

## SINGLE PHASE Pump Protection Relay without Level Sensors

### SINGLE PHASE PUMP PROTECTION

#### Underload protection by undercurrent

- Eliminates need for level sensors to detect dry running.
- For 1-phase motors from 3 to 16 A.
- Precise motor heating and cooling memory, reproduces its thermal image.
- Visual indication of trip cause.
- Adjustable reset time for  $I<$ .

Suitable for 1-phase submersible pumps. By monitoring undercurrent it avoids problems caused by dry running, cavitation, etc.

The great advantage of the PS relay is that, without requiring any external detectors like level electrodes, it monitors the load of the motor and stops it before an expensive breakdown occurs.

### PS 11-R



### PROTECTION FUNCTIONS

- $I>$  Overload
- $I<$  Undercurrent
- $U>$  Overvoltage

## WITHOUT LEVEL SENSORS

### PS 16-R



MODELS		PS 11-R	PS 16-R	
Adjustment range Motor 400 V 50/60 Hz	$I_B$ (A)	3 - 11	3 - 16	
	CV	0,5 - 2	0,5 - 3	
	kW	0,37 - 1,5	0,37 - 2,2	
Code	according to the relay voltage supply (+15% -10%) ac: 50/60 Hz	230 Vac single phase	12164	12163
		115 Vac single phase	12171	12172

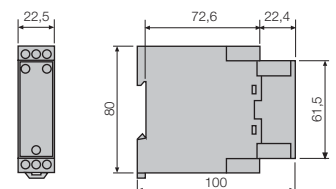
CHARACTERISTICS	
Thermal memory / Overload trip	Yes / From $1,1 \times I_B$
Maximum motor nominal voltage	230 Vac
Trip classes (IEC 947-4-1)	10
Undercurrent protection adjustable / Trip delay	From 0,4 to $0,9 \times I_B / 5$ s
Overvoltage protection	From nominal V + 15%
Reset mode for protection against dry running	$I<$ automatic (adjustable) and remote. More info in page 110
Reset mode for other protection functions	$I>$ automatic and remote, $U>$ automatic. More info in page 110
Signalling LED's	3 LED's: ON + $I>$ $I<$ + $U>$
Output contacts	1 relay with 1 NO
Switching power	$I_{th}$ : 5A; AC15 - 250V - 2A; DC13 - 30V - 2A
Terminals: Max. section / screw torque	2,5 mm <sup>2</sup> , No. 22 - 12AWG / 20Ncm, 1,8 LB - IN
Power consumption	7 VA (230 Vac) - 4 VA (115 Vac)    3 VA (115-230 Vac)
Protection degree / weight / mounting	IP20 / 0,15 kg / DIN rail    IP20 / 0,3 kg / DIN rail
Storage temperature	-30°C +70°C
Operating temperature / max. altitude	-15°C +60°C / 1000m; -15°C +50°C / 3000m
Standards	IEC 255, IEC 947, IEC 801, EN 50081-2



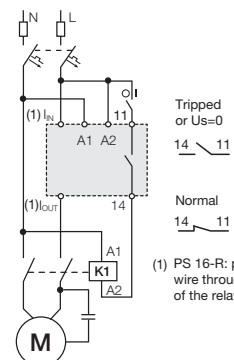
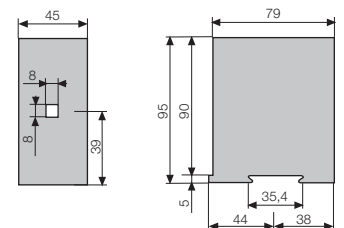
Settings and curves, see pages 105 to 111.

### DIMENSIONS PS RELAY (mm)

#### PS 11-R



#### PS 16-R



Tripped  
or  $U_s=0$   
14 11

Normal  
14 11

(1) PS 16-R: pass the wire through the hole of the relay.