SIEMENS

ONE RANGE FOR EVERY APPLICATION

Monitoring, Controlling and Switching **with SIRIUS Relays**

siemens.com/relays

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.

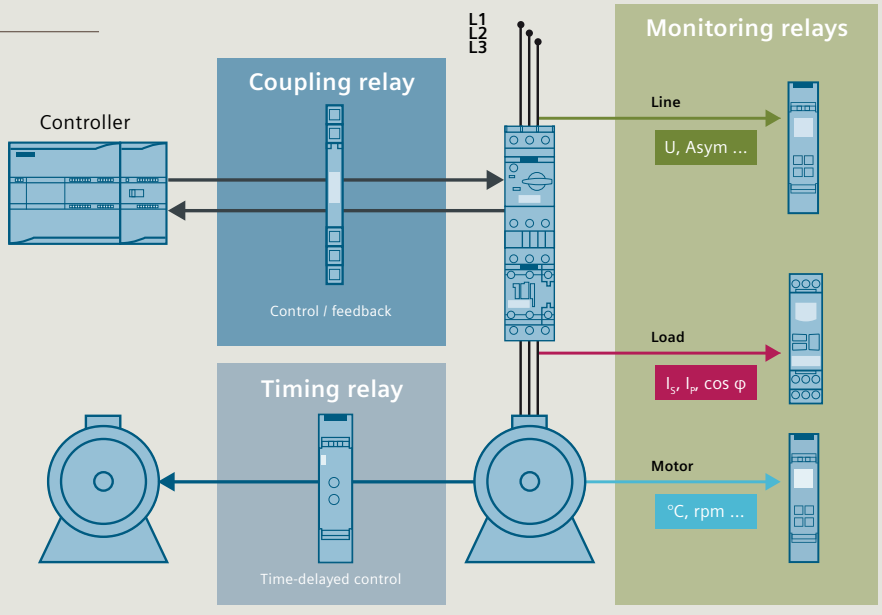
SIRIUS relays – one range for every application

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

Use of SIRIUS relays



Content

* Technical annex

SIRIUS Monitoring Relays for IO-Link

Reliable monitoring and protection

SIRIUS relays from Siemens offer maximum machine and system protection and also communicate with the control level thanks to IO-Link. SIRIUS relays for IO-Link monitor reliably line quality, current values, voltages, speeds, and temperatures while supporting a wide 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. The parameterization too can either be realized locally or via IO-Link. The SIRIUS relays for IO-Link are fully integrated in Totally Integrated Automation, our open system architecture for continuous automation. Data comparison and automatic re-parameterization via parameter allow for an easy replacement of devices.

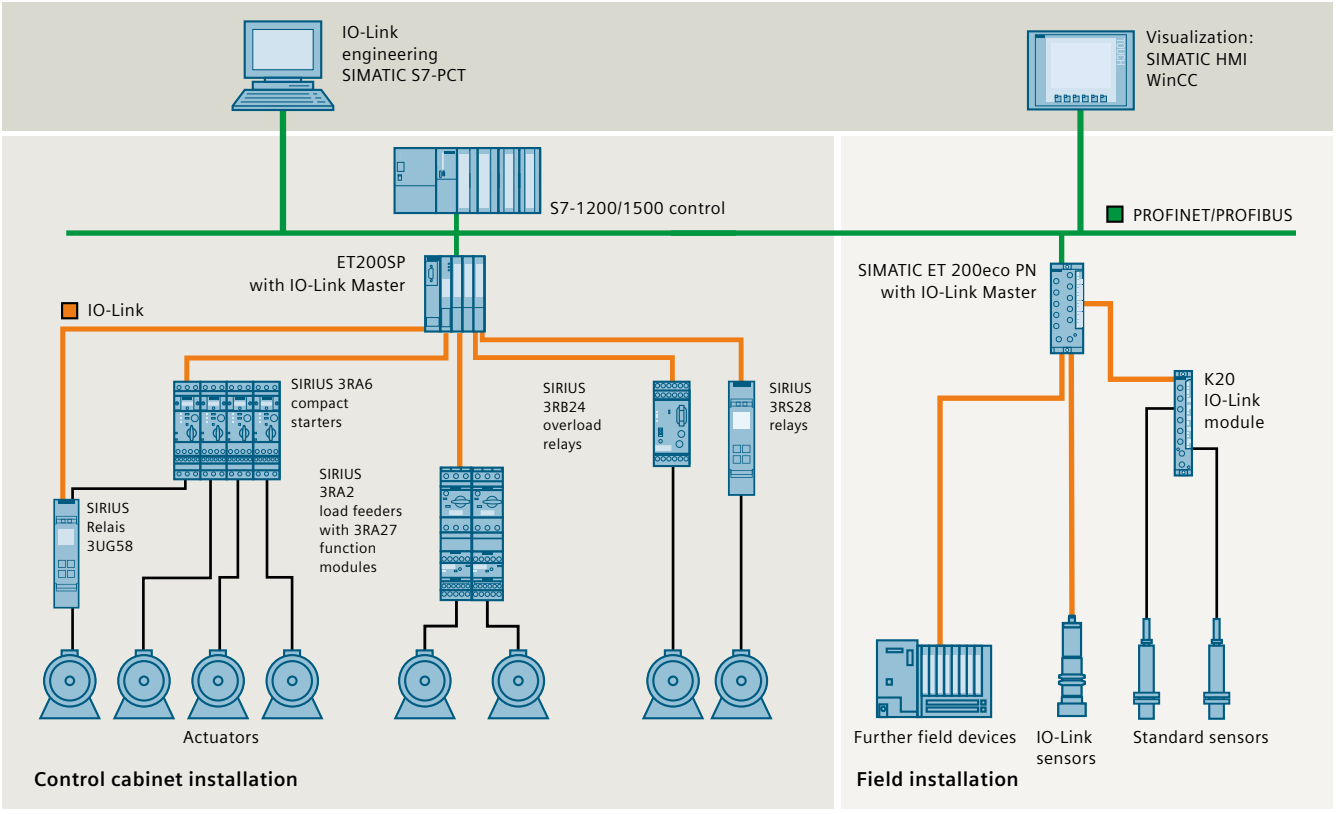
Your advantages

- 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
- Easy servicing thanks to automatic configuration following maintenance or replacement
- Fast commissioning thanks to automatic data import following one-off parameterization
- Efficient energy management with SIRIUS 3UG48: Support of the data formats defined in the PROFIenergy 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 3UG58:** Monitoring of grids
- **SIRIUS 3RS28:** Monitoring of temperatures

Unique consistency: IO-Link integrated in Totally Integrated Automation



SIRIUS 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 SIRIUS 3RP20/25 timing relays are ideal timing devices for manufacturers of industrial control cabinets, power distribution boards and controls. With their narrow design, the SIRIUS 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 up to 27 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

SIRIUS 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 multi-functional timing relay
- Sealable cover for safeguarding of set parameters
- Force-guided contacts for increased safety without additional coupling relay (e.g. reliable detection of switching faults or safe signal duplication)

SIRIUS 7PV15 timing relays

- Minimum variance: One design for the power distribution board and the control cabinet
- Compliance with EMC requirements for the living space
- Switchover break with wye(star)-delta adjustable from 50 ms to 1 sec, for optimum adjustability to the application

SIRIUS 3RP25 Time Relay Simulator

The simulator for the SIRIUS 3RP25 time relays makes it possible to visualize different time functions, and to reconstruct a variety of errors which have occured.

https://support.industry.siemens.com/cs/document/103556391/3rp-timing-relais-simulation-manual?dti=0&lc=en-WW

Applications of the SIRIUS 3RP20 / 25 and 7PV15 ranges

SIRIUS 3RP20 – the timing relay in contactor design:
Recommended for small distance between DIN rails and/or low installation depths, e.g. in control boxes

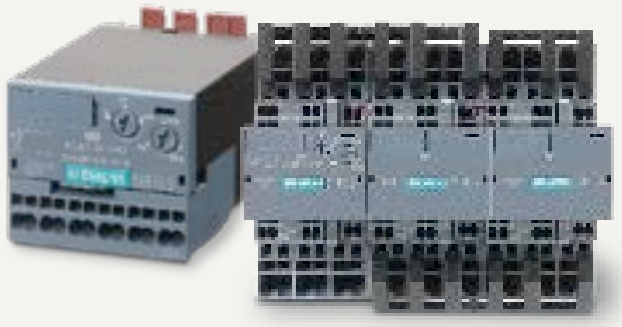
SIRIUS 3RP25 – the premium range for all applications in industrial-standard width 22.5 mm and space-saving 17.5 mm:
for variable use thanks to versions with 1 or 2 relays, screw and spring-type terminals, force-guided operation, etc.

SIRIUS 7PV15 – the version for standard applications:
Narrow and cost-favorable, for for the control cabinet and the power distribution board

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

for mounting on SIRIUS 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

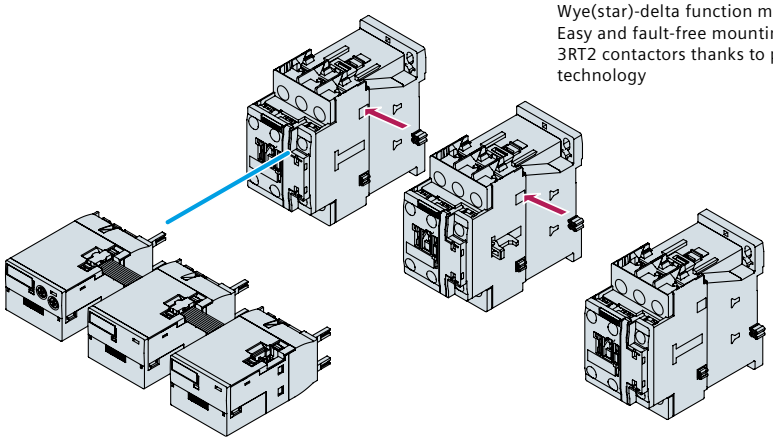
- Time-controlled disconnection of a drive's control signal after a start pulse, e.g. with gate control, follow-up ventilation

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

SIRIUS 3RA2813/14/15 and 3RT1926-2 Time-Delayed Auxiliary Switches

for mounting on SIRIUS 3RT 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 with the SIRIUS 3RA28 function modules

- Flexible use for all contactor control supply voltages in the 24 – 240 V AC/DC range
- All modules with 24 – 240 V AC/DC wide voltage in the auxiliary circuit
- Selectable outputs 1 NO + 1 NC or 1 CO
- Plug-on function modules for connection without tools
- 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, SIRIUS 3RA2811/12/16 and 3RA2831/32 function modules do not have relay outputs. They are timing relays that are directly mounted onto SIRIUS 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 SIRIUS 3RA2813/14/15 time-delayed auxiliary switches, the SIRIUS 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.
- Advantages of time-delayed electronic auxiliary switches for front mounting to SIRIUS 3RT1 contactors:
  – Reduction of variants – only 1 module for sizes S6 to S12
  – Time span can be adjusted from 0.05 to 100 s
  – Available modules with three AC/DC voltage ranges
- Different versions are available, depending on the functions required:
  – On-delay 3RT1926-2E.. 1
  – Off-delay without control signal 3RT1926-2F.. 1
  – Star-delta starter (with integrated varistor) 3RT1926-2G.. 1

SIRIUS 3UG5 Monitoring Relays

for monitoring of line stability

Monitoring and early detection of line and voltage faults is important for the smooth running of operations. In addition there are legally defined safety guidelines to consider. Depending on their specifications the relays monitor phase sequence, phase failure with or without monitoring of the neutral wire, phase imbalance, frequency, under- or over-voltage. If problems of voltage have to be dealt with either an alarm function can be parameterized or a direct shutdown. Data for further analysis can be communicated towards a higher-order system per IO-Link or the controller.

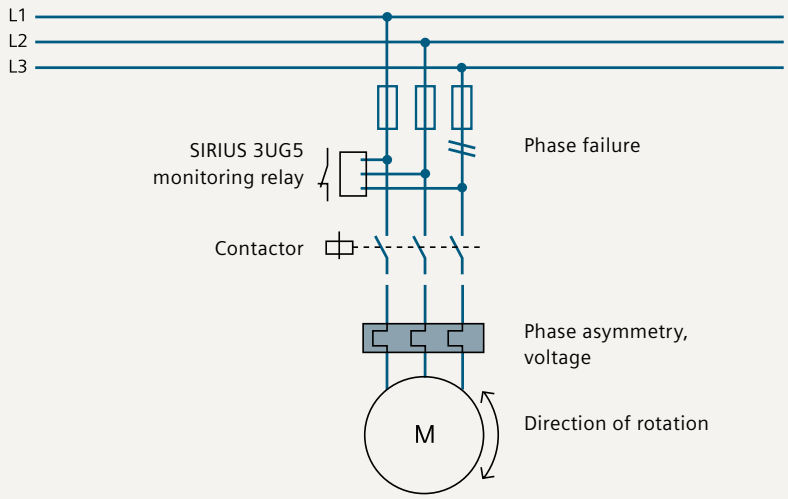
Highlights

- Monitoring of frequencies 15–70 Hz
- Possible for grids up to 690 V
- Safety SIL 1 / PL c
- IO-Link communication for transmission to the control level or the cloud
- SIRIUS casing concept for ease of operability

Your advantages

- Simple and cost-effective solution to optimize the system availability
- Expanded range of frequencies for international deployment and more flexibility
- Broader range of detectable voltages makes possible a lower variance and wide usability of the products
- Certified functional safety (safety versions)
- IO-Link communication selectable for data management, maintenance, diagnostics
- SIRIUS casing concept with 4 buttons and display for ease of use and parameterization
- Teaching function: specification of limits and display of the current measured value

Configuration of 3-phase line monitoring



For an overview of possible system failures see next page.

SIRIUS 3UG463 Monitoring Relays

for voltage monitoring

The relays monitor single-phase AC (r.m.s. value) and DC voltages for the adjusted threshold value's upper and lower deviation. The devices are either self-supplied or need an external supply.

IO-Link

Application

- Protection of a system against destruction through overload of the supply
- Activation of a system at a pre-defined voltage
- Protection against underload through weak supply voltages especially with battery supplies
- Threshold detector for analog signals 0.1 to 10 V

Your advantages

- Versions with wide-range voltage supply
- Can be adjusted to monitor over- or under-load, or a predefined range
- Freely parameterizable delay time and RESET mode
- Width of casing 22.5 mm
- Display of actual value, and status messages
- All versions with detachable terminal clips
- All versions with screw and spring terminal

Overview of possible system faults – Line and voltage monitoring

Measured variable	Possible system fault
Phase sequence	• Direction of rotation of the drive
Phase failure	• Fuse tripping • Control supply voltage failure • Single-phase operation of a motor with corresponding overheating
Phase asymmetry	• Motor overheating due to asymmetric voltages or phase failure • Detection of asymmetrically loaded supply systems • Phase failure detection despite regenerative feedback
Undervoltage	• 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	• 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
Frequency	• Securing the line quality

SIRIUS 3RR21/22 and 3RR24 Monitoring Relays

for direct mounting on contactors
for multi-phase current monitoring

The SIRIUS 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 SIRIUS 3RR2 monitoring relay for current monitoring is directly integrated in the load feeder. It is simply plugged onto the contactor.

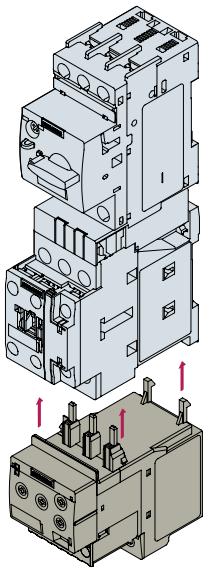
IO-Link

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 SIRIUS 3RT2 contactors, i.e. no additional wiring overhead in the main circuit
- Optimally matched to the technical characteristics of SIRIUS 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

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

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

The SIRIUS 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.

IO-Link

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

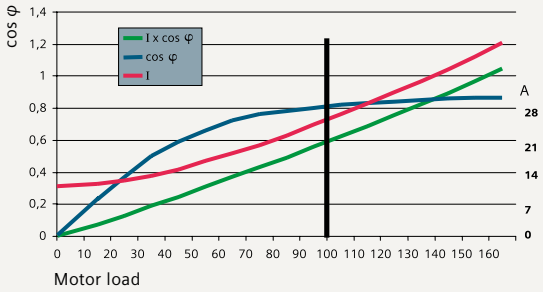
- Reduced stock-keeping thanks to wide-voltage versions
- Variably adjustable to overshoot, undershoot or window monitoring
- Freely parameterizable delay times and RESET response
- Permanent display of ACTUAL value and type of fault
- Setting of monitoring limits on the basis of real measured values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

Rule of thumb: The power factor changes significantly below the rated load; the current increases disproportionally above the rated load.



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

SIRIUS 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. In order to exclude such dangers with certainty it is advisable to employ a SIRIUS 3UG4625 or 3UG4825 relay for monitoring faults in the current, combined with a SIRIUS 3UL23 residual current transformer. 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

SIRIUS 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
- Screw and spring terminal connection

SIRIUS 3UG4501 Monitoring Relays

for level monitoring

SIRIUS 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.

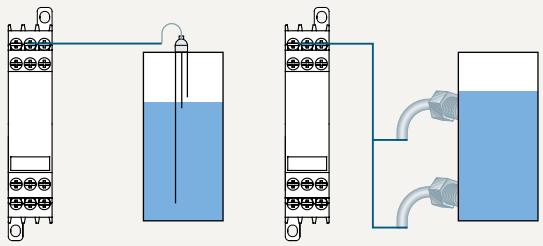
Application

- 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

SIRIUS 3UG4651 and 3UG4851 Monitoring Relays

for speed monitoring

The SIRIUS 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 SIRIUS 3UG4851 monitoring relays have an IO-Link interface for digital transfer of measured values to the control.

IO-Link

Application

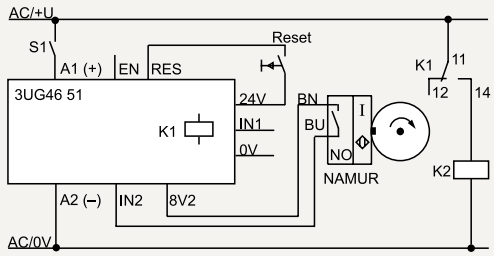
- Slip/breakage of a belt drive
- Load shedding
- Standstill monitoring (no operator protection)
- Transport item monitoring for completeness

Your advantages

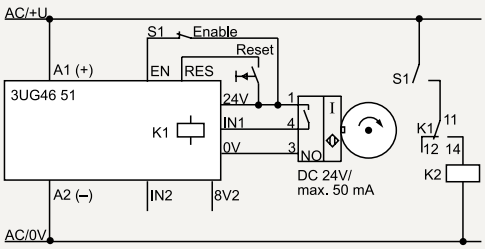
- Can be used worldwide thanks to wide voltage range from 24 to 240 V AC
- Variably adjustable to overshoot, undershoot or window monitoring
- Freely parameterizable delay times and RESET response
- Permanent display of ACTUAL values or type of fault
- Use of up to 10 sensors per rotation with extremely 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



SIRIUS 3UG546 DC Load Monitoring Relays

for load monitoring in DC applications

The SIRIUS 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

Production at the Amberg plant

SIRIUS 3RN2 Thermistor Motor Protection Relays

for protection against overheating

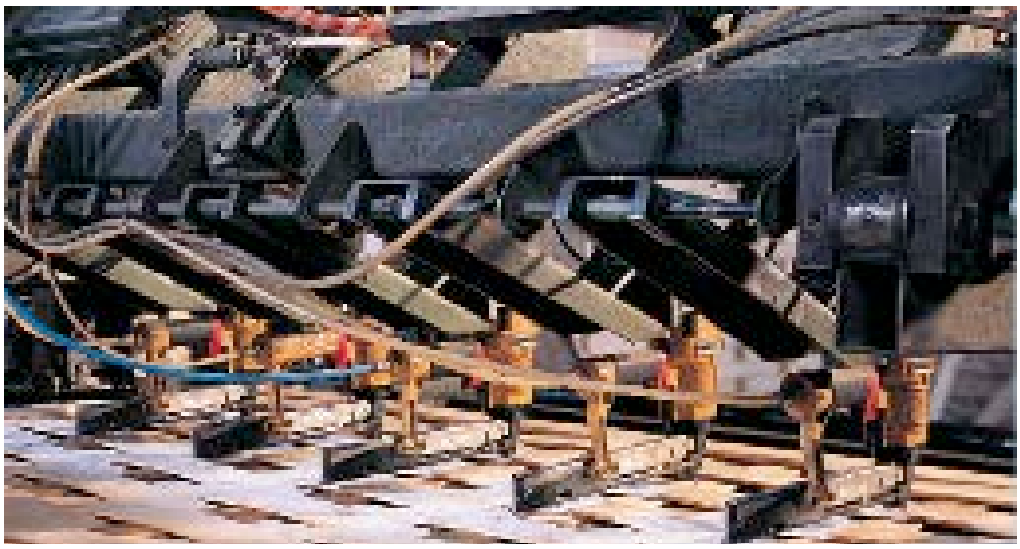
Thermistor motor protection relays provide decisive benefits in cases in which current-dependent protection using either a circuit breaker or an overload relay is not the perfect solution. In specific cases, often as a result of external effects, overheating can occur without being detected by the thermal 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.

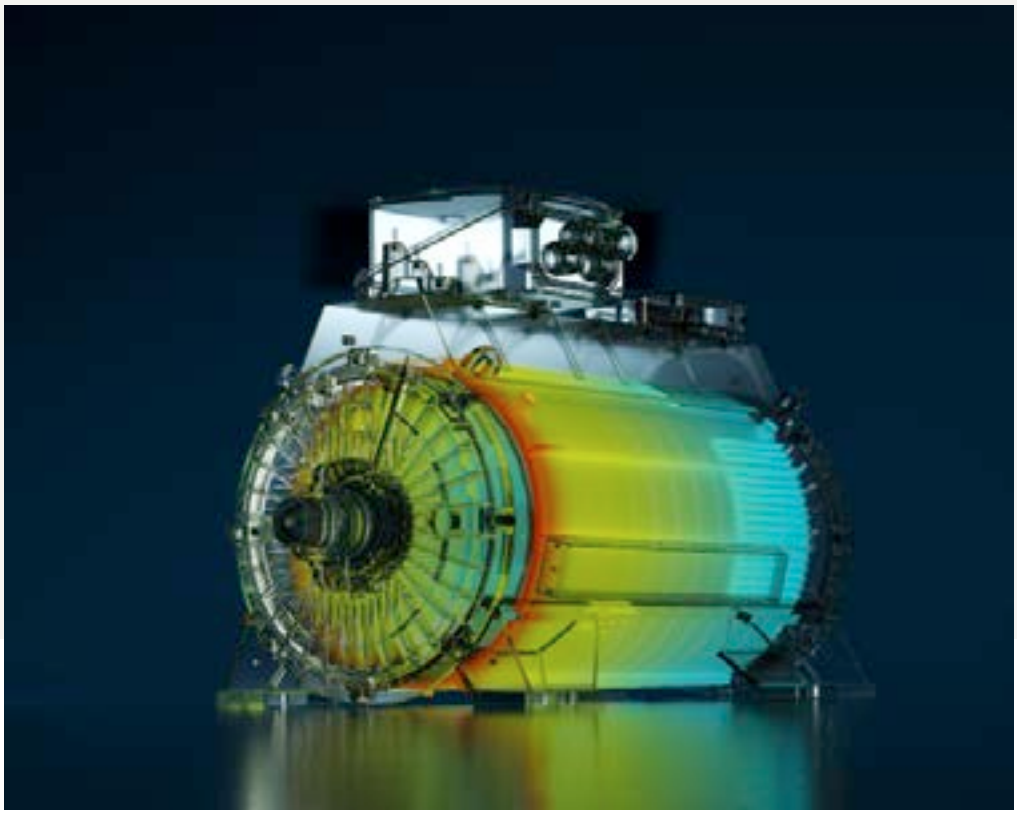
Application

- 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

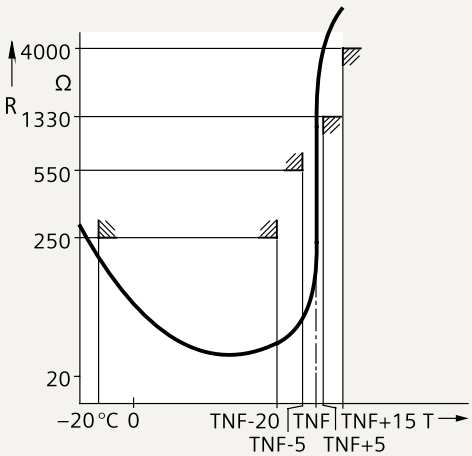
Your advantages

- 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

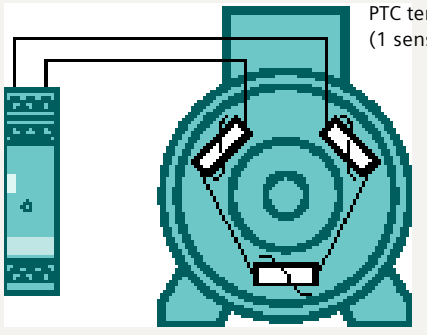




Characteristics for type A thermistor sensor



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.

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.

Applications

- Can be used in almost any application where a temperature range must not be overshot 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

SIRIUS 3RQ1 Coupling Relays

Force-guided coupling relays up to SIL 3 / PL e

The force-guided SIRIUS 3RQ1 coupling relays are available in widths of 17.5 or 22.5 mm. Because the relays are force-guided in accordance with IEC 60947-5-1 (IEC 61810-3), the mechanical are never closed simultaneously. This means failures to open can be reliably recognized in order to ensure maximum safety. This makes them suitable for use in rail, signal systems, and elevators, for example.
These coupling relays are an integral component of the 3SK safety relay system, and serve as an output expansion up to SIL 3.

Application

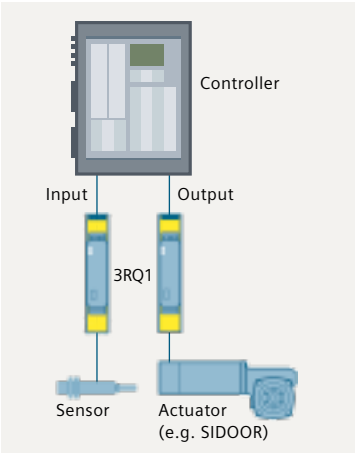
Reliable coupling of signals with force-guided contacts, including safety applications up to SIL 3 / PL e:

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

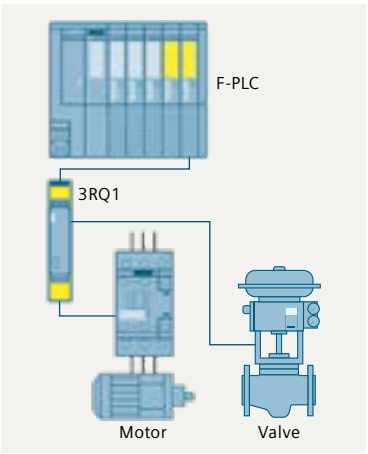
Your advantages

- Wide voltage ranges from 24 to 240 V AC/DC with a mounting depth of 90 mm available for all variants
- Permanent wiring due to removable terminals in screw and spring-type technology (push-in)
- Force-guided contacts used to read back relay status values and provide reliable diagnostics or signaling
- Usable as an output expansion for SIRIUS 3SK safety relays via a device connector
- All variants with genuine load contacts, including in NC circuit
- Safety certification based on functional safety up to SIL 3 / PL e (IEC 61508 / ISO 13849)
- International standards and certifications incl. CE, UL/CSA, EAC, CCC, shipbuilding and rail applications

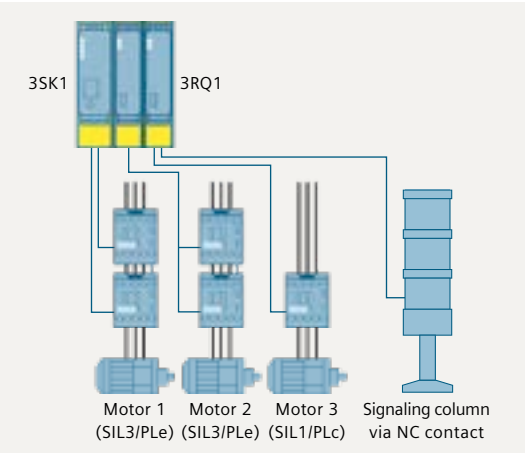
Application based on forced guidance



3RQ1 as coupling link for signals, e.g. for fail-safe control



3RQ1 as output expansion (SIL 1–3) for 3SK with direct control of actuators and signal elements



SIRIUS 3RQ2 Coupling Relays

universal with wide voltage range

The SIRIUS 3RQ2 coupling relays with their wide voltage range from 24 V to 240 V AC/DC can be employed universally. They offer user-friendly connection systems with removable terminals. 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
- Particularly high contact reliability even with low currents
- International standards and certifications incl. CE, UL/CSA, EAC and confirmations for railway

SIRIUS 3RQ3 Coupling Relays

in 6.2 mm slimline, compact design with relay output

3RQ3 coupling relays with a width of just 6.2 mm and a low mounting depth and height 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 serve 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

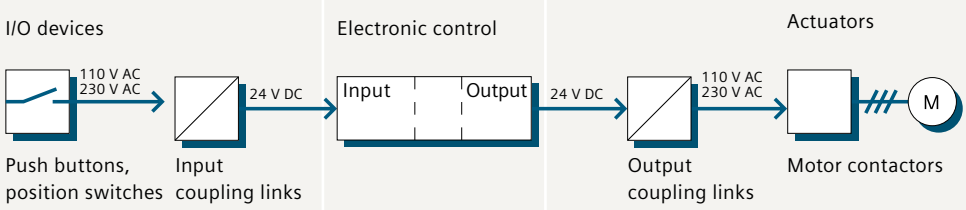
Relays fixed in enclosure

- 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

Coupling relays as input or output coupler



SIRIUS 3RQ3 Coupling Relays

in 6.2 mm slimline, compact design with semiconductor output

Semiconductor coupling relays offer some significant advantages over electromechanical units – electronic components are extremely reliable and have a very long service life (see below). 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.

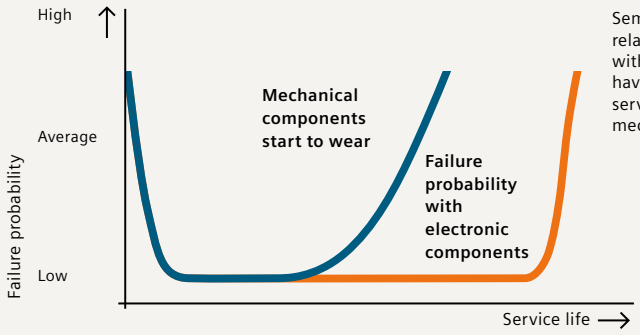
Application

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

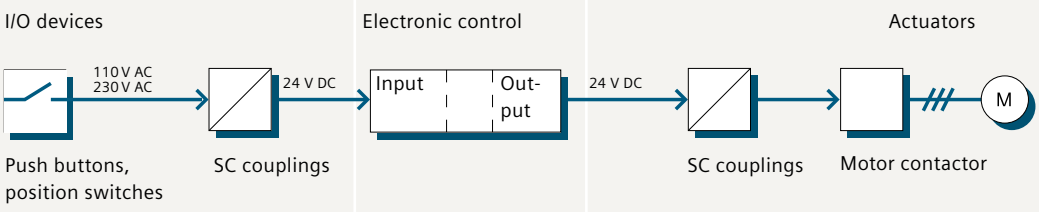
Your advantages – 3RQ3 with semiconductor output

- 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



Use of semiconductor couplers



SIRIUS 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 two types: RT and PT.

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

LZS:RT
1 or 2 CO contacts
AC-1: 16/8 A
Width: 15.5 mm

LZS:PT
2, 3 or 4 CO contacts
AC-1: 12/10/6 A
Width: 28 mm

Wiring bracket for push-in spring-type terminal base

Wiring bracket for screw terminal base

SIRIUS 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

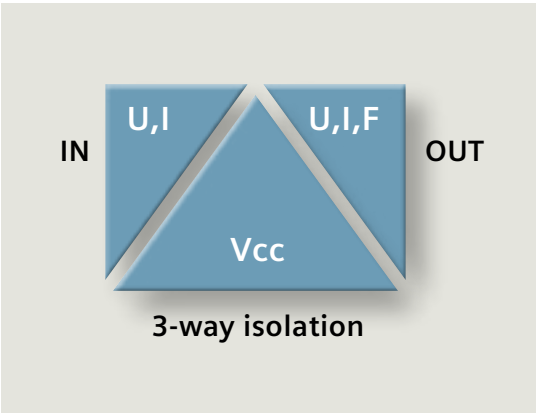
- High-quality, modern titanium gray design
- Look is consistent with all other Siemens devices in the control cabinet
- Simplified logistics and inventory management thanks to reduced device variance resulting from exclusive use of 3-way isolation
- Little space required on the mounting rail:
  – Slimline, 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.



SIRIUS 3TG10 Power Relays / Miniature Contactors

for high performance with minimum dimensions

The SIRIUS 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
- Compressors and heaters

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

Published by
Siemens AG

Smart Infrastructure
Electrical Products
Werner-von-Siemens-Str. 48–50
92224 Amberg
Germany

For the U.S. published by
Siemens Industry Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

For more information,
please contact our
Customer Support Center:
Phone: +49 180 524 70 00
Fax: +49 180 524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Artikel-Nr. SIEP-B10003-02-7600
WS PDF

SIEMENS

TECHNICAL INFORMATION

Monitoring, Controlling and Switching **with SIRIUS Relais**

siemens.com/relays

SIRIUS Timing Relays

Overview of SIRIUS timing relays	3RP25 industrial design	3RP20 contactor design	7PV15 Insta design	3RA28 SIRIUS 3RT2 contactor mounting	3RT1916/26 SIRIUS 3RT1 contactor mounting
Function	**Number and type of contacts**				
ON-delay	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO, 2 CO	1 CO, 1 NO/1 NC, 1 NO (SC)	1 NO/1 NC, 1 NO (SC)
OFF-delay with control signal	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO, 2 CO	1 CO, 1 NO/1 NC, 1 NO (SC)	1 NO/1 NC, 1 NO (SC)
OFF-delay without control signal	1 CO, 2 CO	–	1 CO	1 CO, 1 NO/1 NC	2 NO, 1 NC
Additive ON-delay with control signal	1 CO, 2 CO[1], 1 NO (SC)	1 CO	1 CO	–	–
Additive ON-delay, instantaneous OFF with control signal	2 CO[1], 1 NO (SC)	1 CO	–	–	–
ON/OFF delay with control signal	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	2 CO	–	–
Wye(star)-delta function with run-on time	3 NO	–	–	–	–
Wye(star)-delta function	2 NO, 2 CO	2 CO	2 NO	2 NO	2 NO
Flashing, non-symmetrical, starting with break (clock generator)	1 CO, 1 NO (SC)	–	1 CO	–	–
Flashing, symmetrical, starting with break	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO, 2 CO	–	–
Flashing, symmetrical, starting with pulse	2 CO[1], 1 NO (SC)	–	–	–	–
Passing make contact	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO, 2 CO	–	–
Passing break contact with control signal (retrotriggerable interval relay with deactivated control signal)	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO	–	–
Pulse-shaping with control signal (passing make contact with control signal, not retrotriggerable)	1 CO, 2 CO[1], 1 NO (SC)	1 CO, 2 CO[1]	1 CO, 2 CO	–	–
Fixed pulse after ON-delay	–	–	2 CO	–	–
Pulse-delay relay (settable pulse and pulse delay, pulse length 500 ms)	2 CO[1], 1 NO (SC)	–	–	–	–
Pulse-delay relay with control signal (settable pulse and pulse delay, pulse length 500 ms)	2 CO[1], 1 NO (SC)	–	–	–	–
Retrotriggerable interval relay with activated control signal (watchdog)	2 CO[1], 1 NO (SC)	–	–	–	–
Non-volatile time relay, positive passing make contact	1 CO, 2 CO	–	–	–	–

[1] Can be used both as two CO contacts switched in parallel and as one CO contact switching instantaneously + one CO contact switching with time delay.

For further information refer to Catalog IC 10 and the SIRIUS 3RP25 timing relay simulator: www.siemens.com/relays

CO = changeover contact
NO = normally open contact
SC = semiconductor
NC = normally closed contact

SIRIUS 3RP20 / 3RP25 Timing Relays and 7PV15 Timing Relays

3RP25 electronic timing relays in 17.5 mm and 22.5 mm industrial enclosure

Function	Contacts	Width	Time range	Rated control supply voltage U_s	Article No.
13 functions	1 CO	17.5 mm	0.05 s – 100 h	24 V AC/DC	3RP2505-☐AB30
	1 CO	17.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2505-☐AW30
	1 NO (SC)	17.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2505-☐CW30
	2 CO[1)]	22.5 mm	0.05 s – 100 h	24 – 240 V AC/DC	3RP2505-☐RW30
27 functions	2 CO	22.5 mm	0.05 s – 100 h	24 V AC/DC	3RP2505-☐BB30
	2 CO	22.5 mm	0.05 s – 100 h	400 – 440 V AC	3RP2505-☐BT20
	2 CO	22.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2505-☐BW30
ON-delay	1 CO	17.5 mm	0.5 s – 10 s	12 – 240 V AC/DC	3RP2511-☐AW30
	1 CO	17.5 mm	1 s – 30 s	12 – 240 V AC/DC	3RP2512-☐AW30
	1 CO	17.5 mm	5 s – 100 s	12 – 240 V AC/DC	3RP2513-☐AW30
	1 CO	17.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2525-☐AW30
	2 CO	22.5 mm	0.05 s – 100 h	24 V AC/DC	3RP2525-☐BB30
	2 CO	22.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2525-☐BW30
	1 NO (SC)	17.5 mm	0.05 s – 240 s	12 – 240 V AC/DC	3RP2527-☐EW30
OFF-delay with control signal	1 CO	17.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2535-☐AW30
OFF-delay without control signal, non-volatile, passing make contact	1 CO	17.5 mm	0.05 s – 600 s	24 V AC/DC	3RP2540-☐AB30
	1 CO	22.5 mm	0.05 s – 600 s	12 – 240 V AC/DC	3RP2540-☐AW30
	2 CO	22.5 mm	0.05 s – 600 s	24 V AC/DC	3RP2540-☐BB30
	2 CO	22.5 mm	0.05 s – 600 s	12 – 240 V AC/DC	3RP2540-☐BW30
Clock generator	1 CO	17.5 mm	0.05 s – 100 h	12 – 240 V AC/DC	3RP2555-☐AW30
Wye(star)-delta function (SD) with run-on time	3 NO	22.5 mm	1 s – 20 s (SD), 30 s – 600 s run-on time	12 – 240 V AC/DC	3RP2560-☐SW30
Wye(star)-delta function	2 NO	22.5 mm	1 s – 20 s (SD)	200 – 240 V / 380 – 440 V AC	3RP2574-☐NM20
	2 NO	22.5 mm	1 s – 20 s (SD)	12 – 240 V AC/DC	3RP2574-☐NW30
	2 NO	22.5 mm	3 s – 60 s (SD)	200 – 240 V / 380 – 440 V AC	3RP2576-☐NM20
	2 NO	22.5 mm	3 s – 60 s (SD)	12 – 240 V AC/DC	3RP2576-☐NW30

[1)] force-guided contacts, "railway-compatible"

Screw terminals 1
Spring-type terminals 2

3RP20 electronic timing relays in SIRIUS design 45 mm

Function	Contacts	Time range	Rated control supply voltage U_s	Article No.
8 functions	1 CO	0.05 s – 100 h	24 V AC/DC/100 – 127 V AC	3RP2005-☐AQ30
	1 CO	0.05 s – 100 h	24 V AC/DC/200 – 240 V AC	3RP2005-☐AP30
16 functions[1)]	2 CO	0.05 s – 100 h	24 – 240 V AC/DC	3RP2005-☐BW30
ON-delay	1 CO	0.05 s – 100 h	24 V AC/DC/100 – 127 V AC	3RP2025-☐AQ30
	1 CO	0.05 s – 100 h	24 V AC/DC/200 – 240 V AC	3RP2025-☐AP30

[1)] The 16 functions correspond to the 8 functions of the multifunctional timing relays with one CO contact. In addition it can be set whether both CO outputs should respond with a delay or whether the second CO should switch immediately.

Screw terminals 1
Spring-type terminals 2

7PV15 electronic timing relays in 17.5 mm enclosure for industry and infrastructure

Function	Contacts	Time range	Rated control supply voltage U_s	Article No.
7 functions	1 CO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1508-1AW30
	2 CO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1508-1BW30
ON-delay	1 CO	0,05 s – 1 s	24 V AC/DC/200 – 240 V AC	7PV1511-1AP30
	1 CO	0.5 s – 10 s	24 V AC/DC/200 – 240 V AC	7PV1512-1AP30
	1 CO	0.5 s – 10 s	24 V AC/DC/100 – 127 V AC	7PV1512-1AQ30
	1 CO	5 s – 100 s	24 V AC/DC/200 – 240 V AC	7PV1513-1AP30
	1 CO	5 s – 100 s	24 V AC/DC/100 – 127 V AC	7PV1513-1AQ30
	1 CO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1518-1AW30
OFF-delay with control signal	1 CO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1538-1AW30
OFF-delay without control signal	1 CO	0.05 s – 100 s	12 – 240 V AC/DC	7PV1540-1AW30
Clock generator	1 CO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1558-1AW30
Wye(star)-delta function	1 NO + 1 NO	0.05 s – 100 h	12 – 240 V AC/DC	7PV1578-1BW30

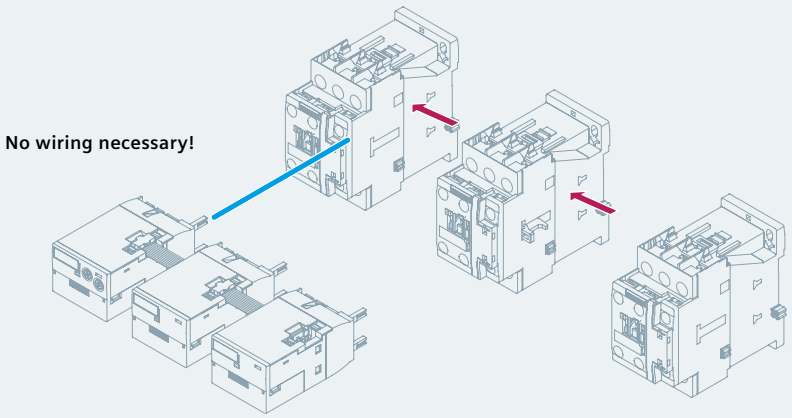
SIRIUS 3RA2811/12/16, 3RA2831/32 Function Modules

3RA2811/12 function modules for direct-on-line starting for mounting on 3RT2 contactors with semiconductor output for sizes S00 and S0			
Function	**Time range**	**Rated control supply voltage U_s**	**Article No.**
ON-delay	0.05 s – 100 s	24 – 240 V AC/DC	**3RA2811-☐CW10**
OFF-delay with control signal	0.05 s – 100 s	24 – 240 V AC/DC	**3RA2812-☐DW10**

Screw terminals 1
Spring-type terminals 2

3RA2831/32 function modules for direct-on-line starting for mounting on contactors with semiconductor output for sizes S2 and S3			
ON-delay	0.05 s – 100 s	24 – 90 V AC/DC	**3RA2831-☐DG10**
	0.05 s – 100 s	90 – 240 V AC/DC	**3RA2831-☐DH10**
OFF-delay with control signal	0.05 s – 100 s	24 – 90 V AC/DC	**3RA2832-☐DG10**
	0.05 s – 100 s	90 – 240 V AC/DC	**3RA2832-☐DH10**

Screw terminals 1
Spring-type terminals 2



3RA2816 function modules for star-delta (wye-delta) starting				
Star-delta (wye-delta) function	0.5 s – 60 s	24 – 240 V AC/DC		**3RA2816-0EW20**

3RT1926-2 plug-on timing relays for star-delta (wye-delta) starting				
Function	**Time range**	**Rated control supply voltage U_s**	**Contacts**	**Article No.**
Star-delta (wye-delta) function	0.5 s – 30 s	24 V AC/DC	1 NO delayed + 1 NO instantaneous	**3RT1926-2GJ51**
		100 – 127 V AC/DC	1 NO delayed + 1 NO instantaneous	**3RT1926-2GC51**
		200 – 240 V AC/DC	1 NO delayed + 1 NO instantaneous	**3RT1926-2GD51**

Sizes S6 – S12

SIRIUS 3RA2813/14/15 Time-Delayed Auxiliary Switches

3RA2813/14/15 electronically delayed auxiliary switches for mounting on 3RT2 contactors for sizes S00 to S3, integrated varistor				
Function	**Rated control supply voltage U_s**	**Time range**	**Contacts**	**Article No.**
ON-delay	24 – 240 V AC/DC	0.05 s – 100 s	1 CO	**3RA2813-☐AW10**
ON-delay	24 – 240 V AC/DC	0.05 s – 100 s	1NO + 1NC	**3RA2813-☐FW10**
OFF-delay with control signal	24 – 240 V AC/DC	0.05 s – 100 s	1 CO	**3RA2814-☐AW10**
OFF-delay with control signal	24 – 240 V AC/DC	0.05 s – 100 s	1NO + 1NC	**3RA2814-☐FW10**
OFF-delay without control signal	24 – 240 V AC/DC	0.05 s – 100 s	1 CO	**3RA2815-☐AW10**
OFF-delay without control signal	24 – 240 V AC/DC	0.05 s – 100 s	1NO + 1NC	**3RA2815-☐FW10**

Screw terminals 1
Spring-type terminals 2

3RT1926-2 electronically delayed auxiliary switches for mounting on 3RT1 contactors with integrated varistor				
ON-delay	24 V AC/DC	0.05 s – 1 s	1NO + 1NC	**3RT1926-2EJ11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2EJ21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2EJ31**
ON-delay	AC 100 – 127 V	0.05 s – 1 s	1NO + 1NC	**3RT1926-2EC11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2EC21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2EC31**
ON-delay	AC 200 – 240 V	0.05 s – 1 s	1NO + 1NC	**3RT1926-2ED11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2ED21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2ED31**
OFF-delay without control signal	24 V AC/DC	0.05 s – 1 s	1NO + 1NC	**3RT1926-2FJ11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2FJ21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2FJ31**
OFF-delay without control signal	AC 100 – 127 V	0.05 s – 1 s	1NO + 1NC	**3RT1926-2FK11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2FK21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2FK31**
OFF-delay without control signal	AC 200 – 240 V	0.05 s – 1 s	1NO + 1NC	**3RT1926-2FL11**
		0.5 s – 10 s	1NO + 1NC	**3RT1926-2FL21**
		5 s – 100 s	1NO + 1NC	**3RT1926-2FL31**

Sizes S6 – S12

SIRIUS 3UG4 / 3UG5 Monitoring Relays

3UG551, 3UG561 monitoring relays for line monitoring

Phase sequence	Phase failure	Asym-metry	Frequency	Hys-teresis	Under-voltage	Over-voltage	Delay times	Contacts	Rated control supply voltage U_s [1]	Article No.
22.5 mm width, 3UG5616 and 3UG5618 digital-adjustable, with fault memory and LC display										
Yes	Condit.[2]	–		–	–	–	–	1 CO	160 – 760 V[1] AC	**3UG5511-☐AR20**
								2 CO	160 – 760 V[1] AC	**3UG5511-☐BR20**
Yes	Yes	10 %		–	–	–	–	1 CO	160 – 760 V[1] AC	**3UG5512-☐AR20**
								2 CO	160 – 760 V[1] AC	**3UG5512-☐BR20**
Yes	Yes	0 or 5 – 20 %		5 %	200 – 690 V	–	Release delay 0.1 s – 20 s	2 CO	160 – 760 V[1] AC	**3UG5514-☐BR20**
Select-able	Yes	Via threshold values	OFF or 15 – 70 Hz	1 – 300 V	90 – 440 V or 160 – 760 V	90 – 440 V or 160 – 760 V	OFF or 0.1 – 999.9 s	2 W, assignable	90 – 440 V[1] AC or 160 – 760 V	**3UG5616-☐CR20**[3]
Autom. correc-tion	Yes	0 or 5 – 20 %	OFF or 15 – 70 Hz	1 – 20 V	90 – 440 V or 160 – 760 V	90 – 440 V or 160 – 760 V	OFF or 0.1 – 999.9 s	1 CO each for line faults and phase sequence	90 – 440 V[1] AC or 160 – 760 V	**3UG5618-☐CR20**[3]

IO-Link

3UG581 monitoring relays for line and three-phase voltage monitoring

Phase sequence	Phase failure	Asym-metry	Frequency	Hystere-sis	Under-voltage	Over-voltage	Delay times	Contacts	Rated control supply voltage Us[1]	Article No.
Width 22.5 mm, adjustable via IO-Link or locally										
Select-able	Yes	Via threshold values	OFF or 15 – 70 Hz	S1 – 300 V	90 – 440 V or 160 – 760 V	90 – 440 V or 160 – 760 V	OFF or 0.1 – 999.9 s	1 W	90 – 440 V[1] AC against N	**3UG5816-☐AA40**[3]

3UG463 monitoring relays for single-phase voltage monitoring

Measuring range	Hysteresis	Contacts	Delay time	Rated control supply voltage U_s [1]	Article No.
22.5 mm width, all devices digital-adjustable and with LC display, connectable fault memory, simultaneous monitoring for voltage overshoot and undershoot over the entire measuring range					
0.1 – 60 V AC/DC	0.1 – 30 V	1 CO	0.1 s – 20 s	24 V AC/DC	**3UG4631-☐AA30**
				24 – 240 V AC/DC	**3UG4631-☐AW30**
10 – 600 V AC/DC	0.1 – 300 V	1 CO	0.1 s – 20 s	24 V AC/DC	**3UG4632-☐AA30**
				24 – 240 V AC/DC	**3UG4632-☐AW30**
17 – 275 V AC/DC	0.1 – 150 V	1 CO	0.1 s – 20 s	Intrinsic supply	**3UG4633-☐AL30**

IO-Link

3UG483 monitoring relays for single-phase voltage monitoring

22.5 mm width, adjustable via IO-Link or locally, monitoring of overvoltage and undervoltage							
1 phase	OFF 0.1 – 999.9 s	–	OFF 0.1 – 999.9 s	OFF 1 – 300 V	1 CO 1 Q in SIO mode	10 – 600 V AC/DC	**3UG4832-☐AA40**

[1] Absolute limit values
[2] Return voltage due to coupling of the individual phases
[3] Neutral wire monitoring as a choice

Screw terminals 1
Spring-type terminals 2

The 3UG4511 device is not able to detect phase failures reliably.
Loads connected in the three-phase network, e.g. motor windings, lamps, transformers, ensure the individual phases' connection.
Due to this network coupling, a return voltage is always present on the device terminal of the failed phase.

SIRIUS 3RR2 Monitoring Relays

3RR21 monitoring relays

Size	Measuring range	Hysteresis	Contacts	ON delay	Rated control supply voltage U_s	Article No.
All devices analog-adjustable, closed-circuit principle, 2-phase current monitoring, apparent current monitoring, tripping delay 0 – 30 s, automatic or manual RESET						
S00	1.6 – 16 A	6.25% of the threshold value	1 CO	0 – 60 s	24 V AC/DC	**3RR2141-☐AA30**
					24 – 240 V AC/DC	**3RR2141-☐AW30**
S0	4 – 40 A	6.25% of the threshold value	1 CO	0 – 60 s	24 V AC/DC	**3RR2142-☐AA30**
					24 – 240 V AC/DC	**3RR2142-☐AW30**
S2	8 – 80 A	6.25% of the threshold value	1 CO	0 – 60 s	24 V AC/DC	**3RR2143-☐AA30**
					24 – 240 V AC/DC	**3RR2143-☐AW30**

Screw terminals 1
Spring-type terminals for sizes S00, S0 2
Spring-type terminals for size S2 3

3RR22 monitoring relays

Size	Measuring range	Hysteresis	Contacts	ON delay	Restart delay	Rated control supply voltage U_s	Article No.
All devices digital-adjustable, LC display, open- or closed-circuit principle, 3-phase current monitoring, active current or apparent current monitoring, delay time 0 – 30 s, automatic or manual RESET, phase sequence monitoring, residual current monitoring, blocking current monitoring, separate settings for warning and alarm thresholds							
S00	1.6 – 16 A	0.1 – 3 A	1 CO 1 Q	0 – 99 s	0 – 300 min	24 V AC/DC	**3RR2241-☐FA30**
						24 – 240 V AC/DC	**3RR2241-☐FW30**
S0	4 – 40 A	0.1 – 8 A	1 CO 1 Q	0 – 99 s	0 – 300 min	24 V AC/DC	**3RR2242-☐FA30**
						24 – 240 V AC/DC	**3RR2242-☐FW30**
S2	8 – 80 A	0.2 – 16 A	1 CO 1 Q	0 – 99 s	0 – 300 min	24 V AC/DC	**3RR2243-☐FA30**
						24 – 240 V AC/DC	**3RR2243-☐FW30**

Screw terminals 1
Spring-type terminals for sizes S00, S0 2
Spring-type terminals for size S2 3

IO-Link

3RR24 monitoring relays

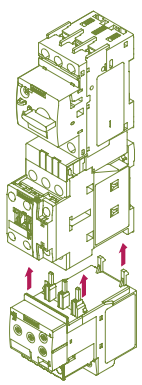
Size	Measuring range	Hysteresis	Contacts	ON delay	Restart delay	Rated control supply voltage U_s	Article No.
All devices adjustable locally and via IO-Link, LC display, open- or closed-circuit principle, 3-phase current monitoring, active current or apparent current monitoring, delay time 0 – 30 s, automatic or manual RESET, current asymmetry monitoring, phase sequence monitoring, residual current monitoring, blocking current monitoring, operating hours counter, switching cycle counter, separate settings for warning and alarm thresholds							
S00	1.6 – 16 A	0.1 – 3 A	1 CO 1 Q (in SIO mode)	OFF 0.1 – 999.9 s	OFF 0.1 – 300 min	24 V DC	**3RR2441-☐AA40**
S0	4 – 40 A	0.1 – 8 A	1 CO 1 Q (in SIO mode)	OFF 0.1 – 999.9 s	OFF 0.1 – 300 min	24 V DC	**3RR2442-☐AA40**
S2	8 – 80 A	0.2 – 16 A	1 CO 1 Q (in SIO mode)	OFF 0.1 – 999.9 s	OFF 0.1 – 300 min	24 V DC	**3RR2443-☐AA40**

Screw terminals 1
Spring-type terminals for sizes S00, S0 2
Spring-type terminals for size S2 3

Adapter for stand-alone mounting for separate mounting of the monitoring relays on DIN rails

Size	Article No.
S00	**3RU2916-3A☐01**
S0	**3RU2926-3A☐01**
S2	**3RU2936-3AA01**

Screw terminals A
Spring-type terminals C



SIRIUS 3UG4 Monitoring Relays

3UG4621/22 monitoring relays for single-phase current monitoring

Measuring range	Hysteresis	Contacts	ON-delay time	Tripping delay time	Rated control supply voltage U_s	Article No.
22.5 mm width, all devices digital-adjustable and with LC display, connectable fault memory, simultaneous monitoring for current overshoot and undershoot over the entire measuring range						
3 – 500 mA AC/DC	0.1 – 250 mA	1 CO	0.1 – 20 s	0.1 – 20 s	24 V[1] AC/DC	**3UG4621-☐AA30**
					24 – 240 V[2] AC/DC	**3UG4621-☐AW30**
0.05 – 10 A AC/DC	0.01 – 5 A	1 CO	0.1 – 20 s	0.1 – 20 s	24 V[1] AC/DC	**3UG4622-☐AA30**
					24 – 240 V[2] AC/DC	**3UG4622-☐AW30**

[1] No galvanic isolation. Load supply voltage 24 V
[2] Galvanic isolation between control circuit and measuring circuit. Load supply voltage for safe isolation max. 300 V, for simple separation max. 500 V.

Screw terminals 1
Spring-type terminals 2

3UG4641 monitoring relays for power factor and active current monitoring

Measuring range for power factor	Measuring range for active current I_{res}	Hysteresis with power factor	Hysteresis with active current	Contacts	ON-delay time	Tripping delay time	Rated control supply voltage U_s[1]	Article No.
22.5 mm width, device digitally adjustable and with LC display, connectable fault memory, simultaneous power factor and active current monitoring over the entire measuring range								
0.1 – 0.99 (PF)	0.2 – 10.0 A	0.1 (PF)	0.1 – 2.0 A	1 CO + 1 CO	0 – 99 s	0.1 – 20.0 s	90 – 690 V[1] AC	**3UG4641-☐CS20**

[1] Absolute limit values

Screw terminals 1
Spring-type terminals 2

IO-Link

3UG4822 monitoring relays for single-phase current monitoring

Measuring range	Hysteresis	Contacts	ON-delay time	Tripping delay time	Article No.
22.5 mm width, adjustable via IO-Link or locally, monitoring of overcurrent and undercurrent, scaling factor for considering external 1 A / 5 A instrument transformer adjustable					
0.05 – 10 A	OFF 0.01 – 5 A	1 CO 1 Q in SIO mode	OFF 0.1 – 999.9 s	OFF 0.1 – 999.9 s	**3UG4822-☐AA40**

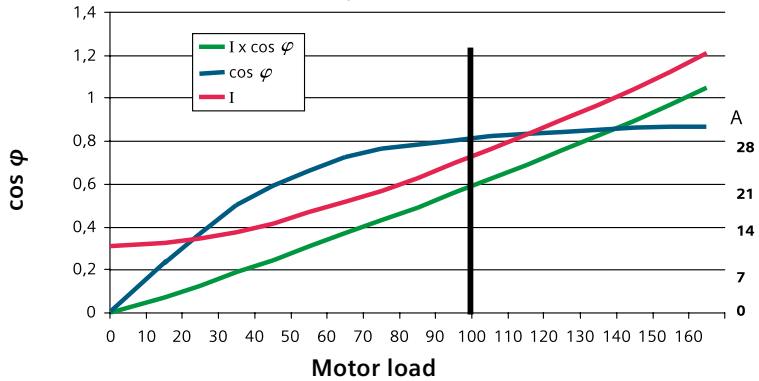
3UG4841 monitoring relays for power factor and active current monitoring

22.5 mm width, adjustable via IO-Link or locally, monitoring of phase sequence, phase failure, phase asymmetry, overvoltage and undervoltage					
cos phi: 0.1 – 0.99 Current: 0.2 – 10 A	cos phi: OFF/0.1 – 0.20 Current: OFF/0.1 – 3 A	1 CO 1 Q in SIO mode	OFF 0.1 – 999.9 s	OFF 0.1 – 999.9 s	**3UG4841-☐CA40**

Screw terminals 1
Spring-type terminals 2

Current and power factor dependent on the motor load

Rule of thumb:
The power factor changes significantly below the rated load;
the current increases disproportionally above the rated load.



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

SIRIUS 3UG4 Monitoring Relays

3UG4625 monitoring relays for residual current monitoring							
Measurable current	**Adjustable response value current**	**Switching hysteresis**	**Adjustable response delay time**	**Control supply voltage at 50 Hz at AC rated value**	**Control supply voltage at 60 Hz at AC rated value**	**Control supply voltage at DC rated value**	**Article No.**
22.5 mm width, digitally adjustable and with LC display, permanent self-monitoring, monitoring of a warning threshold and limit value overshoot, for 3UL23 residual current transformer							
0.01–43 A	0.03–40 A	0–50%	0–20 s	24–240 V	24–240 V	24–240 V	**3UG4625-☐CW30**

Screw terminals 1
Spring-type terminals 2

IO-Link

3UG4825 monitoring relays for residual current monitoring					
Measurable current	**Adjustable response value current**	**Switching hysteresis**	**Adjustable response delay time**	**Control supply voltage at DC rated value**	**Article No.**
22.5 mm width, digitally adjustable and with LC display, permanent self-monitoring, monitoring of a warning threshold and limit value overshoot, for 3UL23 residual current transformer					
0.01–43 A	0.03–40 A	0–50%	OFF 0.1–999.9 s	24 V	**3UG4825-☐CA40**

Screw terminals 1
Spring-type terminals 2

3UL23 residual current transformers for residual current monitoring			
Diameter of bushing opening	**Max. rated current per phase**	**Max. connectable conductor cross-section of terminal**	**Article No.**
Detection of residual currents in machines and systems			
35 mm	85 A	2.5 mm²	**3UL2302-1A**
55 mm	150 A		**3UL2303-1A**
80 mm	225 A		**3UL2304-1A**
110 mm	400 A		**3UL2305-1A**
140 mm	500 A		**3UL2306-1A**
210 mm	630 A	4 mm²	**3UL2307-1A**

3UG4581 monitoring relays for insulation monitoring for non-grounded AC networks						
Rated line voltage U_n	**System leakage capacitance**	**Output relay**	**Messbereich U_e**	**Rated control supply voltage U_s**	**Cable break detection in the measuring range**	**Article No.**
0 – 400 V AC	max. 10 µF	1 CO	1 – 100 kΩ	24 – 240 V AC/DC	–	**3UG4581-1AW30**
3UG4582/83 monitoring relays for insulation monitoring for non-grounded DC and AC voltage networks						
0 – 250 V AC, 0 – 300 V DC	max. 10 µF	1 CO	1 – 100 kΩ	24 – 240 V AC/DC	Yes	**3UG4582-1AW30**
0 – 400 V AC, 0 – 600 V[2)] DC	max. 20 µF	2 CO or 1 CO + 1 CO adjustable	1 – 100 kΩ, 2 – 200 kΩ for 2nd limit value, adjustable	24 – 240 V AC/DC	Yes adjustable	**3UG4583-1CW30**
Series module for 3UG4583 for expansion of the line voltage range to max. 690 V AC and 1000 V DC						**3UG4983-1A**

Covers for monitoring relays for insulation monitoring		
Application	**Version**	**Article No.**
For 3UG4581, 3UG4582	Sealable, transparent cover	**3UG4981-0C**
For 3UG4583	Sealable, transparent cover	**3UG4983-0C**

[2)] With 3UG4983-1A series module also suitable for insulation monitoring of IT networks up to 690 V AC and 1000 V DC.

SIRIUS 3UG4 / 3UG5 Monitoring Relays

3UG4501 monitoring relays for 1- and 2-point level monitoring of conductive liquids

Sensitivity	Contacts	Tripping delay time	Width	Rated control supply voltage U_s	Article No.
2–200 kΩ	1 W	0.5–10 s	22.5 mm	24 V AC/DC	3UG4501-☐AA30
				24 – 240 V AC/DC	3UG4501-☐AW30

Probes for level monitoring, max. operating temperature 90 °C, max. operating pressure 10 bar

Description	Cable connection	Number of poles	Article No.
Wire electrode, 500 mm long, with teflon insulation	3 x 0.5 mm², 2 m	3-pole	3UG3207-3A
	2 x 0.5 mm², 2 m	2-pole	3UG3207-2A
Wire electrode for lateral installation	3 x 0.5 mm², 2 m	2-pole	3UG3207-2B
	2 x 0.5 mm², 2 m	1-pole	3UG3207-1B
Rod electrode, stable	2 x 0.5 mm², 2 m	1-pole	3UG3207-1C

Screw terminals 1
Spring-type terminals 2

3UG4651 monitoring relays for monitoring undershooting and overshooting of a speed

Meas. range pulses/min	Contacts	ON-delay time	Tripping delay time	Width	Rated control supply voltage U_s	Article No.
0.1–2200 (0.0017–36.67 Hz)	1 W	1–900 s	0.1–99.9 s	22.5 mm	24 V AC/DC	3UG4651-☐AA30
					24–240 V AC/DC	3UG4651-☐AW30

Screw terminals 1
Spring-type terminals 2

IO-Link

3UG4851 monitoring relays for monitoring overshoot and undershoot of speeds

Meas. range pulses/min	Contacts	ON-delay time	Tripping delay time	Hysteresis	Article No.
Monitoring overshoot and undershoot of speeds, scaling factor for taking account of multiple pulse encoders per rotation					
0.1 – 2200 (0.0017 – 36.67 Hz)	1 W 1 Q in SIO mode	OFF 0.1 – 999.9 s	OFF 0.1 – 999.9 s	OFF 0.1 – 99.9 rpm	3UG4851-☐AA40

Screw terminals 1
Spring-type terminals 2

PROFINET

3UG546 monitoring relays for DC load monitoring

Measurable current	Voltage measuring range	Width	Contacts	ON-delay time	Tripping delay time	Article No.
Simultaneous monitoring of current, voltage, load; operating hours counter, switching cycle counter, energy consumption counter, energy recovery counter						
0.05–8 A (2-channel) 0.05–16 A (1-channel)	0–800 V	22.5 mm	1 W	0.1–999.9 s	0.1–999.9 s	3UG5461-1AA40
0.05–63 A	0–800 V	45.0 mm	1 W	0.1–999.9 s	0.1–999.9 s	3UG5462-1AA40
0.05–8 A (2-channel) 0.05–16 A (1-channel)	0–60 V	22.5 mm	1 W	0.1–999,9 s	0.1–999,9 s	3UG5461-1AA41
0.05–63 A	0–60 V	45.0 mm	1 W	0.1–999,9 s	0.1–999,9 s	3UG5462-1AA41

SIRIUS 3RN2 Thermistor Motor Protection Relays

Version	RESET	Contacts	Rated control supply voltage U_s	Article No.
Thermistor motor protection relays for PTC thermistors (Type A) All devices except for 24 V AC/DC feature galvanic isolation				
Compact evaluation devices, width 17.5 mm, suitable for bimetallic switches				
Terminal A1 jumpered with root of CO contact	Automatic	1 CO	24 V AC/DC	**3RN2000-☐AA30**
			24 – 240 V AC/DC	**3RN2000-☐AW30**
	Automatic	1NO + 1NC	24 V AC/DC	**3RN2010-☐CA30**
			24 – 240 V AC/DC	**3RN2010-☐CW30**
Standard evaluation devices, width 22.5 mm, suitable for bimetallic switches				
	Automatic	2 CO	24 V AC/DC	**3RN2010-☐BA30**
			24 – 240 V AC/DC	**3RN2010-☐BW30**
Bistable evaluation devices, width 22.5 mm, wire break and short-circuit detection in the sensor circuit				
Does not trip if control supply voltage fails	Manual/Auto/ Remote	2 CO	24 – 240 V AC/DC	**3RN2012-☐BW31**
Standard evaluation devices with ATEX approval, width 22.5 mm, wire break and short-circuit detection in the sensor circuit				
	Manual/Remote[3]	2 CO	24 V AC/DC	**3RN2011-☐BA30**
			24 – 240 V AC/DC	**3RN2011-☐BW30**
Non-volatile[2]	Manual/Auto/ Remote	2 CO	24 V AC/DC	**3RN2012-☐BA30**
			24 – 240 V AC/DC	**3RN2012-☐BW30**
Safe galvanic isolation of all circuits[1], non-volatile[2]	Manual/Auto/ Remote	2 CO	24 V AC/DC	**3RN2013-☐BA30**
			24 – 240 V AC/DC	**3RN2013-☐BW30**
Safe galvanic isolation of all circuits[1], non-volatile[2]	Manual/Auto/ Remote	2 CO, hard gold-plated	24 – 240 V AC/DC	**3RN2013-☐GW30**
Standard evaluation devices with ATEX approval and 2 sensor circuits for warning and shutdown, width 22.5 mm, wire break and short-circuit detection in both sensor circuits				
Safe galvanic isolation of all circuits[1], non-volatile[2]	Manual/Auto/ Remote	1 NO + 1 CO	24 – 240 V AC/DC	**3RN2023-☐DW30**

[1] Safe isolation up to 300 V acc. to DIN/VDE 0106, IEC 60947-1
[2] For information on protection against voltage failure see Catalog IC 10
[3] Reset using RESET button or interruption of control supply voltage possible

Screw terminals 1
Spring-type terminals 2

SIRIUS 3RS2 Temperature Monitoring Relays

3RS2 temperature monitoring relays						
Function	**Sensor**	**Measuring ranges**	**Safety**	**IO-Link**	**Rated control supply voltage U_s 50/60 Hz**	**Article No.**
Analogic adjustable, 1 sensor, 1 threshold value						
Overshoot and undershoot	Resistance sensor Pt100, Thermocouple Types J, K	-50 ... + 50 °C / 0 ... 100 °C / 0 ... 200 °C 0 ... 200 °C / 0 ... 600 °C / 500 ... 1000 °C	No	No	24 V AC/DC	**3RS2500-☐AA30**
					24 ... 240 V AC/DC	**3RS2500-☐AW30**
Digitally adjustable, 1 sensor, 2 threshold values						
Overshoot, undershoot and range monitoring	Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC Thermocouples: Typ J, K, T, E, N, S, R, B	See table with Temperature measurement ranges for resistance sensors and thermocouples	SIL 1 / PL c acc. to IEC 61508 / ISO 13849, EN 14597, EN 50156, ATEX via analog input in 3RS29 sensor expansion module	No	24 V AC/DC	**3RS2600-☐BA30**
					24 ... 240 V AC/DC	**3RS2600-☐BW30**
Overshoot, undershoot and range monitoring	Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC Thermocouples: Typ J, K, T, E, N, S, R, B	See table with Temperature measurement ranges for resistance sensors and thermocouples	SIL 1 / PL c acc. to IEC 61508 / ISO 13849, EN 14597, EN 50156, ATEX via analog input in 3RS29 sensor expansion module	Yes	24 V DC	**3RS2800-☐BA40**
Sensor expansion module for 3RS26/3RS28						
2 additional sensors, analog input 4 ... 20 mA, ATEX via analog input, sensor status relay	Resistance sensors: Pt100, Pt1000, KTY83-110, KTY84, NTC	See Temperature measurement ranges for resistance sensors and thermocouples	SIL 1 / PL c acc. to IEC 61508 / ISO 13849, EN 14597, EN 50156, ATEX via analog input with 3RS26/28 basic unit	No	24 V AC/DC	**3RS2900-☐AA30**
					24 ... 240 V AC/DC	**3RS2900-☐AW30**

Screw terminals 1
Spring-loaded terminal (push-in) 2

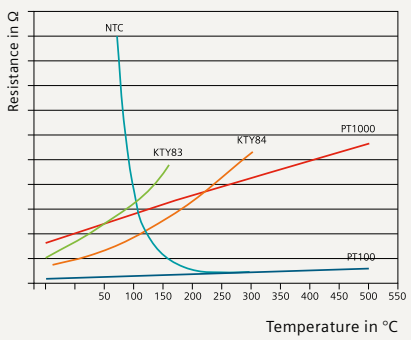
Temperature measuring ranges for resistance sensors and thermocouples

Measuring ranges of resistance sensors				
Sensor type	**Short-circuit monitoring**	**Sensor wire-break monitoring**	**Measuring ranges in °C**	**Measuring ranges in °F**
Pt100	Yes	Yes	–50 ... +750	–58 ... +1382
Pt1000	Yes	Yes	–50 ... +500	–58 ... +932
KTY83-110	Yes	Yes	–50 ... +175	–58 ... +347
KTY84	Yes	Yes	–40 ... +300	–40 ... +572
NTC[1)]	Yes	No	+80 ... +160	+176 ... +320

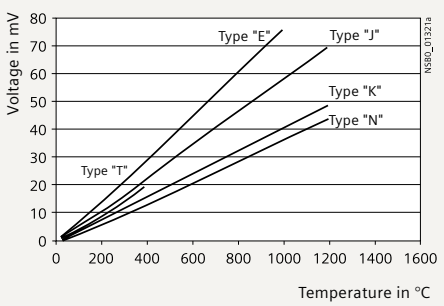
[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ)

Measuring ranges of thermocouples				
Sensor type	**Short-circuit monitoring**	**Sensor wire-break monitoring**	**Measuring ranges in °C**	**Measuring ranges in °F**
J	No	Yes	–99 ... +1200	–146.2 ... +2192
K	No	Yes	–99 ... +1350	–146.2 ... +2462
T	No	Yes	–99 ... +400	–146.2 ... +752
E	No	Yes	–99 ... +999	–146.2 ... +1830.2
N	No	Yes	–99 ... +1300	–146.2 ... +2372
S	No	Yes	0 ... +1750	–32 ... +3182
R	No	Yes	0 ... +1750	–32 ... +3182
B	No	Yes	–400 ... +1800	–752 ... +3272

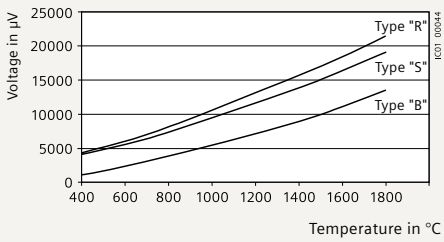
Characteristics of most important resistance temperature sensors



Characteristics for thermocouples



Characteristics for sensor types J, K, T, E and N



Characteristics for sensor types S, R and B

SIRIUS 3RQ1 / 3RQ2 and 3RQ3 Coupling Relays

3RQ1 coupling relays

Rated control supply voltage U_s 50/60 Hz	Operating range Rated control supply voltage	W x H x D	Contact type	Safety level	Usable with 3SK device connector	Article No.
24–240 V AC/DC	0.7 ... 1.1	17.5 x 90 x 90mm	1 NO contact, 1 NC contact	SIL 2 / PL c	No	3RQ1000-☐EW00
24–240 V AC/DC	0.7 ... 1.1	17.5 x 90 x 90mm	2 NO contacts, 1 NC contact	SIL 2 / PL c	No	3RQ1000-☐GW00
24–240 V AC/DC	0.7 ... 1.1	22.5 x 90 x 90mm	2 NO contacts, 2 NC contacts	SIL 2 / PL c	No	3RQ1000-☐HW00
24–240 V AC/DC	0.7 ... 1.1	22.5 x 90 x 90mm	4 NO contacts, 1 NC contact	SIL 2 / PL c	No	3RQ1000-☐LW00
24–240 V AC/DC	0.7 ... 1.1	17.5 x 90 x 90mm	1 NO contact, 1 NC contact	SIL 3 / PL e	No	3RQ1200-☐EW00
24 V DC	0.8 ... 1.1	17.5 x 90 x 120mm	1 NO contact, 1 NC contact	SIL 2 / PL c	Yes	3RQ1000-☐EB00
24 V DC	0.8 ... 1.1	17.5 x 90 x 120mm	2 NO contacts, 1 NC contact	SIL 2 / PL c	Yes	3RQ1000-☐GB00
24 V DC	0.8 ... 1.1	22.5 x 90 x 120mm	2 NO contacts, 2 NC contacts	SIL 2 / PL c	Yes	3RQ1000-☐HB00
24 V DC	0.8 ... 1.1	22.5 x 90 x 120mm	4 NO contacts, 1 NC contact	SIL 2 / PL c	Yes	3RQ1000-☐LB00
24 V DC	0.8 ... 1.1	17.5 x 90 x 120mm	1 NO contact, 1 NC contact	SIL 3 / PL e	Yes	3RQ1200-☐EB00

Screw terminals 1
Spring-type terminals (push-in) 2

3RQ2 coupling relays

Rated control supply voltage U_s 50/60 Hz	Contact type	Article No.
24–240 V AC/DC	1 W	3RQ2000-☐AW00
	2 W	3RQ2000-☐BW00
	3 W	3RQ2000-☐CW00
	3 W hard gold-plated	3RQ2000-☐CW01

Screw terminals 1
Spring-type terminals (push-in) 2

3RQ3 coupling relays with relay output, not pluggable

Output couplers with relay output

Contacts	Rated control supply voltage U_s	W x H x D	Hard gold-plating	M-0-A switch	Article No.
1 changeover contact (1 CO)	24 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3018-☐AB00
	115 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3018-☐AE00
	230 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3018-☐AF00
	24 V DC	6.2 x 93 x 76 mm	–	No	3RQ3018-2AM08-0AA0[1)]
	110 V DC	6.2 x 93 x 76 mm	–	No	3RQ3018-2AN08-0AA0[1)]
	24 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3018-☐AB01

Input couplers with relay output

Contacts	Rated control supply voltage U_s	W x H x D	Hard gold-plating	M-0-A switch	Article No.
1 changeover contact (1 CO)	24 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3038-☐AB00
	115 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3038-☐AE00
	230 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3038-☐AF00
	24 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3038-☐AB01
	115 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3038-☐AE01
	230 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3038-☐AF01

[1)] Suitable for railway applications

Screw terminals 1
Spring-type terminals 2

3RQ3 coupling relays with relay output, pluggable

Coupling relay with plug-in relay, output coupler

Contacts	Rated control supply voltage U_s	W x H x D	Hard gold-plating	M-0-A switch	Article No.
1 changeover contact (1 CO)	24 V DC	6.2 x 93 x 76 mm	–	No	3RQ3118-☐AM00
	24 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3118-☐AB00
	115 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3118-☐AE00
	230 V AC/DC	6.2 x 93 x 76 mm	–	No	3RQ3118-☐AF00
	24 V DC	6.2 x 93 x 76 mm	Yes	No	3RQ3118-☐AM01
	24 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3118-☐AB01
	115 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3118-☐AE01
	230 V AC/DC	6.2 x 93 x 76 mm	Yes	No	3RQ3118-☐AF01

Screw terminals 1
Spring-type terminals 2

SIRIUS 3RQ3 Coupling Relays

3RQ3 coupling relays with semiconductor output, not pluggable							
Output couplers with semiconductor output							
Rated control supply voltage U_s	W x H x D	Switching current max.	Switching voltage	Minimum load current	Short-circuit proof	M-0-A switch	Article No.
24 V DC	6.2 x 93 x 72.5	0.5 A	60 V DC		No	–	3RQ3050-☐SM50
		2 A	30 V DC		Yes	–	3RQ3052-☐SM30
		5 A	30 V DC		Yes	–	3RQ3055-☐SM30
		5 A	30 V DC		Yes	Yes	3RQ3065-☐SM30
110 – 230 V AC/DC	6.2 x 93 x 72.5	3 A	30 V DC		Yes	–	3RQ3053-☐SG30
24 V DC	6.2 x 93 x 72.5	2 A	264 V AC		No	–	3RQ3052-☐SM50
		2 A	60 V DC		No	–	3RQ3052-☐SM40
Input couplers with semiconductor output							
24 V AC/DC	6.2 x 93 x 72.5	0.5 A	30 V DC		No	–	3RQ3070-☐SB30
110 – 230 V AC/DC	6.2 x 93 x 72.5	0.5 A	30 V DC		No	–	3RQ3070-☐SG30

Schraubanschluss 1
Federzugklemme 2

Replacement modules for 3RQ3118 coupling relays with plug-in relay		
Rated control supply voltage U_s	Hard gold-plating	Article No.
24 V DC	$AgSnO_2$	3TX7014-7BM00
	$AgSnO_2$ hard gold-plated	3TX7014-7BM02
24 V AC/DC	$AgSnO_2$	3TX7014-7BM00
	$AgSnO_2$ hard gold-plated	3TX7014-7BM02
115 V AC/DC	$AgSnO_2$	3TX7014-7BP00
230 V AC/DC	AgSnO	
115 V AC/DC	$AgSnO_2$ hard gold-plated	3TX7014-7BP02
230 V AC/DC	$AgSnO_2$ hard gold-plated	

Accessories for 3RQ3 coupling relays	
Galvanic isolation plate	3RQ3900-0A
2-pole connecting comb	3RQ3901-0A
4-pole connecting comb	3RQ3901-0B
8-pole connecting comb	3RQ3901-0C
16-pole connecting comb	3RQ3901-0D
Clip-on label, 5 x 5 mm, white	3RQ3902-0A
Clip-on label, 6 x 12 mm, white	3RQ3902-0B

SIRIUS LZS Coupling Relays

LZS coupling relay with plug-in relay – for low tier heights		
Output couplers		
Switching capacity of LZX plug-in relay	AC-15, 230 V	DC-13, 24 V
RT 1 W	6 A	2 A
RT 2 W	2.5 A	2 A
PT 2 W	5 A	5 A
PT 3 W	5 A	5 A
PT 4 W	DC coil: 4 A, AC coil: 2 A	4 A
MT 3 W	5 A	2 A

Logical isolation:
The connections of the contact elements and the connections of the coil are arranged on different sides, e.g. for contact elements at the top, and for the coil at the bottom. This improves the transparency of wiring. The logical isolation is not necessarily a safe isolation.

Safe isolation:
Safe isolation is a separation that prevents overspill of voltage from one circuit to another with adequate safety.
(DIN VDE 106 Part 101)

Coupling relays with plug-in relays – LZS complete modules (base, plug-in relay, hold/eject clip, LED module and inscription plate)

Versions	Rated control supply voltage U_s	Contacts	Article No.
Complete devices, 8-, 11- and 14-pole, PT range (28 mm width)			
Complete device with plug-in base (screw terminals, standard) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay, standard plug-in base with screw terminals, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	3 CO	**LZS:PT3A5L24**
	24 V AC		**LZS:PT3A5R24**
	115 V AC		**LZS:PT3A5S15**
	230 V AC		**LZS:PT3A5T30**
	24 V DC	4 CO	**LZS:PT5A5L24**
	24 V AC		**LZS:PT5A5R24**
	115 V AC		**LZS:PT5A5S15**
	230 V AC		**LZS:PT5A5T30**
Complete device with plug-in base (screw terminals, logical isolation) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay, plug-in base with screw terminals and logical isolation, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	4 CO	**LZS:PT5B5L24**
	24 V AC		**LZS:PT5B5R24**
	115 V AC		**LZS:PT5B5S15**
	230 V AC		**LZS:PT5B5T30**
Complete device with plug-in base (push-in spring-type terminals, logical isolation) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay, plug-in base with spring-type terminals and logical isolation, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	2 CO	**LZS:PT2D5L24**
	230 V AC		**LZS:PT2D5T30**
	24 V DC	4 CO	**LZS:PT5D5L24**
	24 V AC		**LZS:PT5D5R24**
	115 V AC		**LZS:PT5D5S15**
	230 V AC		**LZS:PT5D5T30**
Complete devices, 8-pole, 5 mm pinning, RT range (15.5 mm width)			
Complete device with plug-in base (screw terminals, standard) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay, standard plug-in base with screw terminals, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	1 CO	**LZS:RT3A4L24**
	24 V AC		**LZS:RT3A4R24**
	115 V AC		**LZS:RT3A4S15**
	230 V AC		**LZS:RT3A4T30**
	24 V DC	2 CO	**LZS:RT4A4L24**
	24 V AC		**LZS:RT4A4R24**
	115 V AC		**LZS:RT4A4S15**
	230 V AC		**LZS:RT4A4T30**
Complete device with plug-in base (screw terminals, logical isolation) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay with safe isolation, plug-in base with screw terminals and logical isolation, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	1 CO	**LZS:RT3B4L24**
	24 V AC		**LZS:RT3B4R24**
	115 V AC		**LZS:RT3B4S15**
	230 V AC		**LZS:RT3B4T30**
	24 V DC	2 CO	**LZS:RT4B4L24**
	24 V AC		**LZS:RT4B4R24**
	115 V AC		**LZS:RT4B4S15**
	230 V AC		**LZS:RT4B4T30**
Complete device with plug-in base (push-in spring-type terminals, logical isolation) for snap-on mounting on 35 mm DIN rail, consisting of: plug-in relay, plug-in base with spring-type terminals and logical isolation, LED module (24 V DC LED module with free-wheeling diode, AC without free-wheeling diode), hold/eject clip and inscription plate	24 V DC	1 CO	**LZS:RT3D4L24**
	24 V AC		**LZS:RT3D4R24**
	115 V AC		**LZS:RT3D4S15**
	230 V AC		**LZS:RT3D4T30**
	24 V DC	2 CO	**LZS:RT4D4L24**
	24 V AC		**LZS:RT4D4R24**
	115 V AC		**LZS:RT4D4S15**
	230 V AC		**LZS:RT4D4T30**

Coupling relays with plug-in relays – individual modules for self-assembly (LZX)

RT range

Plug-in relays

Rated control supply voltage U_s	Contacts	LED	Free-wheeling diode	Logical isolation	Hard-gold plating	Article No.
12 V DC	2 CO	–	–	–	–	**LZX:RT424012**
24 V DC	1 CO	–	–	–	–	**LZX:RT314024**
24 V DC	2 CO	–	–	–	–	**LZX:RT424024**
24 V AC	1 CO	–	–	–	–	**LZX:RT424524**
24 V AC	2 CO	–	–	–	–	**LZX:RT424524**
24 V AC	1 CO	–	–	–	–	**LZX:RT314524**
115 V AC	1 CO	–	–	–	–	**LZX:RT314615**
115 V AC	2 CO	–	–	–	–	**LZX:RT424615**
230 V AC	1 CO	–	–	–	–	**LZX:RT314730**
230 V AC	2 CO	–	–	–	–	**LZX:RT424730**
24 V DC	1 CO	–	–	–	Yes	**LZX:RT315024**
230 V AC	1 CO	–	–	–	Yes	**LZX:RT315730**

RT range		
Accessories, suitable for 1 and 2 CO		
Plug-in base with screw terminals for DIN rail mounting	No logical isolation (standard)	**LZS:RT78725**
	Logical isolation	**LZS:RT78726**
Plug-in base with push-in spring-type terminals for DIN rail mounting	Logical isolation	**LZS:RT7872P**
Hold/eject clip	–	**LZS:RT17016**
Inscription plate		**LZS:RT17040**
Wiring bracket for push-in spring-type terminal base	2-pole	**LZS:RT170P1**
Wiring comb for screw terminal base	8-pole	**LZS:RT170R8**

PT range						
Plug-in relays						
Rated control supply voltage U_s	**Contacts**	**LED**	**Free-wheeling diode**	**Hard-gold plating**	**Test bracket**	**Article No.**
24 V DC	2 CO	–	–	–	Yes	**LZX:PT270024**
24 V DC	3 CO	–	–	–	Yes	**LZX:PT370024**
24 V DC	4 CO	–	–	–	Yes	**LZX:PT570024**
24 V DC	4 CO	–	–	–	–	**LZX:PT520024**
24 V DC	4 CO	–	–	Yes	Yes	**LZX:PT580024**
24 V AC	2 CO	–	–	–	Yes	**LZX:PT270524**
24 V AC	3 CO	–	–	–	Yes	**LZX:PT370524**
24 V AC	4 CO	–	–	–	Yes	**LZX:PT570524**
115 V AC	2 CO	–	–	–	Yes	**LZX:PT270615**
115 V AC	3 CO	–	–	–	Yes	**LZX:PT370615**
115 V AC	4 CO	–	–	–	Yes	**LZX:PT570615**
230 V AC	2 CO	–	–	–	Yes	**LZX:PT270730**
230 V AC	3 CO	–	–	–	Yes	**LZX:PT370730**
230 V AC	4 CO	–	–	–	Yes	**LZX:PT570730**
230 V AC	4 CO	–	–	Yes	Yes	**LZX:PT580730**
230 V AC	4 CO	–	–	–	–	**LZX:PT520730**

Accessories			
Plug-in base with screw terminals for DIN rail mounting	2 CO	No logical isolation	**LZS:PT78720**
	3 CO		**LZS:PT78730**
	4 CO		**LZS:PT78740**
	2 CO	Logical isolation	**LZS:PT78722**
	4 CO		**LZS:PT78742**
Plug-in base with push-in spring-type terminals for DIN rail mounting	2 CO	Logical isolation	**LZS:PT7872P**
	4 CO		**LZS:PT7874P**
Hold/eject clip	2/3/4 CO	Logical isolation	**LZS:PT17021**
Hold/eject clip for screw terminal base	2/3/4 CO	No logical isolation	**LZS:PT17024**
Inscription plate			**LZS:PT17040**
Wiring bracket for push-in spring-type terminal base	2-pole		**LZS:PT170P1**
Wiring comb for screw terminal base	6-pole		**LZS:PT170R6**

Accessories for RT and PT range				
LED module red	Control supply voltage	24 V DC	Free-wheeling diode	**LZS:PTML0024**
		24 V AC/DC	–	**LZS:PTML0524**
		110 – 230 V AC	–	**LZS:PTML0730**
LED module green		24 V DC	Free-wheeling diode	**LZS:PTMG0024**
		24 V AC/DC	–	**LZS:PTMG0524**
		110 – 230 V AC	–	**LZS:PTMG0730**
Free-wheeling diode		6 – 230 V DC	Free-wheeling diode	**LZS:PTMT00A0**
RC link		24 – 48 V AC	–	**LZS:PTMU0524**
		110 – 230 V AC	–	**LZS:PTMU0730**

SIRIUS 3RS70 Signal Converters

Single-range converter, active, 3-way separation					
Input	**Output**	**Width**	**Manual/auto-matic operation**	**Supply voltage**	**Article No.**
0 – 10 V	0 – 10 V	6.2 mm	–	24 V AC/DC	3RS7000-☐AE00
	0 – 20 mA				3RS7000-☐CE00
	4 – 20 mA				3RS7000-☐DE00
0 – 20 mA	0 – 10 V				3RS7002-☐AE00
	0 – 20 mA				3RS7002-☐CE00
	4 – 20 mA				3RS7002-☐DE00
4 – 20 mA	0 – 10 V				3RS7003-☐AE00
	0 – 20 mA				3RS7003-☐CE00
	4 – 20 mA				3RS7003-☐DE00

Switchable multi-range converters, active					
0 – 10 V	0 – 10 V	6.2 mm	–	24 V AC/DC	3RS7005-☐FE00
0 – 20 mA	0 – 20 mA				
4 – 20 mA	4 – 20 mA	17.5 mm	–	24 – 240 V AC/DC	3RS7005-☐FW00
0 – 10 V	0 – 50 Hz	6.2 mm	–	24 V AC/DC	3RS7005-☐KE00
0 – 20 mA	0 – 100 Hz				
4 – 20 mA	0 – 1 kHz	17.5 mm	–	24 – 240 V AC/DC	3RS7005-☐KW00
	0 – 10 kHz				
Switchable multi-range converters, active, with manual/automatic switch and setting potentiometer as manual analog signal transmitter					
0 – 10 V	0 – 10 V	17.5 mm	Yes	24 V AC/DC	3RS7025-☐FE00
0 – 20 mA	0 – 20 mA				
4 – 20 mA	4 – 20 mA			24 – 240 V AC/DC	3RS7025-☐FW00

Switchable universal converters, active, with 16 input ranges and 3 output ranges					
0 – 60 mV	0 – 10 V 0 – 20 mA 4 – 20 mA	6.2 mm	–	24 V AC/DC	3RS7006-☐FE00
0 – 100 mV		17.5 mm	–	24 – 240 V AC/DC	3RS7006-☐FW00
0 – 300 mV					
0 – 500 mV					
0 – 1 V					
0 – 2 V					
0 – 5 V					
0 – 10 V					
2 – 10 V					
0 – 20 V					
0 – 5 mA					
0 – 10 mA					
+/–5 mA					
+/–20 mA					
0 – 20 mA					
4 – 20 mA					

Single-range converters, passive, 2-way separation					
4 – 20 mA	4 – 20 mA	6.2 mm	–	Passive converters	3RS7020-☐ET00

Screw terminals 1
Spring-type terminals 2

Accessories for 3RS70 signal converters	
Galvanic isolation plate	3RQ3900-0A
2-pole connecting comb	3RQ3901-0A
4-pole connecting comb	3RQ3901-0B
8-pole connecting comb	3RQ3901-0C
16-pole connecting comb	3RQ3901-0D
Clip-on label, 5 x 5 mm, white	3RQ3902-0A

SIRIUS 3TG10 Power Relays / Miniature Contactors

3TG10 power relays/miniature contactors							
AC-1 operating current I_e with 400 V	AC-1 power of three-phase loads with 50 Hz 400 V	AC-2 and AC-3 operating current with 400 V	AC-2 and AC-3 three-phase loads with 50 Hz 400 V	Contacts	Connection system	Rated control supply voltage U_s	Article No.
(A)	(kW)	(A)	(kW)				
20	13	8.4	4	3 NO + 1 NC	**Screw terminals**	24 V AC	**3TG1001-0AC2**
						110 V AC	**3TG1001-0AG2**
						230 V AC	**3TG1001-0AL2**
						24 V DC	**3TG1001-0BB4**
20	13	8.4	4	4 NO	**Screw terminals**	24 V AC	**3TG1010-0AC2**
						110 V AC	**3TG1010-0AG2**
						230 V AC	**3TG1010-0AL2**
						24 V DC	**3TG1010-0BB4**
16	10	8.4	4	3 NO + 1 NC	**Flat connectors**	24 V AC	**3TG1001-1AC2**
						110 V AC	**3TG1001-1AG2**
						230 V AC	**3TG1001-1AL2**
						24 V DC	**3TG1001-1BB4**
16	10	8.4	4	4 NO	**Flat connectors**	24 V AC	**3TG1010-1AC2**
						110 V AC	**3TG1010-1AG2**
						230 V AC	**3TG1010-1AL2**
						24 V DC	**3TG1010-1BB4**

Scan the QR code for further information

Published by
Siemens AG

Smart Infrastructure
Electrical Products
Werner-von-Siemens-Str. 48–50
92224 Amberg
Germany

For the U.S. published by
Siemens Industry Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

For more information,
please contact our
Customer Support Center:
Phone: +49 180 524 70 00
Fax: +49 180 524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Artikel-Nr. SIEP-B10003-02-7600
WS PDF