

Schematics

Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

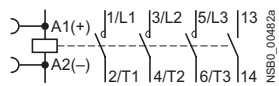
Size S00

Terminal designations according to EN 50012

3RT10 1 contactors

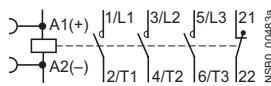
1 NO

Ident. No.: 10E



1 NC

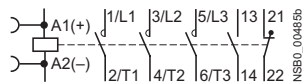
01



3RT10 1 contactors (with 1 NO)
with front-mounted 3RH19 11-.H. auxiliary switch blocks

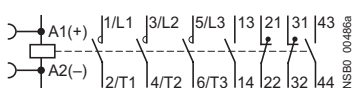
1 NO + 1 NC

Ident. No.: 11E



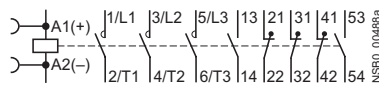
2 NO + 2 NC

22E



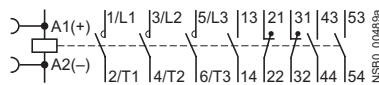
2 NO + 3 NC

Ident. No.: 23E



3 NO + 2 NC

32E

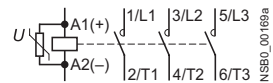


Size S0 to S3

Terminal designations according to EN 50012

3RT10 ... X . 40-0LA2 contactors

Varistor built-in

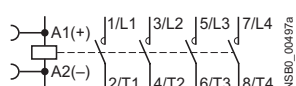


Contactors with 4 main contacts, size S00

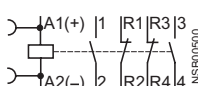
Terminal designations according to EN 50005

3RT13 and 3RT15 contactors

4 NO



2 NO + 2 NC



(3RH19 11 auxiliary switch blocks acc. to EN 50005 can be snapped on)

Surge suppressors for sizes S00 to S3
(coded plug-in direction; Exception: for 3RT19 16-1T...diode assembly designation with +/-)

Diode



Diode assembly



Varistor



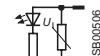
RC element



Diode with LED



Varistor with LED



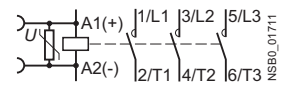
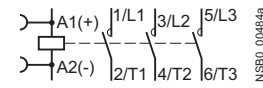
¹⁾ Not for 3RT12 vacuum contactors.

Size S0 to S12

Terminal designations according to EN 50012

3RT10 2, 3RT10 3 contactors

3RT10 5 to 3RT10 7, 3RT12,
3RT14 contactors



3RT10 2 and 3RT10 3, 3RT14 contactors
with front-mounted 4-pole 3RH19 21-.HA22 auxiliary switch block

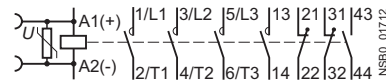
2 NO + 2 NC

Ident. No.: 22E



3RT1. 5, 3RT1. 6, 3RT1. 7 contactors (sizes S6, S10, S12)
with front-mounted 4-pole 3RH19 21-.HA22 auxiliary switch block or
with lateral 2-pole 3RH19 21-1DA11 auxiliary switch blocks

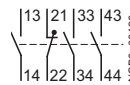
2 NO + 2 NC



4-pole 3RH19 21-.HA...XA... auxiliary switch blocks,
for snapping onto the front¹⁾

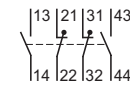
3 NO + 1 NC

Ident. No.: 31



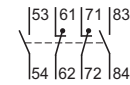
1 NO + 2 NC

22



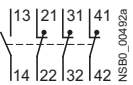
2 NO + 2 NC

22



1 NO + 3 NC

13



First laterally mountable 3RH19 21-.DA11, 3RH19 21-2DE11
auxiliary switch block (solid-state compatible)

1 NO + 1 NC

left



1 NO + 1 NC

right



Second laterally mountable 3RH19 21-.JA11,
3RH19 21-2JE11 auxiliary switch block (solid-state compatible)
(only for sizes S3 to S12)

1 NO + 1 NC

left



1 NO + 1 NC

right

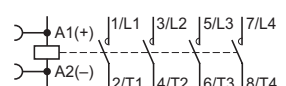


Contactors with 4 main contacts, sizes S0 to S3

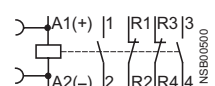
Terminal designations according to EN 50005

3RT13 and 3RT15 contactors

4 NO



2 NO + 2 NC



(3RH19 21 auxiliary switch blocks acc. to EN 50005 can be snapped on)

Controls – Contactors and Contactor Assemblies

Project planning aids

Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

Accessories for size S00 contactors and contactor relays

Terminal designations according to EN 50005

3RH19 11-.F... auxiliary switch blocks and 3RH19 11-.NF... solid-state compatible auxiliary switch blocks for snapping onto the front

2 NO
Ident. No.: 20



1 NO + 1 NC
11



2 NC
02

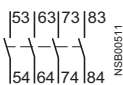


1 NO + 1 NC
11 U

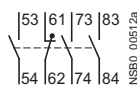


with make-before-break

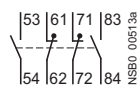
4 NO
Ident. No.: 40



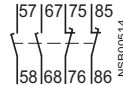
3 NO + 1 NC
31



2 NO + 2 NC
22

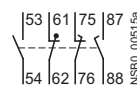


2 NO + 2 NC
22 U



with make-before-break

2 NO + 2 NC
11/11 U



1 NO + 1 NC standard
1 NO + 1 NC with make-before-break

3RH19 11-1AA... and 3RH19 11-1BA... auxiliary switch blocks, for snapping onto the front, cable entry from above or below

1 NO



1 NC



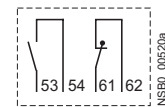
2 NO



1 NO + 1 NC



Internal wiring



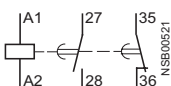
Example of 1 NO + 1 NC, cable entry from below

Accessories for size S00 contactors and contactor relays

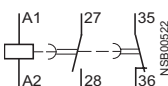
Terminal designations according to DIN 46199 Part 5

3RT19 16-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

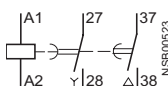
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay



2 NO
Wye-delta function



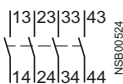
(Integrated varistors not shown)

Accessories for size S0 to S12 contactors

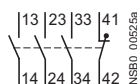
Terminal designations according to EN 50005

3RH19 21-.F... auxiliary switch blocks, 4-pole, for snapping onto the front¹⁾

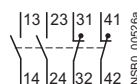
4 NO
Ident. No.: 40



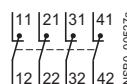
3 NO + 1 NC
31



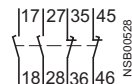
2 NO + 2 NC
22



4 NC
04



2 NO + 2 NC
22 U



with make-before-break

3RH19 21-.CA... auxiliary switch blocks, 1-pole, for snapping onto the front¹⁾

1 NO



1 NC



1 NO



1 NC



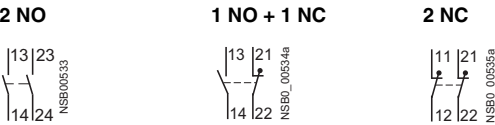
(Terminal designations according to EN 50005 or EN 50012)

¹⁾ Not for 3RT12 vacuum contactors.

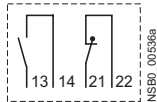
Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

Accessories for size S0 to S12 contactors
Terminal designations according to EN 50005

3RH19 21-1LA... and 3RH19 21-1MA... auxiliary switch block, 2-pole,
for snapping onto the front¹⁾
cable entry from above or below



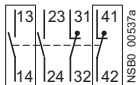
Internal wiring



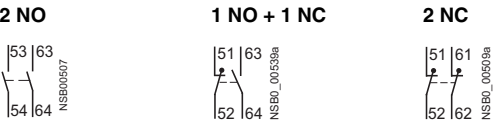
Example of 1 NO + 1 NC,
cable entry from below

3RH19 21-.FE22 solid-state compatible auxiliary switch block, 4-pole,
for snapping onto the front¹⁾

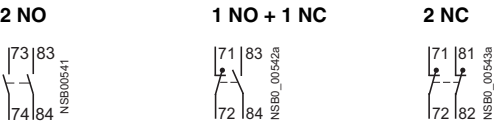
2 NO + 2 NC
Ident. No.: 22



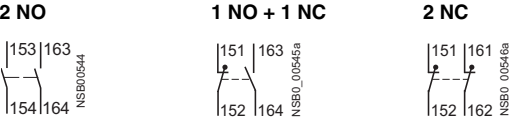
3RH19 21-.EA... first laterally mountable auxiliary switch blocks (left)



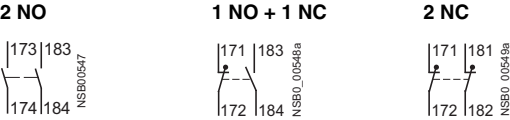
3RH19 21-.EA... first laterally mountable auxiliary switch blocks (right)



3RH19 21-.KA... second laterally mountable auxiliary switch blocks (left)
(only for sizes S3 to S12)



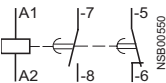
3RH19 21-.KA... second laterally mountable auxiliary switch blocks (right)
(only for sizes S3 to S12)



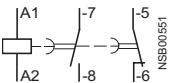
Accessories for size S0 to S12 contactors
Terminal designations according to DIN 46199 Part 5

3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

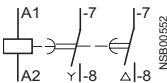
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay

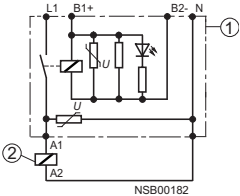


2 NO
Wye-delta function

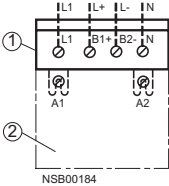


3RH19 24-1GP11 coupling link with surge suppression

Connection diagram



Connection example



- ① Coupling link
- ② Contactor

- ① Coupling link
- ② Contactor

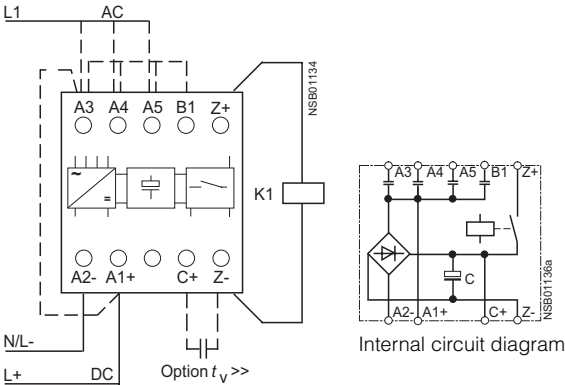
¹⁾ Not for 3RT12 vacuum contactors.

Controls – Contactors and Contactor Assemblies

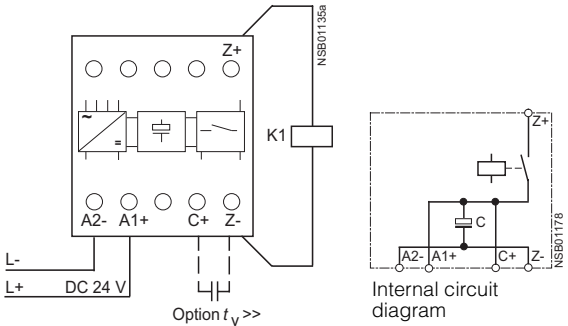
Project planning aids

Schematics for accessories for sizes S00 to S3

3RT19 16-2BK01, 110 V UC
3RT19 16-2BL01, 230 V UC OFF-delay devices



3RT19 16-2BE01, 24 V DC OFF-delay devices



3RT19 16-2BK01, 110 V UC

110 V UC	A1	A3	A4	A5	B1	A2	Z+	Z-	t _v (ms) >
S00 DC	L+					L-			130
50 Hz		L1				N	3RT1. 1.-.BF4.	3RH1. ...-BF4.	130
60 Hz		L1				N			130
S0 DC	L+					L-			100
50 Hz		L1				N	3RT1. 2.-.BF4.		100
60 Hz		L1				N			100

3RT19 16-2BE01, 24 V DC

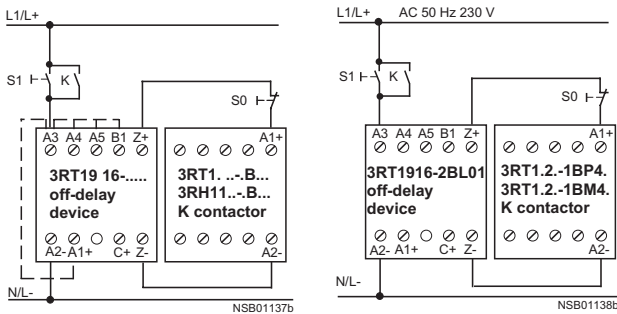
24 V DC	A1	A2	Z+	Z-	t _v (ms) >
S00	L+	L-	3RT1. 1.-.BB4.	3RH1. ...-BB4.	250
S0	L+	L-	3RT1. 2.-.BB4.		150
S2	L+	L-	3RT1. 3.-.BB4.		90
S3	L+	L-	3RT1. 4.-.BB4.		70

3RT19 16-2BL01, 230 V UC

230 V UC	A1	A3	A4	A5	B1	A2	Z+	Z-	t _v (ms) >
S00 DC	L+					L-			600
50 Hz			L1			N	3RT1. 1.-.BM4.	3RT1. 1.-.BP4.	600
60 Hz				L1		N	3RH1. ...-BM4.	3RH1. ...-BP4.	600
S0 DC	L+					L-			400
50 Hz			L1			N	3RT1. 2.-.BM4.	3RT1. 2.-.BP4.	400
60 Hz				L1		N			400

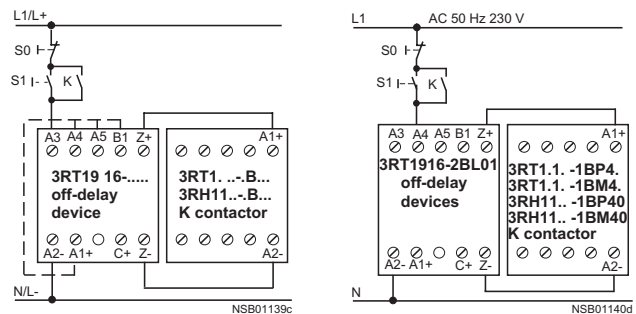
Operation after OFF-delay

(Contactor only switches off with delay in case of voltage failure)



Operation before OFF-delay

(Contactor always switches off with delay)



Controls – Contactors and Contactor Assemblies

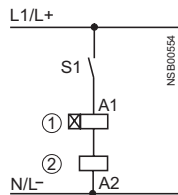
Project planning aids

Circuit diagrams for accessories for sizes S00 to S3

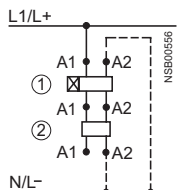
Accessories for size S00 to S3 contactors and contactor relays

Solid-state time-delay blocks
(note planning aids on Page 3/165!)

3RT19 16-2C...
ON-delay
Size S00

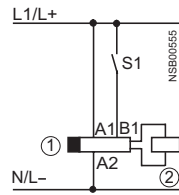


3RT19 26-2C...
ON-delay
Sizes S0 to S3

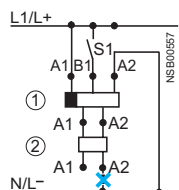


A2 can be connected to N(L-) using either the contactor or the timing relay.
--- optionally connect

3RT19 16-2D...
OFF-delay (with auxiliary voltage)
Size S00



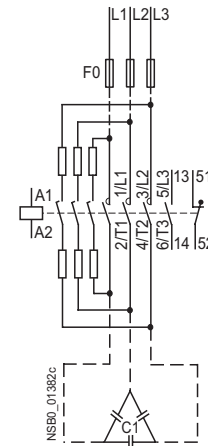
3RT19 26-2D...
OFF-delay (with auxiliary voltage)
Sizes S0 to S3



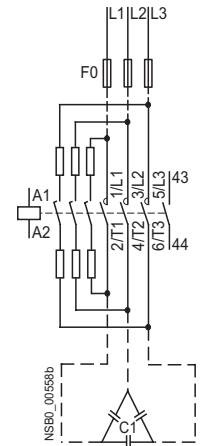
A2 must only be connected to N(L-) from the timing relay.
X do not connect
① Timing relay block
② Contactor

3RT16 capacitor contactors

Size S00



Sizes S0 and S3

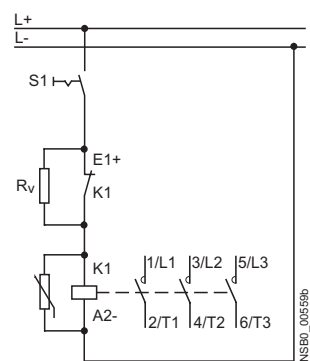


Internal circuit diagrams for accessories for sizes S00 to S3

Contactors with extended operating range 0.7 to 1.25 × U_s

Size S00
Terminal designations
according to EN 50012

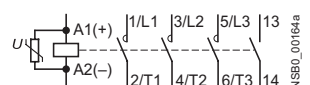
3RT10 17-2K.42-0LA0 contactors



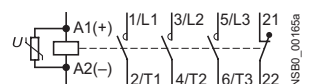
Series resistor R_v
plugged on,
NC contact prewired.

3RT10 17-2K.41/2K.42 contactor
Varistor integrated
Size S00

1 NO
Ident. No.: 10E

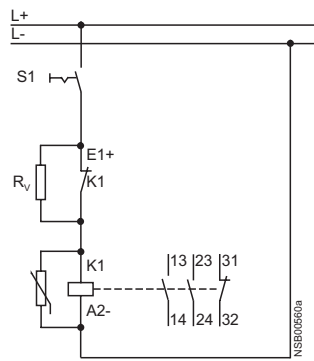


1 NC
01E



Terminal designations
according to EN 50011

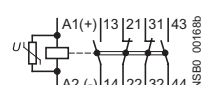
3RH11 22-2K.40-0LA0 contactor relays



2 NO + 1 NC unassigned
Series resistor R_v
plugged on,
NC contact prewired.

3RH11 22-2K.40 contactor relay
Varistor integrated
Size S00

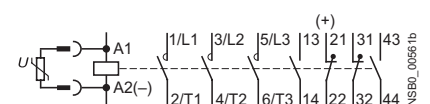
2 NO + 2 NC
22E



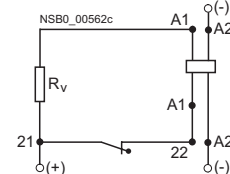
Size S00 to S3
Terminal designations
according to EN 50012

3RT10 2.-, 3RT10 3.-,
3RT10 4.-3K.44-0LA0 contactors
with front-mounted 4-pole 3RH19 21-1HA22
auxiliary switch block

2 NO + 2 NC
Ident. No.: 22

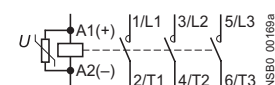


Circuit diagram of the series resistor wiring



The series resistor is supplied separately packed.
The 21/22 NC contact is necessary to wire the series resistor.

3RT10 25-3K.40 contactor
Varistor integrated
Size S0



(Two single-pole auxiliary switch blocks can be snapped on)

Controls – Contactors and Contactor Assemblies

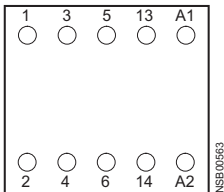
Project planning aids

Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

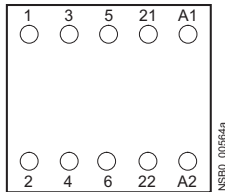
Size S00 Terminal designations according to EN 50012

3RT10 1 contactors, 3RT10 1 coupling relays
3RT10 17-2K.4. contactors with extended operating range

1 NO Ident. No.: 10E

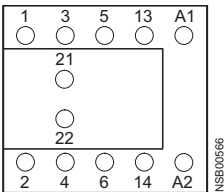


1 NC 01

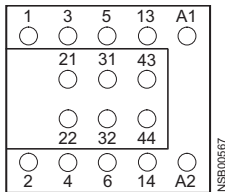


3RT10 1 contactors (with 1 NO contact)
with front-mounted 3RH19 11-. H...
auxiliary switch blocks

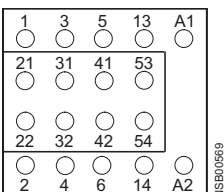
1 NO + 1 NC Ident. No.: 11E



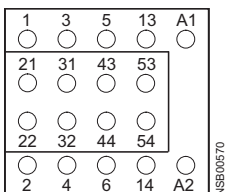
2 NO + 2 NC 22E



2 NO + 3 NC Ident. No.: 23E

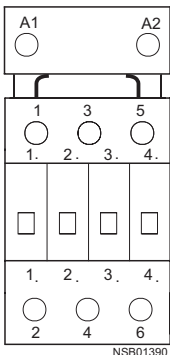


3 NO + 2 NC 32E



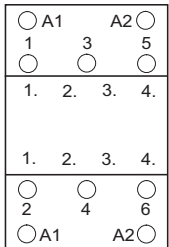
Size S0 to S3 Terminal designations according to EN 50012

3RT10...X.40-0LA2 contactors
with solid-state control unit



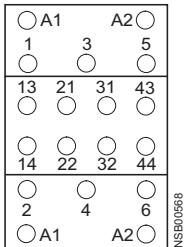
Size S0 to S12 Terminal designations according to EN 50012

3RT10 2, 3RT10 3,
3RT10 4, 3RT14 46 contactors,
3RT10 2 coupling relays
3RT10 25-3K.40 contactors with
extended operating range



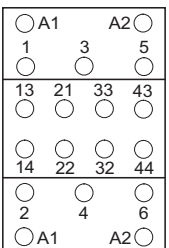
3RT10 2, 3RT10 3, 3RT10 4
contactors with front-mounted
4-pole 3RH19 21-. HA22
auxiliary switch block

2 NO + 2 NC Ident. No.: 22 E



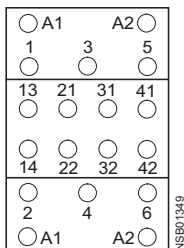
3RT10 2, 3RT10 3, 3RT10 4
contactors with front-mountable
4-pole 3RH19 21-. HA31
auxiliary switch block

3 NO + 1 NC Ident. No.: 31 E



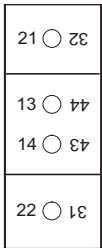
3RT10 2, 3RT10 3, 3RT10 4
contactors with front-mountable
4-pole 3RH19 21-. HA13
auxiliary switch block

1 NO + 3 NC 13 E

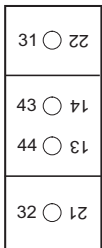


First laterally mountable
3RH19 21-. DA11¹⁾
auxiliary switch block
can be mounted on the left or right

1 NO + 1 NC Left

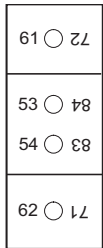


Right

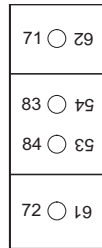


Second laterally mountable
3RH19 21-. JA11¹⁾
auxiliary switch block
can be mounted on the left or right
(only for sizes S3 to S12)

1 NO + 1 NC Left



Right



¹⁾ Note location identifier. Can only be used if no 4-pole auxiliary switch block is snapped onto the front.

Controls – Contactors and Contactor Assemblies

Project planning aids

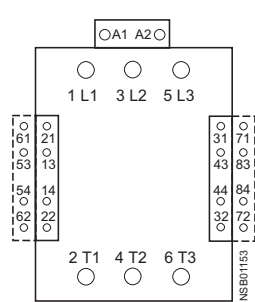
Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

Sizes S6 to S12

3RT1 .5, 3RT1 .6, 3RT1 .7 contactors

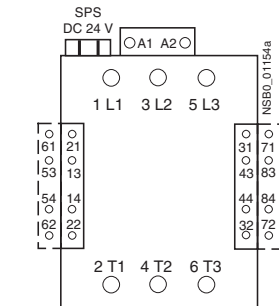
- With conventional operating mechanism (3RT1. ...**A**...)
- With laterally mountable auxiliary switch blocks
3RH19 21-1DA11
(for 2 NO + 2 NC, included in the contactors)
3RH19 21-1JA11
(can be extended to 4 NO + 4 NC)

2 NO + 2 NC or 4 NO + 4 NC



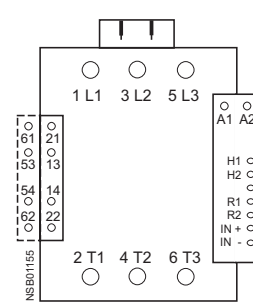
- With solid-state operating mechanism (3RT1. ...**N**...)
- With laterally mountable auxiliary switch blocks
3RH19 21-1DA11
(for 2 NO + 2 NC, included in the contactors)
3RH19 21-1JA11
(can be extended to 4 NO + 4 NC)

2 NO + 2 NC or 4 NO + 4 NC



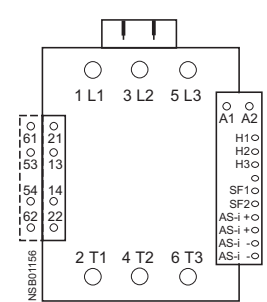
- With solid-state operating mechanism (3RT1. ...**P**...)
- With laterally mountable auxiliary switch blocks
3RH19 21-1DA11
(for 1 NO + 1 NC, included in the contactors)
3RH19 21-1JA11
(can be extended to 2 NO + 2 NC)

1 NO + 1 NC or 2 NO + 2 NC



- With solid-state operating mechanism (3RT1. ...**Q**...)
- With laterally mountable auxiliary switch blocks
3RH19 21-1DA11
(for 1 NO + 1 NC, included in the contactors)
3RH19 21-1JA11
(can be extended to 2 NO + 2 NC)

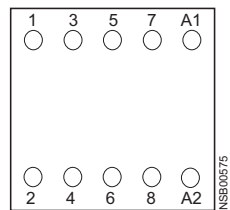
1 NO + 1 NC or 2 NO + 2 NC



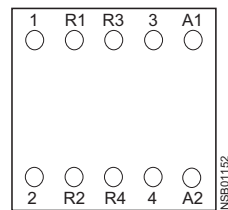
Contactors with 4 main contacts, size S00 Terminal designations according to EN 50005

3RT13 and 3RT15 contactors

4 NO



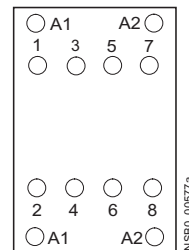
2 NO + 2 NC



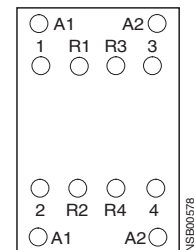
Contactors with 4 main contacts, sizes S0 to S3 Terminal designations according to EN 50005

3RT13 and 3RT15 contactors

4 NO



2 NO + 2 NC

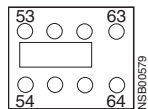


Accessories for size S00 contactors and contactor relays Terminal designations according to EN 50005

3RH19 11-.F... auxiliary switch blocks and 3RH19 11-.NF... solid-state compatible auxiliary switch blocks for snapping onto the front

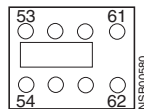
2 NO

Ident. No.: 20



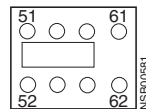
1 NO + 1 NC

11



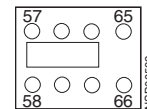
2 NC

02



1 NO + 1 NC

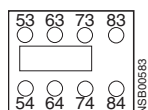
11 U



with make-before-break

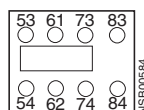
4 NO

Ident. No.: 40



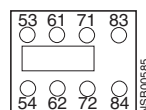
3 NO + 1 NC

31



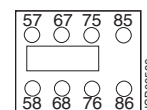
2 NO + 2 NC

22



2 NO + 2 NC

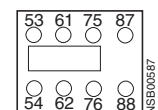
22 U



with make-before-break

2 NO + 2 NC

11/11 U



1 NO + 1 NC ON-delay
1 NO + 1 NC with make-before-break

Controls – Contactors and Contactor Assemblies

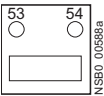
Project planning aids

Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

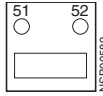
Accessories for size S00 contactors and contactor relays Terminal designations according to EN 50005

3RH19 11-1AA...
auxiliary switch blocks for snapping onto the front
Cable entry from above

1 NO

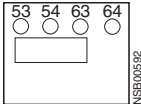


1 NC



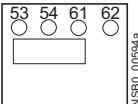
3RH19 11-1LA20

2 NO



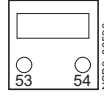
3RH19 11-1LA11

1 NO + 1 NC

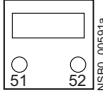


3RH19 11-1BA...
auxiliary switch blocks for snapping onto the front
Cable entry from below

1 NO

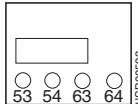


1 NC



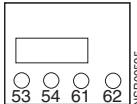
3RH19 11-1MA20

2 NO



3RH19 11-1MA11

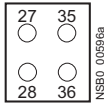
1 NO + 1 NC



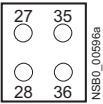
Terminal designations according to DIN 46199 Part 5

3RT19 16-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

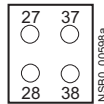
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay



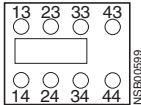
2 NO
Wye-delta function



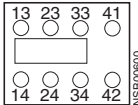
Accessories for size S0 to S12 contactors Terminal designations according to EN 50005

3RH19 21-.F... auxiliary switch blocks, 4-pole,
for snapping onto the front

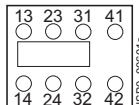
4 NO
Ident. No.: 40



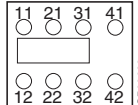
3 NO + 1 NC
31



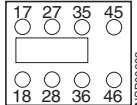
2 NO + 2 NC
22



4 NC
04



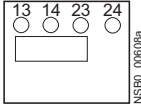
2 NO + 2 NC
22 U



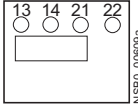
with make-before-break

3RH19 21-1LA... auxiliary switch blocks, 2-pole
for snapping onto the front, cable entry from the top

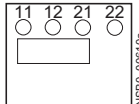
2 NO



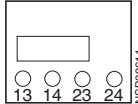
1 NO + 1 NC



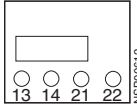
2 NC



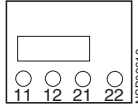
2 NO



1 NO + 1 NC

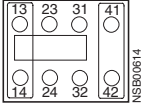


2 NC



3RH19 21-.FE22 solid-state compatible auxiliary switch block, 4-pole,
for snapping onto the front

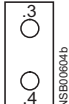
2 NO + 2 NC
Ident. No.: 22



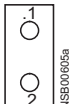
Terminal designations according to EN 50005 or EN 50012

3RH19 21-.CA... auxiliary switch blocks, 1-pole,
for snapping onto the front

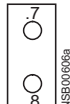
1 NO



1 NC



1 NO



with extended
contacting

1 NC

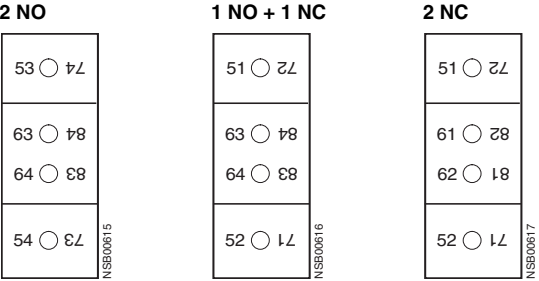


with extended
contacting

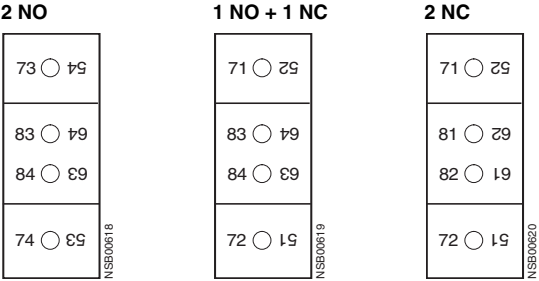
Position of the terminals for 3RT1 contactors and accessories

Accessories for size S0 to S12 contactors
Terminal designations according to EN 50005

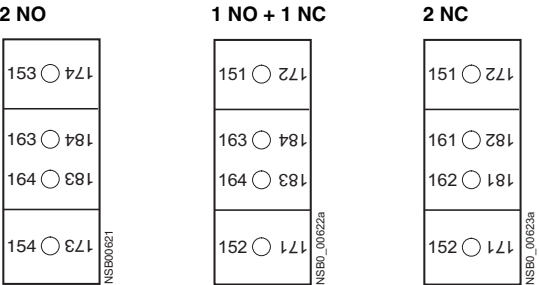
First laterally mountable 3RH19 21- .EA.. auxiliary switch blocks (left)



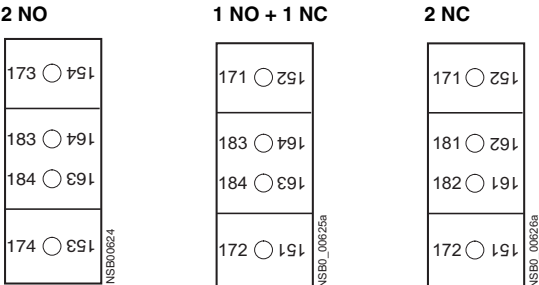
First laterally mountable 3RH19 21- .EA.. auxiliary switch blocks (right)



Second laterally mountable 3RH19 21- .KA.. auxiliary switch blocks (left)
(only for sizes S3 to S12; can only be used if no auxiliary switches are snapped onto to the front)

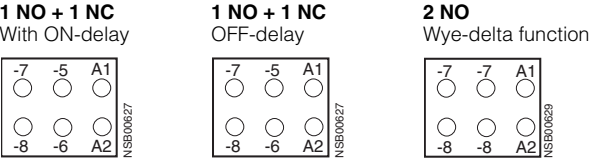


Second laterally mountable 3RH19 21- .KA.. auxiliary switch blocks (right)
(only for sizes S3 to S12; can only be used if no auxiliary switches are snapped onto to the front)



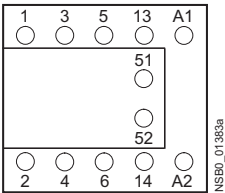
Accessories for size S0 to S12 contactors
Terminal designations according to DIN 46199 Part 5

3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks



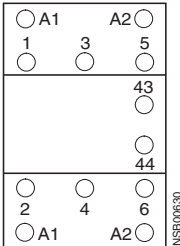
3RT16 capacitor contactors

Size S00
with 4-pole auxiliary switch block mounted on the front



The auxiliary switch block contains 3 leading contacts (not shown) and one unassigned NO contact and one unassigned NC contact.

Size S0 and S3
with 4-pole auxiliary switch block mounted on the front



The auxiliary switch block contains 3 leading contacts (not shown) and one unassigned NO contact.

Controls – Contactors and Contactor Assemblies

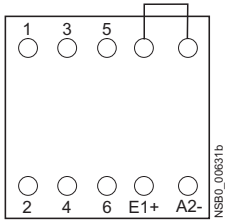
Project planning aids

Position of the terminals for 3RT1 contactors and accessories

Contactors with extended operating range 0.7 to $1.25 \times U_s$
Size S00

Terminal designations according to EN 50012

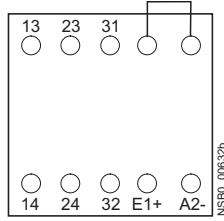
3RT10 17-2K.42-0LA0 contactors



Series resistor R_V plugged on, NC contact prewired.
3RH19 11-2... auxiliary switch blocks according to EN 50005 can be snapped on.

Terminal designations according to EN 50011

3RH11 22-2K.40-0LA0 contactor relays

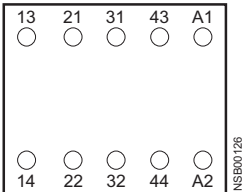


Series resistor R_V plugged on, NC contact prewired.
3RH19 11-2... auxiliary switch blocks according to EN 50005 can be snapped on.

Contactor relays with extended operating range 0.7 to $1.25 \times U_s$
Size S00

3RH11 22-2K.40 contactor relays

2 NO + 2 NC
Ident. No.: 22 E



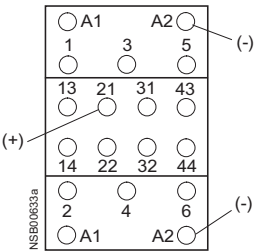
It is not possible to mount an auxiliary switch block.

Contactors with extended operating range 0.7 to $1.25 \times U_s$
Size S0 to S3

Terminal designations according to EN 50012

3RT10 2.-, 3RT10 3.-, 3RT10 4.-3K.44-0LA0 contactors
with front 4-pole 3RH19 21-2HA22 auxiliary switch block

2 NO + 2 NC
Ident. No.: 22 E



For circuit diagram of the series resistor wiring, see page 3/219.

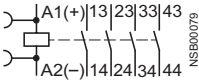
Note:
For position of terminals for the 3RT10 17-2K.4. and 3RT10 25-3K.40 contactors see page 3/220.

Connection diagrams for 3RH1 contactor relays, size S00

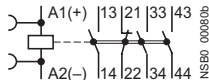
Terminal designations according to EN 50011¹⁾

3RH11 contactor relays

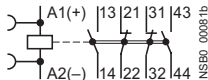
4 NO
Ident. No.: 40E



3 NO + 1 NC
31 E

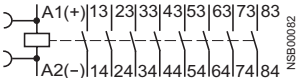


2 NO + 2 NC
22E



3RH11 40 contactor relays
with 3RH19 11-1GA.,
3RH12 44, 3RH12 62 auxiliary switch blocks snapped onto the front

8 NO
Ident. No.: 80E



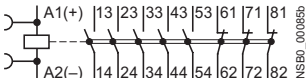
7 NO + 1 NC
71E



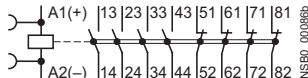
6 NO + 2 NC
62E



5 NO + 3 NC
Ident. No.: 53E

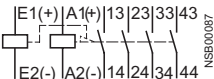


4 NO + 4 NC
44E

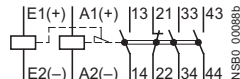


3RH14 latched contactor relays

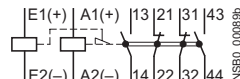
4 NO
Ident. No.: 40E



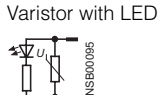
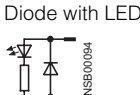
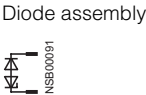
3 NO + 1 NC
1E



2 NO + 2 NC
22E



Surge suppressor (plug-in direction coded)

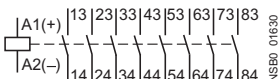


¹⁾ Positively-driven operation is assured likewise for auxiliary switch blocks according to EN 50005 in conjunction with 3RH11 contactor relays (basic units).

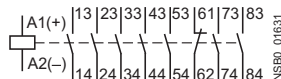
Connection diagrams for 3TH42 contactor relays with 8 contacts

Terminal designations according to EN 50011

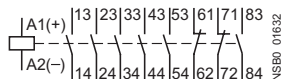
8 NO
Ident. No.: 80E



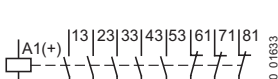
7 NO + 1 NC
71E



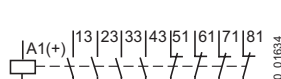
6 NO + 2 NC
62E



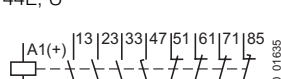
5 NO + 3 NC
Ident. No.: 53E

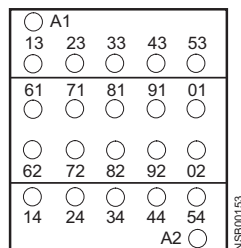


4 NO + 4 NC
44E



3 NO + 3 NC and 1 NO + 1 NC
make-before-break
44E, U



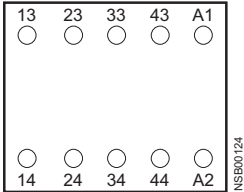


Position of the terminals for 3RH1 contactor relays, size S00

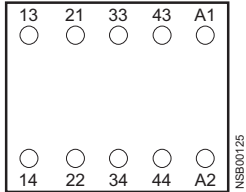
Terminal designations according to EN 50011

3RH11 contactor relays

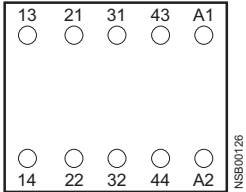
4 NO
Ident. No.: 40E



3 NO + 1 NC
31E

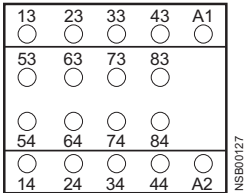


2 NO + 2 NC
22E

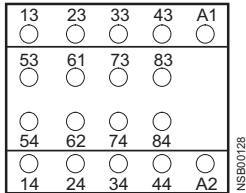


3RH11 40 contactor relays
with 3RH19 11-1GA...
3RH12 44, 3RH12 62 auxiliary switch blocks snapped onto the front

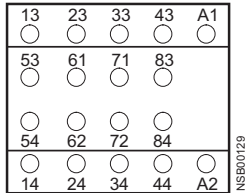
8 NO
Ident. No.: 80E



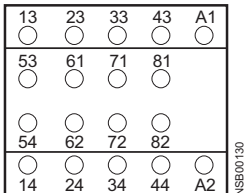
7 NO + 1 NC
71E



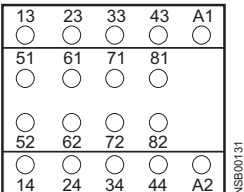
6 NO + 2 NC
62E



5 NO + 3 NC
53E

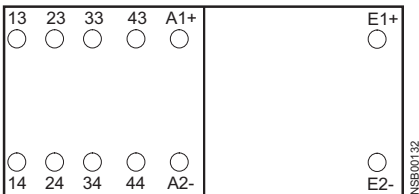


4 NO + 4 NC
Ident. No.: 44E

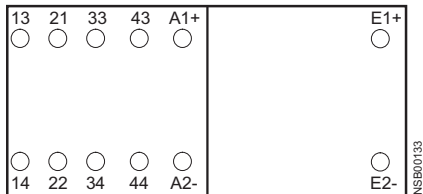


3RH14 latched contactor relays

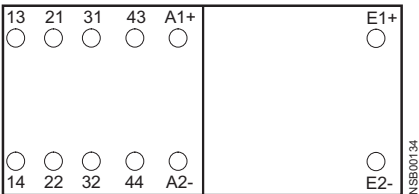
4 NO
Ident. No.: 40E



3 NO + 1 NC
31E



2 NO + 2 NC
Ident. No.: 22E



Controls – Contactors and Contactor Assemblies

Project planning aids

Connection diagrams for 3RH11 coupling relays for switching auxiliary circuits

DC operation
• L+ is to be connected to coil terminal A1.

3RH11 coupling relays for auxiliary circuits

Size S00

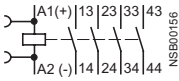
Terminal designations according to EN 50011

(it is not possible to snap on an auxiliary switch block)

Surge suppressor can be mounted

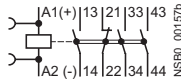
4 NO

Ident. No.: 40E



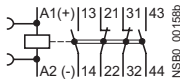
3 NO + 1 NC

31E



2 NO + 2 NC

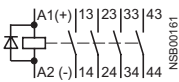
22E



Diode integrated

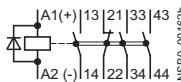
4 NO

Ident. No.: 40E



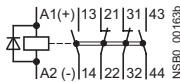
3 NO + 1 NC

31E



2 NO + 2 NC

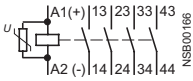
22E



Varistor integrated

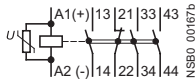
4 NO

Ident. No.: 40E



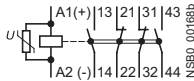
3 NO + 1 NC

31E



2 NO + 2 NC

22E



Surge suppressors for size S00 coupling relays

see 3RH11 contactor relays, page 3/225.

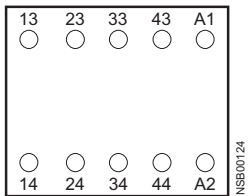
Position of the terminals for 3RH11 coupling relays for switching auxiliary circuits

Size S00

3RH11 coupling relays

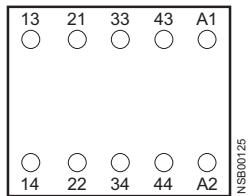
4 NO

Ident. No.: 40E



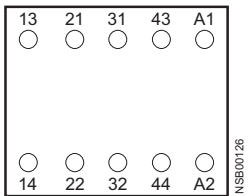
3 NO + 1 NC

31E



2 NO + 2 NC

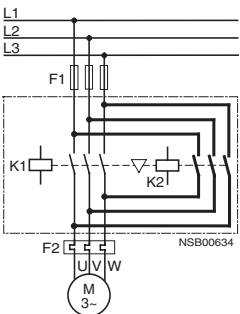
22E



Circuit diagrams for 3RA13 reversing contactor assemblies

Size S00

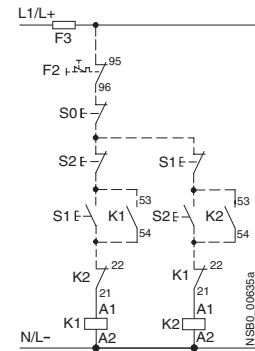
Main circuit



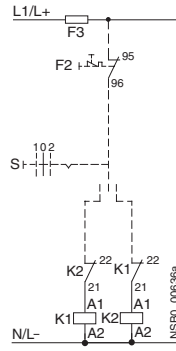
Control circuit

(The terminal designations for the contactors comply with EN 50012)

For momentary-contact operation



For maintained-contact operation

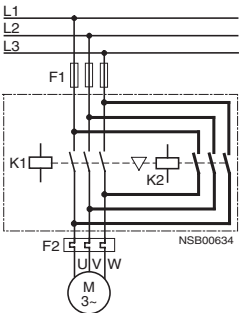


The 3RA19 13-2A installation kit contains, among other things, wiring connectors for connecting the main current paths.

The 3RA19 13-2A installation kit contains, among other things, the electrical interlock.

Sizes S0 to S3

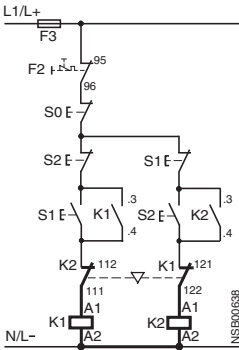
Main circuit



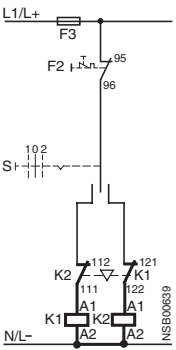
Control circuit

(The terminal designations for the contactors comply with EN 50005)

For momentary-contact operation



For maintained-contact operation



The 3RA19 .3-2A installation kits contain, among other things, the wiring modules on the top and bottom for connecting the main conducting paths.

The 3RA19 24-2B mechanical interlock contains one NC contact for each contactor for the NC contact interlock.

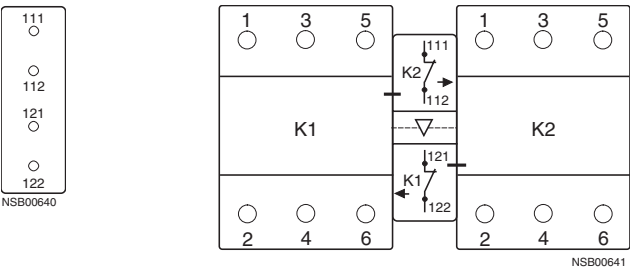
Position of the terminals for 3RA13 reversing contactor assemblies

Size S0 to S3

Terminal designations according to EN 50005

3RA19 24-2B mechanical interlock (laterally mountable), integrated in reversing contactor assemblies (reversing starters), contains one NC contact for the electrical interlock for each contactor

2 NC



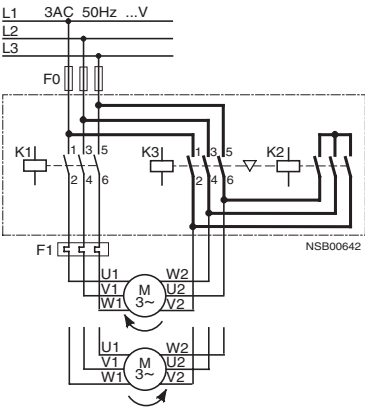
- S0 Button "OFF"
- S1 Button "Clockwise ON"
- S2 Button "Counterclockwise ON"
- S Button "CW-OFF-CCW"
- K1 Clockwise contactor
- K2 Counterclockwise contactor
- F1 Fuses for main circuit
- F3 Fuses for control circuit
- F2 Overload relays

Controls – Contactors and Contactor Assemblies

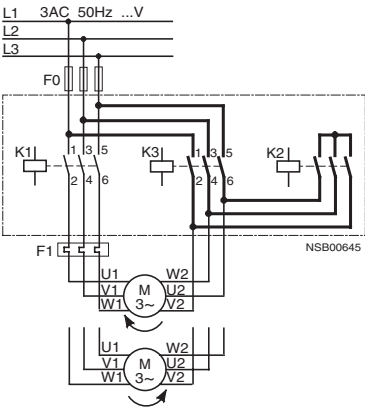
Project planning aids

Circuit diagrams for 3RA14 wye-delta starting contactor assemblies

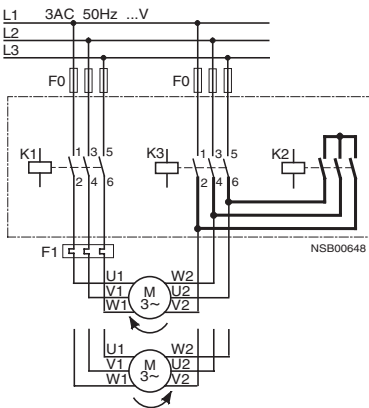
Size S00 Main circuit



Sizes S0 to S6¹⁾ Main circuit

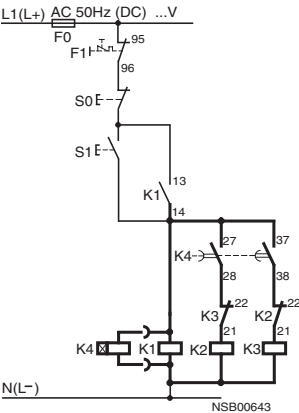


Sizes S6 to S12

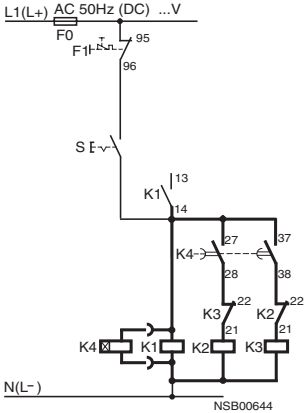


Control circuits with 3RT19 16-2G... solid state time-delay auxiliary switch block, snapped onto the front (example circuits)

For momentary-contact operation



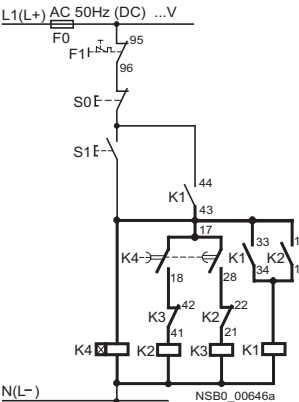
For maintained-contact operation



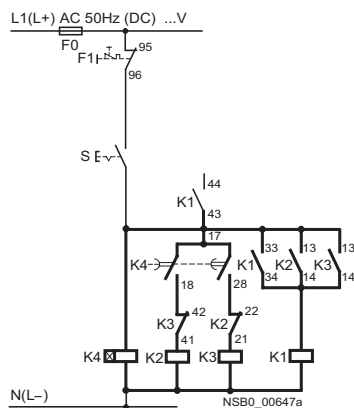
The contact element 27/28 for the solid-state time-delay auxiliary switch block with wye-delta function is only closed on the wye stage; the contact element is open in the delta stage as well as in the de-energized state.

Control circuits with 3RP15 7. timing relay, laterally mounted (example circuits)

For momentary-contact operation



For maintained-contact operation



The contact element 17/18 is only closed in the wye stage; the contact element is open in the delta stage as well as in the de-energized state.
S1 (S) is connected to clamping point K1/33.

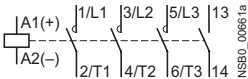
- S0 Button "OFF"
- S1 Button "ON"
- S Maintained-contact switch
- K1 Line contactor
- K2 Star contactor
- K3 Delta contactor
- K4 Solid-state, time-delay auxiliary switch block or timing relay
- F0 Fuses
- F1 Overload relays

¹⁾ Only 3RA19 53-2B. installation kit

Internal circuit diagrams for 3TG10 miniature contactors

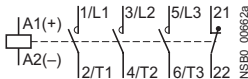
3TG10 10 contactors

1 NO
Ident. No.: 10E



3TG10 01 contactors

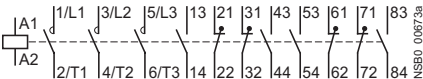
1 NC
01E



Internal circuit diagrams for 3TF68 and 3TF69 vacuum contactors, 3-pole

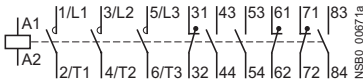
3TF68 44 and 3TF69 44 contactors

4 NO + 4 NC
AC operation
Maximum number of auxiliary contacts that can be fitted



3TF68 33 and 3TF69 33 contactors

3 NO + 3 NC
DC operation
Maximum number of auxiliary contacts that can be fitted



3TY7 681-1G auxiliary switch blocks
for coil reconnection,
3TF68 and 3TF69,
DC economy circuit



3TY7 561-1AA00 auxiliary switch blocks
1st auxiliary switch block
left or right

mounted on left Mounted on right



3TY7 561-1KA00 auxiliary switch blocks
2nd auxiliary switch block
left or right

mounted on left Mounted on right



3TY7 561-1EA00 auxiliary switch blocks
With overlapping contacting

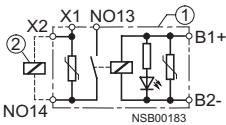
mounted on left Mounted on right



3TY7 561-1. auxiliary switch blocks
Solid-state compatible auxiliary switch block
mounted on left mounted on right



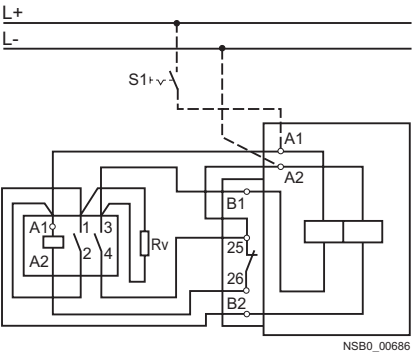
3TX7 090-0D coupling links for control by PLC
with surge suppression



① Coupling link
② Contactor

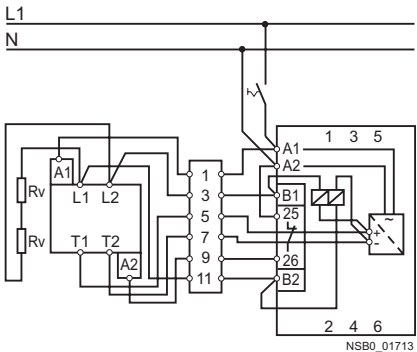
Circuit diagrams for 3TF68 and 3TF69 vacuum contactors, 3-pole
DC economy circuit - Maintained-contact operation

3TF68 33-.D.4 and 3TF69 33-.D.4 contactors



For AC control supply voltage subject to strong interference

3TF68 33-.Q.7 and 3TF69 33-.Q.7 contactors



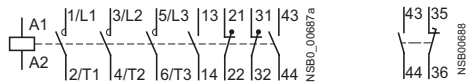
Controls – Contactors and Contactor Assemblies

Project planning aids

Internal circuit diagrams for 3TB50 to 3TB56 contactors, 3-pole

Sizes 6 to 12
3TB50 to 3TB56
DC operation
Auxiliary contacts: **2 NO + 2 NC**

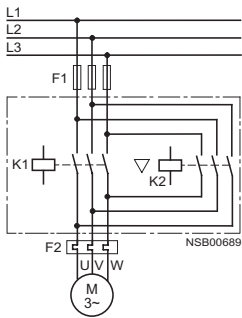
3TY6 501-1E, 3TY6 561-1E
auxiliary switch block
with overlapping
contacting



Circuit diagrams for 3TD68 reversing contactor assemblies

Main circuit

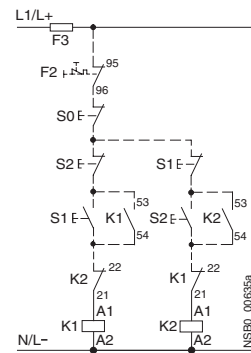
In the main circuit the connections are made between contactors K1 and K2.



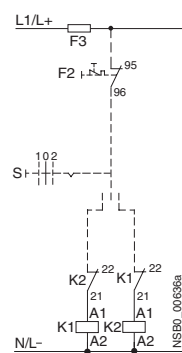
Control circuits

The control circuit cables indicated by broken lines are not wired in the factory.

Momentary-contact operation



Maintained-contact operation



Terminal designations of the unassigned auxiliary contacts

Contactor assembly	With electrical interlock				Without electrical interlock			
	Contactor K1		Contactor K2		Contactor K1		Contactor K2	
	NO contact	NC contact	NO contact	NC contact	NO contact	NC contact	NO contact	NC contact
3TD68	13 – 14	21 – 22	13 – 14	31 – 32	13 – 14	21 – 22	13 – 14	21 – 22
	43 – 44	61 – 62	43 – 44	61 – 62	43 – 44	31 – 32	43 – 44	31 – 32
	53 – 54	71 – 72	53 – 54	71 – 72	53 – 54	61 – 62	53 – 54	61 – 62
	83 – 84		83 – 84		83 – 84	71 – 72	83 – 84	71 – 72

S0 Button "OFF"
S1 Button "Clockwise ON"
S2 Button "Counterclockwise ON"
S Button "CW-OFF-CCW"
K1 Clockwise contactor
K2 Counterclockwise contactor
F1 Fuses for main circuit
F3 Fuses for control circuit
F2 Overload relays

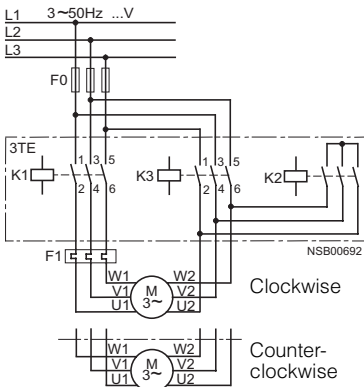
Controls – Contactors and Contactor Assemblies

Project planning aids

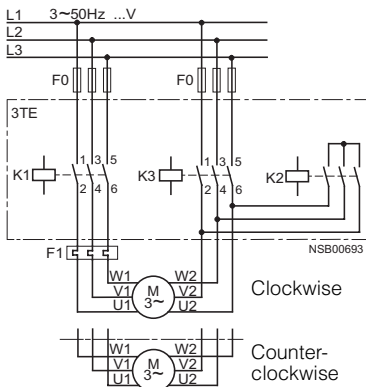
Circuit diagrams for 3TE68 wye-delta starting contactor assemblies

Main circuit

Single infeed
Without main conducting path connection between line and delta contactors

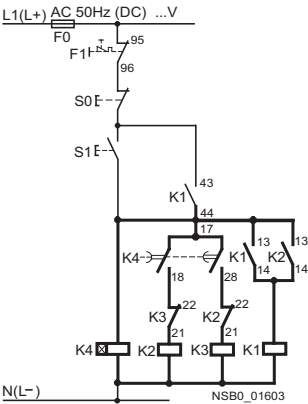


Double infeed
Without main conducting path connection between line and delta contactors

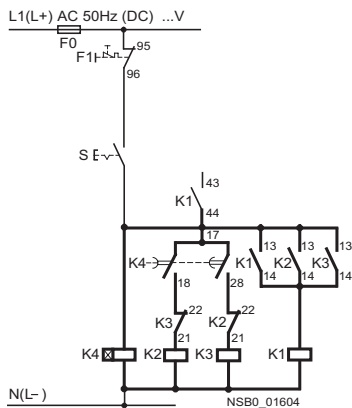


Control circuit with 3RP1 574 timing relay

For momentary-contact operation



For maintained-contact operation

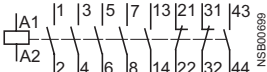


The contact element 17/18 is only closed in the wye stage; the contact element is open in the delta stage as well as in the de-energized state.

- S0 Button "OFF"
- S1 Button "ON"
- S Maintained-contact switch
- K1 Line contactor
- K2 Star contactor
- K3 Delta contactor
- K4 Timing relay
- F0 Fuses
- F1 Overload relays

Internal circuit diagrams for 3TK1 contactors, 4-pole (4 NO) for switching resistive loads (AC-1)

3TK1 contactors



3TK1 910-3B auxiliary
switch block
mounted on left



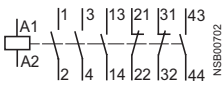
mounted on right



Controls – Contactors and Contactor Assemblies

Project planning aids

Internal circuit diagram for 3TC44 to 3TC56 contactors for switching DC voltage

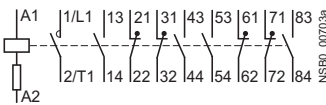


Internal circuit diagrams for 3TC74, 3TC78 contactors for switching DC voltage

DC operation

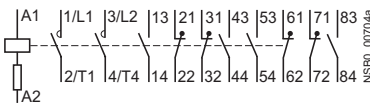
3TC74 contactors

Auxiliary contacts **4 NO + 4 NC**



3TC78 contactors

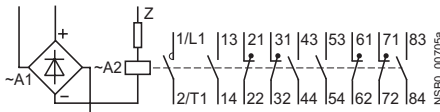
Auxiliary contacts **4 NO + 4 NC**



AC operation

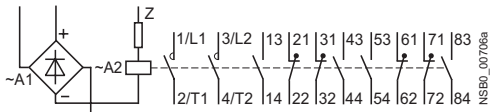
Auxiliary contacts **4 NO + 4 NC**

Must be operated in the DC circuit



Auxiliary contacts **4 NO + 4 NC**

Must be operated in the DC circuit

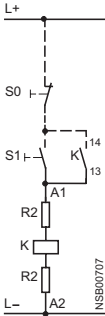


Circuit diagrams for 3TC74, 3TC78 contactors for switching DC voltage

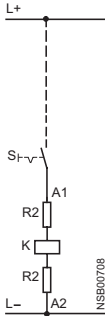
3TC74 contactors

Momentary-contact operation

DC operation

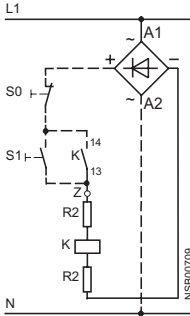


Maintained-contact operation

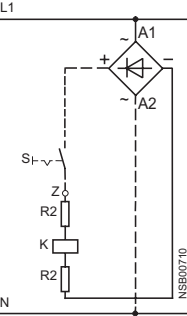


Momentary-contact operation

AC operation (must be operated in the DC circuit)



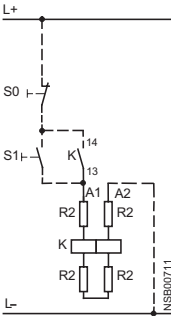
Maintained-contact operation



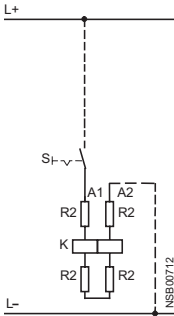
3TC78 contactors

Momentary-contact operation

DC operation

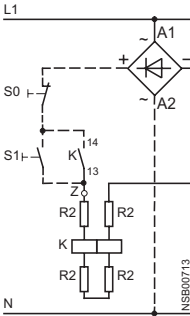


Maintained-contact operation

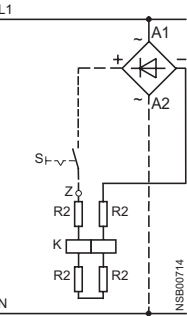


Momentary-contact operation

AC operation (must be operated in the DC circuit)



Maintained-contact operation

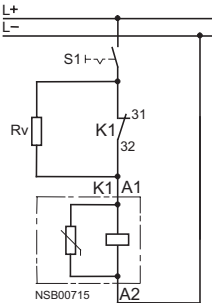


Controls – Contactors and Contactor Assemblies

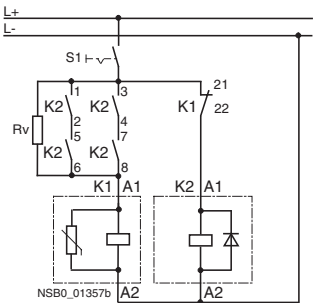
Project planning aids

Circuit diagrams for 3T contactors with extended operating range 0.7 to 1.25 x U_s

Circuit with series resistor Rv (size 2 or larger) without reversing contactor



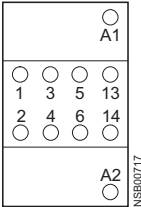
Circuit with series resistor Rv and reversing contactor K2 (for K1 contactors size 8 or larger)



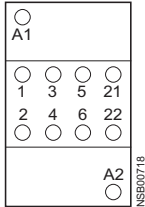
Rv:
Two resistors are connected in series for 3TB54, 3TB56 and 3TC56 contactors.
K2:
For 3TB52 to 3TB56 and 3TC52 to 3TC56:
3RT13 17-1F .40

Position of the terminals for 3TG10 miniature contactors

3TG10 10 contactors
1 NO

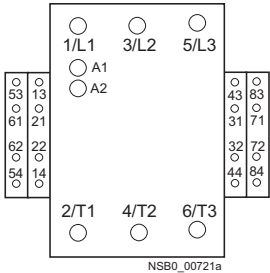


3TG10 01 contactors
1 NC

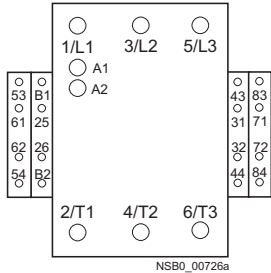


Position of the terminals for 3TF68 and 3TF69 vacuum contactors, 3-pole

AC operation
3TF68 and 3TF69 contactors
4 NO + 4 NC



DC operation
3TF68 and 3TF69 contactors
3 NO + 3 NC
Maximum number of auxiliary contacts that can be fitted



3TY7 561-1 . solid-state compatible auxiliary switch blocks for lateral mounting

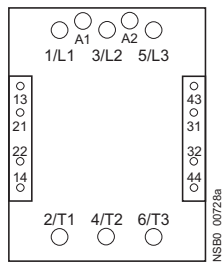


Controls – Contactors and Contactor Assemblies

Project planning aids

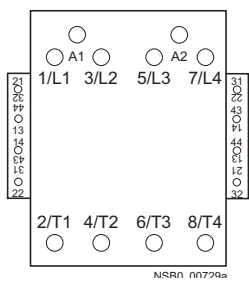
Position of the terminals for 3TB50 to 3TB56 contactors, 3-pole

Size 6 to 12
3TB50 to 3TB56 contactors
2 NO + 2 NC



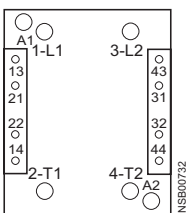
Position of the terminals for 3TK1 contactors for switching resistive loads (AC-1)

3TK10 to 3TK17 contactors
2 NO + 2 NC

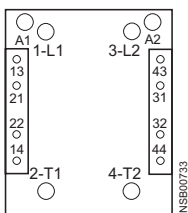


Position of the terminals for 3TC contactors for switching DC voltage

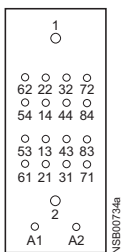
AC and DC operation
Size 2
3TC44 contactors



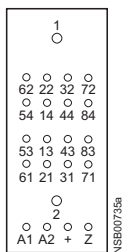
Sizes 4, 8 and 12
3TC48 to 3TC56 contactors



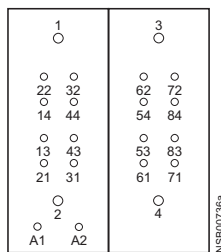
DC operation
3TC74 contactors



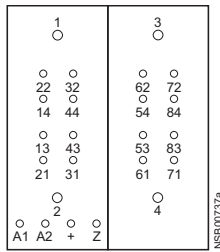
AC operation
3TC74 contactors



DC operation
3TC78 contactors



AC operation
3TC78 contactors

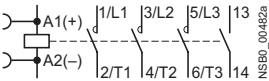


Internal circuit diagrams for 3TF2 and 3TK2 contactors

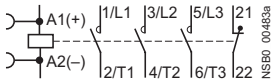
Terminal designations according to EN 50012

3TF20 ...0 and 3TF28 ...0 contactors
with AC and DC operation

1 NO
Ident. No.: 10E

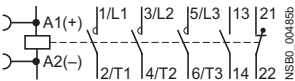


1 NC
01E

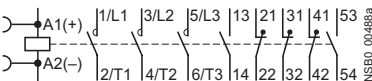


3TF20 10 contactors with 3TX4 4 ...1 auxiliary switch block,
3TF22 and 3TF29 contactors
with AC and DC operation

1 NO + 1 NC
Ident. No. 11E



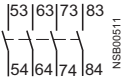
2 NO + 3 NC
Ident. No.: 23E



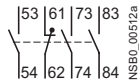
Terminal designations according to EN 50005

3TX4 4 ...2 auxiliary switch block

4 NO
Ident. No.: 40



3 NO + 1 NC
31



2 NO
Ident. No.: 20

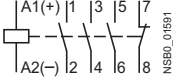


1 NO + 1 NC
11

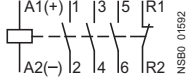


3TK20 contactors

4 NO



3 NO + 1 NC



Surge suppressors

Diode



Diode assembly



Varistor



RC element



Diode with LED

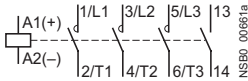


Varistor with LED

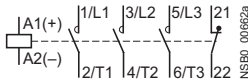


3TF20 ...-3, 3TF20 ...-6 and 3TF20 ...-7 contactors
with AC and DC operation

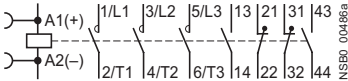
1 NO
Ident. No.: 10E



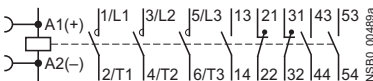
1 NC
01E



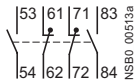
2 NO + 2 NC
22E



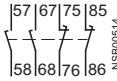
3 NO + 2 NC
32E



2 NO + 2 NC
22



2 NO + 2 NC
22U



with make-before-break

2 NC
02



1 NO + 1 NC
11U



with make-before-break

Controls – Contactors and Contactor Assemblies

Project planning aids

Internal circuit diagrams for 3TH2 contactor relays and 3TH27 latched contactor relays

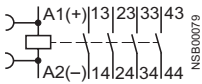
Size S00

Terminal designations according to EN 50011

3TH20 ...0 contactor relays,
AC and DC operation,
with screw terminals

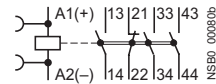
4 NO

Ident. No.: 40E



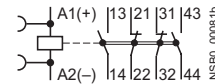
3 NO + 1 NC

31E



2 NO + 2 NC

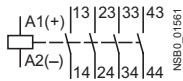
22E



3TH20 ...3, 3TH20 ...6, 3TH20 ...7 contactor relays,
AC and DC operation,
with flat connectors 6.3 mm x 0.8 mm and solder pin connectors

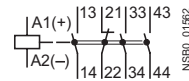
4 NO

Ident. No.: 40E



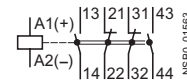
3 NO + 1 NC

31E



2 NO + 2 NC

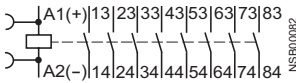
22E



3TH20 40 contactor relays with 3TX4 4 ...0 auxiliary switch block and
3TH22 contactor relay

8 NO

Ident. No.: 80E



7 NO + 1 NC

71E



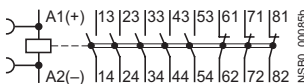
6 NO + 2 NC

62E



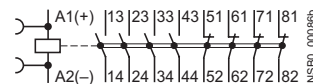
5 NO + 3 NC

Ident. No.: 53E



4 NO + 4 NC

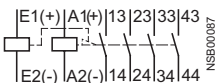
44E



3TH27 latched contactor relays,
AC and DC operation

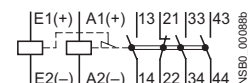
4 NO

Ident. No.: 40E



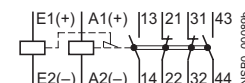
3 NO + 1 NC

31E



2 NO + 2 NC

22E



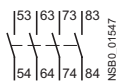
Terminal designations according to EN 50005

3TX4 4 ...2 auxiliary switch block

Positively-driven operation is assured likewise for auxiliary switch blocks according to EN 50005 in conjunction with 3TH20 contactor relays (basic units).

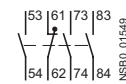
4 NO

Ident. No.: 40



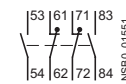
3 NO + 1 NC

31



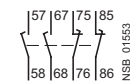
2 NO + 2 NC

22



2 NO + 2 NC

22U



with make-before-break

2 NO

Ident. No.: 20



1 NO + 1 NC

11



2 NC

02



1 NO + 1 NC

11U



with make-before-break

Surge suppressors

Diode



Diode assembly



Varistor



RC element



Diode with LED



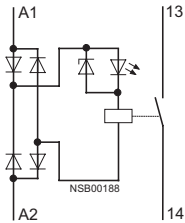
Varistor with LED



Relay couplers – connection diagrams for 3TX7 002/3TX7 003

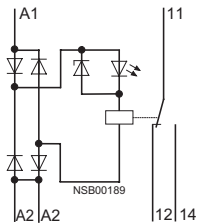
Terminal designations according to EN 50005

3TX7 002-.A.00
3TX7 002-1AB02
3TX7 002-2AF05
3TX7 003-.A.00



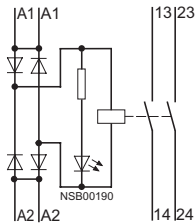
-1B.00

-1B.00

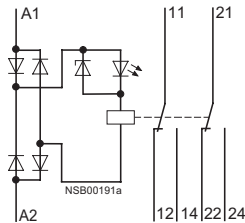


-1CB00

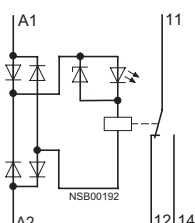
1CB00



-1FB02



-2BF02



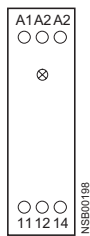
Relay couplers – position of the terminals

Output coupling links

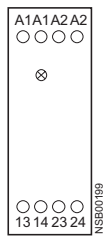
3TX7 002-1AB0.
3TX7 003-1AB00



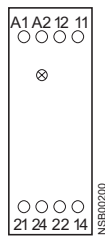
-1B.00
-1B.00



-1CB00
-1CB00

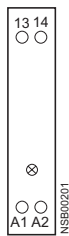


-1FB02



Input coupling links

3TX7 002-2A.0.
3TX7 003-2A.0.



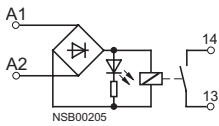
-2BF02



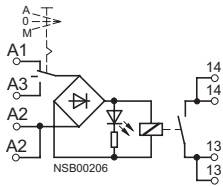
Relay couplers – connection diagrams for 3TX7 004/3TX7 005

Output coupling links

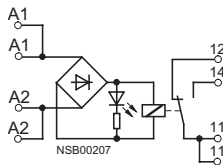
3TX7 00.-1M.00



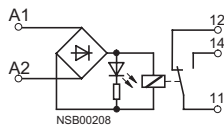
3TX7 00.-1AB10



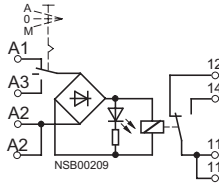
3TX7 00.-1BB00
3TX7 00.-1BF05



3TX7 00.-1L.0.



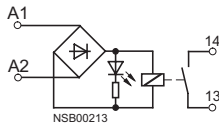
3TX7 00.-1BB10



A = Automatic
0 = Neutral position
M = Manual

Input coupling links

3TX7 00.-2M.02

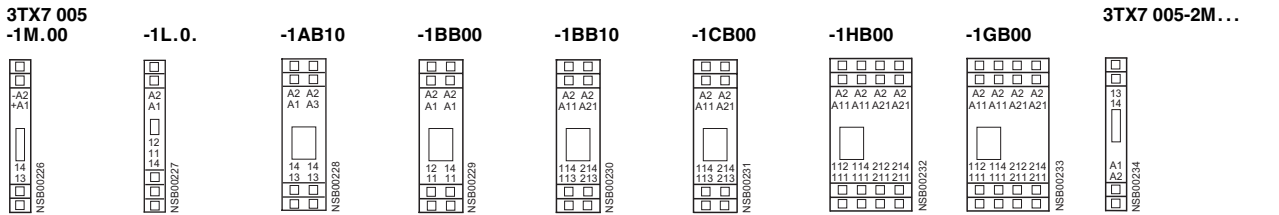
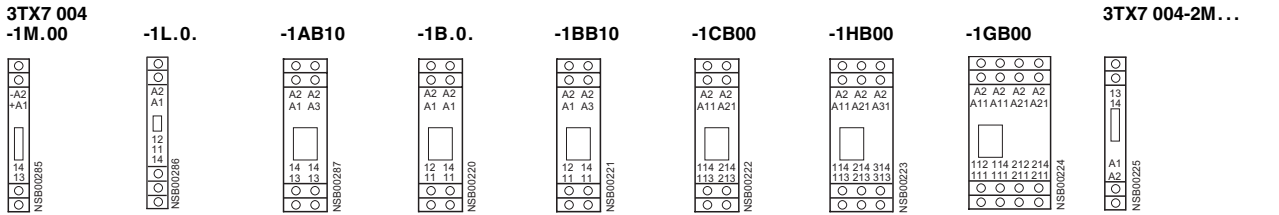


Controls – Contactors and Contactor Assemblies

Project planning aids

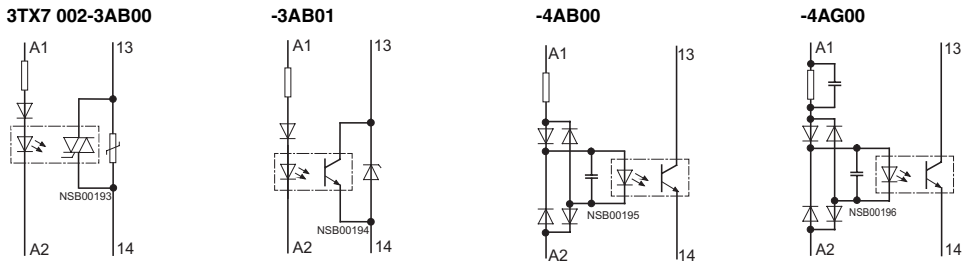
Relay couplers – position of the terminals

Output coupling links



Semiconductor couplers – connection diagrams

Terminal designations according to EN 50005



Semiconductor couplers – position of the terminals

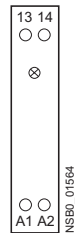
Output coupling links

3TX7 002-3AB0.



Input coupling links

3TX7 002-4A.0.



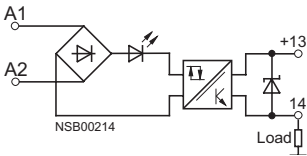
Controls – Contactors and Contactor Assemblies

Project planning aids

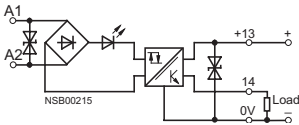
Semiconductor couplers – connection diagrams

Output coupling links

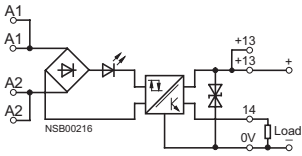
3TX7 00.-3AB04
3TX7 00.-3PB41



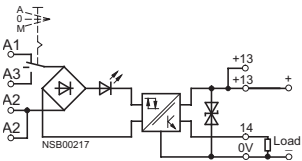
3TX7 00.-3PB54
3TX7 00.-3PG74
3TX7 00.-3PB74



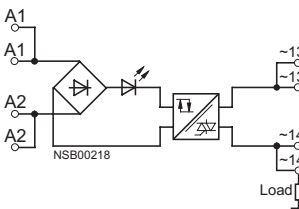
3TX7 00.-3AC04



3TX7 00.-3AC14

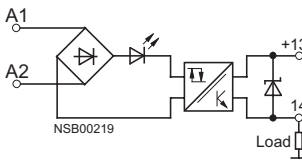


3TX07 00.-3AC03



Input coupling links

3TX7 00.-4AB04



A= Automatic
0= Neutral position
M = Manual

Semiconductor couplers – position of the terminals

Output coupling links

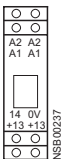
3TX7 004
-3AB04,
-3PB41



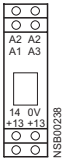
-3PB54,
-3PB74,
-3PG74



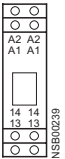
-3AC04



-3AC14



-3AC03



Input coupling links

3TX7 004-4AB04



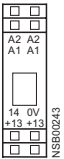
3TX7 005
-3AB04,
-3PB41



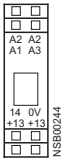
-3PB54,
-3PB74,
-3PG74



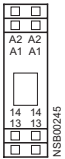
-3AC04



-3AC14



-3AC03



3TX7 005-4AB04



3RS18 coupling relays with industrial housing – position of the terminals

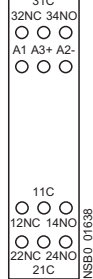
3RS18 00
-.AP00
-.AQ00



3RS18 00
-.BP00
-.BQ00



3RS18 00
-.HP0.
-.HQ0.



3RS18 00
-.BW00



3RS18 00
-.HW0.



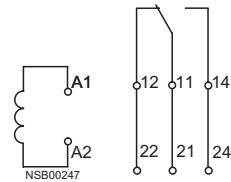
Controls – Contactors and Contactor Assemblies

Project planning aids

LZX plug-in relays – relay couplers

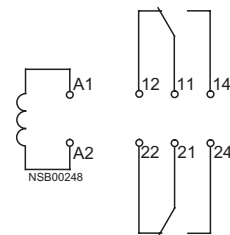
LZX:RT3

1-pole



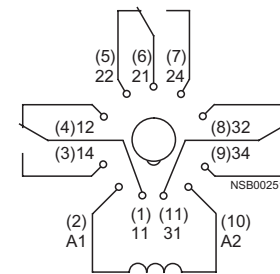
LZX:RT4

2-pole



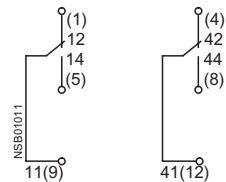
LZX:MT32

3-pole



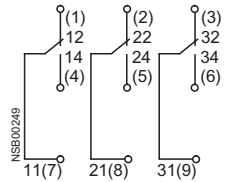
LZX:PT270

2-pole



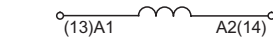
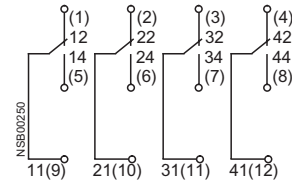
LZX:PT370

3-pole



LZX:PT570

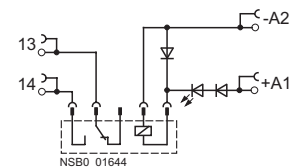
4-pole



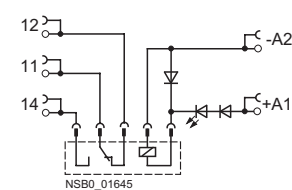
Values in brackets: socket designations.
Without brackets: contact/coil designations.

3TX7 014/3TX7 015 relay couplers with plug-in design – connection diagrams

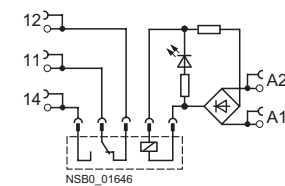
3TX7 01.-1AM00



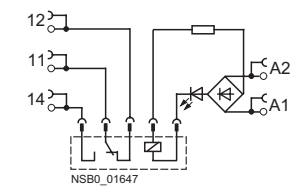
3TX7 01.-1BM0.



3TX7 01.-1BB0.



3TX7 01.-1BE0. 3TX7 01.-1BF0.



3TX7 014/3TX7 015 relay couplers with plug-in design – position of the terminals

3TX7 01.-1AM00



3TX7 01.-1BM0.



3TX7 01.-1BB0. 3TX7 01.-1BE0. 3TX7 01.-1BF0.

