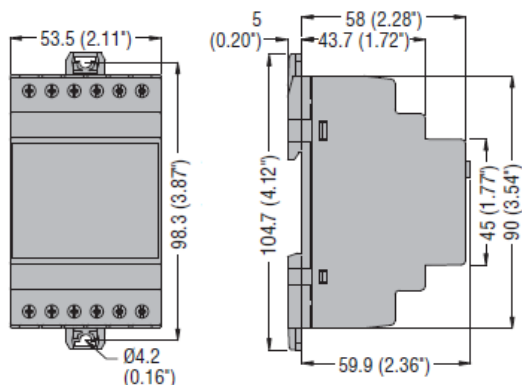


Order code	Rated current I <sub>e</sub>	Auxiliary supply voltage	Qty per pkg	Wt
	[A]	[V]	n°	[kg]

Single and three-phase systems.  
 Maximum AC current and minimum cosφ. Delayed trip.  
 Phase loss and incorrect phase sequence. Instantaneous trip.  
 Auxiliary AC power supply.  
 Automatic or manual reset.

PMA50 A240	5 or 16A	220-240VAC	1	0.251
PMA50 A415		380-415VAC	1	0.251
PMA50 A480		440-480VAC	1	0.251



### General characteristics

- Pump protection relay against dry running, auxiliary AC power supply
- Motor under-load and over-current control
- Direct connection up to 16A max or by current transformer (CT)
- Excellent tripping accuracy
- Voltage control range 80-660VAC
- Current control range 0.1-16A
- Resetting and enabling consent input
- 1 relay output relay with 1 changeover contact (SPDT)
- Modular DIN 43880 housing, 3 module
- IEC protection degree: IP40 on front (only when placed in IP40 enclosure or control board); IP20 at terminals.

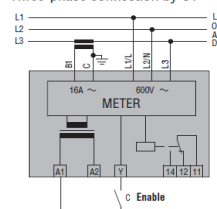
### ADJUSTMENTS

- "Cosφ min" Minimum cosφ threshold 0.1-0.99 (under-load/dry running)
- "I<sub>max</sub>" Maximum (over) current threshold 10-100%I<sub>e</sub>
- "Trip delay" Tripping time for minimum cosφ and maximum current 0.1-10s
- "Inhibition time" Tripping delay for external input or at power up 1-60s
- "Aut. reset delay" Automatic reset time OFF-100min
- "Mode"
  - Rated current 5A or 16A
  - Single or three phase
  - External reset On or Off.

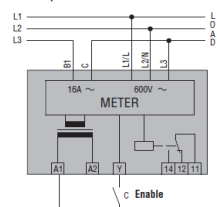
### Pump protection - motor under-load/over-current monitoring

#### PMA50

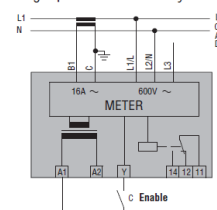
#### Three-phase connection by CT



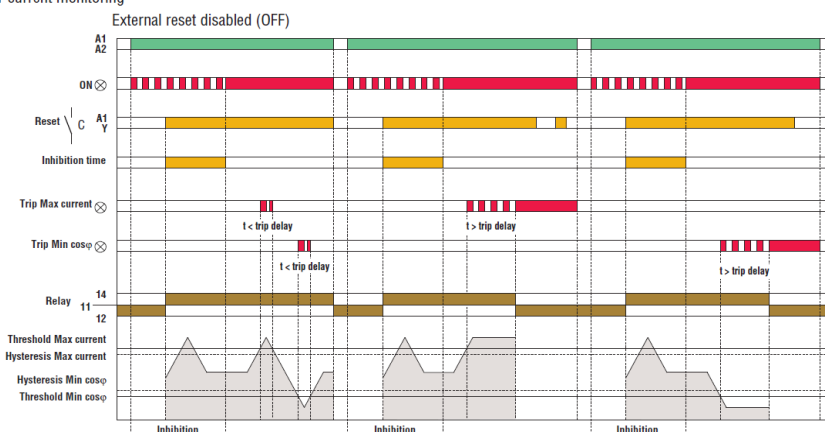
#### Three-phase direct connection



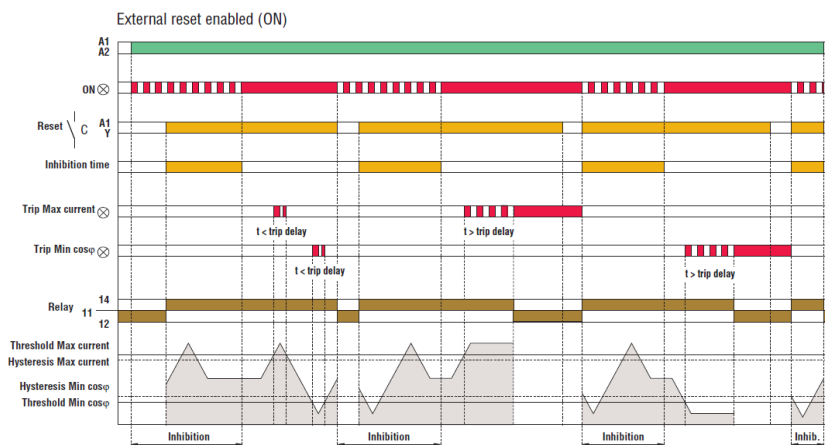
#### Single-phase connection by CT



Operation			
Mode	I <sub>e</sub>	Connection	External reset
A	5A	1 phase	OFF
B			ON
C			OFF
D	16A	3 phase	ON
E			OFF
F			ON
G			OFF
H			ON



**Certifications and compliance**  
 Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices - Modular ampere monitoring relays.  
 Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.



TYPE	PMA50	PMA60
DESCRIPTION	Single and three-phase pump protection (motor under-load and over-current control) monitoring for max AC current, min $\cos\varphi$ , phase loss and incorrect phase sequence	Single and three-phase shift control for minimum and maximum $\cos\varphi$ monitoring
<b>CURRENT AND <math>\cos\varphi</math> CONTROL CIRCUIT</b>		
Rated current $I_e$	5 or 16A	16A
Rated frequency	50/60Hz $\pm 5\%$	
Overload capacity	5I <sub>e</sub> for 1s 160A for 10ms Constant 16A	
Connection	Direct or by current transformer	
Adjustments	End-scale value	5 or 16A
	Tripping for MAX current	10-100I <sub>e</sub>
	Tripping for $\cos\varphi$	0.1-0.99 $\cos\varphi$ (MIN)
	Tripping delay	0.1-10s
	Inhibition time	1-60s
	Automatic resetting delay	OFF-100min
External input	Consent for running/resetting	—
Repeat accuracy	$\pm 1\%$ with constant parameters	
<b>VOLTAGE CONTROL CIRCUIT</b>		
Voltage measuring range (U <sub>e</sub> )	80...660VAC	
Tripping time for phase loss	60ms	
<b>AUXILIARY SUPPLY</b>		
Auxiliary supply voltage U <sub>s</sub>	220-240VAC	
	380-415VAC (maximum voltage for UL/CSA)	
	440-480VAC	
Operating range	0.85-1.1 U <sub>s</sub>	0.85-1.1 U <sub>s</sub>
Frequency range	50/60Hz $\pm 5\%$	50/60Hz $\pm 5\%$
Power consumption (maximum)	4.5VA	4.4VA
Power dissipation (maximum)	2.3W	2.4W
<b>RELAY OUTPUTS</b>		
Number of relays	1	2
Relay state	Normally energised, de-energises at tripping	Normally energised / de-energised (ON-OFF) (configurable)
Contact arrangement	1 changeover contact SPDT each	
Rated operational voltage	250VAC	
Maximum switching voltage	400VAC	
IEC conventional free air thermal current I <sub>th</sub>	8A	
UL/CSA and IEC/EN 60947-5-1 designation	B300	
Electrical life (With rated load)	10 <sup>5</sup> cycles	
Mechanical life	30x10 <sup>6</sup> cycles	
Indications	1 green LED for power on/inhibition 2 red LEDs for minimum/maximum tripping	
<b>CONNECTIONS</b>		
Tightening torque maximum	0.8Nm (7lbin; 7-9lbin per UL/CSA)	
Conductor section min-max	0.2-4.0mm <sup>2</sup> (24-12AWG; 18-12 AWG per UL/CSA)	
<b>INSULATION (input-output)</b>		
IEC rated insulation voltage U <sub>i</sub>	600VAC	
IEC rated impulse withstand voltage U <sub>imp</sub>	6kV	
IEC power frequency withstand voltage	2.5kV	
<b>AMBIENT CONDITIONS</b>		
Operating temperature	-20...+60°C	
Storage temperature	-30...+80°C	
<b>HOUSING</b>		
Material	Self-extinguishing polyamide	