

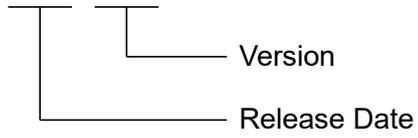
# HIMC3

## Installation Guide

# Revision History

The version of the manual is also indicated on the bottom of the front cover.

MH12UE01-2503\_V1.0



Release Date	Version	Applicable Product	Revision Contents
Mar. 31 <sup>st</sup> , 2025	1.0	HIMC3	First edition.

## Related Documents

Through related documents, users can quickly understand the positioning of this manual and the correlation between manuals and products. Go to HIWIN MIKROSYSTEM's official website → Download → Manual Overview for details ([https://www.hiwinmikro.tw/Downloads/ManualOverview\\_EN.htm](https://www.hiwinmikro.tw/Downloads/ManualOverview_EN.htm)).

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# 1. About this guide

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## 1.1 General precautions

This guide is for HIMC3, HIWIN Motion Controller 3. Before using the product, please carefully read through this guide. HIWIN MIKROSYSTEM is not responsible for any damage, accident or injury caused by failure in following the installation instructions and operating instructions stated in this guide.

- Do not disassemble or modify the product. The design of the product has been verified by structural calculation, computer simulation and actual testing. HIWIN MIKROSYSTEM is not responsible for any damage, accident or injury caused by disassembly or modification done by users.
- Before installing or using the product, ensure there is no damage on its appearance. If any damage is found after inspection, please contact HIWIN MIKROSYSTEM or local distributors.
- Carefully read through the specification noted on product label or technical document. Install the product according to its specification and installation instructions stated in this guide.
- Ensure the product is used with power supply specified on product label or in product requirement. HIWIN MIKROSYSTEM is not responsible for any damage, accident or injury caused by incorrect power supply.
- Do not repair the product by yourself when it malfunctions. The product can only be repaired by qualified technician from HIWIN MIKROSYSTEM. For any repair or maintenance needs, please contact us.

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## 1.2 Safety precautions

- Carefully read through this guide before installation, transportation, maintenance and examination. Ensure the product is correctly used.
- Carefully read through electromagnetic (EM) information, safety information and related precautions before usage.
- Safety precautions in this guide are classified into “Warning”, “Attention”, “Prohibited” and “Required.”

Signal Word	Description
 <b>Warning</b>	It indicates if the precaution is not observed, it is likely to cause property loss, severe injury or death.
 <b>Attention</b>	It indicates the precaution must be observed.
 <b>Prohibited</b>	It indicates prohibited activity.
 <b>Required</b>	It indicates mandatory activity.

- ◆ If the product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

Si le produit est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par le produit peut être altérée.



- ◆ The installation that the safety of any system incorporating the product is the responsibility of the assembler of the system.  
L'installation ainsi que la sécurité de tout système intégrant le produit relèvent de la responsabilité de l'assembleur du système.

## ■ Operation

 <b>Warning</b>	<ul style="list-style-type: none"><li>◆ Do not touch the terminals and the internal part of the product when power on, or it may cause electric shock.</li><li>◆ Do not touch the terminals and internal part of the product within 10 minutes after power off, or the residual voltage may cause electric shock.</li><li>◆ Do not modify wiring when power on, or it may cause electric shock.</li><li>◆ Do not damage, apply excessive force to place any heavy object on the cable or put the cable between two objects, or it may cause electric shock or fire.</li></ul>
 <b>Attention</b>	<ul style="list-style-type: none"><li>◆ Do not use the product in location which is subject to humidity, corrosive materials, flammable gas or flammable materials.</li></ul>

## ■ Storage

 <b>Prohibited</b>	<ul style="list-style-type: none"><li>◆ Do not store the product in location which is subject to water, water drop, direct sunlight, harmful gas or liquid.</li></ul>
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## ■ Transportation

 <b>Attention</b>	<ul style="list-style-type: none"><li>◆ Carefully move the product to avoid damage.</li><li>◆ Do not apply excessive force to the product.</li><li>◆ Do not stack the products to avoid collapse.</li></ul>
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## ■ Installation site

 <b>Required</b>	<ul style="list-style-type: none"><li>◆ Do not install the product in location with high ambient temperature and high humidity or location which is subject to dust, iron powder or cutting powder.</li><li>◆ Install the product in location with ambient temperature stated in the guide. Use cooling fan if the ambient temperature is too high.</li><li>◆ Do not install the product in location which is subject to direct sunlight.</li><li>◆ The product is not drip-proof or waterproof, so do not install or operate the product outdoor or in location which is subject to water or liquid.</li><li>◆ Install the product in location with less vibration.</li></ul>
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## ■ Installation

 <b>Attention</b>	<ul style="list-style-type: none"><li>◆ Do not place heavy object on the product, or it may cause injury.</li><li>◆ Prevent any foreign matter from entering the product, or it may cause fire.</li><li>◆ Install the product in the specified orientation, or it may cause fire.</li><li>◆ Avoid strong shock to the product, or it may cause malfunction or injury.</li><li>◆ When installing the product, take the product weight into consideration. Improper installation may cause damage.</li><li>◆ Install the product on noncombustible objects, such as metal to avoid fire.</li></ul>
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## ■ Wiring

 <b>Attention</b>	◆ Ensure wiring is correctly performed, or it may cause malfunction or burn. There is a risk of injury or fire.
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## ■ Operation and transportation

 <b>Attention</b>	◆ Use power supply specified in product specification, or it may cause injury or fire. ◆ The product may suddenly start to operate after power supply recovers. Please do not get too close to the product.
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## ■ Maintenance

 <b>Attention</b>	◆ The battery cannot be replaced by the operator. Use the same type of battery to prevent explosion or fire hazard.
 <b>Prohibited</b>	◆ Do not disassemble or modify the product. ◆ Do not repair the product by yourself when it malfunctions, please contact HIWIN MIKROSYSTEM for help.
 <b>Required</b>	◆ The product is for indoor use. It can only be kept in the environment of pollution degree 2. Clean up the appearance with a dry cloth.

## 1.3 Package list

The product package comes with the following items. If any of them is missing or damaged, please contact Customer Service Department for assistance.

-  1 x Wall mount installation kit
-  1 x DIN rail installation kit
-  1 x DC power input connector 3 pin
-  1 x Digital I/O connector 20 pin

## 2. Specifications

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## 2.1 Nameplate

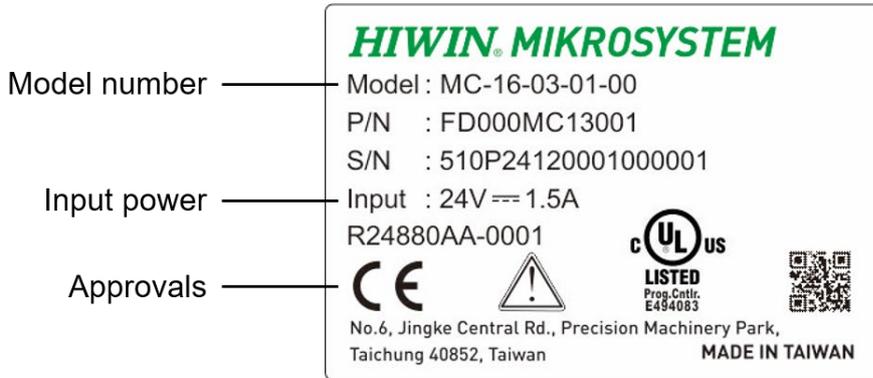


Figure 2.1.1

## 2.2 Model explanation

Table 2.2.1

Code	1	2	-	3	4	-	5	6	-	7	8	-	9	10
Example	M	C	-	1	6	-	0	3	-	0	1	-	0	0
1, 2: HIWIN Motion Controller	MC													
3, 4: Maximum number of axes	16 = Up to 16 synchronized axes													
5, 6: Hardware options	03 = Elkhart Lake x6425RE													
7, 8: Communication	01 = CoE													
9, 10: Reserved	Reserved													

Note: HIMC3 is the acronym for MC-XX-03-01-XX.

## 2.3 Specifications

Motion control	
Maximum motion axes	16
Maximum SubDevices	32 (including servo drives and I/O devices)
Motion types	Single axis motion: point-to-point, jog Group interpolation: multi-axis linear interpolation
Motion profile	Trapezoidal profile with smooth time from 0 to 500 msec
Dynamic error compensation	Geometric compensation for increasing positioning accuracy
Position precision	32-bit resolution
Numerical precision	Double floating-point precision real-time trajectory generation

Programming	
Motion script	HMPL (HIWIN Motion Programming Language) High-level multi-tasking environment Up to 64 simultaneously running user tasks
User-defined variable table	Up to 512,000 double precision user defined variables
User program size	Up to 10 MB of source code
HIMC API software library	Library for C, C++, C#, Python and LabVIEW

Communication	
Communication port	10/100/1000 Base-T Ethernet with TCP/IP x2
Host communication protocol	API, Modbus and ASCII TCP
Number of Host communication	Communication protocols mentioned above can support up to 9 clients at the same time. Each communication protocol can simultaneously connect to 3 clients, but users need to pay attention to the access privilege issue (refer to section 2.1.4 in "iA Studio User Guide" for details).

Computational capability	
Processor	Intel® Atom® x6425RE (Quad-core)
Memory	On board DRAM 4 GB
Storage	On board eMMC 32 GB

Built-in I/O	
General purpose input	8x optical couplers, 24 V, delay time within 1 ms. Support the configuration of NPN / PNP.
General purpose output	8x optical couplers, 24 V, delay time within 1 ms. Support the configuration of NPN / PNP.
GPIO current limit	Digital input: Max. 24 Vdc, 2.8 mA per pin. Digital output: Max. 24 Vdc, max. 100 mA. Total 0.8 A per bank of 8.

Power	
Main power input	DC 24 V / 1.5 A
Power consumption	Max. 36 W
Status LED	Refer to section 2.6

Mechanical characteristics	
Size (WxHxD)	55 x 158 x 133 mm
Weight	Approx. 1,000 g
Mounting	DIN in an enclosure or industrial panel
Machine housing	Extruded aluminum alloy for fan-less support

Environment	
Protection class	IP30 (Not UL certified)
Operating temperature	0°C~50°C
Storage temperature	-20°C~85°C
Operating altitude	Up to 2,000 m
Pollution degree	II
Ventilation	Fan-less convection cooling
Humidity	5%~95%, non-condensing
Vibration	Random: 5~500 Hz, 2G Sine: 10~500 Hz, 5G
Shock	5G for a duration of 11 ms

Certificates	
EMC	EN61000-6-2, EN61000-6-4 Class A compliance
Safety	UL61010-1, UL61010-2-201, EN61010-1, EN61010-2-201

### 2.4 Dimensions

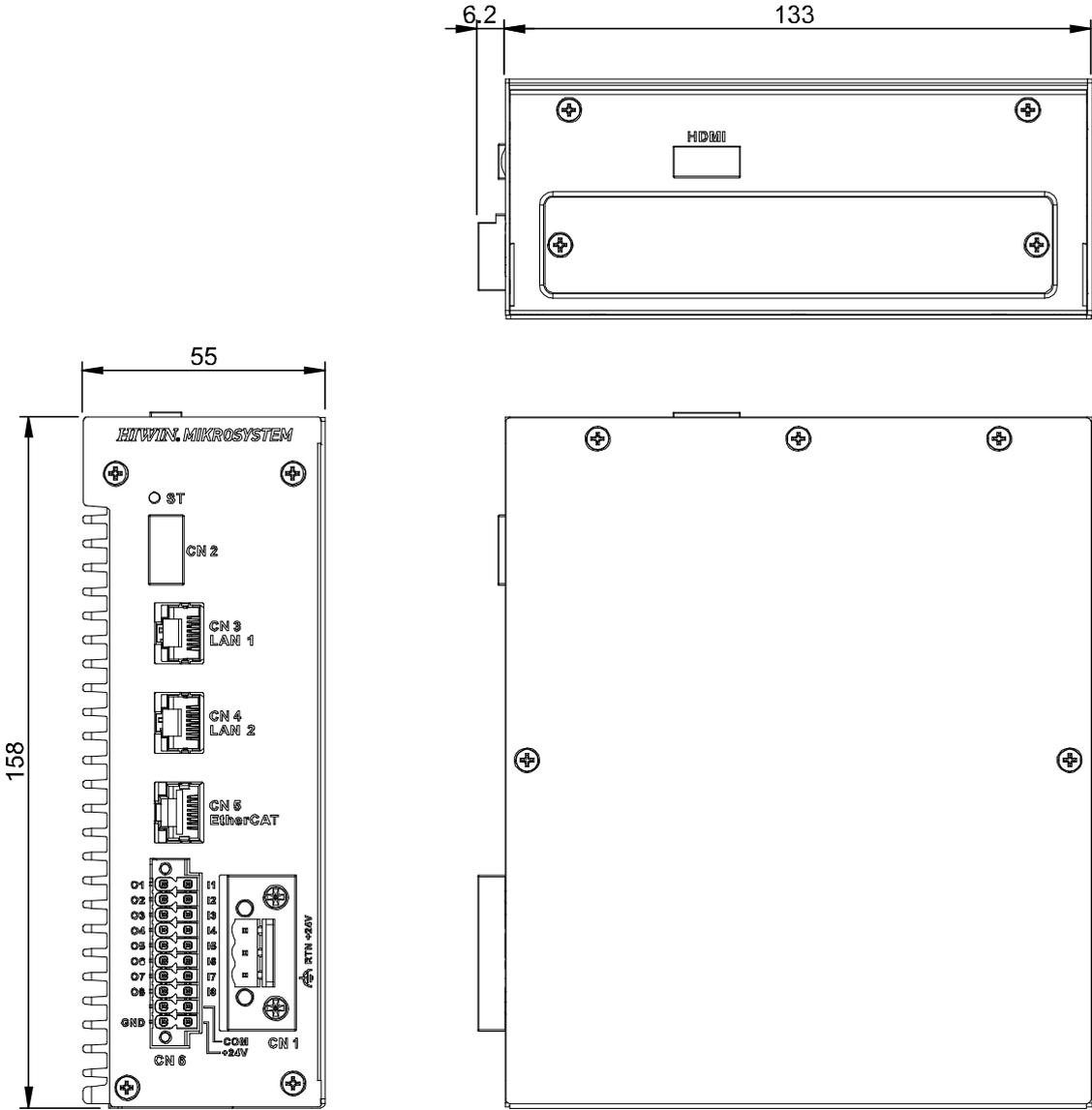


Figure 2.4.1 Dimensions (Unit: mm)

## 2.5 Installation

### **REQUIRED**

- ◆ Based on UL61010-2-201, HIMC3 should be mounted on the industrial control panel and the maximum ambient temperature is 50°C.
- ◆ HIMC3 is an open type equipment and intended to be installed in a suitable enclosure.

### 2.5.1 Wall mount

Step 1. Install the Wall mount to HIMC3 and fix it with the screws (screw torque:  $3.5 \pm 0.5$  kgf-cm).

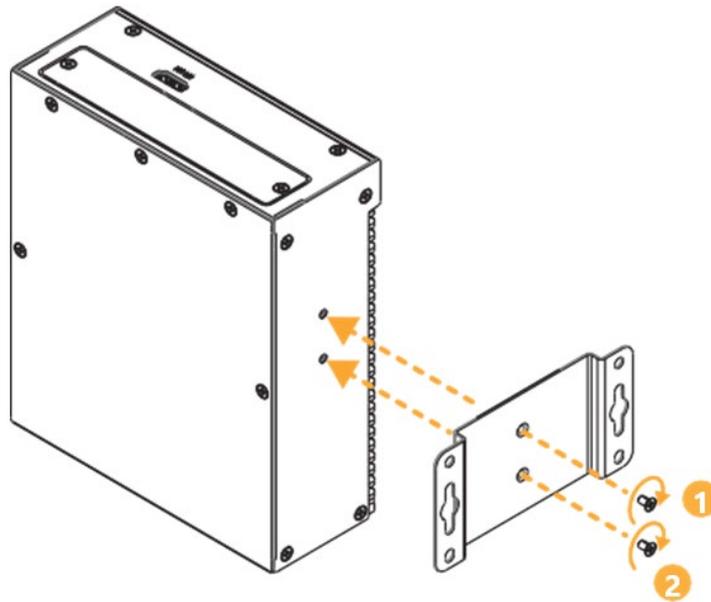


Figure 2.5.1.1

Step 2. Fix HIMC3 on the electric control box with the screws (screw torque: 4.0±0.5 kgf-cm).

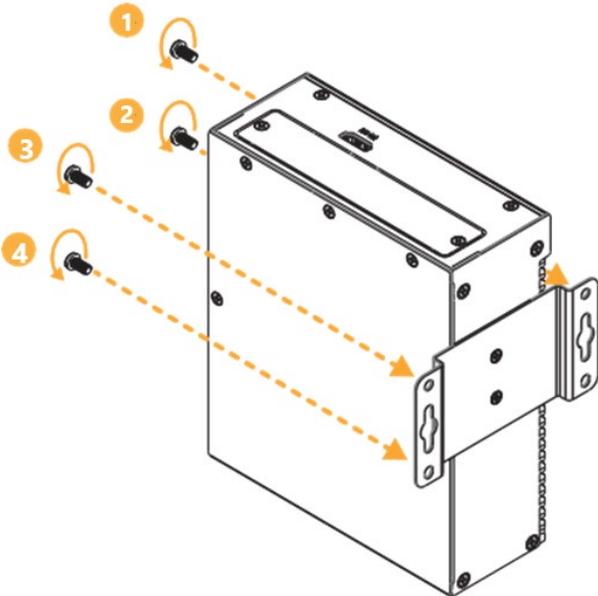


Figure 2.5.1.2

■ Size of Wall mount

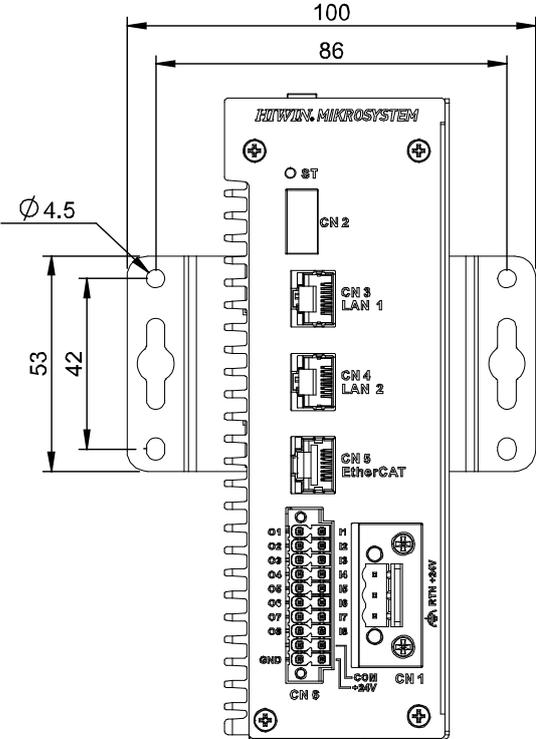


Figure 2.5.1.3

### 2.5.2 DIN rail

Step 1. Install the DIN rail bracket to HIMC3 and fix it with the screws (screw torque: 3.5±0.5 kgf-cm).

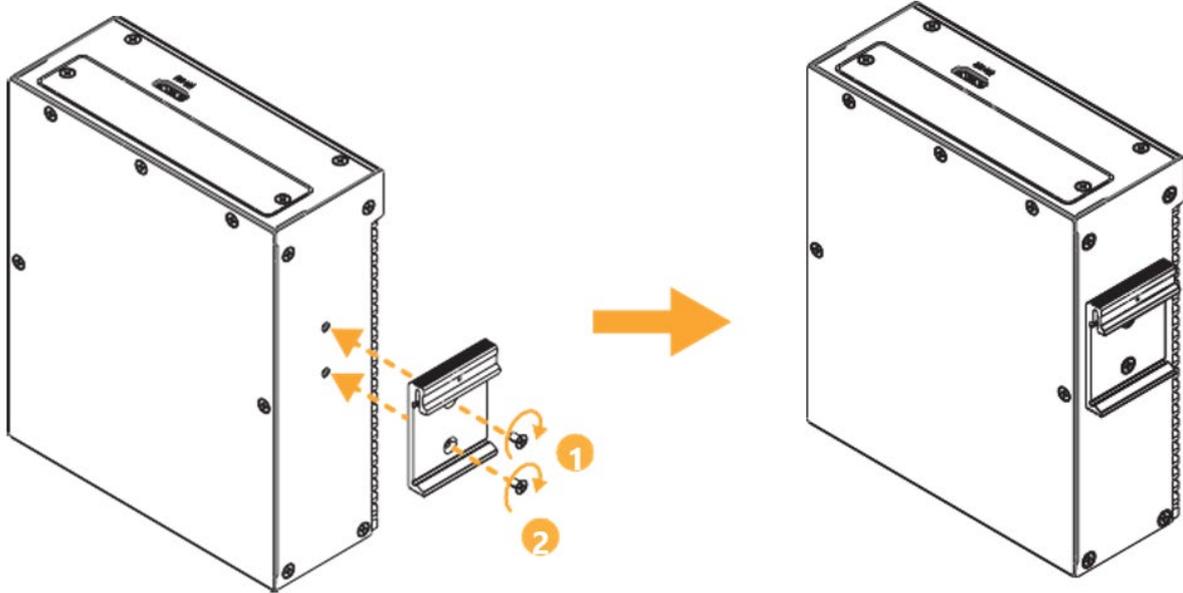


Figure 2.5.2.1

Step 2. Put HIMC3 on the DIN rail. (Vertical angle mounting only.)

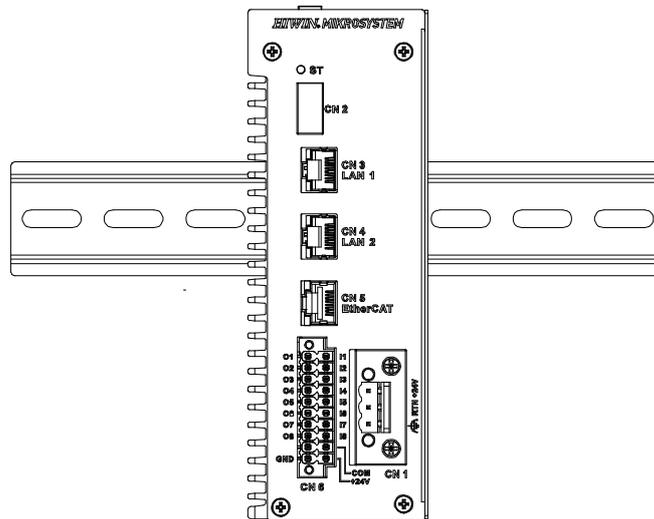


Figure 2.5.2.2

Note:

- (1) For well cooling and circulation effect, the clearance between HIMC3 and the adjacent device must be at least 25 mm.
- (2) The supported specification for the rail is TS35/7.5 or TS35/15.

## 2.6 LED indicator

Table 2.6.1 LED indicator

Color	Status	Description
No light		Power off
White	Solid	Boot
	Blinking	Initializing
Green	Solid	Operation
	Blinking	Pre-operation
Red	Solid	Hardware binding failed
	Blinking	Error

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# 3. Wiring

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### 3.1 Overview

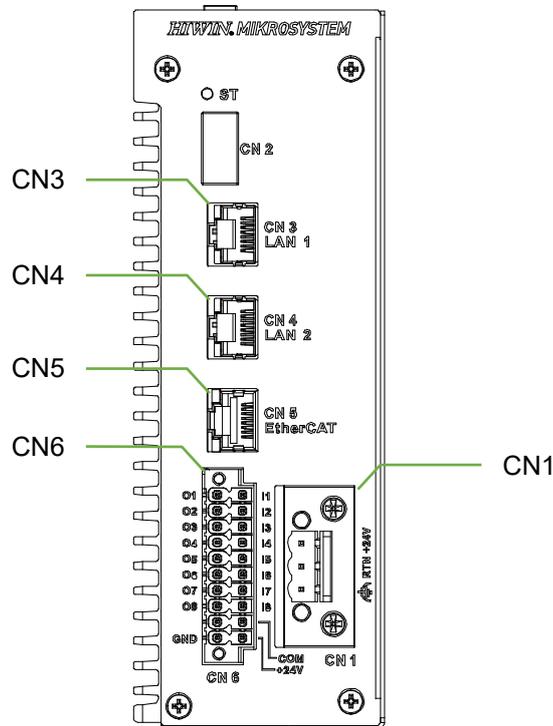


Figure 3.1.1 HIMC3 front panel

Table 3.1.1 Wiring overview

Item	Connector	Description
CN1	Connector 3 pin	Power input 24 V
CN2	USB connector	(Reserved)
CN3	RJ45	Communicate with customers' PC or devices (Default IP address: 192.168.0.101)
CN4	RJ45	Communicate with customers' PC or devices (Fixed IP address: 169.254.188.20)
CN5	RJ45	Communicate with SubDevices
CN6	Connector 20 pin	Digital inputs/outputs

### 3.2 CN1 power input

**⚠️ REQUIRED**

- ◆ Please be sure to use certified power supply with SELV output or certified power supply providing double insulation, LE (limited Energy circuits), LPS, or Class 2 evaluated by UL60950-1, UL 62368-1, or UL61010-1 and UL61010-2-201 standards.  
 Veuillez vous assurer d'utiliser une alimentation certifiée avec sortie SELV ou une alimentation certifiée offrant une double isolation, LE (circuits à énergie limitée), LPS ou classe 2 évaluée par les normes UL60950-1, UL 62368-1 ou UL61010-1 et UL61010-2-201.
- ◆ The power input connector (CN1) is suitable for AWG (American Wire Gauge) 18~22 (0.326~0.823 mm<sup>2</sup>). With the rated load current, conductor limit temperature should be less than 60°C for operation.  
 Screw torque: 0.5 N·m (4.5 Lb In.)  
 Use copper conductors only.  
 Utilisez uniquement des conducteurs en cuivre.

**Note: Ensure that the voltage of the DC power source is stable before connecting HIMC3 to DC power input.**

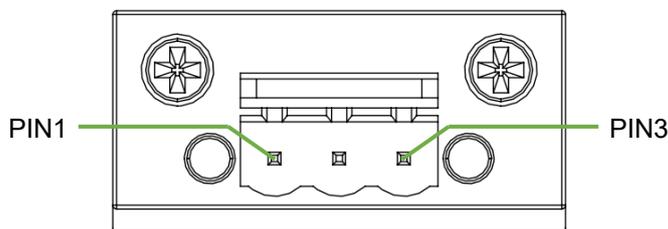


Figure 3.2.1 CN1 connector type

Table 3.2.1 CN1 pin assignment

Pin	Name	Description	Remarks
1	+24V	System power	Power requirement: DC 24 V / 1.5 A
2	RTN	System grounding	
3	 Functional Earth	Shield grounding	

### 3.3 CN6 digital I/O

**REQUIRED**

- ◆ The digital I/O connector (CN6) is suitable for AWG (American Wire Gauge) 18~22 (0.326~0.823 mm<sup>2</sup>).  
With the rated load current, conductor limit temperature should be less than 60°C for operation.  
Screw torque: 0.5 N-m (4.5 Lb In.)  
Use copper conductors only.  
Utilisez uniquement des conducteurs en cuivre.

HIMC3 provides 8 general purpose inputs and 8 general purpose outputs.

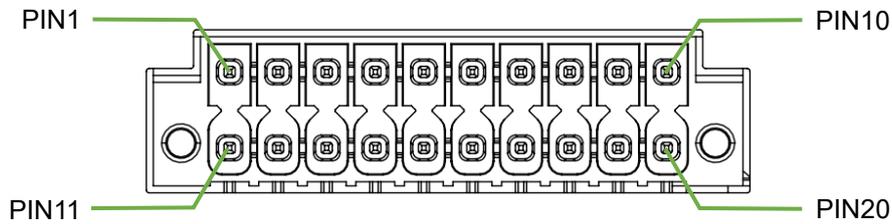


Figure 3.3.1 CN6 connector type

Table 3.3.1 CN6 pin assignment

Pin	Name	Description	Pin	Name	Description
1	I1	Digital input 1	11	O1	Digital output 1
2	I2	Digital input 2	12	O2	Digital output 2
3	I3	Digital input 3	13	O3	Digital output 3
4	I4	Digital input 4	14	O4	Digital output 4
5	I5	Digital input 5	15	O5	Digital output 5
6	I6	Digital input 6	16	O6	Digital output 6
7	I7	Digital input 7	17	O7	Digital output 7
8	I8	EMO	18	O8	Digital output 8
9	COM	Input common point	19	-	NC
10	VIN	+24VDC supply	20	GND	Digital grounding

**Note: The last input (I8) is for Emergency Machine Off.**

■ Wiring for digital inputs

(1) Sink

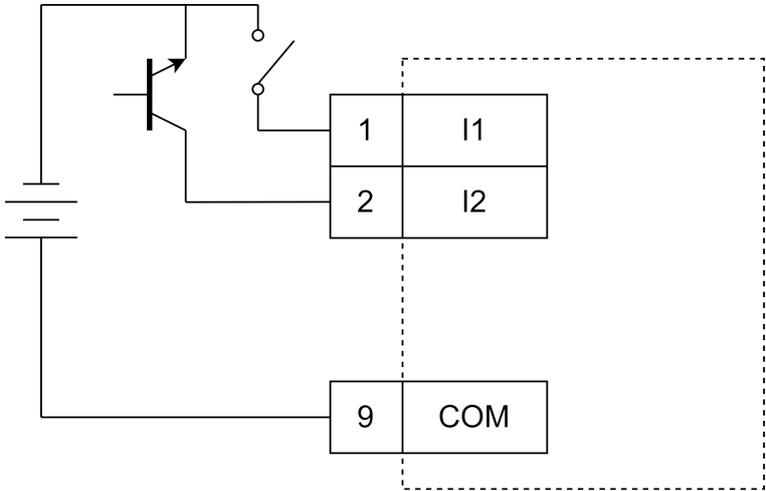


Figure 3.3.2

(2) Source

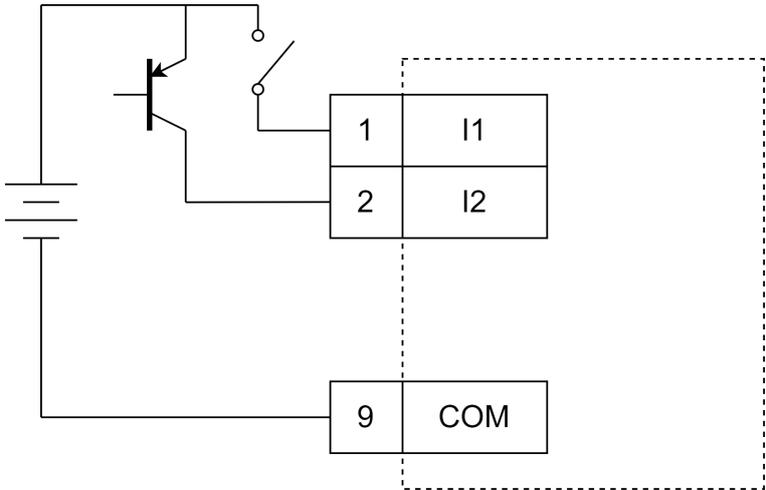


Figure 3.3.3

■ Wiring for digital outputs

(1) Sink

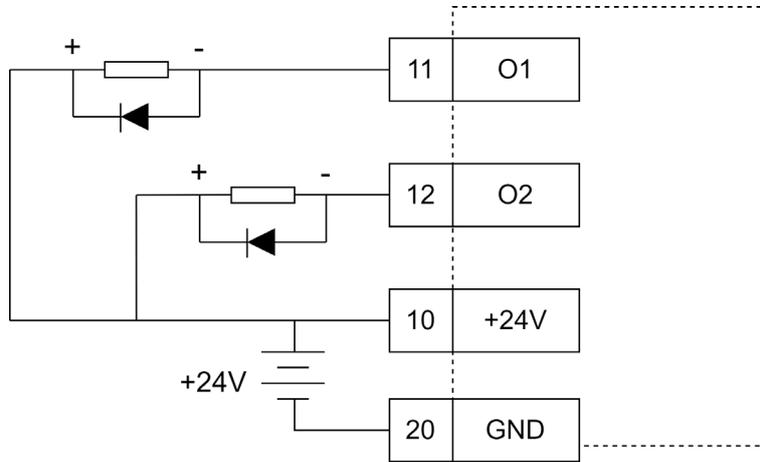


Figure 3.3.4

(2) Source

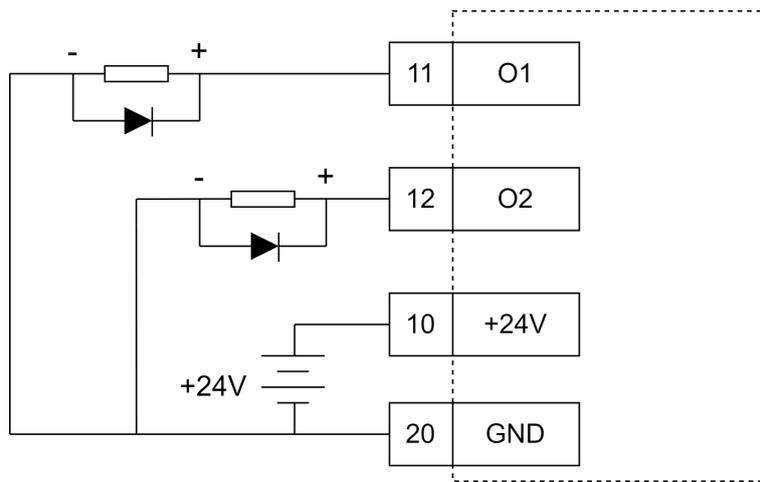


Figure 3.3.5