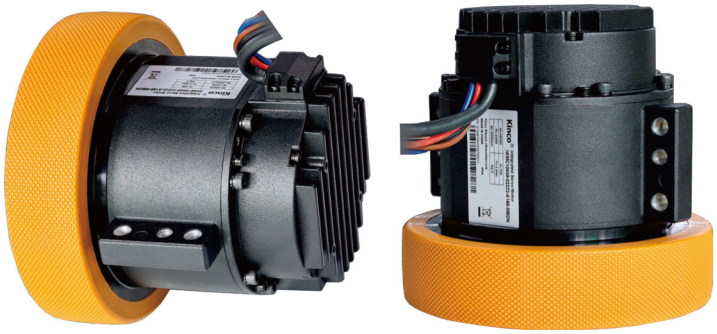
# IWMC10409
# Integrated Servo Wheel

Kinco

## FEATURES

- ***24-60VDC***
- ***165mm Wheel Frame Size***
- ***104mm Motor Frame Size***
- ***Singleturn Magnetic Encoder***
- ***1.9m/s Rated Linear Speed***
- ***22 Nm Rated Torque***
- ***Standard CANopen Communication***
- ***Position and Speed Control***
- ***24V Logic Power Supply***



## DESCRIPTION

The IWMC10409 Integrated Servo Wheel includes a Servo Driver, Servo Motor, Gearhead and Rubber Wheel, all highly integrated in one unique product. This Integrated Servo Wheel creates a compact Servo System which uses less space than a typical Servo System, facilitating downsizing. These packages are ideal and provide easy start-ups, convenience, and performance. The Servo Motors included in these packages provide torque up to 60 Nm. The Servo Drive is designed to switch dynamically among different control methods for more flexible operation and can operate in position control mode with either pulse and direction inputs, internal position points, or internal speed points.

## SPECIFICATIONS

| Item | Rated Output Power (Watts) | Rated Voltage (VDC) | Rated Speed (RPM) | Rated Torque (Nm) | Max Current (Arms) | Peak Torque (Nm) | Brake (24VDC) | Overall Length (mm) | Tire Diameter (mm) | Tire Width (mm) | Weight (Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IWMC10409-02222-A165-MADT | 500 | 24VDC | 2000 | 22 | 16A | 60 | No | 152±1.5 | 165 | 39.5 | 7.2 |
| IWMC10409-02222-A165-MBDT | 500 | 24VDC | 2000 | 22 | 16A | 60 | Yes | 152±1.5 | 165 | 39.5 | 9.0 |

## ORDERING INFORMATION

**IWMC10409-02222-A165-MADT**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Outer Diameter of Motor Stator | Reducer Speed Ratio | Torque | Wheel Speed | Wheel Covering Material / Pattern Type | Wheel Outer Diameter | Encoder Type | Brake | Supply Voltage | Connector Type |
| 104 104mm | 09 9 Speed Ratio | 022 22 Nm | 22 220 RPM | A: Polyurethane / Raised Cross-Section, Diamond Pattern | 165 165mm | M: Single Turn Communication Type Magnetoelectric Encoder | A No Brake<br>B Brake | D DC48V | T: Standard Connector and Cable Length |

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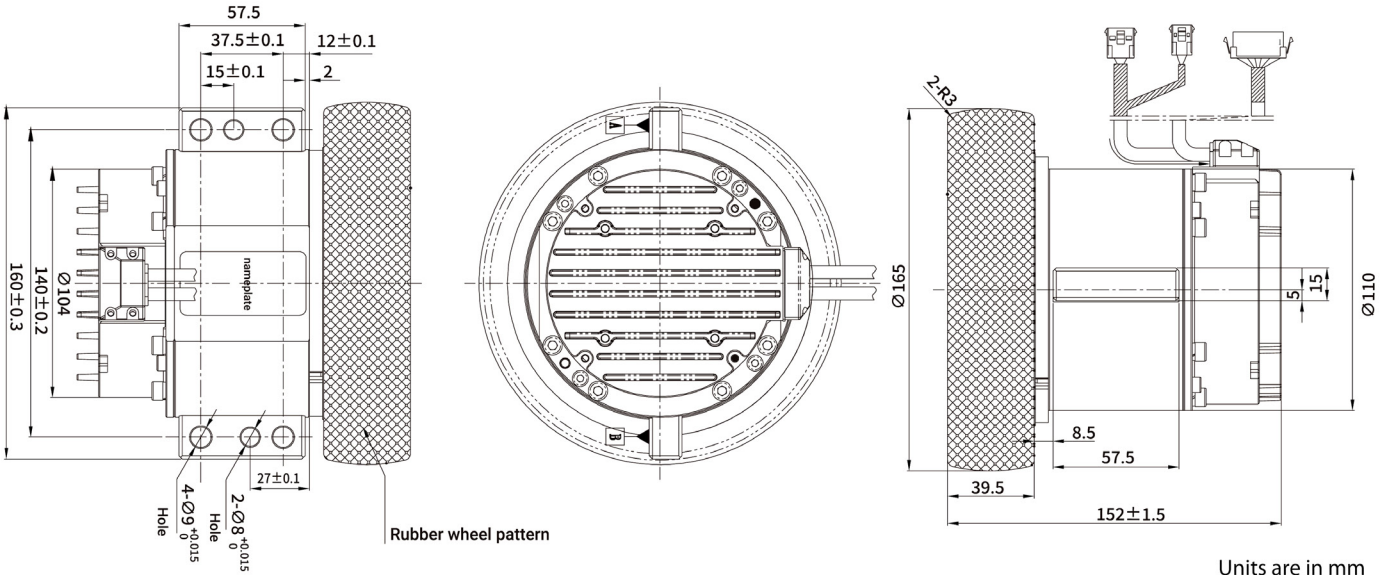
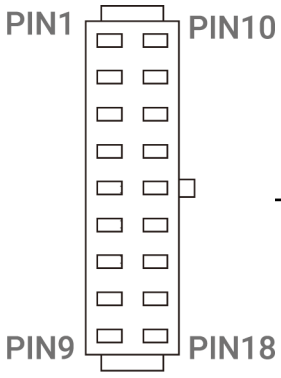
## DIMENSIONS




Units are in mm

## INTERFACE DESCRIPTION




Rear Viewing Plane

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | 24V | 10 | GND |
| 2 | LOCK+ | 11 | LOCK- |
| 3 | CANH | 12 | CANL |
| 4 | CANH | 13 | CANL |
| 5 | 485A | 14 | 485B |
| 6 | 485A | 15 | 485B |
| 7 | OUT1+ | 16 | COMO |
| 8 | COMI | 17 | DI1 |
| 9 | Empty | 18 | DI2 |

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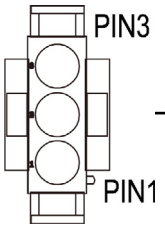
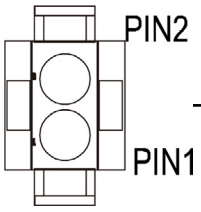
INTERFACE DESCRIPTION




Power Port

| Pin | Name | Function |
|---|---|---|
| 3 | DC- | The input end of the power supply of the driver must be connected |
| 1 | DC+ | Input voltage: 24~60VDC |

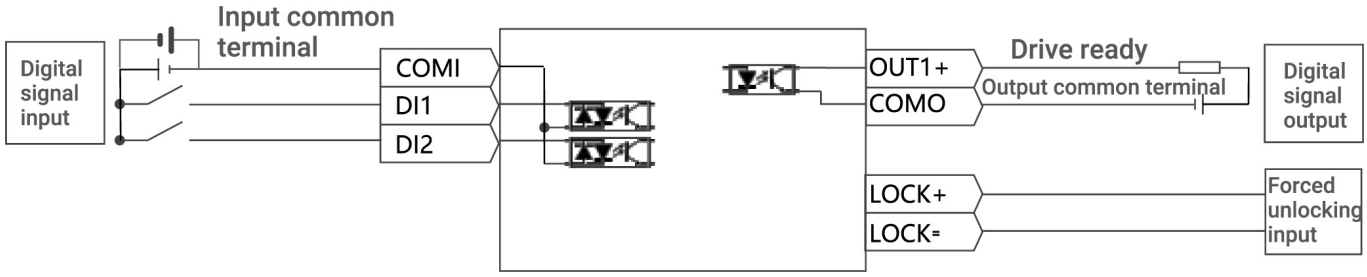



Brake Resistance Port

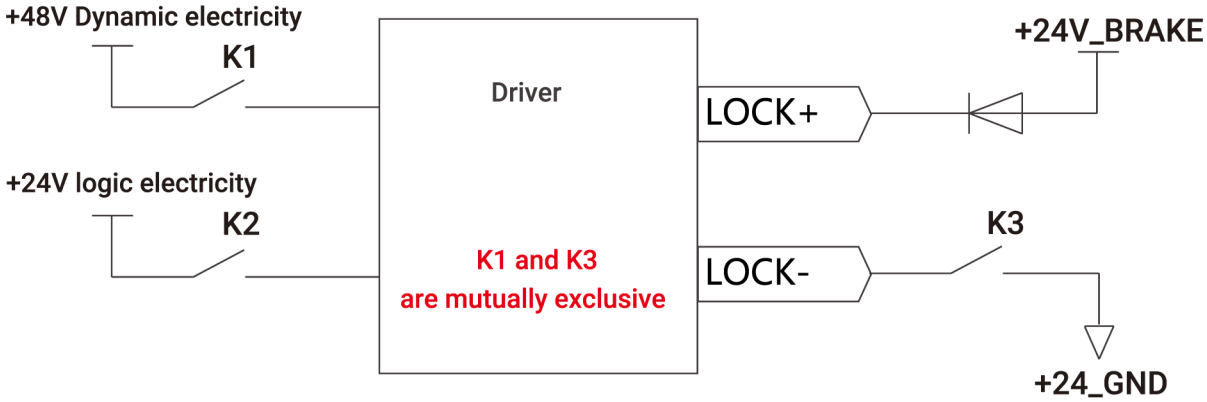
| Pin | Name | Function |
|---|---|---|
| 1 | RB+ | External braking resistor input terminal |
| 2 | RB- | |

WIRING DIAGRAM

IWMC Integrated Servo Wheel Control Wiring Diagram




Wiring Diagram of Recommended Circuit for Forced Unlocking Brake




**Note: The forced unlocking function needs to be used after the power supply of the servo wheel is cut off.**

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TECHNICAL SPECIFICATIONS

| Model Parameter | | IWMC10409 Series |
|---|---|---|
| Power | Power Supply | DC24V~60V |
| | Logic Supply | 24VDC |
| Rated Linear Speed (m/s) | | 1.9 (m/s) |
| Rated Torque (Nm) | | 22 (Nm) |
| Peak Torque (Nm) | | 60 (Nm) |
| Tire Diameter (mm) | | 165 (mm) |
| Tire Width (mm) | | 39.5 (mm) |
| Tire Material | | Polyurethane |
| Tire Hardness Rating | | 85A |
| Energy Consumption Rating | | External braking resistor is required (depending on the operating conditions, mainly used for rapid starting and stopping). |
| Energy Consumption Braking Voltage Absorption Point | | DC63V ± 2V (Default, settable) |
| Overvoltage Alarm Point | | DC68V ± 2V |
| Undervoltage Alarm Point | | DC18V ± 2V |
| Input Specifications | | 2 Digital Inputs / Common COMI Terminal / High Level: 12.5-30VDC / Low Level: 0-5VDC / Maximum Frequency: 1KHz / Input Impedance: 5KΩ. |
| Output Specifications | | 1 Digital Output Common COMO Terminal / Maximum Output Current: 100mA |
| Brake | | Built-In Brake and Control Circuit |
| Forced Unlock Interface | | 1-way forced unlock interface, only for use when there is no power input to the servo wheel. |
| RS485 Debug Port | | Maximum support for 115.2Kbps baud rate |
| CAN BUS | | Maximum support for 1Mbps baud rate, CANopen protocol can be used to communicate with the controller. |
| Drive Current | Max. Continuous Output Current (rms) | 16A |
| | Peak Current | 100Ap(<2s) |
| Motor | Rated RPM | 2000 RPM |
| | Rated Torque (Nm) | 2.4 (Nm) |
| | Brake Holding Torque (Nm) | 4 (Nm) |
| Noise | | <65dB |
| Cooling Methods | | Natural cooling & body-assisted cooling. |
| Operation Environment | Operating Temperature | 0°C ~ 40°C |
| | Humidity (non-condensing) | Less than 90%RH |
| | Storage Temperature | -20°C ~ 60°C |
| | Protection Class | IP54 |
| | Altitude | Rated Working Altitude at 1000m or Below, Above 1000m: Decreasing 1.5% per 100m Rise, Maximum Altitude 2000m Above Sea Level |
| | Atmospheric Pressure | 86kpa~106kpa |

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