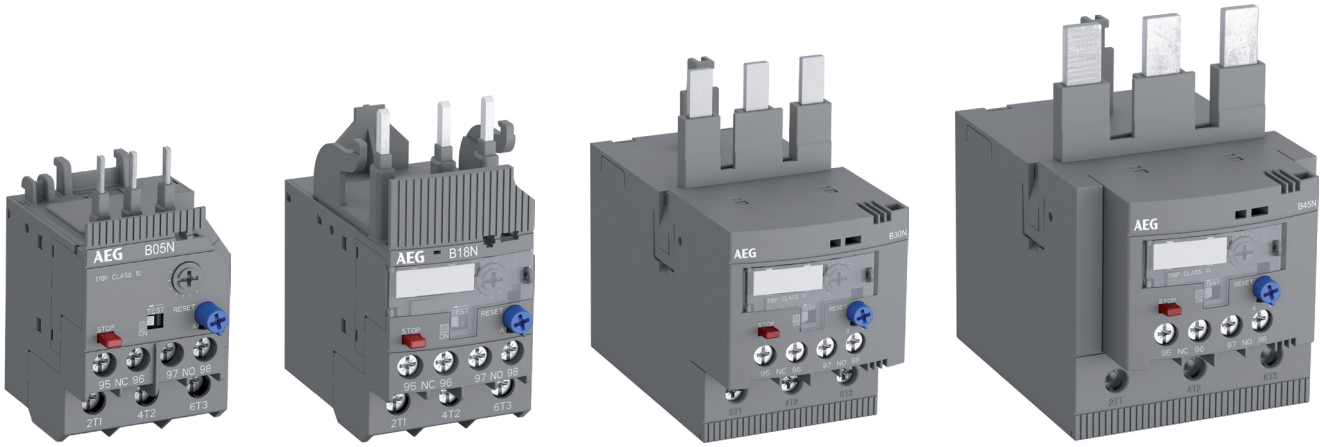
B05N ... B45N overload relays



Thermal overload relays are economic electromechanical protection devices for the main circuit. They are used mainly to protect motors against overload and phase failures. Starter combinations are setup together with contactors.

- Overload protection 1.3 A up to 96 A
- Adjustable current setting
- Trip class 10
- Temperature compensation
  from -25°C to 60°C
- Phase loss sensitivity
- Optimized match with LS..N contactors
- Stand alone mounting kits

Reliable in extreme conditions

B..N overload relays guarantee reliable operations in hot or cold environments with its temperature compensation. They are the right protection for motors operating in explosive areas thanks to the ATEX certification

Speed up installation

B..N overload relays perfectly match to LS..N contactors allowing an easy and quick starter mounting. For separate mounting, single mounting kits are also available.

Thermal overload relays




IEC: rated operational power AC-3	400 V	0.06 … 7.5 kW	0.06 … 18.5 kW	11 … 37 kW	18.5 … 45 kW
UL/CSA: 3-phase hp-ratings	480 V	1/2 … 10 hp	1/2 … 25 hp	15 … 50 hp	30 ... 75 hp
Fitting to contactors		LS05K.., LS06K..	LS04N ... LS18N	LS22N, LS30N	LS37N, LS45N
Type		**B05N**	**B18N**	**B30N**	**B45N**
Current range		1.3 … 13 A	0.74 … 38 A	36 … 67 A	65 … 96 A
Trip class		10	10	10	10
Single mounting kit		VST05N	VST18N	VST30N	VST45N

B05N thermal Overload Relays - 1.30 to 13 A

Ordering details

B05N

VST05N

B05N + VST05N

The B05N thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure.
The devices have trip class 10.

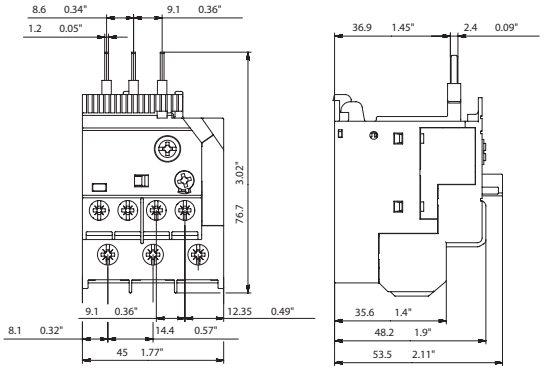
The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly. In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
Suitable for all LS05K.. and LS06K.. variants					
1.30 ... 1.70	10.0 A, fuse type gG	10	B05N-1.7	4TQE571110R0000	0.100
1.70 ... 2.30	10.0 A, fuse type gG	10	B05N-2.3	4TQE571111R0000	0.100
2.30 ... 3.10	10.0 A, fuse type gG	10	B05N-3.1	4TQE571112R0000	0.100
3.10 ... 4.20	20.0 A, fuse type gG	10	B05N-4.2	4TQE571113R0000	0.100
4.20 ... 5.70	20.0 A, fuse type gG	10	B05N-5.7	4TQE571114R0000	0.100
5.70 ... 7.60	35.0 A, fuse type gG	10	B05N-7.6	4TQE571115R0000	0.100
7.60 ... 10.0	35.0 A, fuse type gG	10	B05N-10	4TQE571116R0000	0.104
10.0 ... 13.0	40.0 A, fuse type gG	10	B05N-13	4TQE571117R0000	0.104

Accessories

Description	Suitable for	Type	Order code	Weight (1 pce) kg
Single mounting kit	B05N	VST05N	4TQE579001R0000	0.032



B05N

Main dimensions mm, inches

B05N thermal Overload Relays - 1.30 to 13 A

Technical data

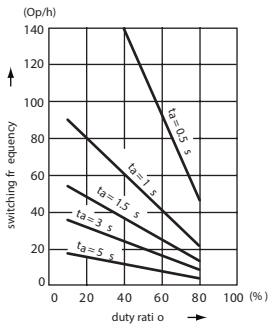
Main circuit – Utilization characteristics according to IEC/EN

Type	B05N
Standards	IEC/EN 60947–4–1, IEC/EN 60947-5-1, IEC/EN 60947-1
Rated operational voltage Ue	690 V AC - V DC
Rated frequency	50/60 Hz
Trip class	10
Number of poles	3
Duty time	100%
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage Uimp	6 kV
Rated insulation voltage Ui	690 V AC

Auxiliary circuit according to IEC/EN

Type		B05N
Rated operational voltage Ue		600 V
Conventional free air thermal current Ith	N.C., 95-96	6 A
	N.O., 97-98	4 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.O. + 1 N.C.
Ie / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
220-230-240 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
440 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
480-500 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
Ie / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V	N.C., 95-96	1.25 A
	N.O., 97-98	1.25 A
60 V	N.C., 95-96	0.55 A
	N.O., 97-98	0.55 A
110-120-125 V	N.C., 95-96	0.55 A
	N.O., 97-98	0.55 A
250 V	N.C., 95-96	0.27 A
	N.O., 97-98	0.27 A
Minimum switching capacity		17 V / 3 mA
Short-circuit protective device	N.C., 95-96	6 A, fuse type gG
	N.O., 97-98	4 A, fuse type gG
Rated impulse withstand voltage Uimp		6 kV
Rated insulation voltage Ui		690 V

Technical diagram – Intermittent periodic duty



ta: Motor starting time

AEG

B05N thermal Overload Relays - 1.30 to 13 A

Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	B05N
Standards	UL 508, CSA 22.2 No. 14
Maximum operational voltage	600 V AC
Trip rating	125% of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		B05N
Contact rating	N.C., 95-96	B600, Q300
	N.O., 97-98	D300, Q300
Conventional thermal current	N.C., 95-96	5 A
	N.O., 97-98	2.5 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse type	Short circuit rating RMS symmetrical	Fuse type
B05N-1.7	1.70 A	18 kA	6 A, K5	100 kA	30 A, Class J
B05N-2.3	2.30 A	18 kA	10 A, K5	100 kA	30 A, Class J
B05N-3.1	3.10 A	18 kA	10 A, K5	100 kA	30 A, Class J
B05N-4.2	4.20 A	18 kA	15 A, K5	100 kA	30 A, Class J
B05N-5.7	5.70 A	18 kA	20 A, K5	100 kA	30 A, Class J
B05N-7.6	7.60 A	18 kA	25 A, K5	100 kA	30 A, Class J
B05N-10	10.0 A	18 kA	35 A, K5	100 kA	45 A, Class J
B05N-13	13.0 A	18 kA	40 A, K5	100 kA	45 A, Class J

B05N thermal Overload Relays - 1.30 to 13 A

Technical data

General technical data

Type		**B05N**
Pollution degree		3
Phase loss sensitive		Yes
Ambient air temperature		
Operation	Open - compensated	-25 ... +60 °C
	Open	-25 ... +60 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/EN60947-4-1
Maximum operating altitude permissible		2000 m
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		3g / 3 ... 150 Hz
Mounting position		Position 1-5
Mounting		Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit on DIN rail (35 mm)
Degree of protection	Housing	IP20
	Main circuit terminals	IP10

Electrical connection

Main circuit

Type			**B05N**
Connecting capacity			
	Rigid	1 x	0.75 ... 4 mm²
		2 x	0.75 ... 1.5 mm² or 1.5 ... 4 mm² (1)
	Flexible	1 x or 2 x	0.75 ... 4 mm²
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18-10
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18-10
Stripping length			12 mm
Tightening torque			1.1 ... 1.5 Nm / 9 ... 13 lb.in
Recommended screw driver			M4 (Pozidriv 2)

Auxiliary circuit

Type			**B05N**
Connecting capacity			
	Rigid	1 x or 2 x	0.75 ... 4 mm²
	Flexible with ferrule	1 x or 2 x	0.75 ... 2.5 mm²
	Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm²
		2 x	0.75 ... 1.5 mm²
	Flexible	1 x or 2 x	0.75 ... 1 mm² or 1 ... 2.5 mm² (1)
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18-12
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18-12
Stripping length			9 mm
Tightening torque			1.1 ... 1.5 Nm / 9 ... 13 lb.in
Recommended screw driver			M3 (Pozidriv 2)

(1) Only connect two different "conductor/wire" cross-sections, if they are within the indicated ranges

B18N thermal overload relays - 0.74 to 38.0 A

Ordering details

B18N

VST18N

B18N + VST18N

The B18N thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure. The devices have trip class 10.

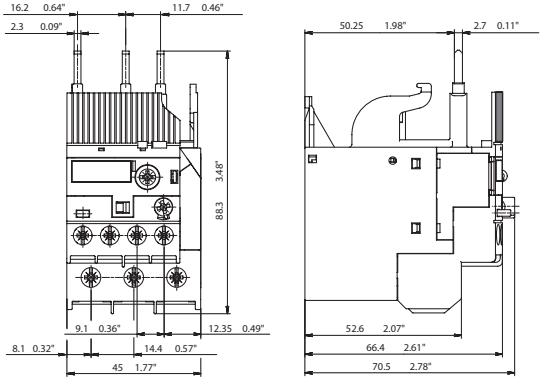
The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly. In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications
- With ATEX certification

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
Suitable for LS04N ... LS18N contactors					
0.74 ... 1.00	6.0 A, fuse type gG	10	B18N-1.0	4TQE572108R0000	0.130
1.00 ... 1.30	6.0 A, fuse type gG	10	B18N-1.3	4TQE572109R0000	0.130
1.30 ... 1.70	10.0 A, fuse type gG	10	B18N-1.7	4TQE572110R0000	0.130
1.70 ... 2.30	10.0 A, fuse type gG	10	B18N-2.3	4TQE572111R0000	0.130
2.30 ... 3.10	10.0 A, fuse type gG	10	B18N-3.1	4TQE572112R0000	0.130
3.10 ... 4.20	20.0 A, fuse type gG	10	B18N-4.2	4TQE572113R0000	0.130
4.20 ... 5.70	20.0 A, fuse type gG	10	B18N-5.7	4TQE572114R0000	0.130
5.70 ... 7.60	35.0 A, fuse type gG	10	B18N-7.6	4TQE572115R0000	0.130
7.60 ... 10.0	35.0 A, fuse type gG	10	B18N-10	4TQE572116R0000	0.130
10.0 ... 13.0	40.0 A, fuse type gG	10	B18N-13	4TQE572117R0000	0.130
13.0 ... 16.0	40.0 A, fuse type gG	10	B18N-16	4TQE572118R0000	0.130
16.0 ... 20.0	63.0 A, fuse type gG	10	B18N-20	4TQE572119R0000	0.145
20.0 ... 24.0	63.0 A, fuse type gG	10	B18N-24	4TQE572120R0000	0.145
24.0 ... 29.0	63.0 A, fuse type gG	10	B18N-29	4TQE572121R0000	0.145
29.0 ... 35.0	80.0 A, fuse type gG	10	B18N-35	4TQE572122R0000	0.145
35.0 ... 40.0	80.0 A, fuse type gG	10	B18N-38	4TQE572123R0000	0.145

Ordering details accessories

Description	Suitable for	Type	Order code	Weight (1 pce) kg
Single mounting kit	B18N	VST18N	4TQE579002R0000	0.087



B18N

Main dimensions mm, inches

B18N thermal overload relays - 0.74 to 38.0 A

Technical data

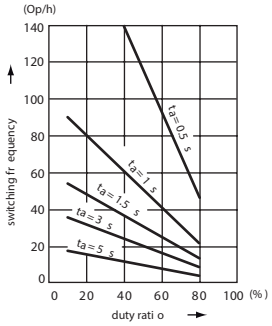
Main circuit – Utilization characteristics according to IEC/EN

Type	B18N
Standards	IEC/EN 60947–4–1, IEC/EN 60947-5-1, IEC/EN 60947-1
Rated operational voltage Ue	690 V AC
Rated frequency	50/60 Hz
Trip class	10
Number of poles	3
Duty time	100%
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage Uimp	6 kV
Rated insulation voltage Ui	690 V AC

Auxiliary circuit according to IEC/EN

Type		B18N
Rated operational voltage Ue		600 V
Conventional free air thermal current Ith	N.C., 95-96	6 A
	N.O., 97-98	4 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.O. + 1 N.C.
Ie / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
220-230-240 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
440 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
480-500 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
Ie / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V	N.C., 95-96	1.25 A
	N.O., 97-98	1.25 A
110-120-125 V	N.C., 95-96	0.55 A
	N.O., 97-98	0.55 A
250 V	N.C., 95-96	0.27 A
	N.O., 97-98	0.27 A
Minimum switching capacity		17 V / 3 mA
Short-circuit protective device	N.C., 95-96	6 A, fuse type gG
	N.O., 97-98	4 A, fuse type gG
Rated impulse withstand voltage Uimp		6 kV
Rated insulation voltage Ui		690 V

Technical diagram – Intermittent periodic duty



ta: Motor starting time

AEG

B18N thermal overload relays - 0.74 to 38.0 A

Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	B18N
Standards	UL 508, CSA 22.2 No. 14
Maximum operational voltage	600 V AC
Trip rating	125% of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		B18N
Contact rating	N.C., 95-96	B600, Q300
	N.O., 97-98	D300, Q300
Conventional thermal current	N.C., 95-96	5 A
	N.O., 97-98	2.5 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse type	Short circuit rating RMS symmetrical	Fuse type
B18N-0.74	0.74 A	18 kA	3 A, K5	100 kA	30 A, Class J
B18N-1.0	1.00 A	18 kA	6 A, K5	100 kA	30 A, Class J
B18N-1.3	1.30 A	18 kA	6 A, K5	100 kA	30 A, Class J
B18N-1.7	1.70 A	18 kA	6 A, K5	100 kA	30 A, Class J
B18N-2.3	2.30 A	18 kA	10 A, K5	100 kA	30 A, Class J
B18N-3.1	3.10 A	18 kA	10 A, K5	100 kA	30 A, Class J
B18N-4.2	4.20 A	18 kA	15 A, K5	100 kA	30 A, Class J
B18N-5.7	5.70 A	18 kA	20 A, K5	100 kA	30 A, Class J
B18N-7.6	7.60 A	18 kA	25 A, K5	100 kA	30 A, Class J
B18N-10	10.0 A	18 kA	35 A, K5	100 kA	45 A, Class J
B18N-13	13.0 A	18 kA	40 A, K5	100 kA	45 A, Class J
B18N-16	16.0 A	18 kA	60 A, K5	100 kA	45 A, Class J
B18N-20	20.0 A	18 kA	80 A, K5	100 kA	60 A, Class J
B18N-24	24.0 A	18 kA	80 A, K5	100 kA	60 A, Class J
B18N-29	29.0 A	18 kA	100 A, K5	100 kA	100 A, Class J
B18N-35	35.0 A	18 kA	150 A, K5	100 kA	175 A, Class J
B18N-38	38.0 A	18 kA	150 A, K5	100 kA	175 A, Class J

B18N thermal overload relays - 0.74 to 38.0 A

Technical data

General technical data

Type		**B18N**
Pollution degree		3
Phase loss sensitive		Yes
Ambient air temperature		
Operation	Open - compensated	-25 ... +60 °C
	Open	-25 ... +60 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/EN60947-4-1
Maximum operating altitude permissible		2000 m
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		3g / 3 ... 150 Hz
Mounting position		Position 1-5
Mounting		Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit on DIN rail (35 mm)
Degree of protection	Housing	IP20
	Main circuit terminals	IP10

Electrical connection

Main circuit

Type			**B18N (B18N-0.13 … B18N-16)**	**B18N (B18N-20 … B18N-38)**
Connecting capacity				
Rigid		1 x or 2 x	0.75 ... 4 mm²	1.5 ... 2.5 mm² or 2.5 ... 10 mm² (1)
Flexible with insulated ferrule		1 x or 2 x	0.75 ... 4 mm²	2.5 ... 4 mm² or 4 ... 6 mm² (1)
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18-10	AWG 14-6
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18-10	AWG 14-6
Stripping length			12 mm	
Tightening torque			1.5 - 2.5 Nm / 13 … 22 lb.in	2.5 - 2.7 Nm / 22 lb.in
Recommended screw driver			M4 (Pozidriv 2)	

Auxiliary circuit

Type			**B18N**
Connecting capacity			
Rigid		1 x or 2 x	0.75 ... 4 mm²
Flexible with ferrule		1 x or 2 x	0.75 ... 2.5 mm²
Flexible with insulated ferrule		1 x	0.75 ... 2.5 mm²
		2 x	0.75 ... 1.5 mm²
Flexible		1 x or 2 x	0.75 ... 1 mm² or 1 ... 2.5 mm² (1)
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18-12
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18-12
Stripping length			9 mm
Tightening torque			1.1 ... 1.5 Nm / 9 … 13 lb.in
Recommended screw driver			M3 (Pozidriv 2)

(1) Only connect two different "conductor/wire" cross-sections, if they are within the indicated ranges.

B30N thermal overload relays - 36.0 to 67.0 A

Ordering details

B30N

VST30N

B30N + VST30N

The B30N thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure.
The devices have trip class 10.

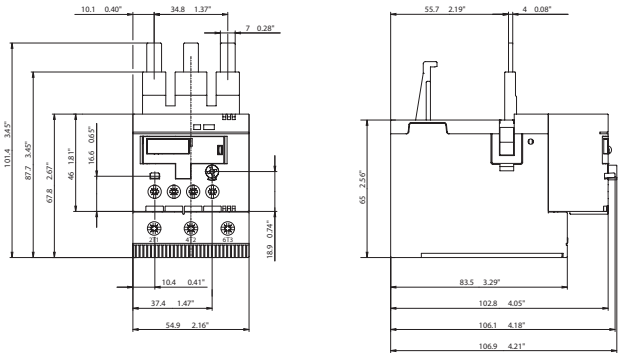
The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly. In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications
- With ATEX certification

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
Suitable for LS22N, LS30N contactors					
36.0 ... 47.0	125 A, gG Type Fuses	10	B30N-47	4TQE572204R0000	0.456
44.0 ... 53.0	125 A, gG Type Fuses	10	B30N-53	4TQE572205R0000	0.456
50.0 ... 60.0	125 A, gG Type Fuses	10	B30N-60	4TQE572206R0000	0.466
57.0 ... 67.0	160 A, gG Type Fuses	10	B30N-67	4TQE572207R0000	0.466

Ordering details accessories

Description	Suitable for	Type	Order code	Weight (1 pce) kg
Single mounting kit	B30N	VST30N	4TQE579003R0000	0.132



B30N

Main dimensions mm, inches

B30N thermal overload relays - 36.0 to 67.0 A

Technical data

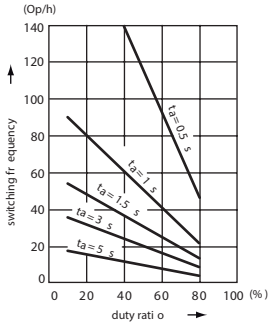
Main circuit – Utilization characteristics according to IEC/EN

Type		**B30N**
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1
Rated operational voltage Ue		690 V AC
Rated frequency		50/60 Hz
Trip class		10
Number of poles		3
Duty time		100%
Operating frequency without early tripping		Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage Uimp		8 kV
Rated insulation voltage Ui		690 V

Auxiliary circuit according to IEC/EN

Type		**B30N**
Rated operational voltage Ue		600 V
Conventional free air thermal current Ith	N.C., 95-96	6 A
	N.O., 97-98	4 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.O. + 1 N.C.
Ie / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
220-230-240 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
440 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
480-500 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
Ie / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V	N.C., 95-96	1.25 A
	N.O., 97-98	1.25 A
110-120-125 V	N.C., 95-96	0.55 A
	N.O., 97-98	0.55 A
250 V	N.C., 95-96	0.27 A
	N.O., 97-98	0.27 A
Minimum switching capacity		17 V / 3 mA
Short-circuit protective device	N.C., 95-96	6 A, gG Type Fuses
	N.O., 97-98	4 A, gG Type Fuses
Rated impulse withstand voltage Uimp		6 kV
Rated insulation voltage Ui		690 V

Technical diagram – Intermittent periodic duty



ta: Motor starting time

AEG

B30N thermal overload relays - 36.0 to 67.0 A

Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	B30N
Standards	UL 60947-1, UL 60947-4-1
Maximum operational voltage	600 V AC
Trip rating	125% of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		B30N
Contact rating	N.C., 95-96	B600, Q600
	N.O., 97-98	D300, Q600
Conventional thermal current	N.C., 95-96	6 A
	N.O., 97-98	4 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse type	Short circuit rating RMS symmetrical	Fuse type
B30N-47	47 A	5 kA	125 A, K5 / RK5	100 kA	125 A, Class J
B30N-53	53 A	10 kA	125 A, K5 / RK5	100 kA	125 A, Class J
B30N-60	60 A	10 kA	150 A, K5 / RK5	100 kA	150 A, Class J
B30N-67	67 A	10 kA	150 A, K5 / RK5	100 kA	150 A, Class J

B30N thermal overload relays - 36.0 to 67.0 A

Technical data

General technical data

Type		**B30N**
Pollution degree		3
Phase loss sensitive		Yes
Ambient air temperature		
Operation (1)	Open - compensated	-40 ... +70 °C
	Open	-40 ... +70 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/EN 60947-4-1
Maximum operating altitude permissible		2000 m
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz
Mounting position		Position 1 to 6
Mounting		Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit on DIN rail (35 mm)
Degree of protection	Housing	IP20
	Main circuit terminals	IP10

Electrical connection

Main circuit

Type			**B30N**
Connecting capacity			
	Rigid	1 x or 2 x	2.5 ... 16 mm²
		1 x	2.5 ... 35 mm²
	Flexible with ferrule	1 x or 2 x	2.5 ... 10 mm²
		1 x	2.5 ... 35 mm²
	Flexible with insulated ferrule	1 x or 2 x	2.5 ... 10 mm²
		1 x	2.5 ... 35 mm²
	Flexible	1 x or 2 x	2.5 ... 16 mm²
		1 x	2.5 ... 35 mm²
	Stranded acc. to UL/CSA	1 x	AWG 12 ... 2
		2 x	AWG 12 ... 6
	Flexible acc. to UL/CSA	1 x	AWG 12 ... 2
		2 x	AWG 12 ... 6
Stripping length			17 mm
Tightening torque			4.0 - 4.5 Nm / 35 ... 40 lb.in
Recommended screw driver			M6 (Pozidriv 2)

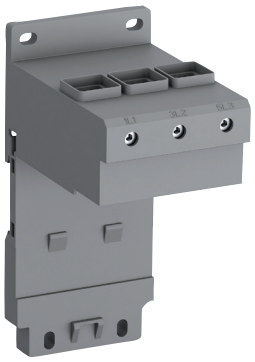
Auxiliary circuit

Type			**B30N**
Connecting capacity			
	Rigid	1 x or 2 x	0.75 ... 4 mm²
	Flexible with ferrule	1 x or 2 x	0.75 ... 4 mm²
	Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm²
		2 x	0.75 ... 1.5 mm²
	Flexible	1 x or 2 x	0.75 ... 1 mm² or 1 ... 2.5 mm²
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18 ... 12
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18 ... 12
Stripping length			9 mm
Tightening torque			1.1 ... 1.5 Nm / 9 … 13 lb.in
Recommended screw driver			M3 (Pozidriv 2)

B45N thermal overload relays - 65.0 to 96.0 A

Ordering details

B45N



VST45N

B45N + VST45N

The B45N thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure. The devices have trip class 10.

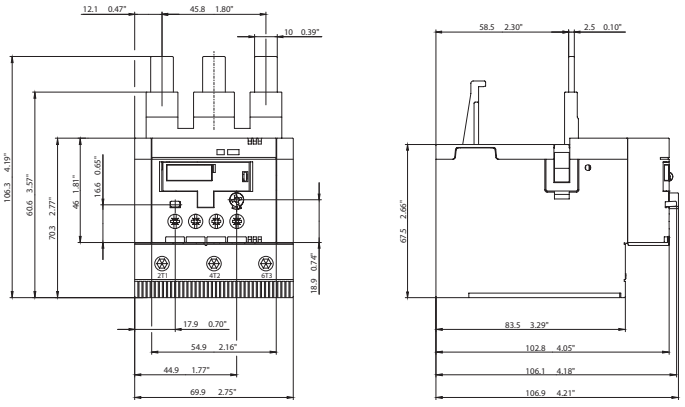
The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly.
In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications
- With ATEX certification

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
Suitable for LS37N, LS45N contactors					
65.0 ... 78.0	200 A, gG Type Fuses	10	B45N-78	4TQE572304R0000	0.620
75.0 ... 87.0	200 A, gG Type Fuses	10	B45N-87	4TQE572305R0000	0.620
84.0 ... 96.0	250 A, gG Type Fuses	10	B45N-96	4TQE572306R0000	0.630

Ordering details accessories

Description	Suitable for	Type	Order code	Weight (1 pce) kg
Single mounting kit	B45N	VST45N	4TQE579004R0000	0.190



B45N

Main dimensions mm, inches

B45N thermal overload relays - 65.0 to 96.0 A

Technical data

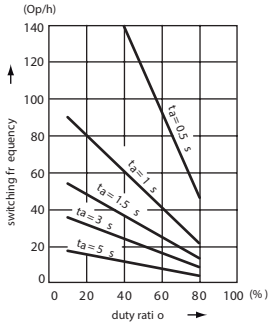
Main circuit – Utilization characteristics according to IEC/EN

Type		**B45N**
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1
Rated operational voltage Ue		690 V AC
Rated frequency		50/60 Hz
Trip class		10
Number of poles		3
Duty time		100%
Operating frequency without early tripping		Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage Uimp		8 kV
Rated insulation voltage Ui		690 V

Auxiliary circuit according to IEC/EN

Type		**B45N**
Rated operational voltage Ue		600 V
Conventional free air thermal current Ith	N.C., 95-96	6 A
	N.O., 97-98	4 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.O. + 1 N.C.
Ie / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
220-230-240 V	N.C., 95-96	3.00 A
	N.O., 97-98	0.50 A
440 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
480-500 V	N.C., 95-96	0.75 A
	N.O., 97-98	0.50 A
Ie / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V	N.C., 95-96	1.25 A
	N.O., 97-98	1.25 A
110-120-125 V	N.C., 95-96	0.55 A
	N.O., 97-98	0.55 A
250 V	N.C., 95-96	0.27 A
	N.O., 97-98	0.27 A
Minimum switching capacity		17 V / 3 mA
Short-circuit protective device	N.C., 95-96	6 A, fuse type gG
	N.O., 97-98	4 A, fuse type gG
Rated impulse withstand voltage Uimp		6 kV
Rated insulation voltage Ui		690 V

Technical diagram – Intermittent periodic duty



ta: Motor starting time

AEG

B45N thermal overload relays - 65.0 to 96.0 A

Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	B45N
Standards	UL 60947-1, UL 60947-4-1
Maximum operational voltage	600 V AC
Trip rating	125% of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		B45N
Contact rating	N.C., 95-96	B600, Q600
	N.O., 97-98	D300, Q600
Conventional thermal current	N.C., 95-96	6 A
	N.O., 97-98	4 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse type	Short circuit rating RMS symmetrical	Fuse type
B45N-78	78 A	10 kA	175 A, K5 / RK5	100 kA	175 A, Class J
B45N-87	87 A	10 kA	200 A, K5 / RK5	100 kA	200 A, Class J
B45N-96	96 A	10 kA	250 A, K5 / RK5	100 kA	200 A, Class J

B45N thermal overload relays - 65.0 to 96.0 A

Technical data

General technical data

Type		**B45N**
Pollution degree		3
Phase loss sensitive		Yes
Ambient air temperature		
Operation (1)	Open - compensated	-40 ... +70 °C
	Open	-40 ... +70 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/EN60947-4-1
Maximum operating altitude permissible		2000 m
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz
Mounting position		Position 1 to 6
Mounting		Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit on DIN rail (35 mm)
Degree of protection	Housing	IP20
	Main circuit terminals	IP10

Electrical connection

Main circuit

Type			**B45N**
Connecting capacity			
	Rigid	1 x or 2 x	6 ... 35 mm²
		1 x	6 ... 50 mm²
	Flexible with ferrule	1 x or 2 x	6 ... 35 mm²
		1 x	6 ... 50 mm²
	Flexible with insulated ferrule	1 x or 2 x	6 ... 16 mm²
		1 x	6 ... 50 mm²
	Flexible	1 x or 2 x	6 ... 35 mm²
		1 x	6 ... 50 mm²
	Stranded acc. to UL/CSA	1 x	AWG 8 ... 1
		2 x	AWG 8 ... 3
	Flexible acc. to UL/CSA	1 x	AWG 8 ... 1
		2 x	AWG 8 ... 3
Stripping length			20 mm (1)
Tightening torque			6 ... 9 Nm / 53 ... 80 lb.in (2)
Recommended screw driver			M8 (Hexagon)

Auxiliary circuit

Type			**B45N**
Connecting capacity			
	Rigid	1 x or 2 x	0.75 ... 4 mm²
	Flexible with ferrule	1 x or 2 x	0.75 ... 4 mm²
	Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm²
		2 x	0.75 ... 1.5 mm²
	Flexible	1 x or 2 x	0.75 ... 1 mm² or 1 ... 2.5 mm²
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18 ...12
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18 ... 12
Stripping length			9 mm
Tightening torque			1.1 ... 1.5 Nm / 9 ... 13 lb.in
Recommended screw driver			M3 (Pozidriv 2)