



- Designed for non-grounded networks with Frequency Converters
- Direct connection up to 500V line voltage, up to 1.4kV with HV adapter CH163/1,4
- Monitoring during both live and standby conditions
- For use in land, marine and offshore Installations
- "Megger" - safe to 1.4kVDC when aux power is OFF
- Immune to earth capacitance and voltage surges

**Specifications**

**General**

Auxiliary Supply:	100-120, 200-240, 380-415 or 440-460VAC, 40-70Hz (Fuse 0.5A)
Optional Voltage:	12-48VDC (>9 - <60VDC) (Fuse 2A)
Contact rating:	AC: 100VA - 250V/2A max. DC: 50W - 100V/1A max.
Analogue Output:	Up to 20mA, max 500R
F-versions	Up to 10V, min 100kohm (other on request)
Temperature:	-20 to +70°C
Weight:	0.62kgs
Front protection:	IP54 (IP65 optional)

**Application**

The digitally controlled KPM163FQ is designed to monitor the insulation level between a non-grounded (IT) AC mains and its protective earth in systems with frequency converters. The unit is for land, marine and offshore use.

An AC or DC auxiliary voltage is required for the unit, if powered from a separate source the network can also be monitored during inactive (standby) conditions. Only ONE KPM163FQ can be connected to each IT-system. The ohmmeter and the triple-zone status LEDs give at a glance the clear safety message:

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



**INTELLIGENT SETTING ASSISTANCE**

KPM163FQ has a built-in Assistance tool for setting/verification of the trip levels and the analogue output.

When either the **Warning** or **Alarm** potmeter on the rear is operated by user, the meter goes into **Assistance Mode** and meter reading and analogue output will reflect the potmeter setting.

**How to set alarm levels:**

Firstly adjust potmeter fully clockwise (see that meter goes to the top), then adjust potmeter down to required **Warning** or **Alarm** setpoint. Without any movement of potmeters, the meter will revert to normal Insulation Monitoring Mode after approximately 10 seconds.



**How to test analogue output signal:**

Adjust any trip level potmeter to activate Assistance Mode. **Example:** On a 4-20mA output, adjust potmeter fully anti clockwise for 4mA and fully clockwise for 20mA.

The KPM163FQ range is designed to comply with specification AODC035 "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.

**General**

**IDV MEASURING PRINCIPLE**

Insulation is measured between the complete galvanically interconnected AC network and its protective earth. The unit injects a DC measuring 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.

This unit is used for any land, marine or offshore installations. Start of monitoring function is delayed when auxiliary power is switched on (default 10 secs delay). The unit has minimum of 9 seconds detection time for any insulation fault.

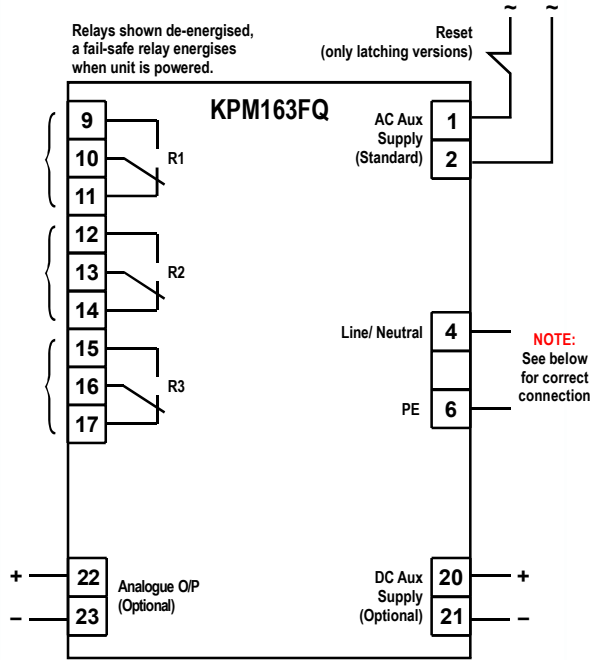
Trip levels and delays are settable on unit rear. A trip LED flashes when the trip level is passed, the relay trips when the delay has elapsed. The timer resets if the fault is removed during countdown.

**OUTPUTS**

The KPM163FQ has an isolated **analogue output** proportional to meter reading. If output is used for remote meter reading, we recommend 0-1mA for the slave indicator.

**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.



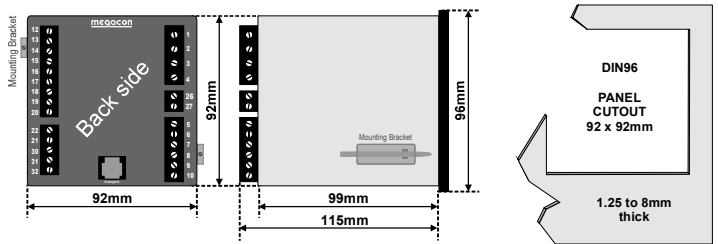
## Analogue Output

KPM163FQ have an analogue output proportional to meter reading. (Special outputs are available on request)

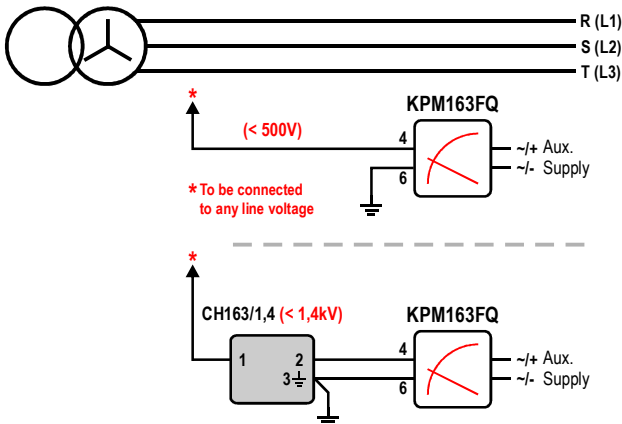
Add suffix from table below to type designation to specify output required:

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

## Dimensions



## NETWORK SYSTEM VOLTAGE



## High Voltage Adaptor CH163/1,4 for KPM163FQ

Voltage Adaptor CH163-1,4 is used for Insulation Guard KPM163FQ when the monitored line voltage is higher than 500VAC.

The adaptor is a passive low-pass filter for use in 50, 60 or 400Hz networks, and is potted in polyurethane.

The unit includes high inductance reactance modules, connected in a special configuration to avoid DC saturation.

Connection to the star-point (Neutral) is Preferable.

The Adaptor maintains a high AC suppression of its signal output to very low, safe levels, under all conditions. Alternative connections to the AC network are shown below.



CH163/1,4 up to 1.4kVAC

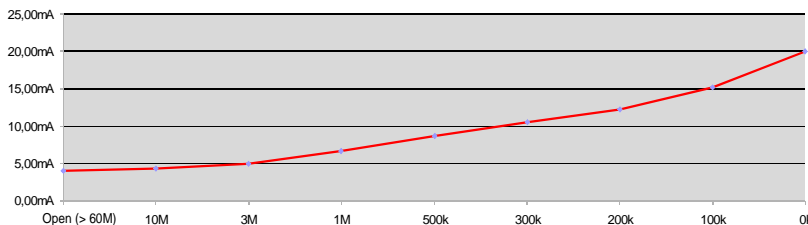
## Relay Operation

	Warning	Alarm	Fail Safe	Latch
R1	✓			
R2		✓	✓	
R3		✓		

Adjustments	Trip level	Delay
WARNING:	0-10M $\Omega$	0-30secs
ALARM:	0-10M $\Omega$	0,1-3secs

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

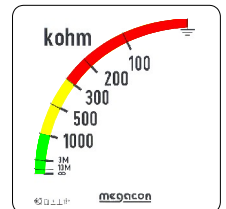
## Output diagram



## Output table (example for 4-20mA)

Value (scale)	mA output
0k $\Omega$	20.00mA
100k $\Omega$	15.18mA
200k $\Omega$	12.30mA
300k $\Omega$	10.59mA
500k $\Omega$	8.67mA
1M $\Omega$	6.69mA
3M $\Omega$	4.98mA
10M $\Omega$	4.28mA
Open (60M $\Omega$ )	4.00mA

## Range



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

### ORDERING EXAMPLE:

Type: KPM163FQ  
 Aux. Supply: 200-240VAC  
 Network Voltage: 690VAC  
 Analogue O/P: 4-20mA

