



- Comprises a wide variety of instrumentation for protection, control and regulation of DC electrical parameters or physical parameters
- DC Voltage or Current Guards and Controllers
- DC Signal Slave Controllers
- Analogue Signal Controllers
- Triple relay for more flexibility
- One fast response analogue output (<50mS), F-versions

## Specifications

Auxiliary Voltage:	100-120V, 200-240V, 380-415V, 440-460 or 480VAC 40-70Hz (Fuse 0,5A)
Optional Auxiliary Voltage:	24, 48 or 110VDC (Fuse 2A)
DC Input signal:	mA and up to 5A mV and up to 450V
Contact rating:	AC: 100VA -250V/2A max. DC: 50W -100V/1A max.
Adjustments available:	(Depending of selected model) <u>Low / Negative / Level 1:</u>
Trip level:	0-100% of FSD
Trip delay:	0-30 secs
	<u>High / Positive / Level 2:</u>
Trip level:	0-100% of FSD
Trip delay:	0-30 secs
	<u>Reverse Power:</u>
Trip level:	0-20% of FSD
Trip delay:	0-30 secs
	<u>Overload:</u>
Trip level:	0-100% of FSD
Trip delay:	0-30 secs
Hysteresis:	2-50% of FSD on High level Alarm (on non latching relays)
Analogue outputs: (F-versions)	Up to 20mA, max 500ohm Up to 10VDC, min 100kohm (other outputs available on request)
Temperature:	-20 to +70°C
Weight:	0.6kgs
Front protection:	IP52 (IP65 optional)

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.

### Related information:

The KPM13x serie is also available for rail mounting as KCM13x serie.

## Application

The KPM13x is a digitally controlled guard/controller for use in a large range of applications such as power guards, load controller, DC current guards, DC voltage guards, etc.

As an analogue controller it can be used to monitor a large range of physical parameters as flow, pressure, temperature, length, weight and more.

An AC or DC auxiliary voltage is required for the unit. A green LED indicates POWER on. Start of monitoring function is delayed when power is switched on (default 2 secs delay). In this way false tripping during power up is avoided.

The precision DIN96 moving coil meter reads the monitored parameter, and has low-reflection glass to ease reading at a distance.

The triple-zone status LEDs at a glance gives the clear safety message, typically LOW TRIP / NORMAL / HIGH TRIP etc.

The standard version has no analogue output. The optional F-version has an isolated analogue output signal proportional to meter deflection.

The units three C/O relay outputs may typically be configured for Low, Low-Low or Negative Trip, High, High-High or Positive Trip and Trip Status (R3).

The trip levels and trip delays are user settable on unit rear to suit most applications. (see individual description for relay operation)

Red relay trip lamps flash instantly (approx. 1 flash per second) when the trip level is passed, the relay trips after elapsed delay. The lamp changes state and the trip relay operates after the pre-set delay. If a trip condition ends during the delay interval, the timer will automatically reset.

As standard the unit is supplied for automatic reset. Manual reset (latching relays) is optional (All G-versions).

**Description**

**Relay Operation**

**Voltage Guards**

**KPM13V15E - KPM13V15F & KPM13V15GE - KPM13V15GF**

**Relay Configuration: Differential**

**DC Over and Under Voltage Guard**

A DC voltage guard with direct input up to 400VDC. Input from voltage divider with grounded negative for any voltage range. The unit is used for protection of any DC motor or mains.

	Low	High	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓	✓	*✓		✓
R2	✓		✓	*✓	✓	
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13V15GE & KPM13V15GF

**KPM13V16E - KPM13V16F & KPM13V16GE - KPM13V16GF**

**Relay Configuration: Bi-Polar**

**DC Bi-Polar Voltage Guard**

A DC voltage guard with direct input up to +/- 400VDC. Input from voltage divider with grounded negative for any voltage range. The unit is used for protection of any DC motor or mains.

	Negative	Positive	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓	✓	*✓		✓
R2	✓		✓	*✓	✓	
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13V16GE & KPM13V16GF

**Current Guards**

**KPM13C121E - KPM13C121F & KPM13C121GE - KPM13C121GF**

**Relay Configuration: Differential**

**DC Over and Under Current Guard**

Direct input up to 1ADC, input from standard 60-150mV measuring shunt from 1ADC to 30.000ADC. The unit is used for selective current protection of DC loads such as motors, generators etc. Relays are differential configured.

	Low	High	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓	✓	*✓		✓
R2	✓		✓	*✓	✓	
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13C121GE & KPM13C121GF

**KPM13C123E - KPM13C123F & KPM13C123GE - KPM13C123GF**

**Relay Configuration: Cascade**

**DC Two Level Over Current Guard**

Direct input up to 1ADC, input from standard 60-150mV measuring shunt from 1ADC to 30.000ADC. The unit is used for selective current protection of DC loads such as motors, generators etc. Relays are cascade configured.

	Level 1	Level 2	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1	✓		✓	*✓	✓	
R2		✓	✓	*✓		✓
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13C123GE & KPM13C123GF

**KPM13C126E - KPM13C126F & KPM13C126GE - KPM13C126GF**

**Relay Configuration: Bi-Polar**

**DC Bi-Polar Current Guard**

Direct input up to 1ADC, input from standard 60-150mV measuring shunt from 1ADC to 30.000ADC. The unit is designed for both level and polarity of DC current to provide dual polarity excess current protection like a charge/ discharge guard. Relays are differential configured.

	Negative	Positive	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓		*✓		✓
R2	✓			*✓	✓	
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13C126GE & KPM13C126GF

**Power Controllers / Guards**

**KPM13M173E - KPM13M173F & KPM13M173GE - KPM13M173GF**

**Relay Configuration: Bi-Polar**

**Bi-Directional Active (kW) Power Guard**

It is operating from mA output of a matching kW power transducer, it monitors forward and reverse active load of generators. The unit has one overload and two reverse power relay. The overload relay have adjustable hysteresis and can be used to release and re-entry non essential load.

	Reverse Power	Overload	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓		*✓		✓
R2	✓		✓	✓		
R3	✓		✓	✓		

\*Latch: Only for KPM13M173GE & KPM13M173GF

Depending on application, select the model that matches the electrical installation. If none of the listed models fit your purpose please contact Megacon for customer adaptation.

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**Description**

**Relay Operation**

**Power Controllers / Guards**

**KPM13M193E - KPM13M193F & KPM13M193GE - KPM13M193GF**

**Relay Configuration: Bi-Polar**

**Bi-Directional Reactive (kVAR) Power Guard**

It is operating from mA output of a matching kVAR power transducer, it monitors forward and reverse active load of generators. The unit has one overload and two reverse power relay. The overload relay have adjustable hysteresis and can be used to release and re-entry non essential load.

	Reverse Power	Overload	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓		*✓		✓
R2	✓		✓	✓		
R3	✓		✓	✓		

\*Latch: Only for KPM13M193GE & KPM13M193GF

**KPM13M151E - KPM13M151F & KPM13M151GE - KPM13M151GF**

**Relay Configuration: Differential**

**AC Power Controller**

It is operating on a output from the MCE105 generator controller or from any low level DC signal i.e. 0-5V, 4-20mA etc. When used as a "Total power" instrument it monitors the combined output of a generator system. The relays can be used to automatically start and stop generators in a simple system or for preferential tripping. As a "Surplus power" instrument, it monitors the remaining available power and therefore the relays can be used for load blocking of heavy loads.

	Low	High	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1	✓		✓	*✓	✓	
R2		✓		*✓		✓
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13M151GE & KPM13M151GF

**KPM13M154E - KPM13M154F & KPM13M154GE - KPM13M154GF**

**Relay Configuration: Differential**

**AC Power Controller**

It is operating on a output from balance lines from the MCE105 generator controller or from any low level DC voltage signal i.e. 0-5V, 0-8V etc. By monitoring the load balance lines of the MCE105, the instrument will indicate the total percentage of power from the generators in use regardless of the number of generators running. The trip relays can be used to automatically start and stop generators based purely on percentage of generated power. Scaled with 0-100%kW.

	Low	High	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1	✓		✓	*✓	✓	
R2		✓		*✓		✓
R3	✓	✓	✓	*✓		

\*Latch: Only for KPM13M154GE & KPM13M154GF

**Analogue Level Controllers**

**KPM13M13E - KPM13M13F & KPM13M13GE - KPM13M13GF**

**Relay Configuration: Differential**

**A Low / High Universal Level Controller**

It is operating from mA or volt output of any transmitter or converter for monitoring of most physical parameters like Flow, Volume, RPM, Vibration, Time, Pressure, Temperature, Level, Length, Weight, Angle, RH, Dewpoint, pH, Lux, UV exposure etc. Scaled to customer requirement. The unit has one low and one high alarm relay. The high relay have adjustable hysteresis.

	Low	High	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓	✓	*✓		✓
R2	✓			*✓	✓	
R3	✓	✓	✓	*✓	✓	

\*Latch: Only for KPM13M13GE & KPM13M13GF

**KPM13M23E - KPM13M23F & KPM13M23GE - KPM13M23GF**

**Relay Configuration: Cascade**

**A two level Universal Level Controller**

It is operating from mA or volt output of any transmitter or converter for monitoring of most physical parameters like Flow, Volume, RPM, Vibration, Time, Pressure, Temperature, Level, Length, Weight, Angle, RH, Dewpoint, pH, Lux, UV exposure etc. Scaled to customer requirement. The unit has one low and one high alarm relay. The high relay have adjustable hysteresis.

	Level 1	Level 2	Fail Safe	Latch	Fixed Hysteresis (2%)	Adjustable Hysteresis
R1		✓	✓	*✓		✓
R2	✓			*✓	✓	
R3	✓	✓	✓	*✓	✓	

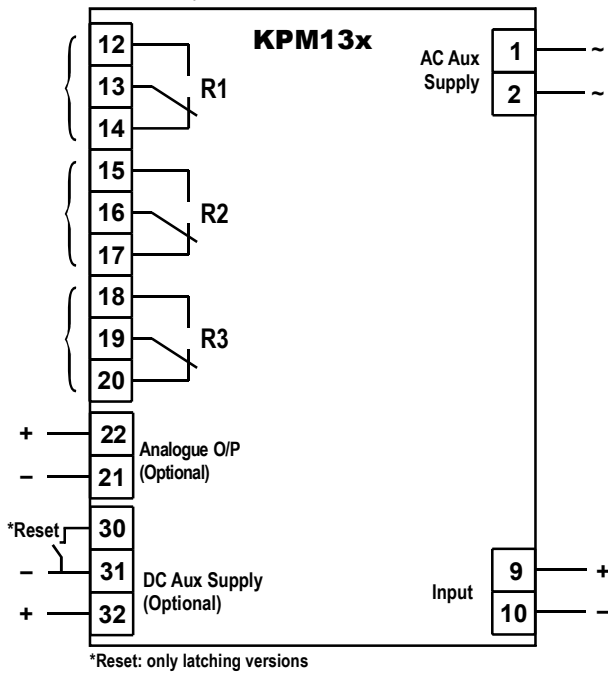
\*Latch: Only for KPM13M23GE & KPM13M23GF

Depending on application, select the model that matches the electrical installation. If none of the listed models fit your purpose please contact Megacon for customer adaptation.

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



**Analogue Output**

All **F-versions** have an analogue output proportional to meter reading. The signal is specifically intended as input to a control system or for remote monitoring of the measured parameter. Other outputs available on request.

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

O/P1	0-10mA	O/P6	-10-0-+10mA
O/P2	0-20mA	O/P7	-20-0-+20mA
O/P3	4-20mA	O/P8	0-10V
O/P4	4-12-20mA	O/P9	0,2-10V
O/P5	4-5,45-20mA	O/P10	4,3-20mA

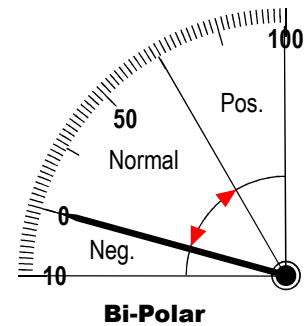
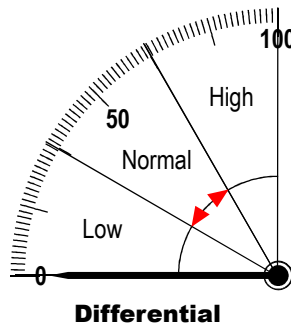
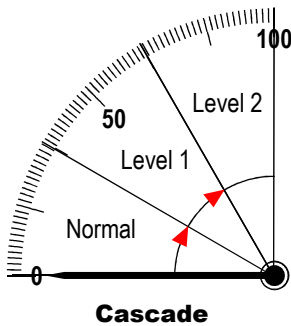
**\*Relay Reset**

Any latched relay is reset by linking terminals 30 and 31 or by interrupting the voltage input to terminal 1.

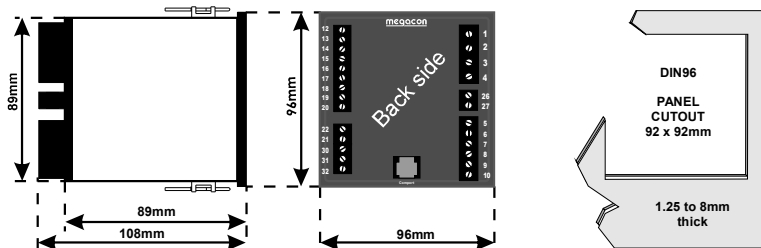
**Relay Configurations**

The difference between the configurations is the "direction" the relay time delay. The relay operation is delayed in the arrow direction, the reset is instantaneous.

Both trip levels can, independently, individually set over the scale range (0-100% FSD). The Bi-Polar version is available with 10% or 100% negative scale, 10% is the standard.



**Dimensions**



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**ORDERING EXAMPLE:**

Type: KPM13M23F  
 Aux. Supply: 200-240VAC  
 Input signal: 0-10mA  
 Scale: 0-1800rpm  
 Analogue O/P: (O/P3) 4-20mA

