Technical Datasheet **1SBC101434D0201** *29/03/11*

NF80E-.. / NFZ80E-.. Contactor Relays AC / DC Operated - with Screw Terminals

NF(Z) contactor relays are used for switching auxiliary and control circuits.

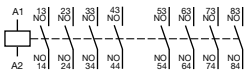
- NF(Z) contactor relays include an electronic coil interface providing reduced pull-in and holding consumption, particularly for AC control circuits
- Only four coils are needed to cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC
  NF(Z) offer extended operating limits and are suitable worldwide for different control voltages. e.g.: the coil 100...250 V 50/60 Hz - DC is suitable for Europe (230 V 50 Hz) and for North America (120 V 60 Hz and 208 V 60 Hz).
  NF(Z) contactors can manage large control voltage variations.
- NFZ contactor relays equipped with a 24...60 V 50/60 Hz - 20...60 V DC coil allow direct control by 24 V DC 500 mA PLC-output
- NFZ contactor relays withstand short voltage dips and voltage sags (SEMI F47-0706 compliance)
- NF(Z) contactor relays have built-in surge protection and do not require additional surge suppressors.

3D CAD outline drawings available on «Control Product 3D» portal

Ordering Details

Number of contacts 1st stack	Number of contacts 2nd stack	Control voltage Uc min. ... Uc max. V 50/60 Hz	Control voltage Uc min. ... Uc max. V DC	Type	Order code	EAN		Weight Pack(ing) 1 piece kg
Contactor Relays								
		24...60	20...60	**NF80E-11**	**1SBH 137 001 R1180**	3471523100312		0.320
		48...130	48...130	**NF80E-12**	**1SBH 137 001 R1280**	3471523100329		0.320
		100...250	100...250	**NF80E-13**	**1SBH 137 001 R1380**	3471523100336		0.320
		250...500	250...500	**NF80E-14**	**1SBH 137 001 R1480**	3471523100343		0.360

Note: NF80E-11 not suitable for a direct control by PLC-output. NF80E-11 available in some countries: please consult your ABB representative.

Contactor Relays - Low Consumption							
	-	12...20	**NFZ80E-20**	**1SBH 136 001 R2080**	3471523101906		0.360
	24...60	20...60	**NFZ80E-21**	**1SBH 136 001 R2180**	3471523101913		0.360
	48...130	48...130	**NFZ80E-22**	**1SBH 136 001 R2280**	3471523101920		0.360
	100...250	100...250	**NFZ80E-23**	**1SBH 136 001 R2380**	3471523101937		0.360

Note: Only NFZ contactor relays with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole

Certifications and Approvals

CE cULus CCC GOST C-Tick

Contact Utilization Characteristics according to IEC

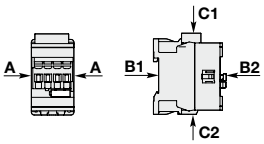
Standards		IEC 60947-1 / 60947-5-1 and EN 60947-1 / 60947-5-1
Rated operational voltage Ue max.		690 V
Conventional free-air thermal current Ith $\theta \leq 40$ °C		16 A
Rated frequency limits		25 ... 400 Hz
Rated operational current Ie / AC-15		
acc. to IEC 60947-5-1	**24-127 V 50/60 Hz**	6 A
	220-240 V 50/60 Hz	4 A
	400-440 V 50/60 Hz	3 A
	500 V 50/60 Hz	2 A
	690 V 50/60 Hz	2 A
Making capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1
Breaking capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1
Rated operational current Ie / DC-13		
acc. to IEC 60947-5-1	**24 V DC**	6 A / 144 W
	48 V DC	2.8 A / 134 W
	72 V DC	1 A / 72 W
	110 V DC	0.55 A / 60 W
	125 V DC	0.55 A / 69 W
	220 V DC	0.27 A / 60 W
	250 V DC	0.27 A / 68 W
	400 V DC	0.15 A / 60 W
	500 V DC	0.13 A / 65 W
	600 V DC	0.1 A / 60 W
Short-circuit protection gG type fuse		10 A
Rated short-time withstand current I_{cw}	**for 1.0 s**	100 A
	for 0.1 s	140 A
Minimum switching capacity		12 V / 3 mA
with failure rate acc. to IEC 60947-5-4		10^{-7}
Non-overlapping time between N.O. and N.C. contacts		≥ 2 ms
Heat dissipation per pole at 6 A		0.1 W
Max. electrical switching frequency	**AC-15**	1200 cycles/h
	DC-13	900 cycles/h

Main Pole - Utilization Characteristics according to UL / CSA

Standards	UL 508, CSA C22.2 N°14
Rated insulation voltage U_i	600 V
Max. rated voltage	600 V AC, 600 V DC
Pilot duty	A600, Q600
AC thermal rated current	10 A
AC maximum volt-ampere making	7200 VA
AC maximum volt-ampere breaking	720 VA
DC thermal rated current	2.5 A
DC maximum volt-ampere making-breaking	69 VA

General Technical Data

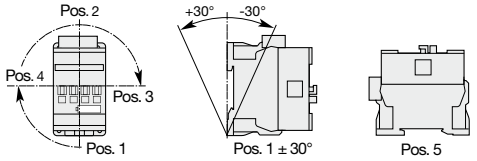
Rated insulation voltage Ui	
acc. to IEC 60947-5-1	690 V
acc. to UL / CSA	600 V
Rated impulse withstand voltage Uimp	6 kV
Electromagnetic compatibility	Devices complying with IEC 60947-1 / EN 60947-1 - Environment A
Ambient air temperature close to contactor	
Operation in free air	-40 ... +70 °C
Storage	-60 ... +80 °C
Climatic withstand	Category B according to IEC 60947-1 Annex Q
Operating altitude	≤ 3000 m
Mechanical durability	
Number of operating cycles	20 millions operating cycles
Max. switching frequency	6000 cycles/h
Shock withstand acc. IEC 60068-2-27 and EN 60068-2-27	
Mounting position 1	
Closed or open position	**Shock direction** 1/2 sinusoidal shock for 11 ms: no change in contact position
	A 30 g
	B1 25 g Closed position / 5 g Open position
	B2 15 g
	C1 25 g
	C2 25 g
Vibration withstand acc. to IEC 60068-2-6	5 ... 300 Hz 4 g Closed position / 2 g Open position



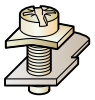
Magnet System Characteristics

Coil operating limits acc. to IEC 60947-5-1		**AC supply**	at θ ≤ 60°C 0.85 x Uc min ... 1.1 x Uc max at θ ≤ 70°C 0.85 x Uc min ... Uc max
		DC supply	at θ ≤ 60°C 0.85 x Uc min ... 1.1 x Uc max at θ ≤ 70°C (NF) 0.85 x Uc min ... Uc max - (NFZ) 0.85 x Uc min ... 1.1 x Uc max
AC control voltage	Rated control circuit voltage Uc		24 ... 500 V AC
50/60 Hz	Coil consumption	**Average pull-in value**	(NF) 50 VA - (NFZ) 16 VA
		Average holding value	(NF) 2.2 VA / 2 W - (NFZ) 1.7 VA / 1.5 W
DC control voltage	Rated control circuit voltage Uc		12 ... 500 V DC
	Coil consumption	**Average pull-in value**	(NF) 50 W - (NFZ) 12 ... 16 W
		Average holding value	(NF) 2 W - (NFZ) 1.7 W
PLC-Output control			(NFZ) ≥ 500 mA 24 V DC
Drop-out voltage in % of Uc min.			≤ 60 % Uc min
Voltage sag immunity according to SEMI F47-0706			(NFZ) conditions of use on request
Dips withstand (level 0% according to IEC 61000-4-11) -20 °C ≤ θ ≤ +60 °C			(NFZ) 22 ms average for Uc = 24 ... 250 V 50/60Hz
Operating time			
between coil energization and:		**N.O. contact closing**	40 ... 95 ms
		N.C. contact opening	38 ... 90 ms
between coil de-energization and:		**N.O. contact opening**	11 ... 95 ms
		N.C. contact closing	13 ... 98 ms

Mounting Characteristics

Mounting positions	 Max. add-on N.C. auxiliary contacts: see accessory fitting details for a NF contactor relay
Mounting distances	The contactor relays can be assembled side by side.
Fixing	
on rail according to IEC 60715, EN 60715	35 x 7.5 mm or 35 x 15 mm
by screws (not supplied)	2 x M4 screws placed diagonally

Connecting Characteristics

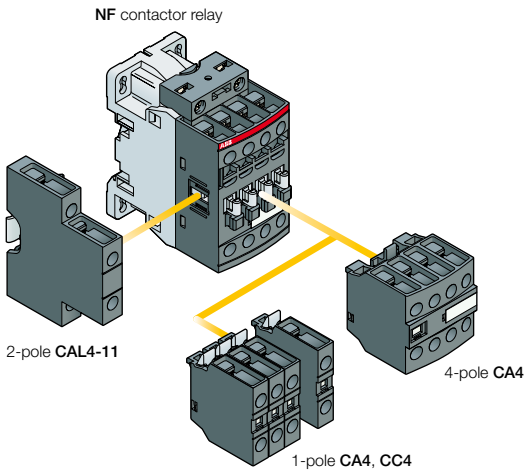
Main terminals		 Screw terminals with cable clamp
Connecting capacity (min. ... max.)		
Pole and coil terminals		
Rigid	**1 x**	1 ... 2.5 mm²
	2 x	1 ... 2.5 mm²
Flexible with non insulated ferrule	**1 x**	0.75 ... 2.5 mm²
	2 x	0.75 ... 2.5 mm²
Flexible with insulated ferrule	**1 x**	0.75 ... 2.5 mm²
	2 x	0.75 ... 1.5 mm²
Bars or lugs	**L <**	8 mm
Capacity according to UL/CSA	**1 or 2 x**	AWG 18 ... 14
Stripping length		10 mm
Degree of protection		
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		
All terminals		IP20
Screw terminals		(delivered in open position, screws of unused terminals must be tightened)
All terminals		M3.5
Screwdriver type		Flat Ø 5.5 / Pozidriv 2
Tightening torque		
Pole terminals		1.2 Nm / 11 lb.in
Coil terminals		1.2 Nm / 11 lb.in

Accessory Fitting Details for a NF Contactor Relay

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Front-mounted accessories			Side-mounted accessories	
Auxiliary contact blocks			Auxiliary contact blocks	
1-pole **CA4**			Left side	Right side
1-pole **CC4**	4-pole **CA4**		2-pole **CAL4-11**	
–	–		1	–

Overview of main accessories (other accessories available)



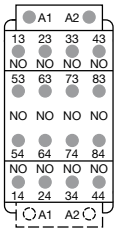
Main Accessories

Ordering Details

Description		Auxiliary contacts	Type	Order code	EAN	Pack(ing) piece	Weight kg (1 pce)
Additional auxiliary contact blocks	Side-mounted instantaneous auxiliary contact blocks	1 1 - -	**CAL4-11**	**1SBN 010 120 R1011**	3471523130043	1	0.040
		1 1 - -	**CAL4-11-T**	**1SBN 010 120 T1011**	3471523130418	10	0.040
Additional coil terminal block	Additional coil terminal block		**LDC4**	**1SBN 070 156 T1000**	3471523130678	10	0.010
Protective covers	Protective covers		**BX4-CA**	**1SBN 110 109 W1000**	3471523130715	50	0.001
Function markers	Function markers		**BA4**	**1SNA 235 156 R2700**	3472592351568	16	0.011
			HTP500-BA4	**1SNA 235 712 R2400**	3472592357126	1	0.220
			SPRC 1	**1SNA 360 010 R1500**	3472593600108	1	0.290

Terminal Marking and Positioning

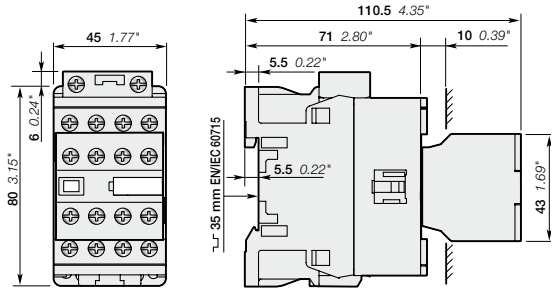
Standard devices without addition of auxiliary contacts



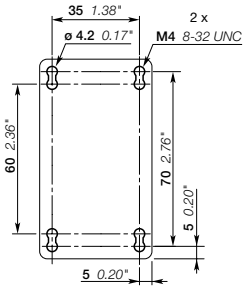
NF80E-.. / NFZ80E-..

NF80E-.. / NFZ80E-..

Dimensions mm, inches



NF80E



NF80E

Note: contactor lateral distance to grounded component 2 mm *0.08*" min.