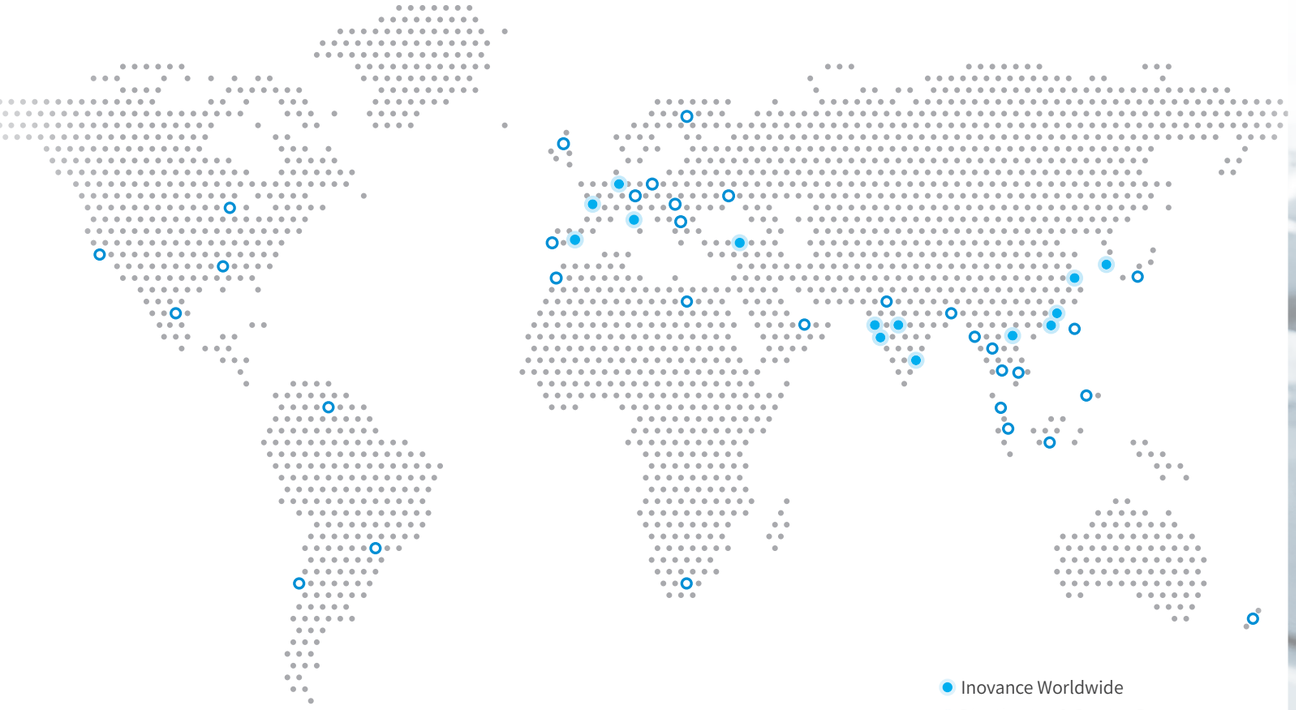
19120446 A01



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INOVANCE

# MS1-R Series

## High Performance Explosion-Protected Servo Motor


## Features & functions

### High-standard certification
- Highest protection level against gas explosion:Ex db IIC T5 Gb
- Highest protection level against dust explosion:Ex tb IIIC T100°C Db

### Optical, mechanical & electronic integration
- Self-developed encoder, motor, drive, and controller for system integration, improving selection convenience, quality reliability, and system performance

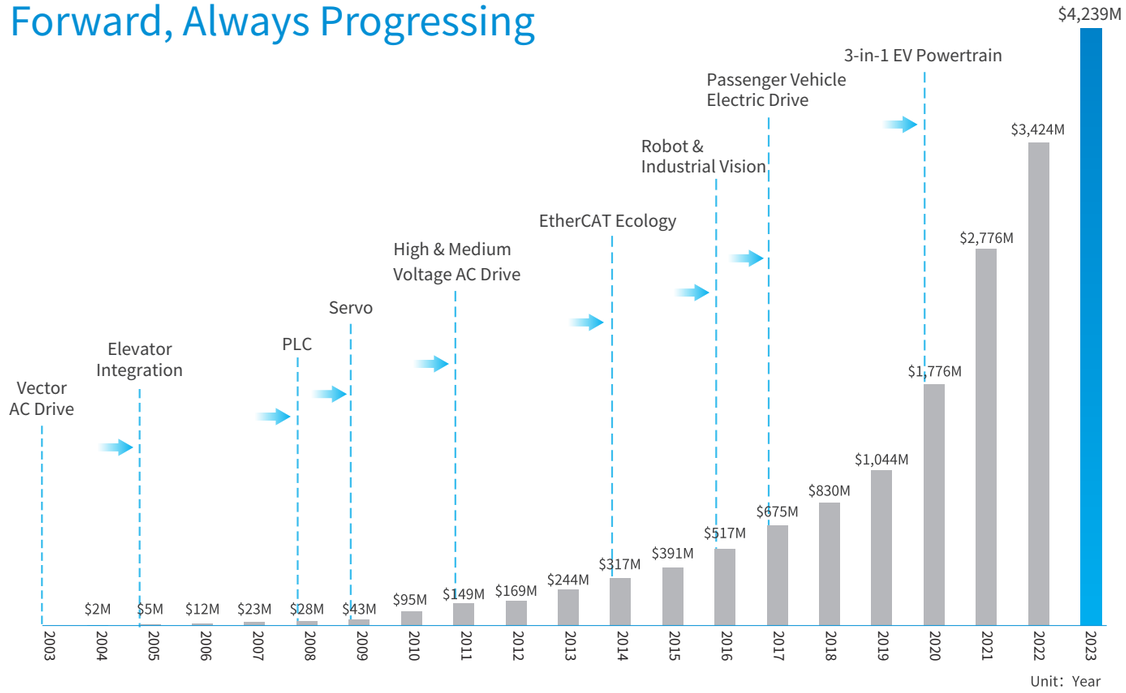
### Easy wiring
- Explosion-proof junction box for wiring in four directions
- Plug-in terminals for efficient wiring
- Easy installation for single product

# About Inovance

The Inovance Group, founded in 2003, is a rising star in the global industrial automation business and has revenues of $4.2 in 2023. Inovance is headquartered in Shenzhen, China, and has built a global operation with offices and facilities in Germany, France, Italy, Spain, Turkey, India, and South Korea. Additionally, the company has a strong network of distribution partners around the world.

The company 's flexible production techniques and expert understanding of all industry sectors - from plastics to printing to packaging to iron & steel production - have allowed it to establish globally leading industry-specific business units. Over the years, Inovance has built an engineering team with specialist expertise in industrial automation. This knowledge allows it to form strong partnerships with OEMs and end users, providing ongoing advice about how to get the most out of their automation solutions today, and how to stay prepared for the market and technology changes that are coming in future.

## Forward, Always Progressing




**2003**
founded

**IPO:2010**
Shenzhen, China

**20,000**
employees

**Global**
network of offices and distributors

**$4.2+bn**
revenues in 2023

### Servo System

**4,500,000+**
sets delivered in 2023

### AC Drive

**2,20,000+**
sets delivered in 2023

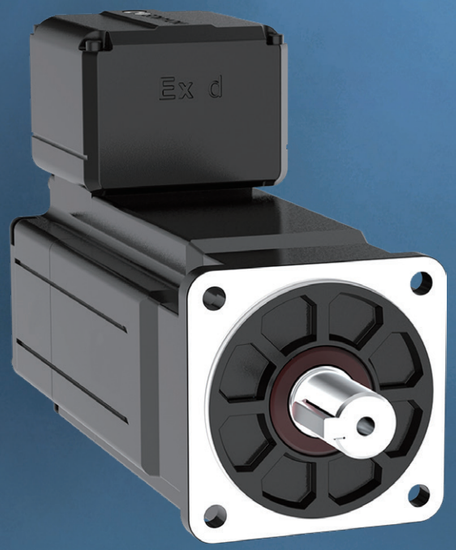
### Industrial Robot

**22,000+**
sets delivered in 2023

### Controller

**3,400,000+**
sets delivered in 2023

# Overview




## Wide power range

- Covers power range from 0.2 kW to 7.5 kW
- Supports multiple models

## High speed

- Max. speed of H4 models **7000 rpm**
- Max. speed of H3 models **4500 rpm**

## High-standard temperature certification

- Provides models with surface temperature no higher than 100°C
- Provides models with surface temperature no higher than 135°C


## High performance

- Supports 23-bit multi-turn absolute encoder
- Provides 18-bit multi-turn absolute encoder


## *Explosion-Proof Design*

Newly developed for use in flammable and explosive atmospheres that contain Zones 1, 2, 21, and 22

### Explosion protection level

Ex db IIC T5 Gb/
Ex tb IIIC T100°C Db IP66

Ex db IIC T4 Gb/
Ex tb IIIC T135°C Db IP66

# Ordering code

**MS1 H4 - 20B 30C B - A3 3 1 R - EX d T5**
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

| | | |
|---|---|---|
| ① MS1 series servo motor | ④ Rated speed (rpm)<br>One letter and two digits<br>B: x 10<br>C: x 100<br>Example: 30C indicates 3,000 rpm | ⑦ Shaft connection mode<br>3: Solid shaft, with key and threaded hole |
| ② Inertia and capacity<br>H3: Medium inertia, medium capacity<br>H4: Medium inertia, small capacity | | ⑧ Brake, reducer, oil seal<br>1: With oil seal but no brake<br>4: With oil seal and brake |
| ③ Rated power (W)<br>One letter and two digits<br>B: x 10<br>C: x 100<br>Example, 20B indicates 200 W. | ⑤ Voltage class (V)<br>B: 220<br>D: 380 | ⑨ Motor series<br>R series |
| | ⑥ Encoder type<br>One letter and one digit<br>A3: 23-bit multi-turn absolute encoder<br>T3: 18-bit multi-turn absolute encoder | ⑩ Explosion protection level<br>EX d T5：Ex db IIC T5 Gb/Ex tb IIIC T100°C Db IP66<br>EX d T4：Ex db IIC T4 Gb/Ex tb IIIC T135°C Db IP66 |

## Gas Explosion Protection Certification

**Ex db IIC T5/T4 Gb**
① ② ③ ④ ⑤

| | | |
|---|---|---|
| ① Marking<br>Ex: Explosion protection marking | ③ Electrical equipment type<br>IIC: Gas category (hydrogen and acetylene supported)<br>Note: It applies to both IIA and IIB. | ⑤ Electrical equipment protection class<br>Gb: The gas explosion protection level is Zone 1.<br>Note: It also applies to Gc Zone 2. |
| ② Electrical equipment explosion protection level<br>db: Explosion proof | ④ Enclosure temperature<br>(Lower temperature indicates better safety.)<br>T5: Max. motor enclosure temperature of 100°C<br>T4: Max. motor enclosure temperature of 135°C | |

## Dust Explosion Protection Certification

**Ex tb IIIC T100°C Db IP66**
① ② ③ ④ ⑤ ⑥

| | | |
|---|---|---|
| ① Marking<br>Ex: Explosion protection marking | ③ Electrical equipment type<br>IIIC: Dust category supported (conductive dust)<br>Note: It applies to both IIIA and IIIB. | ⑤ Electrical equipment protection class<br>Db: The dust explosion protection level is Zone 21.<br>Note: It also applies to Dc Zone 22. |
| ② Electrical equipment explosion protection level<br>tb: Protection by enclosure | ④ Enclosure temperature<br>(Lower temperature indicates better safety.)<br>T5: Max. motor surface temperature of 100°C<br>T4: Max. motor surface temperature of 135°C | ⑥ IP66<br>The waterproof and dustproof standards are IP66. |

# Selection chart

## A3: 23-Bit Multi-Turn Absolute Encoder

| Servo motor | | | Recommended drive | | |
|---|---|---|---|---|---|
| Model | Frame size (mm) | Capacity (kW) | Model | Size | Voltage class |
| **Explosion protection level: Ex db IIC T5 Gb/Ex tb IIIC T100°C Db IP66** | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=7000 rpm) | | | | | |
| MS1H4-20B30CB-A33*R-EX d T5 | 60 | 0.2 | SV670 ☐ S1R6I-PTC / SV660 ☐ S1R6I / IS810 ☐ S(D)3R5 | A | SV670 and SV660: Single-phase 220 V<br>IS810: Three-phase 380 V to 480 V |
| MS1H4-40B30CB-A33*R-EX d T5 | | 0.4 | SV670 ☐ S2R8I-PTC / SV660 ☐ S2R8I / IS810 ☐ S(D)3R5 | | |
| MS1H4-55B30CB-A331R-EX d T5 | 80 | 0.55 | SV670 ☐ S5R5I-PTC / SV660 ☐ S5R5I / IS810 ☐ S(D)5R4 | C | SV670 and SV660: Single-phase 220 V<br>IS810: Three-phase 380 V to 480 V |
| MS1H4-75B30CB-A33*R-EX d T5 | | 0.75 | | | |
| MS1H4-90B30CB-A33*R-EX d T5 | | 0.9 | SV670 ☐ S7R6I-PTC / SV660 ☐ S7R6I / IS810 ☐ S(D)8R4 | | SV670 and SV660: Single-phase/ Three-phase 220 V<br>IS810: Three-phase 380 V to 480 V |
| Ratings of medium-inertia medium-capacityMS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=4500 rpm) | | | | | |
| MS1H3-85B15CD-A33*R-EX d T5 | 130 | 0.85 | SV670 ☐ T3R5I-PTC / SV660 ☐ T3R5I / IS810 ☐ S(D)3R5 | C | SV670 and SV660: Three-phase 380 V<br>IS810: Three-phase 380 V to 480 V |
| MS1H3-13C15CD-A33*R-EX d T5 | | 1.3 | SV670 ☐ T5R4I-PTC / SV660 ☐ T5R4I / IS810 ☐ S(D)5R4 | | |
| MS1H3-16C15CD-A33*R-EX d T5 | | 1.6 | SV670 ☐ T8R4I-PTC / SV660 ☐ T8R4I / IS810 ☐ S(D)8R4 | D | |
| MS1H3-29C15CD-A33*R-EX d T5 | 180 | 2.9 | SV670 ☐ T012I-PTC / SV660 ☐ T012I / IS810 ☐ S(D)012 | | |
| MS1H3-37C15CD-A33*R-EX d T5 | | 3.7 | SV670 ☐ T017I-PTC / SV660 ☐ T017I / IS810 ☐ S(D)017 | E | |
| MS1H3-45C15CD-A33*R-EX d T5 | | 4.5 | SV670 ☐ T026I-PTC / SV660 ☐ T026I / IS810 ☐ S(D)026 | | |
| **Explosion protection level: Ex db IIC T4 Gb/Ex tb IIIC T135°C Db IP66** | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=7000 rpm) | | | | | |
| MS1H4-10C30CB-A33*R-EX d T4 | 80 | 1.0 | SV670 ☐ S7R6I-PTC / SV660 ☐ S7R6I / IS810 ☐ S(D)8R4 | C | SV670 and SV660: Single-phase/ Three-phase 220 V<br>IS810: Three-phase 380 V to 480 V |
| Ratings of medium-inertia medium-capacity MS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=4500 rpm) | | | | | |
| MS1H3-18C15CD-A33*R-EX d T4 | 130 | 1.8 | SV670 ☐ T8R4I-PTC / SV660 ☐ T8R4I / IS810 ☐ S(D)8R4 | D | SV670 and SV660: Three-phase 380 V<br>IS810: Three-phase 380 V to 480 V |
| MS1H3-29C15CD-A33*R-EX d T4 | 180 | 2.9 | SV670 ☐ T012I-PTC / SV660 ☐ T012I / IS810 ☐ S(D)012 | | |
| MS1H3-44C15CD-A33*R-EX d T4 | | 4.4 | SV670 ☐ T017I-PTC / SV660 ☐ T017I / IS810 ☐ S(D)017 | E | |
| MS1H3-55C15CD-A33*R-EX d T4 | | 5.5 | SV670 ☐ T021I-PTC / SV660 ☐ T021I / IS810 ☐ S(D)021 | | |
| MS1H3-75C15CD-A33*R-EX d T4 | | 7.5 | SV670 ☐ T026I-PTC / SV660 ☐ T026I / IS810 ☐ S(D)026 | | |

Note: 1. The asterisk (*) indicates an optional standard motor or motor with brake.
2. Drives with A3 encoder motor must be used together with PTC temperature control module except for SV670-PTC.

# Selection chart

## T3: 18-Bit Multi-Turn Absolute Encoder

| Servo motor | | | Recommended drive | | |
|---|---|---|---|---|---|
| Model | Frame size(mm) | Capacity (kW) | Model | Size | Voltage class |
| Explosion protection level: Ex db IIC T4 Gb/Ex tb IIIC T135°C Db IP66 | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=6000 rpm) | | | | | |
| MS1H4-20B30CB-T33*R-EX d T4 | 60 | 0.2 | SV630 ☐ S1R6I | A | Single-phase 220 V |
| MS1H4-40B30CB-T33*R-EX d T4 | | 0.4 | SV630 ☐ S2R8I | | |
| MS1H4-55B30CB-T331R-EX d T4 | 80 | 0.55 | SV630 ☐ S5R5I | C | Single-phase 220 V |
| MS1H4-75B30CB-T33*R-EX d T4 | | 0.75 | | | |
| MS1H4-10C30CB-T33*R-EX d T4 | | 1.0 | SV630 ☐ S7R6I | | Single-phase/Three-phase 220 V |
| Ratings ofmedium-inertia medium-capacity MS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=3000 rpm) | | | | | |
| MS1H3-85B15CD-T33*R-EX d T4 | 130 | 0.85 | SV630 ☐ T3R5I | C | Three-phase 380 V |
| MS1H3-13C15CD-T33*R-EX d T4 | | 1.3 | SV630 ☐ T5R4I | | |
| MS1H3-18C15CD-T33*R-EX d T4 | | 1.8 | SV630 ☐ T8R4I | D | |
| MS1H3-29C15CD-T33*R-EX d T4 | 180 | 2.9 | SV630 ☐ T012I | | |
| MS1H3-44C15CD-T33*R-EX d T4 | | 4.4 | SV630 ☐ T017I | E | |
| MS1H3-55C15CD-T33*R-EX d T4 | | 5.5 | SV630 ☐ T021I | | |
| MS1H3-75C15CD-T33*R-EX d T4 | | 7.5 | SV630 ☐ T026I | | |

Note: The asterisk (*) indicates an optional standard motor or motor with brake.

# Specifications

## A3: 23-Bit Multi-Turn Absolute Encoder

| Motor model | Frame size (mm) | Rated power (kW) | Voltage (V) | Rated torque (N·m) | Max. torque (N·m) | Rated current (A) | Max. current (A) | Rated speed (rpm) | Max. speed (rpm) | Torque coefficient (N·m/A) | Moment of inertia (kg·cm$^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Explosion protection level: Ex db IIC T5 Gb/Ex tb IIIC T100°C Db IP66 | | | | | | | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=7000 rpm) | | | | | | | | | | | |
| MS1H4-20B30CB-A33*R-EX d T5 | 60 | 0.2 | 220 | 0.64 | 2.24 | 1.3 | 5.3 | 3000 | 7000 | 0.46 | 0.22±10% (0.23±10%) |
| MS1H4-40B30CB-A33*R-EX d T5 | | 0.4 | 220 | 1.27 | 4.45 | 2.4 | 9.2 | 3000 | 7000 | 0.53 | 0.44±10% (0.45±10%) |
| MS1H4-55B30CB-A331R-EX d T5 | 80 | 0.55 | 220 | 1.75 | 6.13 | 3.3 | 13.2 | 3000 | 7000 | 0.49 | 1.16±10% |
| MS1H4-75B30CB-A33*R-EX d T5 | | 0.75 | 220 | 2.39 | 8.37 | 4.4 | 16.9 | 3000 | 7000 | 0.58 | 1.52±10% (1.55±10%) |
| MS1H4-90B30CB-A33*R-EX d T5 | | 0.9 | 220 | 2.86 | 9.54 | 5.85 | 24 | 3000 | 7000 | 0.46 | 1.96±10% (1.99±10%) |
| Ratings of medium-inertia medium-capacityMS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=4500 rpm) | | | | | | | | | | | |
| MS1H3-85B15CD-A33*R-EX d T5 | 130 | 0.85 | 380 | 5.39 | 13.5 | 3.5 | 8.5 | 1500 | 4500 | 1.84 | 13.56±10% (15.8±10%) |
| MS1H3-13C15CD-A33*R-EX d T5 | | 1.3 | 380 | 8.34 | 20.85 | 5.1 | 12.6 | 1500 | 4500 | 1.85 | 19.25±10% (21.5±10%) |
| MS1H3-16C15CD-A33*R-EX d T5 | | 1.6 | 380 | 10.4 | 28.75 | 6.08 | 17.7 | 1500 | 4500 | 1.87 | 24.9±10% (27.2±10%) |
| MS1H3-29C15CD-A33*R-EX d T5 | 180 | 2.9 | 380 | 18.6 | 46.5 | 10.5 | 29.75 | 1500 | 4500 | 1.94 | 44.7±10% (52.35±10%) |
| MS1H3-37C15CD-A33*R-EX d T5 | | 3.7 | 380 | 24.2 | 71.1 | 13.6 | 42 | 1500 | 4500 | 1.96 | 64.9±10% (72.55±10%) |
| MS1H3-45C15CD-A33*R-EX d T5 | | 4.5 | 380 | 29 | 119 | 15 | 65 | 1500 | 4500 | 2.13 | 127.5±10% (135.15±10%) |
| Explosion protection level: Ex db IIC T4 Gb/Ex tb IIIC T135°C Db IP66 | | | | | | | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=7000 rpm) | | | | | | | | | | | |
| MS1H4-10C30CB-A33*R-EX d T4 | 80 | 1.0 | 220 | 3.18 | 9.54 | 6.5 | 24 | 3000 | 7000 | 0.46 | 1.96±10% (1.99±10%) |
| Ratings of medium-inertia medium-capacity MS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=4500 rpm) | | | | | | | | | | | |
| MS1H3-18C15CD-A33*R-EX d T4 | 130 | 1.8 | 380 | 11.5 | 28.75 | 6.75 | 17.7 | 1500 | 4500 | 1.87 | 24.9±10% (27.2±10%) |
| MS1H3-29C15CD-A33*R-EX d T4 | 180 | 2.9 | 380 | 18.6 | 46.5 | 10.5 | 29.75 | 1500 | 4500 | 1.94 | 44.7±10% (52.35±10%) |
| MS1H3-44C15CD-A33*R-EX d T4 | | 4.4 | 380 | 28.4 | 71.1 | 16 | 42 | 1500 | 4500 | 1.96 | 64.9±10% (72.55±10%) |
| MS1H3-55C15CD-A33*R-EX d T4 | | 5.5 | 380 | 35 | 87.6 | 20.7 | 52 | 1500 | 4500 | 1.92 | 86.9±10% (94.55±10%) |
| MS1H3-75C15CD-A33*R-EX d T4 | | 7.5 | 380 | 48 | 119 | 25 | 65 | 1500 | 4500 | 2.13 | 127.5±10% (135.15±10%) |

Note: The asterisk (*) indicates an optional standard motor or motor with brake.The parentheses, (), encloses parameters of the motor with brake.

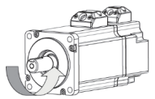
# Specifications

## T3: 18-Bit Multi-Turn Absolute Encoder

| Servo motor | Frame size (mm) | Rated power (kW) | Voltage (V) | Rated torque (N·m) | Max. torque (N·m) | Rated current (A) | Max. current (A) | Rated speed (rpm) | Max. speed (rpm) | Torque coefficient (N·m/A) | Moment of inertia ($kg·cm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Explosion protection level: Ex db IIC T4 Gb/Ex tb IIIC T135°C Db IP66 | | | | | | | | | | | |
| Ratings of medium-inertia small-capacity MS1H4 series motors ($n_N$=3000 rpm, $n_{max}$=6000 rpm) | | | | | | | | | | | |
| MS1H4-20B30CB-T33*R-EX d T4 | 60 | 0.2 | 220 | 0.64 | 2.24 | 1.3 | 5.3 | 3000 | 6000 | 0.46 | 0.22±10% (0.23±10%) |
| MS1H4-40B30CB-T33*R-EX d T4 | | 0.4 | 220 | 1.27 | 4.45 | 2.4 | 9.2 | 3000 | 6000 | 0.53 | 0.44±10% (0.45±10%) |
| MS1H4-55B30CB-T331R-EX d T4 | 80 | 0.55 | 220 | 1.75 | 6.13 | 3.3 | 13.2 | 3000 | 6000 | 0.49 | 1.16±10% |
| MS1H4-75B30CB-T33*R-EX d T4 | | 0.75 | 220 | 2.39 | 8.37 | 4.4 | 16.9 | 3000 | 6000 | 0.58 | 1.52±10% (1.55±10%) |
| MS1H4-10C30CB-T33*R-EX d T4 | | 1.0 | 220 | 3.18 | 9.54 | 6.5 | 24 | 3000 | 6000 | 0.46 | 1.96±10% (1.99±10%) |
| Ratings ofmedium-inertia medium-capacity MS1H3 series motor ($n_N$=1500 rpm, $n_{max}$=3000 rpm) | | | | | | | | | | | |
| MS1H3-85B15CD-T33*R-EX d T4 | 130 | 0.85 | 380 | 5.39 | 13.5 | 3.5 | 8.5 | 1500 | 3000 | 1.84 | 13.56±10% (15.8±10%) |
| MS1H3-13C15CD-T33*R-EX d T4 | | 1.3 | 380 | 8.34 | 20.85 | 5.1 | 12.6 | 1500 | 3000 | 1.85 | 19.25±10% (21.5±10%) |
| MS1H3-18C15CD-T33*R-EX d T4 | | 1.8 | 380 | 11.5 | 28.75 | 6.75 | 17.7 | 1500 | 3000 | 1.87 | 24.9±10% (27.2±10%) |
| MS1H3-29C15CD-T33*R-EX d T4 | 180 | 2.9 | 380 | 18.6 | 46.5 | 10.5 | 29.75 | 1500 | 3000 | 1.94 | 44.7±10% (52.35±10%) |
| MS1H3-44C15CD-T33*R-EX d T4 | | 4.4 | 380 | 28.4 | 71.1 | 16 | 42 | 1500 | 3000 | 1.96 | 64.9±10% (72.55±10%) |
| MS1H3-55C15CD-T33*R-EX d T4 | | 5.5 | 380 | 35 | 87.6 | 20.7 | 52 | 1500 | 3000 | 1.92 | 86.9±10% (94.55±10%) |
| MS1H3-75C15CD-T33*R-EX d T4 | | 7.5 | 380 | 48 | 119 | 25 | 65 | 1500 | 3000 | 2.13 | 127.5±10% (135.15±10%) |

Note: **The asterisk (*) indicates an optional standard motor or motor with brake.**The parentheses, (), encloses parameters of the motor with brake.

# Technical Specifications

| Item | Description |
|---|---|
| Duty cycle | S1 (Continuous duty) |
| Vibration level | V15[1] |
| Insulation resistance | 500 VDC, above 50 MΩ |
| Excitation mode | Permanent magnetic |
| Mounting method | Flange |
| Heat resistance level | F (155°C ) |
| Insulation voltage | 1500 VAC for 1 minute (220 V class); 1800 VAC for 1 minute (380 V class) |
| Ambient temperature | 0°C to 40°C (non-frozen) (Derate based on the derating curve for temperatures above 40°C .) |
| Ambient humidity | 20% to 80% RH (without condensation) |
| Storage environment | Observe the following requirements for storing a de-energized motor.<br>· Storage temperature: -20°C to +60°C (non-frozen)<br>· Storage humidity: 20% to 80% RH (without condensation) |
| IP rating of the enclosure | IP66 (Replace the sealing quick-wear parts as required.) |
| Direction of rotation | Rotates counterclockwise (CCW) when viewed from the shaft extension side with the forward run command.<br>  <br>CCW |
| Vibration resistance[2] | 49 $m/s^2$ (flange side as standard) |
| Shock resistance [3] | 490 $m/s^2$ (flange side as standard); number of shocks: 2 |
| Altitude | < 1000 m (Derating is required for altitudes above 1000 m. For details, see the altitude derating curve.) |

Note:

[1] Vibration grade V15 indicates that the vibration amplitude is lower than 15 μm when the motor is operating at rated speed.

[2] The resistance for shock in the vertical direction when the servo motor is mounted with the shaft in a horizontal position is shown in the preceding table.

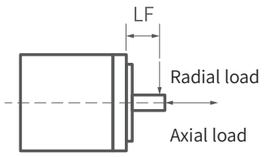
[3] The vertical, side-to-side, and front-to-back resistance for vibration in three directions when the servo motor is mounted with the shaft in a horizontal position is shown in the preceding table.

The vibration intensity applied on the motor varies with applications.

# Electrical Specifications of the Brake

| Frame size (mm) | Holding torque (N·m) | Power supply voltage (VDC)±10% | Rated power (W) | Coil resistance (Ω)±7% | Excitation current (A) | Release time (ms) | Apply time (ms) | Backlash (°) |
|---|---|---|---|---|---|---|---|---|
| 60 | 1.5 | 24 | 7.6 | 75.79 | 0.32 | ⩽ 60 | ⩽ 20 | ⩽ 1 |
| 80 | 3.2 | 24 | 10 | 57.6 | 0.42 | ⩽ 60 | ⩽ 40 | ⩽ 1 |
| 130 | 16 | 24 | 24 | 24 | 1 | ⩽ 120 | ⩽ 60 | ⩽ 1 |
| 180 | 50 | 24 | 31 | 18.58 | 1.29 | ⩽ 200 | ⩽ 100 | ⩽ 1 |

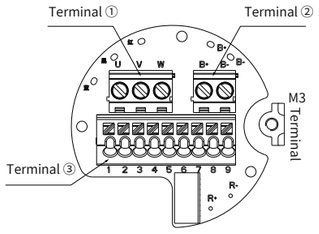
# Radial and Axial Loads




| Motor model | Frame size (mm) | Power class (kW) | LF (mm) | Allowable radial load (N) | Allowed axial load (N) |
|---|---|---|---|---|---|
| MS1H4-20B30CB<br>MS1H4-40B30CB | 60 | 0.2~0.4 | 25 | 245 | 74 |
| MS1H4-55B30CB<br>MS1H4-75B30CB<br>MS1H4-90B30CB<br>MS1H4-10C30CB | 80 | 0.55~1.0 | 35 | 392 | 147 |
| MS1H3-85B15CD<br>MS1H3-13C15CD<br>MS1H3-16C15CD<br>MS1H3-18C15CD | 130 | 0.85~1.8 | 55 | 686 | 196 |
| MS1H3-29C15CD<br>MS1H3-37C15CD<br>MS1H3-44C15CD T4 | 180 | 2.9~4.4 | 79 | 1470 | 490 |
| MS1H3-44C15CD T5<br>MS1H3-45C15CD<br>MS1H3-55C15CD<br>MS1H3-75C15CD | | 4.4~7.5 | 113 | 1764 | 588 |

# Terminal Assignment

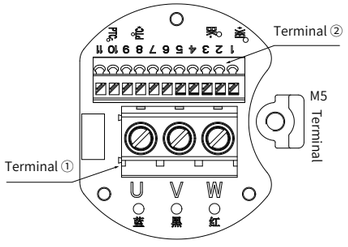
## Frame sizes 60 and 80




| Assignment of power wiring terminals | | | | | | |
|---|---|---|---|---|---|---|
| Connection position | Terminal ① | | | M3 terminal | Terminal ② | |
| Plate mark | U | V | W | - | B+ | B- |
| Conductor mark | U | V | W | PE | BK+ | BK- |
| Conductor color | Blue | Black | Red | Yellow/ Green | Brown | Blue |

| Assignment of encoder wiring terminals | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Connection position | Terminal ③ | | | | | | | | |
| Terminal No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Conductor color | Blue | Purple | Black | Brown | Red | Orange | White | Yellow | Green |
| Signal name | PS+ | PS- | BT- | BT+ | +5 V | GND | PE | PTC+ | PTC- |

## Frame sizes 130 and 180




| Assignment of power wiring terminals | | | | | | |
|---|---|---|---|---|---|---|
| Connection position | Terminal ① | | | M5 terminal | Terminal ② | |
| Plate mark | U | V | W | - | 1 | 2 |
| Conductor mark | U | V | W | PE | BK+ | BK- |
| Conductor color | Blue | Black | Red | Yellow/ Green | Brown | Blue |

| Assignment of encoder wiring terminals | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Connection position | Terminal ② | | | | | | | | |
| Terminal No. | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Conductor color | Blue | Purple | Black | Brown | Red | Orange | White | Yellow | Green |
| Signal name | PS+ | PS- | BT- | BT+ | +5 V | GND | PE | PTC+ | PTC- |

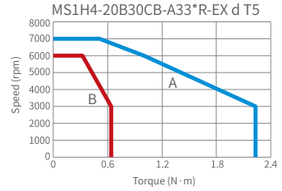
# Speed-Torque Characteristics

## A3: 23-Bit Multi-Turn Absolute Encoder

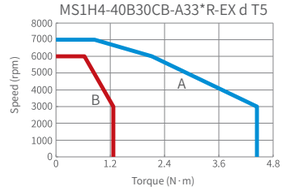
A: Short term working area
B: Continuous working area

**MS1H4 Medium inertia, small capacity**

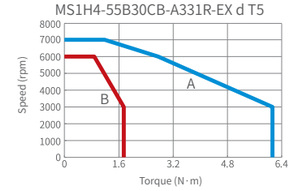
MS1H4-20B30CB-A33*R-EX d T5



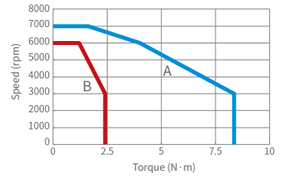

MS1H4-40B30CB-A33*R-EX d T5



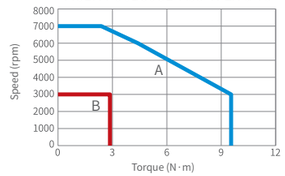

MS1H4-55B30CB-A331R-EX d T5



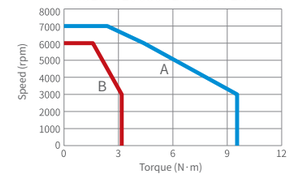

MS1H4-75B30CB-A33*R-EX d T5




MS1H4-90B30CB-A33*R-EX d T5

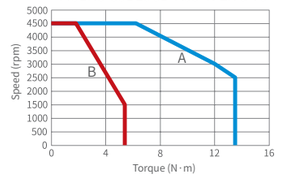



MS1H4-10C30CB-A33*R-EX d T4

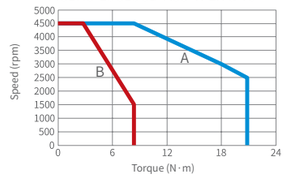



**MS1H3 Medium inertia, medium capacity**

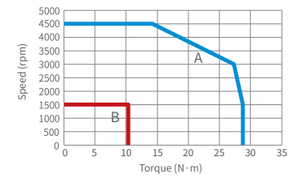
MS1H3-85B15CD-A33*R-EX d T5



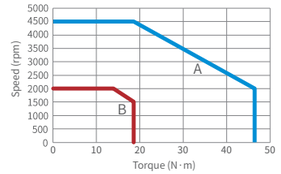

MS1H3-13C15CD-A33*R-EX d T5



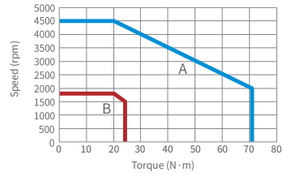

MS1H3-16C15CD-A33*R-EX d T5



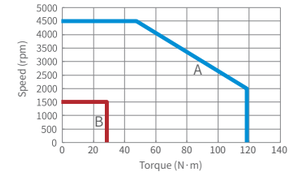

MS1H3-29C15CD-A33*R-EX d T5



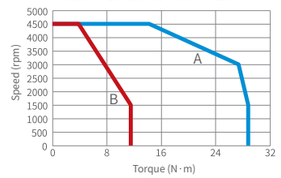

MS1H3-37C15CD-A33*R-EX d T5



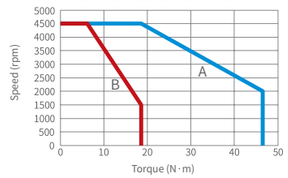

MS1H3-45C15CD-A33*R-EX d T5



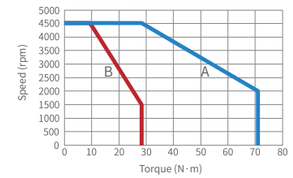

MS1H3-18C15CD-A33*R-EX d T4



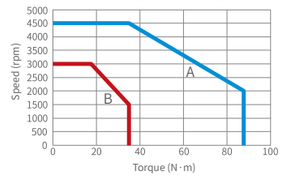

MS1H3-29C15CD-A33*R-EX d T4



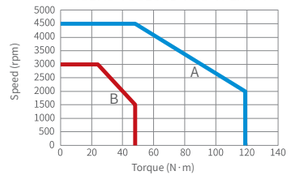

MS1H3-44C15CD-A33*R-EX d T4




MS1H3-55C15CD-A33*R-EX d T4




MS1H3-75C15CD-A33*R-EX d T4



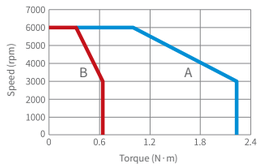
# Speed-Torque Characteristics

## T3: 18-Bit Multi-Turn Absolute Encoder

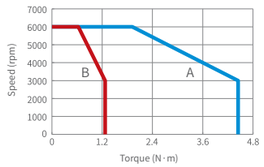
A: Short term working area　　B: Continuous working area

**MS1H4 Medium inertia, small capacity**

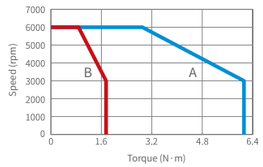
MS1H4-20B30CB-T33*R-EX d T4



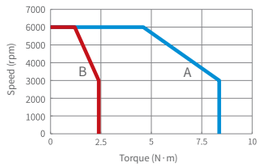

MS1H4-40B30CB-T33*R-EX d T4



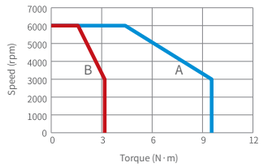

MS1H4-55B30CB-T331R-EX d T4




MS1H4-75B30CB-T33*R-EX d T4

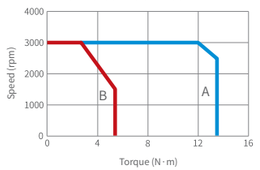



MS1H4-10C30CB-T33*R-EX d T4

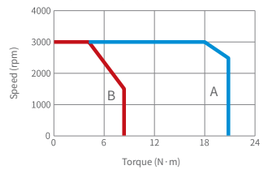



**MS1H3 Medium inertia, medium capacity**

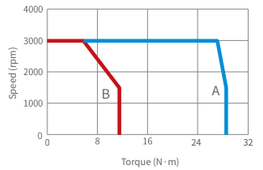
MS1H3-85B15CD-T33*R-EX d T4



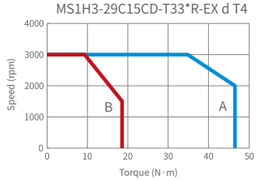

MS1H3-13C15CD-T33*R-EX d T4



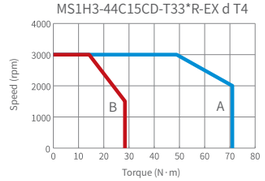

MS1H3-18C15CD-T33*R-EX d T4



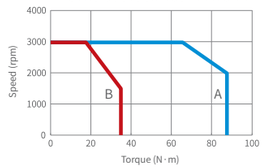

MS1H3-29C15CD-T33*R-EX d T4



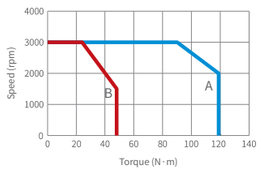

MS1H3-44C15CD-T33*R-EX d T4




MS1H3-55C15CD-T33*R-EX d T4

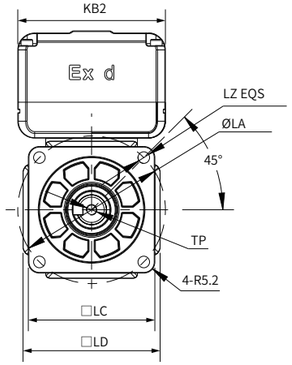


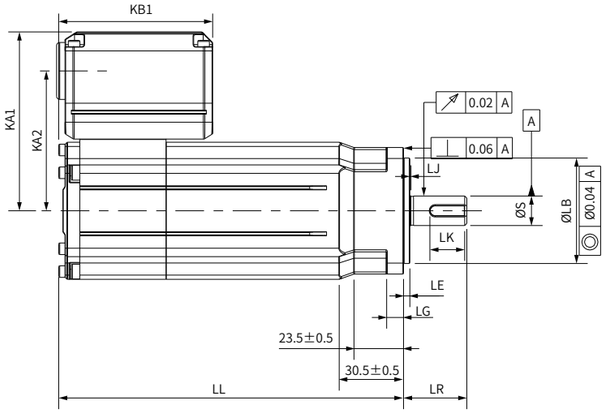

MS1H3-75C15CD-T33*R-EX d T4

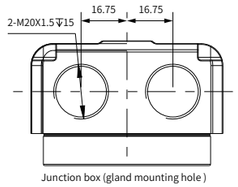


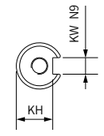

# Dimensions

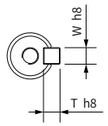
## Frame Size 60




Unit: mm

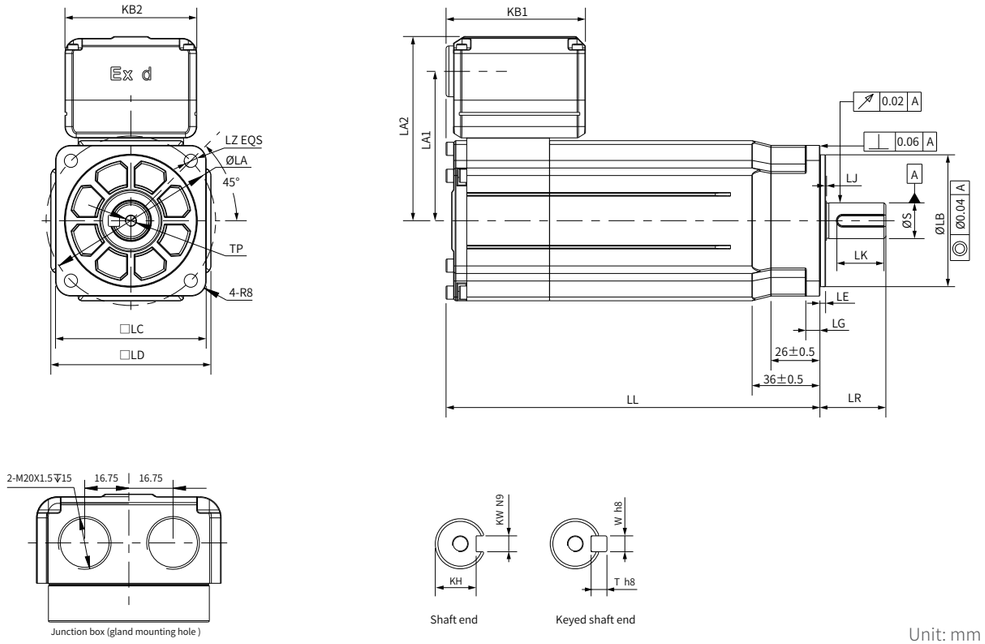
| Motor model | LC | LD | LL | LR | LA | LZ | LG | LE | LJ | LB | LK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H4-20B30CB-A33*R-EX d T5<br>MS1H4-20B30CB-T33*R-EX d T4 | 60±0.3 | 65±0.3 | 127.15±1<br>(145.2±1) | 30±0.35 | 70 | 4-Φ5.5 | 8±0.5 | 3±0.3 | 0.5±0.35 | 50 $h7^{0}_{-0.025}$ | 16.5 |
| MS1H4-40B30CB-A33*R-EX d T5<br>MS1H4-40B30CB-T33*R-EX d T4 | 60±0.3 | 65±0.3 | 145.45±1<br>(163.5±1) | 30±0.35 | 70 | 4-Φ5.5 | 8±0.5 | 3±0.3 | 0.5±0.35 | 50 $h7^{0}_{-0.025}$ | 16.5 |

| Motor model | S | TP | KH | kW | W | T | KB1 | KB2 | KA1 | KA2 | Weight(kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H4-20B30CB-A33*R-EX d T5<br>MS1H4-20B30CB-T33*R-EX d T4 | 14 | M5×8 | $11^{0}_{-0.1}$ | 5 | 5 | 5 | 73±0.5 | 70±0.5 | 66.3±1 | 84.8±1 | 1.75<br>(2.1) |
| MS1H4-40B30CB-A33*R-EX d T5<br>MS1H4-40B30CB-T33*R-EX d T4 | 14 | M5×8 | $11^{0}_{-0.1}$ | 5 | 5 | 5 | 73±0.5 | 70±0.5 | 66.3±1 | 84.8±1 | 2.1<br>(2.45) |

Note: **The asterisk (*) indicates an optional standard motor or motor with brake.** The parentheses, (), encloses parameters of the motor with brake.

# Dimensions

## Frame Size 80




Unit: mm

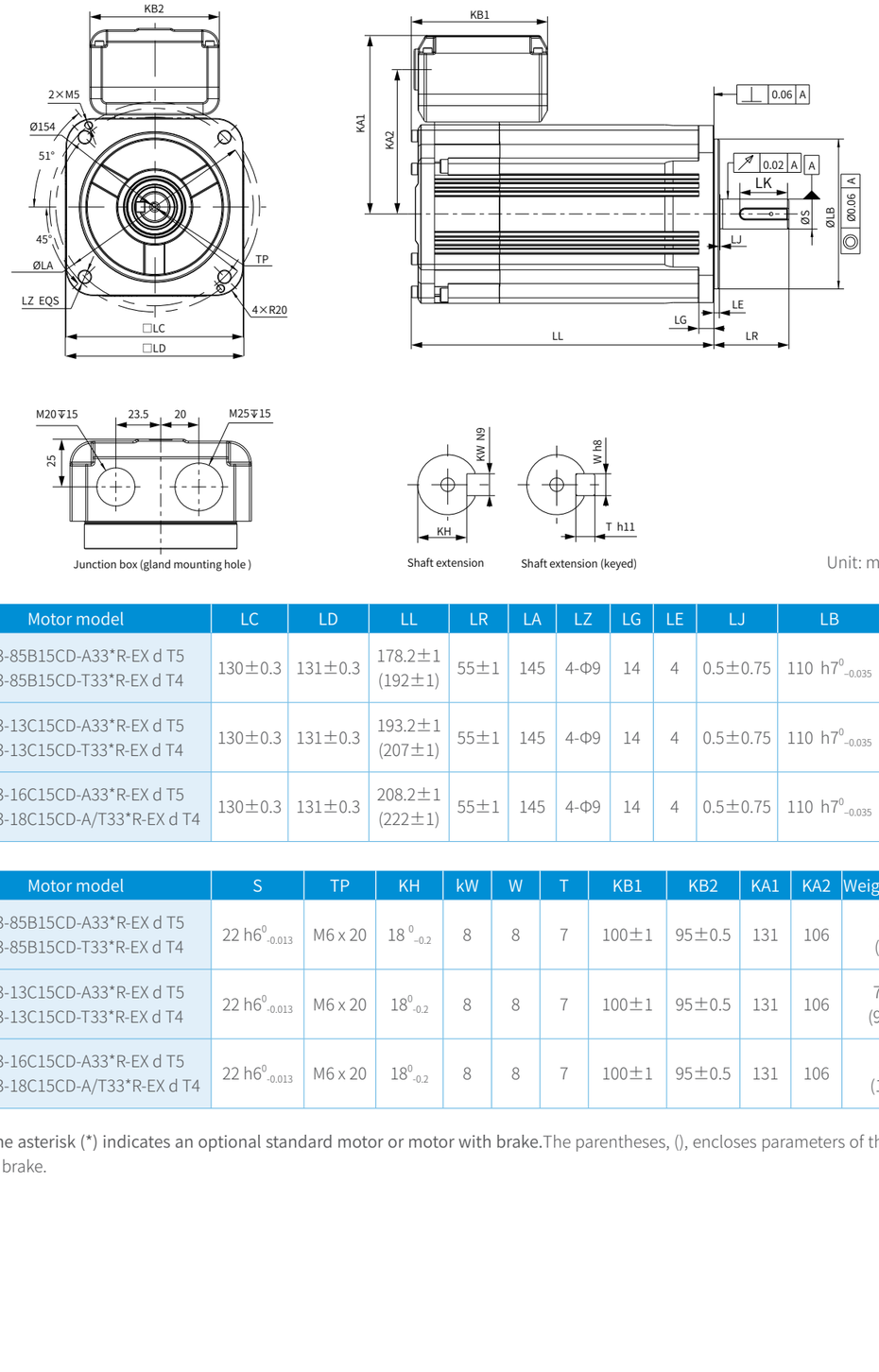
| Motor model | LC | LD | LL | LR | LA | LZ | LG | LE | LJ | LB | LK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H4-55B30CB-A331R-EX d T5<br>MS1H4-55B30CB-T331R-EX d T4 | 80±0.3 | 85±0.3 | 154.3±1 | 35±0.5 | 90 | 4-Φ7 | 8±0.5 | 3±0.3 | 0.5±0.35 | 70 $h7^{0}_{-0.025}$ | 25 |
| MS1H4-75B30CB-A33*R-EX d T5<br>MS1H4-75B30CB-T33*R-EX d T4 | 80±0.3 | 85±0.3 | 164.4±1<br>(186.6±1) | 35±0.5 | 90 | 4-Φ7 | 8±0.5 | 3±0.3 | 0.5±0.35 | 70 $h7^{0}_{-0.025}$ | 25 |
| MS1H4-90B30CB-A33*R-EX d T5<br>MS1H4-10C30CB-A/T33*R-EX d T4 | 80±0.3 | 85±0.3 | 176.3±1<br>(198.5±1) | 35±0.5 | 90 | 4-Φ7 | 8±0.5 | 3±0.3 | 0.5±0.35 | 70 $h7^{0}_{-0.025}$ | 25 |

| Motor model | S | TP | KH | kW | W | T | KB1 | KB2 | KA1 | KA2 | Weight(kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H4-55B30CB-A331R-EX d T5<br>MS1H4-55B30CB-T331R-EX d T4 | 19 | M6×20 | $15.5^{0}_{-0.1}$ | 6 | 6 | 6 | 74±0.5 | 70±0.5 | 79.3±1 | 97.8±1 | 3.35 |
| MS1H4-75B30CB-A33*R-EX d T5<br>MS1H4-75B30CB-T33*R-EX d T4 | 19 | M6×20 | $15.5^{0}_{-0.1}$ | 6 | 6 | 6 | 74±0.5 | 70±0.5 | 79.3±1 | 97.8±1 | 3.45<br>(4.35) |
| MS1H4-90B30CB-A33*R-EX d T5<br>MS1H4-10C30CB-A/T33*R-EX d T4 | 19 | M6×20 | $15.5^{0}_{-0.1}$ | 6 | 6 | 6 | 74±0.5 | 70±0.5 | 79.3±1 | 97.8±1 | 4.15<br>(4.75) |

Note: **The asterisk (*) indicates an optional standard motor or motor with brake.**The parentheses, (), encloses parameters of the motor with brake.

# Dimensions

## Frame Size 130




Unit: mm

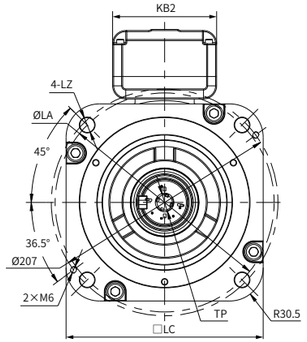
| Motor model | LC | LD | LL | LR | LA | LZ | LG | LE | LJ | LB | LK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H3-85B15CD-A33*R-EX d T5<br>MS1H3-85B15CD-T33*R-EX d T4 | 130±0.3 | 131±0.3 | 178.2±1<br>(192±1) | 55±1 | 145 | 4-Φ9 | 14 | 4 | 0.5±0.75 | 110 $h7^{0}_{-0.035}$ | 36 |
| MS1H3-13C15CD-A33*R-EX d T5<br>MS1H3-13C15CD-T33*R-EX d T4 | 130±0.3 | 131±0.3 | 193.2±1<br>(207±1) | 55±1 | 145 | 4-Φ9 | 14 | 4 | 0.5±0.75 | 110 $h7^{0}_{-0.035}$ | 36 |
| MS1H3-16C15CD-A33*R-EX d T5<br>MS1H3-18C15CD-A/T33*R-EX d T4 | 130±0.3 | 131±0.3 | 208.2±1<br>(222±1) | 55±1 | 145 | 4-Φ9 | 14 | 4 | 0.5±0.75 | 110 $h7^{0}_{-0.035}$ | 36 |

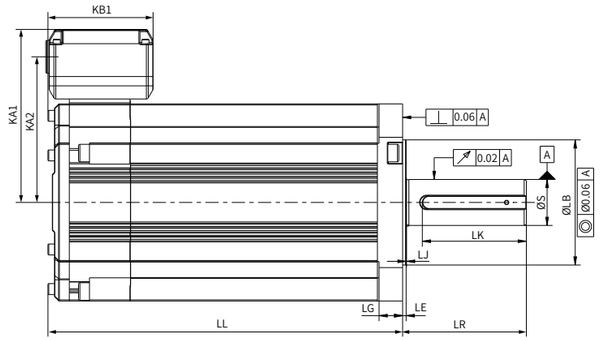
| Motor model | S | TP | KH | kW | W | T | KB1 | KB2 | KA1 | KA2 | Weight(kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H3-85B15CD-A33*R-EX d T5<br>MS1H3-85B15CD-T33*R-EX d T4 | 22 $h6^{0}_{-0.013}$ | M6 x 20 | $18^{0}_{-0.2}$ | 8 | 8 | 7 | 100±1 | 95±0.5 | 131 | 106 | 6<br>(8) |
| MS1H3-13C15CD-A33*R-EX d T5<br>MS1H3-13C15CD-T33*R-EX d T4 | 22 $h6^{0}_{-0.013}$ | M6 x 20 | $18^{0}_{-0.2}$ | 8 | 8 | 7 | 100±1 | 95±0.5 | 131 | 106 | 7.5<br>(9.5) |
| MS1H3-16C15CD-A33*R-EX d T5<br>MS1H3-18C15CD-A/T33*R-EX d T4 | 22 $h6^{0}_{-0.013}$ | M6 x 20 | $18^{0}_{-0.2}$ | 8 | 8 | 7 | 100±1 | 95±0.5 | 131 | 106 | 9<br>(11) |

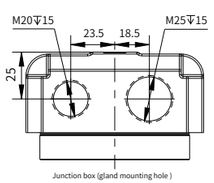
Note: **The asterisk (*) indicates an optional standard motor or motor with brake.**The parentheses, (), encloses parameters of the motor with brake.

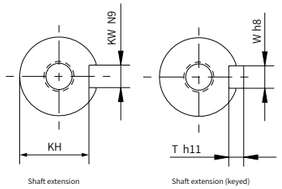
# Dimensions

## Frame Size 180




Unit: mm

| Motor model | LC | LL | LR | LA | LZ | LG | LE | LJ | LB | LK |
|---|---|---|---|---|---|---|---|---|---|---|
| MS1H3-29C15CD-A33*R-EX d T5<br>MS1H3-29C15CD-A/T33*R-EX d T4 | 180±0.3 | 212.9±1<br>(229.9±1) | 79±1 | 200 | 4-Φ13.5 | 22 | 3.2±0.3 | 0.5±0.75 | $Ø114.3h7^{0}_{-0.035}$ | 65 |
| MS1H3-37C15CD-A33*R-EX d T5<br>MS1H3-44C15CD-A/T33*R-EX d T4 | 180±0.3 | 236.4±1<br>(253.4±1) | 79±1 | 200 | 4-Φ13.5 | 22 | 3.2±0.3 | 0.5±0.75 | $Ø114.3h7^{0}_{-0.035}$ | 65 |
| MS1H3-55C15CD-A/T33*R-EX d T4 | 180±0.3 | 259.9±1<br>(276.9±1) | 113±1 | 200 | 4-Φ13.5 | 22 | 3.2±0.3 | 0.5±0.75 | $Ø114.3h7^{0}_{-0.035}$ | 97 |
| MS1H3-45C15CD-A33*R-EX d T5<br>MS1H3-75C15CD-A/T33*R-EX d T4 | 180±0.3 | 306.9±1<br>(323.9±1) | 113±1 | 200 | 4-Φ13.5 | 22 | 3.2±0.3 | 0.5±0.75 | $Ø114.3h7^{0}_{-0.035}$ | 97 |

| Motor model | S | TP | KH | kW | W | T | KB1 | KB2 | KA1 | KA2 | Weight(kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS1H3-29C15CD-A33*R-EX d T5<br>MS1H3-29C15CD-A/T33*R-EX d T4 | 35 $h6^{0}_{-0.16}$ | M12×25 | $30^{0}_{-0.2}$ | 10 | 10 | 8 | 96 | 95 | 158 | 133 | 19.25<br>(22.75) |
| MS1H3-37C15CD-A33*R-EX d T5<br>MS1H3-44C15CD-A/T33*R-EX d T4 | 35 $h6^{0}_{-0.16}$ | M12×25 | $30^{0}_{-0.2}$ | 10 | 10 | 8 | 96 | 95 | 158 | 133 | 22.75<br>(26.7) |
| MS1H3-55C15CD-A/T33*R-EX d T4 | 42 $h6^{0}_{-0.16}$ | M16×32 | $37^{0}_{-0.2}$ | 12 | 12 | 8 | 96 | 95 | 158 | 133 | 27.5<br>(30.95) |
| MS1H3-45C15CD-A33*R-EX d T5<br>MS1H3-75C15CD-A/T33*R-EX d T4 | 42 $h6^{0}_{-0.16}$ | M16×32 | $37^{0}_{-0.2}$ | 12 | 12 | 8 | 96 | 95 | 158 | 133 | 34.8<br>(38.15) |

Note: **The asterisk (*) indicates an optional standard motor or motor with brake.**The parentheses, (), encloses parameters of the motor with brake.

# Accessories

## Power Cable

**S6-L-M 1 J K - 3.0 - T**
① ② ③ ④ ⑤ ⑥

① Cable type
S6-L-M: Power cable (without brake)
S6-L-B: Power cable (with brake)

② Connector type at drive side
1: Pin-type cable lug
3: Pin-type cable lug and OT terminal
4: U-type cable lug and OT terminal

③ Cross-sectional area ($mm^2$)
F: 4 x 14AWG
J: 4C x 16AWG + 1P x 22AWG (M3)
K: 4C x 16AWG + 1P x 22AWG (M5)
L: 4C x 14AWG + 1P x 22AWG
M: 4C x 16AWG (M3)
N: 4C x 16AWG (M5)

④ Connector type at motor side
J: Pin-type cable lug
K: O-type pre-insulated terminal

⑤ Cable length (m)
3.0: 3
5.0: 5
10.0: 10

⑥ Special requirements
T: Drag chain ⩾ 10 million times

| Frame size | Cable/Outer diameter | Cable model | Appearance | Cable length | Gland selection |
|---|---|---|---|---|---|
| 60 & 80 | Power cables for motors with brake<br>10±0.3 mm<br>(Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-B1JK-3.0-T |  | 3 m | Exd-SSF-M20-12/<br>Exd-SSFT-M20-12 |
| | | S6-L-B1JK-5.0-T | | 5 m | |
| | | S6-L-B1JK-10.0-T | | 10 m | |
| | Power cables for standard motors<br>10±0.3 mm<br>(Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-M1MJ-3.0-T |  | 3 m | |
| | | S6-L-M1MJ-5.0-T | | 5 m | |
| | | S6-L-M1MJ-10.0-T | | 10 m | |
| 130 | Power cables for motors with brake<br>11±0.3 mm<br>(Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-B1KJ-3.0-T |  | 3 m | Exd-SSF-M25-12/<br>Exd-SSFT-M25-12 |
| | | S6-L-B1KJ-5.0-T | | 5 m | |
| | | S6-L-B1KJ-10.0-T | | 10 m | |
| | Power cables for standard motors<br>11±0.3 mm<br>(Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-M1NJ-3.0-T |  | 3 m | |
| | | S6-L-M1NJ-5.0-T | | 5 m | |
| | | S6-L-M1NJ-10.0-T | | 10 m | |

## Power Cable

| Frame size | Cable | Cable model | Appearance | Cable length | Gland selection |
|---|---|---|---|---|---|
| 180 (29C motor) | Power cables for motors with brake (Three-phase pin-type terminal and grounding pin-type terminal) 13±0.3 mm (Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-B1LJ-3.0-T |  | 3m | Exd-SSF-M25-15/ Exd-SSFT-M25-15 |
| | | S6-L-B1LJ-5.0-T | | 5m | |
| | | S6-L-B1LJ-10.0-T | | 10m | |
| | Power cables for standard motors (Three-phase pin-type terminal and grounding pin-type terminal) 13±0.3 mm (Applicable to SV630, SV660, SV670, and IS810N drives) | S6-L-M1FJ-3.0-T |  | 3m | |
| | | S6-L-M1FJ-5.0-T | | 5m | |
| | | S6-L-M1FJ-10.0-T | | 10m | |
| 180 (motors of 29C above) | Power cables for motors with brake (Three-phase spade terminal and grounding OT terminal) 13±0.3 mm (Applicable to SV630, SV660, SV670 drives) | S6-L-B4LJ-3.0-T |  | 3m | Exd-SSF-M25-15/ Exd-SSFT-M25-15 |
| | | S6-L-B4LJ-5.0-T | | 5m | |
| | | S6-L-B4LJ-10.0-T | | 10m | |
| | Power cables for motors with brake (Three-phase pin-type terminal and grounding OT terminal) 13±0.3 mm (Applicable to IS810N drives) | S6-L-B3LJ-3.0-T |  | 3m | |
| | | S6-L-B3LJ-5.0-T | | 5m | |
| | | S6-L-B3LJ-10.0-T | | 10m | |
| | Power cables for standard motors (Three-phase spade terminal and grounding OT terminal) 13±0.3 mm (Applicable to SV630, SV660, and SV670 drives) | S6-L-M4FJ-3.0-T |  | 3m | |
| | | S6-L-M4FJ-5.0-T | | 5m | |
| | | S6-L-M4FJ-10.0-T | | 10m | |
| | Power cables for standard motors (Three-phase pin-type terminal and grounding OT terminal) 13±0.3 mm (Applicable to IS810Ndrives) | S6-L-M3FJ-3.0-T |  | 3m | |
| | | S6-L-M3FJ-5.0-T | | 5m | |
| | | S6-L-M3FJ-10.0-T | | 10m | |

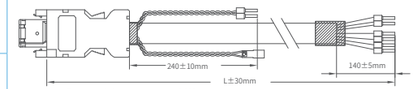
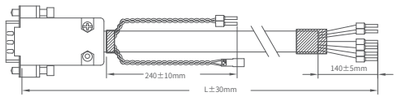
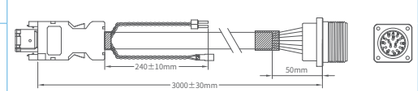
Note:
1. The power cables for motor frame sizes 180, 60, 80, and 130 may vary due to differences in three-phase terminals or grounding terminals of the drive.
2. Cable with length less than 25 m; motor directly connected to the drive (cable with or without PTC, diagrams for 3 m/5 m/10m cable available)
3. Select flexible cables with temperature resistance no lower than 105°C .

# Accessories

## Encoder Cables

**S6-L-P 1 2 U - 3.0 - T - PTC**
① ② ③ ④ ⑤ ⑥ ⑦

| | | | |
|---|---|---|---|
| ① Cable type<br>S6-L-P: Encoder cable | ③ Cross-sectional area ($mm^2$)<br>2: Communication-type multi-turn absolute encoder | ⑤ Cable length (m)<br>3.0: 3<br>5.0: 5<br>10.0: 10<br>100.0: 100 | ⑥ Special requirements<br>T: Drag chain ⩾ 10 million times |
| ② Connector type at drive side<br>0: DB9<br>1: USB | ④ Connector type at motor side<br>U: Pin-type cable lug | | ⑦ PTC: with temperature control module<br>None: standard model |

| Frame size | Cable/Outer diameter | | Cable model | Appearance | Cable length | Gland selection |
|---|---|---|---|---|---|---|
| 60/80/ 130/180 | Encoder cable (Applicable toSV630, SV660, and SV670 drives) | 7.6± 0.3mm | S6-L-P12U-3.0-T-PTC |  | 3m | Exd-SSF-M20-08/ Exd-SSFT-M20-08 |
| | | | S6-L-P12U-5.0-T-PTC | | 5m | |
| | | | S6-L-P12U-10.0-T-PTC | | 10m | |
| | | | S6-L-P12U-3.0-T |  | 3m | |
| | | | S6-L-P12U-5.0-T | | 5m | |
| | | | S6-L-P12U-10.0-T | | 10m | |
| | Encoder cable (Applicable toIS810Ndrives) | | S6-L-P02U-3.0-T-PTC |  | 3m | |
| | | | S6-L-P02U-5.0-T-PTC | | 5m | |
| | | | S6-L-P02U-10.0-T-PTC | | 10m | |

Note:
1. The power cables for motor frame sizes 180, 60, 80, and 130 may vary due to differences in three-phase terminals or grounding terminals of the drive.
2. Cable with length less than 25 m; motor directly connected to the drive (cable with or without PTC, diagrams for 3 m/5 m/10m cable available)
3. Select flexible cables with temperature resistance no lower than 105°C .

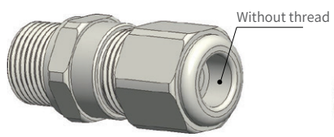
# Accessories

## Gland

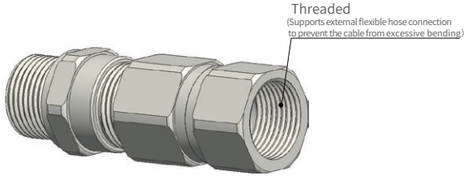
For Inovance explosion-protected servo motors, the frame 60/80 must be equipped with two M20 x 1.5 explosion-proof glands with stuffing box, and the frame 130/180 must be equipped with one M20 x 1.5 and one M25 x 1.5 explosion-proof glands with stuffing box. The gland can be a regular one or a threaded one. Select it according to the application scenario. The gland selection may vary due to differences in cable specifications. (If you have to purchase it yourself, the gland must be one with stuffing box for explosion proof function.)

**Exd - SSF - M20 - 08**
① ② ③ ④

| | | |
|---|---|---|
| ① Explosion protection marking | ③ Thread specification<br>M20：M20 x 1.5<br>M25：M25 x 1.5 | ④ Maximum outer diameter of the cable<br>08: Maximum outer diameter of the cable not exceeding 8 mm (M20 only)<br>12: Maximum outer diameter of the cable not exceeding 12 mm (M20 only)<br>15: Maximum outer diameter of the cable not exceeding 15 mm (M25 only) |
| ② Type<br>SSF: Regular explosion-proof gland with stuffing box<br>SSFT: Threaded explosion-proof gland with stuffing box | | |




Regular explosion-proof gland with stuffing box




Threaded explosion-proof gland with stuffing box

| Model | Thread specification | Type | Applicable cable diameter (mm) | Thread specification | Min. dose of sealing compound | Recommended Brand of Gland |
|---|---|---|---|---|---|---|
| Exd-SSF-M20-08 | M20 x 1.5 | Regular | 3 to 8 | - | 5 | Beisit |
| Exd-SSF-M20-12 | M20 x 1.5 | | 7.5 to 12 | - | 5 | |
| Exd-SSF-M25-15 | M25 x 1.5 | | 9 to 15 | - | 10 | |
| Exd-SSFT-M20-08 | M20 x 1.5 | Threaded | 3 to 8 | M20 x 1.5 | 5 | |
| Exd-SSFT-M20-12 | M20 x 1.5 | | 7.5 to 12 | M20 x 1.5 | 5 | |
| Exd-SSFT-M25-15 | M25 x 1.5 | | 9 to 15 | M25 x 1.5 | 10 | |

## Sealing Compound Selection

| Model | Dose | Initial Curing Conditions | Final Curing Conditions | Recommended Brand |
|---|---|---|---|---|
| Exd-AB | 50ml | 23° C@30min | 23° C@24h | Beisit AB glue/ Taison TS830 |

Note: 1 tube of AB glue can fill about 8×M20 Gland or 4×M25 Gland.

## Tightening Torque Requirements

| Part | Torque Requirements (N·m) |
|---|---|
| Terminal Box Cover Fastening Screw | 1.5±0.1 (60/80 frame, M3) /2.5±0.1 (130/180 frame, M4) |
| Cable Gland Body | 15±0.5 (M20 spec.) /35±1 (M25 spec.) |
| Cable Gland Compression Nut | 10±0.5 (M20 spec.) /30±1 (M25 spec.) |

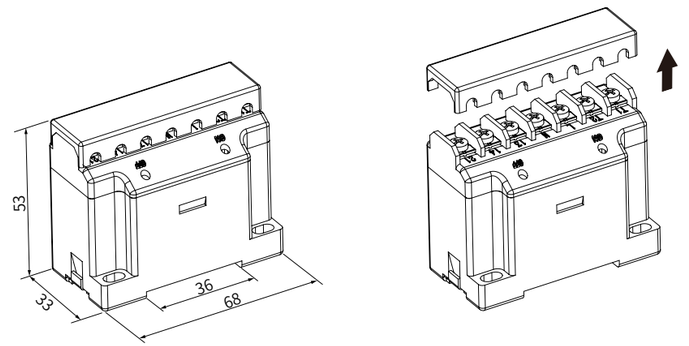
Note: Failure to comply with the torque requirements specified in the table may result in explosion protection type failure.

## PTC Temperature Control Module

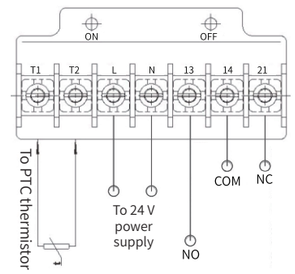
| Item | Param, |
|---|---|
| Operating voltage | 24 V |
| Frequency of the power supply | 47 Hz to 63 Hz |
| Protective resistor | 2.7k to 3.3k |
| Recovery resistor | 1.5k to 1.8k |
| Power consumption | 0.8 W |
| Power loss | ⩽ 15% |

| Item | Param, |
|---|---|
| Contact current | 7 A/250 VAC (resistive) |
| Mounting method | Guide rail, fixing hole |
| Operation relative humidity | 5% to 95% |
| Ambient temperature | -20°C to +65°C |
| Storage temperature | -25°C to +70°C |
| Transportation ambient temperature | -25°C to +70°C |

## Dimensions: 68 mm x 33 mm x 53 mm




## Wiring Diagram




① Open the cable cover of the PTC temperature control module. Then, connect the power supply to terminals L and N, and connect the PTC thermistor to terminals T1 and T2. 13: Normally open (NO) terminal; 14: Relay common (COM) terminal, supports circuit design based on actual conditions; 21: Normally closed (NC) terminal.

② Connect the drain wires to terminals of the PTC temperature control module and secure them properly.

③ After that, tighten the cable cover of the PTC temperature control module properly.

## Precautions

① Ensure that the product is not subject to strong shock during installation.
② Keep the product away from heat generating devices during installation. Otherwise, components can be damaged due to high temperature exposure.
③ Install the product in the power distribution box or power distribution cabinet to get rid of rain splash.
④ When the motor runs properly, the green indicator of the PTC temperature control module is steady on. When motor over-temperature occurs, the green indicator is off, and the red indicator is on.
⑤ Motors with A3 encoders must be used with a temperature control module or optional SV670-PTC drive.