



- Direct connection up to 690V line voltage for both single or Three phase systems
- Monitoring during both live and standby conditions
- For use in land, marine, offshore, sub-sea and ocean floor Installations
- Complies with IMCA D 045 Code of Practice
- "Megger" - safe to 1.4kVDC when aux power is OFF
- Immune to earth capacitance and voltage surges
- Analogue output proportional to meter reading
- Optional slave indicator

Specifications

Auxiliary Supply:	100-120, 200-240, 380-415 or 440-460VAC, 40-70Hz (Fuse 0.5A)
Optional Voltage:	12-24, 48 or 110VDC (Fuse 2A)
Supply tolerance:	± 10%
Power rating:	1,5VA
Analogue Output:	Up to 20mA, max 500R Up to 10V, min 100kohm (other on request)
Temperature:	-20 to +70°C
Weight:	0.5kgs
Front protection:	IP21

The Ultra-Reliability Concept (Paralleling of Transducers)

To obtain ultimate operational safety multiple MCM161x transducer inputs and outputs can be permanently paralleled.

At any time only ONE transducer should be enabled. The selected transducer is activated by applying auxiliary power to unit. Accidental enabling of more than one transducer will give distorted reading, but will not harm the transducer.

The MCM161x range is designed to comply with specification IMCA D 045 "Code of Practice for the Safe Use of Electricity Under Water" issued by IMCA.

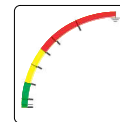
The unit meets IEC60092-504 and the relevant environmental and EMC tests specified in IEC60068/60092 and IEC61000/60533 respectively, to comply with the requirements of the major Classification Societies.

Application

The digitally controlled MCM161x series monitors insulation level between a non-grounded (IT) AC mains and its protective earth, regardless of whether the mains is live or non-live (standby).

An AC or DC auxiliary voltage is required for the unit, if powered from a separate source the network can also be monitored during standby conditions. Only ONE MCM161x can be connected to each IT-system. The optional slave indicator give at a glance the clear safety message:

- ALARM (red zone)
- WARNING (yellow zone)
- HEALTHY (green zone)



General

IDV MEASURING PRINCIPLE

Insulation is measured between the complete galvanically interconnected AC network and its protective earth. The unit injects a DC voltage signal into the monitored system. The signal flows to ground via the path of the insulation fault, the level of flow indicates the insulation resistance. The measuring accuracy is not influenced by any normal kind of load attached to the AC network.

MEGGER SAFE

When auxiliary power is OFF the unit input is automatically protected against "megger" test voltages up to 1.4kVDC, and incorrect measurements caused by the unit's input impedance are avoided.

OUTPUTS

The unit is supplied with an isolated analogue output proportional to insulation level. If output is used for remote meter reading, we recommend 0-1mA for the slave indicator.

SAFETY

When a voltage adapter (CHx) is used the signal to terminals 4 and 6 on MCM161x is limited to a safe level, avoiding any dangerous voltage exposure to personnel.

NOTE

Special versions of the MCM161x are available as:

MCM161xM series - Insulation Guards with DC detection function, protected against high-energy DC voltage imposed on the monitored AC supply.

MCM261x series - Insulation Guards with measuring loop continuity monitoring.

Description

MCM161F

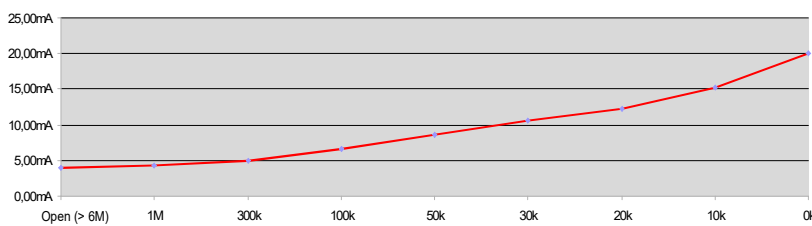
Scale range: 0-1000kΩ - ∞ (>6MΩ)

This unit is used for hospital, industrial, marine and offshore installations. Start of monitoring function is delayed when auxiliary power is switched on (default 5 secs delay).

Direct connection up to 690V line voltage. Up to 1,4kV via HV adaptor CH163/1,4.

Coloured sectors show recommended areas of settings:
 - Indicates alarm trip zone
 - Indicates warning trip zone
 - Indicates healthy zone

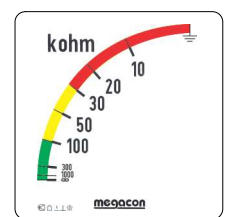
Output diagram



Output table (example for 4-20mA)

Value (scale)	mA output
0kΩ	20.00mA
10kΩ	15.22mA
20kΩ	12.32mA
30kΩ	10.61mA
50kΩ	8.68mA
100kΩ	6.69mA
300kΩ	4.98mA
1MΩ	4.28mA
Open (>6MΩ)	4.00mA

Range (slave indicator)



High Voltage Adaptors up to 1,4kVAC for MCM161x series

- HV Adaptor for AC Insulation Guards
- CH163x series, up to 1400V Line Voltage live or non-live (standby)
- Creates safety barrier from live HT network to LV switchboard
- Limits measuring output signal to safe levels
- No restrictions on distance between adapter and LV switchboard

Voltage Adaptors CH163x series are used for Insulation Guard MCM161x when the monitored line voltage is higher than 690VAC. These adapters are a passive low-pass filter for use in 50, 60 or 400Hz networks, and are potted in polyurethane.

These units includes high inductance reactance modules, connected in a special configuration to avoid DC saturation. Connection to the star-point (Neutral) is Preferable. These adapters maintain a high AC suppression of its signal output to very low, safe levels, under all conditions.

Caution

Terminal 1 must be disconnected during "megger" test.

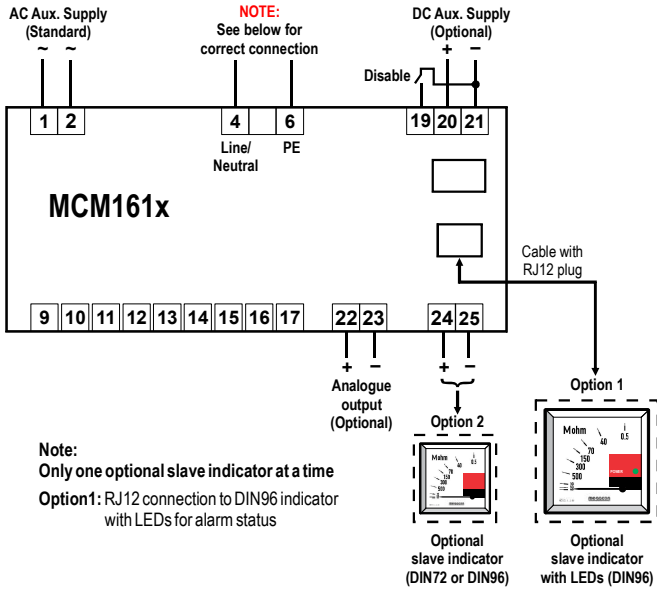


CH163/1,4 up to 1.4kVAC

The MEGACON policy is one of continuous improvement, consequently equipment supplied may vary in detail from this publication.



Connection



Note:
Only one optional slave indicator at a time
Option 1: RJ12 connection to DIN96 indicator with LEDs for alarm status

Analogue Output

MCM161F have an analogue output proportional to insulation level. (Special outputs are available on request)

Add suffix from table below to type designation to specify output required:

O/P1	0 - 10mA	O/P6	N/A
O/P2	0 - 20mA	O/P7	N/A
O/P3	4 - 20mA	O/P8	0 - 10VDC
O/P4	N/A	O/P9	N/A
O/P5	N/A	O/P10	N/A

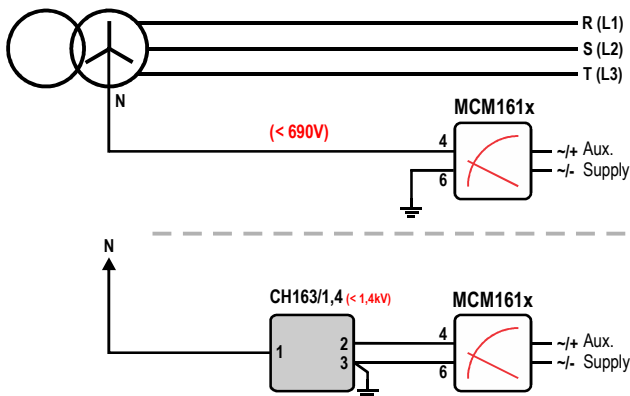
Paralleling Disable Function

MCM161x has a built-in disable function. When connecting two or more IT-networks together **only one unit** can be active, the other(s) must be disabled. When unit is disabled the power led will flash every 2 seconds to indicate that unit is inactive.

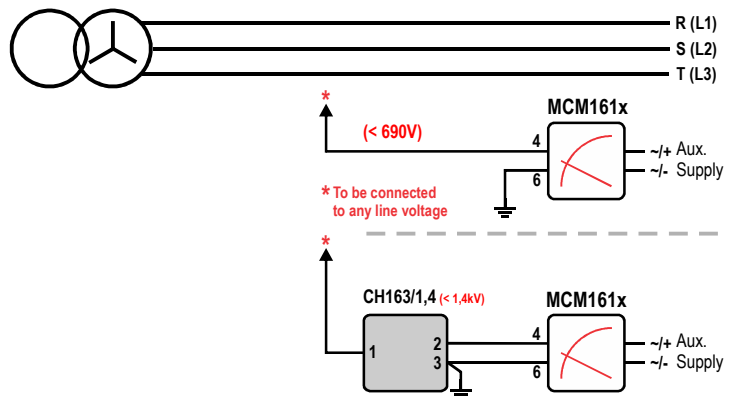
Use a potential free contact on terminal 19 & 20 to activate the disable function (after 2 secs). When activated the measuring input terminal 4 will be internally disconnected.

Connection

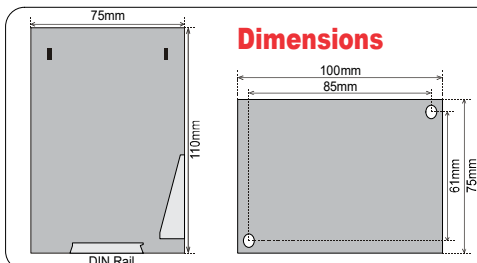
NEUTRAL VOLTAGE INPUT



LINE VOLTAGE INPUT



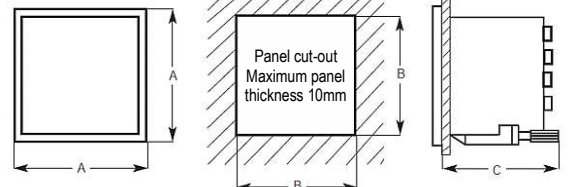
! The instrument will detect earth fault on all phases independent of which phase is connected to terminal 4.



Dimensions

Dimensions for Slave instrument

	DIN 72	DIN96
A	72 x 72mm	96 X 96mm
B	68 x 68mm	92 x 92mm
C	64mm	64mm



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ORDERING EXAMPLE:

Type: MCM161F
 Aux. Supply: 200-240VAC
 Network Voltage: Up to 690VAC
 Analogue O/P: (O/P3) 4-20mA
 Range: 0 - 1000kohm

