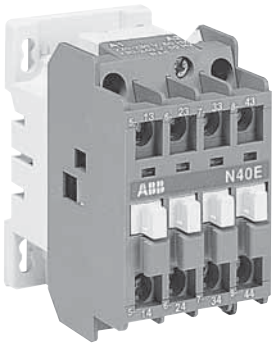
Control relays
Type N, NE, NL & TNL
Positive safety
AC/DC operated



Positive safety relays

There are many applications where safety is very critical and it is important to use electrical equipment which ensures that dangerous machine movement cannot occur when a fault is detected with the moving contacts during the cycle which the fault is indicated.

Regulations and standards have been written to ensure that safety is maintained:

- United States — ANSI B11.19-1990, ANSI B11.20-1991
- Germany — SÜVA, ZH1/457
- France — INRS
- United Kingdom — BIA
- Switzerland — SA

The ABB Type N & NL 4 and 8 pole relays are designed with “Positive Guided” contacts and fulfill the regulations or standards shown. The relays can provide positive safety for the N.O. and N.C. contacts which assure that the N.O. contacts will not close before any N.C. contact opens. Therefore, if one of the contacts weld due to abnormal conditions in the control circuit, the other contacts will also remain in the same position as when the welding occurred. This means that the open contacts must maintain an air distance 0.5mm when the coil is energized at 110% Vc or when it is de-energized.

UL File No: E39231 (N & NL)

General information
Type NL & TNL, DC operated

Type NL

Description

- Magnetic circuit variants: NL types: d.c. operated with solid magnetic circuits.
- 2 versions: 4 pole or 8 pole

  The width of 8 pole devices is identical to that of 4 pole devices; only the depth is increased.
- Bifurcated auxiliary contacts.
- Alone or mounted with a 4 pole CA5 auxiliary contact block, these devices offer “positive safety” between their auxiliary contacts.

Application

Type NL control relays are used for switching auxiliary circuits and control circuits.

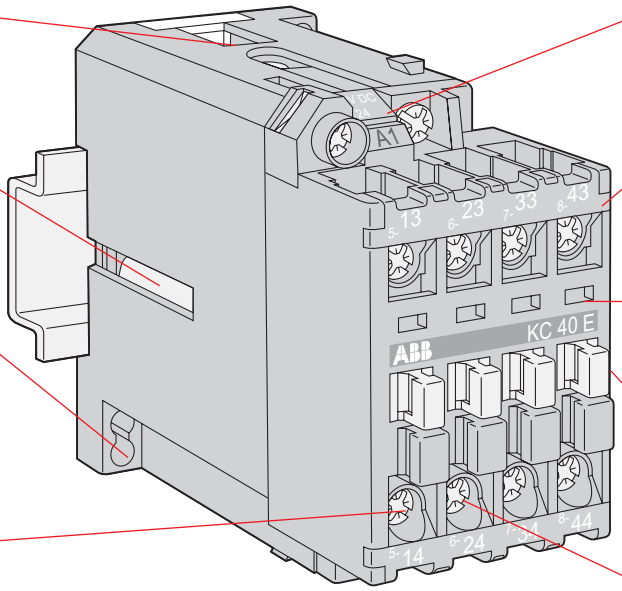
Type TNL

Description

- Magnetic circuit variants
  – NL types: D.C. operated with solid magnetic circuits.
  – TNL types: D.C. operated with solid magnetic circuit and large coil voltage range.
- 2 versions
  – 4-pole/1-stack or 8-pole/2-stack
  – The width of 8-pole devices is identical to that of 4 pole devices; only the depth is increased.
- Double sharp auxiliary contacts.
- Alone or mounted with a 4-pole CA 5 auxiliary contact block, these devices offer "positive safety" between their auxiliary contacts.

Application

Type NL and TNL control relays are used for switching auxiliary circuits and control circuits.



Location of surge suppressors.

Quick mounting on 35 x 7.5mm or 35 x 15mm DIN mounting rail according to IE715 and EN50022.

Holes for screw mounting (screws not supplied). Distances between holes according to EN50002.

Terminals delivered in open position with captive screws (screws of unused terminal should be tightened).

Screwdriver guidance for all screws makes it possible to use motorized screwdrivers.

All terminals provide protection against accidental direct contact with live parts according to VDE0106 – Part. 100.

Clear marking of coil voltages.

Terminal marking according to IEC947-5-1 and EN50 011.

Location of function marker and surge suppressor.

Stops for attaching front mounted accessories.

All terminal screws:
M 3.5, posidrive (+,-) N° 2

Catalog number explanation

(T)NL 44E–84

Frame type

Contact configuration

Coil voltage
(see coil voltage chart below.)

Coil voltage selection chart

Hz	Relay type	Volts															
		12	24	48	110	120	125	208	220	240	277	380	415	440	480	500	600
60	N		81	83	84	84		34	36	80	42		86	86	51	53	55
50	N		81	83	84				80			85	86			55	
DC	NE, NL	80	81	83	86		87		88	89							

Type N & NL
AC & DC operated

N40E-1

NE12E-1

A.C. operated

Contact configuration N.O.	N.C.	Catalog number	List price
4	0	N40E-84	
3	1	N31E-84	**$ 60**
2	2	N22E-84	
4	4	N44E-84	
5	3	N53E-84	
6	2	N62E-84	**120**
7	1	N71E-84	
8	0	N80E-84	

Coil voltage selection

All AC operated catalog numbers include a 120VAC coil. All DC operated catalog numbers include a 110VDC coil. To select other coil voltages, substitute the code from the Coil Voltage Selection Chart for the first digit after the last dash in the catalog number.

Ex.: A 240V coil is required for an N80 control relay: N80E-80

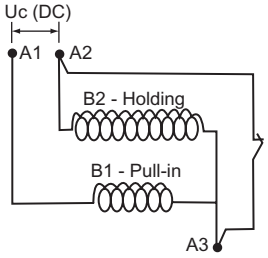
Coil voltage selection chart

Hz	Relay type	Volts 12	24	48	110	120	125	208	220	240	277	380	415	440	480	500	600
60	N		81	83	84	84		34	36	80	42		86	86	51	53	55
50	N		81	83	84				80			85	86			55	
DC	NE, NL	80	81	83	86		87		88	89							

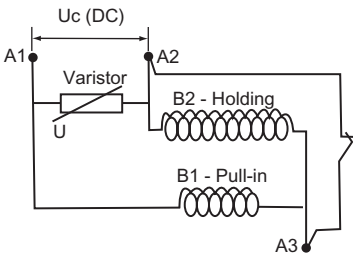
D.C. operated

Contact configuration N.O.	N.C.	Catalog number	List price
4	0	NL40E-86	
3	1	NL31E-86	**$ 72**
2	2	NL22E-86	
4	4	NL44E-86 ①	
5	3	NL53E-86	
6	2	NL62E-86	**144**
7	1	NL71E-86	
8	0	NL80E-86	
1	2	NE12E-86	
2	1	NE21E-86	**72**
3	0	NE30E-86	
4	3	NE43E-86 ①	
5	2	NE52E-86	
6	1	NE61E-86	**144**
7	0	NE70E-86	

Block diagrams for NE... contactor relay coil supply



Coil supply Uc <110 VDC



Coil supply via built-in varistor UC ≤ 110 VDC

① NE43 – NE70 and NL44 – NL62 control relays cannot accept any front mounted auxiliary contact blocks.