



METERING

ECOMeter Light

Energy meter for railways application

ECOMeter Light is a device able to measure line current and voltage and calculate the consumed and regenerated active or reactive energy of a traction unit.

The ECOMeter Light can be used on railway vehicles which operate in DC 3 kV, DC 1.5 kV and DC 750V voltage systems according to EN50163. The line voltage is directly measured by the device, while the line current is measured by means of an external shunt, the energy value is calculated in compliance with EN 50463-2.

Furthermore, ECOMeter Light is also suitable to measure energy consumed by auxiliary power systems feed with AC voltages up to 1000Vrms.

The device features very high accuracy voltage measurement and high galvanic insulation degree between Low and High Voltage side. The device is characterized by very low energy absorption.



MICROELETTRICA

Characteristics

Voltage and Current Measurement	3 kVdc	1.5 kVdc	0.750 kVdc	1 kVac	Reference
Nominal Voltage [kV]	3	1,5	0.750	1	EN 50163
Min. Voltage – Max. Voltage [kV]	2 – 3.9	1 – 1.95	0.5 – 1	0.1 – 1.2	
Full Scale Range [kVpk]	5	5	1.5	1,7	
Frequency [Hz]	-	-	-	50	EN 50163
Nominal voltage drop at nominal current [mV] ¹	60	60	60	60	
Accuracy	0,5 R				EN 50463-1

¹ Voltage drop on the external shunt at the nominal current

Mechanical Characteristics	Value	Reference
Weight	2,500 kg ± 10%	
Fire and smoke class	HL3	EN45545-2
Protection class	IP 50	EN60529
Electrical Characteristics		Reference
Over Voltage Degree	OV3	EN 50124-1
Pollution degree	PD3	
Insulation Voltage Test	9,2 kV 50 Hz -60 s	
Rated Pulse Voltage UNI	±20 kV	
Creepage	> 46,25 mm	
Clearance	> 25 mm	
Material Group	I (CTI≥600)	
Auxiliary Power Supply	Value	Reference
Nominal supply voltage	24÷110 Vdc	
Power consumption	< 8 W	
Environmental Conditions	Value	Reference
Shocks and vibrations	Cat. 1 – Class B	EN 61373
Ambient temperature	TX Range	EN 50155 EN 50125-1
Temperature yearly average	45°C	
Temperature variation	±3°C/s	EN 50125-1
Average yearly relative humidity	h<75%	
Continuous relative humidity	30 days 75% < h < 95%	
Absolute maximum humidity	30 g/m3	
Maximum altitude	AX	EN 50125-1

Inputs/Output



Ethernet Communication

One Ethernet communication port is available and dedicated to the data transfer to the DHS. Ethernet communication can be used also to transmit data to the train communication network and for diagnostic purpose. Mechanisms of protection and security can be applied to ensure both the integrity and the management of data transmitted over the line. Data exchange with TCMS is foreseen according to protocol specification to be defined.

High Speed Serial Communication

One serial “digital sensor” at RS485 communication level is available to interface the ECOBox with the ECOMeter. The maximum cable length allowed is 4m, however evaluating the cable path and the EMC interference the length can be extended up to 7/8m.

Relay Digital Output

The ECOMeter Light provides four relays output to let available the device status and the detected catenary types. The three relays are both Normally Open (NO) and Normally Closed (NC)

Specific Application Requirements

Catenary Detection

ECOMeter Light can detect the catenary provide feedback through the digital outputs and eventually also by Ethernet communication through TRDP protocol.

Overcurrent Detection

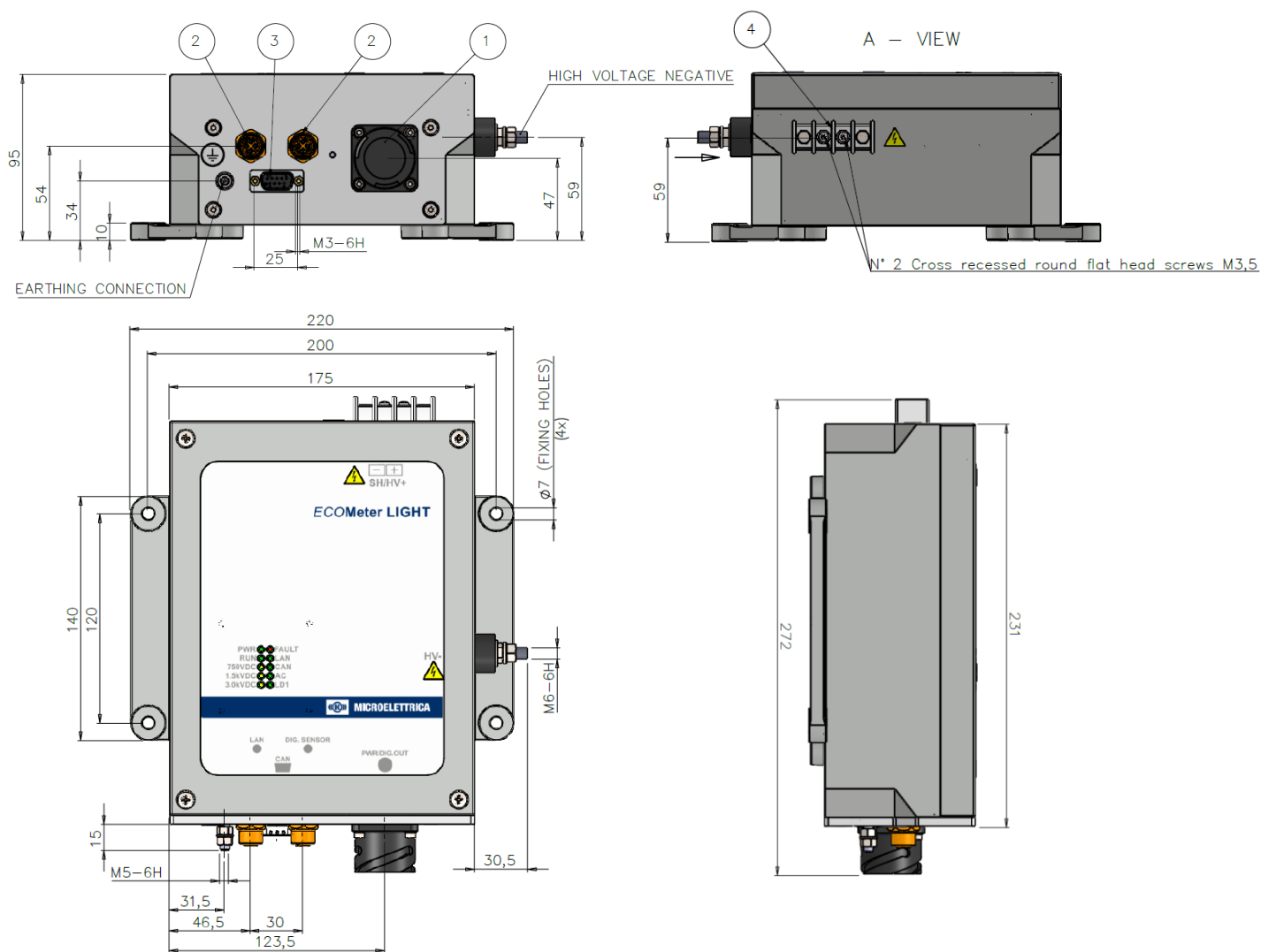
The overcurrent can be detected by the ECOMeter Light with the following options:

- AC/DC Fast Overcurrent Detection – Useful to detect short-circuit
- AC/DC Slow Overcurrent Detection – Useful to protect the system against overloads

Harmonic Detection

Harmonic detection function is one of the main features of the ECOMeter Light, different software filter can be implemented with order up to 8th to detect the harmonics according to the specific national standards.

Dimension ECOMeter Light



For further technical information on our products visit www.microelettrica.com

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