



- Direct connection up to 690V line voltage, up to 6,6kV with HV adapter for both single or three phase systems
- Continuous supervision of measuring loop continuity
- 2-level insulation relays and loop continuity relay
- For use in land, marine, offshore, sub-sea and ocean floor installations.
- Complies with IMCA D 045 Code of Practice
- Analogue output proportional to meter reading (F-version)
- With Modbus RTU (see Megacon modbus datasheet)

## 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 AC/DC:	3VA/3W
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:	0.85kgs
Front protection:	IP52 (IP65 optional)
Communication:	Modbus RTU

### INTELLIGENT SETTING ASSISTANCE

KPM26x 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. In this mode, the Alarm or Warning LEDs (depending on which potmeter is adjusted) will flash quickly Red/Yellow.



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 KPM26x range is designed to comply with specification IMCAD 045 "Code of Practice for the Safe Use of Electricity Under Water" issued by IMCA.

The unit meets EN 61010-1 Cat. III, Pollution degree 2 and the relevant environmental and EMC tests specified in EN 61326-2-4 to comply with the requirements of the major Classification Societies.

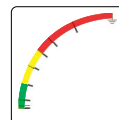
## Application

The prime purpose of the digitally controlled KPM26x is basically identical to the "traditional" KPM16x Insulation Guard range. An auxiliary Measuring Input Loop Continuity Monitoring Facility has been added to notify the operator if a measuring loop disruption may cause the meter to read a too high insulation level. With built-in Modbus RTU.

The unit has C/O relay outputs for Warning, Alarm and loop failure. The Alarm relay is fail to safety configured. 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. Trip levels and delays are settable on unit rear.

Only **ONE** KPM26x 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)



## General

### IDV MEASURING PRINCIPLE

Insulation is measured between the complete galvanically interconnected AC network and its protective earth. 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, the processing time for KPM26x is approximately 400ms.

### MEASURING LOOP ALARM

A sensing resistor is mounted at the furthest end of the monitored loop in a separate **Loop Resistance Sensor Module (LRSM-1,4 or LRSM-5)**. There are no restrictions on distance from the sensing resistor to the KPM26x unit. There is a fixed delay of 60 seconds on the loop failure alarm.

The Loop alarm will notify the operator by activating LED **LOOP FAILURE** and trip relay 3. A disruption in the input measuring loop may cause the guard to falsely read a too high insulation level. The Measuring Input Loop Continuity Monitoring Facility is of special importance during lasting standby conditions (motors, lanterns etc).

### 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 is avoided.

### OUTPUTS

All **F** versions have an isolated **analogue output** proportional to meter reading. If output is used for remote meter reading, we recommend 0-1mA for the slave indicator.

### Test Function

The external test input activates the self test function. A 65kohm resistor is then connected on the input between line-in and PE as long as the button is pressed.

### Communication

The KPM163x is fitted with modbus RTU communication. Details can be found in Megacon datasheet KxM16x-modbus protocol.

### SAFETY

When a voltage adapter (CHx) is used the signal to terminals 4 and 6 on KPM261x and KPM263x is limited to a safe level, avoiding any dangerous voltage exposure to personnel.

## Description

**KPM261E & KPM261F - KPM261G & KPM261GF****Scale range:** 0-1000KΩ - ∞ (>10MΩ)

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.

NB! Loop Resistance Sensor Module LRSM-x must be used together with all KPM26x models.

## Relay Operation

Scale range: 0-1000kΩ - ∞ (&gt;6MΩ)

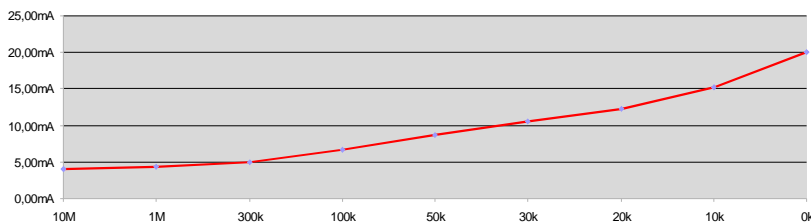
Relay	Warning	Alarm	Loop Failure	Fail Safe	Latch
R1	X				
R2		X		X	*X
R3			X	X	*X

Model	Latch	Output	Adjustments	Trip level	Delay
KPM261E	-	-	WARNING:	0-1MΩ	0-30secs
KPM261F	-	X	ALARM:	0-1MΩ	0,1-3secs
KPM261G*	X	-			
KPM261GF*	X	X			

Coloured sectors show recommended areas of settings:

- Indicates alarm trip zone
- Indicates warning trip zone
- Indicates healthy zone

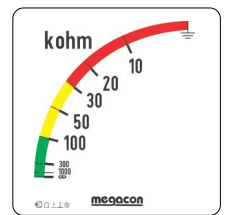
## Output diagram



## 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



## Description

**KPM263E - KPM263F - KPM263G & KPM263GF****Scale range:** 0-10MΩ - ∞ (>1000MΩ)

This unit is used for marine, ROV and offshore installations. Start of monitoring function is delayed when auxiliary power is switched on (default 10 secs delay).

Direct connection up to 690V line voltage. Up to 6,6kV via HV adaptor CH163Bx or AN6,6B series.

NB! Loop Resistance Sensor Module LRSM-x must be used together with all KPM26x models.

## Relay Operation

Scale range: 0-10MΩ - ∞ (&gt;60MΩ)

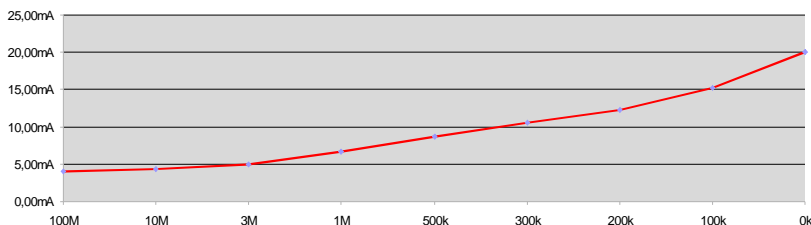
Relay	Warning	Alarm	Loop Failure	Fail Safe	Latch
R1	X				
R2		X		X	*X
R3			X	X	*X

Model	Latch	Output	Adjustments	Trip level	Delay
KPM263E	-	-	WARNING:	0-10MΩ	0-30secs
KPM263F	-	X	ALARM:	0-10MΩ	0,1-3secs
KPM263G*	X	-			
KPM263GF*	X	X			

Coloured sectors show recommended areas of settings:

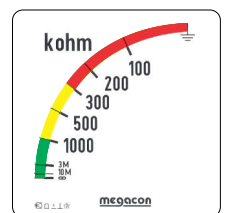
- Indicates alarm trip zone
- Indicates warning trip zone
- Indicates healthy zone

## Output diagram



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

Value (scale)	mA output
0kΩ	20,00mA
100kΩ	15,18mA
200kΩ	12,30mA
300kΩ	10,59mA
500kΩ	8,67mA
1000kΩ	6,69mA
3MΩ	4,98mA
10MΩ	4,28mA
Open (>60MΩ)	4,00mA



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

**IS**  
range

## Description

## KPM263E2 - KPM263F2 - KPM263G2 &amp; KPM263GF2

Scale range: 0-10MΩ - ∞ (&gt;1000MΩ)

This unit is used for marine, ROV and offshore installations. Start of monitoring function is delayed when auxiliary power is switched on (default 10 secs delay).

Direct connection up to 690V line voltage. Up to 6,6kV via HV adaptor CH163Bx or AN6,6B series.

NB! Loop Resistance Sensor Module LRSM-x must be used together with all KPM26x models.

## Relay Operation

Scale range: 0-10MΩ - ∞ (&gt;60MΩ)

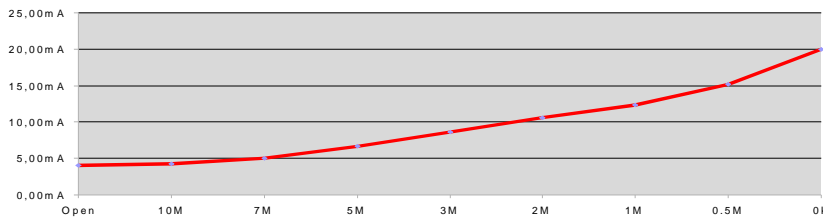
Relay	Warning	Alarm	Loop Failure	Fail Safe	Latch
R1	X				
R2		X		X	*X
R3			X	X	*X

Model	Latch	Output	Adjustments	Trip level	Delay
KPM263E2	-	-	WARNING:	0-10MΩ	0-30secs
KPM263F2	-	X	ALARM:	0-10MΩ	0,1-3secs
KPM263G2*	X	-			
KPM263GF2*	X	X			

Coloured sectors show recommended areas of settings:

- Red - Indicates alarm trip zone
- Yellow - Indicates warning trip zone
- Green - Indicates healthy zone

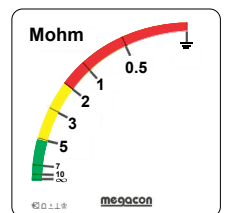
## Output diagram



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

Value (scale)	mA output
0kΩ	20.00mA
0,5MΩ	15.18mA
1MΩ	12.30mA
2MΩ	10.59mA
3MΩ	8.67mA
5MΩ	6.69mA
7MΩ	4.98mA
10MΩ	4.28mA
Open (>60MΩ)	4.00mA

## Range



## High Voltage Adaptors up to 6,6kVAC for KPM263x series

- HV Adaptor for AC Insulation Guards
- CH163Bx series, up to 5000V Line Voltage live or non-live (standby)
- AN6,6B up to 6600V System Voltage live or non-live (Starpoint/Neutral connection only)
- 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 CH163Bx and AN6,6B series are used for Insulation Guard KPM263x 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. 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.



CH163B/1,4 up to 1.4kVAC



CH163B/3,6 up to 3.6kVAC



CH163B/5 up to 5kVAC



AN6,6B up to 6,6kVAC



## Loop Resistance Sensor Module for KPM26x series



LRSM-1,4 up to 1400V

Dimensions:  
DIN rail mounted  
55 x 110 x 75mm  
Weight: 0,5kg



LRSM-5 up to 5kV

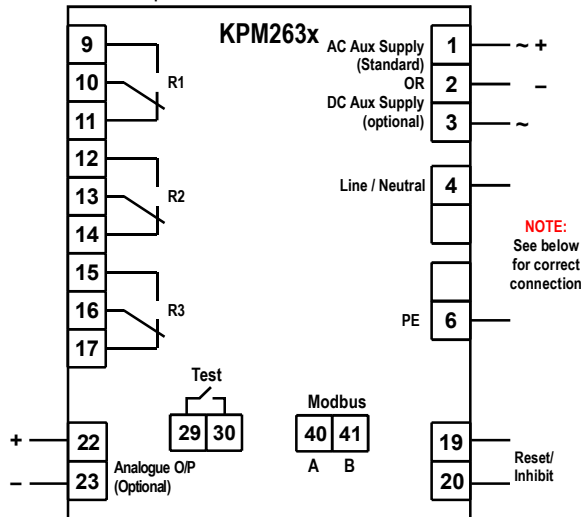
Dimensions:  
DIN rail mounted  
100 x 110 x 75mm  
Weight: 0,8kg

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## Connection

Relays shown de-energised,  
a fail-safe relay energises  
when unit is powered.



## Analogue Output

KPM261F, KPM261GF, KPM263F, KPM263GF, KPM263F2 and KPM263GF2 have an isolated 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

## Reset / Paralleling Disable Function

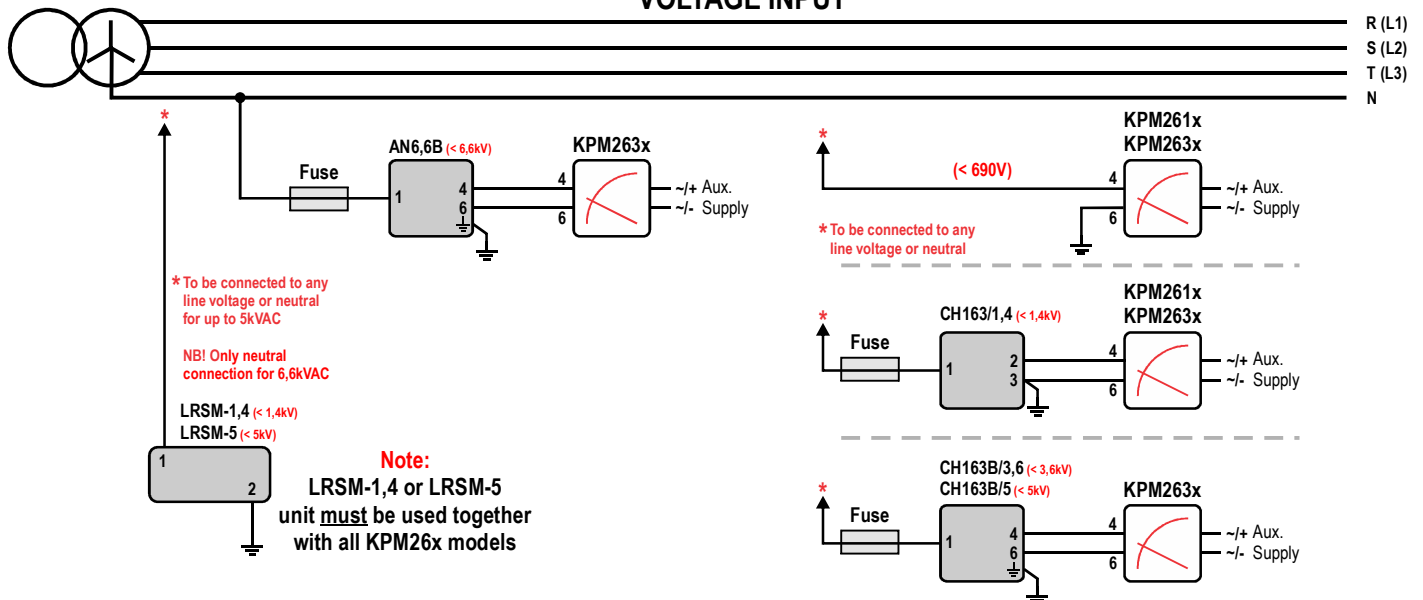
KPM26x has a built-in disable function. When connecting two or more IT-networks together **only one unit** can be active, the other(s) must be disabled. When unit is disabled the power led will flash every 2 seconds to indicate that unit is inactive.

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.

A pulse (60mS - 2 secs) on terminal 19 & 20 will only reset any latching alarm.

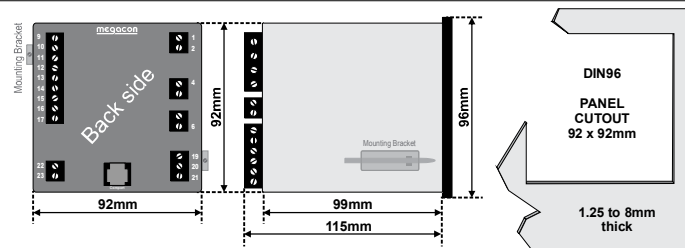
## Connection

## VOLTAGE INPUT



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

## Dimensions



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## ORDERING EXAMPLE:

Type: KPM263F  
Aux. Supply: 200-240VAC  
Network Voltage: 3.6kVAC  
Analogue O/P: (O/P3) 4-20mA  
Range: 0-10Mohm

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