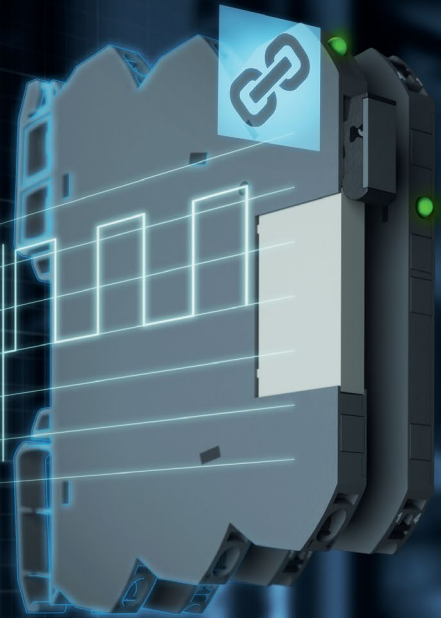


SIEMENS

Ingenuity for life



**SIRIUS
Monitor**

Monitoring, Controlling and Switching with SIRIUS Relays

One range for every application

The full-range SIRIUS relay portfolio

Every engineer knows that he must be completely up to date when it comes to controls, load feeders and drives. However, with coupling, control and monitoring relays, the search among the various suppliers becomes time-consuming. This is now a thing of the past because we have combined all these products in a single range: SIRIUS®. This makes it easy for you to select the optimum product and guarantees a top price-performance ratio.

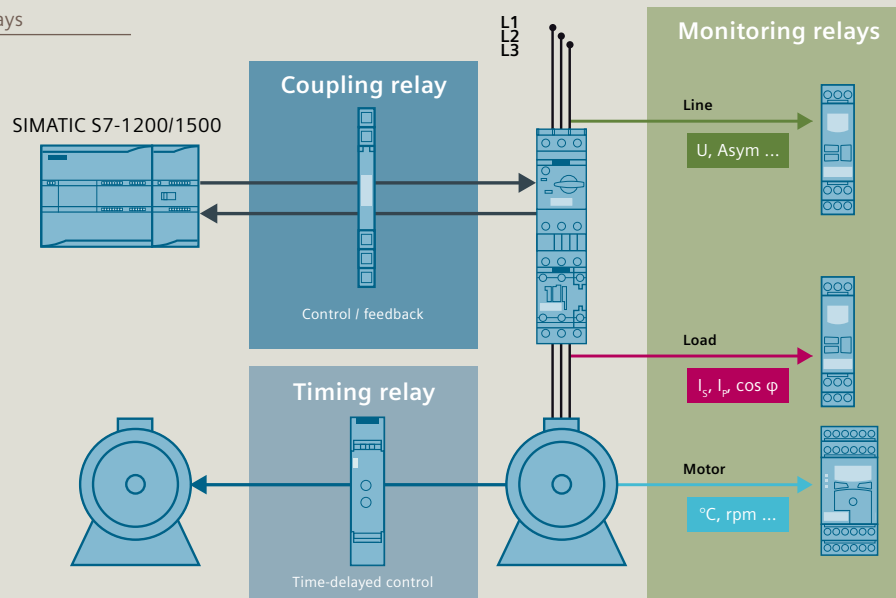
SIRIUS relays – one range for every application

Our range of SIRIUS relays comprises everything required for motor feeder applications. With maximum ease and comfort. From a single source. Whether compact timing or reliable monitoring relays, particularly narrow coupling relays, plug-in relays, low-noise power relays or signal converter our relay range is the most complete and comprehensive portfolio on the market. We offer relays for each and every application. Moreover, all SIRIUS relays offer outstanding ease of operation. Take a closer look at our portfolio and convince yourself. You will be surprised.

The highlights at a glance

- **Broad applicability** – comprehensive portfolio
- **User-friendly** – easy operation
- **Multi-functional** – flexibly applicable relays
- **Practice-oriented** – graded for customized performance
- **Open communication with the control** – thanks to IO-Link interface
- **Excellent cost/performance ratio**

Use of SIRIUS relays



Content



SIRIUS timing relays: Full control of all time sequences

Timing relays	3RP20/25 and 7PV15 timing relays for DIN rail mounting	6
Function modules	3RA2811 / 12 / 16, 3RA2831 / 32 function modules for mounting on 3RT2 contactors	8
Time-delayed auxiliary switches	3RA2813 / 14 / 15 time-delayed auxiliary switches for mounting on 3RT2 contactors	9

SIRIUS monitoring relays: Perfect protection of machines and systems

Monitoring relays	3UG451 / 461 / 463 monitoring relays for line and single-phase voltage monitoring – as 3UG481 / 483 also for IO-Link	10
	3RR21/22 monitoring relays for direct mounting on contactors for multi-phase current monitoring – as 3RR24 also for IO-Link	12
	3UG4621 / 4622 / 4641 monitoring relays for single-phase current monitoring, power factor and active current monitoring – as 3UG4822 / 4841 also for IO-Link	13
	3UG4625 monitoring relays for residual current monitoring – as 3UG4825 also for IO-Link	14
	3UG458 monitoring relays for insulation monitoring	15
	3UG4501 monitoring relays for level monitoring	16
	3UG4651 monitoring relays for speed monitoring – as 3UG4851 also for IO-Link	17
	3UG546 DC load monitoring relays with Profinet	18
Thermistor motor protection relays	3RN2 thermistor motor protection relays for protection against overheating	20
Temperature monitoring relays	3RS25 temperature monitoring relays (analog adjustable)	22
	3RS26/28/29 temperature monitoring relays (digital-adjustable) also for IO-Link	23

SIRIUS coupling relays: Perfect interaction of control and system

Coupling relays	Overview of SIRIUS coupling relays / signal converters	24
	3RQ2 coupling relays in industrial enclosure, universal	25
	3RQ3 coupling relays with a slimline, compact design	26
	3TX71 plug-in relays	28
	LZS coupling relays with plug-in relays	29
Signal converters	3RS70 signal converters (standard signal and universal converters)	30
Power relays	3TG10 power relays for high performance with minimum dimensions	31

* Technical annex

SIRIUS Monitoring Relays for IO-Link

Reliable monitoring and protection

SIRIUS relays from Siemens offer maximum machine and system protection and now also communicate with the control level thanks to IO-Link. The new SIRIUS relays for IO-Link monitor line quality, current values, voltages, speeds and temperatures with the known reliability while supporting an even broader application area.

SIRIUS speaks IO-Link

With the SIRIUS monitoring relays for IO-Link, you opt for maximum flexibility: In addition to the unchanged autonomous monitoring function, measured values and data can be directly transferred to the control via IO-Link. Also parameterization can either be realized locally or via IO-Link. The SIRIUS relays for IO-Link are thus fully integrated in Totally Integrated Automation, our open system architecture for integrated automation. Moreover, you will benefit from considerably eased device replacement – thanks to data comparison and automatic re-parameterization via parameter servers.

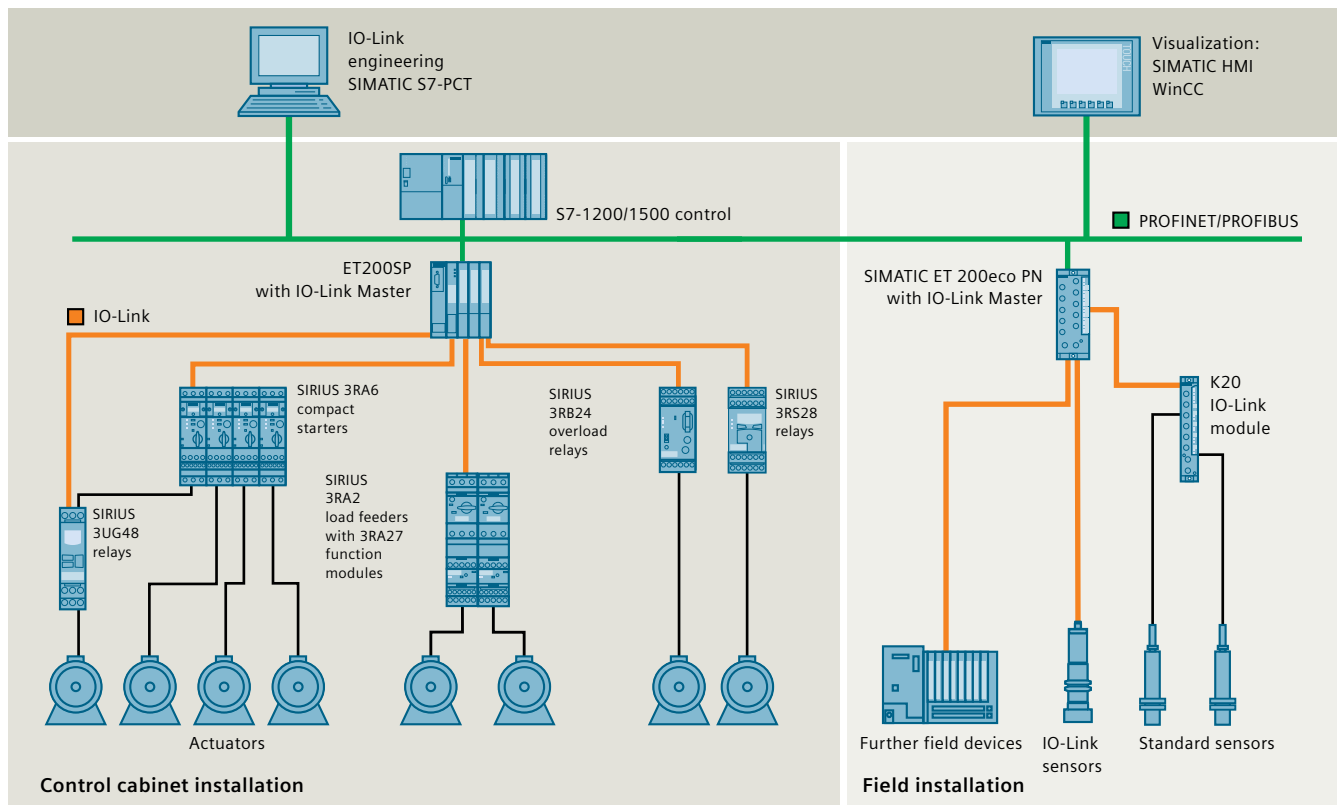
Your advantages

- Precise monitoring of electrical, mechanical and temperature values
- Reliable protection of motors and system components
- Realization of simple autonomous temperature control tasks (2-point, 3-point control)
- Connection to the control level via IO-Link
- Central fault diagnostics and localization
- Eased commissioning and maintenance
- Efficient energy management with SIRIUS 3UG48: Support of the data formats defined in the PROFINergy profile

SIRIUS monitoring relays for IO-Link:

- **SIRIUS 3RR24:** 3-phase current monitoring directly integrated in the load feeder
- **SIRIUS 3UG48:** Monitoring of electrical and mechanical parameters: Voltage, current, power factor and speed
- **SIRIUS 3RS28:** Monitoring of temperatures

Unique consistency: IO-Link integrated in Totally Integrated Automation





3RP20/25 and 7PV15 Timing Relays

for DIN rail mounting

Electronic timing relays are used for all time-delayed switching processes in control, starting, protection and regulation circuits. Thanks to their elaborate operating concept and space-saving, compact design, the 3RP20/25 timing relays are ideal timing devices for manufacturers of industrial control cabinets, power distribution boards and controls. With their narrow design, the 7PV15 timing relays are particularly suitable for applications in heaters, fans, air-conditioning systems and compressors.



Application

ON-delay

- Interference pulse suppression (gating of interference pulses)
- Successive motor starting to prevent mains overloads

OFF-delay

- Generation of overtravel functions after disconnection of the control voltage (e.g. fan run-on)
- Successively delayed disconnection of motors, fans, etc., for targeted system shutdown

Wye(star)-delta

- Motor start-up with reduced starting current in wye (star) circuit
- Switchover to delta operation for full motor power after adjustable time
- Short switchover break to prevent interphase short circuit with delayed contactor switching

Multifunction

- Maximum flexibility: one device with wide-range supply for all time functions
- Versions for railway applications for special requirements (e.g. temperature range, vibration/shock resistance and EMC)

Watchdog function

- Monitoring of cyclic events

Your advantages

- The right construction type for any application
- Compact range for all applications thanks to multifunctional devices and wide voltage range
- Significant logistical advantages thanks to versions with wide voltage and wide time setting ranges
- DIN rail mounting and disassembly without tools
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure

3RP25 timing relays

- Short cycle times and bounce-free and wear-free switching thanks to timing relays with semiconductor output
- Adhesive films are used to document the function set on the multifunctional timing relay
- Sealable cover for safeguarding of set parameters
- Positively driven contacts for increased safety without additional coupling relay (e.g. reliable detection of switching faults or safe signal duplication)

7PV15 timing relays

- Minimum variance: One design both for power distribution boards and control cabinets
- Compliance with EMC requirements for residential areas
- Switchover break with wye(star)-delta adjustable from 50 ms to 1 sec, for optimum adjustability to the application



Applications of the 3RP20/25 and 7PV15 ranges

3RP20 – the timing relay in contactor design:

Recommended for small distance between DIN rails and/or low installation depths, e.g. in control boxes

3RP25 – the premium range for all applications in industrial-standard width 22.5 mm and space-saving 17.5 mm:

for variable use thanks to versions with 1 or 2 relays, screw and spring-type terminals, positively driven operation, etc.

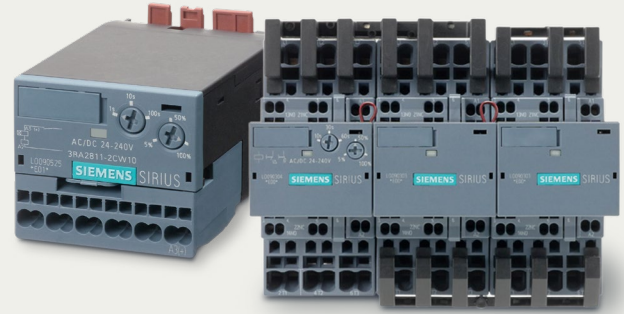
7PV15 – the version for standard applications:

Narrow and cost-favorable, both for control cabinets and power distribution boards

3RA2811/12/16, 3RA2831/32 Function Modules

for mounting on 3RT2 contactors

The function modules facilitate the mounting of starters and contactor assemblies for direct-on-line and wye(star)-delta starting. They comprise all important control functions required for the respective feeder – e.g. timing and electric interlocking function. The function modules, which act as timing relays, can be rapidly and easily mounted on SIRIUS contactors – without laborious wiring. They support contactor switching both with ON- and OFF-delay.



Application

ON-delay

- Time-delayed starting of multiple drives for example reduces the summation starting current and thus prevents the occurrence of line voltage dips or cable overloads (cascade circuit)

OFF-delay

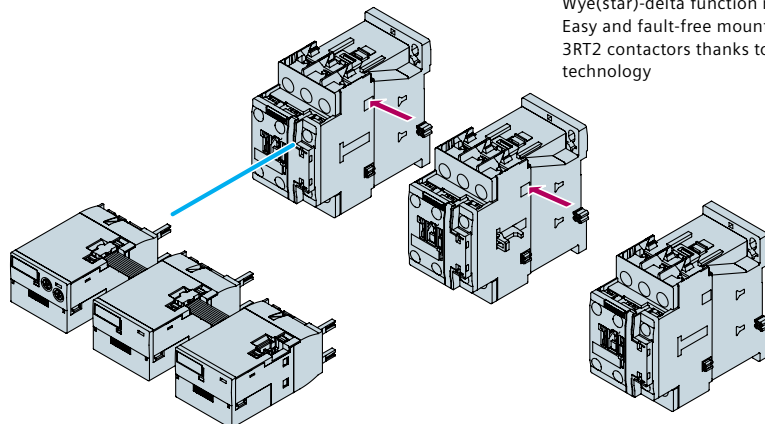
- Time-controlled disconnection of a drive's control signal after a start pulse, e.g. with gate control, follow-up ventilation

Function modules for wye(star)-delta start

- Switchover during drive starting, e.g. switchover of large fans from wye (star) to delta as current-limiting measure
- Fixed switchover break of 50 ms for short-circuit protection
- Universal use thanks to wide voltage and large setting range of the wye (star) start time

Your advantages

- Reduction of control circuit wiring
- Prevention of wiring faults
- 24–240 V AC/DC wide voltage range for control supply voltage and contactor coil control
- Reduced testing costs
- Realization of control-independent timing functions
- Space savings in the control cabinet (compared to a separate timing relay)
- No additional protective circuit required (integrated varistor)
- Automatic preference circuit with wye(star)-delta function modules for further reduction of current peaks
- Assembly of wye(star)-delta starters, including timing function and electric interlocking, without additional wiring
- Approvals in accordance with IEC, CCC, UL and CSA standards



Wye(star)-delta function module:
Easy and fault-free mounting on
3RT2 contactors thanks to plug-in
technology

3RA2813/14/15 Time-Delayed Auxiliary Switches

for mounting on 3RT2 contactors

The electronically delayed auxiliary switches for mounting onto contactors are dimensioned for contactor coil voltages from 24 to 240 V AC/DC (wide voltage). Auxiliary switches for control and status signals are employed especially for the switching of very small signals for electronic applications. They are used for example for pump or fan run-on similar to OFF-delay timing relays or the delayed switch-on of a gate drive. Both the electrical and mechanical connection are realized by simply snapping the device on and locking it. A varistor is integrated in the time-delayed auxiliary switch for the attenuation of switching overvoltages in the contactor coil.



Application

ON-delay

- For example for the delayed readiness signaling of a drive after start-up with centrifugal mass

OFF-delay

- Generation of run-on functions for fans or pumps after disconnection of the control voltage

Your advantages

- Flexible use for all contactor control supply voltages in the 24 – 240 V AC/DC range
- Selectable outputs 1 NO + 1 NC or 1 CO
- All modules with 24 – 240 V AC/DC wide voltage in the auxiliary circuit
- Integrated electric interlocking and factory-integrated varistor (protective circuit) – easy configuration
- Plug-on function modules for connection without tools
- High setting accuracy thanks to selectable time ranges
- Reduced variance – only 1 module for sizes S00 to S3
- Add-on modules for reduced wiring and space savings



SIRIUS 3RA2811 / 12 / 16, 3RA2831 / 32 and 3RA2813 / 14 / 15

- As distinct from other timing relays, 3RA2811 / 12 / 16 and 3RA2831 / 32 function modules do not have relay outputs. They are timing relays that are directly mounted onto 3RT2 contactors. Rather than the contactors themselves, it is the function modules that are controlled, with the modules switching the contactors below them via direct contact to the contactor coil.
- With 3RA2813 / 14 / 15 time-delayed auxiliary switches, the 3RT2 contactor is controlled which then switches on or off instantaneously. The auxiliary switch mounted on the contactor responds to this via voltage tap on the contactor coil and switches the relay outputs with a time delay.

3UG451/461/463 and 3UG481/483 Monitoring Relays

for line and voltage monitoring

The 3UG4 monitoring relays provide a maximum degree of protection for machines and systems. They facilitate the early detection of line and voltage faults, allowing for their rectification before any consequential damage can occur.



IO-Link

Application

Typical applications can be derived from the table below.

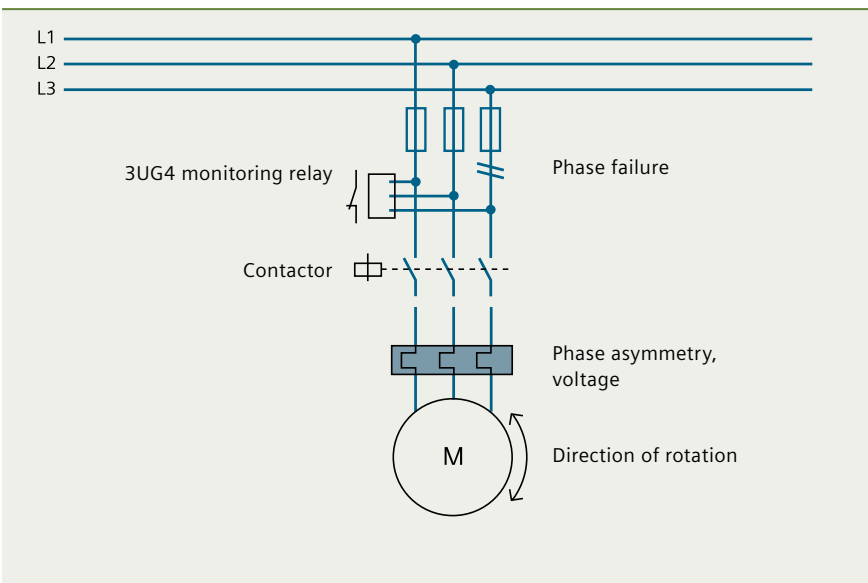
Your advantages

- Thanks to the wide voltage range, the monitoring relays can be used on any power systems around the world – from 160 V to 600 V AC – without separate auxiliary voltage
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Narrow width for all versions
- Permanent display of ACTUAL value and type of line fault with digital versions
- Automatic correction of rotation direction by differentiating between line faults and incorrect phase sequence

Measured variable	Possible system fault
Phase sequence	<ul style="list-style-type: none"> • Direction of rotation of the drive
Phase failure	<ul style="list-style-type: none"> • Fuse tripping • Control supply voltage failure • Single-phase operation of a motor with corresponding overheating
Phase asymmetry	<ul style="list-style-type: none"> • Motor overheating due to asymmetric voltages or phase failure • Detection of asymmetrically loaded supply systems • Phase failure detection despite regenerative feedback
Undervoltage	<ul style="list-style-type: none"> • Increased motor current with respective overheating • Unintended device reset • Mains failure, particularly with battery supply • Threshold value switch for analog signals from 0 to 10 V
Overvoltage	<ul style="list-style-type: none"> • System protection against destruction caused by supply overvoltages • System switch-on upon reaching a certain voltage • Threshold value switch for analog signals 0 to 10 V



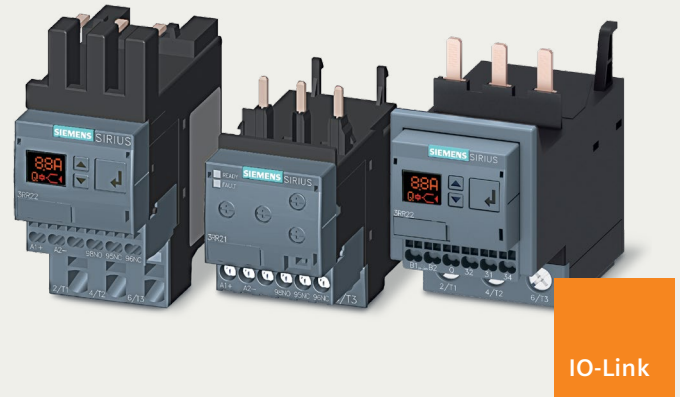
Configuration of 3-phase line monitoring



3RR21/22 and 3RR24 Monitoring Relays

for direct mounting on contactors
for multi-phase current monitoring

The 3RR2 monitoring relays are used not only for monitoring motors or other loads, but additionally also facilitate optimum current monitoring of the entire system or driven process. This for example allows for the early detection and signaling of load shedding or motor overloads. The 3RR2 monitoring relay for current monitoring is directly integrated in the load feeder. It is simply plugged onto the contactor.

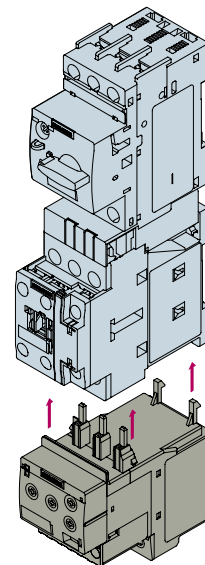


Application

- Monitoring for current overshoot and undershoot
- Monitoring of open circuit
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. caused by excessive loading of conveyor belts or cranes
- Monitoring of the functionality of electric loads such as heaters
- Monitoring of wrong phase sequences on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. due to damaged insulation or moisture

Your advantages

- Direct mounting on 3RT2 contactors, i.e. no additional wiring overhead in the main circuit
- Optimally matched to the technical characteristics of 3RT2 contactors, no separate current transformers required
- 2- or 3-phase current monitoring, apparent or active current monitoring
- Display of ACTUAL values and status messages
- Easy determination of threshold values by means of direct reference to actually measured values under setpoint load
- Only one device is required for motor monitoring along the entire torque curve
- Monitoring for cable break, phase failure/sequence, fault current, motor blocking



Current monitoring directly in the main circuit

3UG4621/4622/4641 and 3UG4822/4841 Monitoring Relays

for single-phase current, power factor and active current monitoring

The 3UG4 relays for current, active power and active current monitoring are ideally suited for monitoring the load of motors and the functionality of electronic loads. These devices detect signs of wear and faults early on, thereby for example facilitating the timely implementation of maintenance measures to prevent system failures.



Application

Current monitoring

- Overload monitoring
- Underload monitoring close to the rated torque
- Monitoring of the functionality of electric loads
- Wire breakage monitoring
- Energy management (phase current monitoring)
- Threshold value switch for analog signals from 4 to 20 mA

Power factor and active current monitoring

- No-load monitoring
- Underload monitoring in the lower power range
- Overload monitoring
- Easy power factor monitoring in networks for the control of compensation systems
- Energy management
- Cable breakage between control cabinet and motor

Your advantages

- Reduced stock-keeping thanks to wide-voltage versions
- Variably adjustable to overshoot, undershoot or window monitoring
- Freely parameterizable delay times and RESET response
- Permanent display of ACTUAL value and type of fault
- Setting of monitoring limits on the basis of real measured values
- Real rms value measurement

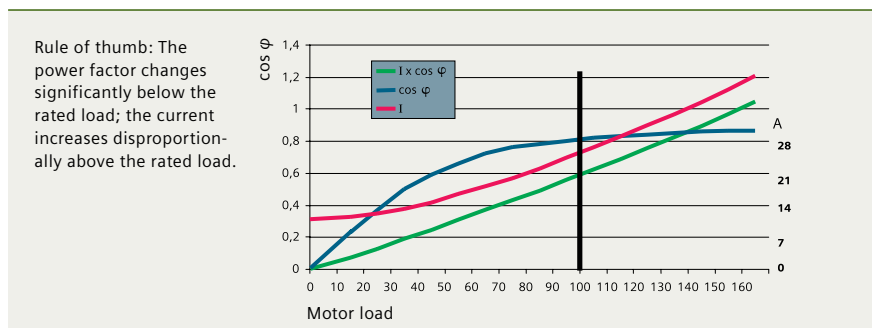
Current monitoring

- Only two versions from 2 mA to 10 A
- Applicable for frequencies with 40–500 Hz AC and DC

Power factor and active current monitoring

- Global use thanks to wide voltage from 90 to 690 V AC
- Monitoring of smaller single-phase motors with a no-load current below 0.5 A
- One device for motor monitoring, from no-load to overload
- Voltage-independent monitoring of the motor load

Current and active power depending on the motor load



The active current I_{res} indicates a linear correlation between the motor load and the measured value over the entire measuring range.

3UG4625 and 3UG4825 Monitoring Relays

for residual current monitoring

Residual-current monitoring relays are used for monitoring residual currents that can result in insulation problems in plants due to humidity or severe contamination. By using the 3UG4625 or 3UG4825 residual-current monitoring relay in combination with a 3UL23 summation current transformer, such hazards can be eliminated. Thanks to adjustable limit or warning threshold values, the relay issues a warning before the limit value is reached and switches off reliably when the limit value is exceeded after a certain delay time. The 3UG4825 monitoring relays have an IO-Link interface for digital transfer of measured values to the control.



Application

Monitoring of systems prone to residual currents, e.g. caused by:

- Dust deposits or humidity
- Porous cables and lines
- Capacitive residual currents

Your advantages

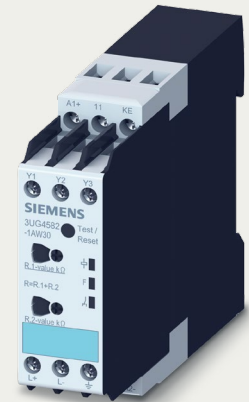
- Can be used worldwide thanks to a wide voltage range from 24 to 240 V AC/DC
- Measuring range from 30 mA to 40 A
- Variably adjustable threshold values for warning and disconnection
- Freely parameterizable delay times and RESET response and connectable fault memory
- Permanent display of the ACTUAL value and fault diagnostics via display
- High level of flexibility and space saving through installation of the transformer outside the control cabinet
- All diagnostics data are now available in the control



3UG458 Monitoring Relays

for insulation monitoring

Insulation monitoring relays are used for monitoring the insulation resistance between ungrounded single- or three-phase current supplies and a protective conductor. Ungrounded, i.e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e.g. emergency lighting systems. After an initial insulation fault it is possible to continue working in safety (single-fault safety). The fault must still be rectified as quickly as possible before a second insulation fault occurs (e.g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value.



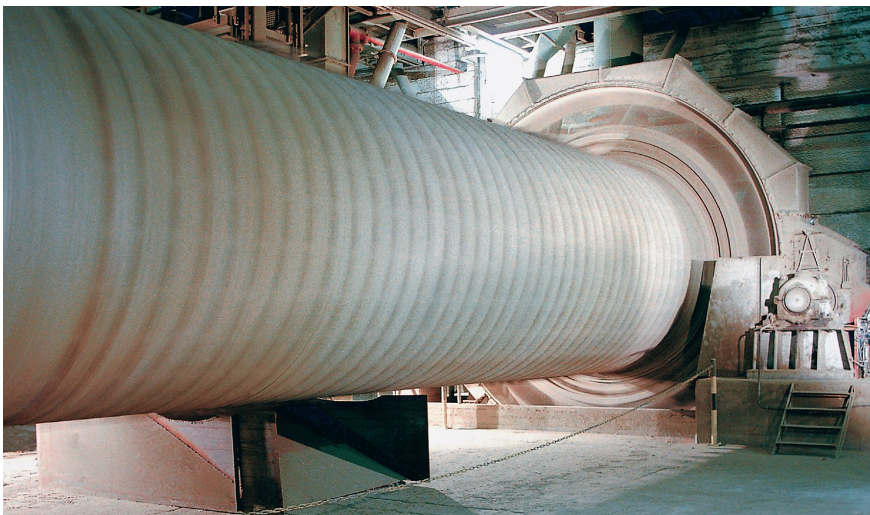
Application

Amongst others, IT networks are employed in the following applications:

- Emergency power supply systems
- Emergency lighting systems
- Industrial production plants with high availability requirements (chemical industry, automotive industry, printing industry)
- Marine and railway applications
- Mobile current generators (airplanes)
- Renewable energies, e.g. wind energy and photovoltaic plants
- Mining

Your advantages

- Devices for AC and DC systems
- All devices with wide supply voltage range
- Direct connection to networks with line voltages up to 690 V AC and 1000 V DC via voltage reducer module
- With AC networks: Frequency range 15 ... 400 Hz
- Monitoring for line breakage
- Monitoring for faulty settings
- Application safety thanks to integrated system start after start-up
- Reset and test option (via button on the front or control contact)
- Rapid response times thanks to new predictive measuring principle



3UG4501 Monitoring Relays

for level monitoring

3UG4 monitoring relays also detect non-electrical variables. Our 3UG4501 level monitoring relays thus ensure reliable 1- and 2-point controls and alarms in case of overflow or dry running – according to a simple principle: almost all liquids are conductive. This is utilized for monitoring levels. If the probes are immersed in the liquid, current flows – if the probes fall dry, no current flows.



Application

- 1- and 2-point level control
- Overflow protection
- Dry running protection
- Leakage monitoring

Your advantages

- Can be used worldwide thanks to wide voltage range from 24 to 240 V AC/DC
- Individually trimmable 2- and 3-pole wire electrodes for easy mounting from the top/bottom
- Bow electrodes for lateral installation for higher filling levels and minimum space requirements
- Flexibly adjustable to various conductive liquids through analog setting of the sensitivity from 2 to 200 kΩ
- Compensation of wave movements thanks to tripping delay times from 0.1 to 10 seconds
- Selectable feed or discharge function

1- and 2-point level monitoring, overflow protection

This method is applicable with very many liquids and substances.
Prerequisite:
Specific resistance < 200 kΩ

Product kΩ		Product kΩ	
Buttermilk	1	Natural water	5
Fruit juice	1	Wastewater	5
Vegetable juice	1	Starch solution	5
Milk	1	Oil	10
Soup	2.2	Condensed water	18
Beer	2.2	Soap foam	18
Coffee	2.2	Jams	45
Ink	2.2	Jellies	45
Saltwater	2.2	Sugar solution	90
Wine	2.2	Whisky	220
		Distilled water	450

3UG4651 and 3UG4851 Monitoring Relays

for speed monitoring

The 3UG4651 and 3UG4851 speed monitoring relays monitor the setpoint speed of motors, shafts or driven wheels for overshoot or undershoot. Implementing a period measurement, they monitor the pulses delivered per rotation from the sensors. In addition, the relays are suitable for all functions requiring the monitoring of a continuous pulse signal, e.g. belt operation and scan time monitoring or bypass control. The 3UG4851 monitoring relays have an IO-Link interface for digital transfer of measured values to the control.



IO-Link

Application

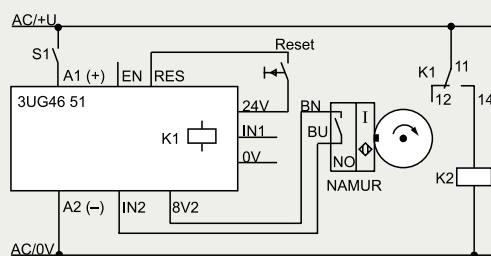
- Slip/breakage of a belt drive
- Load shedding
- Standstill monitoring (no operator protection)
- Transport item monitoring for completeness

Your advantages

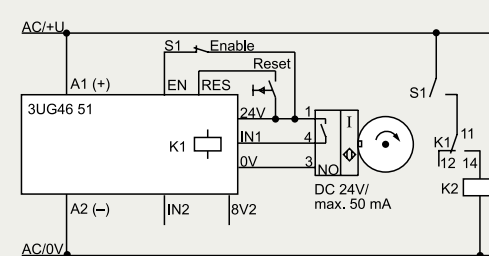
- Can be used worldwide thanks to wide voltage range from 24 to 240 V AC
- Variably adjustable to overshoot, undershoot or window monitoring
- Freely parameterizable delay times and RESET response
- Permanent display of ACTUAL values or type of fault
- Use of up to 10 sensors per rotation with extremely slowly rotating motors
- Connection option for 2- or 3-conductor sensors and sensors with mechanical switching or electronic output
- Integrated auxiliary voltage for sensor

Speed monitoring example with 3UG4651

Without enable input



With enable input



3UG546 DC Load Monitoring Relays

for load monitoring in DC applications

The 3UG546 DC load monitoring relays monitor the DC current (DC load circuit), voltage, and actual power for overshooting or undershooting of set limit values in one or two channels. Besides providing detailed fault diagnostics, the integrated energy, operating hours, and operating cycle counters can be read out and reset. The DC load monitoring relays transfer the measured and counter values as well as the diagnostic messages to the controller via Profinet. Due to the integrated relay output, reactions to limit violations can also take place independently of a controller.



Applications

- Wherever DC monitoring is required in industrial applications
- Especially in automotive production facilities, DC energy storage or autonomously guided vehicles

Your advantages

- Metering, monitoring, and transferring data with a single compact device saves time and money
- Large operational voltage range up to 800 V and current range up to 63 A
- Operating hours counter and switching cycle counter facilitate preventive maintenance
- Separate recording of energy consumption and energy recovery offers transparency in the power consumption of the machines
- Simple communication and visualization of plant energy values via Profinet



3RN2 Thermistor Motor Protection Relays

for protection against overheating

Thermistor motor protection relays provide decisive benefits in cases in which current-dependent protection using either a circuit breaker or an overload relay is not the perfect solution. In specific cases, often as a result of external effects, overheating can occur without being detected by the thermal image in the circuit breaker or overload relay. Examples for this include heavy-duty starting (e.g. centrifuges), operation with frequency converters or frequent switching, braking operations, or when cooling is restricted, e.g. due to accumulated dirt. SIRIUS 3RN2 thermistor motor protection relays reliably protect motors against overheating, as they measure the temperature at the relevant locations within the motor, directly monitoring the motor winding temperature.

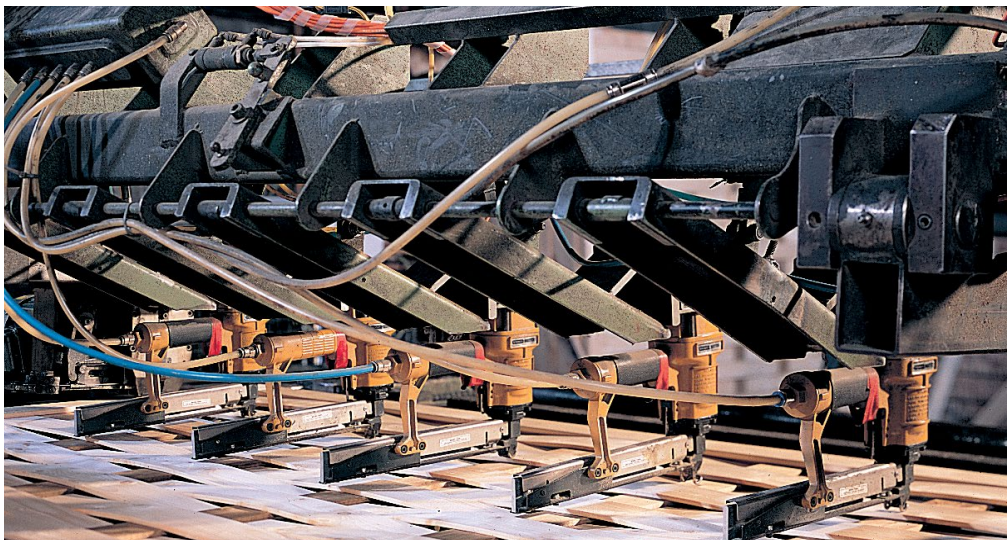


Application

- Under atypical conditions such as heavy-duty starting, braking operation, frequent switching, or insufficient cooling
- In areas with gas explosion hazards such as in the oil & gas or chemical industries and for use in dusty environments such as sawmills or mills
- Worldwide use thanks to globally recognized certificates
- "Warning and shutdown" function using two sensor circuits with different response temperatures – this means that it is possible to respond before overheating occurs

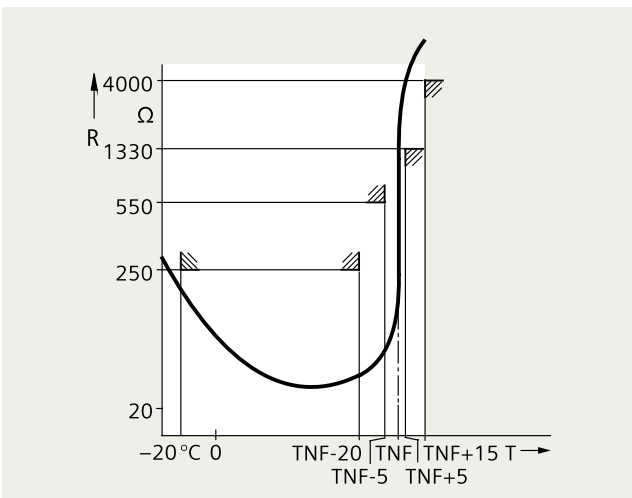
Your advantages

- Optimal protection thanks to direct measurement of the motor temperature
- With ATEX approval, even for hazardous areas – meets SIL1 according to EN 50495
- Space-saving, uniform enclosure concept in titanium gray – 17.5 or 22.5 mm width available
- Simple handling thanks to removable terminals
- Low-cost version for bimetallic sensors

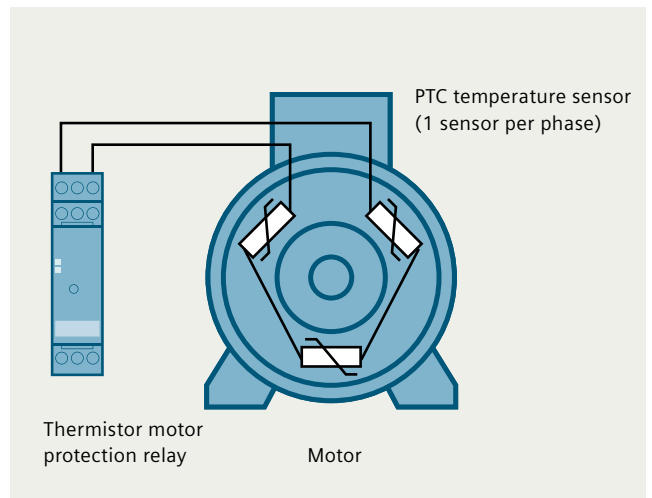




Characteristics for type A thermistor sensor



Thermistors (PTCs) in the three-phase motor



SIRIUS 3RS25 Temperature Monitoring Relays

analog-adjustable

SIRIUS 3RS25 temperature monitoring relays can be used to measure temperatures in solid, liquid, and gas media. The temperature is recorded by a sensor in the medium, evaluated by the device, and monitored to determine whether it is within the upper and lower temperature limits. The analog multifunctional device is parameterized using rotary and slide switches. The new 3RS25 temperature monitoring relays replace the predecessor 3RS1.



Applications

- Motor and system protection
- Control cabinet temperature monitoring
- Frost monitoring
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, air-conditioning and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Coolant monitoring
- Overload protection in transformer windings
- Simple two-point temperature controllers

Your advantages

- Versions for a sensor, a threshold value, and for Pt100 sensor types as well as thermo elements J and K for the most common temperature ranges
- Permanent wiring due to removable terminals in screw and spring-type technology (push-in)
- Compact, easy to adjust two-point controller (overshoot and undershoot)
- Relay changeover outputs for direct switching of loads and simultaneous use of the NC contact as the signaling contact
- Easy operation using rotary potentiometer and settable hysteresis (5%, 10%, 15%, 20%)



SIRIUS 3RS26/28/29 Temperature Monitoring Relays

digital-adjustable

SIRIUS 3RS2 temperature monitoring relays with a width of 22.5 mm are used to measure temperatures in solid, liquid and gas media. They monitor temperatures to evaluate whether they are above or below a certain value or within a specific operating range (range monitoring function). The function of the basic device can be extended without wiring via a SIL1-certified infrared interface with a sensor extension module. This combination features three resistance sensors. Therefore the temperature in each winding of three-phase motors or transformers can be optimally monitored. The new SIRIUS 3RS2 temperature monitoring relays fully supersede the functionality of the predecessor 3RS1 in a single device type.



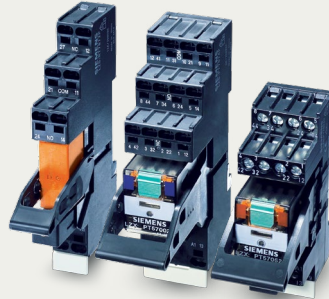
Applications

- Can be used in almost any application where a temperature range must not be overshoot or undershot
- Simple and compact two-point or three-point temperature controllers

Your advantages

- Intuitive operating concept and LCD display with additional functionalities (e.g. teaching, output of warning values with color change)
- Variants for a sensor with two threshold values for all common resistance sensors and thermoelements
- Due to an integrated infrared interface (SIL 1), the digital basic unit can be expanded for up to three sensors and an analog input (4...20 mA)
- ATEX explosion protection via analog input in the sensor expansion module (no intrinsically safe outputs, suitable explosion-protection type sensors required)
- Safety certification according to IEC 61508/62061 or ISO 13849 up to SIL 1 / PL c, EN 14597 for heat generating systems and EN 50156 for burners

Overview of SIRIUS Coupling Relays / Signal Converters



Coupling relays RQ3:
slim + compact

3RQ2 coupling relays:
universal with wide voltage range

LZS coupling relays:
powerful

3TG10 power relays:
solution for the performance range below S00

3RS70 signal converters:
for analog standard and universal signals

For space-optimized use in the control cabinet:

- Design: 6.2 mm width / minimum space on the mounting rail

- Unique with wide range supply voltage of 24 to 240 V AC/DC – for global use
- In high-quality industrial enclosure with removable terminals

- Higher power – for switching larger loads
- Plug-in relays for fast relay replacement

- For restricted installation conditions (width of only 36 mm)
- Flexible installation / position-independent
- High power rating (20 A/400 V AC)

- For analog signal conversion and transfer to a PLC or measuring instruments in a control cabinet door
- For galvanic separation of analog inputs and outputs of the controller

3RQ2 Coupling Relays

in innovative industrial enclosure

The 3RQ2 coupling relays are able to deliver convincing results thanks to their wide voltage range and universal usability. Coming in a high-quality industrial enclosure with a modern titanium gray design, they optically match up with the relay family and offer user-friendly connection systems with removable terminals. Just like their predecessor series, SIRIUS 3RS18, the relays come with a wide voltage range from 24 V to 240 V AC/DC and are an absolute highlight in the coupler market. The devices can optionally be ordered with one, two or three changeover contacts. All versions are available with screw or spring-type terminals with push-in technology. Contact reliability is particularly high thanks to the hard gold-plated contacts – even at low currents.

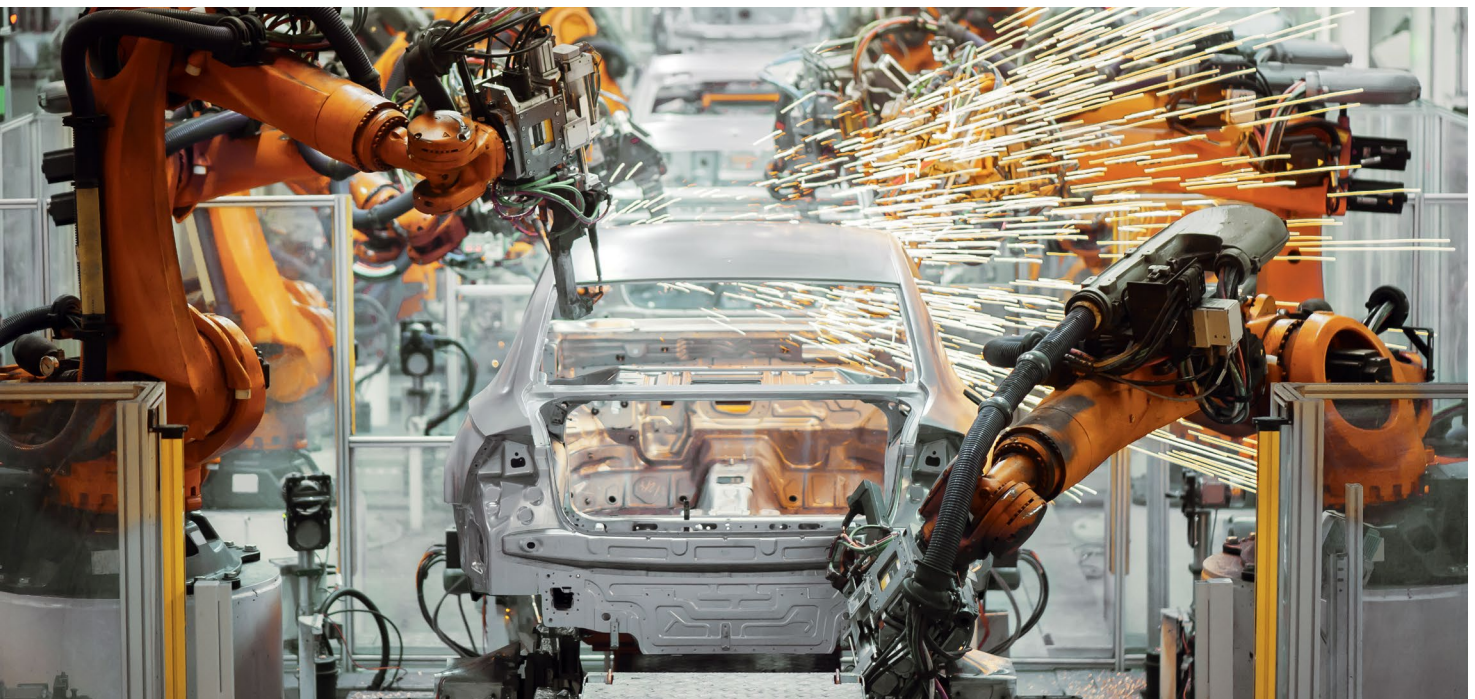


Application

- Wherever electronically optimized contacts are required and devices with wide voltage are used
- Predestined for inputs and outputs on PLC thanks to hard gold-plated contacts

Your advantages

- Uniform enclosure design
- Permanent wiring thanks to removable terminals in screw or spring-type connection system (push-in)
- Replacing individual terminals reduces wiring effort
- One product for all control voltages from 24 V to 240 V AC/DC
- Cost savings thanks to reduced variance
- Particularly high contact reliability even with low currents
- International standards and certifications incl. CE, UL/CSA, EAC and confirmations for railway



3RQ3 Coupling Relays

in 6.2 mm slimline, compact design with relay output

3RQ3 coupling relays have been innovated and are now available in a high-quality enclosure design with a uniform look across the range. With a width of just 6.2 mm and a low mounting depth and height, they are ideal for optimizing the use of space in control cabinets with narrow tier spacing or in flat switchboxes. All versions are available with either screw terminals or spring-type terminals with push-in technology. The wire inlet and front clamping option additionally serves to reduce wiring times.



Application

- Galvanic isolation
- Voltage conversion, e.g. from 24 V DC to 230 V AC
- Signal amplification
- General relay controls
- Controller overvoltage and EMC protection

Your advantages with 3RQ3

General

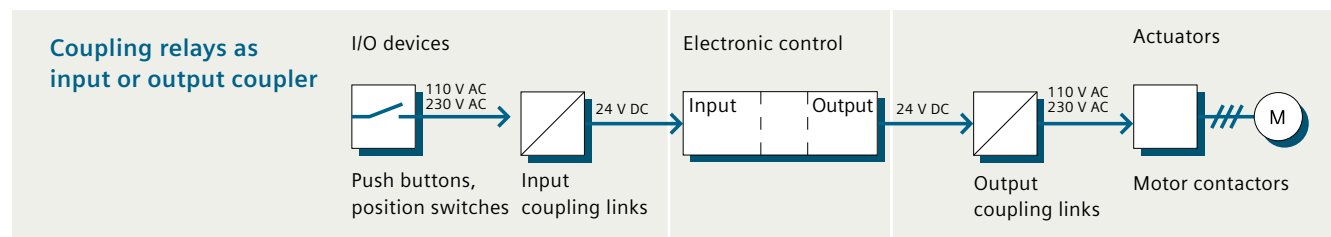
- Option of either screw terminals or spring-type terminals with push-in technology – ensures rapid and reliable wiring
- Cable inlet and terminals accessible from the front – accelerates the wiring process and avoids errors
- Width of 6.2 mm across the entire range – reducing space requirements in the control cabinet
- Lower device variance – reduced inventory costs
- Green LED – displays functional state of the relay coupler
- Uniform accessories for all devices
 - Universal bridging option with connecting combs for all terminals
 - Galvanic isolation plate for isolating different voltages for neighboring units
 - “Clip-on” labels that can be individually printed
- Optional connecting comb for rapidly bridging equal potentials without the need for wiring

Relays fixed in enclosure

- Increased contact reliability

With plug-in relays

- Quicker replacement of worn relays with existing wiring
- Shorter installation times thanks to certified complete units
- Device versions optionally with hard gold-plated contacts
- Single relays available as components



3RQ3 Coupling Relays

in 6.2 mm slimline, compact design with semiconductor output

The latest coupling relays are available either with conventional relays or as a semiconductor version. Semiconductor coupling relays offer some significant advantages over electromechanical units – electronic components are extremely reliable and have a very long service life (see below). This means that the input coupler is the better option overall in terms of both technology and price. When considering output couplers, the question of whether to use a relay or semiconductor should be answered by taking into account the requirements concerning switching capacity and the number of operating cycles. If a relay has to be replaced just once during the entire service life of a machine, then a semiconductor coupler will already have paid for itself. All versions are available with either screw-type terminals or spring-type terminals with push-in technology.

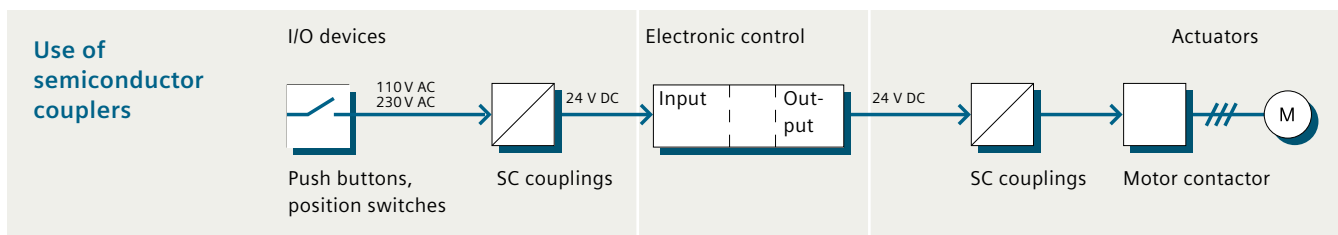
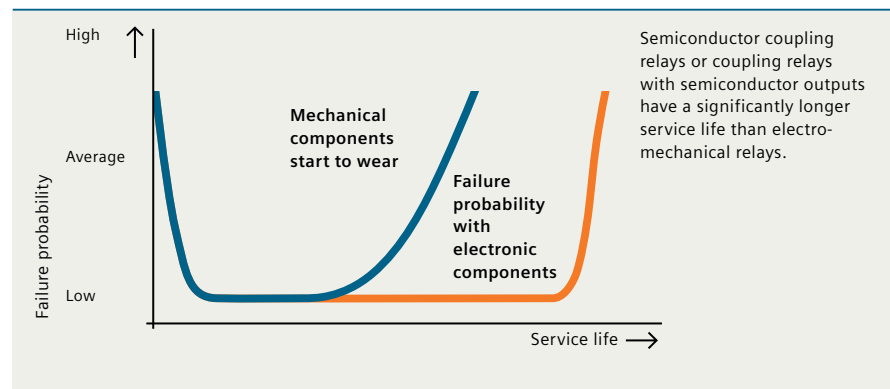
Application

- Electrical isolation, voltage conversion
- Switching of DC loads
- Switching of capacitive loads
- Controller overvoltage and EMC protection

Your advantages – 3RQ3 with semiconductor output

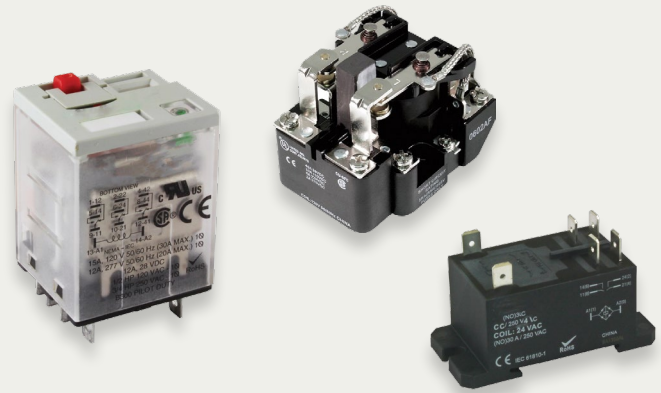
- Extremely long electrical service life/unlimited number of switching cycles
- Extremely high contact reliability
- High DC switching capacity
- Short switching times
- Optional connecting comb for rapidly bridging equal potentials without the need for wiring
- Noise-free switching

Service life comparison



3TX71 Plug-in Relays

3TX71 relays are available as open power, enclosed power and plug-in style relays. The plug-in family includes basic, premium and bifurcated styles and can be ordered as individual components, including relay, socket, suppression and hold-down clips.



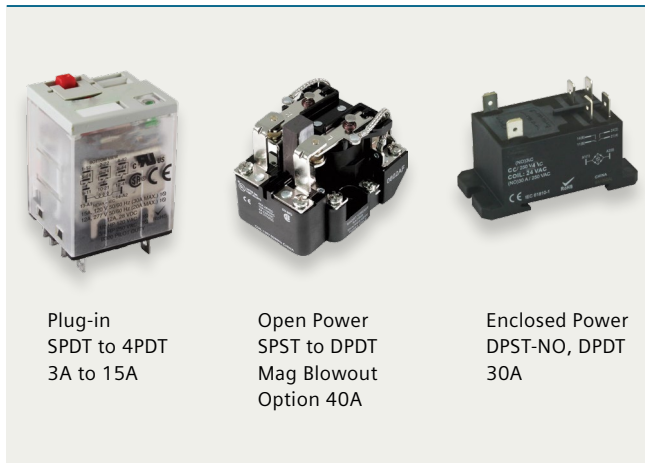
Application

- Galvanic isolation between field and input and outputs of electronic controls
- Contact multiplication
- As potential transfer switch
- Switching of loads from 3A to 40A

Your advantages

- Plug-in Style
 - Push-to-test, mechanical flag, LED and latching door options
 - Multiple contact configurations available, including bifurcated
 - UL Class I Division 2 option available
- Open Power
 - Increased electrical endurance, up to 100,000 cycles
 - Heavy-duty contacts
 - Mag Blowout option for high voltage DC switching
- Enclosed Power
 - For high power applications
 - High dielectric strength
 - IP20 protection

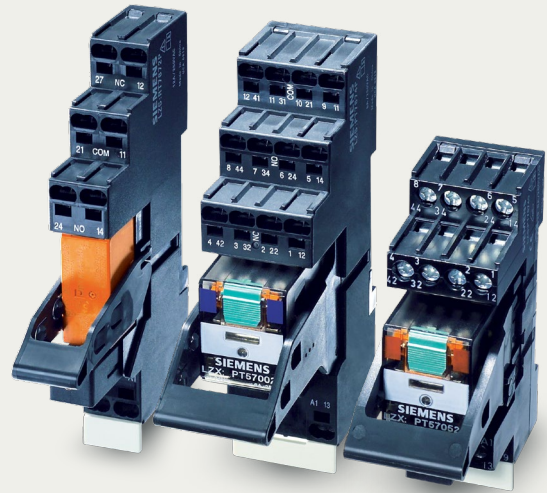
Types



LZS Coupling Relays

with plug-in relays

Plug-in relay couplers are available both as complete devices and as individual modules for self-assembly or spare parts requirements. The range is divided into three types: RT, PT and MT.



Application

- As coupling relay for galvanic isolation between field and input and outputs of electronic controls
- Contact multiplication
- Switching of small loads
- As potential transfer switch

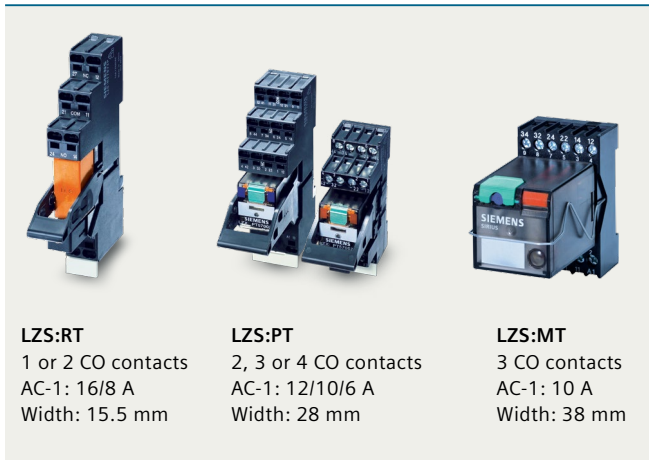
Your advantages

- Wiring without tools and vibration-proof connection thanks to innovative push-in spring-type terminals
- Base with logical isolation for easy wiring
- Tested AC-15 and DC-13 switching capacity
- Available coil voltages: 24 V DC, 24 V AC, 115 V AC, 230 V AC
- Hard gold-plated contacts for optimum interaction with electronic controls

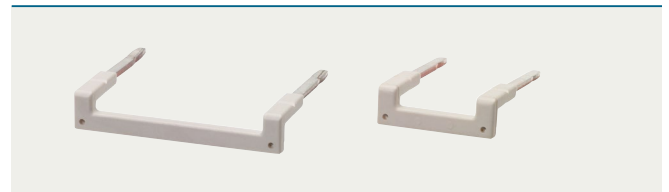
Configuration information

The test lever of the PT relay does not feature a latching mechanism. If the test lever is pressed further until a movement of 90° is reached, two small snap-in lugs break off and the test lever can be set to latching. When using plug-in relays with voltages of 60 Hz AC, the lower response value has to be increased by 10%, the power loss decreases slightly.

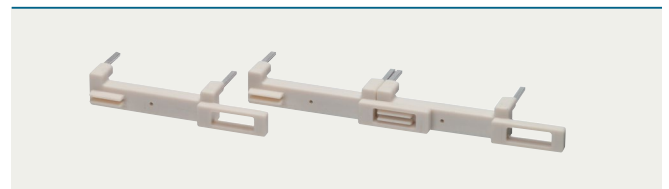
Types



Wiring bracket for push-in spring-type terminal base



Wiring bracket for push-in screw terminal base



3RS70 Signal Converters

Standard signal and universal converters – in slimline, compact design

Signal converters are mainly used to electrically isolate and convert analog signals. Sensors/actuators and controls generally have different power supply units, and must therefore be electrically isolated from one another. This is either integrated in the control or is implemented using a signal converter. A signal has to be converted into another signal if, for instance, a voltage signal needs to be converted for transmission over a long distance into a current signal, or if the output of a sensor and the input of a control are incompatible with one another. Another application is offered by the implemented frequency outputs, which convert the input signal into a proportional frequency. This means that analog signals can be processed with digital inputs. This is important if the control does not have any provisions for an analog input, or if all of its analog inputs are already assigned, e.g. when devices are retrofitted.



Application

- Galvanic isolation of analog signals
- Conversion of analog signals
- Conversion of analog signals into a frequency
- Conversion of non-standard signals to standard signals
- Overvoltage and short-circuit protection for analog PLC inputs

Your advantages

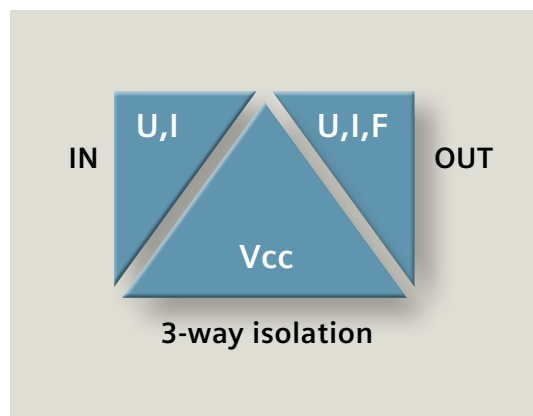
- High-quality, modern titanium gray design
- Look is consistent with all other Siemens devices in the control cabinet
- Simplified logistics and inventory management thanks to reduced device variance resulting from exclusive use of 3-way isolation
- Little space required on the mounting rail:
 - Slimline, compact design with width of 6.2 mm
 - and low installation depth/height
 - For flat control boxes and control cabinets with tight tier spacing

Passive converters

Passive converters do not require a supply voltage as the energy they require is supplied via the analog signal.

3-way separation

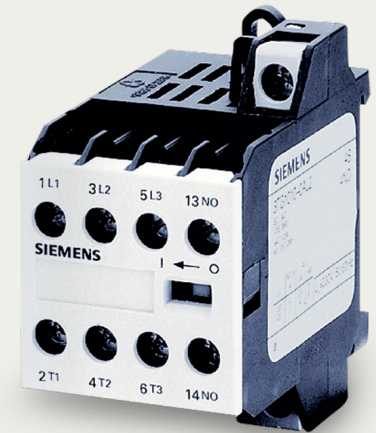
In 3-way separation, each circuit is isolated from the other circuits, i.e. the input, output, and supply voltage potentials are not linked, meaning that they cannot affect each other.



3TG10 Power Relays / Miniature Contactors

for high performance with minimum dimensions

The 3TG10 power relays/miniature contactors are the ideal solution for all applications requiring small, low-noise relays or contactors at low costs. The power relays are suitable for basic controls and particularly for use in large-scale series devices and controls. They are ideal for applications which require only one auxiliary contact and no overload relay – and place increased requirements upon switching capacity, switching voltage and service life.



Application

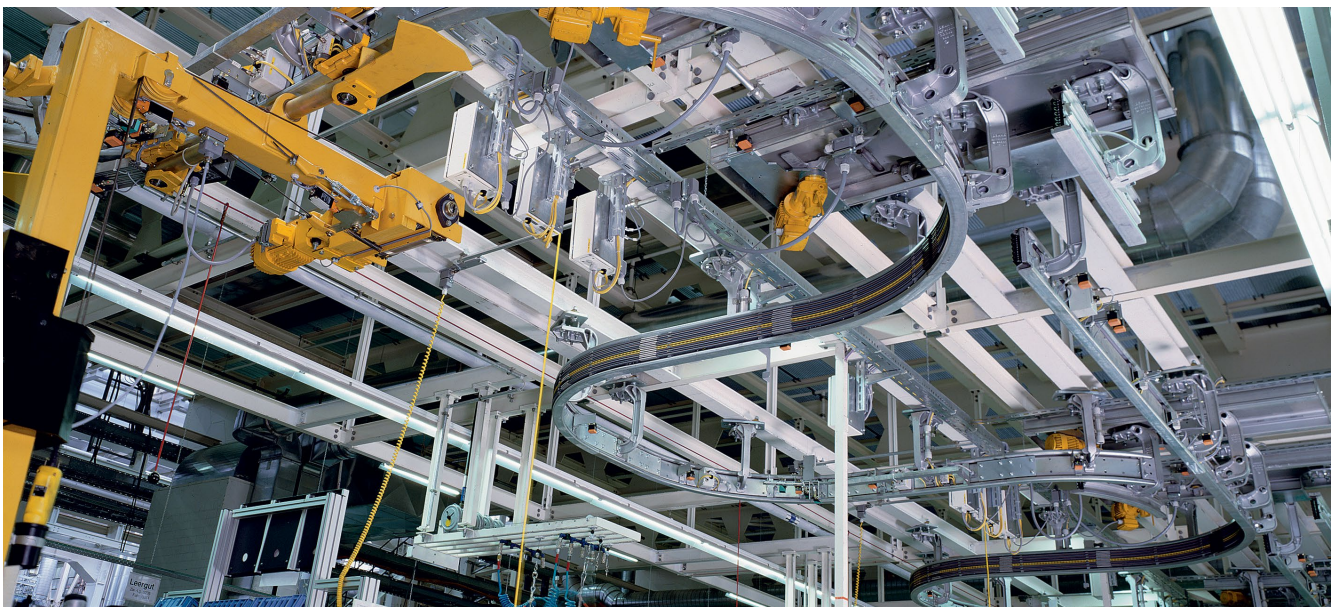
- Domestic appliances and installations
- Hoisting systems: Small elevators, elevating platforms
- Building technology, hum-free application in building systems, e.g. in hospitals

Configuration information

With a 20 A load on the three main current paths, the following applies with $I > 10$ A for the fourth current path: Permissible ambient temperature 40 °C

Your advantages

- Any mounting position, hum-free
- Safe isolation
- Screw-type or plug-in connection
- Integrated auxiliary switch
- AC-3 power: 4 kW / 400 V
- Operating current I_e /AC-1: 20 A / 400 V
- Inrush current per phase: 90 A
- Integrated overvoltage damping
- Narrow width of only 36 mm



Scan the
QR code
for further
information



Siemens Industry, Inc.

3617 Parkway Lane
Peachtree Corners, GA 30092

1-866-663-7324
info.us@siemens.com

Subject to change without prior notice

All rights reserved

Order No.: CPBR-RELAY-0620

Article No.: DFCEP-B10093-01-7600

Printed in USA

© 2020 Siemens Industry, Inc.

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.