PROTECTOR TRIP RELAYS

An extensive range of electronic control products providing continuous monitoring and protection of any electrical parameter. When the monitored parameter deviates from the desired set trip limit, the relay will operate to prevent damage to power asset. This versatile range features a host of stylish DIN-rail protectors offering numerous trip functions for single and three-phase power systems, including over and under voltage, current, frequency, phase sequence/failure or balance, reverse power, synchro-check, speed sensing and finally DC inputs.

Features

- LED fault indication
- Adjustable nominal voltages, trip points, time delay and differentials
- Compact DIN-rail enclosure
- Power on LED (Green)
- Designed to avoid nuisance tripping

Benefits

- Protection of power assets
- Detection and isolation of faults
- Maintains supply continuity of healthy circuits
- High speed tripping to avoid damage

Applications

- Switchgear
- Distribution systems
- Process control
- Motor protection
- Equipment and network protection

New Products

Voltage Relays with Auxiliary

Lower profile
Earth Leakage Protection Relay

Hot Spot Temperature Relay

Multifunction Timer Relays

DC Voltage Relays

AC CURRENT

AC current protectors provide a continuous surveillance of monitored circuits and offer user adjustable trip points (set points) with time delay settings. When the current moves outside the set point limit for longer than the time delay, the relay will operate providing an alarm control or tripping signal.

Basic Parameters

- Universal auxiliary supply 24-240V AC/DC galvanically isolated from monitored current circuit
- Pre-set differential (hysteresis) 1%
- Trip level adjustment between 40-120% (In)
- Available with 1A or 5A nominal inputs of (In)
- Power on LED (green)

Under Current - PAU

- Single-phase
- Continuously monitors to provide under current protection (set level Imin)
- Adjustable time delay
- 1 module version

Over Current - PAO

- Single-phase
- Continuously monitors to provide over current protection (set level Imax)
- Adjustable time delay
- 1 module version

Under and Over Current - PAD

- Single-phase
- Monitors decrease of current under a set level Imin and simultaneously an over range of current above a set level Imax
- Independently adjustable delay on both over and under set points
- Two output relays
- Three module version

Under or Over Current - PAP/V

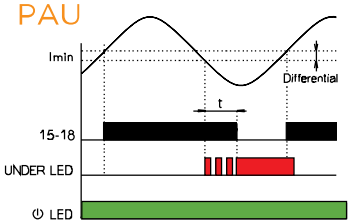
- Three-phase, three/four-wire
- Continuously monitors to provide under or over protection (set level In)
- Monitors three-phase current
- Selectable under or over protection
- Six module version

Part number	1-phase	3-phase 3/4-wire	Protection
PAU	x		Under current
PAO	x		Over current
PAD	x		Under and over current
PAP/V		x	Under or over current

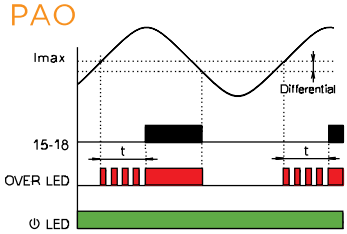
AC CURRENT

Characteristics

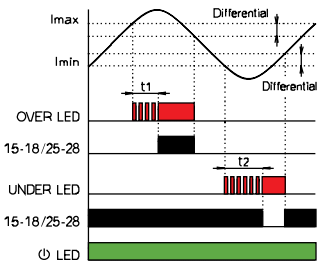
PAU



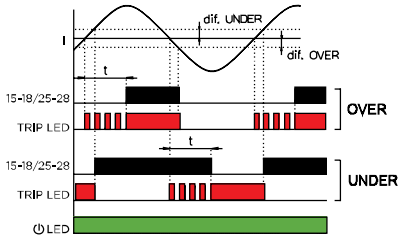
PAO



PAD



PAP/V



Operation

The set point adjustment range is between 40% and 120% of the nominal current with 1A or 5A nominal input current (via current transformers or direct connection). An internal differential setting of 1% reduces nuisance tripping if the measured signal is noisy or unstable. Relay will trip if the measured current moves outside the set point limit and the red LED indicates a fault condition. An adjustable time delay eliminates premature operation on short duration current fluctuations. During this delay period the red LED will flash. Protectors draw their operating power from a separate auxiliary supply input.

Under Current - PAU

Should the monitored current fall below the set point level Imin, the protector will trip and the red LED will illuminate indicating the fault condition. During the time delay period the red LED will flash for the set time (t) before the relay de-energises output relay contacts. The relay will automatically reset once the monitored current rises above the set point level Imin plus the differential (internally pre-set 1%) causing the red LED to extinguish and the relay to make without time delay.

Over Current - PAO

Should the monitored current exceed the set point level Imax, the protector will trip and the red LED will illuminate indicating the fault condition. During the time delay period the red LED will flash for the set time (t) before the relay energises output relay contacts. The protector will automatically reset once the monitored current falls below the set point level Imax plus the differential (internally pre-set 1%) causing the red LED to extinguish and the relay to release without time delay.

Under and Over Current - PAD

- PAD is a combination of both PAU and PAO products.

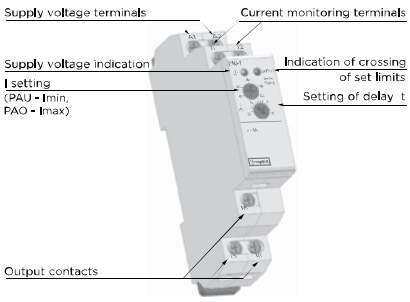
Under or Over Current - PAP/V

The manner of operation depends on the mode selected at the front panel either Under Current or Over Current.

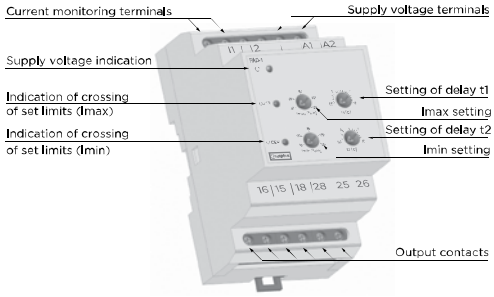
Note: Red LED indicates fault condition, not relay status.

Protector Overview

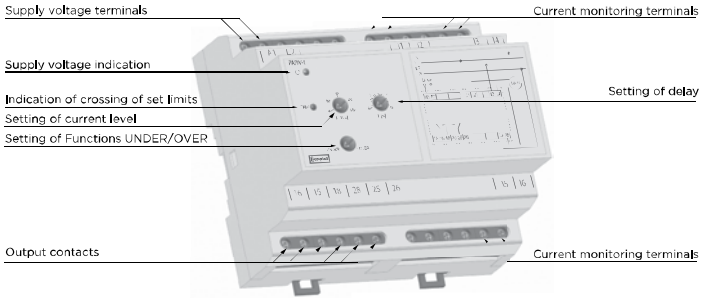
PAU, PAO



PAD



PAP/V

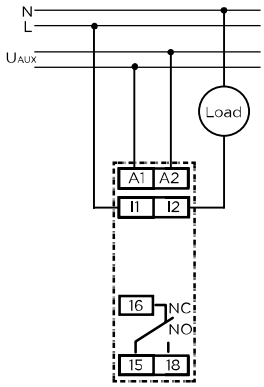


Single-phase

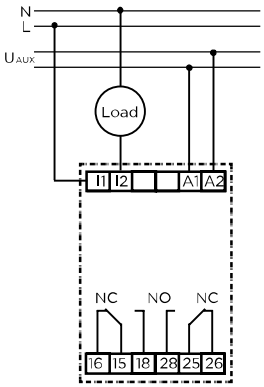
Technical parameters	PAU-1	PAU-5	PAO-1	PAO-5	PAD-1	PAD-5
Under current protection (de-energise on trip):	•	•			•	•
Over current protection (energise on trip):			•	•	•	•
Auxiliary supply terminals:	A1, A2					
Auxiliary supply voltage:	24-240V AC/DC					
Auxiliary supply voltage tolerance:	±10%					
Auxiliary voltage burden (max):	2.6VA/0.8W				3VA/1.2W	
Operating frequency AC:	45-65 Hz					
Current input terminals:	I1, I2					
Rated current In:	1A AC	5A AC	1A AC	5A AC	1A AC	5A AC
Current input burden (max):	0.1VA	0.5VA	0.1VA	0.5VA	0.1VA	0.5VA
Upper current limit Imax:	Adjustable 40-120% In					
Lower current limit Imin:	Adjustable 40-120% In					
Overload capacity -continuous: -max. 3s:	2A 20A	10A 50A	2A 20A	10A 50A	2A 20A	10A 50A
Differential (hysteresis):	Internally pre-set at 1% In					
Time delay:	Adjustable 0.5-10s				Independently adjustable under/over 0.5-10s	
Output relay-contact:	1x change over (AgNi) plated				2x change over (AgNi) plated	
Output relay-contact terminals:	15, 16, 18				Under 15, 16, 18/over 25, 26, 28	
Load capability of relay contact AC:	250V/8A, max. 2000VA					
Load capability of relay contact DC:	30V/8A					
Mechanical life:	$3x10^6$ by rated load					
Relay reset:	Automatic					
ANSI no.:	37	37	50	50	37/50	37/50
Operating temperature:	-20 +55°C					
Storage temperature:	-30 +70°C					
Electric strength (supplying - contact relay):	4kV/1min.					
Overvoltage category:	III.					
Pollution degree:	2					
Enclosure integrity:	IP40 from the front panel/IP10 terminals				IP40 from the front panel/ IP20 terminals	
Enclosure style:	DIN-rail, 1 module				DIN-rail, 3 module	
Case material:	Flame retardant polycarbonate					
Connecting conductors profile (mm^2):	max. $2x2.5mm^2/1x4mm^2$				max. $2x1.5mm^2/1x2.5mm^2$	
Dimensions:	H90xW17.6xD64mm				H90xW52xD65mm	
Weight:	70g	70g	70g	70g	208g	208g
Standards:	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 6100-6-4					

Connection

PAU, PAO



PAD



Three-phase three/four-wire

Technical parameters	PAP/V-1	PAP/V-5
Under current protection (de-energise on trip):	Selectable	Selectable
Over current protection (energise on trip):	Selectable	Selectable
System type:	3-phase (3-)	3-phase (3-)
Auxiliary supply terminals:	A1, A2	
Auxiliary supply voltage:	24-240V AC/DC	
Auxiliary supply voltage tolerance:	±10%	
Auxiliary voltage burden (max):	3VA/1.2W	
Operating frequency AC:	45-65 Hz	
Current input terminals L1 phase: L2 phase: L3 phase:	 I1, I2 I3, I4 I5, I6	
Rated current In:	1A AC	5A AC
Current input burden (max):	0.1VA	0.5VA
Upper current limit Imax:	Adjustable 40-120% In	
Lower current limit Imin:	Adjustable 40-120% In	
Overload capacity -continuous: -max. 3s:	 2A 50A	 10A 50A
Differential (hysteresis):	Internally pre-set at 1% In	
Time delay:	Adjustable 0.5-10s	
Output relay-contact:	2x change over (AgNi) plated	
Output relay-contact terminals:	15, 16, 18 & 25, 26, 28	
Load capability of relay contact AC:	250V/8A, max. 2000VA	
Load capability of relay contact DC:	30V/8A	
Mechanical life:	$3x10^6$ by rated load	
Relay reset:	Automatic	
ANSI no.:	37/50	37/50
Operating temperature:	-20 +55°C	
Storage temperature:	-30 +70°C	
Electric strength (supplying - contact relay):	4kV/1min.	
Over voltage category:	III.	
Pollution degree:	2	
Enclosure integrity:	IP40 from the front panel/IP20 terminals	
Enclosure style:	DIN-rail, 6 module	
Case material:	Flame retardant polycarbonate	
Connecting conductors profile (mm^2):	max. $2x1,5mm^2/1x2,5mm^2$	
Dimensions:	H90xW105xD64mm	
Weight:	208g	208g
Standards:	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 6100-6-4	

Connection

PAP/V