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:

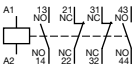
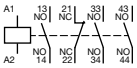
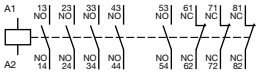
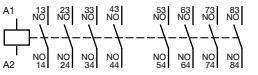
- **RV5** or **RC5-1** surge suppressors which do not increase overall dimensions
- Up to 2 add-on **CA3..S** 1-pole auxiliary contact blocks for 1-stack contactor relays.

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

cULus CCC CE

Ordering Details

For other coil voltage see 1SBC101024S0201.pdf

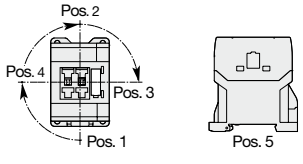
Number of contacts 1st stack	2nd stack	Control coil voltage 50 Hz	60 Hz	Type	Order code	Pack(ing) pieces	Weight kg (1 pce)
		24 V	24 V	NS22ES-20M	**1SBH 101 004 M2022**	40	0.22
		110 V	110 V	NS22ES-23M	**1SBH 101 004 M2322**	40	0.22
		-	120 V	NS22ES-16M	**1SBH 101 004 M1622**	40	0.22
		230 V	230 V	NS22ES-26M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

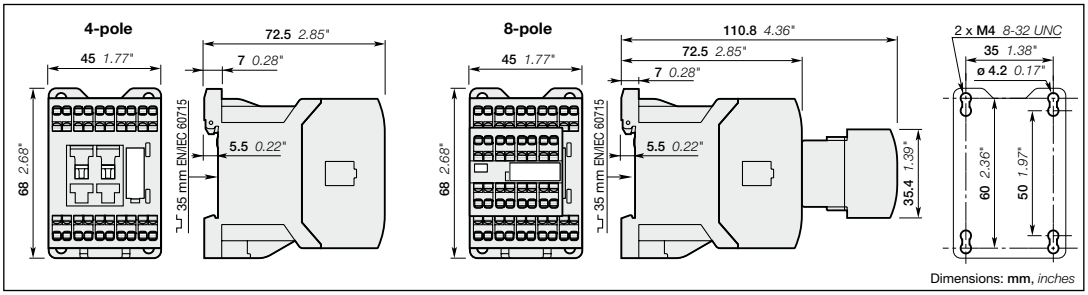
Main Technical Data

For complete technical data see 1SBC101018S0201.pdf

Main poles	Rated operational voltage U_e max.			690 V
IEC	Conventional free air thermal current I_{th} (open contactors θ ≤ 40 °C)			10 A
acc. to IEC 60947-5-1	I_e / AC-15 rated operational current		400 V AC	3 A
	I_e / DC-13 rated operational current		24 V DC	6 A (144 W)
UL/CSA	Pilot duty			A600, Q300
Magnet system	Coil operating limits (acc. to IEC 60947-5-1)			0.85 ... 1.1 x U_c (θ ≤ 60°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
Max. electrical switching frequency				1200 cycles/h
Connecting capacity	Poles and coil terminals	Rigid		1 or 2 x 0.75 ... 2.5 mm²
		Flexible with cable end		1 or 2 x 0.75 ... 2.5 mm²
		AWG		1 or 2 AWG 18-14
Degree of protection	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, θ ≤ 40 °C			**A**	10	
Rated frequency limits			**Hz**	25 ... 400	
Rated operational current I_e / AC-15					
acc. to IEC 60947-5-1	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		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	**A**	100	
in free air, from a cold state		for 0.1 s	**A**	140	
Minimum switching capacity			**V/mA**	12 / 3	
with failure rate acc. to IEC 60947-5-4				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				20	
– max. mechanical switching frequency			**cycles/h**	3600	

Contact Utilization Characteristics according to UL/CSA

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

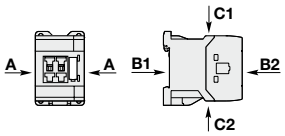
General Technical Data

Contactor relay types: AC operated / DC operated	NS range / NSL range	NS..S range / NSL..S range
Terminals	 **Screw terminals**	 **Spring terminals**

Rated insulation voltage U_i		
according to IEC 60947-5-1	**V**	690
according to UL/CSA	**V**	600
Rated impulse withstand voltage $U_{imp.}$	**kV**	6
Standards		Devices complying with IEC 60947-5-1 and EN 60947-5-1
Air temperature close to contactor		
– for operation in free air	**°C**	-40 ... +70
– for storage	**°C**	-60 ... +80
Climatic withstand		Category B according to IEC 60947-1 Annex Q
Operating altitude	**m**	≤ 3000

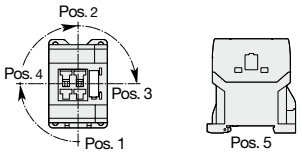
Shock withstand
acc. IEC 60068-2-27 and EN 60068-2-27
Mounting position 1

1/2 sinusoidal shock for 11 ms: no change in contact position



Shock direction	NS contactor relays - AC operated		NSL contactor relays - DC operated	
	Closed position	Open position	Closed position	Open position
A	20	20	20	10
B1	5	5	15	5
B2	15	15	10	10
C1	19	8	19	8
C2	16	13	14	8

Mounting positions



Mounting distances		The contactor relays can be assembled side by side
Fixing		
– on rail acc. to IEC 60715 and EN 60715		⊓ 35 x 7.5 ⊓ 35 x 15
– with screws (not supplied)		2 x M4 screws placed diagonally

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Magnet System Characteristics for AC Operated Contactor Relays

Contactor relay types:		AC operated	NS range	NS..S range
Terminals			 **Screw terminals**	 **Spring terminals**
Rated control circuit voltage U_c				
	- at 50 Hz	**V**	24 ... 415	
	- at 60 Hz	**V**	24 ... 415	
Coil operating limits acc. to IEC 60947-5-1			0.85 ... 1.1 x **U_c** (at θ ≤ 60 °C) ; **U_c** (at θ ≤ 70 °C)	
Drop-out voltage in % of U_c			approx. 30 ... 50 %	
Coil consumption				
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	
Operating time				
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**
Rated control circuit voltage U_c		**V DC**	12 ... 240	
Coil operating limits acc. to IEC 60947-5-1			0.85 ... 1.1 x **U_c** (at θ ≤ 60 °C) ; **U_c** (at θ ≤ 70 °C)	
Drop-out voltage in % of U_c			approx. 10 ... 40 %	
Coil consumption				
– pull-in value		**W**	3	
– holding value		**W**	3	
Coil time constant				
– open	L/R	**ms**	12	
– closed	L/R	**ms**	40	
Operating time				
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.

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Connecting Characteristics

Contactor relay types:		**AC operated** **DC operated**	**NS range** **NLS range**	**NS..S range** **NSL..S range**
Terminals			 **M3 Screw terminals with cable clamp** Delivered in open position. Screws of unused terminals must be tightened.	 **Spring terminals**
Connecting capacity (min. ... max.)				
Pole and coil terminals				
Rigid solid		**1 x mm²**	0.75 ... 2.5	0.75 ... 2.5
		**2 x mm²**	0.75 ... 2.5	0.75 ... 2.5
Flexible with non-insulated cable end		**1 x mm²**	0.75 ... 2.5	0.75 ... 2.5
		**2 x mm²**	0.75 ... 2.5	0.75 ... 2.5
Flexible with insulated cable end		**1 x mm²**	0.75 ... 2.5	0.75 ... 1.5
		**2 x mm²**	0.75 ... 1.5	0.75 ... 1.5
Bars or lugs		L **mm** ≤	7.7	-
		l **mm** >	3.2	-
Capacity acc. to **UL/CSA**		**1 or 2 x AWG**	18-14	18-14
Degree of protection				
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			IP 20	IP 20
Screwdriver type			Flat Ø 6.5 / Pozidriv 2	Flat Ø 3.5
Stripping length		**mm**	9	10
Tightening torque				
All terminals	– recommended	**Nm / lb.in**	1.00 / 9	-
	– max.	**Nm**	1.20	-