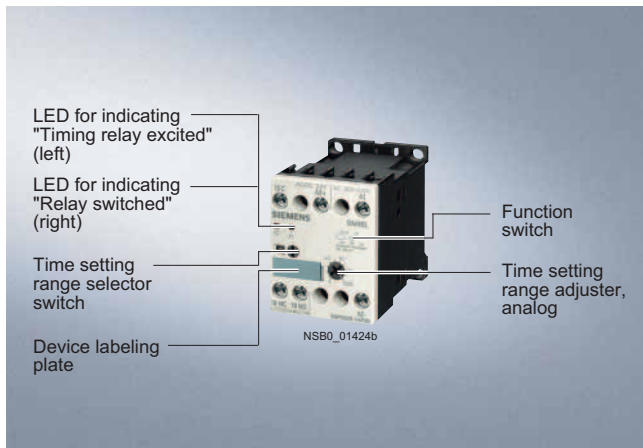


# 3RP, 3RT19 Timing Relays

**3RP20 timing relays, 45 mm**

## Overview

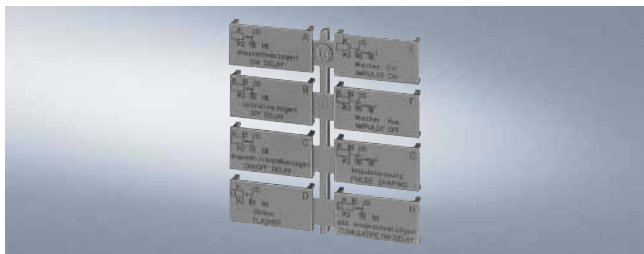


## Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1/DIN VDE 0435 Part 221 "Electrical relays, timing relays"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage controlgear, switchgear and systems – Electromechanical controlgear"
- EN 61140 "Safe electrical isolation"

## Accessories



Label set for marking the multifunction relay

## Function

- Changes to the time setting ranges and the functions must be carried out in the de-energized state.
- Start input B1 or B3 must only be triggered when the supply voltage is applied.
- The same potential must be applied to A1 and B1 or A3 and B3. With two-voltage version, only one voltage range must be connected.
- The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).
- Surge suppression is integrated in the timing relay. This prevents the generation of voltage peaks on the supply voltage when the relay is switched on and off. No additional damping measures are necessary.

### Timing relay with multifunction

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP20 05 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.

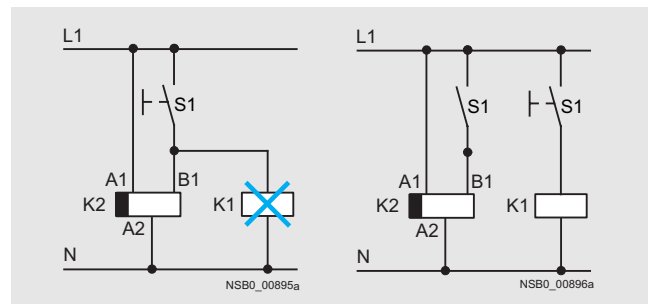
### 3RP20 05 with one changeover contact

Corresponds to the functions of 3RP15 05-.A.

### 3RP20 05 with two changeover contacts

Corresponds to the functions of 3RP15 05-.B.

### Parallel load on start input



# 3RP, 3RT19 Timing Relays

## General data

### Function

#### 3RP15 and 3RP20 function table

Function	Function chart	3RP20 timing relay and 3RP19 01 label set	3RP15 timing relay and 3RP19 01 label set										
		3RP20 05-A	3RP20 25	3RP15 05-A	3RP19 01-OA	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 7.
<b>1 CO contact</b>													
With ON-delay		■	■	■		A	■	■					
OFF-delay with auxiliary voltage		■		■		B <sup>1)</sup>				■			
OFF-delay without auxiliary voltage											■		
ON-delay and OFF-delay with auxiliary voltage (t = t <sub>on</sub> = t <sub>off</sub> )		■		■		C <sup>1)</sup>							
Flashing, starting with interval (pulse/interval 1:1)		■		■		D							
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)												■	
Passing make contact		■		■		E							
Passing break contact with auxiliary voltage		■		■		F <sup>1)</sup>							
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		■		■		G <sup>1)</sup>							
Additive ON-delay with auxiliary voltage		■		■		H <sup>1)</sup>							
<b>1 NO contact (semiconductor)</b>													
ON-delay												■	

<sup>1)</sup> 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. This does not apply to G, G● and H, H●, which are not retriggerable.

■ Function is possible

# 3RP, 3RT19 Timing Relays

## General data

Function	Function chart	3RP20 timing relay and 3RP19 01 label set	3RP15 timing relay and 3RP19 01 label set													
		3RP20 05-B	3RP20 25	3RP15 05-B	3RP19 01-0B	3RP15 05-R	3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
<b>2 CO contacts</b>																
With ON-delay		■	■	■	■	■	■	A	■							
ON-delay and instantaneous contact		■	■	■	■	■	■	A●								
OFF-delay with auxiliary voltage		■	■	■	■	■	■	B <sup>1)</sup>								
OFF-delay with auxiliary voltage and instantaneous contact		■	■	■	■	■	■	B <sup>1)</sup>								
OFF-delay without auxiliary voltage												■				
ON-delay and OFF-delay with auxiliary voltage (t = t <sub>on</sub> = t <sub>off</sub> )		■	■	■	■	■	■	C <sup>1)</sup>								
ON-delay and OFF-delay with auxiliary voltage and instantaneous contact (t = t <sub>on</sub> = t <sub>off</sub> )		■	■	■	■	■	■	C● <sup>1)</sup>								
Flashing, starting with interval (pulse/interval 1:1)		■	■	■	■	■	■	D								
Flashing, starting with interval (pulse/interval 1:1) and instantaneous contacts		■	■	■	■	■	■	D●								
Passing make contact		■	■	■	■	■	■	E								
Passing make contact and instantaneous contact		■	■	■	■	■	■	E●								

■ Function is possible

For footnote, see page 7/50.

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# 3RP, 3RT19 Timing Relays

## General data

Function	Function chart	3RP20 timing relay and 3RP19 01 label set	3RP15 timing relay and 3RP19 01 label set													
		3RP20 05-B	3RP20 25	3RP15 05-B	3RP19 01-0B	3RP15 05-R	3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
<b>2 CO contacts</b>																
Passing break contact with auxiliary voltage		■		■		■		F <sup>1)</sup>								
Passing break contact with auxiliary voltage and instantaneous contact		■		■				F● <sup>1)</sup>								
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		■		■		■		G <sup>1)</sup>								
Pulse-forming with auxiliary voltage and instantaneous contact (pulse generation at the output does not depend on duration of energizing)		■		■				G● <sup>1)</sup>								
Additive ON-delay with auxiliary voltage						■		H <sup>1)</sup>								
Additive ON-delay with auxiliary voltage and instantaneous contact		■		■				H● <sup>1)</sup>								
Wye-delta function		■		■				YΔ								
<b>2 NO contacts</b>																
Wye-delta function YΔ																■
<b>3 NO contacts</b>																
Wye-delta function with overtravel function <sup>2)</sup> (idling)																■

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. This does not apply to G, G● and H, H●, which are not retriggerable.

2) For function diagrams showing the various possibilities of operation of the 3RP15 60-1S.30, see page 7/54.

■ Function is possible

# 3RP, 3RT19 Timing Relays

## 3RP20 timing relays, 45 mm

### Technical specifications

Type		3RP20 05 3RP20 25
<b>Rated insulation voltage</b> Degree of pollution 3 Overvoltage category III	V AC	300
<b>Operating range at excitation<sup>1)</sup></b>		0.85 ... 1.1 x $U_s$ at AC; 0.8 ... 1.25 x $U_s$ at DC; 0.95 ... 1.05 times rated frequency
<b>Rated power</b> Power consumption at 230 V AC, 50 Hz	W VA	1 4
<b>Rated operational current <math>I_e</math></b> • AC-15, at 24 ... 400 V, 50 Hz • DC-13 at - 24 V - 125 V - 250 V	A A A A A	3 1 0.2 0.1
<b>Uninterrupted thermal current <math>I_{th}</math></b>	A	5
<b>DIAZED protection<sup>2)</sup></b> gL/gG operational class	A	4
<b>Switching frequency</b> • When loaded with $I_e$ 230 V AC • When loaded with 3RT10 16 contactor, 230 V AC	1/h 1/h	2500 5000
<b>Recovery time</b>	ms	150
<b>Minimum ON period</b>	ms	35
<b>Setting accuracy</b> with reference to scale value		Typical $\pm 5\%$
<b>Repeat accuracy</b>		$\leq \pm 1\%$
<b>Mechanical endurance</b> Operating cycles		$30 \times 10^6$
<b>Permissible ambient temperature</b> During operation During storage	°C °C	-25 ... +60 -40 ... +85
<b>Degree of protection</b> acc. to EN 60529		IP40 cover, IP20 terminals
<b>Connection type</b>		<b>Screw terminals</b>
• Terminal screw • Solid • Finely stranded with end sleeve • AWG cables, solid or stranded • Tightening torque	mm <sup>2</sup> mm <sup>2</sup> AWG Nm	M 3 (standard screwdriver, size 2 and Pozidriv 2) 1 x (0.5 ... 4) / 2 x (0.5 ... 2.5) 1 x (0.5 ... 2.5) / 2 x (0.5 ... 1.5) 2 x (20 ... 14) 0.8 ... 1.2
<b>Connection type</b>		<b>Spring-loaded terminals</b>
• Solid • Finely stranded, with end sleeves acc. to DIN 46228 • Finely stranded • AWG cables, solid or stranded	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG	2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (24 ... 16)
<b>Permissible mounting positions</b>		Any
<b>Shock resistance</b> acc. to IEC 60068 for half-sine shock type	g/ms	15/11
<b>Vibration resistance</b> acc. to IEC 60068-2-6		10 ... 55 Hz: 0.35 mm
<b>Electromagnetic compatibility (EMC)</b> Tests acc. to basic specification		EN 61000-6-2/EN 61000-6-4

1) If nothing else is stated.

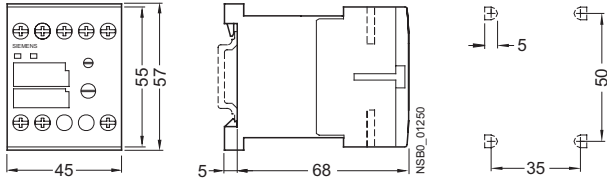
2)  $I_k \geq 1$  kA, weld-free according to IEC 60947-5-1.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

# 3RP, 3RT19 Timing Relays

3RP20 timing relays, 45 mm

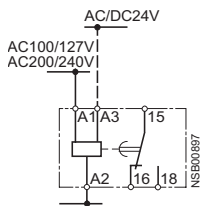
## Dimensional drawings



## Schematics

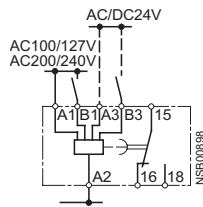
**3RP20 internal circuit diagrams**  
(terminal designation to DIN 46199, Part 5)

**3RP20 05**  
**3RP20 25**



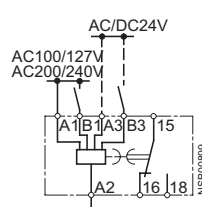
With ON-delay

**3RP20 05**



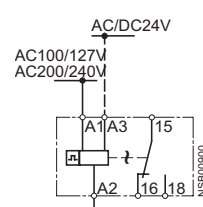
OFF-delay  
with auxiliary voltage

**3RP20 05**



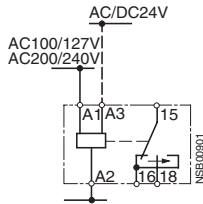
ON-delay and OFF-delay  
with auxiliary voltage

**3RP20 05**



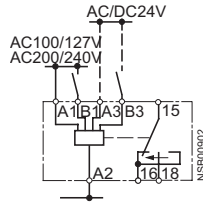
Flashing

**3RP20 05**



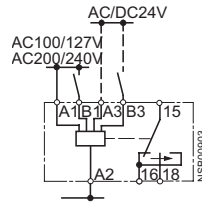
Passing make contact

**3RP20 05**



Passing break contact  
with auxiliary voltage

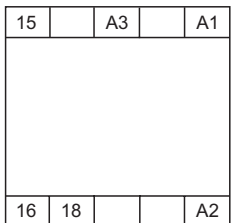
**3RP20 05**



Pulse-forming  
with auxiliary voltage

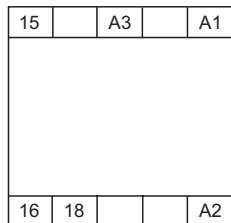
## Position of the connection terminals

**3RP20 05--A**



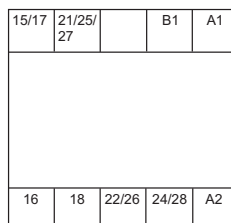
NSB0\_01196a

**3RP20 25--A**



NSB0\_01196a

**3RP20 05--BW30**



NSB0\_01392

### Note:

All the diagrams show the view onto the connection terminals.