



- Precision Under/Over Voltage Protection, not affected by heavily distorted waveform
- Voltage Imbalance Protection
- 3- or 4- wire systems. Definite time trip delays
- Total processing time less than 50mS
- The Pathfinder function identifies faulty phase
- Up to two individual very fast analogue output signals (<50mS), (optional)
- DIN96 Slave Indicator with status LEDs (optional)

**Specifications**

Monitored Voltage:	100-120V, 200-240V, 380-415V, 440-460V, 480VAC 40-70Hz (Fuse 0,5A)
Optional Separate Auxiliary Voltage AC:	100-120V, 200-240V, 380-415V, 440-460V, 480VAC 40-70Hz (Fuse 0,5A)
Optional Separate Auxiliary Voltage DC:	24-60VDC (Fuse 0,5A) 110-220VDC (Fuse 1A)
Supply tolerance:	+10%, -20%
Power rating:	5VA
Current Input:	1A CT or 5A CT, <0,1VA
Contact rating:	AC: 100VA -250V/2A max. DC: 50W -100V/1A max.
Adjustments:	Depending on the selected model (see page 2)
Voltage range: (as standard)	0-150V, 0-300V, 0-500V or 0-600V
Analogue output 1: (see page 3 for available outputs)	mA: Up to 20mA, max 500R V: Up to 10V, min 100kohm (other on request)
Analogue output 2: (see page 3 for available outputs)	mA: Up to 20mA, max 500R V: Up to 10V, min 500ohm (other on request)
Accuracy:	Class 0,5
Temperature:	-20 to +70°C
Humidity, relative:	0-95%
Weight:	0.6kgs
Front protection:	IP21
Flammability:	UL94-V0

The unit meets EN 60255-27 Cat. III, Pollution degree 2 and the relevant environmental and EMC tests specified in EN 60255-26 to comply with the requirements of the major Classification Societies.

Related information:  
The KCV233x/234x series are also available for panel mounting as KEV233x/234x series.

**Description**

The digitally controlled KCV233x and KCV234x provide precision (0.5% repeatability) high/low line voltage and phase voltage protection respectively to any three phase generator or motor.

A digitally controlled voltage window discriminator controls operation and delay of the voltage low/high alarm relays. The unit measures the zero point crossing and the true r.m.s. voltage value, and accuracy is independent of any wave form distortion.

The standard models takes the auxiliary supply voltage from the monitored voltage (terminal 1 & 2). It can also be delivered with optional separate AC or DC auxiliary voltage (terminal 26 & 27), but that must be specified when ordering (see page 3 for ordering code for separate Aux. Supply).

User settable trip levels and delays (definite time delays). Colour of LEDs indicate alarm status. Alarm LEDs flash during count-down.

LED status		
Power	Low	High
Normal	Alarm	Alarm

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 DIN-rail mounted instrument will view the highest up of the three phases directly in Volt. The optional slave volt-meter and the triple-zone status LEDs at a glance gives the clear safety message:

- HIGH (Over Voltage)
- NORMAL
- LOW (Under Voltage)

Red alarm lamps U/V (under voltage) and/or O/V (over voltage) flash instantly (approx. 1 flash per secs) on passing the lower and/or upper voltage differential set points. The lamp changes state and the trip relay operates after the pre-set delay. If a fault condition ends during the delay interval, the timer will automatically reset.

The voltage differential set points can be user-adjusted to suit most applications. Trip levels and delays are settable on unit front. Operation of the status trip relay is inverted (fail safe), i.e. the relay is energised during normal conditions. If one phase voltage is below the low trip level and, simultaneously, another phase voltage exceeds the high trip level then all three relays will operate.

**OUTPUTS**

Up to two individual very fast analogue output signals (optional) proportional to Volt range (see page 2 for models with outputs). If output is used for remote meter reading, we recommend 0-1mA for the slave indicator.

**RELAY OUTPUTS**

Relay operation depends on the selected model (see page 2). Other combinations are available on request.

## Pathfinder

The Pathfinder function identifies the phase(s) causing the trip by the flashing pattern of the relevant LED(s).



## Description

**KCV233E - KCV233FA / FB - KCV233G - KCV233GFA / FB**  
**KCV234E - KCV234FA / FB - KCV234G - KCV234GFA / FB**

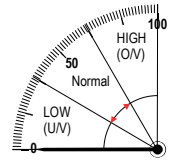
Over and under voltage protection with a third relay (R3) that operates if either the over voltage relay (R2) and/or under voltage relay (R1) operate.

A timer will reset if fault is removed during count-down. Fixed hysteresis prevents relay "chatter" (\*only on non-latch models).

Full functionality control during power-up/power-down, with 500mS power-out reservoir.

## Relay Configurations

The relay operation is delayed in the arrow direction, the reset is instantaneous. Both trip levels can, independently, individually set over the scale range.

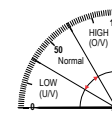


## Relay Operation

**Configuration: 3 Phase, 3-wire system**  
**Configuration: 3 Phase, 4-wire system**

Relay	UV	O/V	N/A	Fail Safe	Latch	Fixed Hysteresis	Adjustable Hysteresis	N/A	N/A
R1	X			X	X	*X			
R2		X		X	X	*X			
R3	X	X				*X			

Models	Latch	Output 1	Output 2
KCV233E	-	-	-
KCV233FA	-	X	-
KCV233FB	-	X	X
KCV233G	X	-	-
KCV233GFA	X	X	-
KCV233GFB	X	X	X
KCV234E	-	-	-
KCV234FA	-	X	-
KCV234FB	-	X	X
KCV234G	X	-	-
KCV234GFA	X	X	-
KCV234GFB	X	X	X



Adjustments	Trip level	Delay
Over Voltage:	0/+20%	0-30secs
Under Voltage:	0/-20%	0-30secs

Relays shown de-energised. R1 & R2 are fail-safe and energises when unit is powered.

**KCV233B - KCV233BFA / FB - KCV233BG - KCV233BGFA / FB**  
**KCV234B - KCV234BFA / FB - KCV234BG - KCV234BGFA / FB**

Over and under voltage protection with a third relay (R3) that operates if either the over voltage relay (R2) and/or under voltage relay (R1) operate.

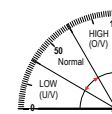
A timer will reset if fault is removed during count-down. Fixed hysteresis prevents relay "chatter" (\*only on non-latch models).

Full functionality control during power-up/power-down, with 500mS power-out reservoir.

**Configuration: 3 Phase, 3-wire system**  
**Configuration: 3 Phase, 4-wire system**

Relay	UV	O/V	N/A	Fail Safe	Latch	Fixed Hysteresis	Adjustable Hysteresis	N/A	N/A
R1	X			X	X	*X			
R2		X		X	X	*X			
R3	X	X				*X			

Models	Latch	Output 1	Output 2
KCV233B	-	-	-
KCV233BFA	-	X	-
KCV233BFB	-	X	X
KCV233BG	X	-	-
KCV233BGFA	X	X	-
KCV233BGFB	X	X	X
KCV234B	-	-	-
KCV234BFA	-	X	-
KCV234BFB	-	X	X
KCV234BG	X	-	-
KCV234BGFA	X	X	-
KCV234BGFB	X	X	X



Adjustments	Trip level	Delay
Over Voltage:	0/+20%	0-1secs
Under Voltage:	0/-20%	0-1secs

Relays shown de-energised. R1 & R2 are fail-safe and energises when unit is powered.

**KCV233C - KCV233CFA / FB - KCV233CG - KCV233CGFA / FB**  
**KCV234C - KCV234CFA / FB - KCV234CG - KCV234CGFA / FB**

Over and under voltage protection with a third relay (R3) that operates if either the over voltage relay (R2) and/or under voltage relay (R1) operate.

A timer will reset if fault is removed during count-down. Fixed hysteresis prevents relay "chatter" (\*only on non-latch models).

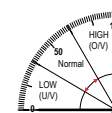
Full functionality control during power-up/power-down, with 500mS power-out reservoir.

Can be delivered with **only** separate aux supply.

**Configuration: 3 Phase, 3-wire system**  
**Configuration: 3 Phase, 4-wire system**

Relay	UV	O/V	N/A	Fail Safe	Latch	Fixed Hysteresis	Adjustable Hysteresis	N/A	N/A
R1	X			X	X	*X			
R2		X		X	X	*X			
R3	X	X				*X			

Models	Latch	Output 1	Output 2
KCV233C	-	-	-
KCV233CFA	-	X	-
KCV233CFB	-	X	X
KCV233CG	X	-	-
KCV233CGFA	X	X	-
KCV233CGFB	X	X	X
KCV234C	-	-	-
KCV234CFA	-	X	-
KCV234CFB	-	X	X
KCV234CG	X	-	-
KCV234CGFA	X	X	-
KCV234CGFB	X	X	X



Adjustments	Trip level	Delay
Over Voltage:	0/+50%	0-30secs
Under Voltage:	0/-50%	0-30secs

Relays shown de-energised. R1 & R2 are fail-safe and energises when unit is powered.

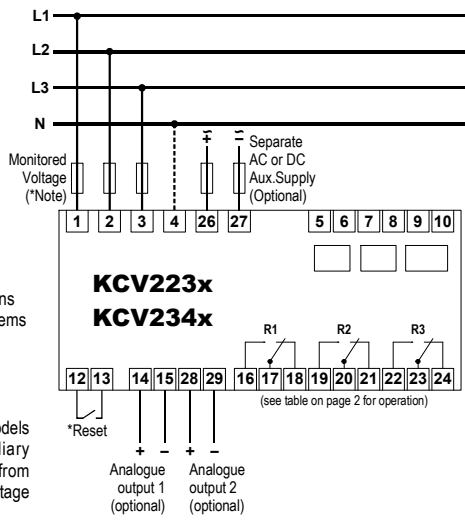
The MEGAcon policy is one of continuous improvement, consequently equipment supplied may vary in detail from this publication.

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.



## Connection Diagram

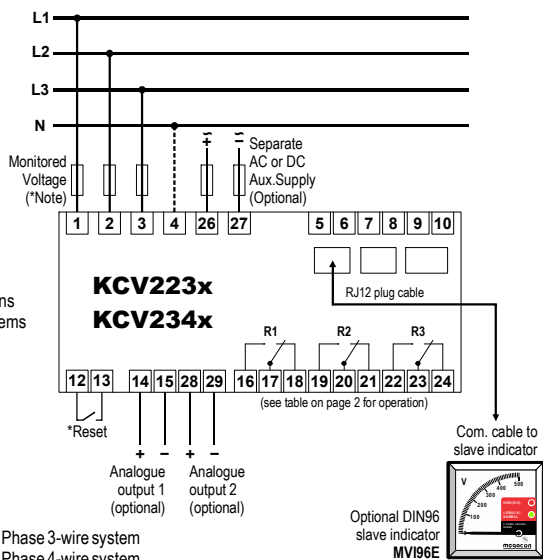
### Connection Diagram without optional slave instrument



**NB!**  
Dotted connections are for 4-wire systems (KCV234x)

**\*Note:**  
The standard models takes the auxiliary supply voltage from the monitored voltage (terminal 1 & 2).

### Connection Diagram with optional slave instrument



**NB!**  
Dotted connections are for 4-wire systems (KCV234x)

**KCV233x** : Three Phase 3-wire system  
**KCV234x** : Three Phase 4-wire system

**\*Reset:** Any latched relay is reset by linking terminals 12 and 13 or by interrupting the auxiliary voltage supply.

## Analogue Output

The output signals are proportional to the meter reading (see page 2 for an overview of models and functions).

The signal is specifically intended as an input to a control system for monitoring or control.

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

### Outputs 1

O/P1	0 - 10mA
O/P2	0 - 20mA
O/P3	4 - 20mA
O/P4	N/A
O/P5	N/A
O/P6	N/A
O/P7	N/A
O/P8	0 - 10V
O/P9	0,2 - 10V
O/P10	4,3 - 20mA/O/P20

### Outputs 2

O/P11	0 - 10mA
O/P12	0 - 20mA
O/P13	4 - 20mA
O/P14	N/A
O/P15	N/A
O/P16	N/A
O/P17	N/A
O/P18	0 - 10V
O/P19	0,2 - 10V
O/P20	4,3 - 20mA

## Relay Contacts

Burden on supply	: 170mW per relay
Switching voltage (Max)	: 400V AC, 300V DC
Switching voltage (Rated)	: 250V AC, 30V DC
Max I continuous	: 6A RMS, 6A DC
Max breaking capacity	: 1500VA AC, 18-120W DC
Dielectric strength across Open contacts	: 1000V RMS

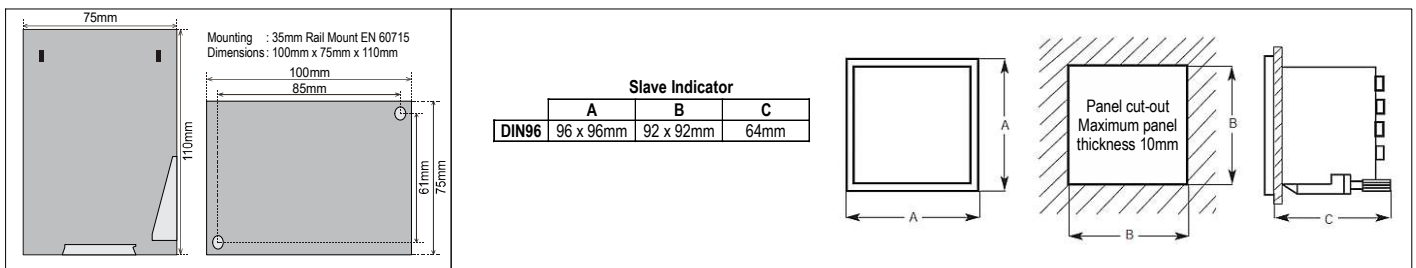
## Connection

Terminal type	: Terminal Clamp and Screw
Wire max.	: T1-T4, T5-T10: AWG 12, other terminals: AWG 24-12
Screw Torque	: 0.5Nm

## Overload

Voltage	: 1.2 x Un continuous 2 x Un for 10secs
Current	: 2.5 x In continuous 5 x In for 1secs (max 25A)

## Dimensions



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

### ORDERING INFORMATION (Example)

Type	: KCV223FB
Aux. Supply	: 200-240VAC
Monitored Voltage	: 230V (nom.)
Range	: 0-300V
Analogue output 1	: O/P3: 4-20mA
Analogue output 2	: O/P18: 0-10VDC

### Optional Separate Aux. Supply:

Add **-SA** for models with Separate AC Aux. Supply. (Example: KCV223FB-SA)

Add **-SD** for models with Separate DC Aux. Supply. (Example: KCV223FB-SD)

