

Protection relays

Technical characteristics

Pump protection and phase shift monitoring relays

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
CURRENT AND $\cos\varphi$ CONTROL CIRCUIT		
Rated current I_e	5 or 16A	16A
Rated frequency	50/60Hz $\pm 5\%$	
Overload capacity	5 I_e for 1s 160A for 10ms Constant 16A	
Connection	Direct or by current transformer	
Adjustments	End-scale value	5 or 16A
	Tripping for MAX current	10-100 I_e
	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	
VOLTAGE CONTROL CIRCUIT		
Voltage measuring range (U_e)	80...660VAC	
Tripping time for phase loss	60ms	
AUXILIARY SUPPLY		
Auxiliary supply voltage U_s	220-240VAC	
	380-415VAC (maximum voltage for UL/CSA)	
	440-480VAC	
Operating range	0.85-1.1 U_s	0.85-1.1 U_s
Frequency range	50/60Hz $\pm 5\%$	50/60Hz $\pm 5\%$
Power consumption (maximum)	4.5VA	4.4VA
Power dissipation (maximum)	2.3W	2.4W
RELAY OUTPUTS		
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_{th}	8A	
UL/CSA and IEC/EN 60947-5-1 designation	B300	
Electrical life (With rated load)	10 ⁵ cycles	
Mechanical life	30x10 ⁶ cycles	
Indications	1 green LED for power on/inhibition 2 red LEDs for minimum/maximum tripping	
CONNECTIONS		
Tightening torque maximum	0.8Nm (7lbin; 7-9lbin per UL/CSA)	
Conductor section min-max	0.2-4.0mm ² (24-12AWG; 18-12 AWG per UL/CSA)	
INSULATION (input-output)		
IEC rated insulation voltage U_i	600VAC	
IEC rated impulse withstand voltage U_{imp}	6kV	
IEC power frequency withstand voltage	2.5kV	
AMBIENT CONDITIONS		
Operating temperature	-20...+60°C	
Storage temperature	-30...+80°C	
HOUSING		
Material	Self-extinguishing polyamide	