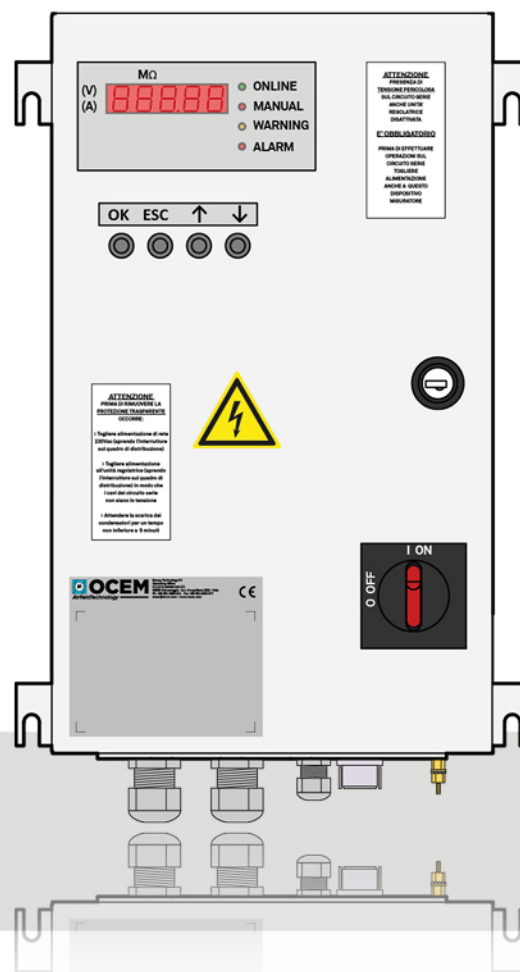


Insulation Resistance Measurement



INSULATION RESISTANCE MEASUREMENT

SERIES CIRCUITS 6.6A UP TO 30 KVA

FIELD BUS CONNECTION LONWORKS

MANAGEMENT SOFTWARE SERVER AND CLIENT

Measuring device of the insulation of the airport series circuit powered by regulator units realized according to the standard IEC 61822, FAA L-828/829, ICAO. It allows the periodic measurement of the circuit leakage current to the ground, with possibility of reading of the values locally and remotely (cabin supervision and system overall supervision). Available in version with bus interface LonTalk type (standard ISO/ 14908-2) and with electromechanical interface (optional).

Conformity:

61010-1 **IEC**

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Generality - IRM

The device IRM performs measure of the insulation resistance of the circuit airport series through the periodic application of a voltage of about $800 V_{DC}$ to an end of the series circuit by measuring the leakage current to the ground. The measuring interval can be customised (default: 60 sec). The device IRM can be inserted on the series circuit independently on the type of regulator unit and without the need to make changes to the circuit. A disconnecter switch easily accessible allow the supply control.

A LED display positioned on the front of the device IRM allows to locally view the measured insulation resistance value AND alternatively the current values (and voltage, optional) on the series circuit, and the main alarms. All the threshold values (pre-alarm and alarm) can be customised.

The internal connection between the measurement card and the interface card is realized through a pair of optical fibres. The device IRM allows the remote monitoring (optional) of the measured values.

The device is suitable at monitoring series circuits powered by power regulator units not higher than 30 kVA/6.6 A, in the measuring field $10 k\Omega \div 500 M\Omega$.

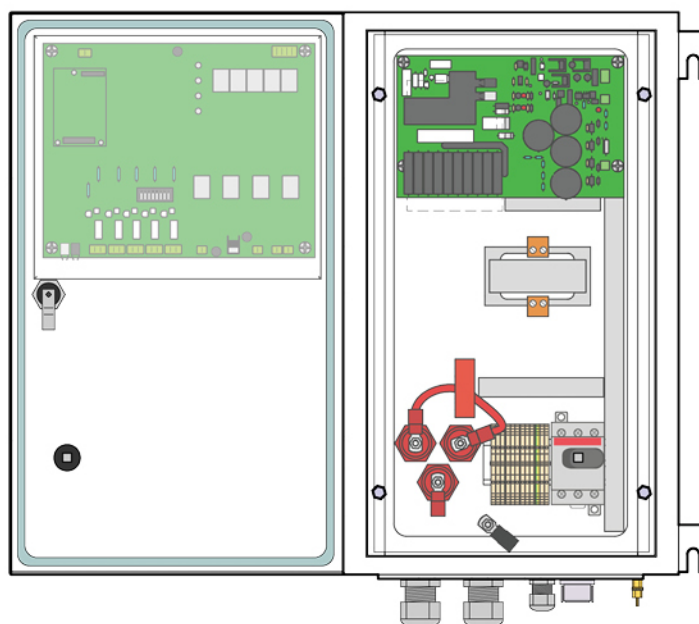
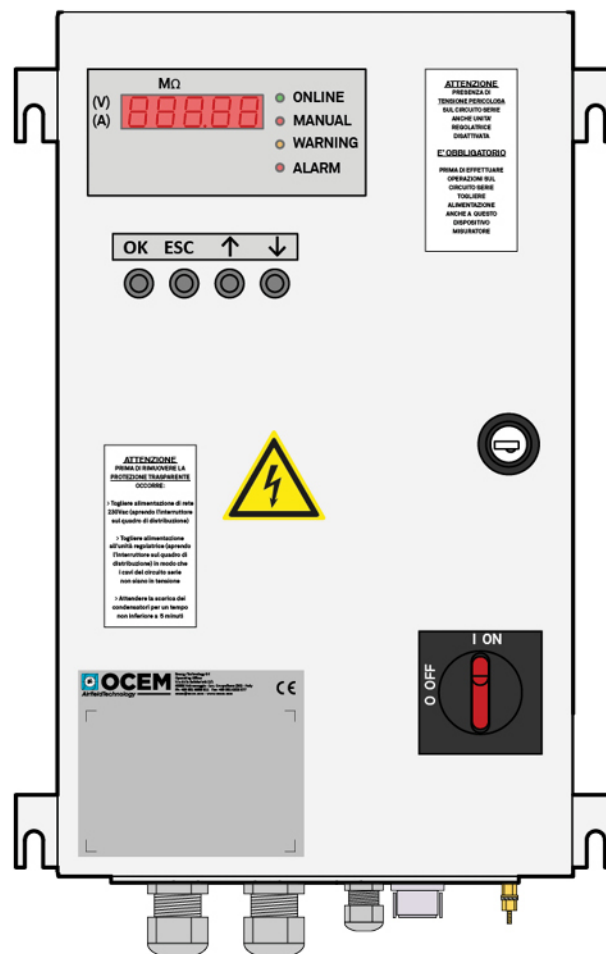
Construction detail

The device consists of a case in zinc-coated steel, painted with thermosetting epoxy powders (colour RAL 7032). The internal sides of the device are segregated by panels in polycarbonat, removable only in safety conditions for the operator (as indicated on the monitoring plates).

The intake and outlet of the cables of the series circuit and of the supply circuit is foreseen from below through suitable cable gland. The protective conductor (min. $10 mm^2$) must be attested through a terminal stud to the screw M8 present on the container. On the bottom in addition there are connectors or cable entry systems for the connection of signals (optionals). The device is predisposed for the wall fastening through suitable fastening system through screws and plugs (not provided). A template $330 \times 420 mm$ allows an easier realization of support holes properly aligned.

Optional devices

- Series circuit rated voltage reading: the device allows the measuring of the voltage on the series circuit, making them available on the local display and on the remote reading.
- Electromechanical remote signalling: a terminal board on the card or a connector make available the reverse contacts (NC, C, NA) to repeat the WARNING, ALARM and MANUAL status.
- IRMS remote control option: is possible remote monitoring of the values measured from the device, through a LONTALK network (standard ISO/IEC 14908-2). A connector type HARTING 5 pin (2 conductors twisted pair + shield) -supplied- allows to easily connect the device to the network.

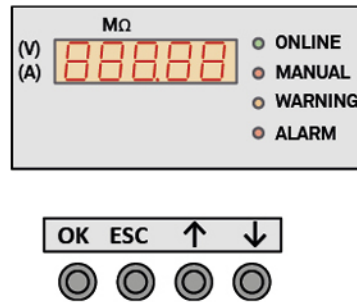


Local operator interface

The local interface is composed of:

- Multifunction display;
- Status LEDs (OnLine, Manual, Warning, Alarm);
- Configuration keypad.

During normal operation the display shows the measured insulation value.



The status LEDs allow the operator a quick reading of the circuit state:

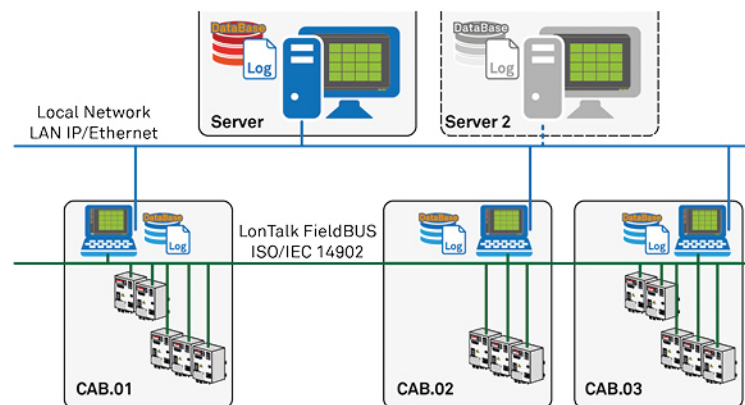
- **ONLINE**: the series circuit is powered and electricity circulates;
- **MANUAL**: the device is in manual mode (maintenance);
- **WARNING**: the measured insulation value is lower than the pre-alarm threshold;
- **ALARM**: the measured insulation value is lower than the alarm threshold.

IRMS remote control

Remote control system structure for devices with CNT data interface LonTalk type

The supervision software must be installed on a PC connected through router to the fieldbus LonTalk and communicate with the measurement devices IRM through interface Ethernet connection to the LAN.

The cabin PC collect data and log from devices IRM and make them available to the supervision server of the whole system.



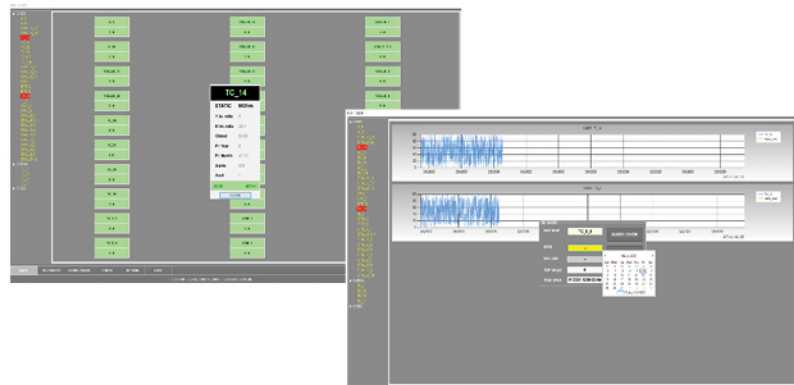
Each series circuit subject to monitoring must be equipped with a device IRM.

Cabin supervision software

All the monitoring devices IRM installed in each electric cabin transfer the measurement data to local database with the configured interval. The supervision software focuses on realizing the calculation of statistics (average, standard deviation, maximum and minimum,...) and of providing a graphic interface to the operator, with authentication system. Through software interface is possible to view the progress of the measures in time and consult the status of each device.

The main measurement parameters can be updated, by the only authorized operators, on the basis of the needs: Saving frequency in the local DB, alarm threshold value, pre-alarm threshold value.

The data are then sent to the aggregation client station.



Aggregation client station

The client station receive the measurement data from all the supervisory applications active on the ethernet network. The measures are saved in the global DB.

The interface, similarly to the supervision software, allows the visualization of data and the management of the measures.

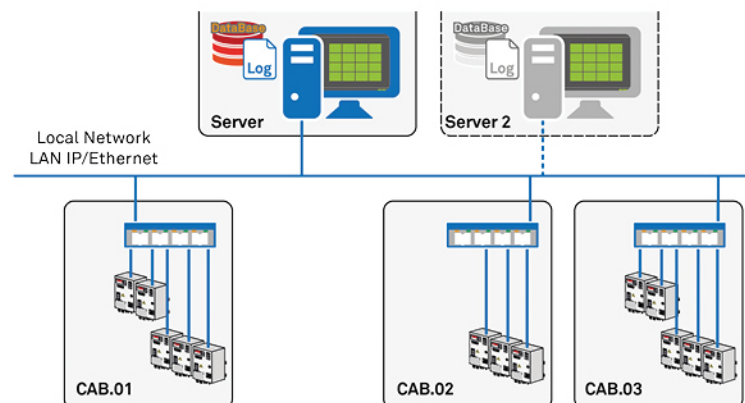
Ethernet connection

Remote control system structure for devices with CNT data interface Ethernet type

The meters with CNT interface Ethernet type may be interfaced directly with the network structure.

Each unit can be configured with its own IP address in order to be easily reached on the existing LAN data network

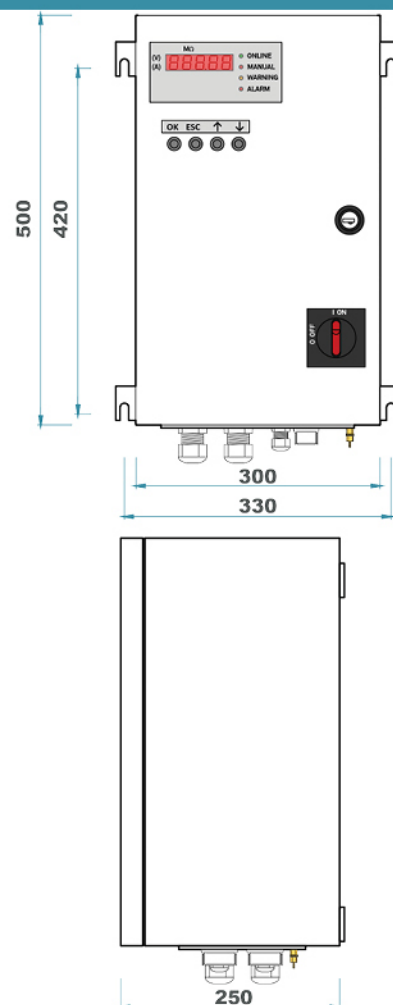
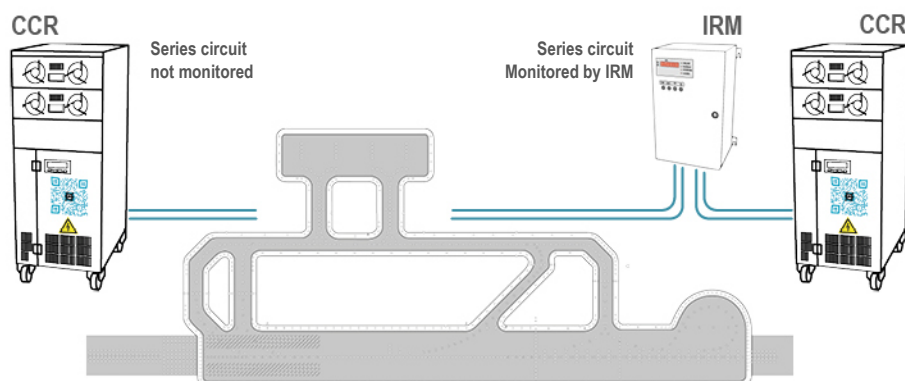
The supervision server of the whole system directly reach the devices and can collect data and log from the units.



Each series circuit subject to monitoring must be equipped with a device IRM.

ARTICLE NUMBER

example IRM -1-1-RC-0-B	
Infeed Cut-Out:	
1 = Cut-Out present	
Voltage measuring on the series circuit	
0 = Voltage on the series circuit not detectable	
1 = TV for voltage measuring on the series circuit	
Electromechanical remote signalling (NO/NC):	
00 = No remote signalling	
RM = Remote signalling with terminal board	
RC = Remote signalling with connector	
Voltage loop:	
0 = Voltage loop not present	
1 = Voltage loop present	
CNT data interface	
A = LonTalk (4P+GND)	
B = Ethernet (RJ45)	



		IRM
Ambient conditions	Ambient temperature	MIN: 0 [°C]
	Relative humidity (at 20°C)	MAX: +40 [°C]
	Altitude asl	90 [%] non-condensing
Electrical specifications	V_N – Rated voltage	230 ±10% [V]
	I_N – Rated current	0.5 [A]
	F_N – Rated frequency	50/60 ±5% [Hz]
	Test voltage	800 [V _{DC}]
	Insulation resistance	MIN: 10 [kΩ] MAX: 500 [MΩ]
	Accuracy	±5%
	Series circuit	V_{MAX} – Maximum Rated voltage I_{MAX} – Massima Rated current
Mechanical specifications	Degree of protection (EN 60529)	INTERNAL: IP2x EXTERNAL: IP54
	Strength degree/shock-resistance (EN 62262)	IK10
	Access	Frontal (with key-locked drawer)
	Materials	STRUCTURE: painted galvanized steel sheet
	Painting	standard: RAL 7032 optionals: RAL (colour on request)
	Plastic components	Halogen-free, CFC-free
	Dimensions WxLxH	300x250x500 [mm]
Installation	Weight	24.0 [kg]
	Characteristics of supply line entry	Cable gland PG16
	Characteristics of series circuit line entry	IN: 2 x Cable gland PG21 - OUT: 2 x Cable gland PG21
	Protective conductor	M8 (min. 10 mm ²)
	Characteristics of IRMS remote control communication line	LonTalk (ISO/IEC 14908-2)
	Characteristics of the remote signalling line (optional)	Terminal board/Connector

The Manufacturer reserves the right to variation and/or modification the technical parameters at any time without notice.

