



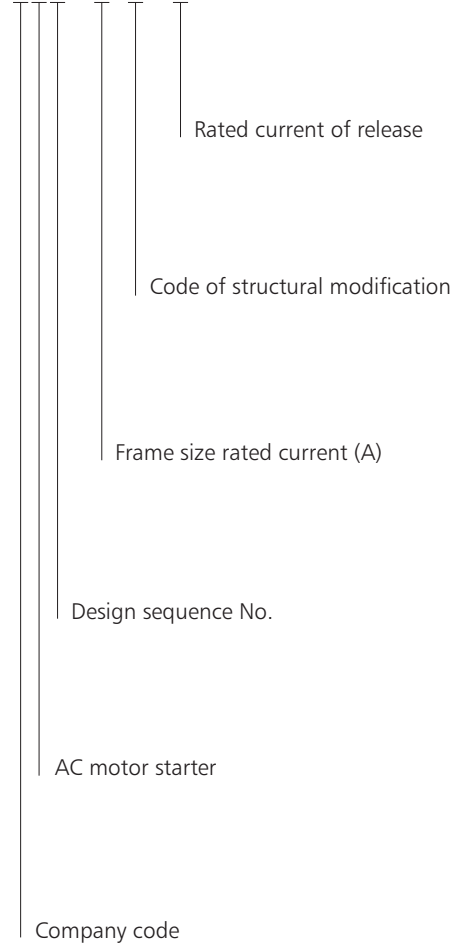
NS2 Manual Motor Starter

1. General

- 1.1 Certificates: SEMKO, CE, UkrSEPRO, EAC, RCC, UL;
- 1.2 Electric ratings: AC690V, 25A, 80A;
- 1.3 Standard: IEC/EN 60947-2, IEC60947-4-1

2. Type designation

NS2 - □ □ / □



3. Operating conditions

- 3.1 Temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$,
average temperature in 24 hours not exceed $+35^{\circ}\text{C}$
- 3.2 Altitude: not exceed 2000m
- 3.3 Air conditions:
At mounting site, relative humidity not exceed 50% at the max temperature of $+40^{\circ}\text{C}$, higher relative humidity is allowable under lower temperature, for example, RH could be 90% at $+20^{\circ}\text{C}$
- 3.4 Pollution grade: Grade III
- 3.5 Trip class:
10A(NS2-25, NS2-25X, NS2-32, NS2-32X)
10 (NS2-80, NS2-80B)
- 3.6 Rated operational system:
Continuous operational system
- 3.7 Mounting conditions:
The inclination between the mounting plane and the vertical plane shall not exceed 5°
The product shall be installed and operated at a place without obvious shake, impact and vibration.

4. Technical data

4.1 Protection properties

Over-load Protection Properties

| Series No. | Multiple of setting current | Initial status | Time | | Expected results | Ambient temperature |
|------------|-----------------------------|-------------------------------------|----------------|-----------------------|------------------|---|
| 1 | 1.05 | Cold status | $t \geq 2h$ | | Non-tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 2 | 1.20 | Heat status (right after test.1) | $t < 2h$ | | Tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 3 | 1.50 | Heat status (right after test.1) | Tripping class | 10A $t < 2\text{min}$ | Tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| | | 10 $t < 4\text{min}$ | | | | |
| 4 | 7.20 | Cold status | Tripping class | 10A $2s < t \leq 10s$ | Tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| | | 10 $4s < t \leq 10s$ | | | | |

Phase failure protection properties


| Series No. | Multiple of setting current | | Initial status | Time | Expected results | Ambient temperature |
|------------|-----------------------------|-----------------|-------------------------------------|-------------|------------------|---|
| | Any 2 phase | The other phase | | | | |
| 1 | 1.0 | 0.9 | Cold status | $t \geq 2h$ | Non-tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 2 | 1.15 | 0 | Heat status (right after test.1) | $t < 2h$ | Tripping | $+20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |

Temperature compensation properties

| Series No. | Multiple of setting current | Initial status | Time | Expected results | Ambient temperature |
|------------|-----------------------------|--|-------------------|------------------|---|
| 1 | 1.0 | Cold status | $t \geq 2h$ | Non-tripping | $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 2 | 1.2 | Heat status (right after test.1) | $t < 2h$ | Tripping | $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 3 | 1.5 | Heat status (through 1.0 times rated current ,after thermal equilibrium is reached) | $t < 2\text{min}$ | Tripping | $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 4 | 1.05 | Cold status | $t \geq 2h$ | Non-tripping | $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 5 | 1.3 | Heat status (right after test.3) | $t < 2h$ | Tripping | $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 6 | 1.5 | Heat status (through 1.0 times rated current ,after thermal equilibrium is reached) | $t < 4\text{min}$ | Tripping | $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |



4.2 Technical parameters

| Model | | | NS2-25, NS2-25X | | | |
|---|----------|---------|--|-----------|----------|----------|
| Picture | | |  | | | |
| Rated insulation voltage U_i (V) | | | 690 | | | |
| Rated operational voltage U_e (V) | | | 230/240, 400/415, 440, 500, 690 | | | |
| Rated impulse withstand voltage U_{imp} (V) | | | 8000 | | | |
| Regulating rang of setting current (A) | | | 0.1~0.16 | 0.16~0.25 | 0.25~0.4 | 0.4~0.63 |
| Rated current of release | | | 0.16 | 0.25 | 0.4 | 0.63 |
| Rated ultimate short-circuit breaking capacity I_{cu} (kA) | 230/240V | | 100 | 100 | 100 | 100 |
| | 400/415V | | 100 | 100 | 100 | 100 |
| | 440V | | 100 | 100 | 100 | 100 |
| | 480/500V | | 100 | 100 | 100 | 100 |
| | 660/690V | | 100 | 100 | 100 | 100 |
| Rated service short-circuit breaking capacity I_{cs} (kA) | 230/240V | | 100 | 100 | 100 | 100 |
| | 400/415V | | 100 | 100 | 100 | 100 |
| | 440V | | 100 | 100 | 100 | 100 |
| | 480/500V | | 100 | 100 | 100 | 100 |
| | 660/690V | | 100 | 100 | 100 | 100 |
| Arcing distance (mm) | | | 40 | 40 | 40 | 40 |
| Standard rated power of three-phase motor (kW) | 230/240V | | - | - | - | - |
| | 400V | | - | - | - | - |
| | 415V | | - | - | - | - |
| | 440V | | - | - | - | - |
| | 500V | | - | - | - | - |
| | 660/690V | | - | - | - | 0.37 |
| Current setting value of instantaneous electromagnetic release I_r (A) | | | 1.5 | 2.4 | 5 | 8 |
| Current rating of fuse-link of back-up fuse, which is only needed in case of $I_{cc} > I_{cu}$ (I_{cc} : prospective short-circuit breaking current) | 230/240V | aM A | ★ | ★ | ★ | ★ |
| | | gI/gG A | ★ | ★ | ★ | ★ |
| | 400/415V | aM A | ★ | ★ | ★ | ★ |
| | | gI/gG A | ★ | ★ | ★ | ★ |
| | 440V | aM A | ★ | ★ | ★ | ★ |
| | | gI/gG A | ★ | ★ | ★ | ★ |
| | 500V | aM A | ★ | ★ | ★ | ★ |
| | | gI/gG A | ★ | ★ | ★ | ★ |
| ★: fuse is not required | 690V | aM A | ★ | ★ | ★ | ★ |
| | | gI/gG A | ★ | ★ | ★ | ★ |
| Degree of protection | | | IP2L0 | IP2L0 | IP2L0 | IP2L0 |

NS2-25, NS2-25X




690

230/240, 400/415, 440, 500, 690

8000

| 0.63~1 | 1~1.6 | 1.6~2.5 | 2.5~4 | 4~6.3 | 6~10 |
|--------|-------|---------|-------|-------|-------|
| 1 | 1.6 | 2.5 | 4 | 6.3 | 10 |
| 100 | 100 | 100 | 100 | 100 | 100 |
| 100 | 100 | 100 | 100 | 100 | 100 |
| 100 | 100 | 100 | 100 | 50 | 15 |
| 100 | 100 | 100 | 100 | 50 | 10 |
| 100 | 100 | 3 | 3 | 3 | 3 |
| 100 | 100 | 100 | 100 | 100 | 100 |
| 100 | 100 | 100 | 100 | 100 | 100 |
| 100 | 100 | 100 | 100 | 50 | 15 |
| 100 | 100 | 100 | 100 | 50 | 10 |
| 100 | 100 | 2.25 | 2.25 | 2.25 | 2.25 |
| 40 | 40 | 40 | 40 | 40 | 40 |
| - | - | 0.37 | 0.75 | 1.1 | 2.2 |
| - | 0.37 | 0.75 | 1.5 | 2.2 | 4 |
| - | - | 0.75 | 1.5 | 2.2 | 4 |
| 0.37 | 0.55 | 1.1 | 1.5 | 3 | 4 |
| 0.37 | 0.75 | 1.1 | 2.2 | 3.7 | 5.5 |
| 0.55 | 1.1 | 1.5 | 3 | 4 | 7.5 |
| 13 | 22.5 | 33.5 | 51 | 78 | 138 |
| ★ | ★ | ★ | ★ | ★ | ★ |
| ★ | ★ | ★ | ★ | ★ | ★ |
| ★ | ★ | ★ | ★ | ★ | ★ |
| ★ | ★ | ★ | ★ | ★ | ★ |
| ★ | ★ | ★ | ★ | 50 | 50 |
| ★ | ★ | ★ | ★ | 63 | 63 |
| ★ | ★ | ★ | ★ | 50 | 50 |
| ★ | ★ | ★ | ★ | 63 | 63 |
| ★ | ★ | 16 | 25 | 32 | 32 |
| ★ | ★ | 20 | 32 | 40 | 40 |
| IP2L0 | IP2L0 | IP2L0 | IP2L0 | IP2L0 | IP2L0 |



| Model | | | NS2-25, NS2-25X, NS2-32, NS2-32X | | | | |
|---|----------|--------|--|-------|-------|-------|-------|
| Picture | | |  | | | | |
| Rated insulation voltage U_i (V) | | | 690 | | | | |
| Rated operational voltage U_e (V) | | | 230/240, 400/415, 440, 500, 690 | | | | |
| Rated impulse withstand voltage U_{imp} (V) | | | 8000 | | | | |
| Regulating rang of setting current (A) | | | 9~14 | 13~18 | 17~23 | 20~25 | 24~32 |
| Rated current of release | | | 14 | 18 | 23 | 25 | 32 |
| Rated ultimate short-circuit breaking capacity I_{cu} (kA) | 230/240V | | 100 | 100 | 50 | 50 | 50 |
| | 400/415V | | 15 | 15 | 15 | 15 | 10 |
| | 440V | | 8 | 8 | 6 | 6 | 6 |
| | 480/500V | | 6 | 6 | 4 | 4 | 4 |
| | 660/690V | | 3 | 3 | 3 | 3 | 3 |
| Rated service short-circuit breaking capacity I_{cs} (kA) | 230/240V | | 100 | 100 | 50 | 50 | 50 |
| | 400/415V | | 7.5 | 7.5 | 6 | 6 | 5 |
| | 440V | | 4 | 4 | 3 | 3 | 3 |
| | 500V | | 4.5 | 4.5 | 3 | 3 | 3 |
| | 660/690V | | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Arcing distance (mm) | | | 40 | 40 | 40 | 40 | 40 |
| Standard rated power of three-phase motor (kW) | 230/240V | | 3 | 4 | 5.5 | 5.5 | 7.5 |
| | 400V | | 5.5 | 7.5 | 11 | 11 | 15 |
| | 415V | | 5.5 | 9 | 11 | 11 | 15 |
| | 440V | | 7.5 | 9 | 11 | 11 | 15 |
| | 500V | | 7.5 | 9 | 11 | 15 | 18.5 |
| | 660/690V | | 9 | 11 | 15 | 18.5 | 25 |
| Current setting value of instantaneous electromagnetic release I_r (A) | | | 170 | 223 | 327 | 327 | 416 |
| Current rating of fuse-link of back-up fuse, which is only needed in case of $I_{cc} > I_{cu}$ (I_{cc} : prospective short-circuit breaking current) | 230/240V | aM A | ★ | ★ | 80 | 80 | 80 |
| | | g/gG A | ★ | ★ | 100 | 100 | 100 |
| | 400/415V | aM A | 63 | 63 | 80 | 80 | 80 |
| | | g/gG A | 80 | 80 | 100 | 100 | 100 |
| | 440V | aM A | 50 | 50 | 63 | 63 | 63 |
| | | g/gG A | 63 | 63 | 80 | 80 | 80 |
| | 500V | aM A | 50 | 50 | 50 | 50 | 50 |
| | | g/gG A | 63 | 63 | 63 | 63 | 63 |
| ★: fuse is not required | 690V | aM A | 40 | 40 | 40 | 40 | 40 |
| | | g/gG A | 50 | 50 | 50 | 50 | 50 |
| Degree of Protection | | | IP2L0 | IP2L0 | IP2L0 | IP2L0 | IP2L0 |

NS2-80B




690

230/240, 400/415

8000

| | 16~25 | 25~40 | 40~63 | 56~80 |
|--|-------|-------|-------|-------|
| | 25 | 40 | 63 | 80 |
| | - | - | - | - |
| | 15 | 15 | 15 | 15 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | 7.5 | 7.5 | 7.5 | 7.5 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | 50 | 50 | 50 | 50 |
| | 5.5 | 11 | 15 | 22 |
| | 11 | 18.5 | 30 | 40 |
| | 11 | 22 | 33 | 45 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | 327 | 480 | 756 | 960 |
| | ★ | ★ | ★ | ★ |
| | ★ | ★ | ★ | ★ |
| | 250 | 250 | 315 | 315 |
| | 315 | 315 | 400 | 400 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | IP2L0 | IP2L0 | IP2L0 | IP2L0 |



| Model | | | NS2-80 | | | |
|---|----------|---------|---|-------|-------|-------|
| Picture | | |  | | | |
| Rated insulation voltage U_i (V) | | | 690 | | | |
| Rated operational voltage U_e (V) | | | 400/415 660/690V | | | |
| Rated impulse withstand voltage U_{imp} (V) | | | 8000 | | | |
| Regulating rang of setting current (A) | | | 16~25 | 25~40 | 40~63 | 56~80 |
| Rated current of release | | | 25 | 40 | 63 | 80 |
| Rated ultimate short-circuit breaking capacity I_{cu} (kA) | 230/240V | | - | - | - | - |
| | 400/415V | | 35 | 35 | 35 | 35 |
| | 440V | | - | - | - | - |
| | 480/500V | | - | - | - | - |
| | 660/690V | | 4 | 4 | 4 | 4 |
| Rated service short-circuit breaking capacity I_{cs} (kA) | 230/240V | | - | - | - | - |
| | 400/415V | | 17.5 | 17.5 | 17.5 | 17.5 |
| | 440V | | - | - | - | - |
| | 500V | | - | - | - | - |
| | 660/690V | | 2 | 2 | 2 | 2 |
| Arcing distance (mm) | | | 50 | 50 | 50 | 50 |
| Standard rated power of three-phase motor (kW) | 230/240V | | 5.5 | 11 | 15 | 22 |
| | 400V | | 11 | 18.5 | 30 | - |
| | 415V | | 11 | 22 | 33 | 45 |
| | 440V | | 11 | 22 | 33 | 45 |
| | 500V | | 15 | 25 | 40 | 55 |
| | 660/690V | | 18.5 | 33 | 55 | 63 |
| Current setting value of instantaneous electromagnetic release I_r (A) | | | 327 | 480 | 756 | 960 |
| Current rating of fuse-link of back-up fuse, which is only needed in case of $I_{cc} > I_{cu}$ (I_{cc} : prospective short-circuit breaking current) | 230/240V | aM A | - | - | - | - |
| | | gI/gG A | - | - | - | - |
| | 400/415V | aM A | 250 | 250 | 315 | 315 |
| | | gI/gG A | 315 | 315 | 400 | 400 |
| | 440V | aM A | - | - | - | - |
| | | gI/gG A | - | - | - | - |
| | 500V | aM A | - | - | - | - |
| | | gI/gG A | - | - | - | - |
| ★: fuse is not required | 690V | aM A | 160 | 160 | 200 | 200 |
| | | gI/gG A | 200 | 200 | 250 | 250 |
| Degree of Protection | | | IP2L0 | IP2L0 | IP2L0 | IP2L0 |

5. Other

5.1 Starters accessories

5.1.1 Type, model and specifications of accessories (see Table 10).

Table 10

| Description of accessories | Accessories Model | | | | Accessories Specifications |
|--|------------------------|--------------------------|------------------|-------------------|----------------------------|
| | NS2-25, NS2-32 applies | NS2-25X, NS2-32X applies | NS2-80 applies | NS2-80B applies | |
| Undervoltage release | NS2-UV110 | NS2-UV110 | NS2-UV110 | - | 110~115V, 50Hz ; 127V,60Hz |
| | NS2-UV220 | NS2-UV220 | NS2-UV220 | - | 220~240V, 50Hz |
| | NS2-UV380 | NS2-UV380 | NS2-UV380 | - | 380~400V, 50Hz ; 440V,60Hz |
| Shunt release | NS2-SH110 | NS2-SH110 | NS2-SH110 | - | 110~115V, 50Hz ; 127V,60Hz |
| | NS2-SH220 | NS2-SH220 | NS2-SH220 | - | 220~240V, 50Hz |
| | NS2-SH380 | NS2-SH380 | NS2-SH380 | - | 380~400V, 50Hz ; 440V,60Hz |
| Instantaneous auxiliary contact (front hanging) | NS2-AE20 | NS2-AE20 | NS2-AE20 | - | 2NO |
| | NS2-AE11 | NS2-AE11 | NS2-AE11 | - | 1NO+1NC |
| Instantaneous auxiliary contact (side hanging) | NS2-AU20 | NS2-AU20 | NS2-AU20(NS2-80) | NS2-AU20(NS2-80B) | 2NO |
| | NS2-AU11 | NS2-AU11 | NS2-AU11(NS2-80) | NS2-AU11(NS2-80B) | 1NO+1NC |
| Fault signal contact and instantaneous auxiliary contact | NS2-FA0110 | NS2-FA0110 | - | - | 1NC+1NO |
| | NS2-FA0101 | NS2-FA0101 | - | - | 1NC+1NC |
| | NS2-FA1010 | NS2-FA1010 | - | - | 1NO+1NO |
| | NS2-FA1001 | NS2-FA1001 | - | - | 1NO+1NC |
| Waterproof mounting box | NS2-MC | WPB-1 | - | - | - |
| Mounting box with emergency stop button | NS2-MC01 | - | - | - | - |

5.1.2 Undervoltage trip device

NS2-UV110, UV220, UV380'S, performance:

- Rated insulation voltage U_i (V): 690.
- Operating characteristics: When the voltage drops to 70% and 35% of the rated voltage range, undervoltage trip device shall act;

Undervoltage trip device in the power supply voltage is less than 35% of the rated voltage of the trip device, the undervoltage trip device should be able to prevent the starter from closing; when the power supply voltage is equal to or greater than 85% of the rated voltage of the trip device, the undervoltage trip device should guarantee closure of the starter.

5.1.3 The characteristics of the shunt trip

NS2-SH110, SH220, SH380:

- Rated insulation voltage U_i (V): 690.
- Operating characteristics: the operating voltage range of the shunt trip device is rated working voltage of 70% ~ 110%.

5.1.4 Characteristics of the instantaneous auxiliary contact NS2-AE20, AE11 (front hanging)

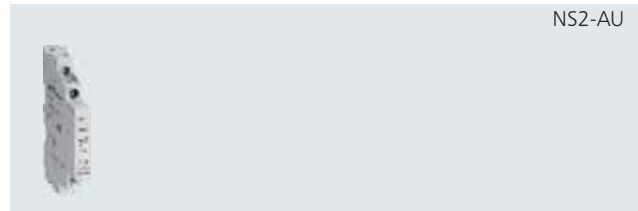
- rated insulation voltage U_i (V): 250;
- agreed thermal current I_{th} (A): 2.5;
- type , rated voltage and rated operating current (see Table 11) of instantaneous auxiliary contacts.



Table 11

| Utilization category | AC-15 | | | | DC-13 | | |
|-----------------------------------|-------|------|---------|---------|-------|-----|------|
| | 24 | 48 | 110/127 | 230/240 | 24 | 48 | 60 |
| Rated operating voltage U_e (V) | 24 | 48 | 110/127 | 230/240 | 24 | 48 | 60 |
| Rated operating current I_e (A) | 2 | 1.25 | 1 | 0.5 | 1 | 0.3 | 0.15 |
| Normal operating power P (W) | 48 | 60 | 127 | 120 | 24 | 15 | 9 |

5.1.5 Instantaneous auxiliary contact NS2-AU20, AU11 performance (side hung):
 a. rated insulation voltage U_i (V): 690;
 b. agreed thermal current I_{th} (A): 6;
 c. type, rated voltage and rated operating current of the instantaneous auxiliary contacts(see Table 12).

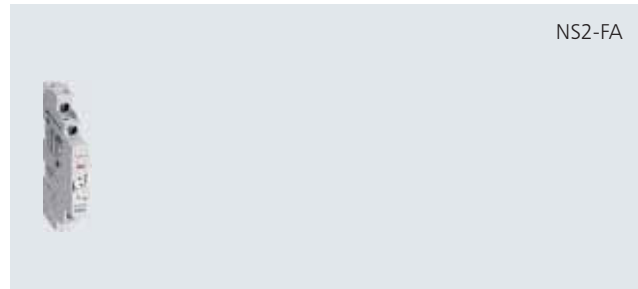


NS2-AU

Table 12

| Utilization category | AC-15 | | | | | | | DC-13 | | | | |
|-----------------------------------|-----------------------------------|-----|---------|---------|---------|-----|-----|-------|-----|-----|-----|-----|
| | Rated operating voltage U_e (V) | 48 | 110/127 | 230/240 | 380/415 | 440 | 500 | 690 | 24 | 48 | 60 | 110 |
| Rated operating current I_e (A) | 6 | 4.5 | 3.3 | 2.2 | 1.5 | 1 | 0.6 | 6 | 5 | 3 | 1.3 | 0.5 |
| Normal operating power P (W) | 300 | 500 | 720 | 850 | 650 | 500 | 400 | 140 | 240 | 180 | 140 | 120 |

5.1.6 Characteristics of the fault signal contact and instantaneous auxiliary contact NS2-FA:
 Fault signal contact and instantaneous auxiliary contact NS2-FA, consist of the fault signal contact and instantaneous auxiliary contact. They have different use types and characteristics.
 a. rated insulation voltage U_i (V): 690;
 b. agreed thermal currents of instantaneous auxiliary contacts: 6, agreed thermal current of fault signal contacts I_{th} (A): 2.5;
 c. the use type, rated voltage and rated work current (see Table 12) of the instantaneous auxiliary contact same as the NS2-AU instantaneous auxiliary contact; the use type, rated voltage and rated operating current (see Table 13) of the fault signal contacts.



NS2-FA

Table 13

| Utilization category | AC-14 | | | | DC-13 | | |
|-----------------------------------|-----------------------------------|------|------|---------|---------|------|------|
| | Rated operating voltage U_e (V) | 24 | 48 | 110/127 | 230/240 | 24 | 48 |
| Rated operating current I_e (A) | 1.5 | 1 | 0.5 | 0.3 | 1 | 0.3 | 0.15 |
| Normal operating power P (W) | 36 | 48 | 72 | 72 | 24 | 15 | 9 |
| Operating performance (time) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

5.1.7 Non-normal making and breaking capacity (see Table 14) of fault signal contact and instantaneous auxiliary contact.

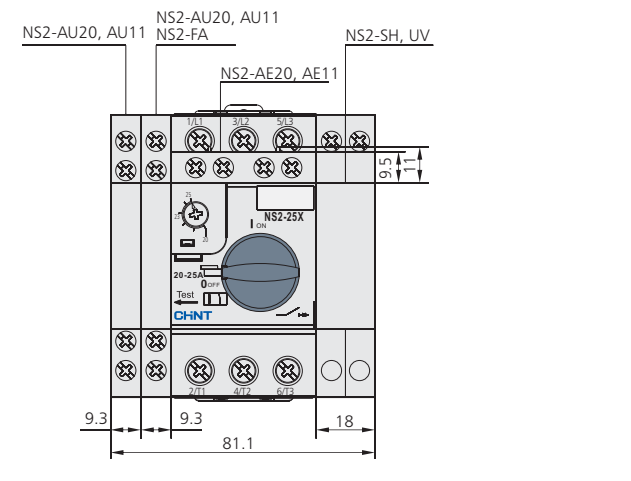
Table 14

| Use type | Connection | | Disconnection | | | On-off operation cycles and operating frequency | | | |
|----------|------------|---------|--------------------------|---------|---------|---|------------------|------------------------------|---------------|
| | I/I_e | U/U_e | $\cos\Phi$ or $T_{0.95}$ | I/I_e | U/U_e | $\cos\Phi$ or $T_{0.95}$ | Operating cycles | Operating cycles per minutes | Energize Time |
| AC-14 | 6 | 1.1 | 0.7 | 6 | 1.1 | 0.7 | 10 | 2 | 0.05 |
| AC-15 | 10 | 1.1 | 0.3 | 10 | 1.1 | 0.3 | 10 | 2 | 0.05 |
| DC-13 | 1.1 | 1.1 | 6Pe | 1.1 | 1.1 | 6Pe | 10 | 2 | 0.05 |

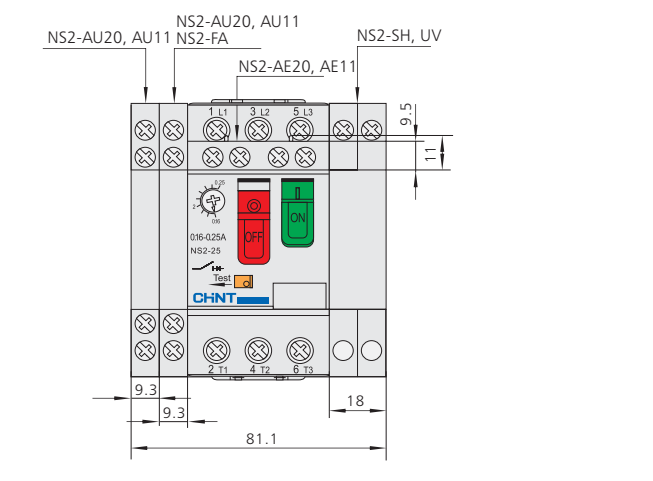
Note: $Pe \geq 50W$, $T_{0.95}$ upper limit $\approx 6Pe \leq 300ms$.

6. Overall and mounting dimension (mm)

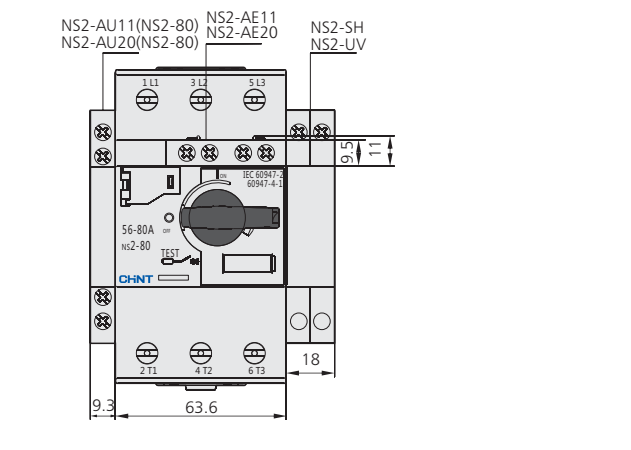
NS2-25X, NS2-32X



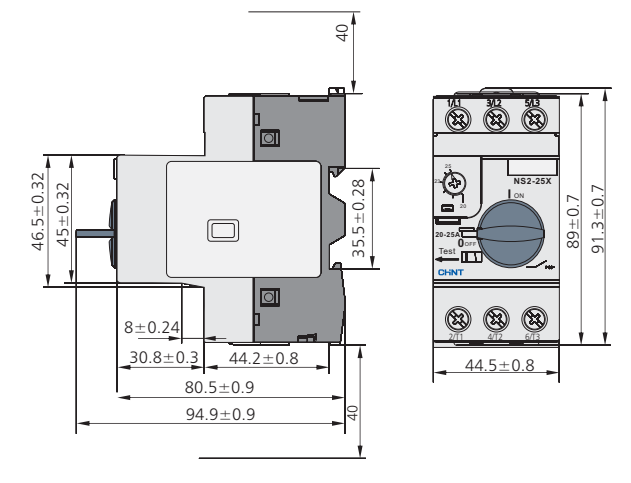
NS2-25, NS2-32



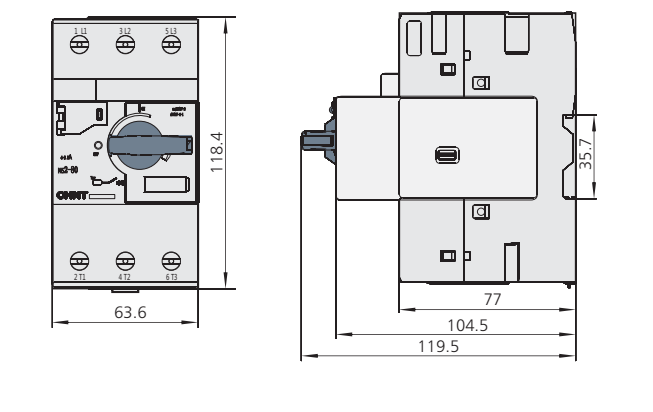
NS2-80



NS2-25X, NS2-32X

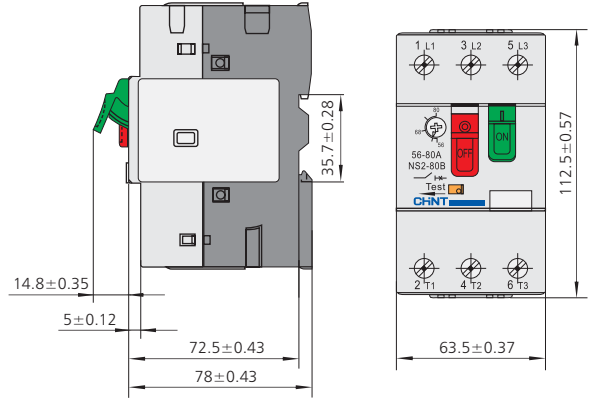
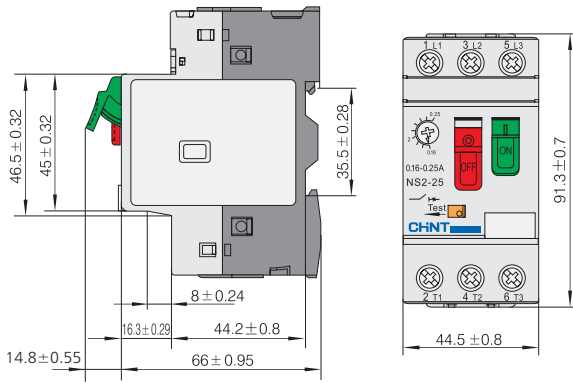


NS2-80

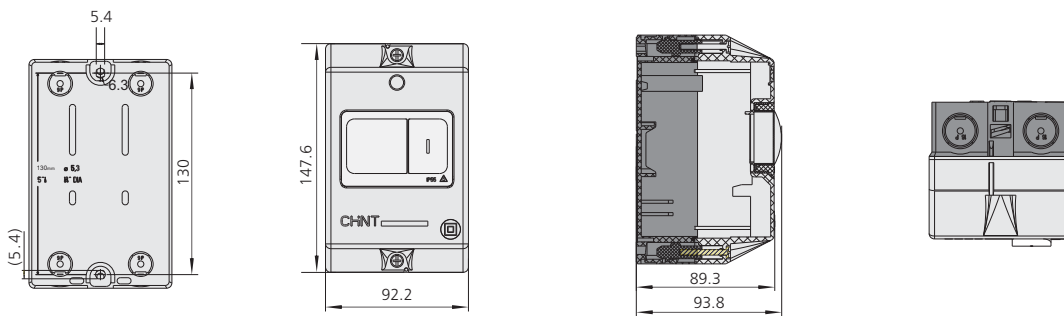


NS2-25, NS2-32

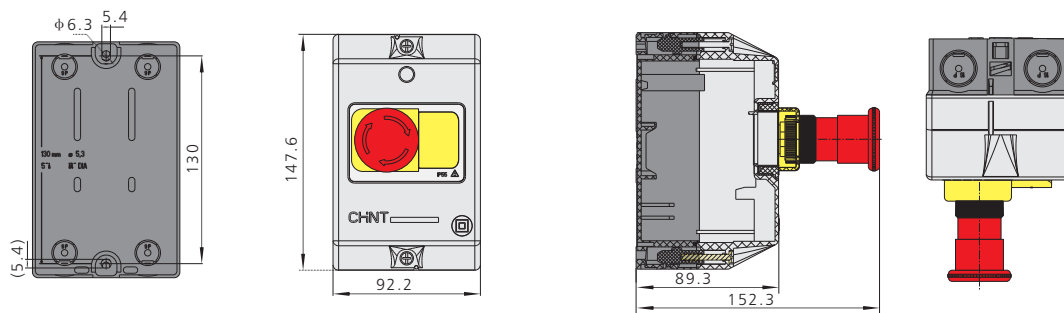
NS2-80B



NS2-MC



NS2-MC01



WPB-1

