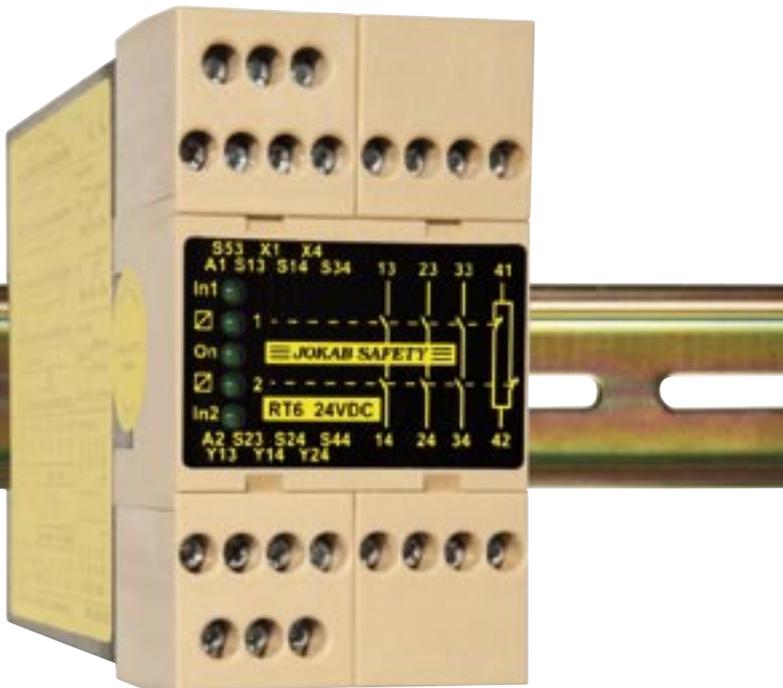


Safety relay RT6



Would you like a single safety relay for all your safety applications?

Then choose the RT6 universal relay to supervise both your safety devices and the internal safety of your machinery. In addition you can select the safety level required for each installation. All this is possible because the RT6 has the most versatile input option arrangement available on the market. Many other relays can therefore be replaced by the RT6.

The relay also comes with other options such as manual or automatic reset. Manual supervised reset can be used for gates and other safety devices that can be bypassed. Automatic reset can be used for small hatches, if deemed acceptable from risk assessment.

The RT6 also has information outputs that follow the inputs and outputs of the relay. These outputs will for example indicate if a gate is open or closed and if the safety relay needs to be reset.

The RT6 is designed with a minimum amount of components thus keeping both production costs and component acquisitions to a minimum.

Choose the RT6 to simplify your safety circuits and reduce your costs.

Approvals:



Safety relay for:

- Emergency stops
- Light curtains
- Three position devices
- Interlocked gates/hatches
- Magnetic switches
- Light beams
- Safety mats
- Contact strips
- Foot operated switches

Features:

- Five input options
- Single or dual channel input
- Manual supervised or automatic reset
- Test input for supervision of external contactors
- Width 45 mm
- LED indication of supply, inputs, outputs, short-circuit and low voltage level.
- 3 NO / 1 NC relay outputs
- Two voltage free transistor information outputs
- Supply 24 VDC, 24, 48, 115 or 230 VAC
- Quick release connector blocks

Technical information - RT6

Inputs

The RT6 can be configured to operate in either of the following input options:

1. Single channel, 1 NO contact from +24 V DC, safety cat. 1.
2. Dual channel, 2 NO contacts from +24 V DC, safety cat. 3.
3. Dual channel 1 NO, 1 NC contact from +24 V DC, safety cat. 4.
4. Dual channel, 1 NO contact from 0V and 1 NO contact from +24 V DC, safety cat. 4.
5. Safety mats/contact strips 1 'contact' from 0V and 1 'contact' from +24 V DC, safety cat. 1.

When the input/inputs are activated and the test/supervised reset is complete, relays 1 and 2 are energized. These are de-energized when the input/inputs are de-activated in accordance with the input option chosen or in case of a power failure. Relays 1 and 2 must both be de-energized before the RT6 can be reset.

Transistor output status information

The RT6 has two voltage free transistor outputs that can be connected to a PLC, computer or other monitoring device. These outputs give the input and output status of the relay.

Reset and testing

The RT6 has two reset options; manual and automatic. The manual supervised reset is used when the RT6 is monitoring safety devices that can be bypassed, i.e. to ensure that the outputs of the safety relay do not close just because a gate is closed. The automatic reset should only be used if deemed an acceptable risk.

In addition, the RT6 can also test (supervise), if for example, contactors and valves etc are de-energized/de-activated before a restart is allowed.

Indication of low voltage

The 'On' LED will flash if the relay supply voltage falls below an acceptable level. This indication will also be given if a monitored safety mat/contact strip is actuated. See connection option 5.

Safety level

The RT6 has internal dual and supervised safety functions. Power failure, internal faulty component or external interference will not present a risk to options with the highest safety level. A manual reset requires that the reset input is closed and opened before the safety relay outputs are activated. A short-circuit or a faulty reset button is consequently supervised.

When the RT6 is configured for dual channel input, both the inputs are supervised for correct sequence operation before the unit can be reset.

The input options 3 and 4 have the highest safety levels as all short-circuits and power failures are supervised. This in combination with internal current limitation makes the relay ideal for supervision of safety mats and contact strips.

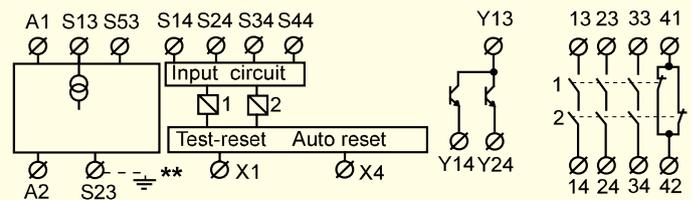
Regulations and standards

The RT6 is designed and approved in accordance with appropriate standards.

Examples of such are: EN 292-1/2, EN 60204-1, EN 954-1.

Connection examples

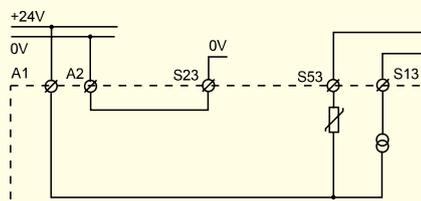
For examples of how our safety relays can solve various safety problems, see the section "Connection examples".



**Only for AC supply

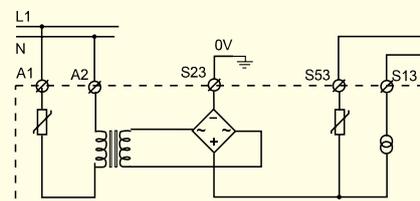
Connection of supply - RT6

DC supply



The RT6 DC option should be supplied with +24 V on A1 and 0 V on A2.

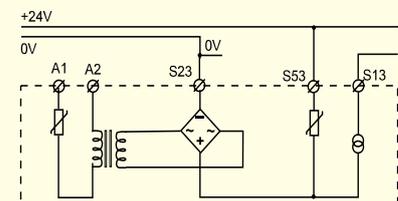
AC supply



The RT6 AC option should be supplied with the appropriate supply voltage via connections A1 and A2.

The S23/ must be connected to protective earth.

DC-supply of AC-units



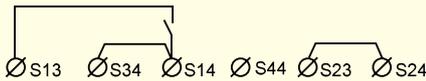
All AC-units can also be supplied by +24 VDC to S53 (0VDC to S23).

NOTE

With both DC and AC modules, if cable shielding is used this must be connected to an earth rail or an equivalent earth point.

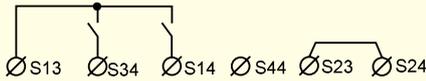
Connection of safety devices - RT6

1. SINGLE CHANNEL, 1 NO from +24V



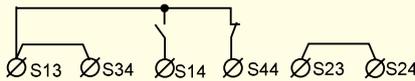
The input (contact to S14) must be closed before the outputs can be activated. When the input contact is opened the relay safety output contacts open.

2. DUAL CHANNEL, 2 NO from +24V



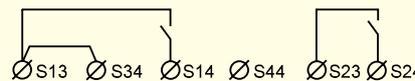
Both input contacts (S14 and S34) must be closed before the relay outputs can be activated. The safety relay contacts will open if one or both of the input contacts are opened. Both the input contacts must be opened and reclosed before the relay can be reset. A short-circuit between inputs S14 and S34 can only be supervised if the device connected to the inputs has short-circuit supervised outputs, e.g. JOKAB Focus light curtains.

3. DUAL CHANNEL, 1 NO, 1 NC from +24V



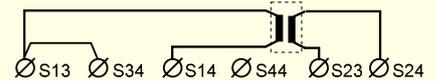
One input contact must be closed (S14) and one opened (S44) before the relay outputs can be activated. The safety relay contacts will open if one or both of the inputs change state or in case of a short-circuit between S14 and S44. Both inputs must return to their initial positions before the relay outputs can be reactivated.

4. DUAL CHANNEL, 1 NO from +24V, 1 NO to 0V



Relay functions as option 2, but a short-circuit, in this case between inputs S14 and S24, is supervised (safety outputs are opened).

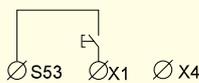
5. Safety mat/Contact strip



Both 'contact' inputs from a inactivated safety mat/contact strip must be made in order to allow the RT6 relay outputs to be activated. When the safety mat/contact strip is activated or a short-circuit is detected across S14-S23, the relay will de-energize (safety outputs open) and the 'ON' LED will flash. As output S13 has an internal current limit of 70 mA, the RT6 will not be overloaded when the mat/contact strip is activated or a short circuit is detected.

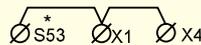
Reset connections - RT6

Manual supervised reset



The manual supervised reset contact connected to input X1 must be closed and opened in order to activate the relay outputs.

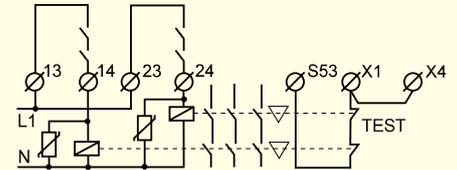
Automatic reset



*connected to S13 for safety mat/contact strip

Automatic reset is selected when S53, X1 and X4 are linked. The relay outputs are then activated at the same time as the inputs.

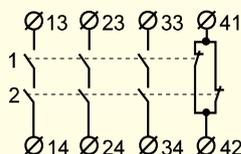
Testing external contactor status



Contactors, relays and valves can be supervised by connecting 'test' contacts between S53 and X1. Both manual supervised and automatic reset can be used.

Output connections - RT6

Relay outputs

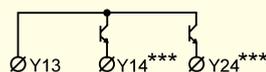


The RT6 has three (3 NO) safety outputs and 1 NC information output.

In order to protect the output contacts it is recommended that loads (inductive) are suppressed by fitting correctly chosen VDR's, diodes etc.

Diodes are the best arc suppressors, but will increase the switch off time of the load.

Transistor outputs



The RT6 has two(2) voltage free transistor outputs for information.

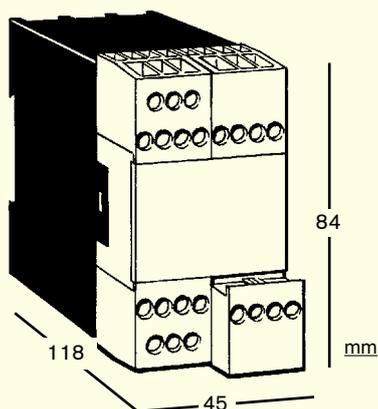
The transistor outputs are supplied with voltage to Y13, either from S53 (+24V) or an external 5-30 VDC. Y14 and Y24 follow the relay inputs and outputs as follows:

- Y14 becomes conductive when the relay input conditions are fulfilled.
- Y24 becomes conductive when both the output relays are activated.

***NOTE

These outputs are only for information purposes and must not be connected to the safety circuits of the machinery.

Technical data - RT6



Manufacturer JOKAB SAFETY AB, Sweden
Ordering data RT6 and supply voltage
Colour black and beige
Weight 335 g (24 VDC), 485 g (24-230 VAC)

Supply
 Voltage (A1-A2) 24 VDC +15/-20%,
 24/48/115/230 VAC,
 +15/-10%, 50-60 Hz

Power consumption
 DC supply, nominal voltage <2.4 W
 AC supply, nominal voltage 5.3 VA

Connections S13 Short-circuit protected voltage output,
 70 mA +/- 10% current limitation.
 Is used for the inputs S14, S34 and S44.

Connections S53 Short-circuit protected voltage output,
 internal automatic fuse 270 mA.
 Is used for the reset and
 autoreset inputs X1 and X4

Connections S23 0V connection for input S24

Safety inputs
 S14 (+) input 20 mA
 S24 (0V) input 20 mA
 S34 (+) input 20 mA
 S44 (+) input 30 mA

Reset input X1
 Supply for reset input +24 VDC
 Reset current 300 mA current pulse at contact closure,
 then 30 mA
 Minimum contact closure time for reset 100 ms

Maximum external connection cable resistance at nominal voltage for
 S14, S24, S34 300 Ohm
 S44, X1 150 Ohm

Response time
 At Power on DC/AC <90ms/<220ms
 When activating (input-output) <20 ms
 When deactivating (input-output) <20 ms
 At Power Loss <150 ms

Relay outputs
 NO 3
 NC 1
 Maximum switching capacity res. load AC 6A/250 VAC/
 1500 VA
 Maximum switching capacity res. load DC 6A/24 VDC/
 150 W
 Minimum load 10mA/10 V
 (if load on contact
 has not exceeded 100 mA)

Contact material AgNi10+0,2µAu
Mechanical life >10⁷ operations

Transistor outputs Short-circuit proof
 External supply to Y13 +5 to +30 VDC
 Y14 Indicates that the input conditions have been
 fulfilled
 Y24 Indicates that the output relays are activated
 Maximum load of Y14, Y24 15 mA /output
 Maximum voltage drop at maximum load 2.4 V

LED indication
 on Supply voltage OK , the LED is on
 Flashing light in case of under-voltage or overload
 In1 In2 Indicates that the input conditions are fulfilled.
 1 2 Indicates that the output relays are activated.

Mounting
 Rail 35 mm DIN rail
 Operating temperature range -10° C to + 55° C

Connection block (detachable)
 Maximum screw torque 1 Nm
 Maximum connection area
 Solid conductors 1x4mm² /2x1.5mm² /12AWG
 Conductor with socket contact 1x2.5mm² /2x1mm²
 Air and creep distance 4kV/2 IEC 60664-1

Protection class
 Enclosure IP 40 IEC 60529
 Connection block IP 20 IEC 60529