# 3-PHASE GENERATOR REVERSE POWER AND VAR OVERLOAD GUARD

# KPVA17x


- **Precision Generator Reactive Power Load Protection, not affected by heavily distorted waveforms**
- **Total processing time less than 50mS**
- **3 or 4-wire systems. Definite time trip delays**
- **2-level overload protection (F version)**
- **Fast response analogue kVAr-signal output, <50mS**
- **Wide range setting of overload contact hysteresis**

## Specifications

| | |
|---|---|
| Auxiliary Voltage:<br><br>Optional Auxiliary Voltage: | 100-120, 200-240, 380-415 or 440-460VAC, 40-70Hz<br><br>24, 110DC |
| Current Input: | 1 or 5A C.T. <0,1VA |
| Contact rating: | AC: 100VA – 250V/2A max.<br>DC. 50W – 100V/1A max. |
| Adjustments: | **Basic version**<br>Overload 1: 0-100% of FSD<br>Overload 1 trip delay: 0-30Sec<br>Reverse power: 0-20% of FSD<br>Reverse trip delay: 0-30Sec<br>Hysteresis: 2-50%<br><br>**F version**<br>Overload 2: 0-100% of FSD<br>Overload 2 trip delay: 0-30Sec<br>(Fixed 10% on the F-version) |
| Analogue Output: | 0/10, 0/20, 4/20, 4,3/20, 4/5,45/20, 4/12/20, -1/0/+10mA, max 500R or 0/10, 0,2/10V, min 10kohm |
| Temperature: | -20 to +70ºC |
| Weight: | 0.6kgs |
| Front protection: | IP54 (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 KPVA17x-range is also available for rail mounting as KCVA17x.

## Application

**The digital controlled KPVA17x range provides precision (1.0%) reverse reactive power and reactive overload protection and monitoring of three phase generators.**

The unit measures the voltage and current true r.m.s. value, and accuracy is independent of any wave form distortion. The auxiliary voltage is supplied from the unit voltage input. A DC auxiliary voltage input is optionally available.

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 DIN96 instrument reads the power level directly in kVAr. The wattmeter and the triple-zone status LEDs at a glance gives the clear safety message: REVERSE / NORMAL / OVERLOAD.

**Relay Outputs**
The basic unit has relay outputs for Reverse Power (R1), Overload (R2) and R/P Status (R3). In F-versions R2 trips on O/L1 setting, R3 trips on O/L2 setting. The R/P relay is fail to safety configured. A trip LED flashes when the trip level is passed, the relay trips after elapsed delay. The timer resets if the fault is removed during countdown. Hysteresis, Trip levels and delays are settable on unit rear.

## Description

**KPVA171C** **3-wire** configuration. Reverse power relay (R1) is used to trip the generator breaker. The overload relay (R2) can be used for non-essential load release or as start signal to standby generator etc.
**A wide range overload hysteresis** can be set to enable R2 to be used for non-essential load to be reconnected or as standby generator stop signal. Relay R3 is intended for notification of a reverse power condition, or can be used for local indication, as input to an alarm system etc. R1and R3 will latch after trip.

**KPVA174C** Similar to KPVA171C, but for **4-wire** configuration.

**KPVA171F** **3-wire** configuration. The unit is similar to KPVA171C, but R3 is not used for reverse power notification, but as **Overload 2 trip relay**. R2 and R3 are non-latching and have a 10% fixed hysteresis.

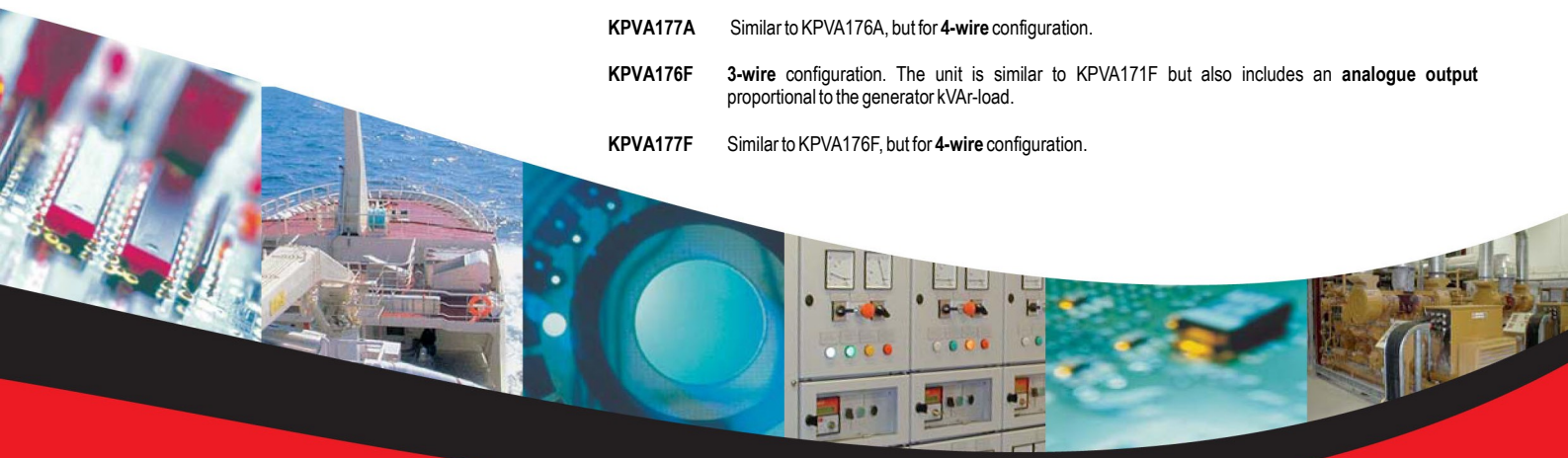
**KPVA174F** Similar to KPVA171F, but for **4-wire** configuration.

**KPVA176A** **3-wire** configuration. The unit is similar to KPVA171C, but also includes an **analogue output** proportional to the generator kVAr-load.

**KPVA177A** Similar to KPVA176A, but for **4-wire** configuration.

**KPVA176F** **3-wire** configuration. The unit is similar to KPVA171F but also includes an **analogue output** proportional to the generator kVAr-load.

**KPVA177F** Similar to KPVA176F, but for **4-wire** configuration.



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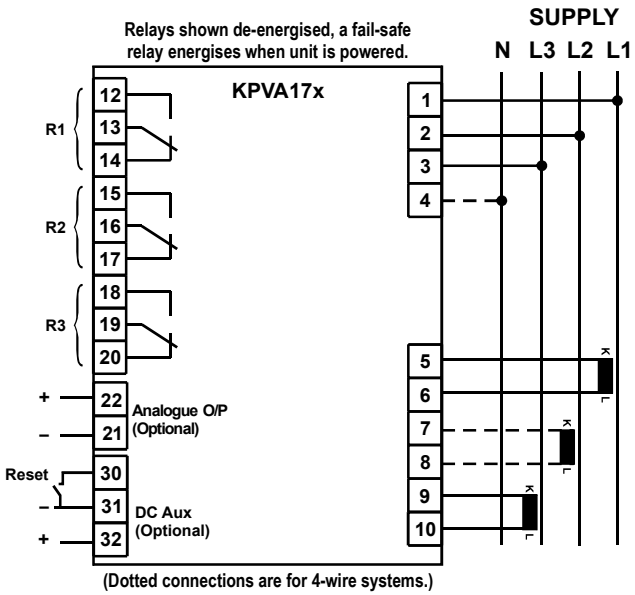
To ensure correct kVAr measurement voltage phase sequence and CT connections MUST be as shown on connection diagram.




**NOTE:** **Details in individual connection diagram supplied with unit may differ from the general diagram shown above.**

## Relay — Basic version

| | REVERSE POWER | OVERLOAD | FAIL SAFE | LATCH |
|---|---|---|---|---|
| R1 | √ | | √ | √ |
| R2 | | √ | | |
| R3 | √ | | | √ |

## Relay — F version

| | REVERSE POWER | OVERLOAD 1 | OVERLOAD 2 | FAIL SAFE | LATCH |
|---|---|---|---|---|---|
| R1 | √ | | | √ | √ |
| R2 | | √ | | | |
| R3 | | | √ | | |

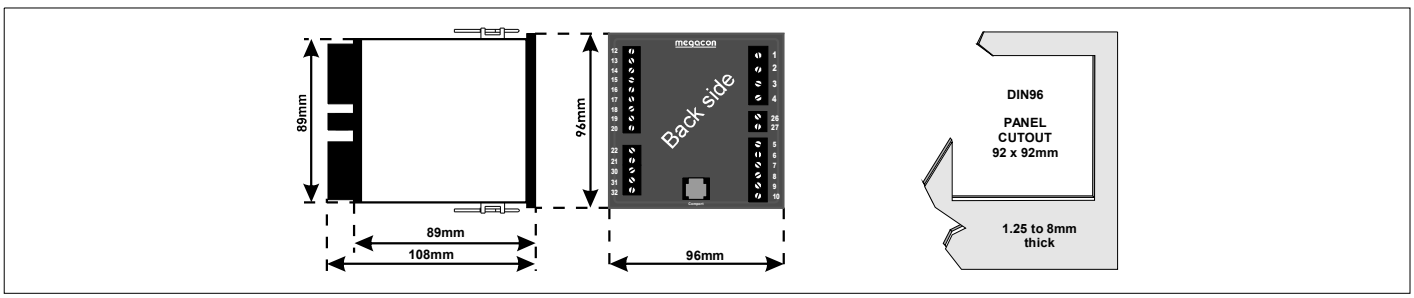
**Relay Reset**
Any latched relay is reset by linking terminals 30 and 31 or by interupting voltage input to terminal 1.

## Analogue Output

**KPVA176A**, **KPVA177A**, **KPVA176F** and **KPVA177F** have an analogue output proportional to kVAr-meter reading. The signal is specifically intended as input to a control system for kVAr monitoring, load sharing, load shedding etc.

Add to type designation suffix from table below to designate 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 |




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

**ORDERING EXAMPLE:**

| | |
|---|---|
| Type: | KPVA176A |
| Aux. Supply: | 200-240V |
| Input Voltage: | 690:230V |
| Input Current: | 1500/5A |
| Range: | -150/0/+1500kVAr |
| Analogue O/P: | 4/5,45/20mA |

IS range

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