

*Zelio® Control
Measurement Relays*
Monitoring your equipment



Zelio control and measurement relays

Maintain availability of your automated systems

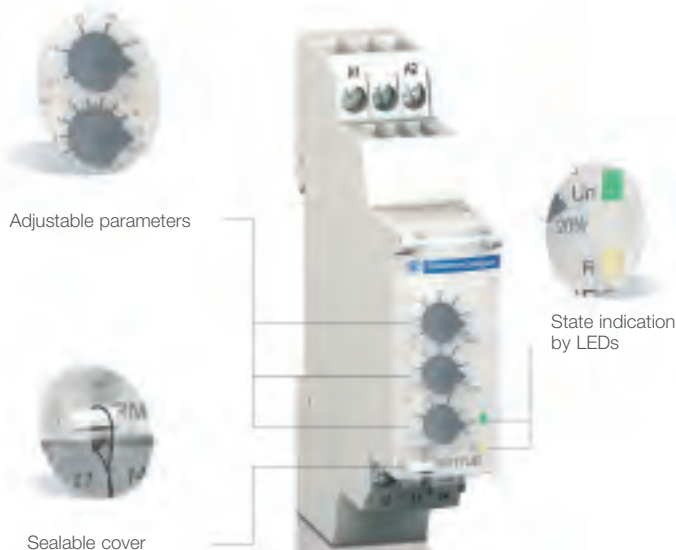
Highly-automated process industries cannot run the risk of production line shutdowns. To minimize breakdowns with costly consequences, equipment monitoring is vital. Measurement and control relays monitor equipment for abnormal operating conditions. By monitoring energy network states, they improve the control of electrical and mechanical loads. Control relays inform users of abnormal conditions, and allow them to initiate the necessary corrective actions to minimize the risk of serious and costly breakdowns.

Simply Smart!

Leveraging
ingenuity
and intelligence
for **ease of use**

Eight product families

- 3-phase network control
- Current control
- Voltage control
- Frequency control
- Speed control
- Lift temperature control
- Level control
- Pump control



New design

- Two compact, modular sizes
- Adapted for industrial and building control panels
- Sealable settings protection cover
- State indication by LEDs
- Optimization of power supplies



▶ *Monitor*

Control relays monitor physical and electrical values. They measure variable signals such as: Phase presence, sequence and balance, voltage, current and frequency. They also control liquid levels and process operating rate.

▶ *Inform*

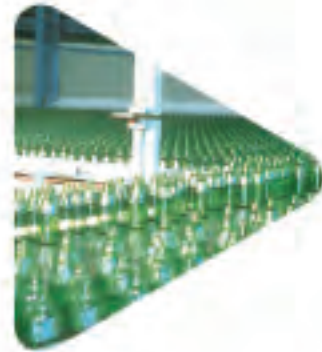
Control device outputs provide users with electrical information. In addition, setting faults are signalled by simultaneous flashing of all LEDs.

▶ *Protect*

Integrated in the control circuits of your automated systems, they enable automatic shutdown management and provide fault information. This improves protection of your equipment.

▶ *Manage*

When the power is switched on, control relays enable correct measurement circuit setting. The outputs operate with positive logic, the contact or contacts being closed under normal conditions and open as soon as fault or power supply loss is detected.



Phase control relays

The motor fault prevention solution

Dedicated mainly to processes integrating 3-phase motors, phase control relays enable in-time detection of 3-phase electrical network faults: single-phase operating mode or overheating caused by network faults. They indicate the need for maintenance and/or corrective operations before additional costs are incurred (production shutdown, motor repair or replacement, etc.). They also extend service life of 3-phase motors.

▼ Functions

Phase control relays monitor:

- Phase sequence
- Loss of one or more phases
- Unbalance level
- Voltage level between phases or between phases and neutral

The Zelio control range also offers relays combining several functions.



► Characteristics

- Standard dimensions: compact and modular format 17.5 mm and 35 mm
- Optimization of number for reference: multivoltage from 3 x 208 VAC to 3 x 480 VAC
- Coverage of all requirements with mono to multifunction offer
- Wiring savings, self-powered
- Combination of phase and motor temperature functions
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- True RMS value measurement (even on deformed sinusoidal waves)
- Adjustable time delay



► Applications

- 3-phase motors
- Moving 3-phase machines and equipment (Traveling cranes and truck refrigeration units)
- Overhead cranes, winches
- Elevators and escalators
- Pumps
- Fans, air extractors
- Mining excavators and conveyors



Phase control

Functions	Power supply	Control values	Time delay	Outputs	References
Phase loss and sequence	Self-powered 208...480 VAC	208...480 VAC	-	1 C/O relay 5 A	RM17TG00
Phase loss and sequence	Self-powered 208...440 VAC	208...440 VAC	-	2 C/O relays 5 A	RM17TG20
Phase loss (regeneration 70% Un) and sequence	Self-powered 208...480 VAC	208/220/380/400/415/440/480 VAC	-	1 C/O relay 5 A	RM17TT00
Phase loss and sequence, undervoltage	Self-powered 208...480 VAC	-2 to -20% Un phase/phase	0.1 to 10 s	1 C/O relay 5 A	RM17TU00
Phase loss and sequence, unbalance	Self-powered 208...480 VAC	Unbalance 5 to 15%	0.1 to 10 s	1 C/O relay 5 A	RM17TA00
Phase loss and sequence, unbalance Over/undervoltage difference	Self-powered 208...480 VAC	Unbalance 5 to 15% Voltage difference 2 to 20% Un phase/phase	0.1 to 10 s	1 C/O relay 5 A	RM17TE00
Phase loss and sequence, unbalance Overvoltage	Self-powered 220...480 VAC	Overvoltage 2 to 20% Un phase/phase	0.1 to 10 s	2 C/O relays 5 A*	RM35TF30
Undervoltage		Undervoltage -20% to -2% Un phase/phase			
Over/undervoltage between phases	Self-powered 220...480 VAC	Overvoltage 2 to 20% Un phase/phase Undervoltage -20% to -2% Un phase/phase	0.3 to 30 s	2 C/O relays 5 A	RM35UB330
Over/undervoltage between phases and neutral	Self-powered 208...480 VAC	Overvoltage 2 to 20% Un phase/neutral Undervoltage -20% to -2% Un phase/neutral	0.3 to 30 s	2 C/O relays 5 A	RM35UB3N30
Over/undervoltage between phases	Self-powered 208...480 VAC	Overvoltage 2 to 20% Un phase/phase Undervoltage -20% to -2% Un phase/phase	0.3 to 30 s	1 C/O relay 5 A	RM17UB310
Phase loss and sequence PTC thermistor probe thermal protection	24...240 VAC/DC 50/60 Hz	Phases : 208...480 VAC Thermal protection: auto reset	-	2 NO relays 5 A	RM35TM50MW
Phase loss and sequence PTC thermistor probe thermal protection	24...240 VAC/DC 50/60 Hz	Phases : 208...480 VAC Thermal protection: selectable fault memorization, front face and remote reset, fault test push button	-	2 NO relays 5 A	RM35TM250MW

* 2 C/O DPDT 5 A

Voltage control relays

The power supply fault prevention solution

Voltage control relays monitor input voltage level compared to a high or low threshold preset by the user. In the “window” mode, the relays simply check that the voltage remains within a predetermined high and low level.



► Characteristics common to voltage and current relays

- Standard dimensions: compact and modular format 17.5 mm and 35 mm
- Suitable for alternating and direct signals
- Fewer catalog numbers for maximum efficiency
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- True RMS value measurement (even on deformed sinusoidal waves)
- Adjustable time delay
- Selectable fault state memorization



Current control relays

The load fault prevention solution

Dedicated to measurement of under and overcurrent, without external sensors, up to 15 A current control relays enable continuous monitoring of the operation of electrical and mechanical loads such as motors and resistors. Simple to install and adjust, these control relays are for applications in fields as varied as ventilation, pumping and conveying.



Frequency control relays

The network frequency fault prevention solution

Frequency control relays monitor positive or negative frequency variation of 50 Hz or 60 Hz alternating signals entering their measurement circuits.



► Characteristics

- Standard dimensions: compact and modular format 17.5 mm and 35 mm
- Optimization of power supplies number: 120 VAC to 277 VAC between phase and neutral
- Cover all requirements, over and under frequency
- Wiring savings, self-powered
- Suitable for 50 Hz and 60 Hz networks
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- Adjustable time delay
- Selectable fault state memorization

Voltage control

Functions	Power supply	Control values	Time delay	Outputs	References
Over and undervoltage	Self-powered 12 VDC	9 to 15 VDC	0.1 to 10 s	1 C/O relay 5A	RM17UAS14
Over and undervoltage	Self-powered 20 to 80 VAC/DC	20 to 80 VAC/DC	0.1 to 10 s	1 C/O relay 5A	RM17UAS16
Over and undervoltage	Self-powered 65 to 260 VAC/DC	65 to 260 VAC/DC	0.1 to 10 s	1 C/O relay 5A	RM17UAS15
Over and undervoltage	Self-powered 20 to 80 VAC/DC	20 to 80 VAC/DC	0.1 to 10 s	1 C/O relay 5A	RM17UBE16
Over and undervoltage	Self-powered 65 to 260 VAC/DC	65 to 260 VAC/DC	0.1 to 10 s	1 C/O relay 5A	RM17UBE15
Over and undervoltage	24 to 240 VAC/DC 50/60 Hz	0.05 V...0.5 V 0.3 V...3 V 0.5 V...5 V	0.3 to 30 s	2 C/O relays 5A	RM35UA11MW
Over and undervoltage	24 to 240 VAC/DC 50/60 Hz	1 V...10 V 5 V...50 V 10 V...100 V	0.3 to 30 s	2 C/O relays 5A	RM35UA12MW
Over and undervoltage	24 to 240 VAC/DC 50/60 Hz	15 V...150 V 30 V...300 V 60 V...600 V	0.3 to 30 s	2 C/O relays 5A	RM35UA13MW

Current control

Functions	Power supply	Control values	Time delay	Outputs	References
Overcurrent	24 to 240 VAC/DC 50/60 Hz	2...20 A by integrated toroid	-	1 C/O relays 5 A	RM17JC00MW
Over or undercurrent	24 to 240 VAC/DC 50/60 Hz	2...20 mA 10...100 mA 50...500 mA	Inhibition: 1 to 20 s Threshold: 0.3 to 30 s	2 C/O relays 5 A*	RM35JA31MW
Over or undercurrent	24 to 240 VAC/DC 50/60 Hz	0.15...1.5 A 0.5...5 A 1.5...15 A	Inhibition: 1 to 20 s Threshold: 0.3 to 30 s	2 C/O relays 5 A*	RM35JA32MW

Frequency control

Functions	Power supply	Control values	Time delay	Outputs	References
Over/underfrequency	120 to 277 VAC 50/60 Hz	Network 50 and 60 Hz Upper threshold: -2 to +10 Hz Lower threshold: -10 to +2 Hz	0.1 to 10 s	2 C/O relays 5 A	RM35HZ21FM

* 2 C/O DPDT 5 A

Level control relays

The filling, draining and monitoring solution

Level control relays are used to monitor or maintain levels of conductive liquid or non-conductive material. Level control is usually achieved with float switch fitted contacts, which change state according to the position of the float switch. Due to the relatively low currents going through these types of probes, their reliability is questionable. This is particularly true in polluted environments and when there are shocks and vibrations.

To properly respond to the requirements of level control, the Zelio Control range offers relays that monitor by measuring liquid resistivity. This operating principle eliminates the problems encountered with contact probes. These monitoring relays enable adjustment of measurement sensitivity so as to precisely set closing and tripping levels. In addition, a selectable time delay takes wave effect into account, avoiding unwanted closing and tripping due to movements of liquid.

Non-conductive level control is achieved by accepting the signal from a limit switch, photo electric sensor, capacitive proximity sensor, pressure sensor, or ultrasonic sensor.



► Characteristics

- Standard dimensions: compact and modular format 35 mm
- Fewer catalog numbers for maximum efficiency: single voltage 24 VAC/DC to 240 VAC/DC
- Offer covering all applications: conducting liquids and other materials
- Drain or fill modes
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- Adjustable time delay

Pump control relays

The pump management and monitoring solution

Pump control relays control pumps (single or 3-phase) using discrete control inputs and monitor current (dry operation and overload protection) and the state of supply phases.



► Characteristics

- Standard dimensions: compact and modular format 35 mm
- Fewer catalog numbers for maximum efficiency: multivoltage from 3 x 208 VAC to 3 x 480 VAC
- Over/undercurrent control 0.1 A to 10 A
- Wiring savings: self-powered
- Combined functions: phase, current and discrete inputs
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- Phase loss and sequence monitoring
- Choice of single or 3-phase modes
- Time delay adjustable up to 60 s



Level control

Functions	Power supply	Control values	Time delay	Outputs	References
Drain or fill	24 to 240 VAC/DC 50/60 Hz	0.25...5 K Ω 5...100 K Ω 0.05...1 M Ω	0.1 to 10 s	2 C/O relay 5 A*	RM35LM33MW
Drain or fill	24 to 240 VAC/DC 50/60 Hz	Sensor discrete input: contact/positive switching/negative switching/	0.1 to 5 s	1 C/O relay 5 A	RM35LV14MW
Suspended probe 1 electrode + 1 ref.					LA9RM201
Suspended protected probe					RM79696043

Pump control

Functions	Power supply	Control values	Time delay	Outputs	References
Single or 3-phase operation Over/undercurrent Phase loss and sequence in 3-phase 2 contact inputs for cycle commands	Self-powered 208...480 VAC or 230 VAC 50/60 Hz	Over/undercurrent: 0.1 to 10 A Phase: 208...480 V C	1 to 60 s	1 C/O relay 5 A	RM35BA10

* 2 C/O DPDT 5 A

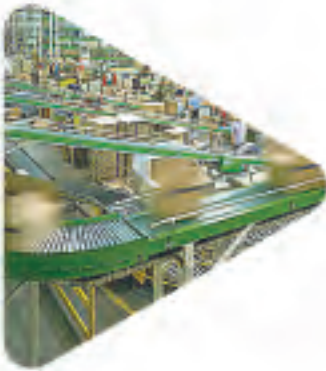
Speed control relays

The operating rate monitoring solution

Speed control relays can receive pulses from all types of sensors such as:

- Inductive sensors on gear wheels
- Photoelectric sensors on conveyors
- Microswitches on cams

Dependent on rotation or movement speed, the pulse rate supplied to the relay varies. By monitoring the pulse rate, the relays control over or underspeed. The applications include monitoring of rotation speed, transporter or conveyor belt speed, and pump rotation.



► Characteristics

- Standard dimensions: compact and modular format 35 mm
- Fewer catalog numbers for maximum efficiency: single voltage 24 VAC/DC to 240 VAC/DC
- Automatic sensor type detection
- Remotable inhibition by external contact
- Fault memory function
- Settings protection thanks to sealable cover
- Clear display of control state by LEDs
- Reset by remote contacts and power supply cuts
- Inhibition time delay at power-on



Temperature control relays

Elevator applications

The temperature control solution conforming to EN81

Temperature control relays monitor the temperature in control or pulley rooms to check that it remains within the regulated limits. A combined temperature and phase control version of the relay is available.



Speed control

Functions	Power supply	Control values	Time delay	Outputs	References
Over/under rate/speed	24 to 240 VAC/DC 50/60 Hz	Interval between control pulses: 0.05 to 0.5 s 0.1 to 1 s 0.5 to 5 s 1 to 10 s 0.1 to 1 mn 0.5 to 5 mn 1 to 10 mn	0.6 to 60 s	1 C/O relay 5 A	RM35S0MW

Temperature control

Functions	Power supply	Control values	Time delay	Outputs	References
Control room temperature	24 to 240 VAC/DC 50/60 Hz	Input PT100 3-wire Lower threshold: -1°C to +11°C Upper threshold: +34°C to +46°C	1 to 10 s	1 C/O relay 5 A	RM35ATL0MW
Control room temperature	24 to 240 VAC/DC 50/60 Hz	Input PT100 3-wire Lower threshold: -1°C to +11°C Upper threshold: +34°C to +46°C	1 to 10 s	2 NO relays 5 A	RM35ATR5MW
Control room temperature Phase loss (regeneration 70% Un) and sequence	24 to 240 VAC/DC 50/60 Hz	Inputs: 208...480 V Input PT100 3-wire Lower threshold: -1°C to +11°C Upper threshold: +34°C to +46°C	1 to 10 s	2 NO relays 5 A	RM35ATW5MW



Discover the complete Zelio time, control and count ranges from Telemecanique.

The efficiency of Telemecanique® branded solutions

Used in combination, Telemecanique products provide quality solutions, meeting all your Automation and Control applications requirements.



A worldwide presence

Schneider Electric is a global supplier of electrical distribution, automation and control equipment products under the brand names of Square D®, Telemecanique® and Merlin Gerin®. Backed by a global organization of 90,000 employees in 190 countries, Schneider Electric is a global electrical industry leader. With one of the strongest distribution networks in the U.S. and around the world, you can count on Schneider Electric to keep your business running smoothly and efficiently.

Technical assistance wherever you are

- Our technicians are available to assist you in finding the optimum solution for your needs.
- Schneider Electric provides you with all necessary technical assistance, throughout the world.

www.us.telemecanique.com

Simply Smart!

Schneider Electric - North American Operating Division

1415 S. Roselle Rd.
Palatine, IL 60067
Tel: 847-397-2800
Fax: 847-925-7500
www.us.telemecanique.com