

Motor protective circuit breakers Ex9SN25B



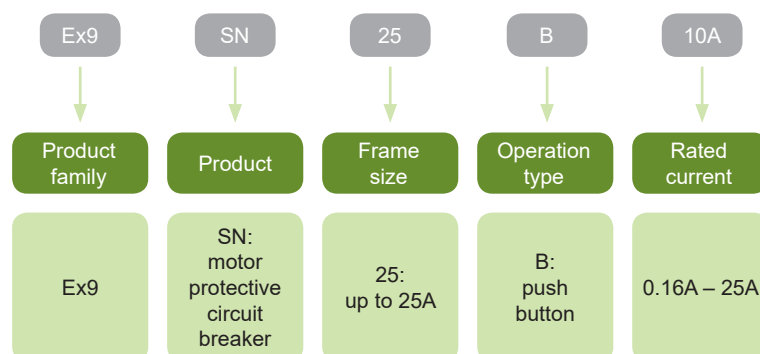
- Manual motor protective circuit breakers
- Meet requirements of EN 60947-2 and EN 60947-4-1
- Rated current I_n up to 25 A at 415 V AC-3
- Rated operating voltage U_n up to 400/415 V
- Short-circuit protection
- Disconnect function
 - Overload protection
 - Loss-phase protection
- Suitable for three and single-phase applications
- Wide range of accessories

Manual motor starters are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and protect them fuseless against short circuit and loss-phase.

Fuseless protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

Manual motor starter combinations are setup together with contactors and overload relays.

Type Key

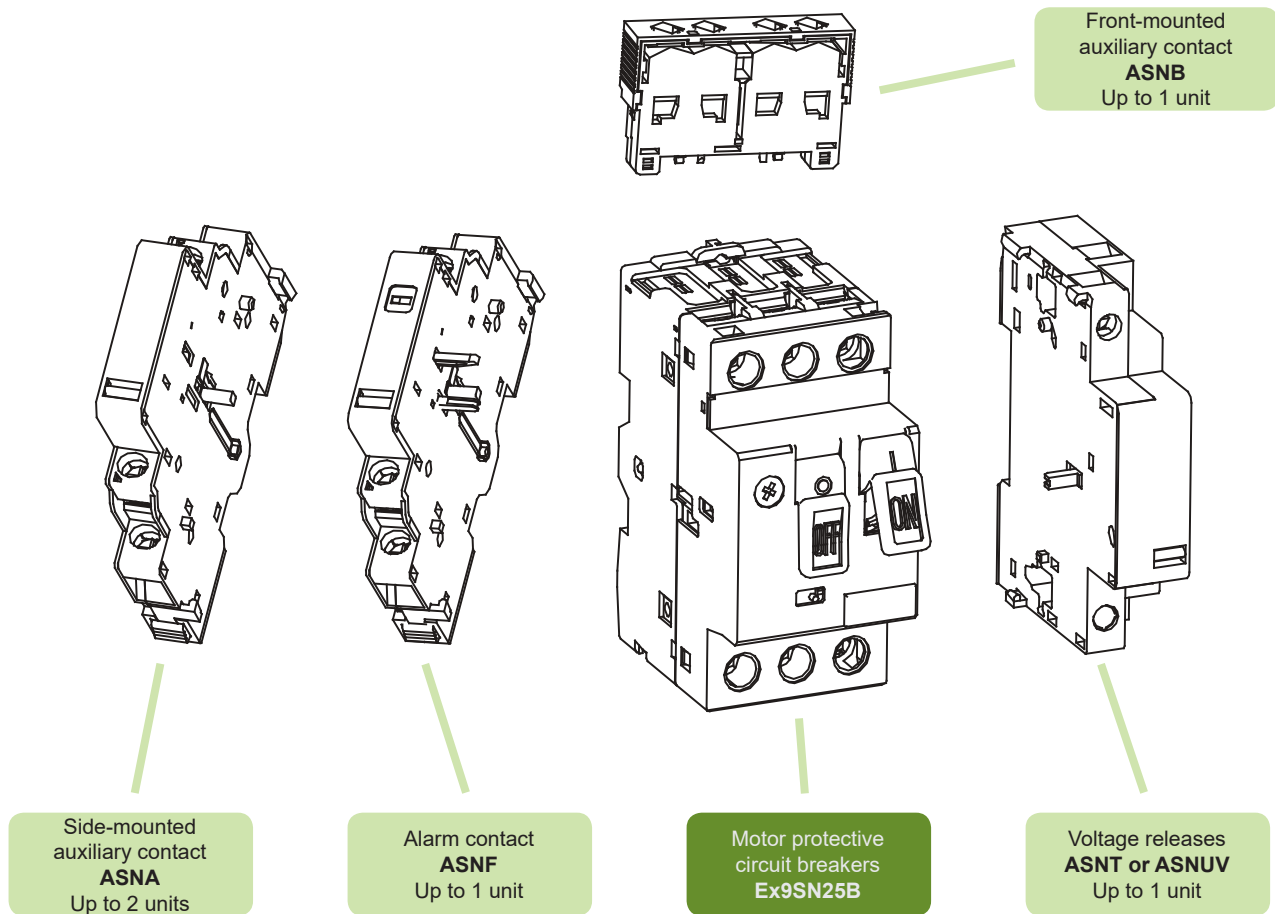


Certification marks



Motor protective circuit breakers Ex9SN25B

Accessories



Auxiliary contacts ASNA

Auxiliary contacts ASNB

Alarm contact ASNF

Shunt trip release ASNT

Undervoltage release ASNUV

Isolated boxes for surface mounting ASNE

Motor protective circuit breakers Ex9SN25B

Motor protective circuit breakers, 3-pole

- Adjustable overload protection I_r
- Fixed instantaneous short-circuit current protection I_i (ca. $11 - 14 \times I_n$)
- Temperature compensation function to reduce the impact of ambient temperature



| Rated current I_n | Tripping current setting range I_r | Short-circuit current I_i | Article No. | Type | Packing |
|---------------------|--------------------------------------|-----------------------------|-------------|----------------|---------|
| 0.16 A | 0.10 – 0.16 A | 1.5 A | 108940 | Ex9SN25B 0.16A | 1/64 |
| 0.25 A | 0.16 – 0.25 A | 2.4 A | 108941 | Ex9SN25B 0.25A | 1/64 |
| 0.40 A | 0.25 – 0.40 A | 5 A | 108942 | Ex9SN25B 0.4A | 1/64 |
| 0.63 A | 0.40 – 0.63 A | 8 A | 108943 | Ex9SN25B 0.63A | 1/64 |
| 1.0 A | 0.63 – 1.00 A | 13 A | 108944 | Ex9SN25B 1A | 1/64 |
| 1.6 A | 1.0 – 1.6 A | 22.5 A | 108945 | Ex9SN25B 1.6A | 1/64 |
| 2.5 A | 1.6 – 2.5 A | 33.5 A | 108946 | Ex9SN25B 2.5A | 1/64 |
| 4.0 A | 2.5 – 4.0 A | 51 A | 108947 | Ex9SN25B 4A | 1/64 |
| 6.3 A | 4.0 – 6.3 A | 78 A | 108948 | Ex9SN25B 6.3A | 1/64 |
| 10 A | 6.0 – 10 A | 138 A | 108949 | Ex9SN25B 10A | 1/64 |
| 14 A | 9.0 – 14 A | 170 A | 108950 | Ex9SN25B 14A | 1/64 |
| 18 A | 13 – 18 A | 223 A | 108951 | Ex9SN25B 18A | 1/64 |
| 23 A | 17 – 23 A | 327 A | 108952 | Ex9SN25B 23A | 1/64 |
| 25 A | 20 – 25 A | 327 A | 108953 | Ex9SN25B 25A | 1/64 |

Technical Data Ex9SN25B

Motor protective circuit breakers

General parameters

For protection of various motor applications

Provide overload, short-circuit and phase-failure protection

Can replace the circuit breaker and thermal relay to reduce costs and space

Temperature compensation function to reduce the impact of ambient temperature

Accessories

| | | |
|-------------------------------------|-------|--------------------------------|
| Front-mounted auxiliary contacts | ASNB | 108954, 108955 |
| Side-mounted auxiliary contacts | ASNA | 108956, 108957 |
| Alarm contacts | ASNF | 108964, 108965, 108966, 108967 |
| Undervoltage releases | ASNUV | 108958, 108959, 108960 |
| Shunt trip releases | ASNT | 108961, 108962, 108963 |
| Isolated boxes for surface mounting | ASNE | 108968, 108969 |

Max. number of installed accessories are 2 pcs of contact or signal units (2 pcs ASNA or 1 pc of ASNA + 1 pc of ASNF) or 1 pc of front-mounted contact unit (ASNB) and 1 pc of voltage release (ASNT, ASNUV)

Electrical parameters

| | |
|--|--|
| Tested according to | EN 60947-4-1 EN 60947-2 |
| Rated operating voltage U_e | 230/240, 400/415, 440, 500, 690 V AC |
| Rated frequency f | 50/60 Hz |
| Rated insulation voltage U_i | 690 V |
| Rated impulse withstand voltage U_{imp} | 8 kV |
| Rated current I_e | 0.16 – 25 A |
| Fixed rated inst. short-circuit current I_i | see table below for exact values |
| Conventional free air thermal current I_{th} | $I_{th} = I_e$ |
| Rated ultimate short-circuit breaking capacity I_{cu} (EN 60947-2) | |
| I_e 0.1 – 18 A at 230/240 V AC | 100 kA |
| I_e 17 – 25 A at 230/240 V AC | 50 kA |
| I_e 0.1 – 10 A at 400/415 V AC | 100 kA |
| I_e 9 – 25 A at 400/415 V AC | 15 kA |
| I_e 0.1 – 1.6 A at 660/690 V AC | 100 kA |
| I_e 1.6 – 25 A at 660/690 V AC | 3 kA |
| Rated service short-circuit breaking capacity I_{cs} (EN 60947-2) | |
| I_e 0.1 – 18 A at 230/240 V AC | 100 kA |
| I_e 17 – 25 A at 230/240 V AC | 50 kA |
| I_e 0.1 – 6.3 A at 400/415 V AC | 100 kA |
| I_e 6 – 18 A at 400/415 V AC | 7.5 kA |
| I_e 17 – 25 A at 400/415 V AC | 6 kA |
| I_e 0.1 – 1.6 A at 660/690 V AC | 100 kA |
| I_e 1.6 – 25 A at 660/690 V AC | 2.25 kA |
| Required contactor type | |
| I_e 0.1 – 10 A | Ex9CS06/09 or Ex9C12 frame size |
| I_e 14 – 25 A | Ex9C18/25 frame size |
| Maximum operating frequency | 30 operating cycles per hour |
| Electrical service life | 2 000 operating cycles (at 400 V AC-3) |
| Power loss | 9 W |

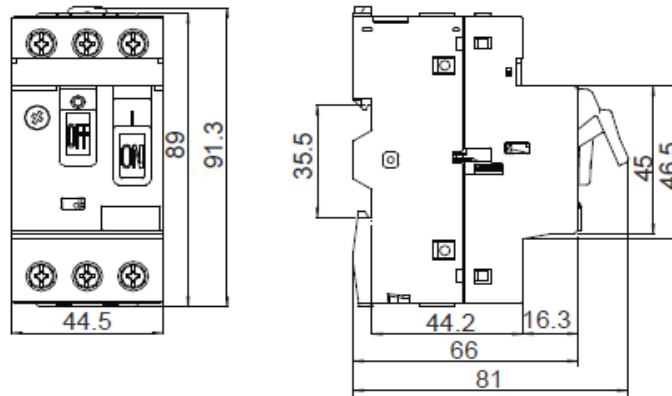
Technical Data Ex9SN25B

Motor protective circuit breakers

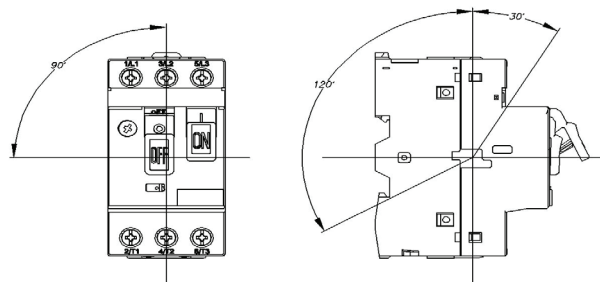
Mechanical parameters

| | |
|-----------------------------------|--|
| Device width | 44.5 mm |
| Device height | 91.3 mm |
| Device depth | 81 mm |
| Frame size | 45 mm |
| Mounting | easy fastening onto 35 mm device rail (DIN) |
| Safety arcing distance | 40 mm |
| Degree of protection | IP20 |
| Mechanical service life | 10 000 operating cycles |
| Terminals | lift |
| Terminal capacity | 1 – 6 mm ² |
| Fastening torque of terminals | 1.7 Nm |
| Ambient temperature | -5 – +40 °C |
| Altitude | ≤ 2 000 m |
| Relative humidity | ≤ 50 % |
| Resistance to climatic conditions | class 2, according to EN 60068-2-3 and EN 60068-2-30 |
| Resistance to mechanical shock | 30 gn (shock duration 11 ms) |
| Resistance to vibrations | 5 gn (5 – 150 Hz) |
| Pollution degree | 3 |
| Overvoltage class | III |
| Weight | 0.33 kg |

Dimensions



Mounting positions



Technical Data Ex9SN25B

Motor protective circuit breakers Ex9SN25B

Rated instantaneous short-circuit current I_i

| I_o [A] | 0.16 A | 0.25 A | 0.40 A | 0.63 A | 1 A | 1.6 A | 2.5 A | 4.0 A | 6.3 A | 10 A | 14 A | 18 A | 23 A | 25 A |
|-----------|--------|--------|--------|--------|-----|-------|-------|-------|-------|------|------|------|------|------|
| I_i [A] | 1.5 | 2.4 | 5 | 8 | 13 | 22.5 | 33.5 | 51 | 78 | 138 | 170 | 223 | 327 | 327 |

Rated power of three-phase motor

| I_o [A] | AC-3, 50/60 Hz [W] | | | | | |
|-----------|--------------------|-------|-------|-------|-------|-------|
| | 230/240 V | 400 V | 415 V | 440 V | 500 V | 690 V |
| 0.16 A | - | - | - | - | - | - |
| 0.25 A | - | - | - | - | - | - |
| 0.40 A | - | - | - | - | - | - |
| 0.63 A | - | - | - | - | - | 0.37 |
| 1 A | - | - | - | 0.37 | 0.37 | 0.55 |
| 1.6 A | - | 0.37 | - | 0.55 | 0.75 | 1.1 |
| 2.5 A | 0.37 | 0.75 | 0.75 | 1.1 | 1.1 | 1.5 |
| 4.0 A | 0.75 | 1.5 | 1.5 | 1.5 | 2.2 | 3.0 |
| 6.3 A | 1.1 | 2.2 | 2.2 | 3.0 | 3.7 | 4.0 |
| 10 A | 2.2 | 4.0 | 4.0 | 4.0 | 5.5 | 7.5 |
| 14 A | 3.0 | 5.5 | 5.5 | 7.5 | 7.5 | 9 |
| 18 A | 4.0 | 7.5 | 9 | 9 | 9 | 11 |
| 23 A | 5.5 | 11 | 11 | 11 | 11 | 15 |
| 25 A | 5.5 | 11 | 11 | 11 | 15 | 18.5 |

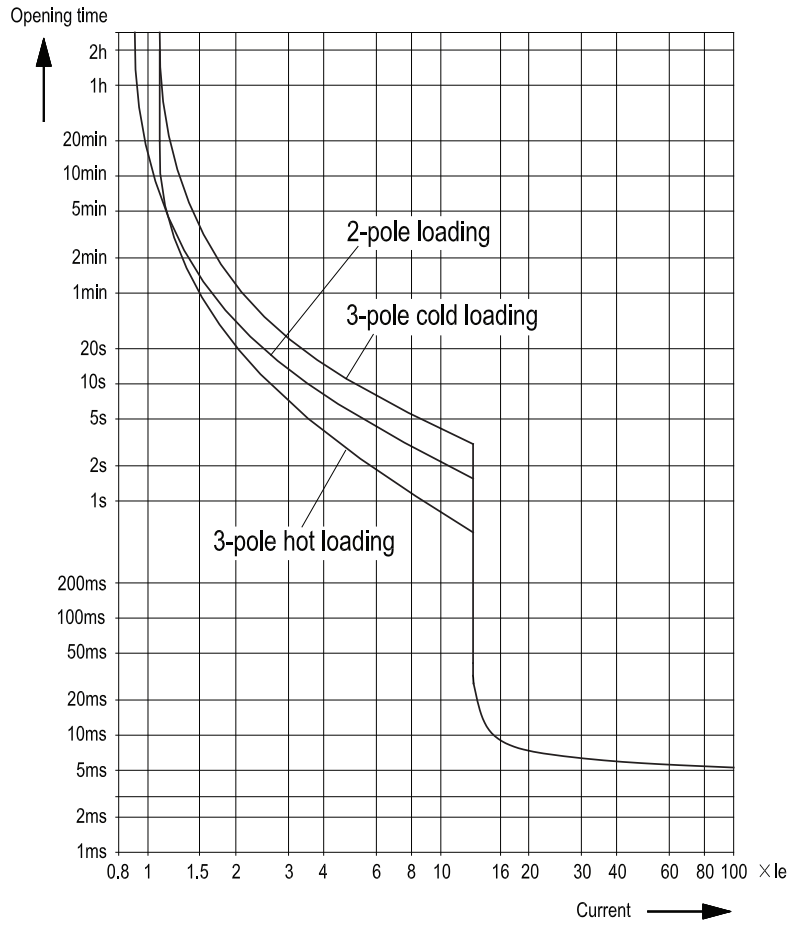
Maximum value of backup fuse for short-circuit protection for $I_{cc} > I_{cu}$

| I_o [A] | 230/240 V | | 400/415 V | | 440 V | | 500 V | | 690 V | |
|-----------|-----------|---------|-----------|---------|-------|---------|-------|---------|-------|---------|
| | aM A | gL/gG A | aM A | gL/gG A | aM A | gL/gG A | aM A | gL/gG A | aM A | gL/gG A |
| 0.16 A | - | - | - | - | - | - | - | - | - | - |
| 0.25 A | - | - | - | - | - | - | - | - | - | - |
| 0.40 A | - | - | - | - | - | - | - | - | - | - |
| 0.63 A | - | - | - | - | - | - | - | - | - | - |
| 1 A | - | - | - | - | - | - | - | - | - | - |
| 1.6 A | - | - | - | - | - | - | - | - | - | - |
| 2.5 A | - | - | - | - | - | - | - | - | 16 | 20 |
| 4.0 A | - | - | - | - | - | - | - | - | 25 | 32 |
| 6.3 A | - | - | - | - | 50 | 63 | 50 | 63 | 32 | 40 |
| 10 A | - | - | - | - | 50 | 63 | 50 | 63 | 32 | 40 |
| 14 A | - | - | 63 | 80 | 50 | 63 | 50 | 63 | 40 | 50 |
| 18 A | - | - | 63 | 80 | 50 | 63 | 50 | 63 | 40 | 50 |
| 23 A | 80 | 100 | 80 | 100 | 63 | 80 | 50 | 63 | 40 | 50 |
| 25 A | 80 | 100 | 80 | 100 | 63 | 80 | 50 | 63 | 40 | 50 |

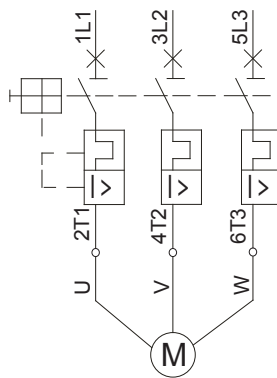
Technical Data Ex9SN25B

Motor protective circuit breakers Ex9SN25B

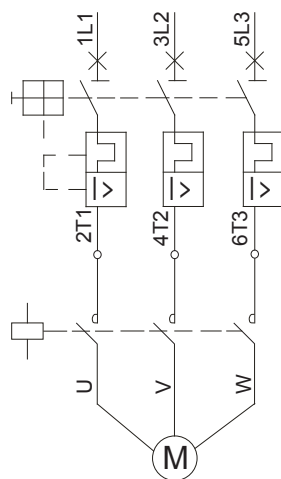
Tripping characteristics



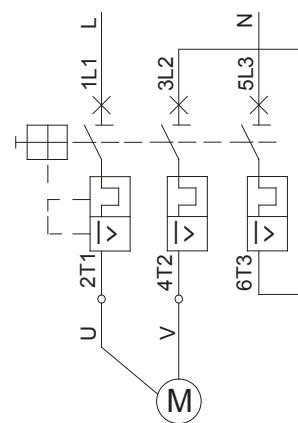
Connection diagram



3-phase motor protection



3-phase motor protection with contactor



1-phase or DC motor protection

Accessories for Ex9SN25B

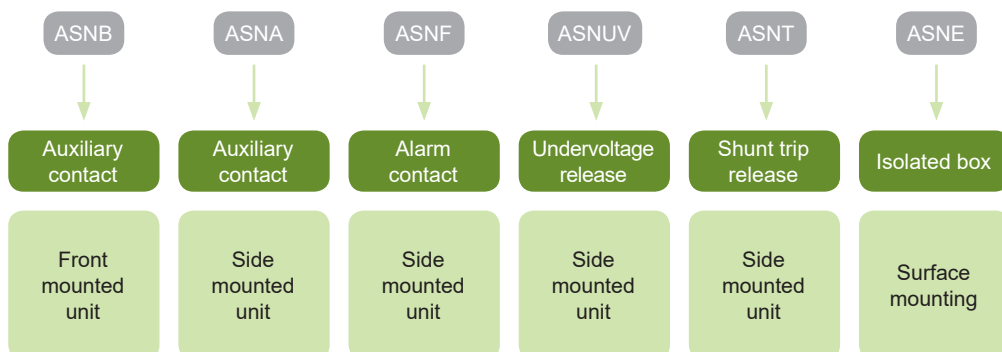


- Accessories for motor protective circuit breakers Ex9SN25B
- Front-mounted auxiliary contacts ASNB
- Side-mounted auxiliary contacts ASNA
- Side-mounted alarm contact ASNF
- Side-mounted alarm contact ASNF
- Undervoltage release ASNUV
- Shunt trip release ASNT
- Isolated boxes for surface mounting

Ex9SN25B motor protective circuit breakers can be equipped with various types of additional accessories. All the accessories are designed in the way to be possible to combine different types with one device. There can be used up to three auxiliary or alarm contact units plus one voltage release.

Auxiliary contact units are available with three possible contact combinations. Auxiliary and alarm contact units are mounted from the left to the device. Release units are mounted from the right side. Installation of an auxiliary or alarm contact units does not affect the possibility of installing voltage release.

Type Key



Accessories for Ex9SN25B

Auxiliary contacts for Ex9SN25B, front-mounted



| Contacts | Suitable for | Article No. | Type | Packing |
|-------------|--------------|-------------|--------|---------|
| 2 NO | Ex9SN25B | 108956 | ASNB20 | 20/1280 |
| 1 NO + 1 NC | Ex9SN25B | 108957 | ASNB11 | 20/1280 |

Auxiliary contacts for Ex9SN25B, side-mounted



| Contacts | Suitable for | Article No. | Type | Packing |
|-------------|--------------|-------------|--------|---------|
| 2 NO | Ex9SN25B | 108954 | ASNA20 | 4/256 |
| 1 NO + 1 NC | Ex9SN25B | 108955 | ASNA11 | 4/256 |

Alarm contacts for Ex9SN25B, side-mounted



| Contacts | Suitable for | Article No. | Type | Packing |
|---------------------------|--------------|-------------|----------|---------|
| 1 NO (Fault) + 1 NC (Aux) | Ex9SN25B | 108964 | ASNF1001 | 3/192 |
| 1 NC (Fault) + 1 NC (Aux) | Ex9SN25B | 108965 | ASNF0101 | 3/192 |
| 1 NO (Fault) + 1 NO (Aux) | Ex9SN25B | 108966 | ASNF1010 | 3/192 |
| 1 NC (Fault) + 1 NO (Aux) | Ex9SN25B | 108967 | ASNF0110 | 3/192 |

Accessories for Ex9SN25B

Undervoltage releases for Ex9SN25B, side-mounted



| AC operating voltage | Suitable for | Article No. | Type | Packing |
|--------------------------|--------------|-------------|--------|---------|
| 110-115V 50Hz/127V 60Hz | Ex9SN25B | 108958 | ASNUVA | 2/128 |
| 220-240V 50Hz | Ex9SN25B | 108959 | ASNUVB | 2/128 |
| 380-400V 50Hz/ 440V 60Hz | Ex9SN25B | 108960 | ASNUVC | 2/128 |

Shunt trip releases for Ex9SN25B, side-mounted



| AC operating voltage | Suitable for | Article No. | Type | Packing |
|--------------------------|--------------|-------------|-------|---------|
| 110-115V 50Hz/127V 60Hz | Ex9SN25B | 108961 | ASNTA | 2/128 |
| 220-240V 50Hz | Ex9SN25B | 108962 | ASNTB | 2/128 |
| 380-400V 50Hz/ 440V 60Hz | Ex9SN25B | 108963 | ASNTC | 2/128 |

Isolated boxes for Ex9SN25B, surface mounting



| Description | Suitable for | Article No. | Type | Packing |
|---------------------------|--------------|-------------|-------|---------|
| Actuating diaphragm | Ex9SN25B | 108968 | ASNEA | 1/20 |
| Emergency stop pushbutton | Ex9SN25B | 108969 | ASNEB | 1/12 |

Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Front-mounted auxiliary contact unit ASNB

General parameters

For subsequent mounting

Front-mounted version

1 unit can be used with a motor protective circuit breaker

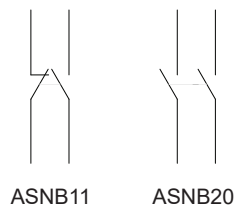
Electrical parameters

| | ASNB20 | ASNB11 |
|---|---------------------------|-------------|
| Contacts | 2 NO | 1 NO + 1 NC |
| Tested according to | EN 60947-5-1 | |
| Rated operating voltage U_e | 240V AC, 415V AC, 220V DC | |
| Rated frequency | 50/60 Hz | |
| Rated thermal current I_{th} | 2.5 A | |
| Rated op. current I_e , ut. cat. AC-15 | 0.5 A at 240 V | |
| Rated op. current I_e , ut. cat. DC-13 | 0.15 A at 60 V | |
| Rated impulse withstand voltage U_{imp} | 2.5 kV | |
| Rated insulation voltage U_i | 250 V | |

Mechanical parameters

| | ASNB20 | ASNB11 |
|-------------------------------|-------------------------|--------|
| Device width | 45 mm | |
| Device height | 9.5 mm | |
| Device depth | 28.7 mm | |
| Mounting | front | |
| Degree of protection | IP20 | |
| Terminals | lift | |
| Terminal capacity | 1 – 2.5 mm ² | |
| Fastening torque of terminals | 0.8 Nm | |

Wiring diagram



Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Side-mounted auxiliary contact unit ASNA

General parameters

For subsequent mounting

Side-mounted version, mounting from the left

Up to 2 units can be used with a motor protective circuit breaker

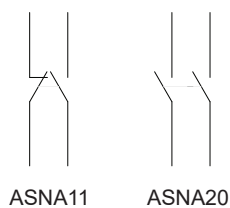
Electrical parameters

| | ASNA20 | ASNA11 |
|---|--------------------------------|-------------|
| Contacts | 2 NO | 1 NO + 1 NC |
| Tested according to | EN 60947-5-1 | |
| Rated operating voltage U_e | 240 V AC, 415 V AC, 220 V DC | |
| Rated frequency f | 50/60 Hz | |
| Rated thermal current I_{th} | 6 A | |
| Rated op. current I_e , ut. cat. AC-15 | 3.3 A at 240 V, 1.5 A at 415 V | |
| Rated op. current I_e , ut. cat. DC-13 | 3 A at 60 V | |
| Rated impulse withstand voltage U_{imp} | 4 kV | |
| Rated insulation voltage U_i | 690 V | |

Mechanical parameters

| | ASNA20 | ASNA11 |
|-------------------------------|-------------------------|--------|
| Device width | 9.5 mm | |
| Device height | 91.3 mm | |
| Device depth | 65.6 mm | |
| Mounting | left side | |
| Degree of protection | IP20 | |
| Terminals | lift | |
| Terminal capacity | 1 – 2.5 mm ² | |
| Fastening torque of terminals | 0.8 Nm | |

Wiring diagram



Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Front-mounted auxiliary contact unit ASNF

General parameters

For subsequent mounting

Front-mounted version

1 unit can be used with a motor protective circuit breaker

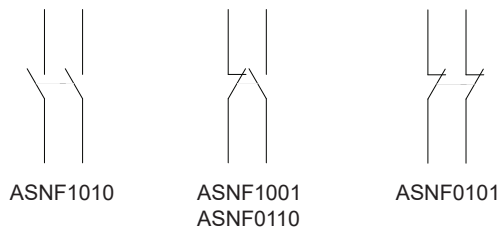
Electrical parameters

| | ASNF1001 | ASNF0101 | ASNF1010 | ASNF0110 |
|---|--------------------------------------|------------------------------|------------------------------|------------------------------|
| Contacts | 1 NO (Fault) + 1 NC (Aux) | 1 NC (Fault) + 1 NC (Aux) | 1 NO (Fault) + 1 NO (Aux) | 1 NC (Fault) + 1 NO (Aux) |
| Tested according to | EN 60947-5-1 | | | |
| Rated operating voltage U_e | Fault: 240 V AC, Auxiliary: 690 V AC | | | |
| Rated frequency | 50/60 Hz | | | |
| Rated thermal current I_{th} | Fault: 2.5 A, Auxiliary: 6 A | | | |
| Rated op. current I_e , ut. cat. AC-14 | Fault: 0.3 A at 240 V | | | |
| Rated op. current I_e , ut. cat. DC-13 | Fault: 0.15 A at 60 V | | | |
| Rated impulse withstand voltage U_{imp} | 4 kV | | | |
| Rated insulation voltage U_i | 690 V | | | |

Mechanical parameters

| | ASNF1001 | ASNF0101 | ASNF1010 | ASNF0110 |
|-------------------------------|-------------------------|----------|----------|----------|
| Device width | 9.5 mm | | | |
| Device height | 91.3 mm | | | |
| Device depth | 65.5 mm | | | |
| Mounting | left side | | | |
| Degree of protection | IP20 | | | |
| Terminals | lift | | | |
| Terminal capacity | 1 – 2.5 mm ² | | | |
| Fastening torque of terminals | 0.8 Nm | | | |

Wiring diagram



Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Shunt trip releases ASNT

General parameters

| |
|--|
| For subsequent mounting |
| Side-mounted version, mounting from the right |
| 1 unit can be used with a motor protective circuit breaker or ASNUV unit |

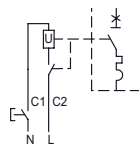
Electrical parameters

| | ASNTA | ASNTB | ASNTC |
|---|--|------------------------|--|
| Tested according to | EN 60947-2 | | |
| Rated operating voltage U_e | 110 – 115 V AC @ 50 Hz 127 V AC @ 60 Hz | 220 – 240 V AC @ 50 Hz | 380 – 400 V AC @ 50 Hz 440 V AC @ 60 Hz |
| Oper. voltage tripping tolerance | 70 – 110 % U_e | | |
| Rated frequency f | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V | | |

Mechanical parameters

| | ASNTA | ASNTB | ASNTC |
|-------------------------------|-------------------------|-------|-------|
| Device width | 18.5 mm | | |
| Device height | 91.3 mm | | |
| Device depth | 65.5 mm | | |
| Mounting | right side | | |
| Degree of protection | IP20 | | |
| Terminals | lift | | |
| Terminal capacity | 1 – 2.5 mm ² | | |
| Fastening torque of terminals | 0.8 Nm | | |

Wiring diagram



Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Undervoltage releases ASNUV

General parameters

For subsequent mounting

Side-mounted version, mounting from the right

1 unit can be used with a motor protective circuit breaker or ASNT unit

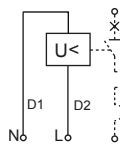
Electrical parameters

| | ASNUVA | ASNUVB | ASNUVC |
|---|--|------------------------|--|
| Tested according to | EN 60947-2 | | |
| Rated operating voltage U_e | 110 – 115 V AC @ 50 Hz 127 V AC @ 60 Hz | 220 – 240 V AC @ 50 Hz | 380 – 400 V AC @ 50 Hz 440 V AC @ 60 Hz |
| Oper. voltage tripping tolerance | 35 – 70 % U_e | | |
| Rated frequency f | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V | | |
| Tripping time | 200 ms | | |
| Making threshold | 85 – 110 % U_e | | |

Mechanical parameters

| | ASNUVA | ASNUVB | ASNUVC |
|-------------------------------|-------------------------|--------|--------|
| Device width | 18.5 mm | | |
| Device height | 91.3 mm | | |
| Device depth | 65.5 mm | | |
| Mounting | right side | | |
| Degree of protection | IP20 | | |
| Terminals | lift | | |
| Terminal capacity | 1 – 2.5 mm ² | | |
| Fastening torque of terminals | 0.8 Nm | | |

Wiring diagram



Technical Data Ex9SN25B Accessories

Accessories for motor protective circuit breakers Ex9SN25B

Isolated boxes for surface mounting ASNE

General parameters

Plastic IP55 boxes for single Ex9SN25B device.

Insulated boxes for surface mounting.

Electrical parameters

| | ASNEA | ASNEB |
|-------------------------------|----------|-------|
| Tested according to | EN 62208 | |
| Rated operating voltage U_e | 400 V AC | |
| Rated frequency f | 50 Hz | |

Mechanical parameters

| | ASNEA | ASNEB |
|----------------------|---------|--------|
| Device width | 93 mm | |
| Device height | 148 mm | |
| Device depth | 94 mm | 152 mm |
| Mounting | surface | |
| Degree of protection | IP55 | |

Dimensions

