

Overview



7PV15, SIRIUS 3RP25 and SIRIUS 3RP20 timing relays

More information

Homepage, see www.siemens.com/sirius-timing-relays

Industry Mall, see www.siemens.com/product?3RP

Electronic timing relays are used in control, starting, and protective circuits for all switching operations involving time delays.

Their fully developed concept and space-saving, compact design make the SIRIUS 3RP timing relays ideal timer modules for control cabinet, switchgear and control manufacturers in the industry.

With their narrow design, the 7PV15 timing relays are ideal in particular for use in heating, ventilation and air-conditioning systems and in compressors. All 7PV15 timing relays in this enclosure version are suitable for snap-on mounting on TH 35 standard mounting rails according to IEC 60175. The enclosure complies with DIN 43880.

Benefits

- The right design for every application
- Clear-cut basic range with five basic units in the case of the 7PV15 timing relays, and up to seven basic units in the case of the 3RP timing relays
- Considerable logistical advantages thanks to versions with wide voltage and wide time setting range
- No tools required for assembly or disassembly on standard mounting rails
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure
- Optimum price/performance ratio

Application

Timing relays with ON-delay

- Interference pulse suppression (gating of interference pulses)
- Gradual startup of motors so as not to overload the power supply

Timing relays with OFF-delay

- Generation of overtravel functions following removal of voltage
- Gradual, delayed shutdown, e.g. of motors or fans, to allow a plant to be shut down selectively

Clock-pulse relay

- Flashing, asymmetrical

The SIRIUS 3RA28 function modules enable the assembly of starters and contactor assemblies for direct-on-line and wye-delta starting. They include the key control functions required for the particular feeder, e.g. timing and electrical interlocking. The function modules that function as timing relays are mounted quickly and simply on SIRIUS contactors – without any great wiring effort.

The SIRIUS 3RA28 solid-state time-delay auxiliary switches which can be mounted on contactors are designed for contactor coil voltages in the range from 24 to 240 V AC/DC (wide voltage range). Auxiliary switches for control and alarm signals are used specially for switching the smallest signals for electronics applications. They are used, for example, for allowing a pump or fan to run on, or for the delayed activation of a gate drive.

Simply by being plugged in place, the SIRIUS 3RT19 timing relays enable different functionalities required for the assembly of starters to be realized in the feeder. At the same time the timing relays for mounting on contactors reduce the wiring work required within the feeder and save space in the control cabinet.

Device seriesSIRIUS timing relays for standard rail mounting

- SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm, see page 10/28
- SIRIUS 3RP20 timing relays, 45 mm, see page 10/40
- 7PV15 timing relays, 17.5 mm, see page 10/46

SIRIUS timing relays for mounting on contactors

- SIRIUS 3RA28 solid-state time-delay auxiliary switches for mounting on 3RT2 contactors and 3RH2 contactor relays, see page 3/102
- SIRIUS 3RA28 function modules for mounting on 3RT2 contactors and 3RH2 contactor relays, see page 3/107
- SIRIUS 3RT19 timing relays for mounting on 3RT1 contactors, see page 3/103

- Versions with logical separation
- Low variance: One design for distribution boards and for control cabinets
- Compliance with EMC requirements for buildings
- Environmentally friendly laser inscription instead of printing containing solvents
- Versions as snap-on modules for reducing wiring and saving space in the control cabinet
- Versions with screw terminals or alternatively with spring-loaded terminals

Wye-delta timing relays

- Switching over motors from wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

Multifunctional timing relays

- Maximum flexibility, with a device for every application
- Available with relay and semiconductor output
- Versions for railway applications for more exacting requirements (e.g. temperature range, vibration/shock resistance and EMC)

Watchdog function

- Monitoring of cyclic events

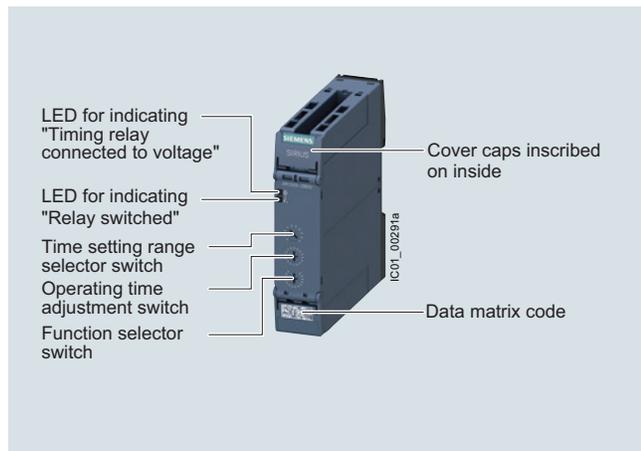
Monitoring and control devices

Relays

Timing relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Overview



SIRIUS 3RP25 timing relay

More information

Homepage, see www.siemens.com/sirius-timing-relays

Industry Mall, see www.siemens.com/product?3RP25

Conversion tool for article numbers, see www.siemens.com/sirius/conversion-tool

Simulator, see <https://support.industry.siemens.com/cs/ww/en/view/103556391>

Electronic timing relays for general use in control systems and mechanical engineering with:

- 1 or 2 CO, 1 NO (semiconductor) or 3 NO
- Monofunction or multifunction
- Combination voltage or wide voltage range
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

Article No. scheme

Product versions		Article number	
Timing relays		3RP25	<input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0
Product function/ time setting ranges	Multifunction ON-delay	0 5	7 time ranges 0.05 s ... 100 h
		1 1	1 time range 0.5 ... 10 s
		1 2	1 time range 1 ... 3 s
		1 3	1 time range 5 ... 100 s
		2 5	7 time ranges 0.05 s ... 100 h
		2 7	4 time ranges 0.05 s ... 240 s
	OFF-delay with control signal	3 5	7 time ranges 0.05 s ... 100 h
	OFF-delay without control signal, non-volatile, passing make contact	4 0	7 time ranges 0.05 s ... 600 s
	Clock-pulse relay, flashing, asymmetrical	5 5	7 time ranges 0.05 s ... 100 h
	Wye-delta function with coasting function (idling)	6 0	Wye-delta 1 ... 20 s, coasting time (idling) 600 s
	Wye-delta function	7 4	1 time range 1 ... 20 s
		7 6	1 time range 3 ... 60 s
Connection type	Screw terminals	1	
	Spring-loaded terminals (push-in)	2	
Contacts	1 CO	A	
	2 CO	B	
	Semiconductors (transistor NPN)	C	
	Semiconductors (thyristor), two-wire	E	
	1 NO + 1 NO (SD)	N	
	2 CO positively driven	R	
	3 NO	S	
Control supply voltage	24 V AC/DC	B 3	
	200 ... 240 V/380 ... 440 V AC	M 2	
	400 ... 440 V AC	T 2	
	12 ... 240 V AC/DC or 24 ... 240 V AC/DC (3RP2505-.RW30)	W 3	
Example		3RP25 0 5 - 1 A B 3 0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

3RP2505 multifunctional timing relays**Two setting options for implementing the multifunctions (A-M):**

- ① Determination of 13 functions by the setting A to M, with 1 CO, 1 NO, 2 CO that switch in parallel.
- ② Extended function variance by selecting the time range and determining, whether 2 CO switch in parallel or whether 1 CO switches with delay + 1 CO switches immediately (1 CO + 1 CO)

Setting the functions on the device

The functions of the 3RP2505 multifunctional timing relays can be set by means of the function selector switch. Whether both CO contacts are switched in parallel or one CO contact with a delay and one instantaneously and the choice of time setting range are set by means of the time setting range selector switch. The exact operating time can be adjusted with the operating time switch.

Overview of functions

Identification letter	13 functions	27 functions
	1 CO contact (1 CO), 1 NO contact (1 NO) semiconductor, 2 CO contacts switched in parallel (2 CO) or 2 CO contacts positively driven and switched in parallel with delay (2 CO)	13 functions (A - M) 2 CO contacts switched in parallel (2 CO) + 13 functions (A - M) 1 delayed CO contact + 1 instantaneous CO contact (1 CO + 1 CO) and wye-delta function
A	ON-delay	ON-delay and instantaneous contact
B	OFF-delay with control signal	OFF-delay with control signal and instantaneous contact
C	ON-delay/OFF-delay with control signal	ON-delay/OFF-delay with control signal and instantaneous contact
D	Flashing, symmetrical, starting with interval	Flashing, symmetrical, starting with interval and instantaneous contact
E	Passing make contact, interval relay	Passing make contact, interval relay and instantaneous contact
F	Retriggerable interval relay with deactivated control signal (passing break contact with control signal)	Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact
G	Passing make contact, with control signal, not retriggerable (pulse-forming with control signal)	Passing make contact, with control signal, not retriggerable, (pulse-forming with control signal) and instantaneous contact
H	Additive ON-delay, instantaneous OFF with control signal	Additive ON-delay, instantaneous OFF with control signal and instantaneous contact
I	Additive ON-delay with control signal	Additive ON-delay with control signal and instantaneous contact
J	Flashing, symmetrical, starting with pulse	Flashing, symmetrical, starting with pulse and instantaneous contact
K	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
L	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
M	Retriggerable interval relay with activated control signal (watchdog)	Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)
--	--	Wye-delta function

Simulator

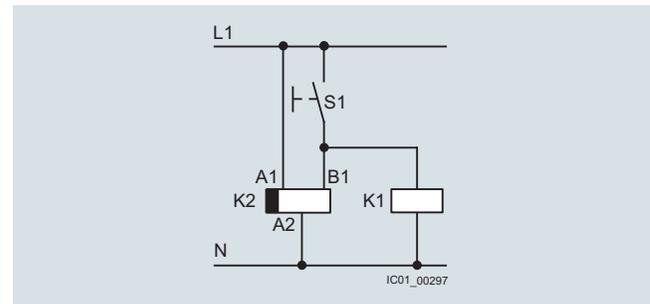
The 3RP25 simulator visualizes different time functions in the 3RP25 timing relay. Any fault scenario can be simulated. The simulator is available free of charge, see <https://support.industry.siemens.com/cs/ww/en/view/103556391>.

With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay.

The same potential must be applied to terminals A. and B.

Note:

The activation of loads parallel to the start input is permissible when using AC/DC control voltage.



Diagram

Monitoring and control devices

Relays

Timing relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Benefits

- Easy stock keeping and logistics thanks to low variance of devices
- Reduced space requirement in the control cabinet thanks to variants in width 17.5 mm and 22 mm
- Consistent for all functions thanks to wide voltage range from 12 to 240 V AC/DC
- Up to 27 functions according to IEC 61812 in the multifunctional timing relay with wide voltage range
- Multifunctional timing relay with semiconductor output for high switching frequencies, bounce-free and wear-free switching

Standards and approvals

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2, IEC 61000-6-3 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

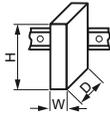
Enclosure version

All timing relays are suitable for snap-on mounting on TH 35 standard mounting rails according to IEC 60715 or for screw fixing.

Technical specifications

More information	
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16354/td	Internal circuit diagrams, see CAx-Download-Manager https://support.industry.siemens.com/my/ww/en/CAxOnline#CAxOnline
Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/view/103532830	FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16354/faq

Type	3RP2505-.A, 3RP2505-.C, 3RP251., 3RP2525-.A, 3RP2527, 3RP253., 3RP255.	3RP2505-.B, 3RP2505-.R, 3RP2525-.B, 3RP254., 3RP256., 3RP257.
Width x height x depth	mm 17.5 x 100 x 90	22.5 x 100 x 90



Type	3RP25...-AB30, 3RP25...-AW30, 3RP25...-BB30, 3RP25...-BW30, 3RP25...-NW30, 3RP25...-SW30	3RP25...-BT20, 3RP25...-NM20	3RP25...-CW30	3RP25...-EW30	3RP25...-RW30
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General technical specifications:						
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3, rated value	V AC	300	500	300	--	300
Ambient temperature	°C	-25 ... +60				-40 ... +70
• During operation	°C	-40 ... +85				-40 ... +85
• During storage	°C					
Operating range factor of the control supply voltage, rated value						
• At AC						
- At 50 Hz		0.85 ... 1.1	0.85 ... 1.1	0.8 ... 1.1	0.85 ... 1.1	0.7 ... 1.1
- At 60 Hz		0.85 ... 1.1	0.85 ... 1.1	0.8 ... 1.1	0.85 ... 1.1	0.7 ... 1.1
• At DC		0.85 ... 1.1	--	0.8 ... 1.1	0.85 ... 1.1	0.7 ... 1.1
Switching capacity current with inductive load	A	0.01 ... 3	0.01 ... 3	0.01 ... 1	0.01 ... 0.6	0.01 ... 3
Operational current of the auxiliary contacts						
• At AC-15						
- At 24 V	A	3	3	1	--	3
- At 250 V	A	3	3	1	--	3
- At 400 V	A	--	3	--	--	--
• At DC-12						
- At 24 V	A	--	--	1	--	--
- At 125 V	A	--	--	1	--	--
- At 250 V	A	--	--	1	--	--
• At DC-13						
- At 24 V	A	1	1	--	--	1
- At 125 V	A	0.2	0.2	--	--	0.2
- At 250 V	A	0.1	0.1	--	--	0.1
Thermal current	A	5	5	1	0.6	5
Mechanical endurance (operating cycles)		10 000 000				
Electrical endurance (operating cycles) for AC-15 at 230 V		100 000		300 000	100 000	

Type	3RP25...-1...0	3RP25...-2...0
Type of electrical connection for auxiliary and control circuits	Screw terminals	Spring-loaded terminals (push-in)
Design of thread of connection screw	M3	--
Tightening torque	Nm 0.6 ... 0.8	--
Type of connectable conductor cross-sections		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 4 mm ²)
• Finely stranded with end sleeve	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 1.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
• For AWG cables		
- Solid	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Stranded	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)

Monitoring and control devices

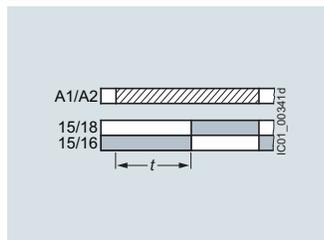
Relays

Timing relays

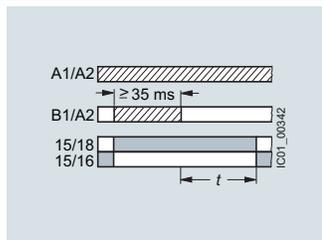
SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

3RP25 function diagrams

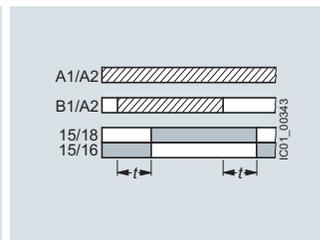
Multifunction 3RP2505-.A, 1 CO, 13 functions and 3RP2505-.C, 1 NO (semiconductor), 13 functions



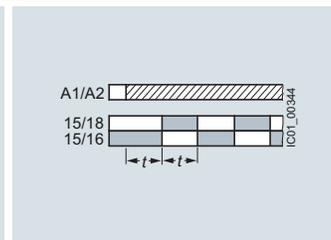
A
ON-delay



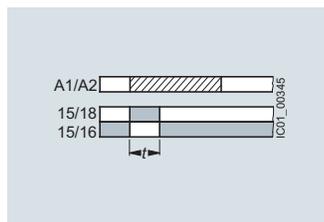
B
OFF-delay with control signal



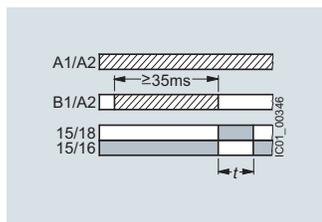
C
ON-delay/OFF-delay with control signal



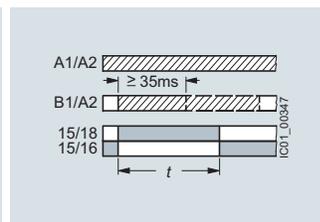
D
Flashing, symmetrical, starting with interval



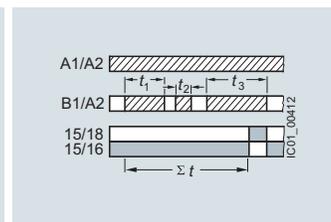
E
Passing make contact, interval relay



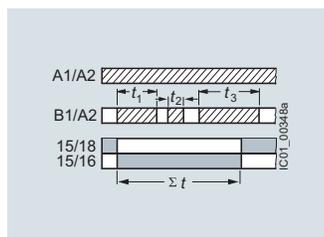
F
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



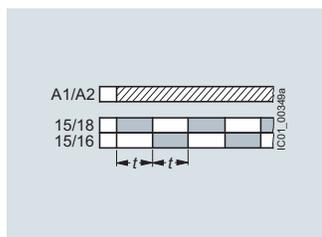
G
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



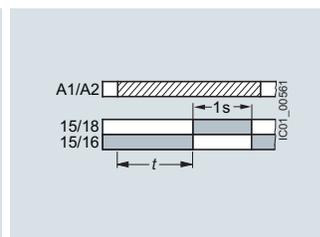
H
Additive ON-delay, instantaneous OFF with control signal



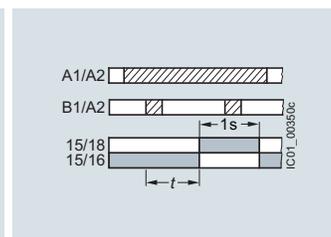
I
Additive ON-delay with control signal



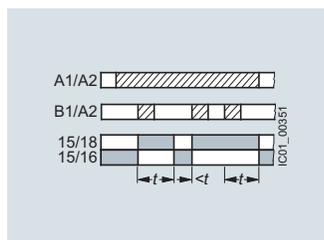
J
Flashing, symmetrical, starting with pulse



K
Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)



L
Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)

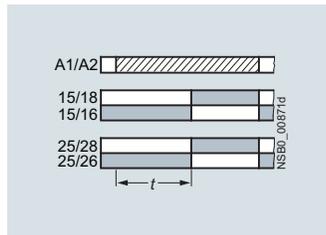


M
Retriggerable interval relay with activated control signal (watchdog)

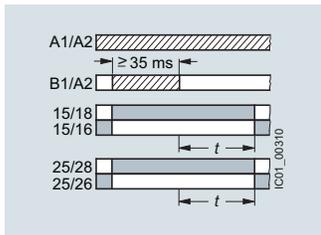
Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

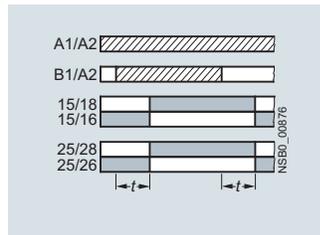
Multifunction 3RP2505-.R, 13 functions, 2 CO positively driven and switched in parallel with delay



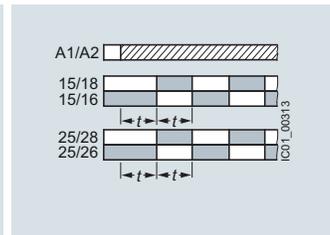
A
ON-delay



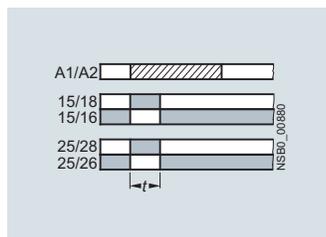
B
OFF-delay with control signal



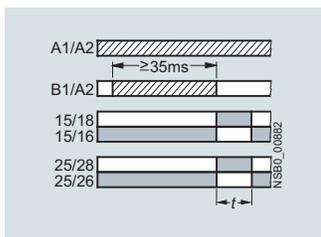
C
ON-delay/OFF-delay with control signal



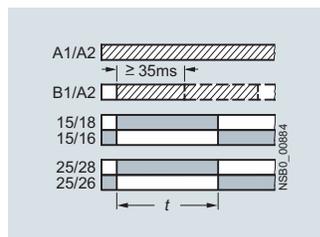
D
Flashing, symmetrical, starting with interval



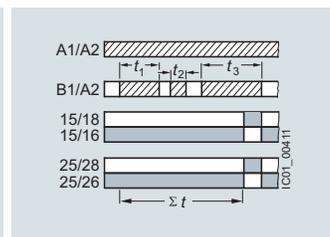
E
Passing make contact, interval relay



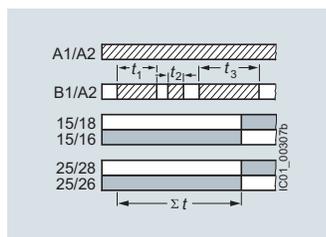
F
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



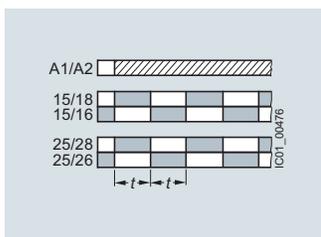
G
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



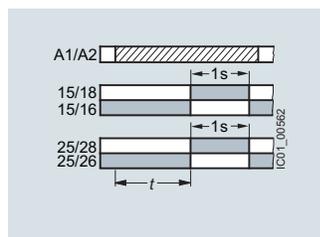
H
Additive ON-delay, instantaneous OFF with control signal



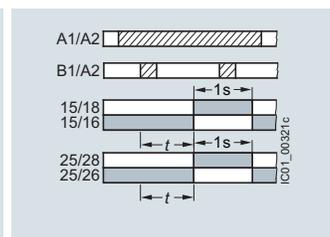
I
Additive ON-delay with control signal



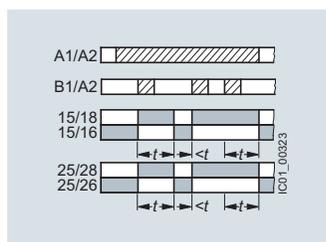
J
Flashing, symmetrical, starting with pulse



K
Pulse-delayed (fixed pulse at 1 s and settable pulse delay)



L
Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay)



M
Retriggerable interval relay with activated control signal (watchdog)

Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

Monitoring and control devices

Relays

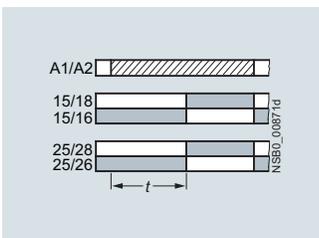
Timing relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

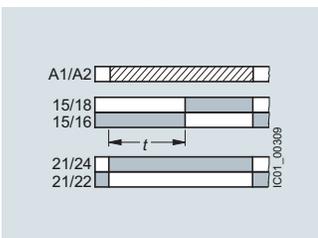
Multifunction 3RP2505-.B, 27 functions, 2 CO

A

2 CO switched in parallel



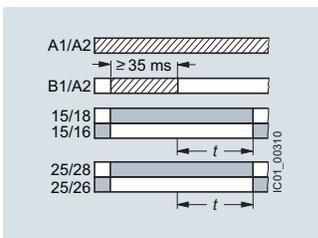
ON-delay

1 delayed CO contact +
1 instantaneous CO contact

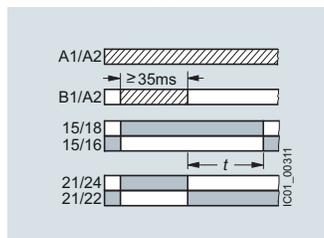
ON-delay and instantaneous contact

B

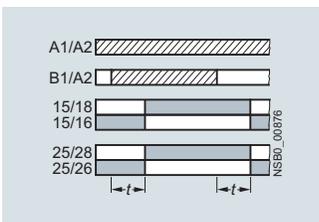
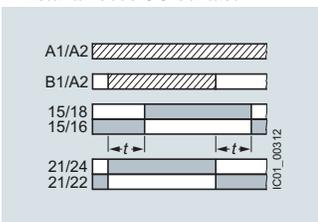
2 CO switched in parallel



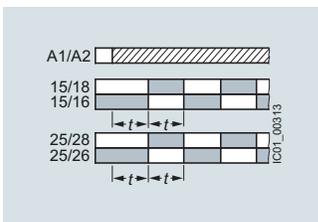
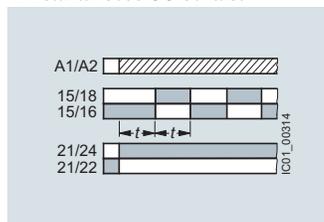
OFF-delay with control signal

1 delayed CO contact +
1 instantaneous CO contactOFF-delay with control signal and
instantaneous contact**C**

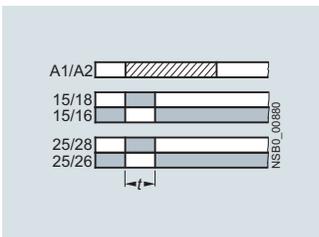
2 CO switched in parallel

ON-delay/OFF-delay with
control signal1 delayed CO contact +
1 instantaneous CO contactON-delay/OFF-delay with control
signal and instantaneous contact**D**

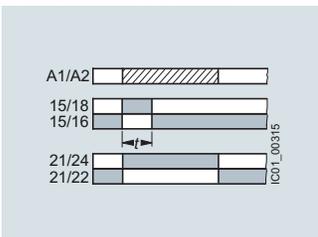
2 CO switched in parallel

Flashing, symmetrical, starting
with interval1 delayed CO contact +
1 instantaneous CO contactFlashing, symmetrical, starting
with interval and instantaneous contact**E**

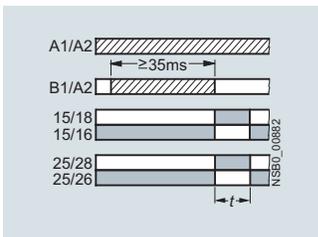
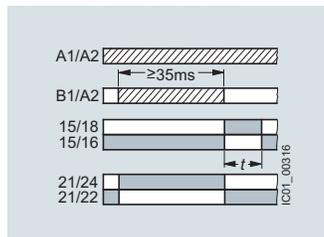
2 CO switched in parallel



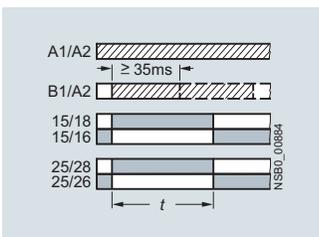
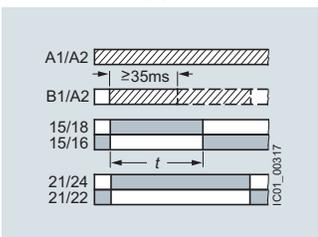
Passing make contact, interval relay

1 delayed CO contact +
1 instantaneous CO contactPassing make contact, interval relay
and instantaneous contact**F**

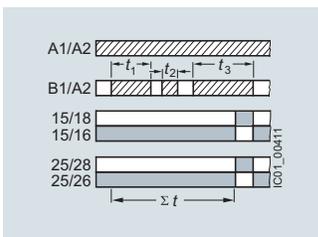
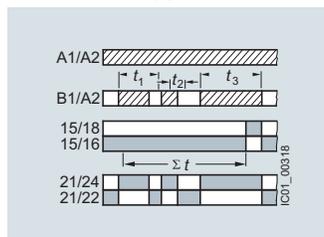
2 CO switched in parallel

Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)1 delayed CO contact +
1 instantaneous CO contactRetriggerable interval relay with
deactivated control signal (passing
break contact with control signal)
and instantaneous contact**G**

2 CO switched in parallel

Passing make contact with control
signal, not retriggerable (pulse-
forming with control signal)1 delayed CO contact +
1 instantaneous CO contactPassing make contact with control
signal, not retriggerable (pulse-
forming with control signal)
and instantaneous contact**H**

2 CO switched in parallel

Additive ON-delay, instantaneous
OFF with control signal1 delayed CO contact +
1 instantaneous CO contactAdditive ON-delay, instantaneous OFF
with control signal and instantaneous
contact

Legend

A ... H Identification letters

▨ Timing relay energized

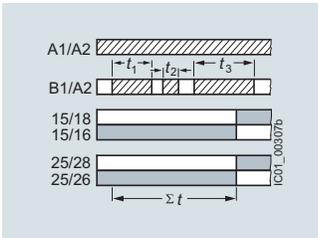
■ Contact closed

□ Contact open

Multifunction 3RP2505-.B, 27 functions, 2 CO (continued)

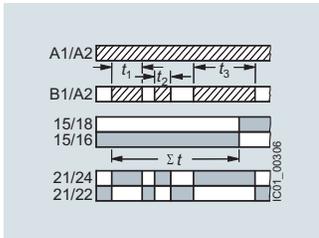
I

2 CO switched in parallel



Additive ON-delay with control signal

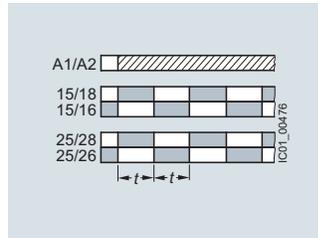
1 delayed CO contact +
1 instantaneous CO contact



Additive ON-delay with control signal and instantaneous contact

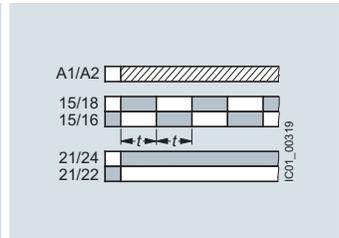
J

2 CO switched in parallel



Flashing, symmetrical, starting with pulse

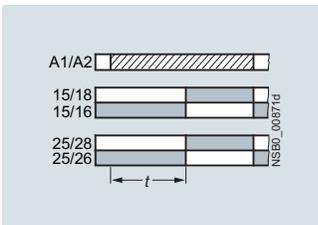
1 delayed CO contact +
1 instantaneous CO contact



Flashing, symmetrical, starting with pulse and instantaneous contact

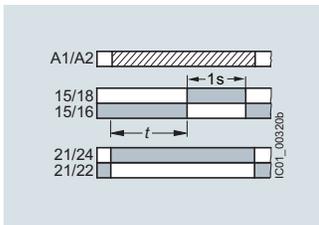
K

2 CO switched in parallel



Pulse-delayed (fixed pulse at 1 s and settable pulse delay)

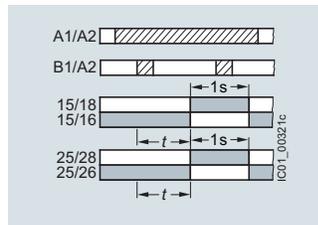
1 delayed CO contact +
1 instantaneous CO contact



Pulse-delayed (fixed pulse at 1 s and settable pulse delay) and instantaneous contact

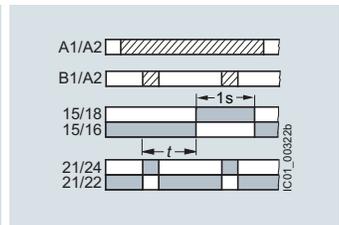
L

2 CO switched in parallel



Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay)

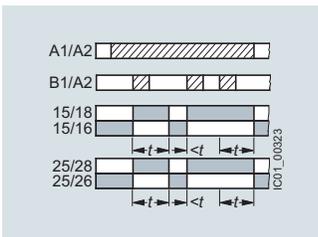
1 delayed CO contact +
1 instantaneous CO contact



Pulse-delayed with control signal (fixed pulse at 1 s and settable pulse delay) and instantaneous contact

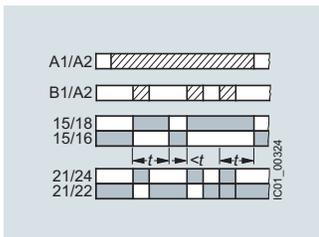
M

2 CO switched in parallel



Retriggerable interval relay with activated control signal (watchdog)

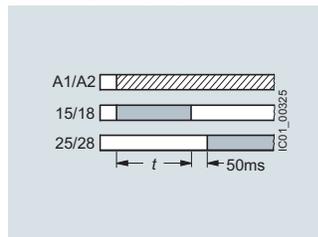
1 delayed CO contact +
1 instantaneous CO contact



Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)

YΔ

2 CO contacts switched in parallel or
1 delayed CO contact +
1 instantaneous CO contact



Wye-delta function

Legend

- I ... M Identification letters
- ▨ Timing relay energized
- Contact closed
- Contact open

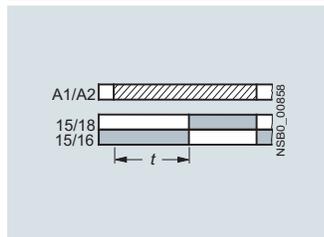
Monitoring and control devices

Relays

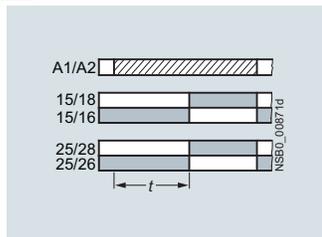
Timing relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

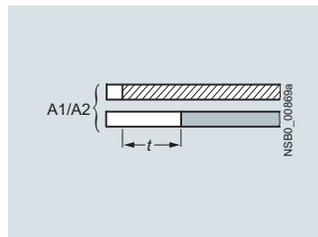
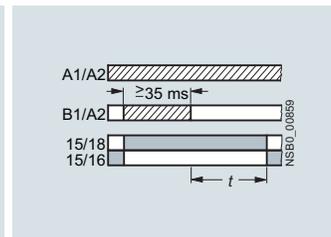
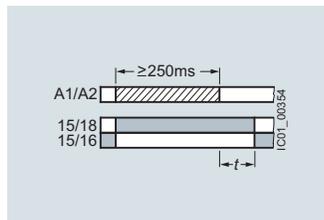
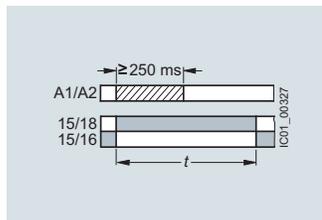
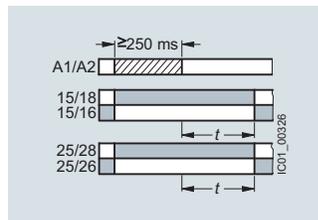
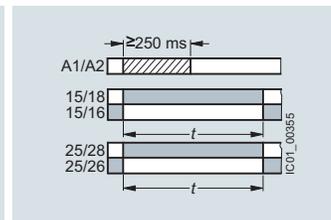
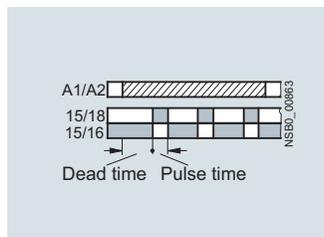
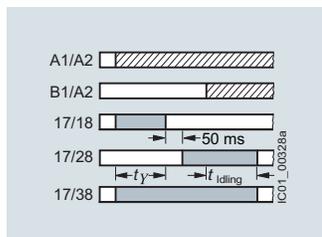
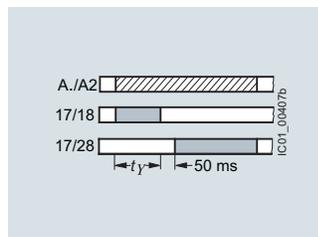
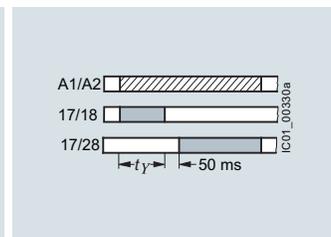
Monofunctions 3RP251. to 3RP257.¹⁾



3RP251-.AW30, 1 CO, ON-delay



3RP2525-..W30, 2 CO, ON-delay

3RP2527-.EW30, 1 NO
(semiconductor), ON-delay3RP2535-.AW30, 1 CO, OFF-delay with
control signal3RP2540-.A.30, 1 CO,
OFF-delay (N)¹⁾3RP2540-.A.30, 1 CO, positive
passing make contact (O)¹⁾3RP2540-.B.30, 2 CO,
OFF-delay (N)¹⁾3RP2540-.B.30, 2 CO, positive passing
make contact (O)¹⁾3RP2555-.AW30, 1 CO, flashing,
asymmetrical, starting with interval
(clock-pulse relay)3RP2560-.SW30, 3 NO, wye-delta
function with overtravel function
(idling)3RP257-.NM20, 2 NO,
wye-delta function3RP257-.NM30, 2 NO,
wye-delta function

Legend

- Timing relay energized
- Contact closed
- Contact open

¹⁾ 3RP2540 has a double function:
Function N = OFF-delay
Function O = Positive passing make contact

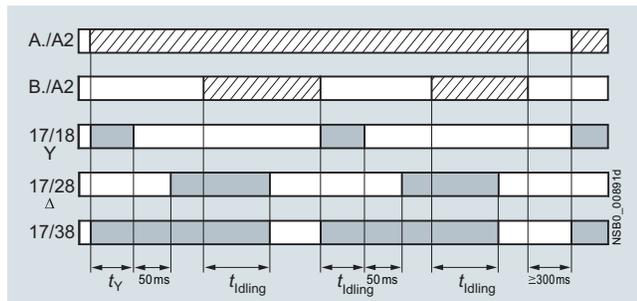
Possibilities of operation of the 3RP2560-.SW30 timing relay

Operation 1: Start contact B./A2 is open when control supply voltage A./A2 is applied

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the $\Upsilon\Delta$ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time t_{idling} (30 ... 600 s) has elapsed, the output relays (17/38 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Note:

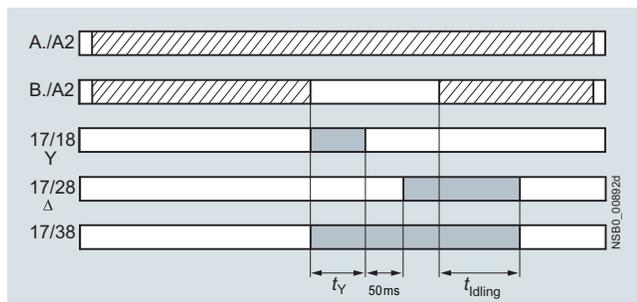
Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/38 close.



Operation 1

Operation 2: Start contact B./A2 is closed when control supply voltage A./A2 is applied

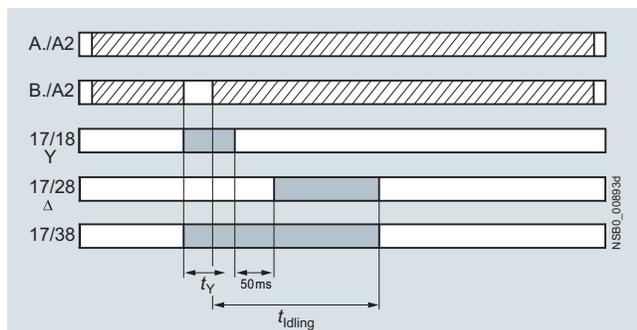
If the control signal B./A2 is already present when the control supply voltage A./A2 is applied, no timing is started. The timing is only started when the control signal B./A2 is switched off.



Operation 2

Operation 3: Start contact B./A2 closes while star time is running

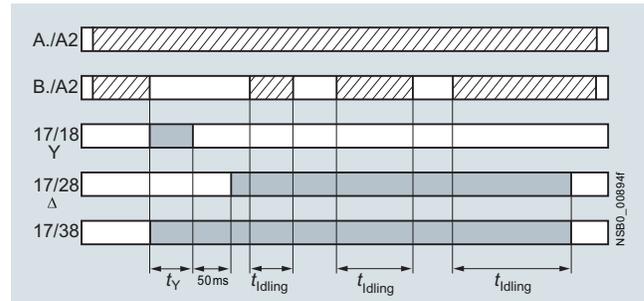
If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.



Operation 3

Operation 4: Start contact B./A2 opens while delta time is running and is applied again

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (coasting time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.



Operation 4

Legend

- Timing relay energized
- Contact closed
- Contact open

t_Y = Star time 1 ... 20 s

t_{idling} = Idling time (coasting time) 30 ... 600 s

Note:

The following applies to all operations: The pressure switch controls the timing via B./A2.

Application example based on standard operation (operation 1):
For example, use of 3RP2560 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode, i.e. in no-load operation for a specific time which can be set from 30 ... 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2.

The control supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the control supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters $\Upsilon\Delta$ operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (coasting time) is started, and the compressor enters no-load operation for the set period of time from 30 ... 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

Monitoring and control devices

Relays

Timing relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Selection and ordering data



3RP2505-2AB30



3RP2505-2BB30



3RP2525-2AW30



3RP2540-2AW30



3RP2555-2AW30



3RP2576-2NW30

Number of NO contacts		Number of CO contacts		Semi-conductor output	Adjustable time	Control supply voltage		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Instantaneous switching	Delayed switching	Instantaneous switching	Delayed switching			At 50/60 Hz AC	At DC						
						V	V	d					
13 functions													
0	0	0	1	No	0.05 s ... 100 h	24	24	▶	3RP2505-□AB30		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2505-□AW30		1	1 unit	41H
0	1	0	0	Yes	0.05 s ... 100 h	12 ... 240	12 ... 240	2	3RP2505-□CW30		1	1 unit	41H
13 functions, suitable for railway applications													
0	0	0	2 ¹⁾	No	0.05 s ... 100 h	24 ... 240	24 ... 240	▶	3RP2505-□RW30		1	1 unit	41H
27 functions													
0	0	0	2 ²⁾	No	0.05 s ... 100 h	24	24	▶	3RP2505-□BB30		1	1 unit	41H
						400 ... 440	--	▶	3RP2505-□BT20		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2505-□BW30		1	1 unit	41H
ON-delay													
0	0	0	1	No	0.5 ... 10 s	12 ... 240	12 ... 240	▶	3RP2511-□AW30		1	1 unit	41H
					1 ... 30 s	12 ... 240	12 ... 240	▶	3RP2512-□AW30		1	1 unit	41H
					5 ... 100 s	12 ... 240	12 ... 240	▶	3RP2513-□AW30		1	1 unit	41H
					0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2525-□AW30		1	1 unit	41H
0	0	0	2	No	0.05 s ... 100 h	24	24	▶	3RP2525-□BB30		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2525-□BW30		1	1 unit	41H
0	1	0	0	Yes	0.05 s ... 240 s	12 ... 240	12 ... 240	2	3RP2527-□EW30		1	1 unit	41H
OFF-delay with control signal													
0	0	0	1	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2535-□AW30		1	1 unit	41H
OFF-delay without control signal, non-volatile, passing make contact													
0	0	0	1	No	0.05 s ... 600 s	24	24	2	3RP2540-□AB30		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2540-□AW30		1	1 unit	41H
0	0	0	2	No	0.05 s ... 600 s	24	24	2	3RP2540-□BB30		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2540-□BW30		1	1 unit	41H
Clock-pulse relay, flashing, asymmetrical													
0	0	0	1	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2555-□AW30		1	1 unit	41H
Wye-delta function with coasting function (idling)													
1	2	0	0	No	1 ... 20 s	12 ... 240	12 ... 240	▶	3RP2560-□SW30		1	1 unit	41H
Wye-delta function													
1	1	0	0	No	1 ... 20 s	380 ... 440 ³⁾	--	2	3RP2574-□NM20		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2574-□NW30		1	1 unit	41H
1	1	0	0	No	3 ... 60 s	380 ... 440 ³⁾	--	2	3RP2576-□NM20		1	1 unit	41H
						12 ... 240	12 ... 240	▶	3RP2576-□NW30		1	1 unit	41H

Type of electrical connection

- Screw terminals
- Spring-loaded terminals (push-in)

¹⁾ Positively-driven contacts.

²⁾ Optionally 1 CO delayed + 1 CO instantaneous.

³⁾ With 3RP2574-.NM20 and 3RP2576-.NM20, connection of 200 to 240 V AC, 50/60 Hz control voltage is also possible.

Notes:

For accessories, see page 10/39.

In the case of 3RP2505, the functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is included in the scope of supply. The same potential must be applied to terminals A. and B.

For functions, see the overview of functions on page 10/29.

Accessories

More information

You can find information on configuring and dimensioning the accessories in the Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/103532830>

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for enclosures						
	Sealing covers					
	• 17.5 mm	2	3ZY1321-1AA00	1	5 units	41L
	• 22.5 mm	2	3ZY1321-2AA00	1	5 units	41L
		2	3ZY1311-0AA00	1	10 units	41L
	Push-in lugs For wall mounting					
		2	3ZY1440-1AA00	1	12 units	41L
	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals					
		2	3ZY1450-1AA00	1	5 units	41L
	Hinged cover Replacement cover, without terminal labeling, titanium gray					
	• 17.5 mm wide	2	3ZY1450-1AB00	1	5 units	41L
	• 22.5 mm wide	2	3ZY1450-1AB00	1	5 units	41L
						
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure						
	Removable terminals		Screw terminals			
	• 2-pole, up to 1 x 4 mm ² or 2 x 2.5 mm ²	2	3ZY1122-1BA00	1	6 units	41L
		2	3ZY1122-2BA00	1	6 units	41L
	• 2-pole, up to 1 x 4 mm ² or 2 x 1.5 mm ² (in shared end sleeve)		Spring-loaded terminals (push-in)			
Tools for opening spring-loaded terminals						
	Screwdrivers		Spring-loaded terminals (push-in)			
	For all SIRIUS devices with spring-loaded terminals	2	3RA2908-1A	1	1 unit	41B
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated					

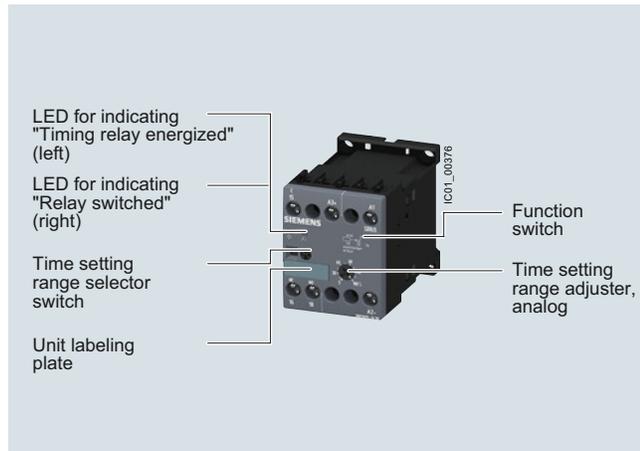
Monitoring and control devices

Relays

Timing relays

SIRIUS 3RP20 timing relays, 45 mm

Overview



SIRIUS 3RP20 timing relay

SIRIUS 3RP20 electronic timing relays for use in control systems and mechanical engineering with:

- 1 or 2 CO contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

Standards

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Specified time relays for industrial use"
- IEC 61000-6-2 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- IEC 60947-1, Appendix N "Protective separation"

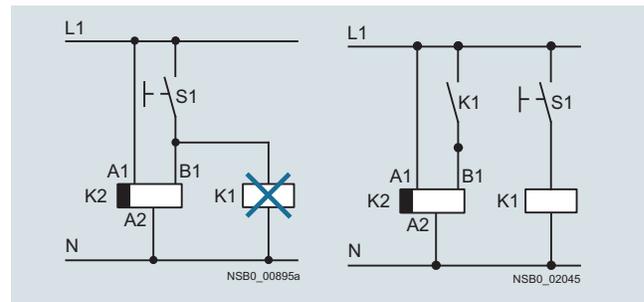
Multifunction

The functions of the 3RP2005 multifunctional timing relays can be set by means of the function selector switch. Insert labels clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

For functions, see 3RP2901 label set, page 10/45.

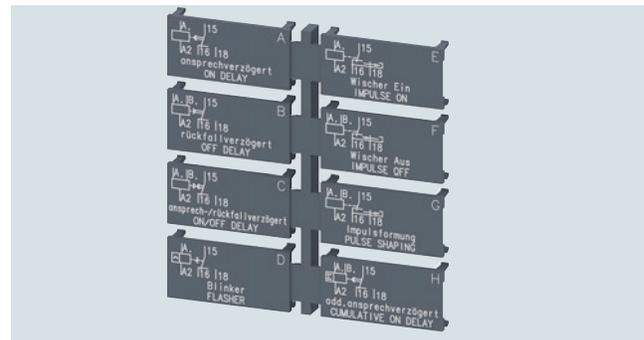
Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage.



Diagrams

Accessories



Label set for marking the multifunctional relay

Article No. scheme

Product versions		Article number							
SIRIUS timing relays, 45 mm enclosure		3RP20	<input type="checkbox"/>	3 0					
Product function/ time setting ranges	Multifunction	0 5							15 time ranges 0.05 s... 100 h
	ON-delay	2 5							15 time ranges 0.05 s... 100 h
Connection type	Screw terminals						1		
	Spring-loaded terminals						2		
Contacts	1 CO							A	
	2 CO							B	
Control supply voltage	24 V AC/DC/100 ... 127 V AC							Q	Combination voltage
	24 V AC/DC/200 ... 240 V AC							P	Combination voltage
	24 ... 240 V AC/DC							W	Wide voltage range
Example		3RP20	0 5	-	1	A	P	3 0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

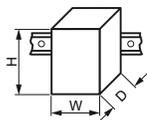
Benefits

- Suitable for 3RT miniature contactors
- Uniform design
- Ideal for small distance between standard mounting rails and/or for low mounting depth, e.g. in control boxes
- Labels are used on the multifunctional timing relay to document the function that has been set

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Technical specifications

More information	
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16356/td	Internal circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/view/11647144
Operating Instructions, see https://support.industry.siemens.com/cs/ww/en/view/11647144	FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/16356/faq
Type	3RP2005, 3RP2025
Dimensions (W x H x D)	mm 45 x 57 x 73
	
Rated insulation voltage Pollution degree 3 Overvoltage category III	V AC 300
Permissible ambient temperature • During operation • During storage	°C °C -25 ... +60 -40 ... +85
Operating range of excitation¹⁾	0.85 ... 1.1 x U _N at AC; 0.8 ... 1.25 x U _N at DC; 0.95 ... 1.05 times the rated frequency
Mechanical endurance	Operating cycles 10 x 10 ⁶
Electrical endurance at I_e	Operating cycles 1 x 10 ⁵
Connection type	 Screw terminals
• Terminal screw • Solid • Finely stranded with end sleeve • Stranded • AWG cables • Tightening torque	mm ² mm ² mm ² AWG AWG Nm M3 (for standard screwdriver, size 2 and Pozidriv 2) 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (18 ... 14) 0.8 ... 1.2
Connection type	 Spring-loaded terminals
• Solid • Finely stranded with end sleeve • Finely stranded without end sleeve • AWG cables, solid or stranded • Max. external diameter of the conductor insulation	mm ² mm ² mm ² AWG mm 2 x (0.25 ... 2.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 2.5) 2 x (24 ... 14) 3.6

¹⁾ If nothing else is stated.

²⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Monitoring and control devices

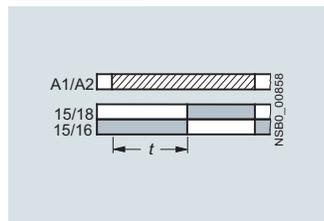
Relays

Timing relays

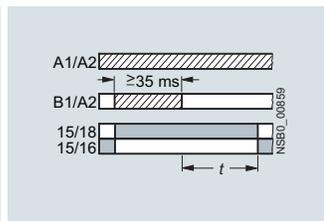
SIRIUS 3RP20 timing relays, 45 mm

3RP20 function diagrams and 3RP2901 label set

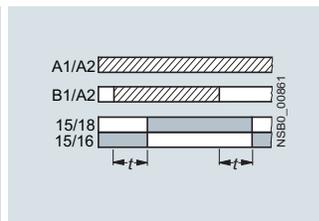
1 CO contact



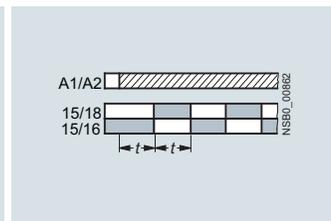
A
3RP2005-.A, 3RP2025
ON-delay



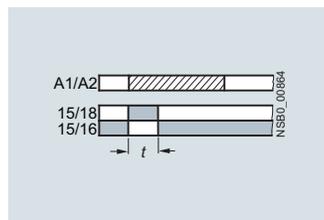
B¹⁾
3RP2005-.A
OFF-delay with control signal



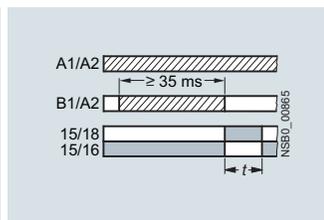
C¹⁾
3RP2005-.A
ON and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



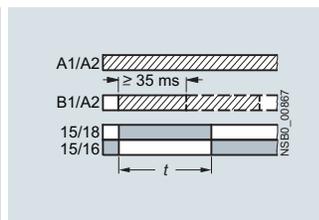
D
3RP2005-.A
Flashing, starting with interval
(pulse/interval 1:1)



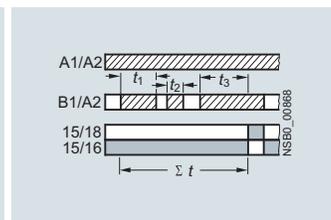
E
3RP2005-.A
Passing make contact



F¹⁾
3RP2005-.A
Passing break contact with
control signal



G¹⁾
3RP2005-.A
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



H¹⁾
3RP2005-.A
Additive ON-delay with control signal

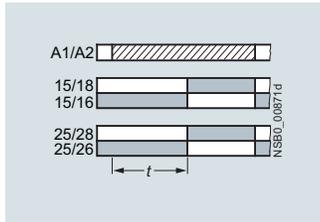
Legend

A ... H Identification letters for 3RP2005

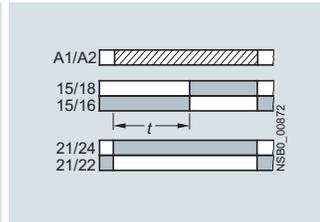
- Timing relay energized
- Contact closed
- Contact open

¹⁾ Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G• and H•, which are not retriggerable.

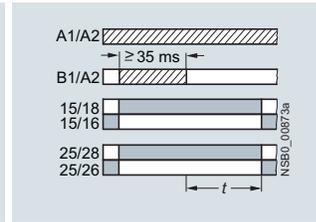
2 CO contacts



A
3RP2005-.B
ON-delay



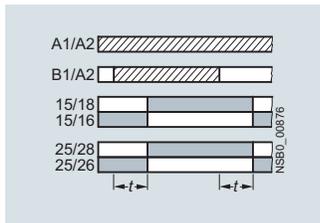
A•
3RP2005-.B
ON-delay and instantaneous contact



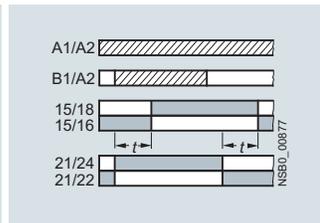
B1)
3RP2005-.B
OFF-delay with control signal



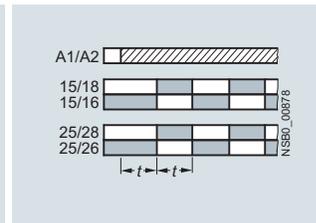
B•1)
3RP2005-.B
OFF-delay with control signal
and instantaneous contact



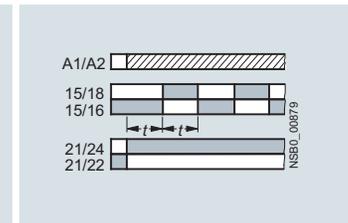
C1)
3RP2005-.B
ON and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



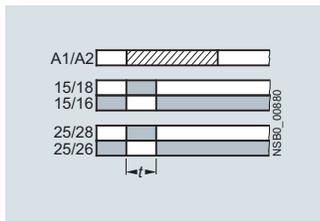
C•1)
3RP2005-.B
ON and OFF-delay
with control signal and
instantaneous contact
($t = t_{on} = t_{off}$)



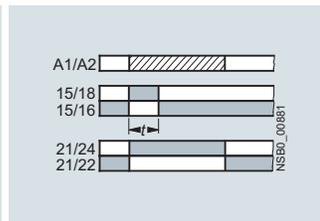
D
3RP2005-.B
Flashing, starting with interval
(pulse/interval 1:1)



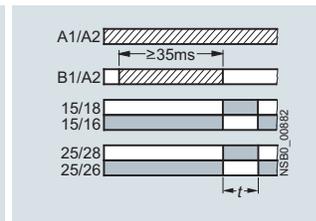
D•
3RP2005-.B
Flashing, starting with
interval (pulse/interval 1:1)
and instantaneous contact



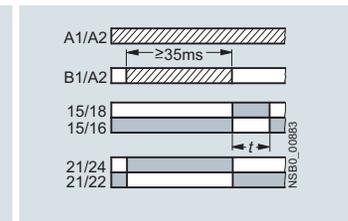
E
3RP2005-.B
Passing make contact



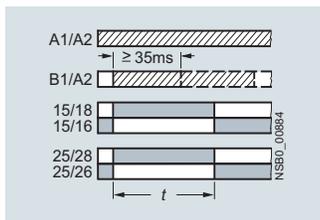
E•
3RP2005-.B
Passing make contact and
instantaneous contact



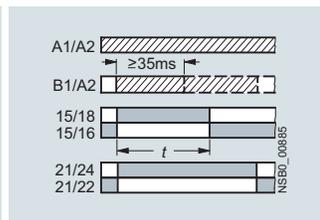
F1)
3RP2005-.B
Passing break contact with control
signal



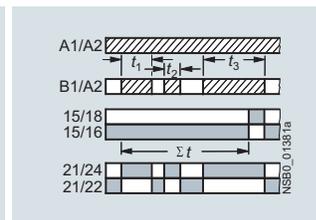
F•1)
3RP2005-.B
Passing break contact with control
signal and instantaneous contact



G1)
3RP2005-.B
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



G•1)
3RP2005-.B
Pulse-forming with control signal
and instantaneous contact (pulse
generation at the output does not
depend on duration of energizing)



H•1)
3RP2005-.B
Additive ON-delay with control signal
and instantaneous contact



YΔ
3RP2005-.B
Wye-delta function

Legend

A ... H Identification letters for 3RP2005

- Timing relay energized
- Contact closed
- Contact open

1) Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G• and H•, which are not retriggerable.

Monitoring and control devices

Relays

Timing relays

SIRIUS 3RP20 timing relays, 45 mm

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41H



3RP2005-1AP30



3RP2005-1BW30



3RP2005-2AP30



3RP2005-2BW30

Version	Time setting range t	Rated control supply voltage U_s	SD	Screw terminals	SD	Spring-loaded terminals
		50/60 Hz AC	DC			
		V	V	d		
				Article No.	Price per PU	Article No.
					d	Price per PU

3RP2005 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP2505 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.
 For functions, see 3RP2901 label set, page 10/45.

With LED and 1 CO contact ¹⁾ , 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	3RP2005-1AQ30 3RP2005-1AP30	2 ▶	3RP2005-2AQ30 3RP2005-2AP30
With LED and 2 CO contacts, 16 functions	1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ ²⁾	24 ... 240 ³⁾	24 ... 240 ⁴⁾	▶	3RP2005-1BW30	2	3RP2005-2BW30

3RP2025. timing relays, ON-delay, 15 time setting ranges

With LED and 1 CO contact ¹⁾	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ ²⁾	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	3RP2025-1AQ30 3RP2025-1AP30	5 ▶	3RP2025-2AQ30 3RP2025-2AP30
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For accessories, see page 10/45.

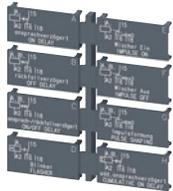
- 1) Units with protective separation.
- 2) With ∞ switch position no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.
- 3) Operating range 0.8 to 1.1 x U_s .
- 4) Operating range 0.7 to 1.1 x U_s .

Accessories

Version	Function	Identifi- cation letter	Use	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
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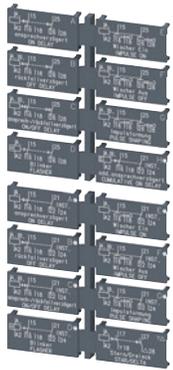
Label sets for 3RP20

Accessories for 3RP20 (not included in the scope of supply).
The label set can be used to label timing relays with the set function
in English and German.



3RP2901-0A

1 label set (1 unit) with 8 functions	<ul style="list-style-type: none"> • ON-delay • OFF-delay with control signal • ON-delay and OFF-delay with control signal • Flashing, starting with interval • Passing make contact • Passing break contact with control signal • Pulse-forming with control signal • Additive ON-delay with control signal 	A B C D E F G H	For devices with 1 CO	10	3RP2901-0A		1	5 units	41H
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3RP2901-0B

1 label set (1 unit) with 16 functions	<ul style="list-style-type: none"> • ON-delay • OFF-delay with control signal • ON-delay and OFF-delay with control signal • Flashing, starting with interval • Passing make contact • Passing break contact with control signal • Pulse-forming with control signal • ON-delay and instantaneous contact • OFF-delay with control signal and instantaneous contact • ON-delay and OFF-delay with control signal and instantaneous contact • Flashing, starting with interval, and instantaneous contact • Passing make contact and instantaneous contact • Passing break contact with control signal and instantaneous contact • Pulse-forming with control signal and instantaneous contact • Additive ON-delay with control signal and instantaneous contact • Wye-delta function 	A B C D E F G A• B• C• D• E• F• G• H• YΔ	For devices with 2 CO	10	3RP2901-0B		1	5 units	41H
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Blank inscription labels for 3RP20

Blank labels, 20 mm x 7 mm, titanium gray ¹⁾			For 3RP20	20	3RT2900-1SB20		100	340 units	41B
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¹⁾ PC labeling system for individual inscription
of unit labeling plates available from:
murrplastik Systemtechnik GmbH,
[see page 16/16](#).