

Overview

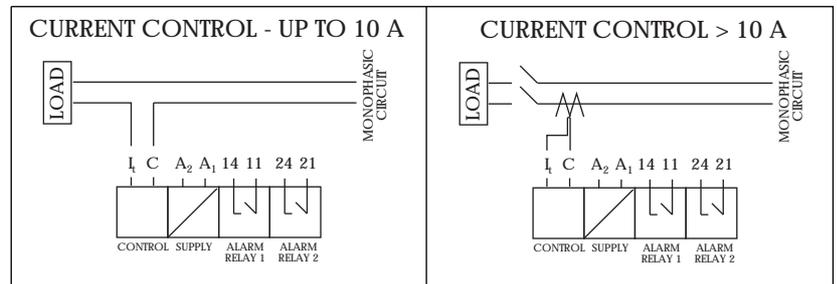
This electronic digital relay for current control has been specially designed to monitor the intensity on single-phase AC/DC circuits. It compares the set intensity value to the real intensity supported by the circuit, activating the alarms and outputs of the relevant relays in order to protect the system against over- and undercurrent of between 0.5 and 10 A (250 V). For currents greater than 10 A a transformer is used (view diagram).



Nominal values

Supply voltage		12 - 24 VAC/VDC (2.5 W) (not isolated)
		48 - 230 VAC/VDC (2 W) (isolated)
Operating range	Current	0.5 - 10 A (AC/DC; without transformer)
	Time	0.1 seconds to 999 hours
Switch-on delay	AC	0.02 seconds
	DC	0.2 seconds
Configuration precision	Time	+ 1% of set time
	AC current	+ 2% of full scale
	DC current	+ 5% of full scale
Measuring circuit impedance		5 mΩ
Indicators	Supply	Green LED
	Alarm	Red LED
Output relays (SPST)		Two change-over relays (6 A, 250 VAC / 30 VDC, resistive load) or one change-over relay (12 A, 250 VAC / 30 VDC)

Connection diagrams



Features

The module can be used in two different ways:

Manual mode: for a simple regulation of intensity. The switching on may be delayed for a given interval, which can be customized thanks to the built-in trimmers placed on the front side. This will protect the system from overcurrents.

Programming mode: thanks to a built-in mini-USB port you will be able to connect the module to a PC. With our Devices Programmer software it is possible to program easily up to 7 different functions and load them onto the connected module.

Software security lock of the manual regulated range.

Over-, under- and window current monitor, with independent state signals.

Adjustable switch-on / -off delay.

Compact design, easy wiring and 22.5 mm wide casing.

LED signaling of voltage state and alarm output on front side.

Double output with two 1-CO-contact relays (switching capacity 6A, AC1 250V / DC1 30V) or single output with one relay (switching capacity 12A, AC1 250V / DC1 30V).

Measurement range from 0.5 A to 10 A, 250 V.

Connection diagrams, functions and installation information laser-marked on module casing.

Certifications: CE, UL (requested).

Uses and applications

Current monitoring has a wide range of applications: in industrial processes, buildings, or wherever electric current needs to be monitored and controlled, either for a load supervision or to protect any kind of electrical systems and installations. With this easily programmable module you will be able to use and customize different functions depending on which one best suits your needs.

Some common applications are the following:

Breakdown protection and prevention due to overloads on low-voltage devices in any kind of system, including heating and cooling installations.

Protection of engines against over- and/or undercurrent.

Detection of resistor failures on heating systems.

Current consumption control.

Breakdown and failure protection on lighting systems.

Security applications for the industry, buildings, etc.

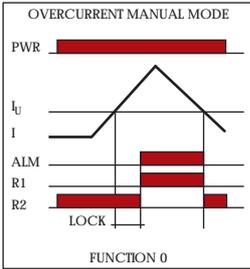
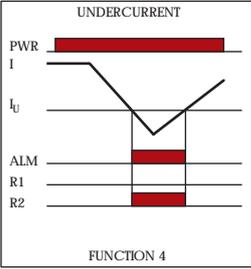
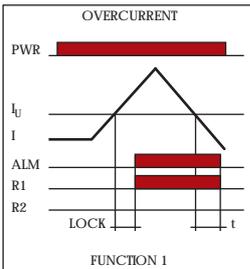
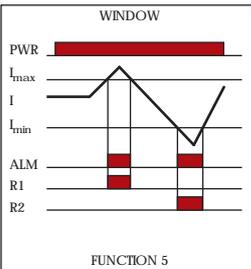
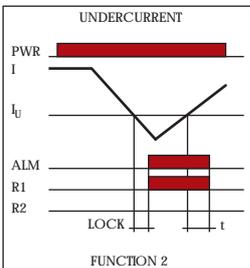
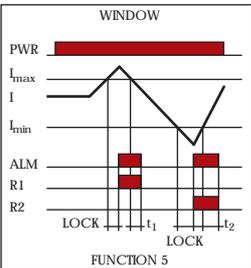
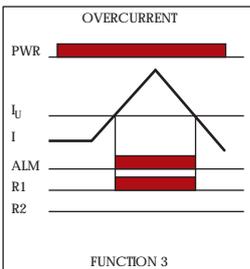
Detection of current leakage of higher values than the preset ones, or due to current decrease (lower values).

Alarm and backup supply activation when the main power supply fails.

Specifications

Room temperature	Working temperature	-10 to 45 °C (24 V) -10 to 60 °C (230 V)
	Storage temperature	-20 to 70 °C
Supply frequency (AC)		50 / 60 Hz + 3 Hz
Overcurrent transient (burst) - 100 ms		50 A
Output relays	Resistive load	6 A at 250 VAC (cos ϕ = 1) 6 A at 30 VDC (L / R = 0 ms)
		12 A at 250 VAC (cos ϕ = 1) 12 A at 30 VDC (L / R = 0 ms)
	Mechanical life	10 ⁷ cycles
	Electrical life	3 x 10 ⁴ cycles
Max. screw torque		0.6 Nm
Mounting		DIN-rail (35 mm)
Dimensions		22.5 x 76 x 105 mm (150 gr)

Functions

<p>Function 0</p> <p>Factory default. After the “lock” time the overcurrent alarm is activated when the given threshold is exceeded. NO and NC contacts are admitted. The user can configure the working values with the built-in trimmers. Working range: 0.5 - 10A with fixed hysteresis set; “lock”: 0 - 26 seconds.</p>  <p style="text-align: center;">FUNCTION 0</p>	<p>Function 4</p> <p>The undercurrent alarm is activated while the current falls under the preset minimum threshold.</p> <p>Working range: 0.5 to 10A.</p>  <p style="text-align: center;">FUNCTION 4</p>
<p>Function 1</p> <p>The overcurrent alarm is activated after a given “lock” time and during a preset interval when the given current threshold is exceeded. Working range: current from 0.5 to 10A; alarm interval from 0.1 seconds to 999 hours; “lock” time from 0 to 99.9 seconds.</p>  <p style="text-align: center;">FUNCTION 1</p>	<p>Function 5</p> <p>The alarm is activated when the current presents values outside a preset range, and it indicates if the deviation is due to an overcurrent or an undercurrent.</p> <p>Working range: 0.5 to 10A.</p>  <p style="text-align: center;">FUNCTION 5</p>
<p>Function 2</p> <p>The undercurrent alarm is activated after a given “lock” time and during a preset interval when the given current minimum threshold is not reached.</p> <p>Working range: current from 0.5 to 10A; alarm interval from 0.1 seconds to 999 hours; “lock” time from 0 to 99.9 seconds.</p>  <p style="text-align: center;">FUNCTION 2</p>	<p>Function 6</p> <p>The alarm is activated after a given “lock” time and during a preset time interval when the current presents values outside a preset range. It indicates if the deviation is due to an overcurrent or an undercurrent.</p> <p>Working range: current from 0.5 to 10A; alarm interval from 0.1 seconds to 999 hours; “lock” from 0 to 99.9 seconds.</p>  <p style="text-align: center;">FUNCTION 5</p>
<p>Function 3</p> <p>The overcurrent alarm is activated while the current exceeds the preset threshold.</p> <p>Working range: from 0.5 to 10 A.</p>  <p style="text-align: center;">FUNCTION 3</p>	<p>Functions 1 to 6 can be configured on a PC with our Easy Control Programmer software. The user can then load them onto the module with the cable provided by Relequick, S. A.</p>

Overview

This electronic digital programmable relay has been specially designed to monitor the voltage asymmetry, sequence and loss phase for three-phase power systems.

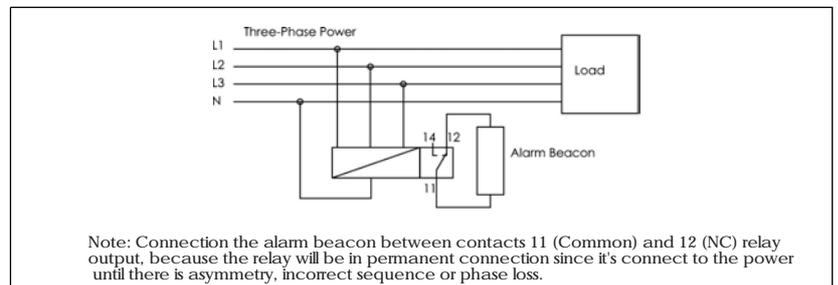
The module is designed to be mounted on Din-rail and it let to monitor all the power specifications and topologies that exists on the world.



Nominal values

Supply voltage		200-240 VAC
		380-480 VAC
Operating range	Asymmetry	To 2% until 22%
	Time	0.1 seconds to 999 hours
Configuration precision	Asymmetry	+ 10% of operating value. Asymmetry will occur if the difference between the higher and lower voltage is greater than the nominal voltage asymmetry percentage.
	Time	+ 1% of set time
Indicators	PWR	Green LED
	Status relay	Yellow LED
	Alarm	Red LED
Status relay		One SPDT (6 A, 250 VAC / 30 VDC, resistive load)

Connection diagrams



Features

Only two models complete the range for all voltages:

Mod: MCP240 in 200-240VAC

Mod: MCP380 in 380-480VAC

The module can be programmed in two different ways:

Manual mode: adjust the percentage values of asymmetry and time delay by the potentiometers and power specifications and topologies through switches.
Programming mode: thanks to a built-in mini-USB port you will be able to connect the module to a PC. With our Devices Programmer software it is possible to program easily different percentage values of asymmetry and time delay besides the power specifications and topologies that exist on the world and load them onto the connected module.

Compact design, easy wiring and 22.5 mm wide casing.
Monitoring of asymmetry power, correct sequence and phase loss with signs of status, alarm and LED power up.

One output with 1-CO-contact relay (switching capacity 6A, AC1 250V / DC1 30V).

Connection diagrams, functions and installation information laser-marked on module casing.

Certifications: CE, UL (requested).

Uses and applications

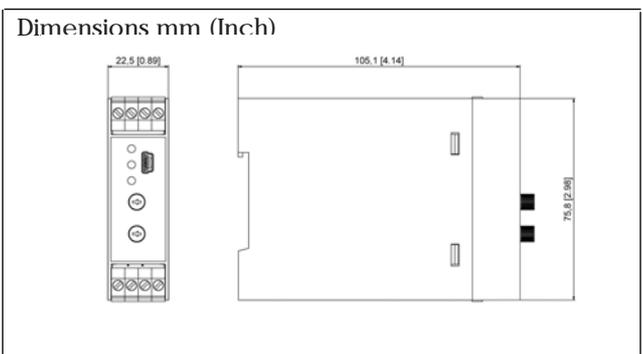
The asymmetry, correct sequence and phase loss monitoring has great applications in industry, buildings, and all kinds of electrical installations, both in load monitoring, as in protection of machines or small installations.

Some common applications are the following:

Protection and prevention due to an imbalance of the asymmetric or one phase loss or the inverse of power in any kind of three phase motors.

Preventing damages or overheating in the engines.

Motors. Pumps, compressors, forklifts, generators... all of them may be protected with this device in the phase failures.



Specifications

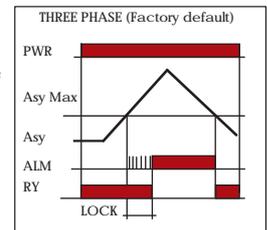
Room temperature	Working temperature	-20 to 60 °C (with no condensation or icing)
	Storage temperature	-40 to 70 °C (with no condensation or icing)
Supply frequency (AC)		50 / 60 Hz + 5 Hz
Output relay	Resistive load	6 A at 250 VAC ($\cos \Phi = 1$) 6 A at 30 VDC (L / R = 0 ms)
	Inductive load	1A at 250 VAC ($\cos \Phi = 4$) 1A at 30 VDC (L / R = 7 ms)
	Mechanical life Electrical life	10 ⁷ cycles 3 x 10 ⁴ cycles
Max. screw torque		0.6 Nm
Mounting		DIN-rail (35 mm)
Dimensions		22.5 x 76 x 105 mm (150 gr)

Functions

Function 0

Factory default. Normal operating mode in which the function of asymmetry is set with the potentiometers and the type of topology of the three-phase power supply is set with the DIP switch.

Ranges: Voltage from 200 VAC to 240 VAC in the model MCP240 and from 380 VAC to 480 VAC in the model MCP480 and delay time (lock) from 0,1 to 30 seconds.



Function 1

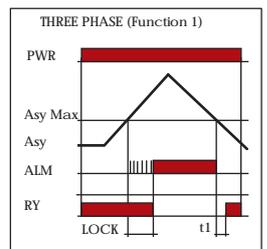
The asymmetry occurs, the alarm LED flashes until the status relay LED turn off (lock), after which time, the alarm LED will remain lit.

Once the asymmetry recovers the alarm LED will turn off and after a time (t1), The status relay LED will remain lit.

Programmable time delay output of 0 to 999 seconds (lock and t1). Parameters will be set by the user using the Devices Programmer software.

In this case one can activate or deactivate the potentiometers and the DIP's switch using the Devices programmer software. If activation is selected, potentiometers must be set at minimum. If this setting is changed, the settings can be program manually again. If the potentiometers and DIPs are locked, the asymmetry and three- phase power specifications cannot be changed manually.

Ranges: From 200 VAC to 240 VAC voltage in the model MCP240 and from 380VAC to 480 VAC in model MCP480 and delay from 0,1 to 999 seconds.

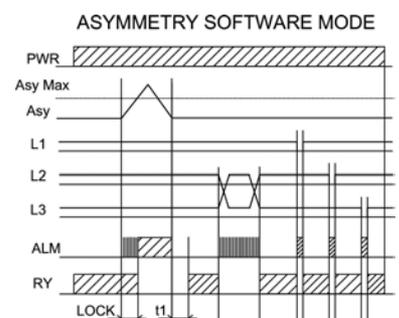


Programming modes

Asymmetry monitoring PH-PH and PH-N voltage can be supervised. If asymmetry occurs between monitorized voltages, the alarm red LED begin to blink until the relay status yellow LED turn off (the time can be set by the potentiometer or by the software programming, time after which the alarm LED will remain on).

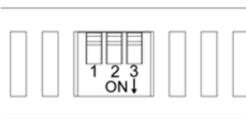
Sequence monitoring If the sequence(L1,L2,L3)is not correct, the alarm LED blink and the relay status LED will remain off.

Loss phase monitoring If phase loss happened, the alarm LED will remain on and the relay status LED will remain off, if the phase is recovered the alarm LED is turned off and the relay status LED is turned on.

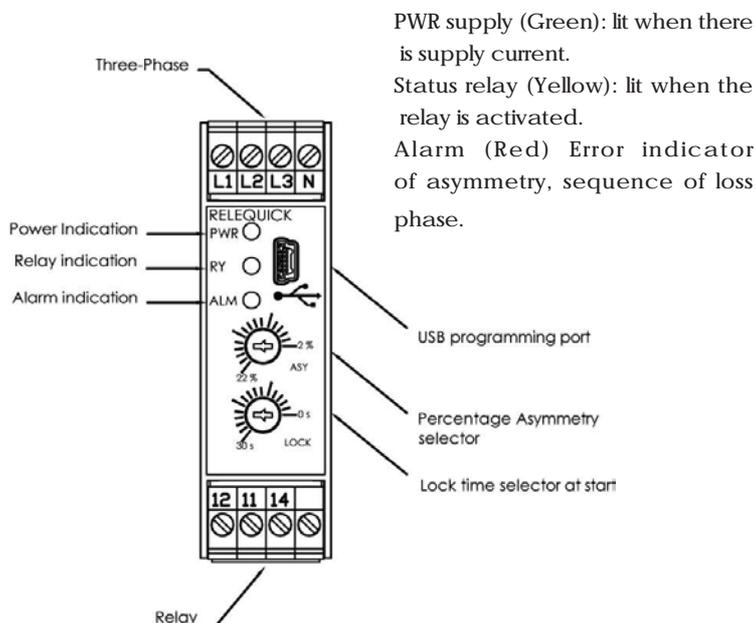




Dip switch for three-phase control



MONITORING	MCP240	MCP480	SW1	SW2	SW3
PH-PH VOLTAGE	200VAC	380VAC	OFF	OFF	OFF
	220VAC	400VAC	OFF	ON	
	230VAC	415VAC	ON	OFF	
	240VAC	480VAC	ON	ON	
PN-N VOLTAGE	115VAC	220VAC	OFF	OFF	ON
	127VAC	230VAC	OFF	ON	
	133VAC	240VAC	ON	OFF	
	138VAC	277VAC	ON	ON	



References

Current control	
MDC230PM2	For currents of up to 10 A. Supply voltage 48 / 230 V AC/DC. Two alarms with relay output, 6 A.
MDC024PM2	For currents of up to 10 A. Supply voltage 12 / 24 V AC/DC. Two alarms with relay output, 6 A.
MDC230PM1	For currents of up to 10 A. Supply voltage 48 / 230 V AC/DC. One alarm with relay output, 12 A.
MDC024PM1	For currents of up to 10 A. Supply voltage 12 / 24 V AC/DC. One alarm with relay output, 12 A.
Three-Phase control	
MCP240	From 200 VAC to 240 VAC voltage
MCP380	From 380 VAC to 480 VAC voltage

Precautions for a correct use

GENERAL PRECAUTIONS

Do not use the product in places exposed to radiant heat, vibrations or shocks.

Make sure the module has been configured properly with regard to the controlled object. Otherwise unwanted or false alarms could arise.

When the product has reached the end of its mechanical or electrical lifetime take into account the applicable laws and policies regarding industrial waste when throwing it out.

INSTALLATION PRECAUTIONS

Tighten the terminal screws firmly without exceeding the maximum screw torque. Recommended torque: 0.6 Nm. The working room temperature must be within the specified allowed range.

Double-check the polarity of the module connections for a correct installation.

Allow for the necessary heat dissipation. Do not block the built-in ventilation openings.

Do not apply any supply to the module during the wiring and installation process.

Do not install the module anywhere near sources of electromagnetic interference.

CORRECT USE

Do not supply the module outside the specified allowed supply range.

Do not modify or manipulate the product without the supervision of a qualified person.

The use of this module on circuits with a high level of harmonics might result in unwanted operations. Take into account the precision of the current measuring when adjusting the release thresholds.