



NS2 Manual Motor Starter

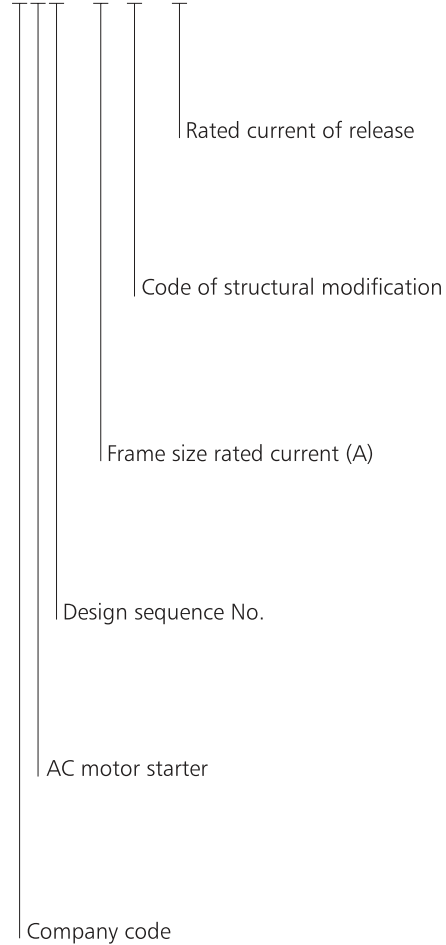
1. General

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

| | | |
|--------------|--------------|--|
| CE | EU | |
| S | Sweden | |
| ESC | Czech | |
| UkrSEPRO | Ukraine | |
| PC | Russia | |
| RCC | South Africa | |
| UL US LISTED | USA | |

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 Release grade:
10A(NS2-25)
10 (NS2-808)
- 3.6 Rated operational system:
Continuous operational system
- 3.7 Mounting conditions:
The indination 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 | 1.05 | Cold status | $t \geq 2h$ | Non-tripping | $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 4 | 1.3 | Heat status (right after test.3) | $t < 2h$ | Tripping | $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |

4.2 Technical Parameters

| Model | | | NS2-25 | | | |
|---|----------|---------|---|-----------|----------|----------|
| 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




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 | 100 | 100 | 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 | 100 | 100 | 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 |

4.3 Technical Parameters

| Model | | | NS2-25 | | | |
|---|----------|--------|---|-------|-------|----------|
| 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 | 0.4~0.63 |
| Rated current of release | | | 14 | 18 | 23 | 0.63 |
| Rated ultimate short-circuit breaking capacity $I_{cu}(kA)$ | 230/240V | | 100 | 100 | 50 | 100 |
| | 400/415V | | 15 | 15 | 15 | 100 |
| | 440V | | 8 | 8 | 6 | 100 |
| | 480/500V | | 6 | 6 | 4 | 100 |
| | 660/690V | | 3 | 3 | 3 | 100 |
| Rated service short-circuit breaking capacity $I_{cs}(kA)$ | 230/240V | | 100 | 100 | 50 | 100 |
| | 400/415V | | 7.5 | 7.5 | 6 | 100 |
| | 440V | | 4 | 4 | 3 | 100 |
| | 500V | | 4.5 | 4.5 | 3 | 100 |
| | 660/690V | | 2.25 | 2.25 | 2.25 | 100 |
| Arcing distance (mm) | | | 40 | 40 | 40 | 40 |
| Standard rated power of three-phase motor (kW) | 230/240V | | 3 | 4 | 5.5 | 5.5 |
| | 400V | | 5.5 | 7.5 | 11 | 11 |
| | 415V | | 5.5 | 9 | 11 | 11 |
| | 440V | | 7.5 | 9 | 11 | 11 |
| | 500V | | 7.5 | 9 | 11 | 15 |
| | 660/690V | | 9 | 11 | 15 | 18.5 |
| Current setting value of instantaneous electromagnetic release $I_r(A)$ | | | 170 | 223 | 327 | 327 |
| 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 |
| | | g/gG A | ★ | ★ | 100 | 100 |
| | 400/415V | aM A | 63 | 63 | 80 | 80 |
| | | g/gG A | 80 | 80 | 100 | 100 |
| | 440V | aM A | 50 | 50 | 63 | 63 |
| | | g/gG A | 63 | 63 | 80 | 80 |
| | 500V | aM A | 50 | 50 | 50 | 50 |
| | | g/gG A | 63 | 63 | 63 | 63 |
| ★: fuse is not required | 690V | aM A | 40 | 40 | 40 | 40 |
| | | g/gG A | 50 | 50 | 50 | 50 |
| Degree of Protection | | | 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 |
| | - | - | 15 | 22 |
| | 11 | 18.5 | 30 | 40 |
| | 11 | 22 | 33 | 45 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | 327 | 480 | 756 | 960 |
| | - | - | - | - |
| | - | - | - | - |
| | 80 | 250 | 315 | 315 |
| | 100 | 315 | 400 | 400 |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | - | - | - | - |
| | IP2L0 | IP2L0 | IP2L0 | IP2L0 |

5. Accessories

5.1 Under-voltage release



| Rated insulation voltage U_i (V) | Voltage range of operation | Model | Specification |
|------------------------------------|----------------------------|-----------|---------------|
| 690 | 35%~70% U_e | NS2-UV110 | 110~115V 50Hz |
| 690 | 35%~70% U_e | NS2-UV110 | 127V 60Hz |
| 690 | 35%~70% U_e | NSE-UV220 | 220~240V 50Hz |
| 690 | 35%~70% U_e | NS2-UV380 | 380~400V 50Hz |
| 690 | 35%~70% U_e | NS2-UV380 | 440V 60Hz |

5.2 Shunt release



| Rated insulation voltage U_i (V) | Voltage range of operation | Model | Specification |
|------------------------------------|----------------------------|-----------|---------------|
| 690 | 70%~110% U_e | NS2-SH110 | 110~115V 50Hz |
| 690 | 70%~110% U_e | NS2-SH110 | 127V 60Hz |
| 690 | 70%~110% U_e | NSE-SH220 | 220~240V 50Hz |
| 690 | 70%~110% U_e | NS2-SH380 | 380~400V 50Hz |
| 690 | 70%~110% U_e | NS2-SH380 | 440V 60Hz |

5.3 Instantaneous auxiliary contact

5.3.1 NS2-AE20, NS2-AE11



| Rated insulation voltage U_i (V) | Conventional heating current I_{th} (A) | Model | Configuration |
|------------------------------------|---|----------|---------------|
| 250 | 2.5 | NS2-AE20 | 2N/O |
| 250 | 2.5 | NS2-AE11 | 1N/O+1N/C |

Application class, rated operational voltage and rated operational current of instantaneous auxiliary contact

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

5.3.2 NS2-AU20, NS2-AU11




| Rated insulation voltage U_i (V) | Conventional heating current I_{th} (A) | Model | Configuration |
|------------------------------------|---|----------|---------------|
| 690 | 6 | NS2-AU20 | 2N/O |
| 690 | 6 | NS2-AU11 | 1N/O+1N/C |

Application class, rated operational voltage and rated operational current of instantaneous auxiliary contact

| Utilization category | AC-15 | | | | | | |
|---------------------------------|-------|---------|---------|---------|-----|-----|-----|
| Rated operational voltage Ue(V) | 48 | 110/127 | 230/240 | 380/415 | 440 | 500 | 690 |
| Rated operational current Ie(A) | 6 | 4.5 | 3.3 | 2.2 | 1.5 | 1 | 0.6 |
| Normal operational power P(W) | 300 | 500 | 720 | 850 | 650 | 500 | 400 |

| Utilization category | DC-13 | | | | |
|---------------------------------|-------|-----|-----|-----|-----|
| Rated operational voltage Ue(V) | 24 | 48 | 60 | 110 | 220 |
| Rated operational current Ie(A) | 6 | 5 | 3 | 1.3 | 0.5 |
| Normal operational power P(W) | 140 | 240 | 180 | 140 | 120 |

5.4 Fault signal contact and instantaneous auxiliary contact

|  | Rated insulation voltage Ui(V) | Conventional heating current Ith(A) | | Model | Configuration |
|---|--------------------------------|-------------------------------------|----------------------|------------|---------------|
| | | Instantaneous auxiliary contact | Fault signal contact | | |
| | 690 | 6 | 2.5 | NS2-FA0110 | 1N/C+1N/O |
| | 690 | 6 | 2.5 | NS2-FA0101 | 1N/C+1N/C |
| | 690 | 6 | 2.5 | NSE-FA1010 | 1N/O+1N/O |
| | 690 | 6 | 2.5 | NS2-FA1001 | 1N/O+1N/C |

Application class, rated working voltage and rated operational current of fault signal contact



| Application class | AC-14 | | | | DC-13 | | |
|---------------------------------|-------|------|---------|---------|-------|------|------|
| Rated operational voltage Ue(V) | 24 | 48 | 110/127 | 230/240 | 24 | 48 | 60 |
| Rated operational current Ie(A) | 1.5 | 1 | 0.5 | 0.3 | 1 | 0.3 | 0.15 |
| Normal operational power P(W) | 36 | 48 | 72 | 72 | 24 | 15 | 9 |
| Operation features (times) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

Capacity of abnormal connection and disconnection of fault signal contact and insrantaneous auxiliary contact

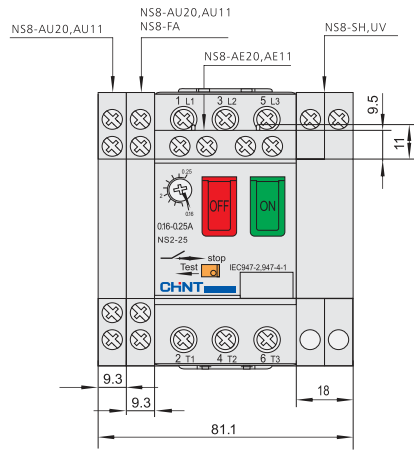
| Utilization category | Connection | | | Disconnection | | | Number of on/off operation cycles and operation frequency | | |
|----------------------|------------|------|----------------|---------------|------|----------------|---|-------------------------------------|---------------|
| | I/Ie | U/Ue | Cos φ or t0.95 | I/Ie | U/Ue | Cos φ or t0.95 | Number of operation cycles | Number of operation cycles per min. | On power 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: $Pe \geq 50W$, upper limit of $T_{0.95} \approx 6 Pe \leq 300ms$.

5.5 Installation box for NS2-25

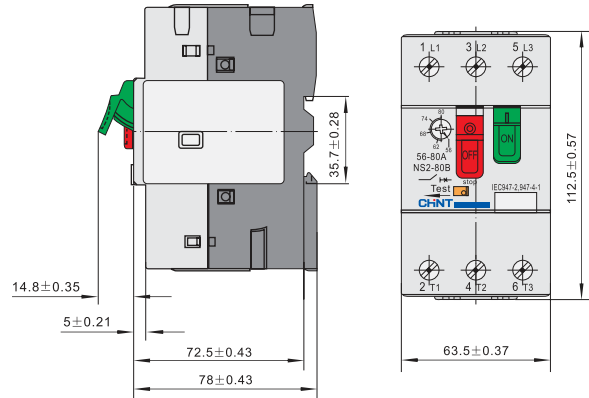
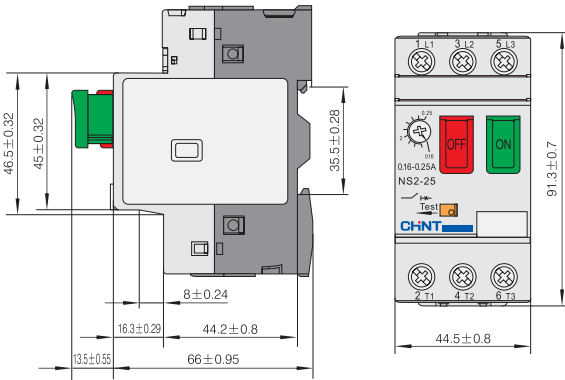
| | | |
|---|---|------|
|  | NS2-MC Installation box without pushbutton | IP55 |
|  | NS2-MC01 Installation box with emergency pushbutton | IP55 |

6. Overall and Mounting Dimension (mm)

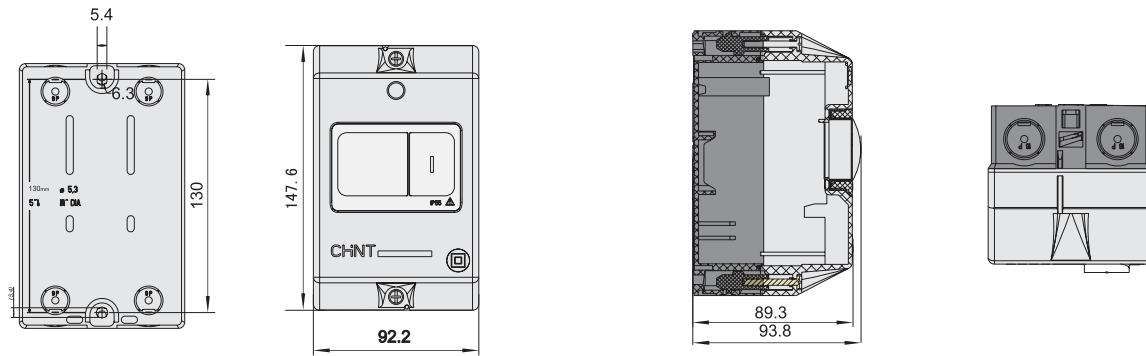


NS2-25

NS2-80B



NS2-MC



NS2-MC01

