



# NS..S 4-pole / 8-pole Contactor Relays - Spring Terminals AC Operated



## Description

- 1-stack contactor relays: 4-pole,
- 2-stack contactor relays: 8-pole,
- Mechanically linked contact elements available,
- Rail-mounted, no tools required.

## Main accessories available:

- **RV5** or **RC5-1** surge suppressors which do not increase overall dimensions
- Up to 2 add-on **CA3..S** 1-pole auxiliary contact blocks for 1-stack contactor relays.

**IEC** AC-15 rated operational current **3 A** 400 V  
**UL/CSA** Pilot duty **A600, Q300**



## Ordering Details

For other coil voltage see 1SBC101024S0201.pdf

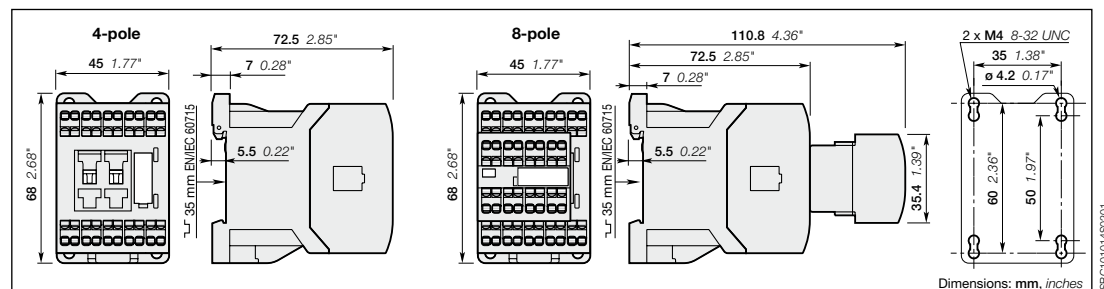
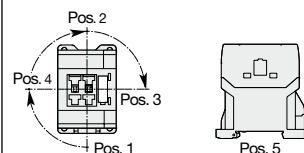
Number of contacts		Control coil voltage		Type	Order code	Pack <sup>(mg)</sup> pieces	Weight kg (1 pce)
1 <sup>st</sup> stack	2 <sup>nd</sup> stack	50 Hz	60 Hz				
		24 V	24 V	NS22ES-20M	<b>1SBH 101 004 M2022</b>	40	0.22
		110 V	110 V	NS22ES-23M	<b>1SBH 101 004 M2322</b>	40	0.22
		-	120 V	NS22ES-16M	<b>1SBH 101 004 M1622</b>	40	0.22
		230 V	230 V	NS22ES-26M	<b>1SBH 101 004 M2622</b>	40	0.22
		24 V	24 V	NS31ES-20M	<b>1SBH 101 004 M2031</b>	40	0.22
		110 V	110 V	NS31ES-23M	<b>1SBH 101 004 M2331</b>	40	0.22
		-	120 V	NS31ES-16M	<b>1SBH 101 004 M1631</b>	40	0.22
		230 V	230 V	NS31ES-26M	<b>1SBH 101 004 M2631</b>	40	0.22
		24 V	24 V	NS40ES-20M	<b>1SBH 101 004 M2040</b>	40	0.22
		110 V	110 V	NS40ES-23M	<b>1SBH 101 004 M2340</b>	40	0.22
		-	120 V	NS40ES-16M	<b>1SBH 101 004 M1640</b>	40	0.22
		230 V	230 V	NS40ES-26M	<b>1SBH 101 004 M2640</b>	40	0.22
		24 V	24 V	NS44ES-20M	<b>1SBH 101 004 M2044</b>	20	0.26
		110 V	110 V	NS44ES-23M	<b>1SBH 101 004 M2344</b>	20	0.26
		-	120 V	NS44ES-16M	<b>1SBH 101 004 M1644</b>	20	0.26
		230 V	230 V	NS44ES-26M	<b>1SBH 101 004 M2644</b>	20	0.26
		24 V	24 V	NS53ES-20M	<b>1SBH 101 004 M2053</b>	20	0.26
		110 V	110 V	NS53ES-23M	<b>1SBH 101 004 M2353</b>	20	0.26
		-	120 V	NS53ES-16M	<b>1SBH 101 004 M1653</b>	20	0.26
		230 V	230 V	NS53ES-26M	<b>1SBH 101 004 M2653</b>	20	0.26
		24 V	24 V	NS62ES-20M	<b>1SBH 101 004 M2062</b>	20	0.26
		110 V	110 V	NS62ES-23M	<b>1SBH 101 004 M2362</b>	20	0.26
		-	120 V	NS62ES-16M	<b>1SBH 101 004 M1662</b>	20	0.26
		230 V	230 V	NS62ES-26M	<b>1SBH 101 004 M2662</b>	20	0.26
		24 V	24 V	NS71ES-20M	<b>1SBH 101 004 M2071</b>	20	0.26
		110 V	110 V	NS71ES-23M	<b>1SBH 101 004 M2371</b>	20	0.26
		-	120 V	NS71ES-16M	<b>1SBH 101 004 M1671</b>	20	0.26
		230 V	230 V	NS71ES-26M	<b>1SBH 101 004 M2671</b>	20	0.26
		24 V	24 V	NS80ES-20M	<b>1SBH 101 004 M2080</b>	20	0.26
		110 V	110 V	NS80ES-23M	<b>1SBH 101 004 M2380</b>	20	0.26
		-	120 V	NS80ES-16M	<b>1SBH 101 004 M1680</b>	20	0.26
		230 V	230 V	NS80ES-26M	<b>1SBH 101 004 M2680</b>	20	0.26

## Main Technical Data

For complete technical data see 1SBC101018S0201.pdf

<b>Main poles</b>	Rated operational voltage $U_o$ max.	690 V
<b>IEC</b>	Conventional free air thermal current $I_{th}$ (open contactors $\theta \leq 40^\circ\text{C}$ )	10 A
acc. to IEC 60947-5-1	$I_o$ / AC-15 rated operational current	400 V AC 3 A
	$I_o$ / DC-13 rated operational current	24 V DC 6 A (144 W)
<b>UL/CSA</b>	Pilot duty	A600, Q300
<b>Magnet system</b>	Coil operating limits (acc. to IEC 60947-5-1)	0.85 ... 1.1 x $U_c$ ( $\theta \leq 60^\circ\text{C}$ )
	Average pull-in coil consumption value	50/60 Hz 33 VA
	Average holding coil consumption value	50/60 Hz 6.5 VA / 1.5 W
<b>Max. electrical switching frequency</b>		1200 cycles/h
<b>Connecting capacity</b>	Poles	Rigid
	and coil terminals	Flexible with cable end
		AWG
		1 or 2 x 0.75 ... 2.5 mm <sup>2</sup>
		1 or 2 AWG 18-14
<b>Degree of protection</b>	acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	IP 20



## Mounting positions



# NS and NSL Contactor Relays

## Technical Data

### Contact Utilization Characteristics according to IEC

Contactor relay types:	AC operated DC operated	NS range NSL range	NS..S range NSL..S range
Terminals		 Screw terminals	 Spring terminals
Rated operational voltage $U_e$ max.	V	690	
Conventional free-air thermal current $I_{th}$ acc. to IEC 60947-5-1, open contactors, $\theta \leq 40$ °C	A	10	
Rated frequency limits	Hz	25 ... 400	
Rated operational current $I_e$ / AC-15 acc. to IEC 60947-5-1	A		
24-127 V 50/60 Hz	A	6	
220-240 V 50/60 Hz	A	4	
400-415 V 50/60 Hz	A	3	
500 V 50/60 Hz	A	2	
690 V 50/60 Hz	A	2	
Rated operational current $I_e$ / DC-13 acc. to IEC 60947-5-1	A/W		
24 V DC	A/W	6 / 144	
48 V DC	A/W	2.8 / 134	
72 V DC	A/W	1 / 72	
110 V DC	A/W	0.55 / 60	
125 V DC	A/W	0.55 / 69	
220 V DC	A/W	0.3 / 66	
250 V DC	A/W	0.3 / 75	
Making capacity acc. to IEC 60947-5-1		10 x $I_e$ / AC-15	
Breaking capacity acc. to IEC 60947-5-1		10 x $I_e$ / AC-15	
Short-circuit protection gG type fuse	A	10	
Rated short-time withstand current $I_{cw}$ at 40 °C ambient temp., for 1.0 s in free air, from a cold state for 0.1 s	A	100 140	
Minimum switching capacity with failure rate acc. to IEC 60947-5-4	V/mA	12 / 3 $10^{-7}$	
Non-overlapping time between N.O. and N.C. contacts	ms	1.5	
Heat dissipation per pole at 6 A	W	0.1	
Max. electric switching frequency	cycles/h	1200	
Mechanical durability – millions of operating cycles – max. mechanical switching frequency	cycles/h	20 3600	



### Contact Utilization Characteristics according to UL/CSA

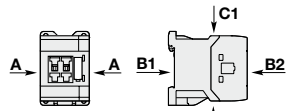
Max. rated voltage	600 V AC, 250 V DC
Pilot Duty	A600, Q300

# NS and NSL Contactor Relays

## Technical Data

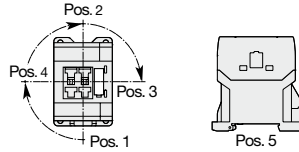
### General Technical Data

<b>Contactor relay types:</b>	AC operated DC operated	<b>NS range</b> <b>NSL range</b>	<b>NS..S range</b> <b>NSL..S range</b>
<b>Terminals</b>		 Screw terminals	 Spring terminals
<b>Rated insulation voltage <math>U_i</math></b> according to IEC 60947-5-1	V	690	
according to UL/CSA	V	600	
<b>Rated impulse withstand voltage <math>U_{imp.}</math></b>	kV	6	
<b>Standards</b>		Devices complying with IEC 60947-5-1 and EN 60947-5-1	
<b>Air temperature</b> close to contactor – for operation in free air	°C	-40 ... +70	
– for storage	°C	-60 ... +80	
<b>Climatic withstand</b>		Category B according to IEC 60947-1 Annex Q	
<b>Operating altitude</b>	m	≤ 3000	
<b>Shock withstand</b> acc. IEC 60068-2-27 and EN 60068-2-27		1/2 sinusoidal shock for 11 ms: no change in contact position	
<b>Mounting position 1</b>		<b>NS contactor relays - AC operated</b>	<b>NSL contactor relays - DC operated</b>
		Closed position	Open position
		20	20
		5	5
		15	15
		19	8
		16	13
		20	10
		15	5
		10	10
		19	8
		14	8



Shock direction  
A  
B1  
B2  
C1  
C2

### Mounting positions


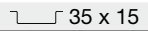


### Mounting distances

#### Fixing

- on rail acc. to IEC 60715 and EN 60715
- with screws (not supplied)



The contactor relays can be assembled side by side

 35 x 7.5     35 x 15  
2 x M4 screws placed diagonally

# NS and NSL Contactor Relays



## Technical Data

### Magnet System Characteristics for AC Operated Contactor Relays

Contactor relay types:	AC operated	NS range	NS..S range
Terminals		 Screw terminals	 Spring terminals
<b>Rated control circuit voltage <math>U_c</math></b>			
- at 50 Hz	V	24 ... 415	
- at 60 Hz	V	24 ... 415	
<b>Coil operating limits</b> acc. to IEC 60947-5-1		0.85 ... 1.1 x $U_c$ (at $\theta \leq 60^\circ\text{C}$ ) ; $U_c$ (at $\theta \leq 70^\circ\text{C}$ )	
<b>Drop-out voltage in % of <math>U_c</math></b>		approx. 30 ... 50 %	
<b>Coil consumption</b>			
Average pull-in value	50 Hz VA	33	
	60 Hz VA	33	
	50/60 Hz VA	33	
Average holding value	50 Hz VA/W	6.5 / 1.5	
	60 Hz VA/W	5 / 1.2	
	50/60 Hz VA/W	6.5 / 1.5	
<b>Operating time</b>			
between coil energization and:			
- N.O. contact closing	ms	9 ... 24	
- N.C. contact opening	ms	6 ... 18	
between coil de-energization and:			
- N.O. contact opening	ms	5 ... 19 (1)	
- N.C. contact closing	ms	7 ... 22 (1)	

(1) The use of RC5-1 surge suppressor increases opening time by a factor of 2 to 3.

### Magnet System Characteristics for DC Operated Contactor Relays










Contactor relay types:	DC operated	NSL range	NSL..S range
Terminals		 Screw terminals	 Spring terminals
<b>Rated control circuit voltage <math>U_c</math></b>	V DC	12 ... 240	
<b>Coil operating limits</b> acc. to IEC 60947-5-1		0.85 ... 1.1 x $U_c$ (at $\theta \leq 60^\circ\text{C}$ ) ; $U_c$ (at $\theta \leq 70^\circ\text{C}$ )	
<b>Drop-out voltage in % of <math>U_c</math></b>		approx. 10 ... 40 %	
<b>Coil consumption</b>			
- pull-in value	W	3	
- holding value	W	3	
<b>Coil time constant</b>			
- open	L/R ms	12	
- closed	L/R ms	40	
<b>Operating time</b>			
between coil energization and:			
- N.O. contact closing	ms	36 ... 59	
- N.C. contact opening	ms	31 ... 53	
between coil de-energization and:			
- N.O. contact opening	ms	13 ... 17 (2)	
- N.C. contact closing	ms	15 ... 20 (2)	

(2) The use of RT5 surge suppressor increases opening time by a factor of 1.1 to 1.2.

# NS and NSL Contactor Relays

## Technical Data

### Connecting Characteristics

Contactor relay types:	AC operated DC operated	NS range NLS range	NS..S range NSL..S range
<b>Terminals</b>		 <b>M3 Screw terminals with cable clamp</b> Delivered in open position. Screws of unused terminals must be tightened.	 <b>Spring terminals</b>
<b>Connecting capacity</b> (min. ... max.)			
<b>Pole and coil terminals</b>			
Rigid solid	 <b>1 x mm<sup>2</sup></b>  <b>2 x mm<sup>2</sup></b>	0.75 ... 2.5	0.75 ... 2.5
Flexible with non-insulated cable end	 <b>1 x mm<sup>2</sup></b>  <b>2 x mm<sup>2</sup></b>	0.75 ... 2.5	0.75 ... 2.5
Flexible with insulated cable end	 <b>1 x mm<sup>2</sup></b>  <b>2 x mm<sup>2</sup></b>	0.75 ... 2.5	0.75 ... 1.5
Bars or lugs	 <b>L mm ≤</b> <b>l mm &gt;</b>	7.7 3.2	- -
Capacity acc. to <b>UL/CSA</b>	<b>1 or 2 x AWG</b>	18-14	18-14
<b>Degree of protection</b>			
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			
<b>Screwdriver type</b>			
Flat Ø 6.5 / Pozidriv 2			
<b>Stripping length</b>			
9			
<b>Tightening torque</b>			
All terminals	- recommended	<b>Nm / lb.in</b>	1.00 / 9
	- max.	<b>Nm</b>	1.20