25°C to +60°C	
Standards	• Optical interface IEC 62056-21 • Internal clock IEC 62054-21	
Options	• Terminal block complies with DIN 43857 or BS 7856 standard • Data display in no-power state available • Two impulse outputs or one tariff output	

ME341

It is a single-phase multirate active energy electronic meter. Four tariff options are available in compliance with the Blue Tariff of Electricité de France (EDF). Instantaneous current and demand can be displayed. A ripple control receiver with 175 Hz carrier frequency and a communication interface for connection to the Euridis bus are built in. "Teleinformation" and 4 A relay outputs are provided.

Standard	IEC 62053-21	EN 50470-3
Current range	15 – 90 A	0.75 – 15(90) A
Accuracy class	2 or 1	A or B
Temperature range	-25°C to +60°C	
Standards	• General requirements EDF HR43/06/015/A • Communication interface Euridis IEC 62056-31	

ME373 (ME22P)

It is a single-phase multirate electronic prepayment active energy meter with an internal clock, four tariffs and one block tariff. A keyboard and an illuminated LCD are provided. A switching device (100 A) is built in. The meter is provided with an optical interface and a built-in GSM modem.

Standard	IEC 62053-21	EN 50470-3
Current range	10 – 100 A	0.5 – 10(100) A
Accuracy class	2 or 1	A or B
Temperature range	-25°C to +60°C	
Standards	• Optical interface IEC 62056-21 • Terminal block in compliance with DIN 43857 or BS 7856	

ME345

It is a single-phase multirate electronic active energy meter with four tariffs. A built-in ripple control receiver (216.66 Hz), a communication interface for connection to the Euridis bus and a 10 A relay output are provided.

Standard	IEC 62053-21	EN 50470-3
Current range	10 – 80 A	0.5 – 10(80) A
Accuracy class	2 or 1	A or B
Temperature range	-25°C to +60°C	
Standards	• Communication interface Euridis IEC 62056-31 • Terminal block in compliance with DIN 43857	

MT171

It is a three-phase multirate electronic meter used for measurement of active or active and reactive energy. A terminal block is available for a whole current or transformer connection. Two inputs are used for changeover of max. four tariffs. The meter is provided with a seven-segment display and an optical interface.

Energy	Active		Reactive
Standard	IEC 62053-21	EN 50470-3	IEC 62053-23
Current range	5 – 85 A	0.25 – 5(85) A	5 – 85 A
	10 – 120 A	0.5 – 10(120) A	10 – 120 A
	5//1 A	0.02 – 1(6) A	5//1 A
Accuracy class	2 or 1	A or B	3 or 2
Temp. range	-25°C to +60°C		
Standards	Optical interface IEC 62056-21		
Options	• Active energy measuring in one energy flow direction (import), two energy flow directions or always positive (absolute) • A standard or VDEW compliant display • Data display in no-power state available • Two impulse outputs • Connection to three-phase or single phase network.		

MT172

It is a three-phase multirate electronic meter used for measurement of active or active and reactive energy. A terminal block is available for a whole current or transformer connection. An internal clock is used for changeover of max. four tariffs. The meter is provided with a seven-segment VDEW display and an optical interface.

Energy	Active		Reactive
Standard	IEC 62053-21	EN 50470-3	IEC 62053-23
Current range	5 – 85 A	0.25 – 5(85) A	5 – 85 A
	10 – 120 A	0.5 – 10(120) A	10 – 120 A
	5//1 A	0.02 – 1(6) A	5//1 A
Accuracy class	2 or 1	A or B	3 or 2
Temp. range	-25°C to +60°C		
Standards	• Optical interface IEC 62056-21 • Internal clock IEC 62054-21		
Options	• Active energy measuring in one energy flow direction (import), two energy flow directions or always positive (absolute) • Data display in no-power state available • Two impulse outputs or tariff output • Connection to three-phase or single phase network.		

MT671

It is a three-phase single-rate electronic meter used for measurement of active energy. A simple plug-in connection complies with DIN VDE 0603-5. The meter can be connected to a single-phase or three-phase network. It is provided with a seven-segment LCD and a unidirectional optical interface.

Standard	IEC 62053-21	EN 50470-3
Current range	5 – 60 A	0.25 – 5(60) A
Accuracy class	2 or 1	A or B
Temperature range	-25°C to +60°C	
Standards	• German specification VDN (Verband der Netzbetreiber) version 1.01 • Optical interface IEC 62056-21	

Electromechanical meters for residential and small commercial users

E7, E8

The single-phase, two-wire electromechanical meters are used for measurement of active energy in one or two tariffs.

Standard	IEC 62053-11, IEC 60521	EN 50470-2
Reference voltage	120 V, 220 V, 230 V, 240 V, ...	230 V, 240 V
Current range	5 – 20 A, 5 – 30 A, 5 – 40 A, 10 – 40 A, 10 – 60 A, . . .	0.5 – 10(60) A 0.25 – 5(30) A, 0.25 – 5(40) A
Accuracy class	2	A
Temperature range	0°C to +40°C, -20°C to +50°C	-25°C to +70°C
Option	Pulse transmitter	

E89

The single-phase, two-wire electromechanical meter is used for measurement of active energy in one or two tariffs.

Standard	IEC 62053-11, IEC 60521, BS 5685	EN 50470-2
Reference voltage	120 V, 220 V, 230 V, 240 V, ...	230 V, 240 V
Current range	10 – 40 A, 10 – 60 A, 20 – 80 A, 20 – 100 A, 15 – 100 A, . . .	0.5 – 10(60) A, 0.5 – 10(80) A 1 – 20(100) A
Accuracy class	2	A
Temperature range	0°C to +40°C, - 10°C to +55°C	-25°C to +70°C
Option	Pulse transmitter	

IE10

The single-phase, two-wire electromechanical meter is used for measurement of active energy in one or two tariffs.

Standard	IEC 62053-11, IEC 60521, IS 13010, BS 5685
Reference voltage	120 V, 220 V, 230 V, 240 V, ...
Current range	2.5 – 10 A, 5 – 20 A, 5 – 30 A, 10 – 40 A, 10 – 60 A, 20 – 80 A, 20 – 100 A, . . .
Accuracy class	2
Temperature range	0°C to +40°C, -10°C to +55°C
Option	Pulse transmitter

D3, T3

Three-phase, three-wire or four-wire electromechanical meters are used for measurement of active or reactive energy in one or two tariffs.

Energy	Active		Reactive
Standard	IEC 62053-11, IEC 60521	EN 50470-2	IEC 60145
Reference voltage	3 x 57/100 V, 3 x 64/110 V, 3 x 120/208 V, 3 x 230/400 V, 3 x 240/415 V, 3 x 110 V, 3 x 400 V, ...	3 x 57/100 V, 3 x 230/400 V, 3 x 240/415 V	3 x 57/100 V, 3 x 64/110 V 3 x 120/208 V, 3 x 230/400 V, 3 x 240/415 V
Current range	5//1 A, 5(5 – 6) A, 10 – 60 A, 20 – 100 A, 20 – 120 A, . . .	0.5 – 10(60) A 0.5 – 10(80) A 1 – 20(100) A	5(5 – 6) A, 10 – 60 A, 20 – 100 A, 20 – 120 A, . . .
Accuracy class	2 or 1	A	3 or 2
Temperature range	0°C to +40°C, - 10°C to +55°C	-25°C to +70°C	0°C to +40°C, - 10°C to +55°C
Option	Pulse transmitter		

T3, T31,T34, T37

The three-phase, four-wire electromechanical meters are used for measurement of active energy in one or two tariffs.

Standard	IEC 62053-11, IEC 60521	EN 50470-2 (only T3)
Reference voltage	3 x 120/208 V, 3 x 230/400 V, 3 x 240/415 V, ...	3 x 230/400 V, 3 x 240/415 V
Current range	5 – 20 A, 5 – 30 A, 5 – 40 A, 10 – 40 A, 10 – 60 A, 20 – 80 A, 20 – 100 A, 20 – 120 A, 40 – 160 A	0.5 – 10(60) A, 0.25 – 5(30) A, 0.25 – 5(40) A, 0.5 – 10(80) A, 1 – 20(100) A
Accuracy class	2	A
Temperature range	0°C to +40°C, -10°C to +55°C	-25°C to +70°C
Option	Pulse transmitter	

T361, T362

Three-phase, four-wire electromechanical meters are used for measurement of active energy in one or two tariffs.
The T362 version is provided with enlarged terminal holes for connection conductors up to 90 mm^2.

Standard	IEC 62053-11, IEC 60521
Reference voltage	3 x 120/208 V, 3 x 230/400 V, 3 x 240/415 V, ...
Current range	20 – 100 A, 40 – 100 A, 20 – 120 A, 40 – 160 A, 80 – 160 A, . . .
Accuracy class	2
Temperature range	0°C to +40°C, -10°C to +55°C
Option	Pulse transmitter

Accessories

Sonda 5

The Sonda 5 optical probe is used for communication with the meters, tariff devices, communicators and data recorders.

Terminal	RS232 (DB9 connector)
Dimensions	34 x 47 x 13 mm with a 7 mm high cylindrical fitting of 31 mm diameter
Standard	IEC 62056-21
Cable length	2 m or 5 m

Sonda 5 USB

The Sonda 5 USB optical probe is used for communication with the meters, tariff devices, communicators and data recorders.

Dimensions	34 x 47 x 13 mm with a 7 mm high cylindrical fitting of 31 mm diameter
Standard	IEC 62056-21, USB 1.1, USB 2.0
Cable length	2 m or 5 m
Consumption	Max. 25 mA

Sonda 6

The Sonda 6 optical probe is used for communication with the MT830, MT831 and MT860 meters. Communication is also possible when the meter is in a no-power state.

Dimensions	32 mm x 32 mm x 31 mm (H x W x D)
Standard	IEC 62056-21, USB 1.1, USB 2.0
Cable length	2 m
Consumption	Max. 25 mA
Used with	**MT830, MT831, MT860**
Specialities	"No power reading/programming" option – meter power supply

CON 1H – RS232/RS485 converter

It enables connection of devices with the RS232 interface to the RS485 interface and vice-versa.

Transmission mode	Half duplex
Transmission rate	300 – 57600 bps
Maximal distance	1200 m
Power supply	230 V, 50 Hz
Temperature range	-25°C to +60°C

ZO3..., ZO4... switching device

This three-phase independent external plug-in unit is connected to meter current terminals and serves for switching ON and OFF the user's part of electric network. The meter controls a switching device via an M-Bus interface (EN 13757-2 and EN 13757–3). The switching device can be controlled locally (from the meter) or from a distribution centre. Together with the meter it forms a unit which complies with the EN 50470-1 and EN 50470-3 standards.

Input/output module

The I/O module is provided with up to four inputs (for tariff changeover, RTC synchronisation, etc.) and with up to eight outputs of which four are impulse outputs an four are used for alarm, tariff indication, etc.

Type	**MI0-V12L51** 1 input 4 + 1 outputs PHOTO-MOS	**MI0-V42L81** 4 inputs 4 + 4 outputs PHOTO-MOS	**MI0-W22L41** 2 inputs S0 4 outputs PHOTO-MOS	**MI0 – V12L41B11** 1 input 4 outputs PHOTO-MOS + 1 bistabile relay output 5 A
Features	Programmable or factory set I/O • Inputs: functional • Outputs: functional or impulse			
Outputs	PHOTO-MOS voltage-free relay, 25 VA (100 mA, 275 V AC) From 20 ms to 240 ms (adjustable in steps by 20 ms)			
Functional inputs	100 – 240 V AC (ON: U ≥ 80 V OFF: U < 20 V)			
S0 impulse input	Class B			
Relay output	5 A/250 V AC, 5 A/30 V DC, 10 A/125 V AC			
Functions	• Plug & Play • Hot-swap • Module failure – 100% safety of other functions			
Used with	**MT831, MT860**			

Communication module

The communication module is provided with two independent communication channels which enable simultaneous and independent communication with the meter. Communication parameters are equal for both channels and can be defined in the module (a factory pre-programmed module) or they can be specified in the meter. The module consists of two passive communication interfaces or a modem and a passive communication interface. Two communication interfaces (RS485 and CS) are built in. They enable "cascade" connection of several meters.

Type	**MK-2** RS232 (DB25 connector)	**MK-2-3** RS232 - RS485
	MK-1-3 CS - RS485	**MK-3-3** RS485 - RS485
	MK-137-3 PSTN - CS - RS485 - RS485	**MK-138-3** GSM - CS - RS485 - RS485
	MK-13a-3 GPRS - CS - RS485 - RS485	**MK-139-3** ISDN - CS - RS485 - RS485
	MK-3e-3 Ethernet - RS485 - RS485	
Functions	Plug & Play • Hot-swap • Module failure – 100% safety of other functions	
Used with	**MT831, MT860**	

P2CD – PSTN modem

It is a stand-alone PSTN modem with an RS232 port used for communication with Iskraemeco products.

Standards	V.90, V.34bis, V.34, V.32bis, V.32, V.22bis, V.22, V.23,V.21 and V.23 reversible (Minitel), Bell 212, Bell 103
Functions	• V.42 or MNP class 3 and 4 error control and V.42bis compression • Caller ID • Non-volatile EEPROM configuration storage • Worldwide Telecom approvals • Protected against surge and over-voltage on the telephone line • Autobauding • Interconnection
Dimensions	195 mm x 95 mm x 33 mm (L x W x H)
Power supply	External power supply unit, 9 V DC, 500 mA
Terminal	RS232 (DB9 connector)
Temp. range	-25°C to +60°C

P2CD – GSM modem

It is a stand-alone GSM modem with an RS232 port used for communication with Iskraemeco products.

Frequency band	Dual band EGSM 900 and GSM 1800, Compliant with GSM Phase 2/2+
GSM class	Small MS
Transmission power	Class 4 (2 W) at EGSM 900 MHz, Class 1 (1 W) at GSM 1800 MHz
SMS	MT, MO, CB, Text and PDU mode, SMS storage: SIM card and 25 locations in the modem
Transmission rate: – data – fax	2400, 4800, 9600, 14400 bps, non-transparent, USSD Group 3: Class 1, Class 2
Interface for SIM	3 V
Antenna connector	50 Ohm, FME Male
Dimensions	195 mm x 95 mm x 33 mm (L x W x H)
Power supply	External power supply unit, 9 V DC, 500 mA
Terminal	RS232 (DB9 connector)
Temp. range	-25°C to +60°C

GSM-Spy

It is a portable device used for measurement of basic parameters in the GSM E900/1800 network.

Its main characteristics are:

- Measurement and registration of GSM signal strength
- Determination of actual as well as adjacent base stations
- Device registration status in the GSM network
- Determination of the GSM network type (900 MHz or 1800 MHz frequency range)
- Determination of GSM networks available
- Measurement of reception signal strength (dBm)
- Measurement of signal strength (in CSQ units)
- Determination of a frequency channel to which GSM-Spy is registered
- Monitoring of the current battery state in the device

AS-900/1800 antenna coupler

It enables connection of an external GSM antenna to ME/MT372 meters and P2G and P2CC communicators.

Frequency band	900/1800 MHz
Antenna connector	FME Male

DLC-Spy

It is a portable device which enables analysis of DLC communication between meters and a concentrator.

Its main characteristics are:

- Measurement of signal/noise ratio on each carrier
- Measurement of signal/noise ratio average on both carriers
- Measurement of average signal strength at reception

SEP2W

SEP2 DbManager

The SEP2 DbManager software module is an integral part of the system for remote control of Iskramatic SEP2W. It is used for managing SEP2 data bases, since required data and system parameters, together with tariff rules, can be entered into the base and modified, if necessary. This software module also enables a simple survey of measuring results and events occured in the meters and devices, as well as data export/import and deleting from the base.

SEP2 Collect

The main purpose of the SEP2 Collect software module is remote automatic readout of devices, and record of measuring results and events in a SEP2 data base. Readout can be performed at any time at the operator's request or automatically according to previously defined time schedules. The programme enables automatic completion of a data base with the missing measuring results.

SEP2 Report

The SEP2 Report software module is used for processing of measuring results in the SEP2 data base. Reports can be displayed, printed or exported in files (.txt, .doc, .xls, .html, etc.). The program enables automatic preparation of reports in compliance with previously defined schedules. A special ESTIMATION function enables completion of a data base with the missing measuring results which could not have been obtained due to different reasons or they are not correct.

SEP2 Validation

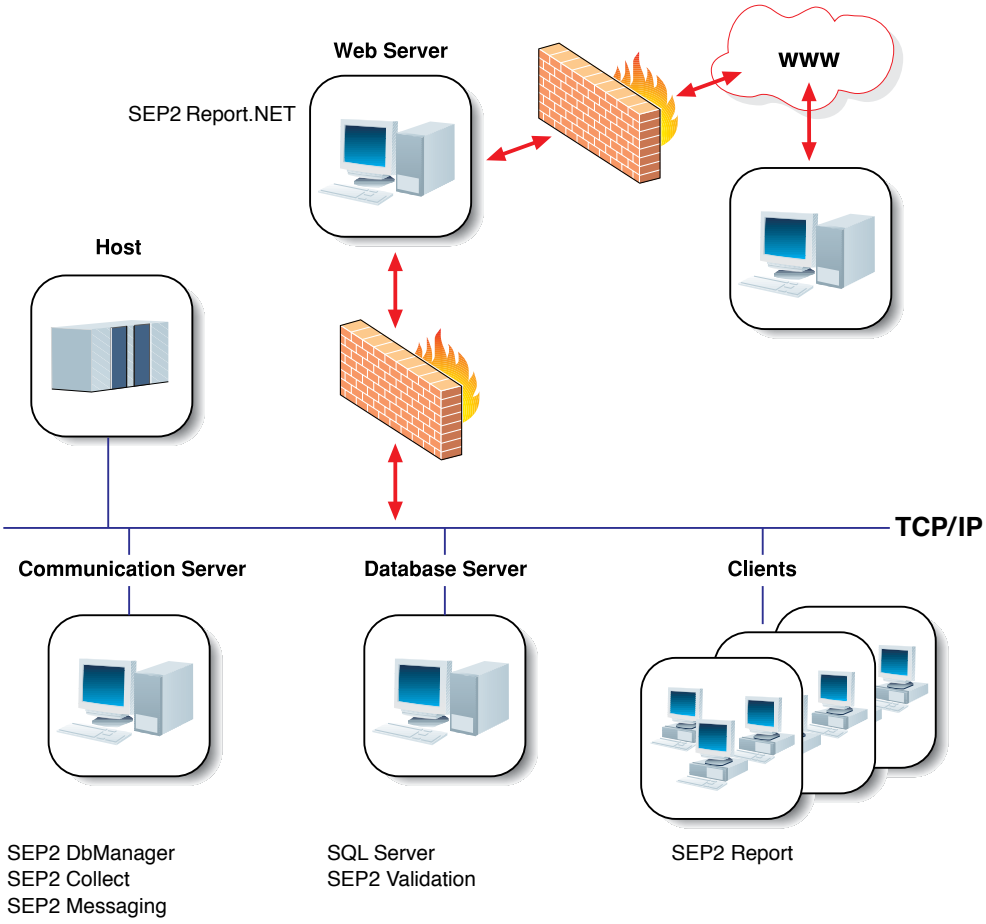
The purpose of the SEP2 Validation software module is data validation within the SEP2W software package. It is performed automatically or on request. The result of validation is the response file with information if the validation procedure has succeeded or failed.

SEP2 Messaging

The purpose of the SEP2 Messaging software module is receiving and sending messages from and to another systems. The SEP2 Messaging contains a number of software adapters for different communication channels and protocols. Messaging requests are made automatically according to a predefined schedule.

SEP2 Report.NET

The SEP2 Report.NET software module enables data monitoring on consumed energy to those users who can read them remotely but do not have a direct access to a data base. A user can monitor, save and print his reports from any PC via internet. The SEP2 Report.NET software module is installed on a WEB server, and data base that is created via a SEP2W system is used as a data source.

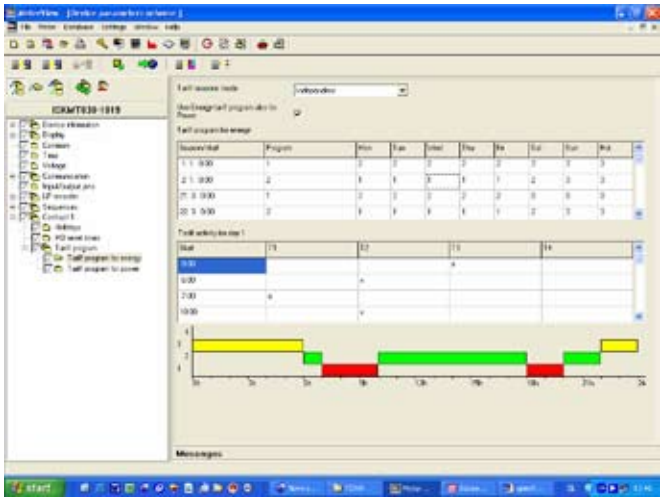


MeterRead

This program is used for readout and parameter setting of the meters with a built-in optical interface in compliance with the IEC 62056-21 standard. It is designed for installation in a palmtop which functions on the basis of a Microsoft Pocket PC (a former Windows CE) operating system. The meter data, read via an optical probe, are recorded into files. In the centre, they can be easily transferred into a PC. Meter parameters can be set by means of previously prepared parameter files, which makes work on the field more user-friendly.

MeterView

This program is used for readout and parameter setting of electronic meters, time switches and P2G and P2W data recorders. Communication can be performed locally via an IR optical interface, an RS232 serial interface or remotely via a modem or a consereth (converter serial/ethernet) interface. The following communication protocols are supported in the program: IEC 62056-21, IEC 870-5-102, IEC 62056-62 (DLMS) and EURIDIS (62056-31). The program enables a graphical display and a data survey as well as data storing and exporting in different formats. Data can be stored in an internal data base or they can be imported into a SEP2W billing software package. Parameter files can also be prepared for the MeterRead program. The program is designed for Microsoft Windows 2000/XP/2003 or newer.



Standard meters

TEMP 100/108

It is a three-phase or a single phase four-quadrant standard meter with 0.05% or 0.02% accuracy used for calibration of meters with accuracy class from 3 to 0.2S. Maximum current applied is 100 A or 200 A. The electrical quantities W, var, VA, Wh, varh, VAh and cosφ, sinφ as well as a measuring error of a meter under test can be measured. It can be connected to a PC via an RS232 interface. Desktop or rack type (19") versions are available.

Type	Accuracy	Current range	Single-phase / Three-phase	No. of test pieces
TEMP-100	0.05 %	10 A / 100 A	Three-phase	1
TEMP-100E	0.05 %	10 A / 200 A	Three-phase	1
TEMP-100M	0.05 %	10 A / 100 A	Single-phase	1
TEMP-108	0.05 %	10 A / 100 A	Three-phase	8

TEMP 108 can measure error on eight meters simultaneously. Each of eight inputs is completely independent of others regarding a constant, duration of measurement and measurement mode (three-phase or by individual phase). Statistics is calculated for each input separately.

TEMP 50

It is a portable standard meter intended for verifying accuracy of the meters on the field.

Functions

- Accuracy verification
- Measurement of voltage, current and frequency
- Power factor and phase angles, single or three-phase
- Graphical and numerical display of measured data
- Data storing
- RS232 for data transmission to a PC
- Internal or external power supply with automatic changeover

Accessories

- 3 pcs of current probes
- FG-LK photo-scanning head for counting rotor revolutions or LED impulses
- Cables
- Support software
- Case

Accuracy	Directly	With a current probe
Current	0.2 %	0.5 %
Voltage	0.2 %	
Phase angle	0.5 %	
Active Energy/Power	0.1 %	0.2 %
Reactive Energy/Power	0.1 %	0.2 %
Apparent Energy/Power	0.2 %	0.5 %
Measurement		
Current range (directly)	10 mA – 10 A (12 A)	
Current range (with current clamps)	100 mA – 100 A (120 A)	
Voltage	30 – 300 V ± 10%	
Frequency	45 – 65 Hz	
Temperature range	0°C to +40°C	
Housing	IP40, mass approx. 5 kg	

Property / Function ▼	Bulk energy meters		Industrial meters				Meters for residential AMM			
Meter type	TE855	MT860	MT831	MT830	MT375	MT173	MT372	MT371	ME372	ME371
Metering principle	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Network	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	3Ph-4W / -3W	1Ph-2W	1Ph-2W
Connection	CT, CT/VT	CT, CT/VT	Direct , CT, CT/VT	Direct , CT, CT/VT	CT	Direct / CT	Direct	Direct	Direct	Direct
Active energy	cl. 0.2	cl. 0.2	cl. 2, 1, or 0.5	cl. 2, 1, or 0.5	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1
Reactive energy	cal. 0.5% or 1%	cal. 0.5% or 1%	cl. 3 or 2, or cal. 1%	cl. 3 or 2, or cal. 1%	cl. 3 or 2	cl. 3 or 2	cl. 3 or 2	cl. 3 or 2	cl. 3 or 2	cl. 3 or 2
Apparent energy	––	cal. 0.5% or 1%	cl. 3 or 2, or cal. 1%	cl. 3 or 2, or cal. 1%	cl. 3 or 2	––	––	––	––	––
Current ranges	1(2) A, 1(6) A 5(6) A, 5(10) A	1(2) A, 1(6) A 5(6) A, 5(10) A	5(120) A 1(6) A, 5(10) A, 5(20) A	5(120) A 1(6) A, 5(10) A, 5(20) A	5(6) A 1(6) A	10(120) A 5(85) A 1(6) A	5(120) A 10(120) A 5(85) A 10(85) A	5(120) A 10(120) A 5(85) A 10(85) A	5(100) A 10(100) A 5(85) A 10(85) A	5(100) A 10(100) A 5(85) A 10(85) A
Voltage multirange	––	●	❍	❍	––	––	––	––	––	––
Energy flow direction	A+, A-, R+, R-, R1, R2, R3, R4	A+, A-, R+, R-, R1, R2, R3, R4, S+, S-	A+, A-, R+, R-, R1, R2, R3, R4, S+, S-	A+, A-, R+, R-, R1, R2, R3, R4, S+, S-	A+, A-, R+, R-, S+, S-	A+, A-, R+, R-, R1, R2, R3, R4	A+, A-, R+, R-	A+, A-, R+, R-	A+, A-, R+, R-	A+, A-, R+, R-
Maximum demand	●	●	●	●	●	●	●	●	●	●
Voltage	––	●	●	●	●	●	●	●	●	●
Current	––	●	●	●	●	●	●	●	●	●
Energy quality	––	●	●	●	––	––	––	––	––	––
Load-profile	●	●	●	●	●	●	●	●	●	●
Cyclometric register	––	––	––	––	––	––	––	––	––	––
LCD	4x20 characters	4x20 characters	VDEW	VDEW	VDEW	VDEW	VDEW	VDEW	VDEW	VDEW
No-power data reading	––	❍	❍	❍	––	❍	––	––	––	––
Tariffs	up to 8	up to 8	up to 8	up to 8	up to 8	up to 4	up to 4	up to 4	up to 4	up to 4
Tariff inputs	❍ (up to 3)	❍ (up to 3)	❍ (up to 3)	❍ (up to 3)	––	❍ (1 or 2)	––	––	––	––
Real-time clock	●	●	●	●	●	●	●	●	●	●
Ripple control receiver	––	––	––	––	––	––	––	––	––	––
Impulse output	❍ (up to 8)	❍ (up to 8)	❍ (up to 8)	❍ (up to 8)	❍ (1 or 2)	❍ (1 or 2)	❍ (1 or 2)	❍ (1 or 2)	❍ (1 or 2)	❍ (1 or 2)
Tariff output	❍	❍	❍	❍	––	❍	––	––	––	––
Load control output	––	––	❍	❍	❍	❍	❍	❍	❍	❍
Alarm ouput	❍	❍	❍	❍	––	––	❍	❍	❍	❍
Impulse input	––	––	❍	❍	❍	––	––	❍	❍	❍
Demand limiter	––	––	❍	❍	❍	❍	❍	❍	❍	❍
Optical port IEC 62056-21	●	●	●	●	●	●	●	●	●	●
CS interface	❍	❍	❍	❍	––	❍	––	––	––	––
RS232 interface	❍	❍	❍	❍	––	––	––	––	––	––
RS485 interface	❍	❍	❍	❍	❍	❍	❍	––	❍	––
GSM/GPRS modem	––	❍	❍	––	❍	––	❍	––	❍	––
ISDN modem	––	❍	❍	––	––	––	––	––	––	––
PSTN modem	––	❍	❍	––	––	––	––	––	––	––
DLC modem	––	––	––	––	––	––	––	●	––	●
Ethernet	––	❍	❍	––	––	––	––	––	––	––
M-bus	––	––	––	––	❍	❍	❍	❍	❍	❍
Euridis-bus	––	––	––	––	––	––	––	––	––	––
Protocol IEC 62056-21	●	●	●	●	❍	●	❍	❍	❍	❍
Protocol DLMS/COSEM	––	❍	––	––	●	––	●	●	●	●
Protocol IEC 62056-31	––	––	––	––	––	––	––	––	––	––
Protocol IEC 870-5-102	❍	❍	❍	❍	––	––	––	––	––	––
Protocol SMP	––	––	––	––	❍	––	––	––	––	––
Protocol SDT (STOM)	❍	––	––	––	––	––	––	––	––	––
Meter opening detector	––	●	●	●	●	●	●	●	●	●
ON-OFF switching device	––	––	––	––	external	––	external	external	internal	internal
Modular design	––	●	●	––	––	––	––	––	––	––
Prepayment	––	––	––	––	––	––	option*	option*	option*	option*

● *standard feature*
❍ *option (see meter leaflet)*
–– *not available*

* Prepayment meter function can be enabled with the SEP2W software for remote meter reading/setting and load management when the meters are incorporated into AMM system.

Small commercial and residential meters

MT172	**MT171**	**MT671**	**ME373**	**ME345**	**ME341**	**ME162i**	**ME162**	**ME160**	**D3..-M T3..-M**	**D3 T3**	**T361 T362**	**T34 T37**	**T3 T31**	**E7 E8**	**E89**	**IE10**
Static	Static	Static	Static	Static	Static	Static	Static	Static	Ferraris	Ferraris	Ferraris	Ferraris	Ferraris	Ferraris	Ferraris	Ferraris
3Ph-4W	3Ph-4W	3Ph-4W	1Ph-2W	1Ph-2W	1Ph-2W	1Ph-2W	1Ph-2W	1Ph-2W	3Ph-3W / -4W	3Ph-3W / -4W	3Ph-4W	3Ph-4W	3Ph-4W	1Ph-2W	1Ph-2W	1Ph-2W
Direct, CT	Direct, CT	Direct (plug-in)	Direct	Direct	Direct	Direct	Direct	Direct	Direct, CT	Direct, CT	Direct, CT	Direct, CT	Direct, CT	Direct	Direct	Direct
cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2 or 1	cl. 2	cl. 2	cl. 2	cl. 2	cl. 2	cl. 2
cl. 3 or 2	cl. 3 or 2	—	—	—	—	—	—	—	—	cl. 3 or 2	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10(120) A 5(85) A 1(6) A	10(120) A 5(85) A 1(6) A	5(60) A	10(100) A 5(85) A	10(80) A	15(90) A	5(30) A	10(100) A 5(85) A	10(100) A 5(85) A	20(120) A, 40(160) A 10(60) A 5(6) A, 5(10) A	20(120) A 10(60) A 1(6) A	40(160) A 20(120) A 20(100) A	40(160) A 20(120) A 20(100) A	10(60) A 5(40) A 5(20) A	5(30) A 10(60) A	10(60) A 20(80) A 15(100) A	2.5(10) A 5(30) A 20(100) A
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VDEW	7-segment	7-segment	2x16 characters	7-segment	7-segment	7-segment	7-segment	—	7-segment	—	—	—	—	—	—	—
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Owing to periodical improvements of our products the supplied products may differ in some details from the data stated in the prospectus material.

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