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Control relays
and protection

Control relays

Modern industry is characterised by automated continuous production process that must be under control in order to avoid high costs associated to irregular operation and unexpected stops. Employing control relays on industrial installations will permit monitoring network supply and prevent potential breakdowns. Machinery maintenance will be supported by anticipatory protection.

General characteristics

Direct setting
Frontal direct setting and reading of measurement thresholds and time delays

On product information
Wiring and relay characteristics on side Product easy recognition with reference on face.

Specific transformer
Oversized transformer stands supply variations and filters disturbances

Firmware

Large flexibility on control specific requirements by integrating programable non-volatile memory. Customised products to particular market and OEM needs.

Phase Control

Aimed to protect motors where phase sequence is specially relevant (lifts, cranes, escalators,..) or phase failure can be specially damaging.

References
RF011 RF01 RF01A

Current and temperature monitoring

Monitoring currents and temperature on mechanical loads such as motors, pumps and resistors increase protection on applications such as pumping, ventilation, lifts and conveyors.

References
RC RTM

Voltage Monitoring

Industrial process requiring additional protection and preventive action install complex voltage monitoring relays that additional to phase failure and sequence protection offer voltage control within established threshold and adjustable timings. We find it in automation systems, refrigeration, network transfers.

References
RF02 RF02N RF-UT
RF03 RF03N

Applications

- Motors
- Moving equipment (cranes, lifts, escalators,conveyors)
- Refrigaration
- Extraction fans
- Pumps
- Automatic transfer supplies
- System automation

Monitor

Control relays are measurement units that continuously monitor electrical values within established parameters.

Control

Output relays operate with positive logic, contacts are closed on normal conditions and will open when control electronics detect network faults.

Protection

Your equipment is protected against network faults and all associated damages.

Signalling

Operating set, working status and failure conditions are informed through rotary selectors and signalling led located on the front face.

RF011

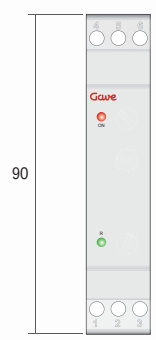
Phase Failure and Phase Sequence Relay

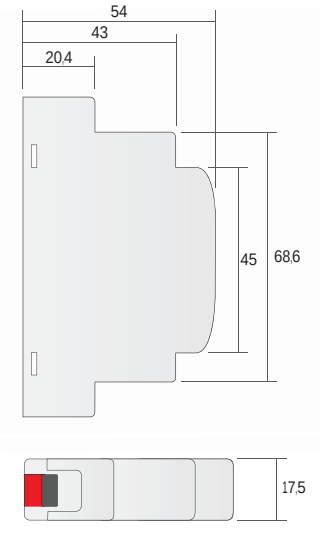
Voltage monitoring relay for three phase supply.
Protects against Phase Failure (loss) and Phase Sequence.

Characteristics

- Mounting on symmetrical DIN rail
- Connects when detecting: 3 phases
  correct phase sequence RST presence
- Trips when detecting: phase failure
  incorrect phase sequence
- Phase failure is considered when nominal voltage is < 85% rated
- Output changeover relay 5A / 250V AC cos φ = 1
- Operating temperature: -10º to + 60ºC

Dimensions

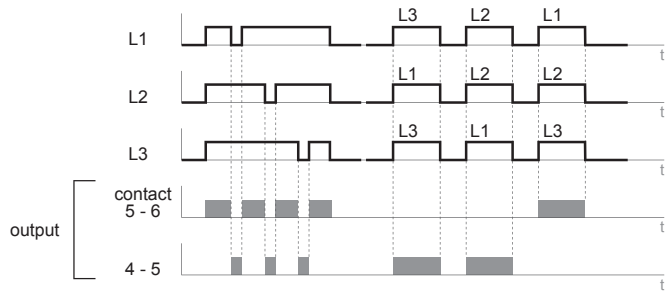




References

References	Width (modules)	Reset time	Voltage
RF011	17,5mm (1)	0,1 sec.	208-480V AC

Diagram



Signalling

ON (red)	R (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
⊗	⊗	phase failure

● ON ⊗ OFF ☼ BLINK

RF01

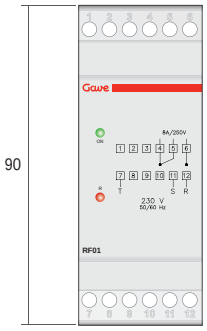
Phase Failure and Phase Sequence Relay

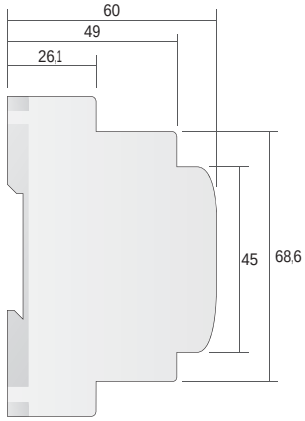
Voltage monitoring relay for three phase supply.
Protects against Phase Failure (loss) and Phase Sequence.

Characteristics

- Mounting on symmetrical DIN rail
- Connects when detecting: 3 phases presence
  correct phase sequence RST presence
- Trips when detecting: voltage drop > 25%
  incorrect phase sequence
- Phase failure is considered when nominal voltage is < 75% rated
- Output changeover relay 8A / 250V AC cos φ = 1
- Operating temperature: -10º to + 60ºC

Dimensions

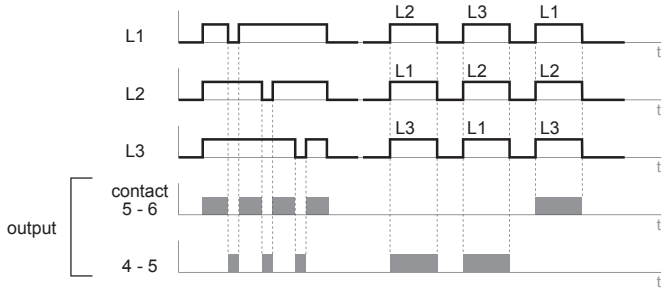




References

References	Width (modules)	Reset time	Voltage
RF01-230	35mm (2)	0,1 sec.	230 V
RF01-400	35mm (2)	0,1 sec.	400 V

Diagram



Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
⊗	⊗	phase failure

● ON ⊗ OFF ☼ BLINK

RF01A

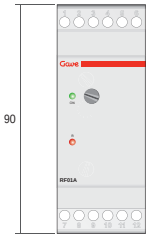
Adjustable Phase Failure and Phase Sequence Relay

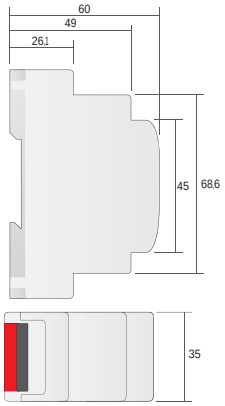
Electronic relay for three phase supply monitoring and protecting against disturbances on the main supply.
Protection against Phase Failure (loss) and Phase Sequence.
Undervoltage adjustable.

Characteristics

- Mounting on symmetrical DIN rail
- Adjustable phase failure tripping
- Connects when detecting: 3 phases
  correct phase sequence RST presence
- Trips when detecting: voltage drop under the preset voltage
  incorrect phase sequence
- Detection of phase failure under preset value
  RF01A-230: adjustable from 150V to 250V
  RF01A-400: adjustable from 300V to 440V
- Output changeover relay 8A / 250V AC cos φ = 1
- Operating temperature: -10º to + 60ºC

Dimensions

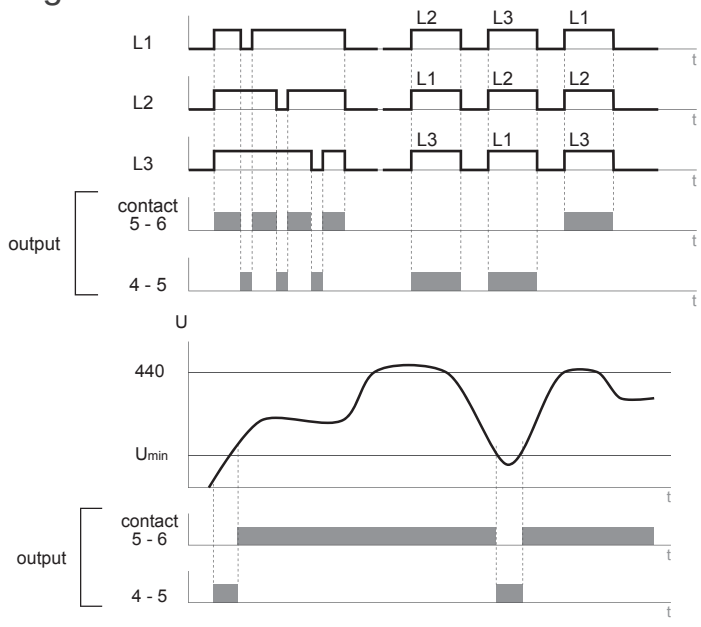




References

References	Width (modules)	Reset time	Voltage
RF01A-230	35mm (2)	0,1 sec.	230 V
RF01A-400	35mm (2)	0,1 sec.	400 V

Diagram



Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
⊗	☼	phase failure

● ON ⊗ OFF ☼ BLINK

RF-UT

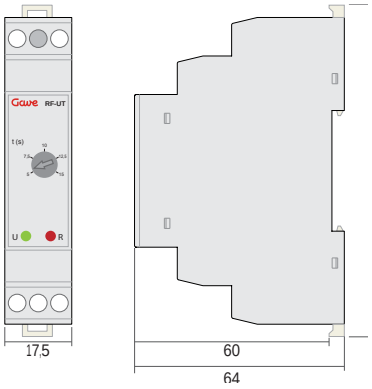
Fixed Undervoltage Relay

Electronic relay for single phase or three phase supply voltage control and protecting against disturbance on the main supply.
Protection against undevoltage at a fixed voltage. Restart time delay to protect motors against abrupt restarts.

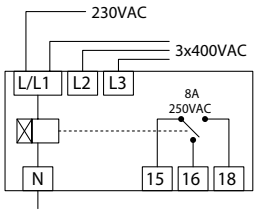
Characteristics

- Compact size width 1 module (17,5 mm)
- 1 output changeover contact
- Breaking capacity: 8A / 250V AC cos φ =1
- Mounting on symmetrical DIN rail
- Energising after time delay when supply voltage >75% Un
- Restart time delay adjustable 5 -15 min

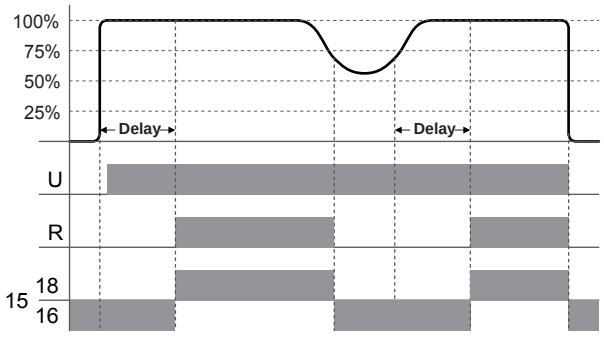
Dimensions



Connection



Diagram



Signalling

R (red)	U (green)	Status
⊗	●	supply
●	●	relay contact closed

● ON ⊗ OFF ☼ BLINK

References

References	Width (modules)	Reset time	Voltage
RF-UT	17,5mm (1)	5-15 min	230 VAC
RF-UT3	17,5mm (1)	5-15 min	3 x 400VAC

RF02

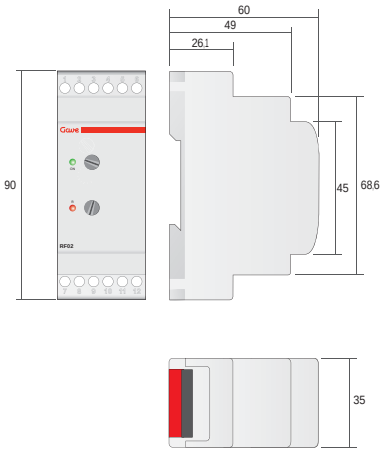
Phase Failure, Sequence and Voltage monitoring Relay

Electronic relay for three phase supply monitoring and protecting against disturbances on the main supply.
Protection against Phase Failure (loss), Phase Sequence and Over/under voltage.

Characteristics

- Mounting on symmetrical DIN rail
- Connects when detecting: 3 phases within the set voltage
  correct phase sequence RST presence
- Trips when detecting: phase failure, incorrect phase sequence, voltage variations
- Adjustable threshold (5 to 20%) for voltage variations (from 0,1 to 10 seconds)
- Output changeover relay 8A / 250V AC cos φ = 1
- Operating temperature: -10° to + 60°C

Dimensions



References

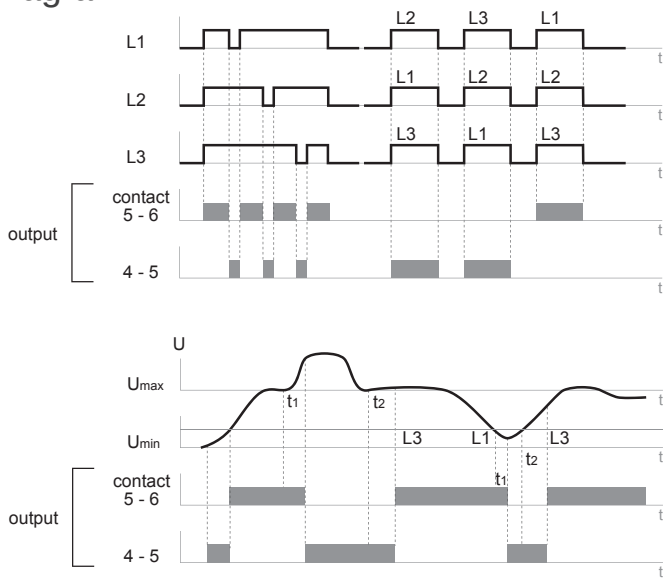
References	Width (modules)	Reset time	Voltage
RF02-230	35mm (2)	3min continuous input voltage within threshold	230 V
RF02-400	35mm (2)		400 V
RF02I-230	35mm (2)	0,1sec.	230 V
RF02I-400	35mm (2)		400 V

Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
☼	●	voltage out of threshold
☼	☼	timing to reset from voltage variation
⊗	⊗	phase failure
⊗	☼	timing to reset from phase failure

● ON ⊗ OFF ☼ BLINK

Diagram



RF02N

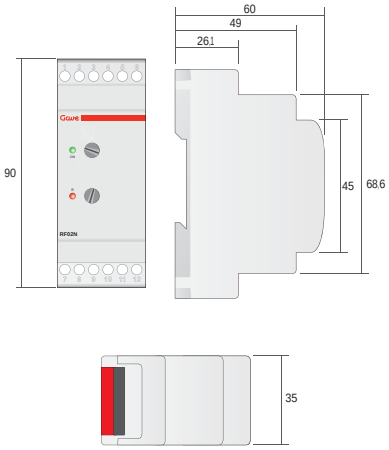
Phase Sequence, Phase + Neutral Failure and Voltage monitoring Relay

Detects an incorrect phase sequence. Detects a failure on any phase.
Detects phase voltage variation

Characteristics

- Mounting on symmetrical DIN rail
- Connects when detecting: 3 phases
  phase sequence RST+N is correct
- Trips when detecting either a phase failure, phase/neutral voltage variations (adjustable threshold ±5 to ±20 %) or an incorrect phase sequence.
- Tripping time, for voltage variations, adjustable from: 0,1 to 10 seconds.
- Tripping time for an incorrect phase sequence or phase failure: 0,1 sec.
- Output: change over relay
- Operating temperature: -10ºC to +60ºC

Dimensions



Signalling

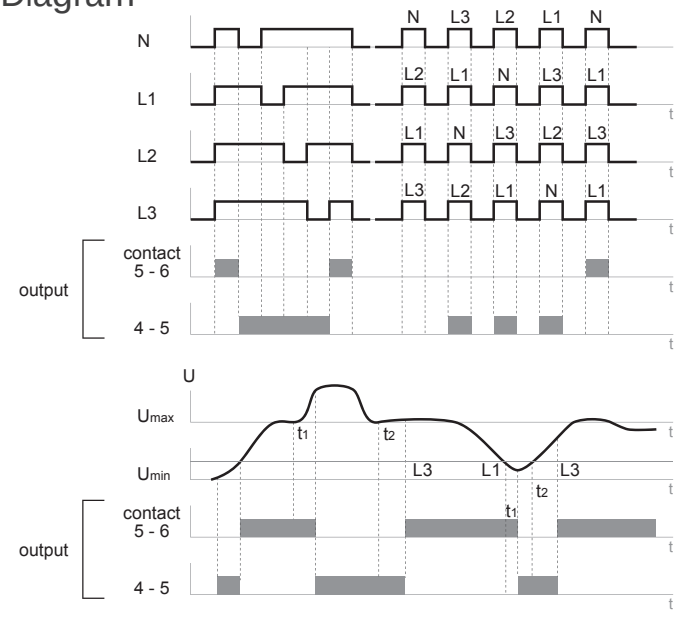
R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
☼	●	voltage out of threshold
☼	☼	timing to reset from voltage variation
⊗	⊗	phase failure
⊗	☼	timing to reset from phase failure

● ON ⊗ OFF ☼ BLINK

References

References	Width (modules)	Reset time	Voltage
RF02N-230	35mm (2)	3min continuous input voltage within threshold	230 V
RF02N-400	35mm (2)		400 V
RF02NI-230	35mm (2)	0,1sec.	230 V
RF02NI-400	35mm (2)		400 V

Diagram



RF03

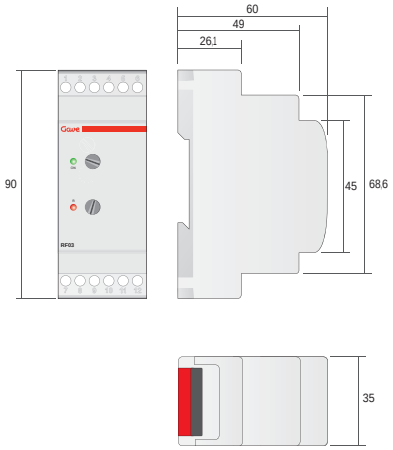
Phase Failure, Sequence and Unbalance Relay

Electronic relay for three phase supply monitoring and protecting against disturbances on the main supply.
Protection against Phase Failure (loss), Phase Sequence and Phase Unbalance.

Characteristics

- Mounting on symmetrical DIN rail
- Connects when detecting: 3 phases within the set voltage
  correct phase sequence RST presence
- Trips when detecting: phase failure, incorrect phase sequence, phase unbalance
- Tripping time delay adjustable against short time voltage variations
- Phase unbalance adjustable threshold (5 to 15%)
- Output changeover relay 8A / 250V AC cos φ = 1
- Operating temperature: -10° to + 60°C

Dimensions



References

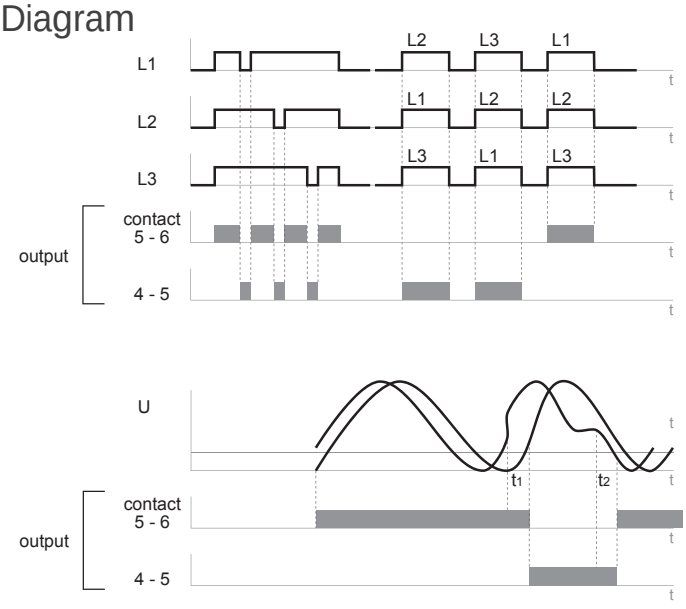
References	Width (modules)	Reset time	Voltage
RF03-400	35mm (2)	3min continuous input voltage within threshold	400 V
RF03I-400	35mm (2)	0,1sec.	400 V

Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
☼	●	voltage out of threshold
☼	☼	timing to reset from voltage variation
⊗	⊗	phase failure
⊗	☼	timing to reset from phase failure

● ON ⊗ OFF ☼ BLINK

Diagram



RF03N

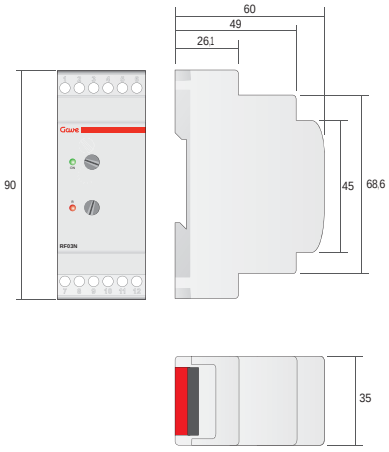
Phase Failure, Sequence and Unbalance Relay

Detects an incorrect phase sequence
Detects a failure on any phase
Detects phase unbalance

Characteristics

- Connects when detecting: 3 phases
  phase sequence RST+N is correct
- Trips when detecting phase failure, a phase unbalance (adjustable threshold 5 to 15 %) or an incorrect phase sequence
- Tripping time, for voltage variations, adjustable from: 0,1 to 10 seconds.
- Tripping time for an incorrect phase sequence or phase failure: 0,1 sec.
- Output: change over relay
- Working temperature: -10ºC to +60ºC
- Phase failure is considered when voltage is lower than 160V between phase and neutral.

Dimensions



Signalling

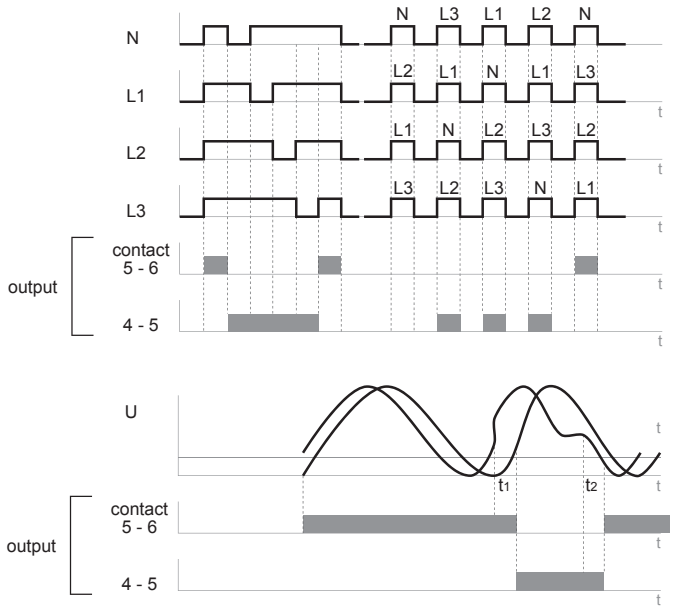
R (red)	ON (green)	Status
⊗	●	supply
●	●	incorrect phase sequence
☼	●	voltage out of threshold
☼	☼	timing to reset from voltage variation
⊗	⊗	phase failure
⊗	☼	timing to reset from phase failure

● ON ⊗ OFF ☼ BLINK

References

References	Width (modules)	Reset time	Voltage
RF03N-400	35mm (2)	3min continuous input voltage within threshold	400 V
RF03NI-400	35mm (2)	0,1sec.	400 V

Diagram



RC

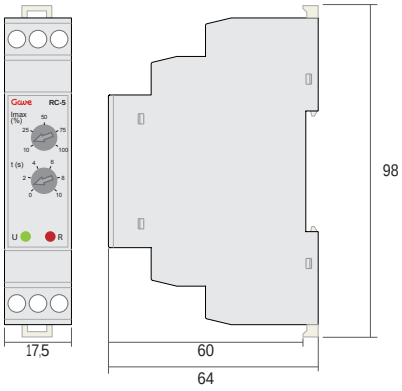
Over Current Relay

Over current Electronic control relay using external sensor in order to monitor electrical and mechanical loads such as motors.

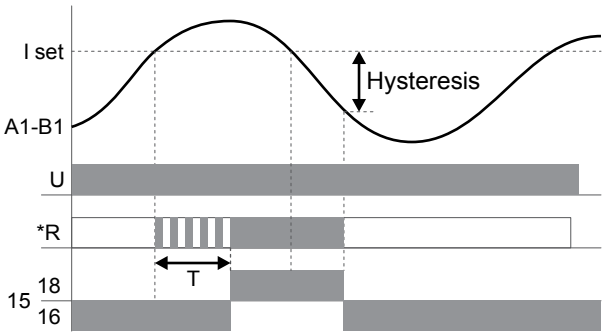
Characteristics

- Current control relay sensing from current transformer
- Current range 5-100% In
- Compact size width 1 module (17,5 mm)
- Consumption: 2,5VA
- Output contacts switching capacity: 8A / 250V AC cos φ =1
- Mounting on simmetrical DIN rail
- Usable for DC current and AC current autorecognized
- Supply is not galvanically separated from measured current, it must be in the same phase
- Adjustable tripping time delay from 0,1 to 10 sec.
- Multivoltage
- Current range 0.25-5 (RC-5) / 0.8-16 (RC-16)

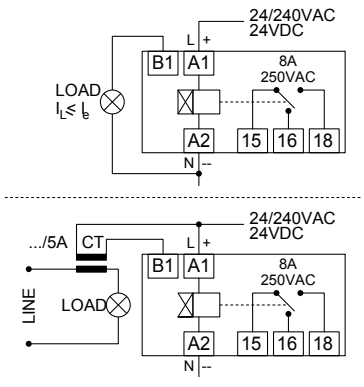
Dimensions



Diagram



Connection



References

References	Width (modules)	Current range	Voltage
RC-5	17,5mm (1)	0,25-5A	24VDC / 24-240VAC
RC-16	17,5mm (1)	0,8-16A	24VDC / 24-240VAC

Signalling

R	U	Status
⊗	●	voltage presence
●	●	tripping voltage relay connected
●	●	tripping voltage relay disconnected

● ON ⊗ OFF ☼ BLINK

RTM

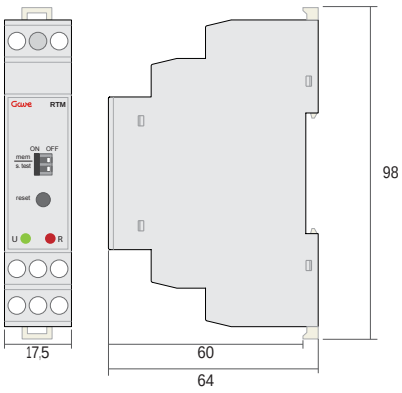
Motor Temperature Relay

Electronic control relay providing thermal protection using external PTC sensor to monitor motor overheating due to overload condition. Relay monitors probe short circuit and line break (wire broken).

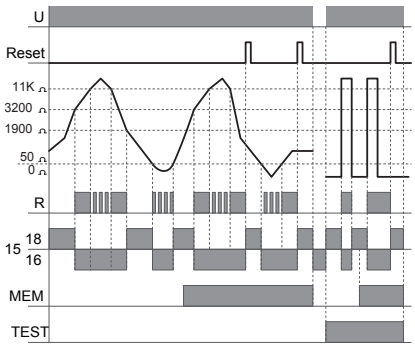
Characteristics

- Compact size width 1 module (17,5 mm)
- Consumption: 2,5VA
- Output contacts breaking capacity: 8A / 250V AC cos φ =1
- Mounting on simmetrical DIN rail
- Sensor PTC according to DIN 44081 total resistence R1+R2+RN <1.5 kΩ
- Tripping resistence 3.2kΩ +-10%
- Reset resistence 1.9kΩ +-10%
- Manual or automatic reset
- 3 operating modes: normal, memory, and test

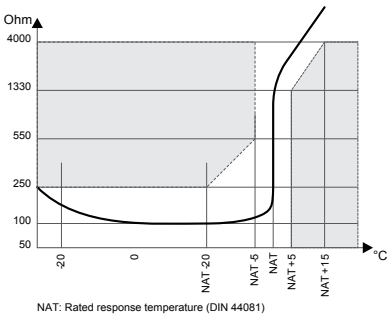
Dimensions



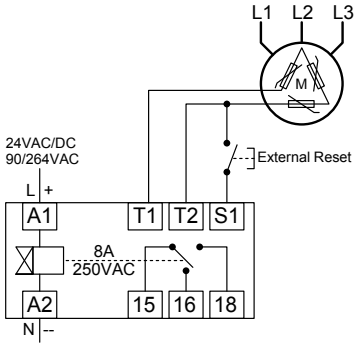
Diagram



PTC resistive curve



Connection



References

References	Width (modules)	Voltage
RTM	17,5mm (1)	230 V
RTM-24	17,5mm (1)	24VAC/DC

Signalling

R	U	Status
⊗	●	voltage presence
●	●	relay contact closed

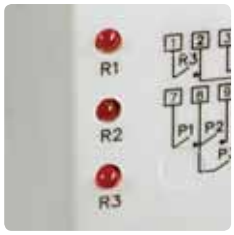
● ON ⊗ OFF ☼ BLINK

Pump control relays

Managing water and conductive liquids are an essential part of modern societies illustrated in water plants, factory production processes, agriculture irrigation, pools,..
Pumps are the core of liquid flow systems and they require efficient control in order to avoid service continuity problems and expensive costs associated to system breakdowns such as pump dry running.

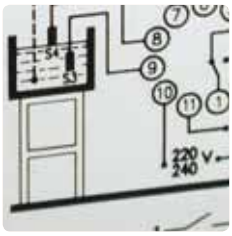
General characteristics

Sensitivity
Frontal direct setting of sensitivity adjustment. Two sensitivities on double level controllers.



Indication LEDs
Indicates relay operational status.

On product information
Relay characteristics, and wiring diagram direct reading on product...



Reinforced electronics
Harsh EMC testing and varistor protection against overvoltage disturbances.

Modularity
All range offers is modular (45mm cutout) including plug-in types.

Level control relays

Conductive liquids are monitored by level control relays that operate based on the principle of liquid resistivity. Sensitivity adjustment permits adapting the circuit to each specific liquid characteristics. Control relays prove more reliable than float switches which demonstrate faulty with vibration, condensation, or polluted environments.
Level controllers will command the pump on filling and draining operations.

References
HN1P HN2P HN12 HN12A HN22

Alternating relays

Liquid systems with multiple pumps use alternating relays in order to balance motor start-ups, diminish maintenance operations on stand-by pumps and optimising load capacity and load sharing on the system. The system does benefit from longer live and increases productivity.

References
AR01 AR02 AR03

Applications

- Pumping systems
- Water plants
- Sewage plants
- Irrigation
- Industrial liquid systems
- Pools

Monitor
Level controllers can adjust sensitivity measurement to specific liquid conditions and monitor filling/draining on wells and tanks. Double types offer optimum coordination between two different reservoirs.

Safety
Transformer insulation between measuring circuit and command circuit guarantees safety.

Protection
Your equipment is protected against idle functioning and live is enlarged by balancing loads. Varistor protection on the electronic circuit prevents damages on the control due to lightning effects.

Signalling
Sensitivity adjusment, relay status and power supply are indicated through rotary selectors and signalling leds located on the front face.

HN12

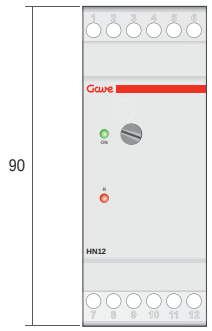
Single Level Control Relay

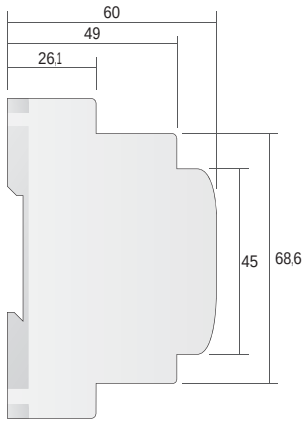
Electronic modular relay for automatic control of conductive liquids in a single tank.
Adjustable sensitivity, either well or tank.
Monitoring filling (up) or empting (down).

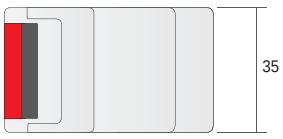
Characteristics

- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 240V AC cos φ = 1
- Protection up to 2500V peak (1,2-50 µs) in voltage supply and probes against lightning disturbances on the supply
- Operating temperature: -10º to + 60ºC

Dimensions



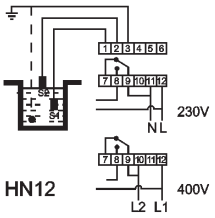


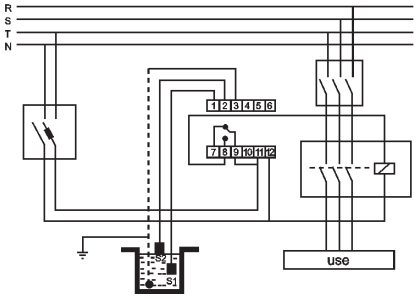


References

References	Width (modules)	Voltage supply	Function
HN12	35mm (2)	230V-400V AC	well or tank
HN12-24AC	35mm (2)	24V AC	
HN12-12DC	35mm (2)	12V AC	

Diagram





Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	output

● ON ⊗ OFF ☼ BLINK

HN22

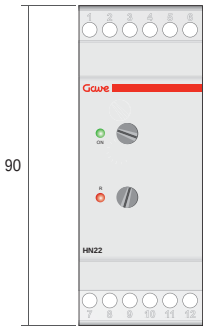
Double Level Control Relay

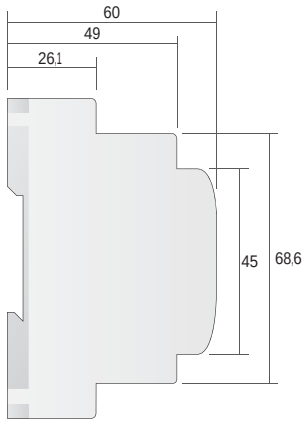
Electronic modular relay for automatic control of conductive liquids in two different tanks.
Two independent adjustable sensitivities, for well and tank.
Monitoring filling (up) or empting (down).
Both functions combined for monitoring the pumping out of a well and filling of a tank.

Characteristics

- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 240V AC cos φ = 1
- Protection up to 2500V peak (1,2-50 µs) in voltage supply and probes against lightning disturbances on the supply
- Operating temperature: -10º to + 60ºC

Dimensions

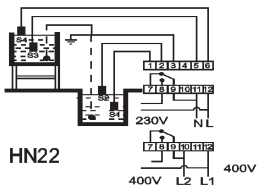


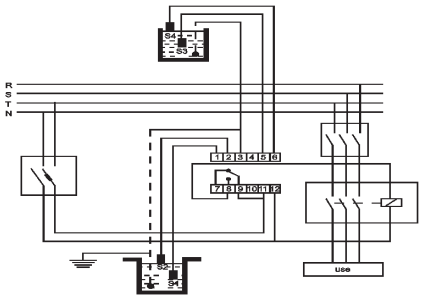


References

References	Width (modules)	Voltage supply	Function
HN22	35mm (2)	230V-400V AC	well and tank
HN22-24AC	35mm (2)	24V AC	

Diagram





Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	output

● ON ⊗ OFF ☼ BLINK

HN12A

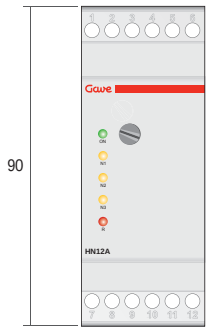
Single Level Control Relay with 3 intermediate levels

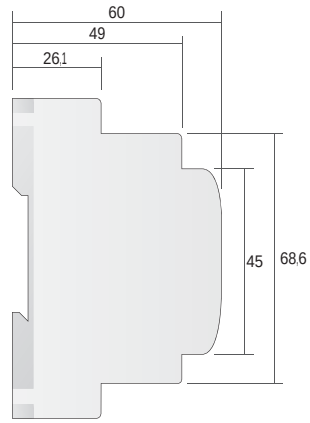
Electronic modular relay for automatic control of conductive liquids in a single tank.
Adjustable sensitivity, either well or tank.
Monitoring filling (up) or empting (down).

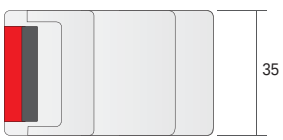
Characteristics

- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 240V AC cos φ = 1
- Protection up to 2500V peak (1,2-50 µs) in voltage supply and probes against lightning disturbances on the supply
- Operating temperature: -10º to + 60ºC

Dimensions



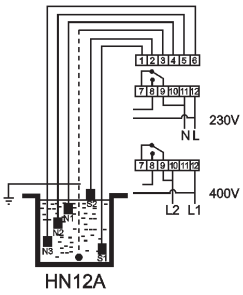


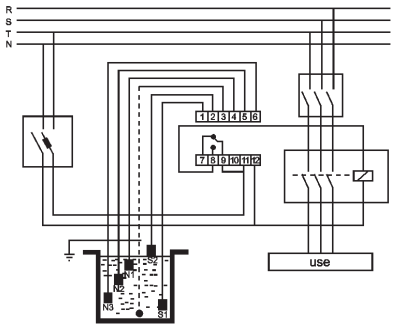


References

References	Width (modules)	Voltage supply	Function
HN12A	35mm (2)	230V-400V AC	well or tank

Diagram





Signalling

level

R (red)	ON (green)	Status
⊗	●	supply
●	●	output

● ON ⊗ OFF ☼ BLINK

HN1P

Single Level Control Relay

Electronic modular relay for automatic control of conductive liquids in a single tank.
Adjustable sensitivity, either well or tank.
Monitoring of filling (up) or empting (down).

Characteristics

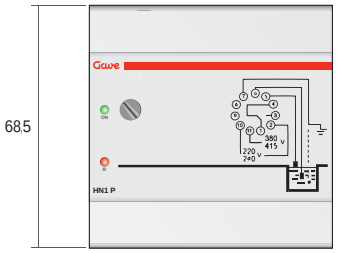
- Plug-in base mounting (11 pin)
- Mounting options: on symmetrical DIN rail
  panel mounting with one screw DIN 963, M4
  panel mounting with two screws and two nuts, M3
- Protection up to 2500V peak (1,2-50 µs) in voltage supply and probes against lightning disturbances on the supply
- Output changeover relay 8A / 240V AC cos φ = 1
- Operating temperature: -10º to + 60ºC

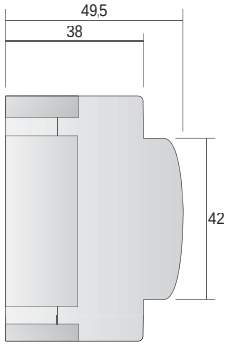
included

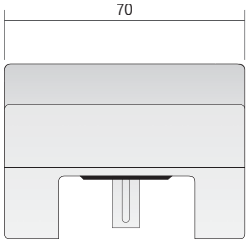
1x 

2x 

Dimensions





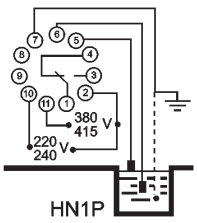


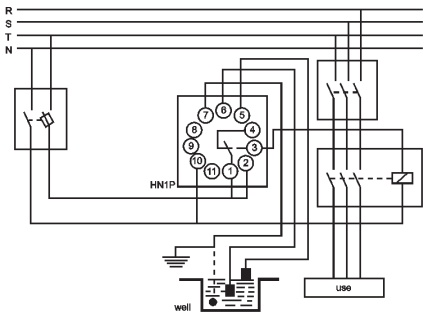
References

References	Width (modules)	Voltage supply	Function
HN1P	70mm (4)	230V-400V AC	well or tank
HN1PLD *	70mm (4)	230V-400V AC	

* High sensitivity long distance

Diagram





Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	output

● ON ⊗ OFF ☼ BLINK

HN2P

Double Level Control Relay

Electronic relay for the automatic control of conductive liquids in two different tanks.
Two independent adjustable sensitivities, for well and tank.
Monitoring filling (up) or empting (down).
Both functions combined for monitoring the pumping out of a well and filling of a tank.

Characteristics

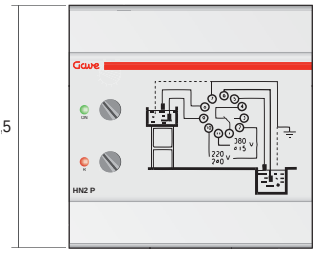
- Plug-in base mounting (11 pin)
- Mounting options: on symmetrical DIN rail
  panel mounting with one screw DIN 963, M4
  panel mounting with two screws and two nuts, M3
- Protection up to 2500V peak (1,2-50 µs) in voltage supply and probes against lightning disturbances on the supply
- Output changeover relay 8A / 240V AC cos φ = 1
- Operating temperature: -10º to + 60ºC

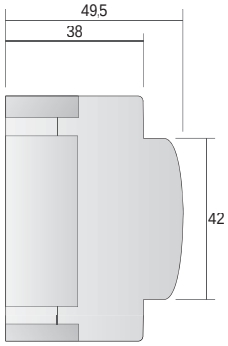
included

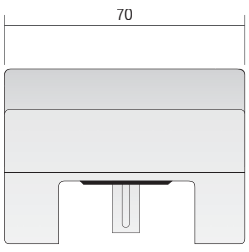
1x 

4x 

Dimensions



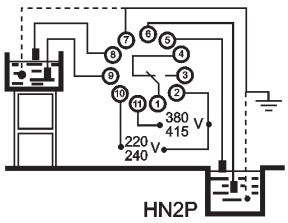


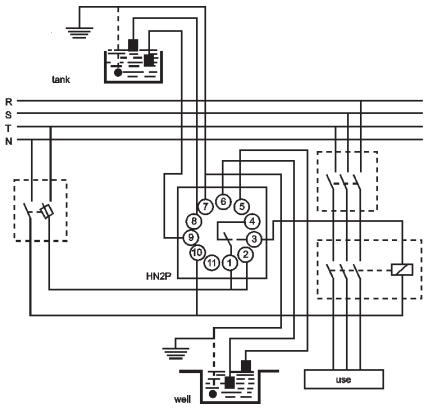


References

References	Width (modules)	Voltage supply	Function
HN2P	70mm (4)	230V-400V AC	well and tank

Diagram





Signalling

R (red)	ON (green)	Status
⊗	●	supply
●	●	output

● ON ⊗ OFF ☼ BLINK

AR01

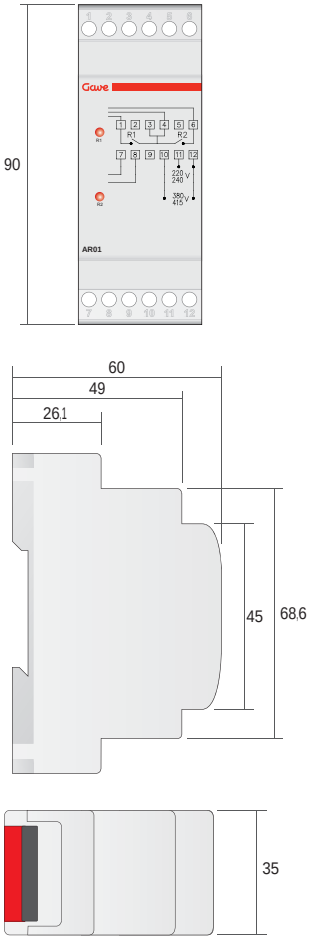
Alternating Relay

Electronic relay designed to alternate 2 different outputs (pumps, compressors...) controlled by an external signal.
Alternates cyclically between 2 outputs.

Characteristics

- Real changeover relay to alternate cyclically and to avoid short-cycling
- When the device is receiving no external signal, both changeover contacts will remain open
- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 250V AC cos φ = 1
- Output contacts (1,3,4,6) voltage free
- Operating temperature: -10º to + 60ºC

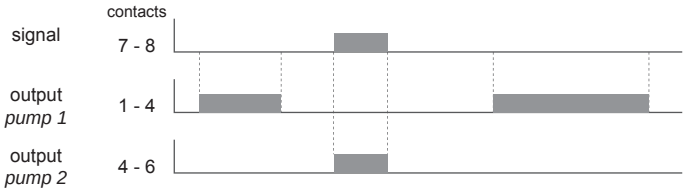
Dimensions



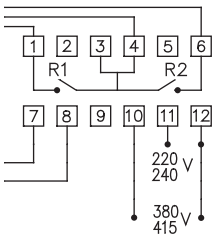
References

References	Width (modules)	Voltage supply
AR01	35mm (2)	220-240V / 380-415 V AC
AR01-24AC	35mm (2)	24 V AC

Diagram



Connection



Signalling

R	Status
●	relay on
⊗	relay off

● ON ⊗ OFF ☼ BLINK

AR02

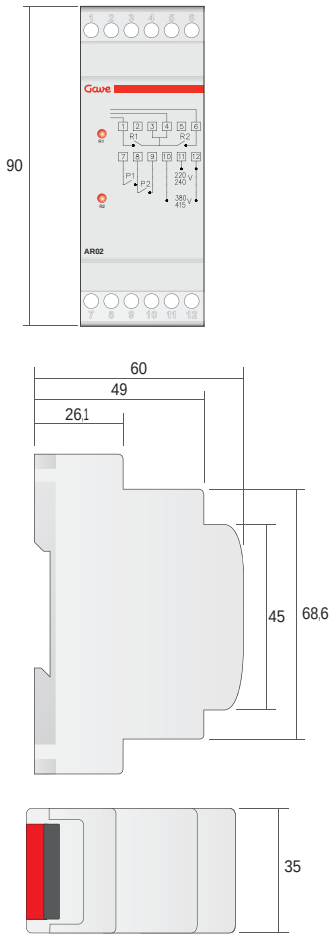
Simultaneous Alternating Relay

Electronic relay designed to alternate 2 different outputs (pumps, compressors...) controlled by an external signal.
Alternates cyclically between 2 outputs.
Possible operation of both outputs at the same time (simultaneous).

Characteristics

- Real changeover relay to alternate cyclically and to avoid short-cycling
- When the device is receiving no external signal, both changeover contacts will remain open
- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 250V AC cos φ = 1
- Output contacts (1,3,4,6) voltage free
- Operating temperature: -10º to + 60ºC

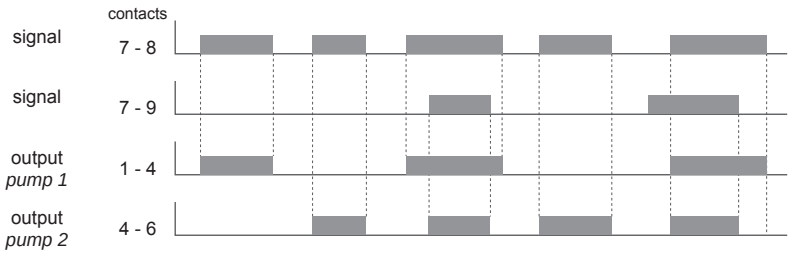
Dimensions



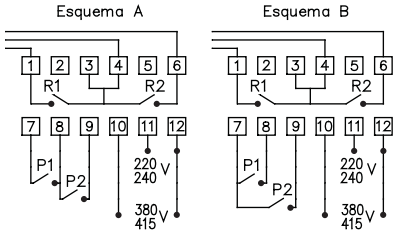
References

References	Width (modules)	Voltage supply
AR02	35mm (2)	220-240V / 380-415 V AC
AR02-24AC	35mm (2)	24 V AC

Diagram



Connection



Signalling

R	Status
●	relay on
⊗	relay off

● ON ⊗ OFF ☼ BLINK

AR03

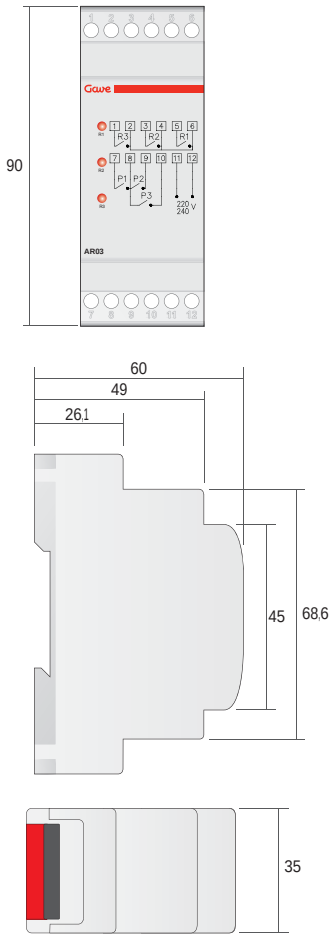
Simultaneous Alternating Relay - 3 outputs

Electronic relay designed to alternate 3 different outputs (pumps, compressors...) controlled by an external signal.
Alternates cyclically between 3 outputs.
Possible operation of all 3 outputs at the same time (simultaneous).

Characteristics

- Real changeover relay to alternate cyclically and to avoid short-cycling
- When the device is receiving no external signal, all changeover contacts will remain open
- Mounting on symmetrical DIN rail
- Output changeover relay 8A / 250V AC cos φ = 1
- Output contacts (1 to 6) voltage free
- Operating temperature: -10º to + 60ºC

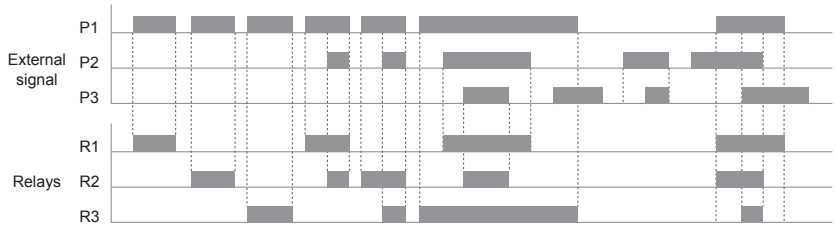
Dimensions



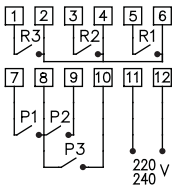
References

References	Width (modules)	Voltage supply
AR03	35mm (2)	220-240V / 380-415 V AC
AR03-24AC	35mm (2)	24 V AC

Diagram



Connection



Signalling

R	Status
●	relay on
☼	stand-by mode (no signal)
⊗	relay off

● ON ⊗ OFF ☼ BLINK

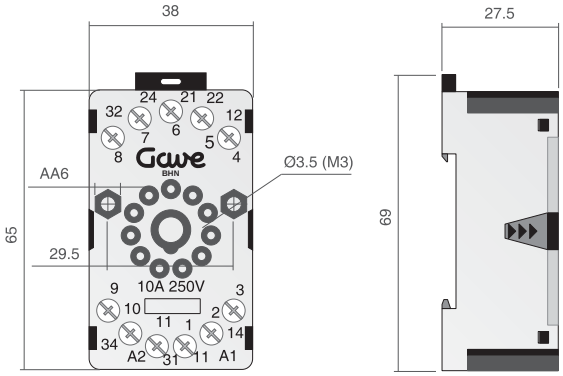
Accesories

Plug-in socket

Characteristics

- 11 pin plug-in relay socket
- Suitable mounting to 35mm rail (EN50022)
- Clear numbering identification with wide label area for code spelling
- Nominal load 10A 250/400V
- Cable clamp capacity: 4 mm2 or 2 x 2,25 mm2
- Max. screw torque 1,2 Nm

Dimensions



Reference

Reference	Description
BHN	11 pin plug-in base

SHNS

SHN

Probes

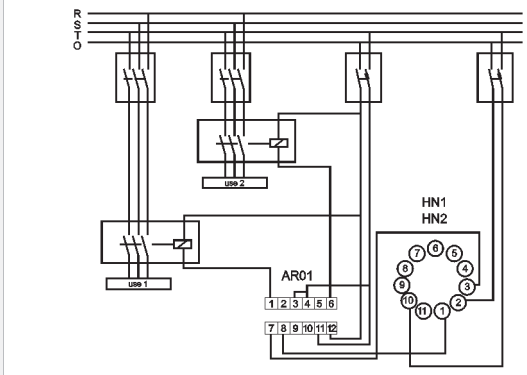
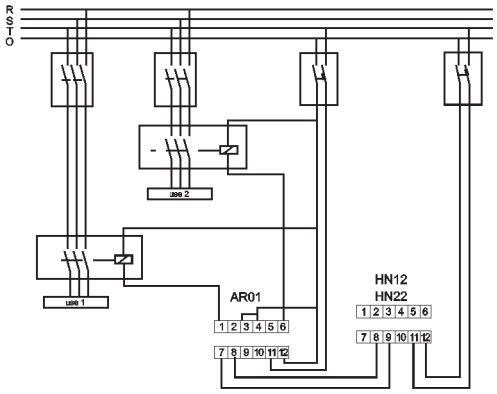
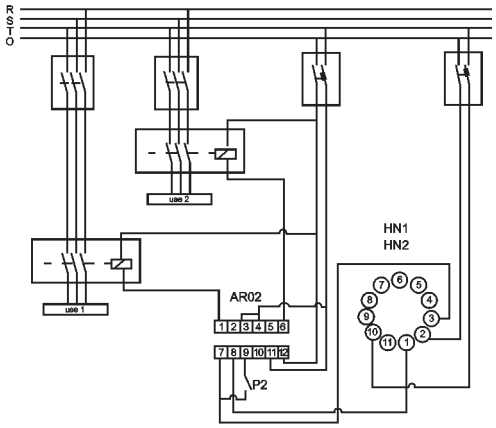
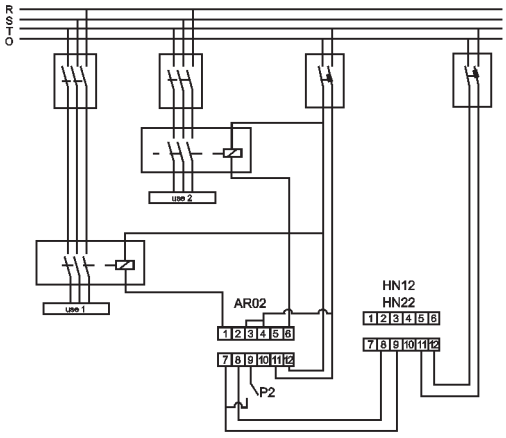
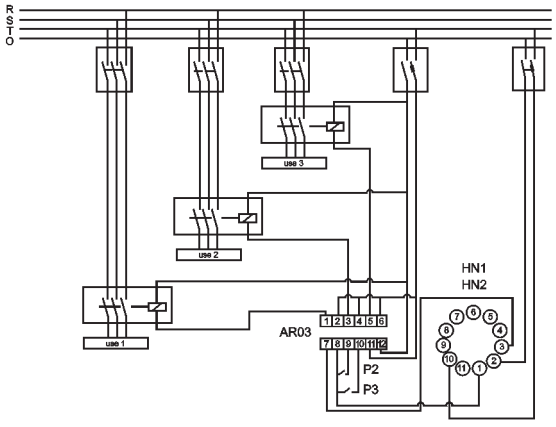
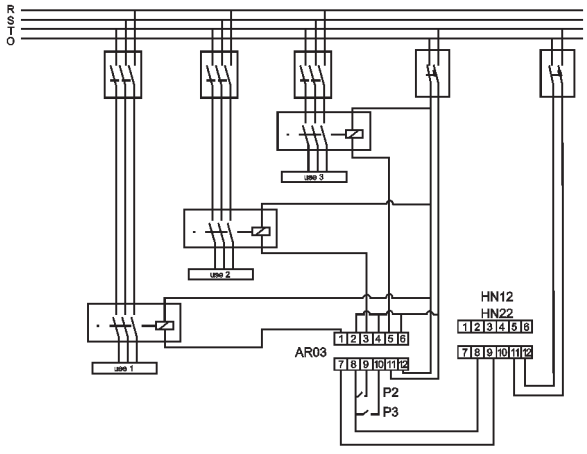
Characteristics

- Conductive electrodes on stainless steel AISI303
- Protection body material PP
- Slotted M4 screw
- Protected cable gland for safe connection

Reference

Reference	Description
SHN	stainless steel probe
SHNS	stainless steel proble with safety cable gland

Alternating Relays with Level Controllers
Connection diagrams

	HN1P / HN2P	HN12 / HN22
AR01		
AR02		
AR03		

Timers

Managing time is an essential need on contemporary world. We require reliable time control on multiple functions that surround our daily live.

We have made simplicity our major advantage on electronic timers. With two unique models we are covering your timing needs.
Our products are multivoltage and multifunctional thus limiting the number of references to be managed while keeping with its functionality and easy setting. Adjustment is always available front face. Furthermore the timer perfectly fits on diferent installation environments due to its modular shape remarkable on its 17,5mm 1 module width.

General characteristics

Direct setting

Frontal direct setting of function, time scale and fine adjustment offer straight reading on timer operation.

LED indication

Indicates relay operational status and blinks to signal elapsed time.

On product information

Wiring , relay characteritstics and timing diagrams located on side of relay.

EMC testing

Reinforced EMC testing conducted on harsh environment conditions

Connecting terminals

Easy access on cage clamp terminals on tightening and release installation operations.

Timers have been developed to withstand harsh conditions following electrical endurance and climatic testing. **EMC** testing has been conducted above standard levels in order to guarantee positive operation on electromagnetic polluted environments safeguarding time control functionality.

Applications

- Lighting controls
- Ventilation
- Access control
- Automation process
- Machinery
- Commercial lights
- Buzzer alarms
- Machinery

Firmware

Large flexibility on control specific requirements by integrating programable EEPROM memory. Customised products to particular market and OEM needs.

Simplicity

Timer rotary potentiometers accessible on the front face, easy setting with direct reading.

Accuracy

Advanced mechanics know-how is applied on frontal rotary switches that are produced with specific plastics particularly resistant to temperature changes. Consequently we minimise setting tolerances thus achieving high accuracy.

Control

Independent Start input contact enlarges number of timer possible operations and associated control functionalities.

Safety

Board insulation distances have been set above standard requirements preventing arcing and increasing operational safety.

Signalling

On/Off led indication on the front face informs about relay status, blinking led indicates elapsed time and forecasts relay changeover operation.

TM01

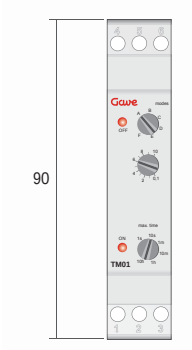
Multifunctional Timer

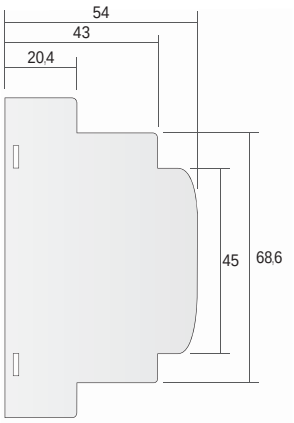
Multi-voltage and multi-function timer with four basic operational functions and six selectable time ranges by frontal rotary selector.

Characteristics

- Working temperature: -10º + 55ºC
- Supply: 24-230V AC, 50/60Hz - 24V DC
- Power consumption: 1,7W / 3VA
- Output changeover relay AC1: 5A, 250V
  DC1: 5A, 24V
  AC15: 3A, 250V
  DC13: 2A, 24V

Dimensions





Time ranges

1S	from 0,1 sec. to 1 sec.
10S	from 1 sec. to 10 sec.
1M	from 0,1 min. to 1 min.
10M	from 1 min. to 10 min.
1HOUR	from 10 min. to 1 hour
10HOURS	from 1 hour to 10 hours

Assembly

- Mounting on symmetrical DIN rail
- Connection with protected wire clamps

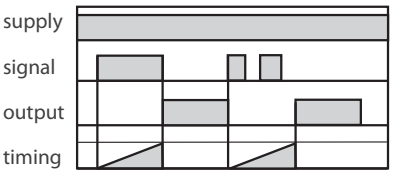
Signalling

- 2 indicating LED for ouput relay and operation status
- Elapsed time indication by blinking LED

References

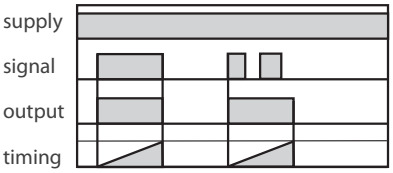
References	Width (modules)	Voltage supply
TM01	17,5mm (1)	24-230V AC / 24V DC
TM01-12DC	17,5mm (1)	12V DC
TM01-DC	17,5mm (1)	127V DC ± 20%

Operational functions



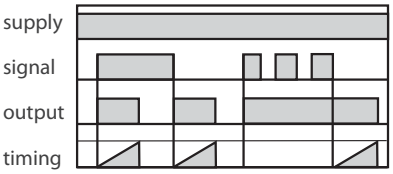
On delay

Supply voltage is on. Set delay time starts when "Start" signal is on. Output relay energizes after the timing period. Reset to zero occurs when disconnecting supply or after a new "Start" connection when the time cycle is finished.



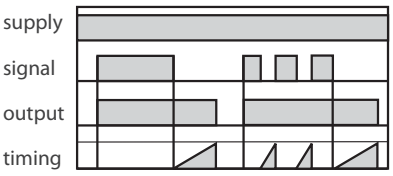
Interval timer

Supply voltage is on. When connecting "Start" the output relay energizes, after the timing period output relay de-energizes. Reset to zero occurs when disconnecting supply or after a new "Start" connection when the time cycle is finished.



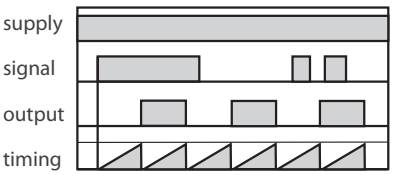
Interval on Make/Break

Supply voltage is on. When making or breaking "Start" output relay energises until set time is reached. Any signal change in "Start" will reset timing to zero.



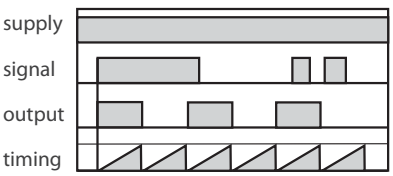
Off Delay

Supply voltage is on. When connecting "Start" output relay energises. When "Start" breaks timing period will start. At the end of timing period output relay will de-energize. When "Start" breaking occurs during timing period timer ill reset timing to zero.



Equal cycling, OFF cycle first

Supply voltage is on. When making "Start" the output remains de-energized during the set timing period. A cyclic mode does continue with energizing and de-energizing periods according to the set time. Timer will reset to zero when supply is removed.



Equal cycling, ON cycle first

Supply voltage is on. When making "Start" the output relay will energize during the set timing period. A cyclic mode does continue with de-energizing and energiznig periods according to the set timing. Timer will reset to zero when supply is removed.

TM02

Cycling Timer

Multi-voltage and multi-function timer with three operating modes by lateral DIP and six time ranges by frontal rotary selector.

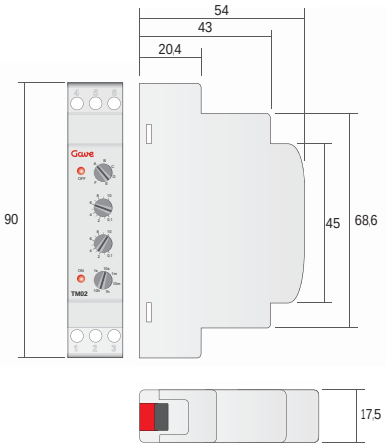
Characteristics

- Working temperature: -10º + 55ºC
- Supply: 24-230V AC, 50/60Hz - 24V DC
- Power consumption: 1,7W / 3VA
- Output changeover relay AC1: 5A, 250V
  DC1: 5A, 24V
  AC15: 3A, 250V
  DC13: 2A, 24V

Time ranges

1S	from 0,1 sec. to 1 sec.
10S	from 1 sec. to 10 sec.
1M	from 0,1 min. to 1 min.
10M	from 1 min. to 10 min.
1HOUR	from 10 min. to 1 hour
10HOURS	from 1 hour to 10 hours

Dimensions



References

References	Width (modules)	Voltage supply
TM02	17,5mm (1)	24-230V AC / 24V DC
TM02-12DC	17,5mm (1)	12V DC

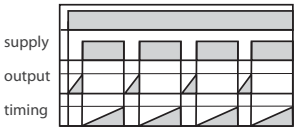
Function Modes

Function A: Asymmetrical re-cycling, OFF cycle first

Function B: Asymmetrical re-cycling, ON cycle first

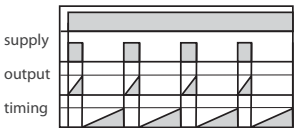
Function C: Asymmetrical cycling, OFF/ON

Operational functions



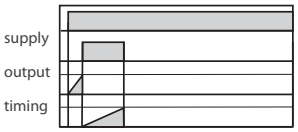
Function A: Asymmetrical re-cycling, OFF cycle first

When supply voltage is on, set delay time (T1) starts. Output relay energizes when reaches T1 then starts the 2nd timing. Output relay (T2) de-energizes after the timing period the cycle re-starts. T1 and T2 are regulated independently. Timer will reset to zero when supply is removed.



Function B: Asymmetrical re-cycling, ON cycle first

When supply voltage is on set delay time starts the 1st timing period, otuput is energized. When the time cycle (T1) is finished output relay T2 energizes and starts the 2nd timing period. When the time cycle (T2) is finished the cycle re-starts. T1 and T2 are regulated independently. Timer will reset to zero when supply is removed.



Function C: Asymmetrical cycling, OFF/ON

When supply voltage is on the 1st timing period (T1) starts. After finishing the first period output relay energizes and the 2nd timing period (T2) starts. After finishing the second period output relay de-energizes until the supply is removed.

TMETR

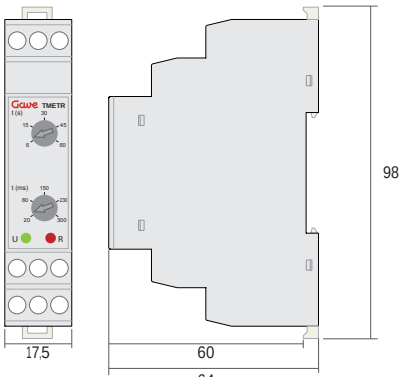
Star Delta timers

Modular star delta timer are an ideal solution on those start up motor applications where we need a modular space saving timer with time adjustment.

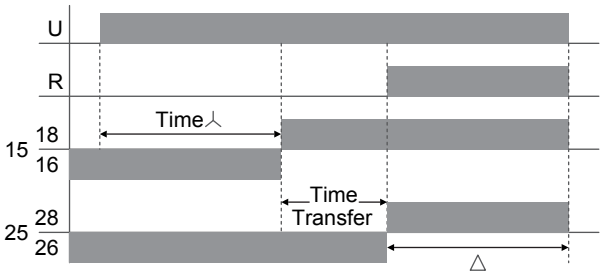
Characteristics

- Star-delta timer
- 2 output relay 1 pole changeover contacts
- Transition delay time adjustable from 20to 300 ms.
- Star time delay adjustable from 6 to 60s
- Led indicator for relay transition
- Energizing at the end of time delay
- Compact width 17,5 mm 1 module
- Mounting on symmetrical DIN rail
- Consumption: 3 VA
- Switching capacity: AC1: 5A / 250V AC15: 3A / 250V
  DC1: 5A / 24V DC13: 2A / 24V

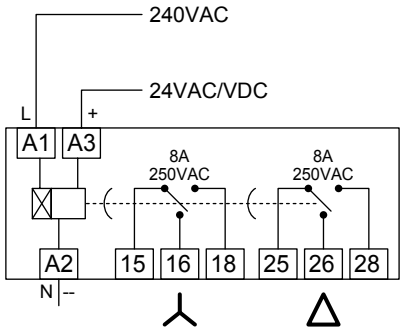
Dimensions



Diagram



Connection



References

References	Width (modules)	Voltage supply
TMETR	17,5mm (1)	230V AC / 24 AC/DC

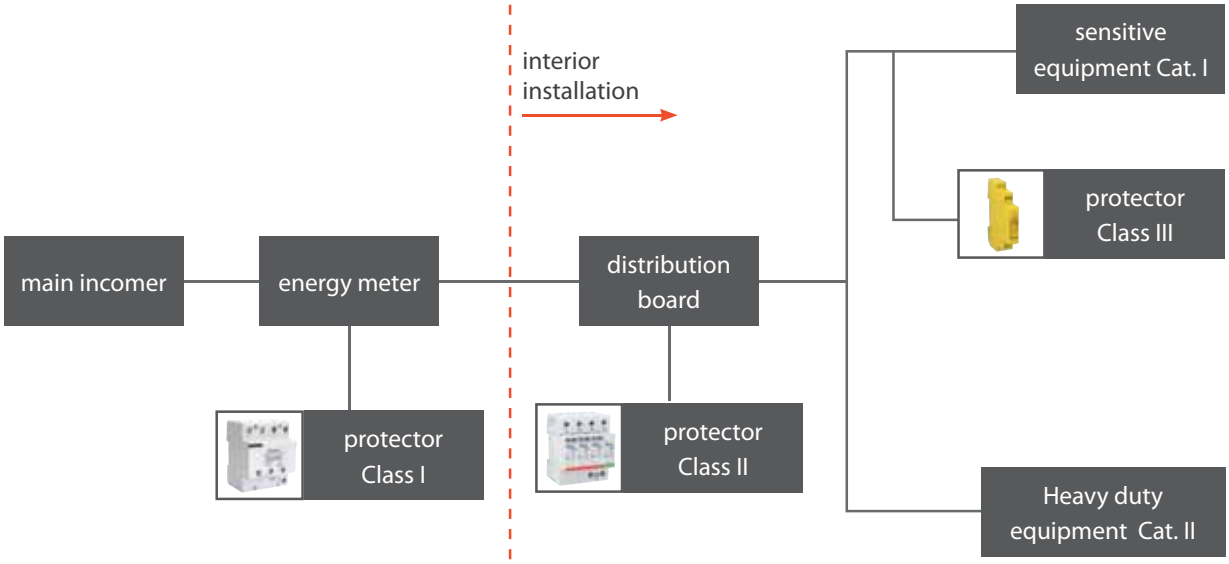
Surge protector devices

Compact surge protector devices (SPD) are developed to meet overvoltage protection needs for low voltage networks. These overvoltages are mainly generated by lightning although also industrial changeovers and network failures.
They provide common/differential protection.

The electrical scheme on PST are based on high energy varistors equipped with thermal disconnector and associated to specific gas discharge tubes GDT.

According to standards

- IEC 61643-1
- EN 61643-11



Type of surge protectors

The AC power surge protectors are split into 3 categories by IEC 61643-1 and EN 61643-11 standards, with the following 3 classes of tests. These different tests depend on the location of the surge protector in the AC network and on the external conditions.

Class I

Type 1 surge protectors are designed to be installed where a direct lightning strike risk is high, especially when the building is equipped with external lightning protection system (LPS or lightning rod). In this situation, EN 61643-11 and IEC 61643-1 standards require the Class I test to be applied to surge protectors : this test is characterized by the injection of 10/350 µs impulse current in order to simulate the direct lightning strike effects.
Therefore these Type 1 surge protectors must be exceptionally powerful to conduct this high energy impulse current.

Class II

Type 2 surge protectors are designed to be installed at the beginning of the installation, in the main switchboard, or close to sensitive terminals, on installations without LPS (lightning rods).
These protectors are tested following the Class II test from IEC61643-11 or EN61643-11standards and based on 8/20 µs impulse current injection.

Class III

In case of very sensitive or remote equipment, secondary stage of surge protectors is required : these low energy SPDs could be Type 2 or Type 3. Type 3 SPDs are tested with a combination waveform (1,2/50 µs - 8/20 µs) following Class III test.

Surge protectors parameters

Uc *Operating voltage*
Is the maximum r.m.s voltage which may be applied continuously to the SPD.

Imax
Discharge current
Applicable to Type 2 SPD, is the maximum impulse current 8/20 µs a surge protector can withstand without destruction .

In *Nominal discharge current*
Is the level of impulse current a surge protector Type 1 or Type 2 can withstand repeatedly (15 surges) without destruction.

Iimp *Impulse current*
Used in Class I test applicable to Type 1 SPDs, is the maximum impulse 10/350 µs current a surge protector can withstand without destruction. This test simulates the effect, on AC power surge protectors, of a direct lightning strike on an installation.

Up *Protection level*
This is the maximum voltage on the surge protector output when subjected to an impulse current equivalent to its nominal discharge current (In). This parameter characterizes the performance of the SPD in limiting the transient overvoltage to protect the equipment.

Protector Advanced Technology

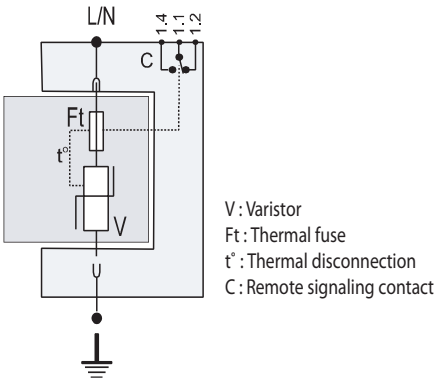
Operating principle

PST surge protectors are based on zinc metal-oxide varistors (MOV), the best compromise between a fast response time (<25 ns) and a high discharge current capacity, which are the main parameters to provide efficient protection.
Surge protection is highly improved by combining varistors with a specific gas discharge tubes (GDT).

Improved performance is specifically attested in;

- protection level (Up)
- life duration (due to the supression of leakage current)
- continuous operation and power quality (no follow current)

Nevertheless the end of life of these varistors must be absolutely monitored thus requiring the systematic use of built-in thermal disconnection devices.



Disconnection devices

In compliance with the standards, the AC power surge protectors are equipped with external and internal disconnection devices in order to provide total safety in case of failure.
2 types of disconnection devices are necessary:

- **Internal thermal** security which will disconnect the surge protector from the AC network in case of thermal runaway. In such a case, the user will be warned about the trouble by an indicator (mechanical or light) in front of the protector and will carry out the replacement of the defective SPD.
- **External electrical** disconnection (fuses or breaker) to disconnect the surge protector from the AC network in case of internal short circuit, e.g. due to an excessive impulse current.

Choosing disconnection devices

Fuses provide a more suitable solution as short circuit protection for SPD

parameters	fuses	circuit breaker
Voltage decrease (Up improvement)	+	
Lightning impulse current behaviour	+	- contacts wear
Icc	+	-
Reduced dimensions	- fuses > 25A	+
Cost	+	-

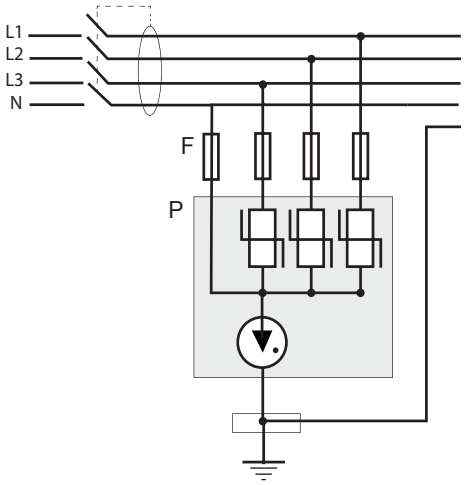
The rating of the external fuses (or breaker) are in relation with the discharge capability of the SPD and the prospective short-circuit current of the installation.

	Class I	Class II	
	15 kA (10/350)	15kA (8/20)	40kA (8/20)
Icc = 300A up to 1kA	25A	16A	16A
Icc = 1kA up to 7kA	50A	16A	25A
Icc = 7kA and above	63A	25-40A	50A

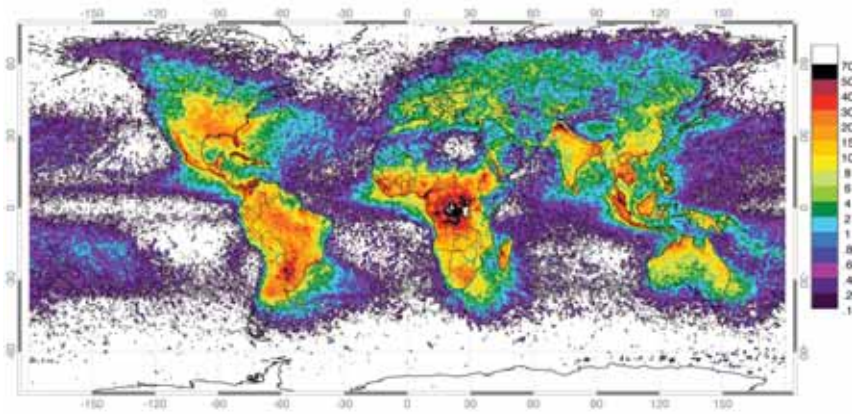
Common and Differential mode protection

Lightning surges occur essentially between active conductors and earth. A live conductor not only refers to the phase conductors but also to the neutral conductor. These overvoltages are protected on Common mode.

Differential overvoltages can occur between live conductors when we are operating on a TT earthing system. It can also appear on TN-S eartingh systems if there is a significant length difference between PE and N cables. The standard IEC 60364 allows combination of protection between phases and neutral (differential mode) and between neutral and ground (common mode) this type of mounting is named "CT2 connection".



World lightning density map (Ng)



Source NASA OTD (4/95-3/00) and LIS (1/98-2/03)

Appliance following IEC 60364

Lightning density (Ng) Keraunic Level (Nk)	Type of installation  Installation equipped with direct lightning protection system (LPS)	 Connection to overhead AC line	 Connection to underground AC line	 The unavailabalitiy of the electrical network could have consequences on human safety
Ng ≤ 2,5 Nk < 25	**Mandatory (Class I)**	**recommended on sensitive equipment or when reinforced reliability is required.**		**Risk analysis required**
Ng > 2,5 Nk > 25	**Mandatory (Class I)**	**Mandatory (Class II)**		**Mandatory**

Regional/national standards

Typically regional/ national standards defines additional conditions where surge protection will be mandatory or recommended. Representative conditions are:

Public services (street lights, telecoms, police,..)

Farming installation when affecting animal safety.

Emergency systems (emergency lights, security alarms, CCTV,..)

Industrial processes requiring continuity (Food processing, chemical, pharmacy,..)

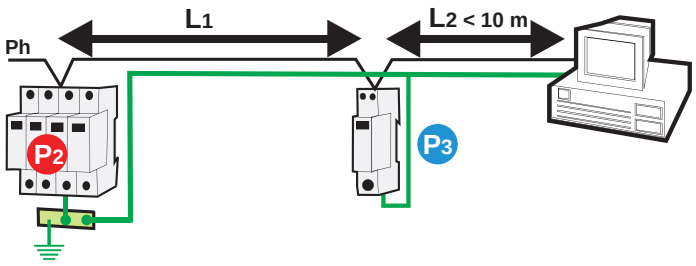
Coordination of Surge Protectors

In order to provide maximum protection efficiency, it is necessary to create a «coordination» diagram, that means installation of a «primary» SPD at the network entrance and a «secondary» close to sensitive equipment.

This association is required in the 2 following cases :

- High sensitivity equipment : Voltage protection level upstream is too high with regards to withstand level capability of protected equipment.
- Long distance (greater than 30 m) of wire between equipment to be protected and primary SPD : Reduction of ringing voltages created during the surge transmission.

Efficient SPD coordination is performed by including between primary and secondary SPDs a minimum length of wire (> 10 m).



P2 : Primary surge protector
P3 : Secondary surge protector
L1 : Length of conductor between surge protector
L2 : Length of conductor between surge protector and installation

→ *Installation rules*

❶ Surge protectors are connected in parallel on the AC network and must be equipped with external fuses for short-circuit protection.

❷ Total length of connection wires to AC network must be lower than 0,5m in order to mantain protection level as the impedance of these connections reduces the protection provided.

❸ Protection wire coming from SPD must be connected to bonding bar. Paralleling protection wire with phases conductors must be avoided.

❹ Type 2 protectors require wires with 4mm2 minimum cross-section. Type 1 require minimum 10mm2.

Class I

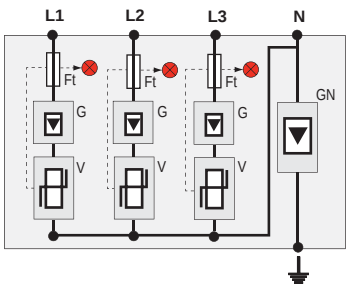
Surge protector devices

The PST4B100 is a compact Class I Surge Protector Device designed to be connected at the entrance of the electrical installation on 3-Phase networks. This device provides efficient protection against direct and indirect effects of lightning phenomena on electrical networks. This protection is specially adequate on those buildings endowed with lightning rods or LPS systems.

This protection is based on combining high discharge capacity MOV varistors with specific GDT providing common and differential mode protection. This technology allows the best performance with no follow current neither leakage current, while achieving an elevated (Up) level of protection.

This SPD is draws attention for its extremely modular compact size, easy to install on DIN rail, and individual visual indicator on each phase.

Electrical scheme

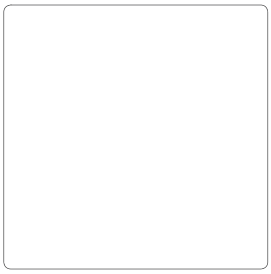


PST4B100

V : High-energy varistor network
G : Heavy duty GDT
GN : Heavy duty N/PE GDT
Ft : Thermal fuse
MI : Disconnection indicator

Electrical characteristics

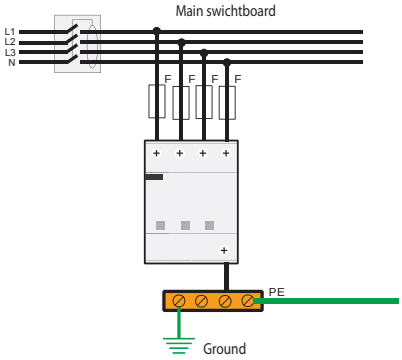
network	V	400 V
modes protection		common and differential
max. operating voltage	Uc	255 Vac
operating current (leakage current at Uc)	Ic	none
discharge currents (15 impulses and 1 max. stand. 8/20 µs)	In / Imax	40 kA / 100 kA
Max. lightning current by pole (1 impulse 10/350 µs)	Iimp	25 kA
total lightning current (1 impulse 10/350 µs)	Itotal	50 kA
protection level (at In)	Up	1.5 kV



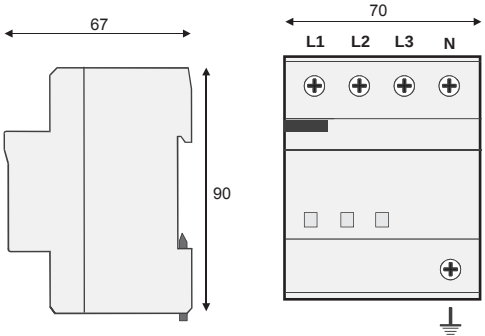
Mechanical characteristics

dimensions	see diagram
Connection	by screw terminals: 6-35 mm^2
Disconnection indicator	red light indicators
Remote signaling of disconnection	none
Mounting	symmetrical rail 35 mm
Operating temperature	-40/ +85º C
Protection class	IP20
Housing material	Thermoplastic UL94-V0
Standards compliance	
IEC 61643-1 International	Low Voltage SPD Test Class I
EN 61643-11 Europe	Low Voltage SPD Test Class I

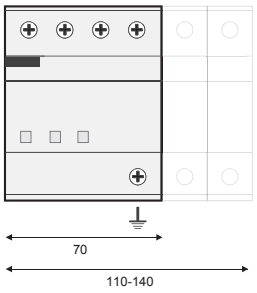
Installation scheme



Dimensions



extra compact size
(up to 50% space saving)



COMPACT SIZE

Class II
Surge Protector Devices

Surge protector devices are developed to meet overvoltage protection needs transmitted on low voltage networks. These overvoltages are mainly generated by atmospheric lightening although also might occur due to industrial changeovers and network failures.

Surge dischargers provide common/differential protection.

The electrical schemes on PST protectors combines high energy MOV varistor with an specific gas discharge tube GDT thus obtaining high performance protection characteristics.

Surge protectors PST are built with plug-in modules with failure indicator and a monobloc fix DIN rail base which allows an easy and fast replacement on maintenance operations.

According to standards

- IEC 61643-1
- EN 61643-11
- UL1449 ed. 2

General characteristics

Modules easy replacement

Plug-in modules easy and quick to replace at the end of protection life.

Visual indicator

Green colour indicates correct operation and red colour indicates module replacement.

Remote signalling

Operational status on the protection is constantly supervised by floating changeover contact that will activiate if module changes status.

DIN rail mounting

Direct mounting on symmetrical DIN rail acc. to EN 60715

Mechanical coding

Plug-in modules and modular bases are mechanically coded and prevent wrong module replacement.

Marking

Terminals clearly marked for easy wiring. Modules marked with reference and electrical data.

Modular construction

Designed to fit on modular enclosures with frontal 45mm window and 17,5mm. modules.

Class II
Surge protectors

PSTCxx

Gave offers a new surge protector designed to be installed on main switchboards that highlights on its **compact** size (1 single module) and its elevated level of protection

COMPACT SIZE

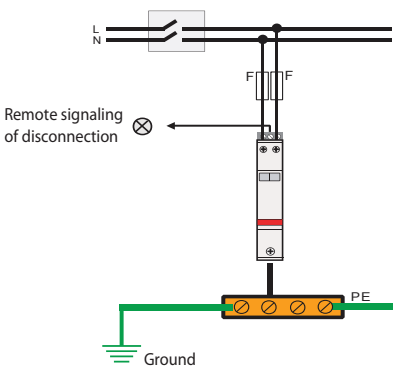
Surge protection device

References	Description	Modules	In	Imax
PSTC15	SPD compact Class II	1	5 kA	15 kA

Replacement modules

References	Description	Modules	In	Imax
PC-15	module phase (MOV) + neutral (GDT)	1	5 kA	15 kA

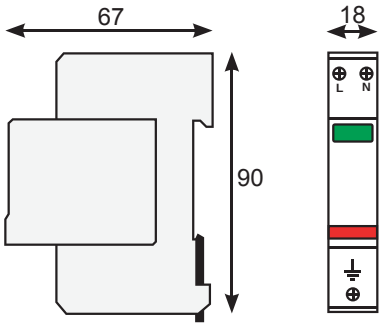
Installation scheme



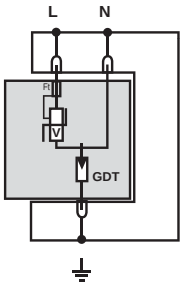
Electrical characteristics

single phase network	V	230
max. operating voltage	Uc	255
follow current	If	none
nominal discharge current *(15 impulses 8/20 µs)*	In	5 kA
maximum discharge current *(max. withstand 8/20 µs)*	Imax	15 kA
protection level (at In)	Up	1,5/0,9 kV
residual voltage at 5 kA		0,9 kV
admissible short-circuit current		10000 A

Dimensions

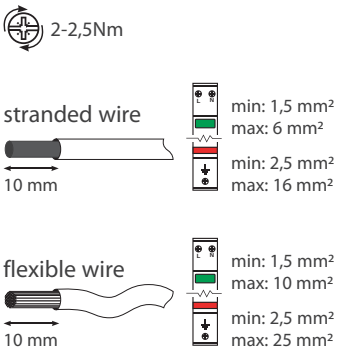


Electrical diagram



V: High energy varistor
GDT: Gas discharge tube
Ft: Thermal fuse

Connection



PST2xx

Gave offers a complete modular Class II range of SPD that distinguishes on its high discharge capacity, plug-in modular cartridges with thermal disconnection visual indicator, and the possibility of remote signalling required on advanced installations

Surge protection device

References	Description	Modules	In	Imax
PST215	SPD Class II	2	5 kA	15 kA
PST240	SPD Class II	4	20 kA	40 kA

Surge protection device with remote signalling

References	Description	Modules	In	Imax
PST240T	SPD Class II + R	2	20 kA	40 kA

Replacement modules

References	Description	Modules	In	Imax
PST-15	Phase module (MOV)		5 kA	15 kA
PST-40	Phase module (MOV)		20 kA	40 kA
PST-N	Neutral (GDT)		20 kA	40 kA

PST4xx

Surge protection device

References	Description	Modules	In	Imax
PST415	SPD Class II	4	5 kA	15 kA
PST440	SPD Class II	4	20 kA	40 kA

Surge protection device with remote signalling

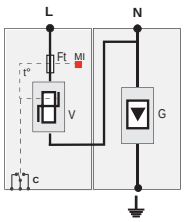
References	Description	Modules	In	Imax
PST440T	SPD Class II + R	4	20 kA	40 kA

Replacement modules

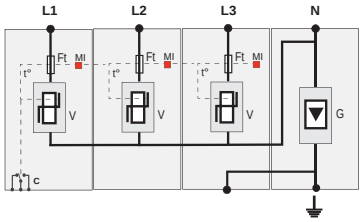
References	Description	Modules	In	Imax
PST-15	Phase module (MOV)			15 kA
PST-40	Phase module (MOV)			40 kA
PST-N	Neutral (GDT)			

Electrical diagram

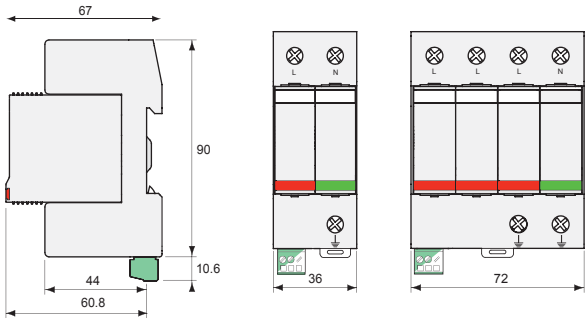
PST2xx



PST4xx



Dimensions

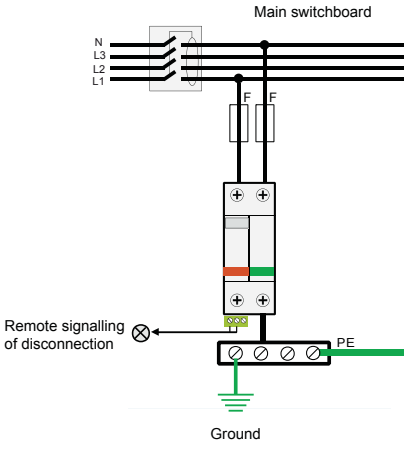


Electrical characteristics

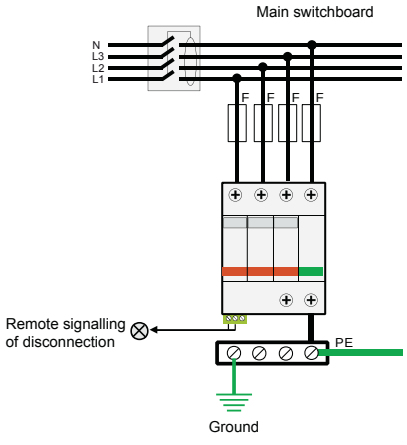
		PST2xx			PST4xx		
		PST215	**PST240**	**PST240T**	**PST415**	**PST440**	**PST440T**
network	V	230	230	230	230/400	230/400	230/400
max. operating voltage.	Uc	275 V~	275 V~	275 V~	275 V~	275 V~	275 V~
follow current	If	none	none	none	none	none	none
nominal discharge current *15 x 8/20 µs impulses*	In	5 kA	20 kA	20 kA	5 kA	20 kA	20 kA
maximum discharge current	Imax	15 kA	40 kA	40 kA	15 kA	40 kA	40 kA
protection level N/PE(at In) Up		1,5 kV	1,5 kV	1,5 kV	1,5 kV	1,5 kV	1,5 kV
protection level L/N (at In) Up		0,9 kV	1,25 kV	1,25 kV	0,9 kV	1,25 kV	1,25 kV
residual voltage at 5kA		0,9 kV	0,9 kV	0,9 kV	0,9 kV	0,9 kV	0,9 kV
protection modes	common	•	•	•	•	•	•
	differential	•	•	•	•	•	•
remote signalling		-	-	•	-	-	•

Installation scheme

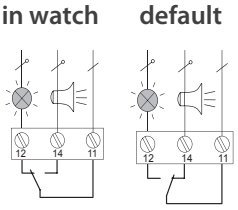
PST2xx



PST4xx

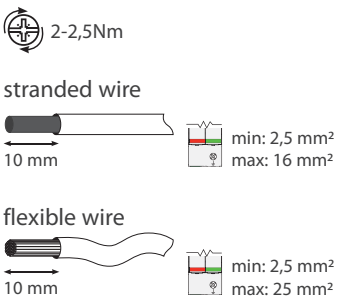


Remote indication



Min: 12 V DC, 10 mA
Max: 250 V AC, 1 A

Connection

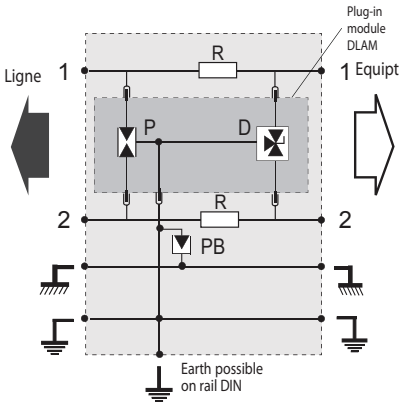


Class III
Surge protectors for telecom and data lines

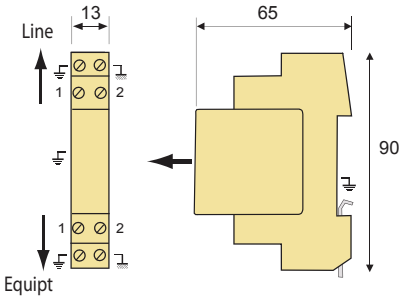
Class III surge protectors are designed to protect, against surge voltages telecom lines, data lines, and automation PLCs and industrial buses. These elements are characterised for their high sensitiveness and the elevated cost that any overvoltages can cause on the equipment to be protected.

DLA protections combine gas discharger tubes and fast clamping diodes in order to provide high discharge current capability and fast operation. These protections are installed on symmetrical DIN rails and are equipped with removable modules for easy maintenance (line continuity in case of plug-in module removal).

Electrical diagram



Dimensions



Electrical characteristics

		DLA-170	DLA-48D3	DLA-12D3	DLA-06D3
Utilisations type		Telephone line	ISDN-T0 48 V line	RS232	RS422 RS485
Configuration		1 pair+shield	1 pair+shield	1 pair+shield	1 pair+shield
Nominal line voltage	Un	150 V	48 V	12 V	6 V
Max. line voltage	Uc	170 V	53 V	15 V	8 V
Max. line current	Imax	300 mA	300 mA	300 mA	300 mA
Protection level	Up	220 V	70 V	30 V	20 V
Nominal discharge current	In	20 kA	20 kA	20 kA	20 kA
Impulse current	Iimp	5 kA	5 kA	5 kA	5 kA
Spare module		DLAM-170	DLAM-48D3	DLAM-12D3	DLAM-06D3

Permanent overvoltage protection PSP-1

MODULTEC

Protection against permanente or temporary overvoltages (TOV) require disconnecting the equipments from the installation. We can not shunt temporary to ground as we are dealing with large time scale overvoltages.

Temporary overvoltages are typically due to neutral fault in the network and specially required on those installations with unstable networks showing regular fluctuations and power cuts.

- Width 1 module (17,5 mm)
- Monitoring indication: green LED on
- Permanent overvoltage: warning sign red backlited
- Reset pushbutton

Technical specifications

operating voltage	(U_n)	230V~
switching threshold	(U_{limit})	255-265V~
suitable RCD	($I_{operate}$)	30mA
switch off delay time		5 msg

Green led

Normal operation. Device monitoring.

Red warning sign

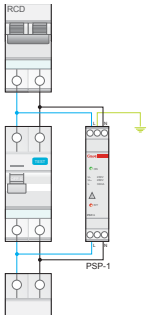
Blinking sign indicates relay disconnection due to permanent overvoltage.

Test/reset pushbutton

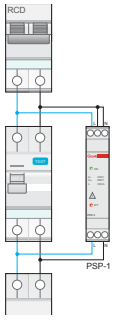
Tripping test pushbutton to check device correct operation.
reset pushbutton after permanent overvoltage disconnection.

Single phase installation diagram

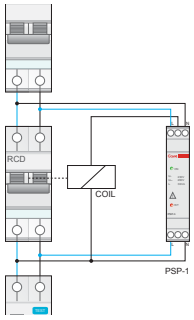
Connection with earth shunting
Single phase 230Vac + Earth
Associated RCD 30 mA



By-pass connection (installations with no earthing)
Single phase 230Vac
Associated RCD 30 mA



Connection with coil release associated to disconnection element: MCB or RCD (preferential on installations without earthing)
Single phase 230Vac
Associated coil release 30mA



Three phase installation

Our range of RF02 is specially suitable on 3Ph (or 3Ph+N) supplies and its operating conditions. You can consult on Control Relays catalogue or use PSP on 3Ph installation when actuating on RCD and/or manual reset/test characteristics is required.

MODUTEC

PSP-3 for three phase networks

Protector PSP-3 does actuate by the means of the output relay on the **shunt trip coil** of the breaking element (MCB or MCCB). Permanent overvoltage protector distinguishes on integrating a voltage free auxiliary contact for external signalling. The protector does also operate on **test** mode.

Signalling

Phase led blinking signals permanent overvoltage, led off signals phase failure.

Axuiliary output

The protector has a built in voltage free auxiliary contact for external signalling, alarm, PLC communication,..

Test mode

Selecting test mode by the jeans of a frontal rotary switch the relay will operate on the shunt trip coil while leds will indicate that we are on test mode.

Signalling

>U Permanent Overvoltage

Permanent overvoltage on phases blinking. Relay and auxiliary contact closed..

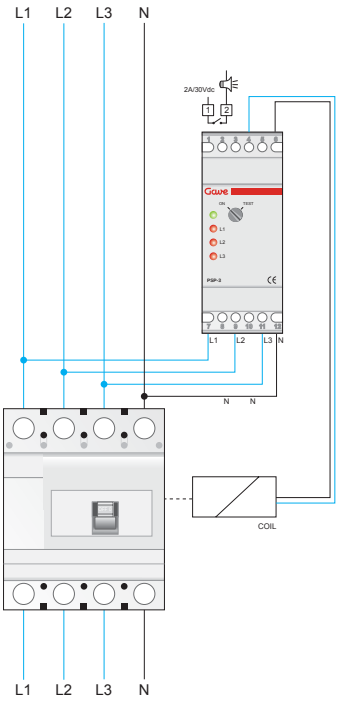
Wrong connection

Neutral wrong connection. Does not distinguish connection between L1,L2 and L3. This condition during an extended period will damage the device. Remake connection.

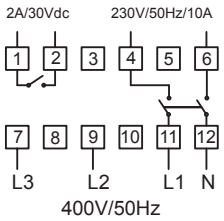
Technical characteristics

Operating voltage	(U_n)	230V~
tripping voltage tripping time	(U_{limit}) (t)	255-265V~ 3s
tripping voltage tripping time	(U_{limit}) (t)	>265V~ 0,8s

Installation diagram



Electrical scheme



Combining protections

Industrial, IT and services facilities face increasing demand on transient and temporary overvoltage protections in order to secure valuable equipments. Installation normative updates are improving equipment protection by writing down new requirements. Gave offers a complete range of combined solutions that warrant flexible installation and easy maintenance.

➜ Flexibility

The protector is installed upon space availability on the panel. Easy to place transient protection close to the earth connection.

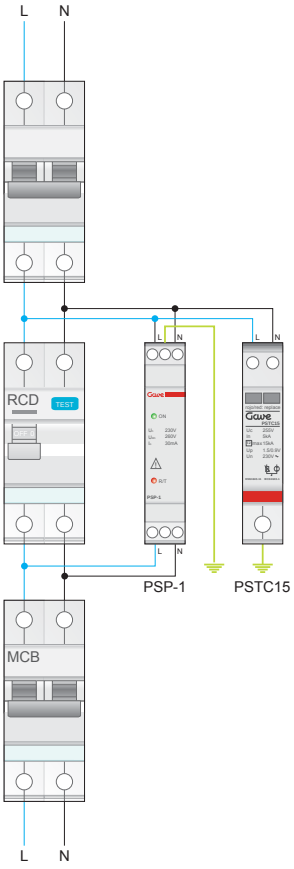
➜ Remote signalling

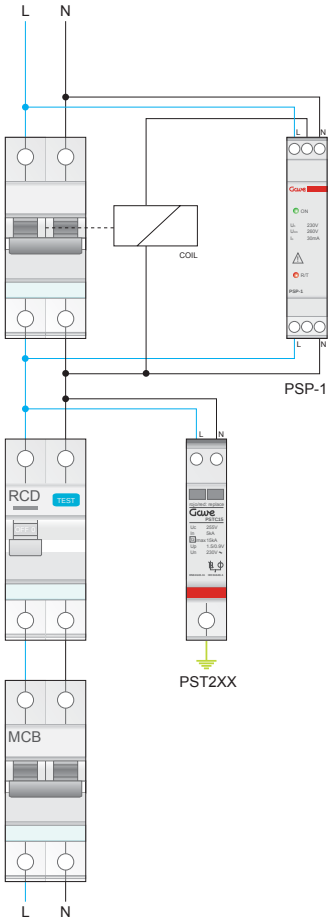
Protectors are equipped with remote signalling. We can distinguish if we have transient or temporary/permanent overvoltage condition.

➜ Maintenance

Friendly maintenance. When a transient varistor protection ends its live we only need to replace this phase cartridge remaining other modules operative.

Single phase installation





Three phase installation