ISKRAEMECO

Energy Measurement and Management

# MT860

## High precision multi-function meter 0.2S

**MT860** is a high precision multi-function electronic transformer rated electricity meter, for measurement and registration of active, reactive and apparent energy, as well as demands.

Meters are intended for large or medium size commercial and industrial customers.

Meter is approved according to IEC 62053-21, IEC 62053-22, IEC 62053-23, ISO 9001 and designed according to even higher internal Iskraemeco standards, based on 60 years of meter manufacturing experience and 50 millions installed meters around the globe.


| | |
|---|---|
| 0,2S | Class 0.2 |
| | Transformer operated |
| Q | Quality of energy |
| | Maximum demand |
| | Load profile |
| | Log-book |
| | Real-time clock |
| T(n) | Multi-rate registration |

- Active, reactive and apparent energy/demand measurement
- Modularity, communication modules and I/O modules
- Voltage, current, frequency measurement
- Voltage dips/sags, power interruptions
- Harmonic components analysis
- Power factor, phase angle
- Anti-tamper features
- Multi-range
- Supply from internal or external supply with priorities
- Optical-magnetic probe for "no-power" meter reading & setting

**Measuring features**
- high accuracy and long-term measurement stability,
- measurement by individual phases or poly-phase,
- active energy (import, export) IEC 62053-22, class 0.2S or 0.5S,
- reactive energy (4 quadrants and combined quadrants) IEC 62053-23, class 2 or 3 (calibrated up to 0.5%, 1%),
- apparent energy 0.5%,
- connection via CT or CT/VT in three-phase 3 or 4-wire networks,
- different measuring methods,
- CT/VT error and Fe-Cu loss compensation,
- neutral line current calculation,
- current average, maximal and cumulative demand measurement,
- maximum demand can be calculated for all energies measured like tariff rated or cumulative.

**Network quality**
Network parameters are monitored and displayed:
- instantaneous values of phase voltages, currents and frequency,
- rms values of phase voltages and currents,
- power factor and phase angle by phases,
- harmonic analysis up to 30 harmonic,
- short power outages,
- voltage dips/sags.

**Onboard terminals**
There are 12 or 6 (with a RJ-11 connector) terminals on the meter basic board. They are used for inputs, outputs, communication and power supply.
Beside local optical port they enable also RS232 or RS485 port and up to 3 inputs and 3 outputs.
Optional modules expand input/output and communication meter capabilities.

**Modularity**
Meter is modular based. Different types of communication and I/O modules can be chosen. The same module can be used also for other Iskraemeco meter types: MT83x, MT86x, MT37x.
Exchangeable modules are automatically recognised (plug & play). Module can be exchanged without disconnecting power supply (hot-swap) or removing calibration seal.
In case of module break-down 100% safety of other functions is guaranteed.

**Communication module**
The modules cover the wide range of communication possibilities. Besides communication towards the centre, the modules also offer possibility of cascade connection.

**Input/output module**
An input/output module has 11 terminals. Limit combinations are 6/8 and 14/0 inputs/outputs, including 6 terminals on the meter basic board. Input and output signals are programmable.

**Time of use**
Meters enable multiple rate registration separately for energy and demand. The considerable amount of tariff registers enable complex tariff systems: 16 tariffs, 10 tariff programs, 30 seasons, 200 holidays.

**Logbooks**
Meter has two logbooks: for voltage network analysis and for all other events.
For tamper protection, meter cover and terminal cover opening sensors are implemented. Timestamp of opening is registered in the logbook also in case of power failure.

**Load profiles**
Two independent load profiles (e.g. 15 min., 4 channels, 74 days) record demand, energy (cumulative or absolute values), network quality parameters, etc. Each load profile has up to 8 channels.
Each record is accompanied with a date and time of the end of a registration period to which it relates.

**Display**
Display is matrix dot 4x20 LCD with statuses.

**Mechanical features**
A compact plastic casing is made of high quality self-extinguishable materials and is resistant to water and dust.

**Accuracy class**
- Active energy ..... 0.2S or 0.5S (IEC 62053-22)
- Reactive energy ..... class 2, 3 (IEC 62053-23), calib. up to 0.5%
- Apparent energy ..... 0.5%

**Measuring voltage** (V) ..... Multirange, 57-240 V ± 20% (phase to neutral)
**Measuring current** (A) ..... 1(1.2), 1(2), 1(6), 5(6), 5(10)
**Outputs** ..... max. 8
- Type ..... Photo-MOS potential-free relay, up to 1 km
- Permitted load ..... 25 VA (100 mA, 250 V AC)
- Impulse length ..... from 10 to 2500 ms

**Inputs** ..... max. 3  57.7 – 230 V AC
**Communication**
- IR ..... max. 9600 Baud
- RS232 ..... max. 19200 Baud
- RS485 ..... max. 9600 Baud
- Protocols ..... IEC 62056-21, IEC 60870-102-5, DLMS/COSEM

**Optical reading LED**
- Impulse frequency ..... ≤ 40 Hz
- Impulse length ..... approx. 14 or 30 ms

**Real time clock**
- Accuracy, crystal ..... IEC 61038, 6 ppm = ≤ ±3 min./year
- Super-Cap ..... 1F for minimal 250 h of back-up
- Li-Battery ..... 2-year operation reserve. Life span 10 years.

**EMC testing**
- Electrostatic discharge ..... 15 kV (IEC 60801-2)
- HF Magnetic field ..... 10 V/m (IEC 60801-3)
- Burst test ..... 4 kV (IEC 60801-4)
- Dielectric strength ..... 4 kVrms, 50 Hz, 1 min
- Impulse voltage ..... 6 kV, 1.2/50 µs

**Temperature range** ..... IEC62053-22
- Operation ..... -20°C ... +60°C
- Storage ..... -30°C ... +70°C

**Housing**
- Half 19'' for rack mounting ..... DIN 43862
- Surface-mounted version ..... DIN 43857, 327 x 177 x 90 mm, 1.4 kg, UL94 (94V0), IP53

**Communication modules** ..... RS232, RS485, RS232+RS485, PSTN,PSTN+RS485, PSTN+CS+RS485, GSM, GSM+RS485, GSM+CS+RS485, ISDN, ISDN+RS485, ISDN+CS+RS485, Ethernet, Ethernet +RS485, Ethernet +CS+RS485

Sliding hanger enables installation for all fixing dimensions, from 165 to 230 mm.
Meter is made of the materials that can be recycled and are environment friendly.

**Power supply**
Meter is supplied from internal or external power supply (50-230 V AC/DC).
Power supply priority is settable.

**Opto-magnetic probe**
Opto-magnetic probe enables "no-power" meter reading and setting. With this probe by means of magnetic connection, communication and LCD display work also if meter is not wired at all.

**Software**
MeterView for Windows and MeterRead for PDAs software have been designed specifically for meter specialists. It offers intuitive graphical interface for meter programming and reading.