

NF53E-.. / NFZ53E-.. 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
- The contactor relays have mechanically-linked auxiliary contacts compliant with Annex L of IEC 60947-5-1 and include the "Mechanically Linked" symbol on their side.



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 ^(ing) 1 piece kg
1st stack	2nd stack					
		V 50/60 Hz V DC				

Contactor Relays

Diagram	24...60	20...60	Type	Order code	EAN	Weight
	24...60	20...60	NF53E-11	1SBH 137 001 R1153	3471523100619	0.320
	48...130	48...130	NF53E-12	1SBH 137 001 R1253	3471523100626	0.320
	100...250	100...250	NF53E-13	1SBH 137 001 R1353	3471523100633	0.320
	250...500	250...500	NF53E-14	1SBH 137 001 R1453	3471523100640	0.360

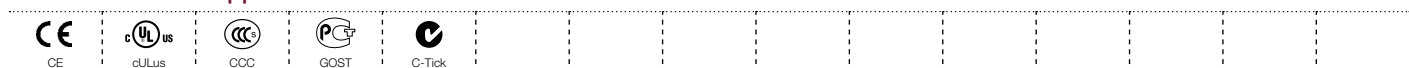
Note: NF53E-11 not suitable for a direct control by PLC-output. NF53E-11 available in some countries: please consult your ABB representative.

Contactor Relays - Low Consumption

Diagram	-	12...20	Type	Order code	EAN	Weight
	-	12...20	NFZ53E-20	1SBH 136 001 R2053	3471523102200	0.360
	24...60	20...60	NFZ53E-21	1SBH 136 001 R2153	3471523102217	0.360
	48...130	48...130	NFZ53E-22	1SBH 136 001 R2253	3471523102224	0.360
	100...250	100...250	NFZ53E-23	1SBH 136 001 R2353	3471523102231	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



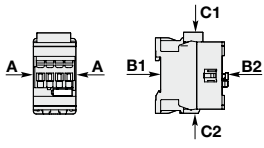
Contact Utilization Characteristics according to IEC

Standards		IEC 60947-1 / 60947-5-1 and EN 60947-1 / 60947-5-1
Rated operational voltage U_e max.		690 V
Conventional free-air thermal current I_{th} θ ≤ 40 °C		16 A
Rated frequency limits		25 ... 400 Hz
Rated operational current I_e / 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 I _e AC-15 acc. to IEC 60947-5-1
Breaking capacity AC-15		10 x I _e AC-15 acc. to IEC 60947-5-1
Rated operational current I_e / 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

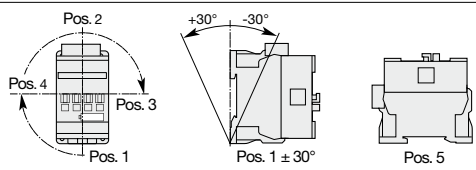
General Technical Data

Rated insulation voltage U_i			
acc. to IEC 60947-5-1			690 V
acc. to UL / CSA			600 V
Rated impulse withstand voltage U_{imp}			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			
		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

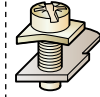
Coil operating limits		AC supply	at $\theta \leq 60^\circ\text{C}$ 0.85 x U_c min ... 1.1 x U_c max at $\theta \leq 70^\circ\text{C}$ 0.85 x U_c min ... U_c max
acc. to IEC 60947-5-1		DC supply	at $\theta \leq 60^\circ\text{C}$ 0.85 x U_c min ... 1.1 x U_c max at $\theta \leq 70^\circ\text{C}$ (NF) 0.85 x U_c min ... U_c max - (NFZ) 0.85 x U_c min ... 1.1 x U_c max
AC control voltage	Rated control circuit voltage U_c		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 U_c		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 U_c min.			≤ 60 % U_c 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)			(NFZ) 22 ms average for $U_c = 24 \dots 250$ V 50/60Hz
-20 °C ≤ θ ≤ +60 °C			
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 mm ²
		2 x	1 ... 2.5 mm ²
	Flexible with non insulated ferrule	1 x	0.75 ... 2.5 mm ²
		2 x	0.75 ... 2.5 mm ²
	Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm ²
		2 x	0.75 ... 1.5 mm ²
	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

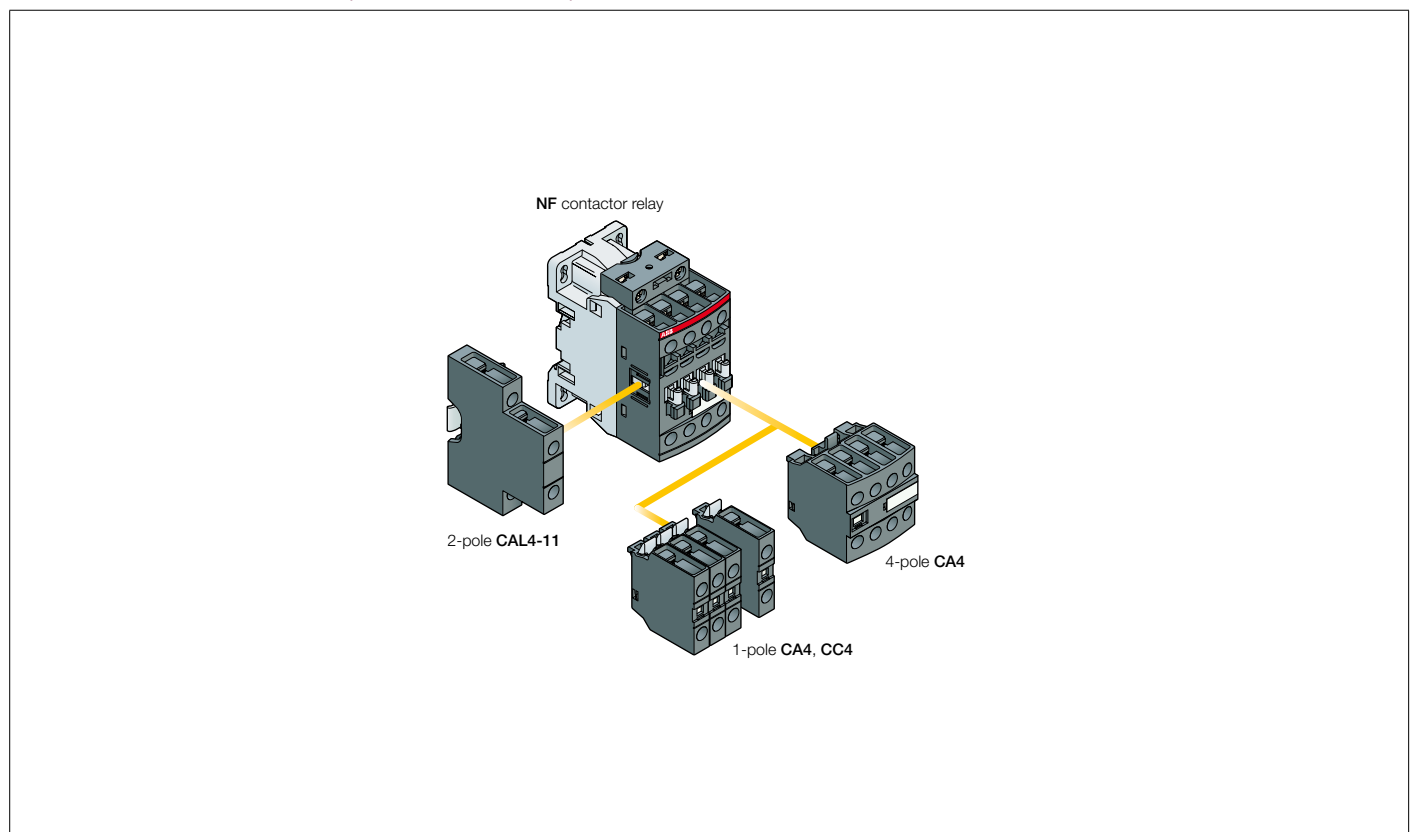
Coil terminals 1.2 Nm / 11 lb.in

Accessory Fitting Details for a NF Contactor Relay

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

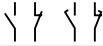
Front-mounted accessories		Side-mounted accessories	
Auxiliary contact blocks		Auxiliary contact blocks	
1-pole CA4		Left side	Right side
1-pole CC4	4-pole CA4	2-pole CAL4-11	
-	-	1	-

Overview of main accessories (other accessories available)



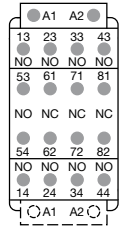
Main Accessories

Ordering Details

Description		Auxiliary contacts	Type	Order code	EAN	Pack ^(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

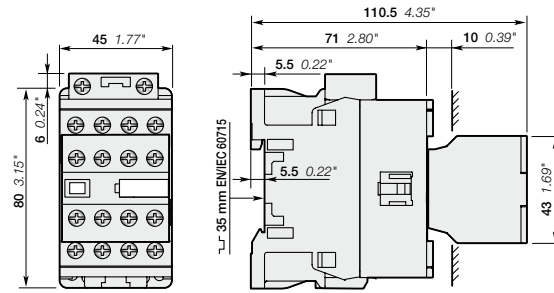
Standard devices without addition of auxiliary contacts



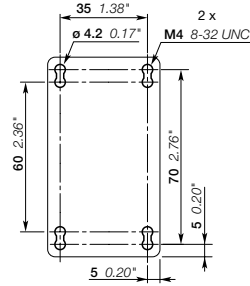
NF53E-.. / NFZ53E-..

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Dimensions mm, inches



NF53E



NF53E

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