

# 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		Control voltage Uc min. ... Uc max.	Type	Order code	EAN	Weight  Pack <sup>(ing)</sup> 1 piece kg
1st stack	2nd stack					
		V 50/60 Hz   V DC				

### Contactor Relays

	24...60	20...60	<b>NF80E-11</b>	<b>1SBH 137 001 R1180</b>	3471523100312	0.320
	48...130	48...130	<b>NF80E-12</b>	<b>1SBH 137 001 R1280</b>	3471523100329	0.320
	100...250	100...250	<b>NF80E-13</b>	<b>1SBH 137 001 R1380</b>	3471523100336	0.320
	250...500	250...500	<b>NF80E-14</b>	<b>1SBH 137 001 R1480</b>	3471523100343	0.360

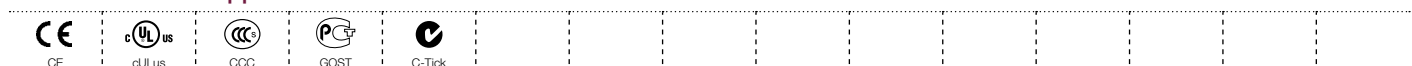
Note: NF80E-11 not suitable for a direct control by PLC-output. NF80E-11 available in some countries: please consult your ABB representative.

### Contactor Relays - Low Consumption

	-	12...20	<b>NFZ80E-20</b>	<b>1SBH 136 001 R2080</b>	3471523101906	0.360
	24...60	20...60	<b>NFZ80E-21</b>	<b>1SBH 136 001 R2180</b>	3471523101913	0.360
	48...130	48...130	<b>NFZ80E-22</b>	<b>1SBH 136 001 R2280</b>	3471523101920	0.360
	100...250	100...250	<b>NFZ80E-23</b>	<b>1SBH 136 001 R2380</b>	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



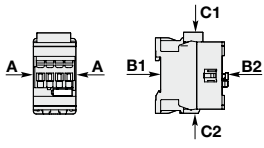
## Contact Utilization Characteristics according to IEC

<b>Standards</b>		IEC 60947-1 / 60947-5-1 and EN 60947-1 / 60947-5-1
<b>Rated operational voltage U<sub>e</sub> max.</b>		690 V
<b>Conventional free-air thermal current I<sub>th</sub> θ ≤ 40 °C</b>		16 A
<b>Rated frequency limits</b>		25 ... 400 Hz
<b>Rated operational current I<sub>e</sub> / AC-15</b>		
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
<b>Making capacity AC-15</b>		10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1
<b>Breaking capacity AC-15</b>		10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1
<b>Rated operational current I<sub>e</sub> / DC-13</b>		
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
<b>Short-circuit protection gG type fuse</b>		10 A
<b>Rated short-time withstand current I<sub>cw</sub></b>	for 1.0 s	100 A
	for 0.1 s	140 A
<b>Minimum switching capacity</b>		12 V / 3 mA
with failure rate acc. to IEC 60947-5-4		10 <sup>-7</sup>
<b>Non-overlapping time between N.O. and N.C. contacts</b>		≥ 2 ms
<b>Heat dissipation per pole at 6 A</b>		0.1 W
<b>Max. electrical switching frequency</b>	AC-15	1200 cycles/h
	DC-13	900 cycles/h

## Main Pole - Utilization Characteristics according to UL / CSA

<b>Standards</b>		UL 508, CSA C22.2 N°14
<b>Rated insulation voltage U<sub>i</sub></b>		600 V
<b>Max. rated voltage</b>		600 V AC, 600 V DC
<b>Pilot duty</b>		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

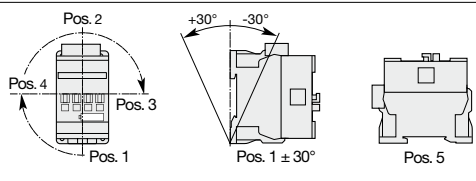
## General Technical Data

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

## Magnet System Characteristics

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

## Mounting Characteristics

<b>Mounting positions</b>	
	Max. add-on N.C. auxiliary contacts: see accessory fitting details for a NF contactor relay
<b>Mounting distances</b>	The contactor relays can be assembled side by side.
<b>Fixing</b>	
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 mm <sup>2</sup>
		2 x	1 ... 2.5 mm <sup>2</sup>
	Flexible with non insulated ferrule	1 x	0.75 ... 2.5 mm <sup>2</sup>
		2 x	0.75 ... 2.5 mm <sup>2</sup>
	Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm <sup>2</sup>
		2 x	0.75 ... 1.5 mm <sup>2</sup>
	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

All 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

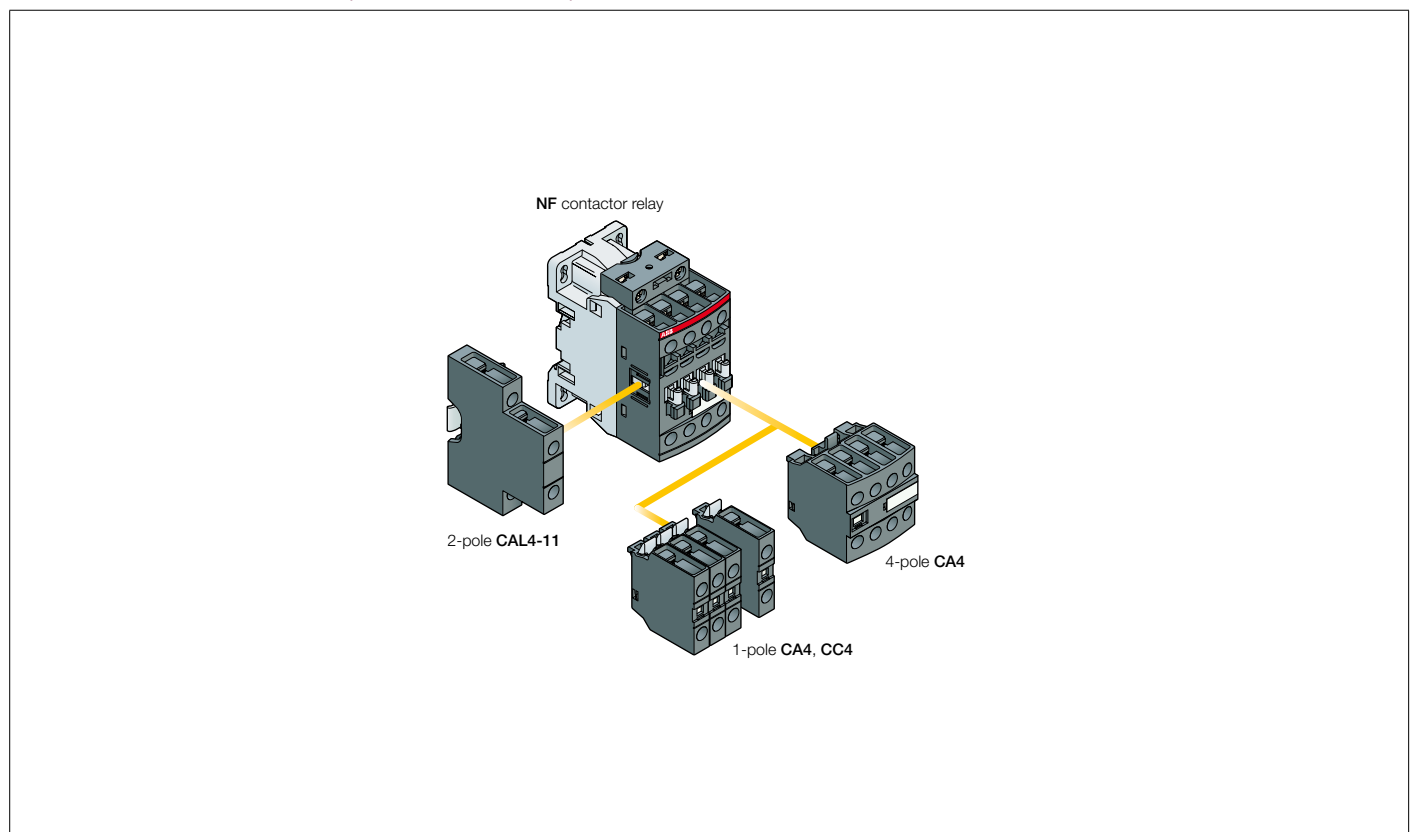
Coil terminals 1.2 Nm / 11 lb.in

## Accessory Fitting Details for a NF Contactor Relay

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

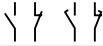
Front-mounted accessories		Side-mounted accessories	
Auxiliary contact blocks		Auxiliary contact blocks	
1-pole CA4		Left side	Right side
1-pole CC4	4-pole CA4	2-pole CAL4-11	
-	-	1	-

### Overview of main accessories (other accessories available)



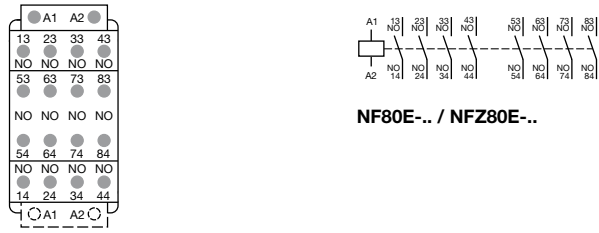
## Main Accessories

### Ordering Details

Description		Auxiliary contacts	Type	Order code	EAN	Pack <sup>(ing)</sup> piece	Weight kg <small>(1 pce)</small>
							
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

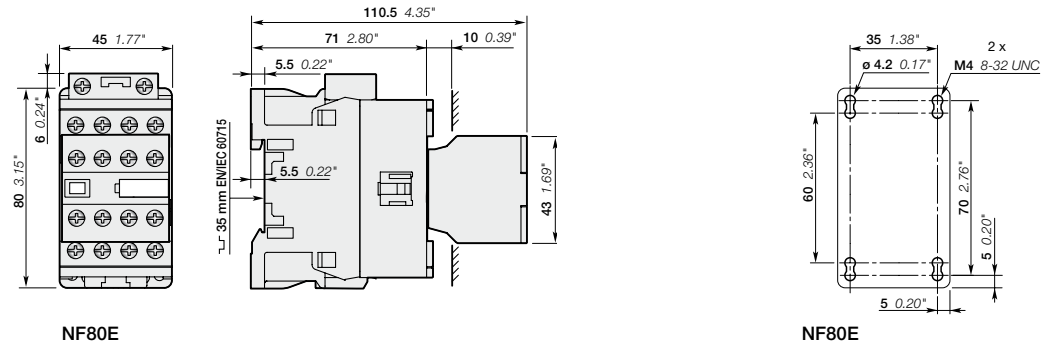
Standard devices without addition of auxiliary contacts



NF80E-.. / NFZ80E-..

NF80E-.. / NFZ80E-..

## Dimensions mm, inches



NF80E

NF80E

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

# Contact us

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