ENERGY METER ELM-102

- ✓ Certified according to EN 50463-2:2012
- ✓ Four Quadrant Energy Measurement
- ✓ Suitable for DC and AC Traction Systems
- ✓ Applicable for Multi-System Locomotives
- ✓ Accuracy Class 0,5R (EN 50463) Class C (EN 50470)
- ✓ Recording road profiles at 1 minute intervals
- ✓ Supply 16,8V to 137,5V DC
- ✓ Operation Temperature Range -40°C to +70°C
- ✓ Range of complementary devices for Data Transmission is available.

The ELM-102 energy meter is designed especially for energy metering onboard electric traction vehicles. It can measure both the DC and AC signals of any existing traction supply system (1.5kV DC, 3kV DC, 15kV/16.7 Hz, 25kV/50Hz). Moreover, it is also suitable for multi-system locomotives using more than one electrifcation system.

ELM-102 measures active and reactive energy both consumed and generated, active and reactive power and instantaneous values of voltages and currents. It records load profles at 1 minute intervals, and monitors the minimum and the maximum of the measured values.

The ELM-102 is a certifed energy meter in accordance with the latest EN 50463-2:2012 standard. It meets the requirements for accuracy class 0.5R. The energy meter can be supplied with a calibration certifcate enabling its use for billing purposes.

MEASUREMENT and CALCULATIONS

- Accuracy Class 0,5 (EN 50463), Class C (EN 50470)
- Harmonics up to 25th
- Active Energy consumed and regenerated (MWh)
- Active Energy consumed and regenerated in DC network only (MWh)
- Active Energy consumed and regenerated both capacitive and inductive (MVArh)
- Active Power (MW), Reactive power (MVAr)
- Instantaneous / Effective value of Voltages and Currents

LOAD PROFILES

- Recording in 1 minute intervals
- Recording Capacity 72 days at the sampling rate of 1 minute
- Format: Date, Time, active and reactive energy consumed and regenerated, maximum values of Power, Voltage and Current and the type of electrification System.

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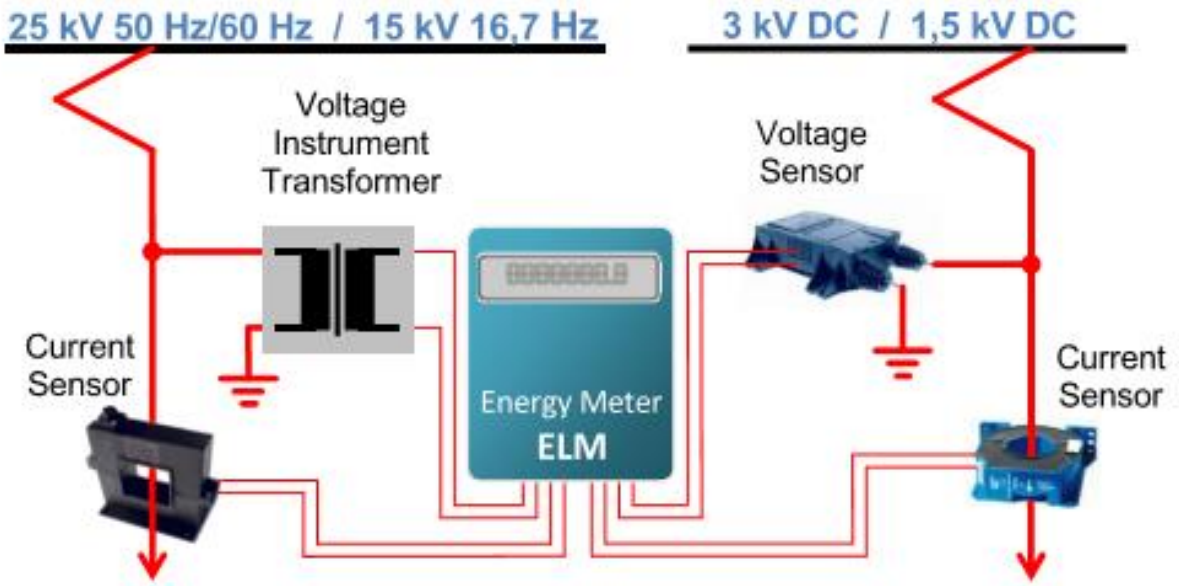

PARAMETER		ELM-102				
		A	B	C	D	F
AC	Nominal primary voltage (U_{1n})	50Hz 100V rms typ. 250V max.	50Hz 100V rms typ. 250V max.	50Hz 90-255V rms typ. 250V max.	---	---
	Nominal primary current (I_{1n})	50Hz, 1A typ. 1,2A max.	50Hz, 1A typ. 1,2A max.	50Hz, 1A typ. 1,2A max.	---	---
DC	Nominal primary current oft the voltage input (U_{1n})	50mA typ. 75mA max.	50mA typ. 75mA max.	50mA typ. 75mA max.	50mA typ. 75mA max.	50mA typ. 75mA max.
	Nominal primary current (I_{1n})	1,6A typ. 2A max.	1,6A typ. 2A max.	175mA typ. 360mA max.	100mA typ. 360mA max.	800mA typ. 2A max.
Recording period, Sampling time		1 minute	5 minute	15 minute	15 minute	1 minute
Recording capacity		72 days	360 days	1080 days	1080 days	72 days
MTBF		173 495 h	173 495 h	174 065 h	174 065 h	174 065 h

SPECIFICATIONS

Communication:	RS232 / RS485, 300 to 115200 Bd. Protocol EN 62056-21, OBIS
RTC:	± 20ppm, 10 years battery life
Supply:	16,8V DC - 137,5V DC, 5W
Temperature:	Working: - 40 ºC to +70 ºC Storing: - 40 ºC to +85 ºC
RH:	max. 75% non-condensing annual average, max. 95% non-condensing for a period of 30 days
Max. Altitude:	2000 meters
Protection:	IP20
Dimensions:	105 x 223 x 46mm (w x h x d), weight 0.65 kg

STANDARDS

EN 50121-3-2	Electromagnetic compatibility	EN 50463:2012
EN 50124-1	Isolation	EN 50470-1
EN 50155	Electronic equipment on rail vehicles	EN 62056-21
EN 61373	Vibration and shock tests	EN 62056-61

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