



# HIOM

## Installation Guide

## Revision History

Release Date	Version	Applicable Product	Revision Contents
2018-08-24	1.0	HIOM	First edition.
2019-01-30	1.1	HIOM	(1) Input Signal voltage(H) in Section 3.2 is changed. (2) Note of digital output specifications in Section 3.2 is changed.

# Table of Contents

- 1. About this Guide..... 1-1
  - 1.1 General precautions..... 1-2
  - 1.2 Safety precautions ..... 1-3
  - 1.3 Package list..... 1-7
  
- 2. Specifications ..... 2-1
  - 2.1 Model number ..... 2-2
  - 2.2 Nameplate information ..... 2-2
  - 2.3 Safety certificates..... 2-2
  - 2.4 HIOM specifications ..... 2-3
  - 2.5 Dimensions ..... 2-4
  - 2.6 Installation ..... 2-5
  
- 3. Wiring ..... 3-1
  - 3.1 CN11—Input power port..... 3-2
  - 3.2 Digital Input / Output specifications ..... 3-3
    - 3.2.1 CN6~CN9—Digital I/O port..... 3-4
  - 3.3 mega-ulink communication specifications..... 3-8
    - 3.3.1 CN1 / CN2—mega-ulink IN / OUT port..... 3-8
  
- 4. Configuration ..... 4-1
  - 4.1 mega-ulink communication setup ..... 4-2
  - 4.2 HMI main window..... 4-3

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# 1. About this Guide

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1.	About this Guide.....	1-1
1.1	General precautions.....	1-2
1.2	Safety precautions .....	1-3
1.3	Package list.....	1-7

## 1.1 General precautions





This guide is for HIWIN mega-ulink IO module of HIOM series. Before using the product, please carefully read through this guide. HIWIN Mikrosystem (HIWIN) 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 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 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 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.

## 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”, “Caution”, “Prohibited” and “Required”.

*Les mesures de sécurité dans ce guide sont classées sous les catégories « Avertissement », « Mise en garde », « Interdit » et « Requis ».*


Signal Word <i>Mot indicateur</i>	Description <i>Description</i>
 <b>Warning</b> <i>Avertissement</i>	<p>It indicates if the precaution is not observed, it is likely to cause property loss, serious injury or death. <i>Il signifie que si les mesures ne sont pas suivies, des dommages à la propriété, des blessures graves ou la mort pourraient survenir.</i></p>
 <b>Caution</b> <i>Mise en garde</i>	<p>It indicates the precaution must be observed. <i>Il signifie que les mesures doivent être suivies.</i></p>
 <b>Prohibited</b> <i>Interdit</i>	<p>It indicates prohibited activity. <i>Il indique une activité interdite.</i></p>
 <b>Required</b> <i>Requis</i>	<p>It indicates mandatory activity. <i>Il indique une activité obligatoire.</i></p>

**If the product is not used in the manner specified in this guide, the protection provided by the product may be impaired.**


## ■ Operation

 <p><b>Warning</b></p> <p><i>Avertissement</i></p>	<ul style="list-style-type: none"> <li>◆ Do not modify wiring when power on, or it may cause electric shock. <i>Ne modifiez pas le câblage si le produit est branché, sinon ceci peut causer une décharge électrique.</i></li> </ul>
 <p><b>Caution</b></p> <p><i>Mise en garde</i></p>	<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. <i>Ne faites pas fonctionner le produit s'il est exposé à l'humidité, des substances corrosives, un gaz inflammable ou une substance inflammable.</i></li> <li>◆ Directly disconnect the power if the product is not used. <i>Débranchez le produit s'il n'est pas en fonction.</i></li> </ul>
 <p><b>Prohibited</b></p> <p><i>Interdit</i></p>	<ul style="list-style-type: none"> <li>◆ Do not use the product with over-rated load or parameters. <i>Évitez d'utiliser une charge ou des paramètres excédant la gamme acceptable.</i></li> </ul>

## ■ Storage


 <p><b>Prohibited</b></p> <p><i>Interdit</i></p>	<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. <i>N'entreposez pas le produit dans un endroit où il sera exposé à l'humidité, à un jet d'eau, à la lumière directe du soleil, à des gaz ou des liquides nocifs.</i></li> </ul>
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## ■ Transportation


 <p><b>Caution</b></p> <p><i>Mise en garde</i></p>	<ul style="list-style-type: none"> <li>◆ Carefully move the product to avoid damage. <i>Déplacez le produit délicatement afin de ne pas l'endommager.</i></li> <li>◆ Do not apply excessive force to the product. <i>N'appliquez pas une force excessive sur le produit.</i></li> <li>◆ Do not stack the products to avoid collapse. <i>N'empilez pas les produits afin d'éviter qu'ils tombent.</i></li> </ul>
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## ■ Installation site



 <p><b>Required</b></p> <p><i>Requis</i></p>	<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. <i>N'installez pas le produit dans un endroit dont l'humidité et la température ambiante sont élevées ou dans un endroit exposé à la poussière, la poudre de fer ou la poudre de coupe.</i></li> <li>◆ Install the product in location with ambient temperature stated in the guide. <i>Installez le produit dans un endroit dont la température ambiante respecte les limites citées dans le guide.</i></li> <li>◆ Do not install the product in location which is subject to direct sunlight. <i>N'entreposez pas le produit dans un endroit où il sera exposé à la lumière directe du soleil.</i></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. <i>Le produit n'est pas étanche et n'est pas protégé contre les gouttes. Conséquemment, n'installez pas le produit et ne le faites pas fonctionner dans un endroit où il sera exposé à l'eau ou à un autre liquide.</i></li> <li>◆ Install the product in location with less vibration. <i>Installez le produit dans un endroit stable et sans vibration.</i></li> </ul>
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## ■ Installation



 <p><b>Caution</b></p> <p><i>Mise en garde</i></p>	<ul style="list-style-type: none"> <li>◆ Do not place heavy object on the product, or it may cause injury. <i>Ne placez pas des objets lourds sur le produit, car ils peuvent provoquer des blessures.</i></li> <li>◆ Install the product in the specified orientation, or it may cause fire. <i>Installez le produit dans une certaine orientation spécifiée, car un incendie peut être généré.</i></li> <li>◆ Avoid strong shock to the product, or it may cause malfunction or injury. <i>Évitez que le produit subisse un violent choc, car ils peuvent provoquer une défectuosité ou des blessures.</i></li> </ul>
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	<ul style="list-style-type: none"> <li>◆ When installing the product, take the product weight into consideration. Improper installation may cause damage.</li> </ul> <p><i>Lors de l'installation, prenez le poids du produit en considération. Une installation inadéquate peut causer des dommages.</i></p>
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## ■ Wiring





 <b>Warning</b> Avertissement	<ul style="list-style-type: none"> <li>◆ Use copper conductors only, or it may cause malfunction or injury.</li> </ul> <p><i>Utilisez des conducteurs en cuivre uniquement, sinon ils peuvent provoquer une défectuosité ou des blessures.</i></p>
 <b>Caution</b> Mise en garde	<ul style="list-style-type: none"> <li>◆ Ensure wiring is correctly performed, or it may cause malfunction or burn. There is a risk of injury or fire.</li> </ul> <p><i>Assurez un câblage adéquat, sinon une défectuosité ou des brûlures pourraient en résulter. Il existe un risque de blessures ou d'incendie.</i></p>

## ■ Maintenance

 <b>Prohibited</b> Interdit	<ul style="list-style-type: none"> <li>◆ Do not disassemble or modify the product.</li> </ul> <p><i>Ne démontez pas et ne modifiez pas le produit.</i></p> <ul style="list-style-type: none"> <li>◆ Do not repair the product by yourself when it malfunctions, please contact HIWIN for help.</li> </ul> <p><i>En cas de défectuosité, ne réparez pas le produit vous-même, mais veuillez communiquer avec HIWIN pour de l'aide.</i></p>
 <b>Required</b> Requis	<ul style="list-style-type: none"> <li>◆ The product is for indoor use. It can only be kept in the environment that the degree of contamination is 2. Clean up the appearance with a dry cloth.</li> </ul> <p><i>Ce produit est conçu pour une utilisation à l'intérieur. Il peut être gardé uniquement dans un environnement dont le degré de contamination est de 2. Nettoyez l'apparence avec un chiffon sec.</i></p>

## 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 HIWIN mega-ulink IO module, HIOM
-  1 x DIN Mount Kit
-  1 x DINKLE Contact 20 pin
-  1 x DINKLE Contact 2 pin

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## 2. Specifications

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2.	Specifications .....	2-1
2.1	Model number .....	2-2
2.2	Nameplate information .....	2-2
2.3	Safety certificates .....	2-2
2.4	HIOM specifications .....	2-3
2.5	Dimensions .....	2-4
2.6	Installation .....	2-5

## 2.1 Model number

HIOM - D 3 2 -  - 0 1

Digital output mode

Sink type .....0

Source type .....1

**Note:** This model number is applicable to HIMC.

## 2.2 Nameplate information

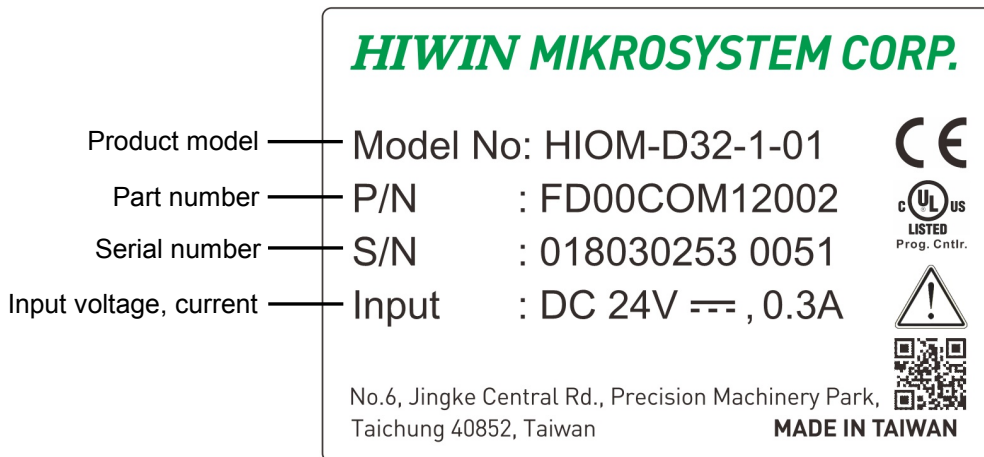


Figure 2-1 Label

## 2.3 Safety certificates

CE Compliance	EMC	EN 61000-6-2
		EN 61000-6-4
	LVD	EN 61010-1
		EN 61010-2-201
UL Standard		UL 61010-2-201

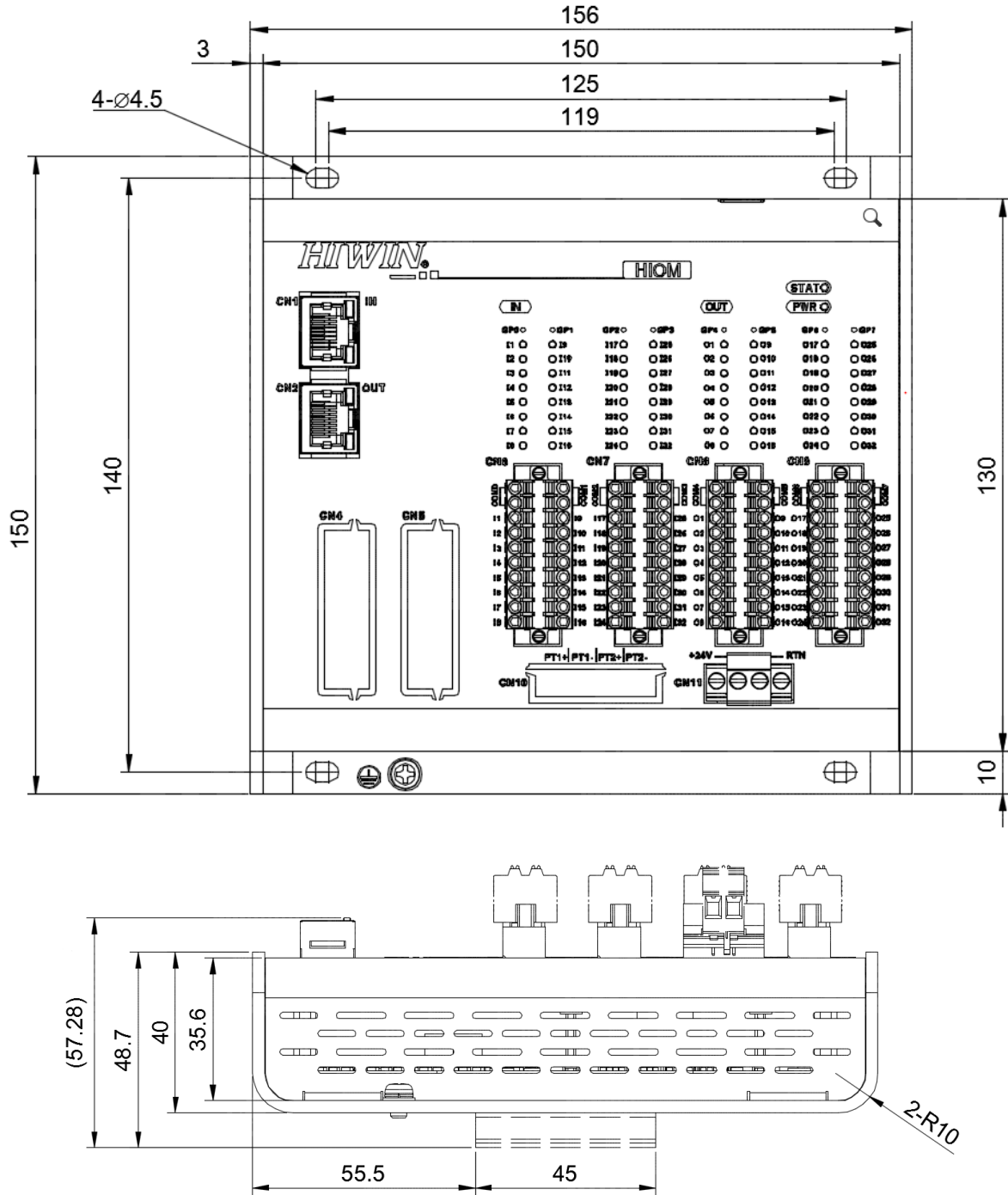
Table 2-1 Safety certificates

## 2.4 HIOM specifications

Input voltage	24Vdc
Max. input voltage	27.6V (+15%)
Min. input voltage	20.4V (-15%)
Rated Input current	300mA @20.4V
LED Status (POWER ON)	Green
Number of input channels	32ch.@24V (±20%); Max. 5mA
Number of output channels	32ch.@24V (±20%); Max. 250mA (Refer to Section 3.2 for details.) Note: When the output load is always on <b>0.25A</b> , only maximum <b>08 channels</b> could be used. When the output load is always on <b>0.20A</b> , only maximum <b>12 channels</b> could be used. When the output load is always on <b>0.15A</b> , only maximum <b>16 channels</b> could be used. When the output load is always on <b>0.10A</b> , only maximum <b>32 channels</b> could be used.
Protection	Reverse voltage protection
Ambient temperature	0~45°C
Storage temperature	-25~85°C
Ambient humidity	30~95%RH (non-condensing)
Vibration	Sweep with a changing rate, 1 octave per minute. 10Hz ≤ f < 57Hz, const. Amplitude 0.075mm 57Hz ≤ f < 150Hz, const. Acceleration 1G

Table 2-2 HIOM specifications

## 2.5 Dimensions



Length x Width x Height → 156 x 150 x 57.28 mm

Figure 2-2 Dimensions



## 2.6 Installation

### REQUIRED

- ◆ Based on UL61010-2-201, HIOM should be mounted on the industrial control panel and the maximum ambient temperature is 45°C.

*Selon la norme UL61010-2-201, le HIOM doit être monté sur un panneau de commande industriel et la température ambiante ne doit pas excéder 45°C.*

- Step 1. Align the mounting holes of the bracket in the system and those on the DIN rail bracket.
- Step 2. Use the provided mounting screws to secure the bracket in place.
- Step 3. Mount the product on the industrial control panel with the recommended orientation, as Figure 2-4 shows.

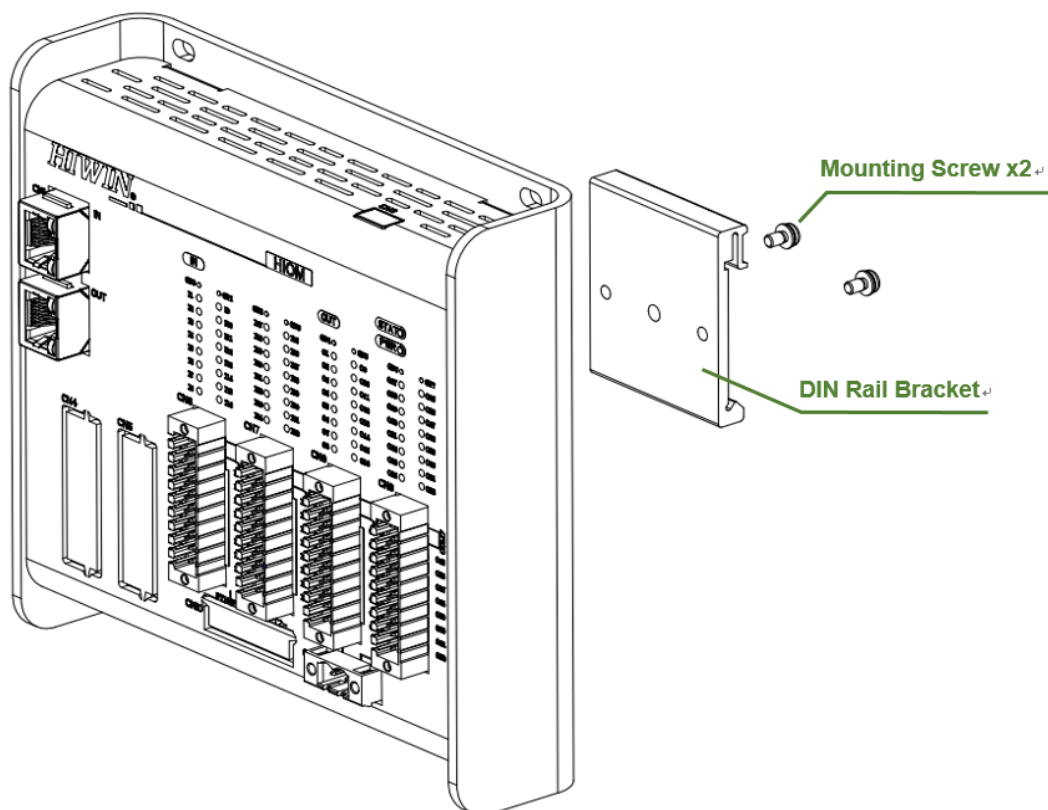


Figure 2-3 DIN rail bracket

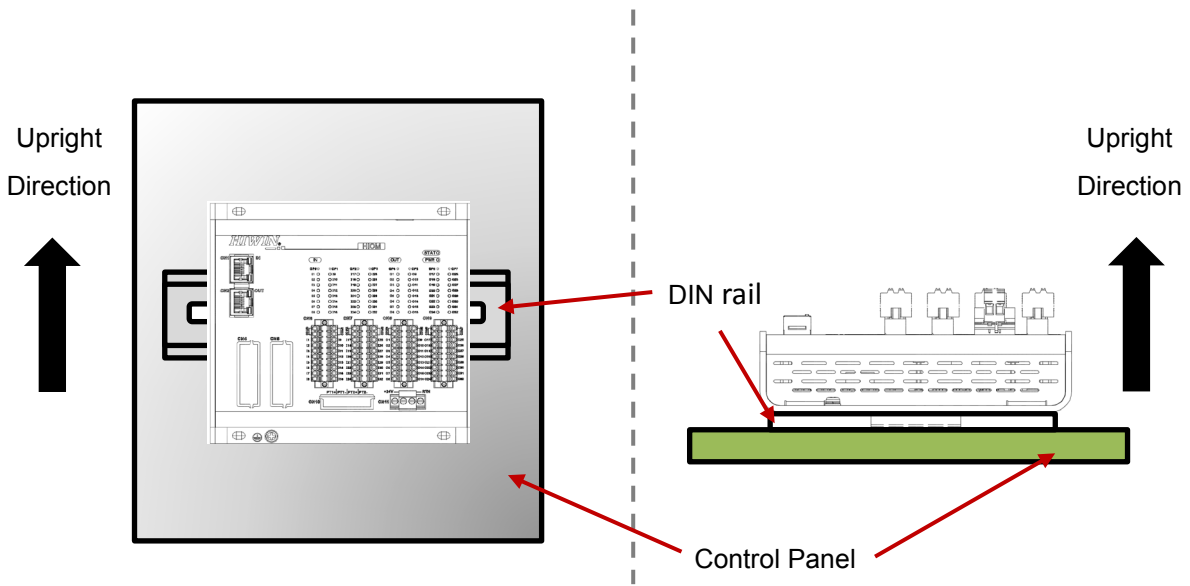


Figure 2-4 Recommended mounting orientation

Do not shut air inlet hole and vent, tilt or invert HIOM when installing it. Otherwise, it will cause HIOM to malfunction. To ensure the effect of cooling circulation, there should be enough space between HIOM and the adjacent articles or baffles. For heat dissipation, please make sure the space between HIOMs is more than 20mm when installing more than one HIOM. Fans can be set in the electric cabinet to facilitate heat dissipation.

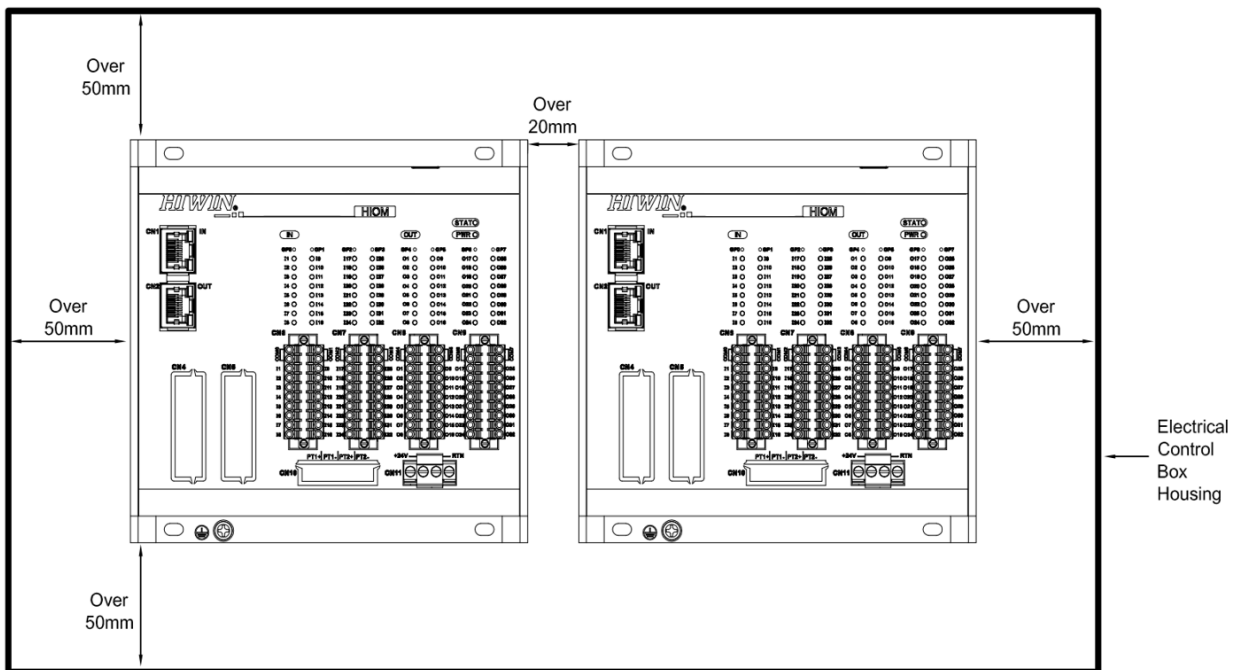


Figure 2-5 Space between HIOMs

# 3. Wiring

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3.	Wiring .....	3-1
3.1	CN11—Input power port.....	3-2
3.2	Digital Input / Output specifications .....	3-3
3.2.1	CN6~CN9—Digital I/O port.....	3-4
3.3	mega-ulink communication specifications.....	3-8
3.3.1	CN1 / CN2—mega-ulink IN / OUT port.....	3-8

## 3.1 CN11—Input power port

### REQUIRED

- ◆ Use SELV or double insulated qualified power supply based on UL60950, UL61010-1 or UL61010-2-201 standard.

*Utilisez un bloc d'alimentation de sécurité à tension très basse (SELV) ou à double isolation selon la norme UL60950, UL61010-1 ou UL61010-2-201.*

- ◆ The power input connector (CN11) 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 90°C for operation.

Screw torque: 0.5N·m

*Le connecteur d'entrée de l'alimentation (CN11) est adéquat pour le calibre américain des fils (American Wire Gauge) entre 18 et 22 (entre 0,326 et 0,823 mm<sup>2</sup>). Selon le courant de charge nominal, la limite de la température du conducteur doit être moins que 90°C pour le fonctionnement.*

*Moment de torsion de la vis: 0,5N m*

**Note: Make sure that the voltage of the DC power source is stable before connecting HIOM to DC power input.**

### ■ Connector type

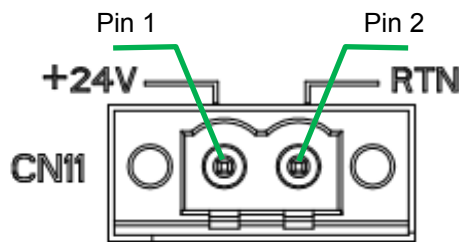


Figure 3-1 CN11 connector type

### ■ Pin assignment

Pin	Signal	Description
1	+24V	Input Power +24V
2	+24V_RTN	Input Power GND

Table 3-1 CN11 pin assignment

## 3.2 Digital Input / Output specifications

### REQUIRED

- ◆ Use SELV or double insulated qualified power supply based on UL60950, UL61010-1 or UL61010-2-201 standard.  
*Utilisez un bloc d'alimentation de sécurité à tension très basse (SELV) ou à double isolation selon la norme UL60950, UL61010-1 ou UL61010-2-201.*
- ◆ The I/O connector (CN6~CN9) is suitable for AWG (American Wire Gauge) 18~24 (0.205~0.823 mm<sup>2</sup>). With the rated load current, conductor limit temperature should be less than 90°C for operation.  
Screw torque: 0.5N·m  
*Le E/S connecteur (CN6~CN9) est adéquat pour le calibre américain des fils (American Wire Gauge) entre 18 et 24 (entre 0,205 et 0,823 mm<sup>2</sup>). Selon le courant de charge nominal, la limite de la température du conducteur doit être moins que 90°C pour le fonctionnement.*  
*Moment de torsion de la vis: 0,5N m*
- ◆ Install an over current protector (e.g. fuse), which can control digital I/O via the over current signal, at the output port of power supply or the input port of digital I/O power. By doing so, it can not only disconnect the power but also provide appropriate control and protection under the overload operation.  
*Installez un protecteur de surintensité (un fusible, par exemple) qui peut contrôler les E/S numériques par un signal de surintensité au port de sortie du bloc d'alimentation ou le port d'entrée d'alimentation des E/S numériques. Ainsi, non seulement il pourra couper l'alimentation, mais il fournira également le contrôle et la protection dans des situations de surcharge lors du fonctionnement.*

Number of Inputs	32
Type	Opto-isolated, bidirectional
Input voltage	24Vdc (±20%)
Input current	< 5mA
Input impedance	5.6kΩ
Input Signal voltage(L)	0~6V
Input Signal voltage(H)	16~28.8V
Input filter	0.2ms

Table 3-2 Digital input specifications

Number of Outputs	32	
Type	BJT, source type or sink type	
Input voltage	24Vdc (±20%)	
Type of load	Resistor, inductive, lamps	
Output current per output	Max. 0.25A(*)	
Max. switch frequency	1kHz	
Delay time	OFF → ON	≤ 50us
	ON → OFF	≤ 500us

Table 3-3 Digital output specifications

(\*)Note:

When the output load is always on **0.25A**, only maximum **08 channels** could be used.  
 When the output load is always on **0.20A**, only maximum **12 channels** could be used.  
 When the output load is always on **0.15A**, only maximum **16 channels** could be used.  
 When the output load is always on **0.10A**, only maximum **32 channels** could be used.

### ■ Analysis of failure mode and effect

	Failure Mode	Effect
Digital input	Abnormal input signal beating	Misjudgment of input signal
	Abnormal input signal voltage	Digital input part of the circuit board being burnt down
Digital output	Abnormal output voltage	Digital output part of the circuit board being burnt down
		No output action
	Wrong external wiring polarity	No output action

Table 3-4 Analysis of failure mode and effect

## 3.2.1 CN6~CN9—Digital I/O port

### ■ Connector type

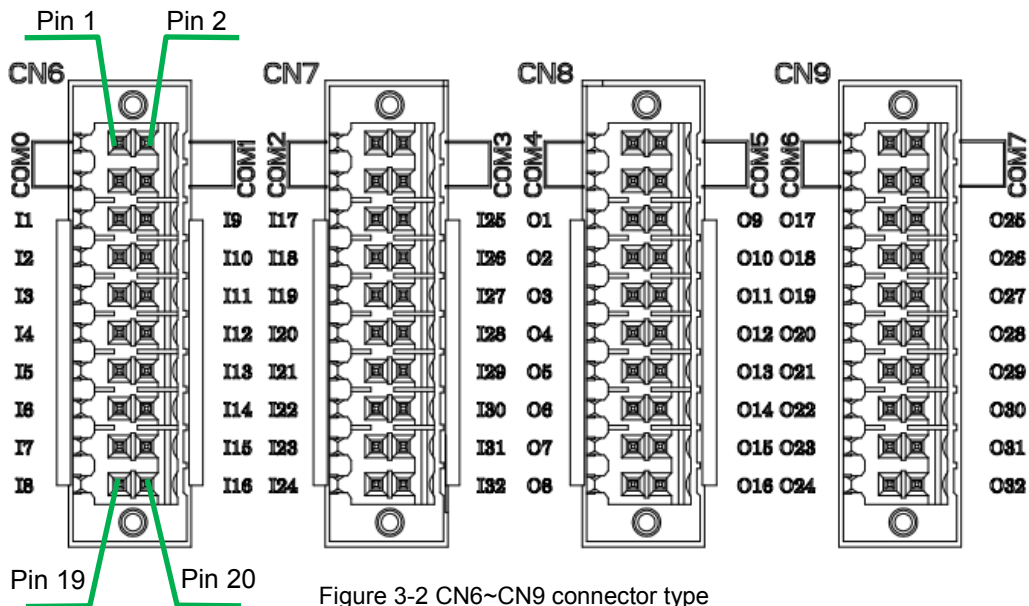


Figure 3-2 CN6~CN9 connector type

■ **CN6 Pin assignment**

Signal	Pin	Pin	Signal
COM0	1	2	COM1
COM0	3	4	COM1
I1	5	6	I9
I2	7	8	I10
I3	9	10	I11
I4	11	12	I12
I5	13	14	I13
I6	15	16	I14
I7	17	18	I15
I8	19	20	I16

Table 3-5 CN6 pin assignment

■ **CN7 Pin assignment**

Signal	Pin	Pin	Signal
COM2	1	2	COM3
COM2	3	4	COM3
I17	5	6	I25
I18	7	8	I26
I19	9	10	I27
I20	11	12	I28
I21	13	14	I29
I22	15	16	I30
I23	17	18	I31
I24	19	20	I32

Table 3-6 CN7 pin assignment

■ **CN8 Pin assignment**

Signal	Pin	Pin	Signal
COM4	1	2	COM5
COM4	3	4	COM5
O1	5	6	O9
O2	7	8	O10
O3	9	10	O11
O4	11	12	O12
O5	13	14	O13
O6	15	16	O14
O7	17	18	O15
O8	19	20	O16

Table 3-7 CN8 pin assignment

■ **CN9 Pin assignment**

Signal	Pin	Pin	Signal
COM6	1	2	COM7
COM6	3	4	COM7
O17	5	6	O25
O18	7	8	O26
O19	9	10	O27
O20	11	12	O28
O21	13	14	O29
O22	15	16	O30
O23	17	18	O31
O24	19	20	O32

Table 3-8 CN9 pin assignment

## ■ Hardware wiring examples

### Digital Input is bidirection

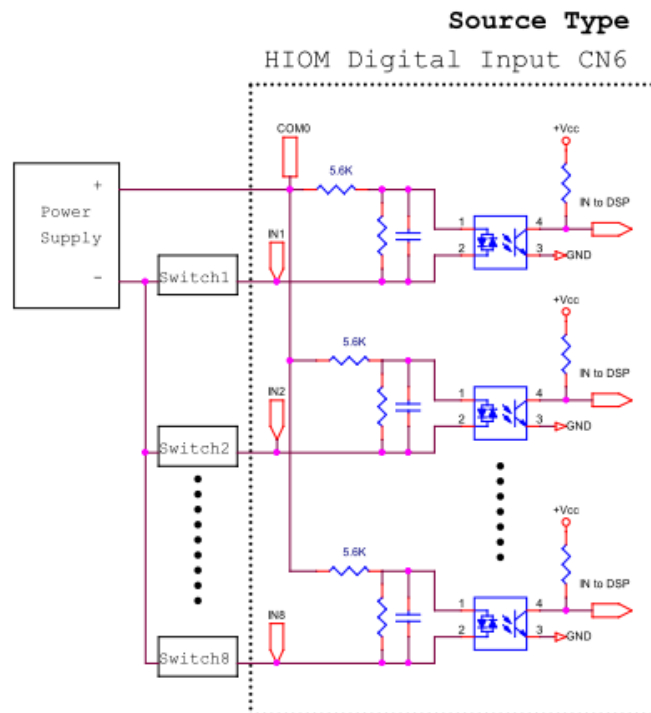


Figure 3-3 Input source type (Host as source)

### Sink Type

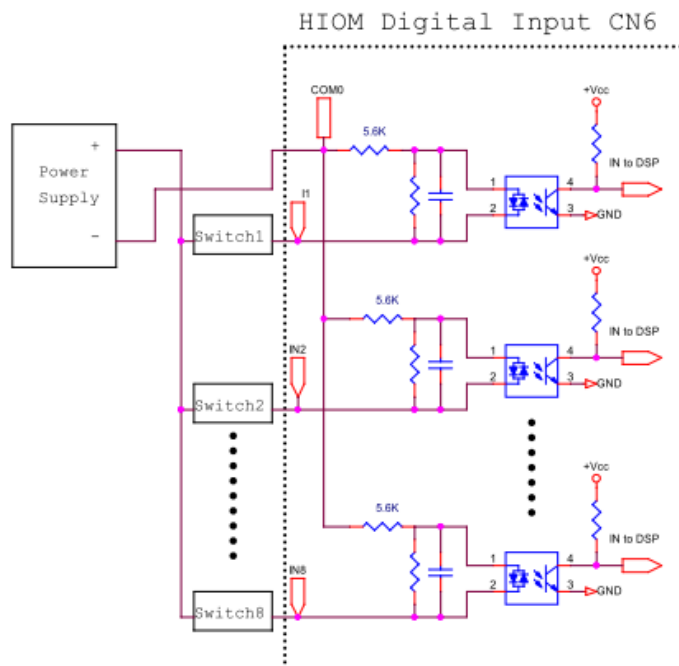


Figure 3-4 Input sink type (Host as sink)



**Digital Output is single direction**

**Source Type**

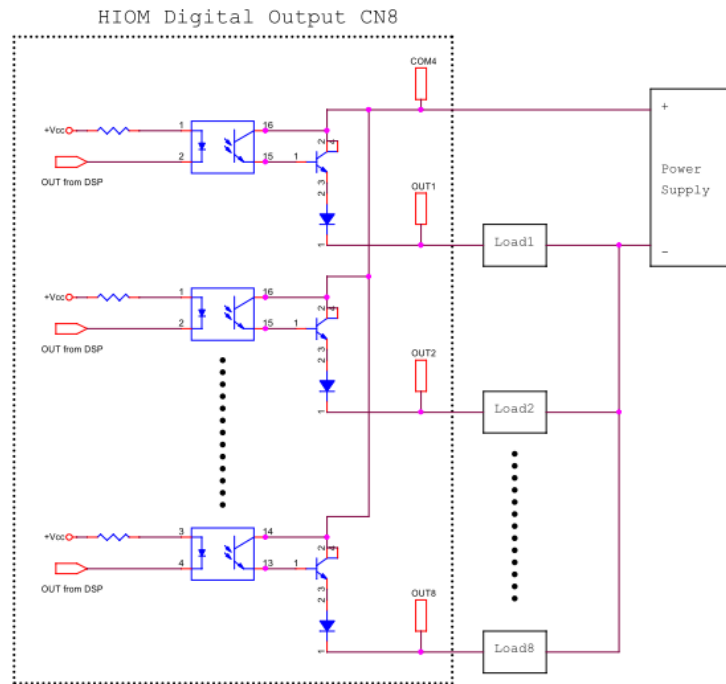


Figure 3-5 Output source type

**Sink Type**

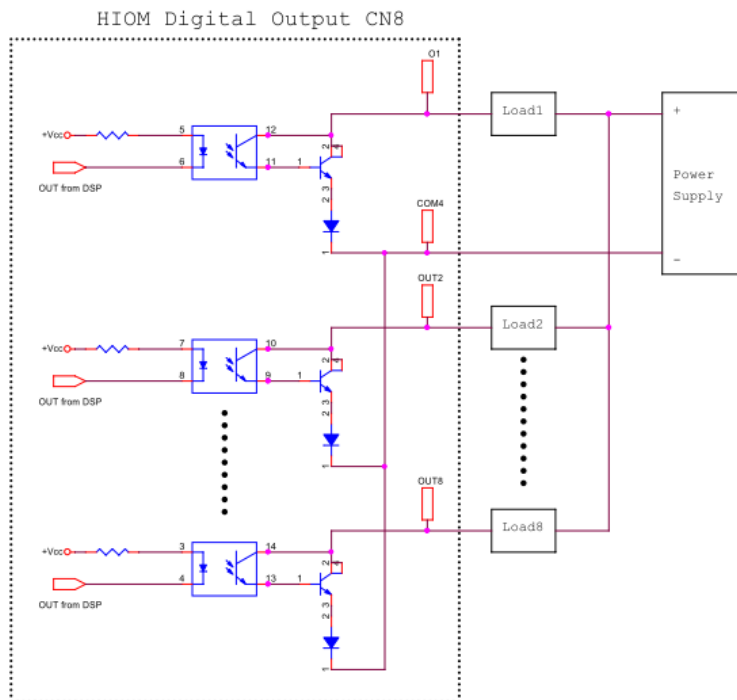


Figure 3-6 Output sink type

## 3.3 mega-ulink communication specifications

Baud rate	100Mbps
Connectors	CN1: mega-ulink input CN2: mega-ulink output
Communication media	Category 5 or higher (It is recommended to use cables with shielding.)
Communication distance	The maximum distance between nodes is 100m.
EMC	IEC61000-4-2, IEC61000-4-4

Table 3-9 mega-ulink communication specifications

### 3.3.1 CN1 / CN2—mega-ulink IN / OUT port

#### ■ Connector type

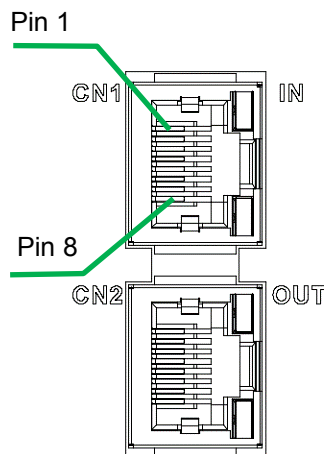


Figure 3-7 CN1 / CN2 connector type

#### ■ Pin assignment

Pin	Signal	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	TERM	N/A
5	TERM	N/A
6	RX-	Receive Data-
7	TERM	N/A
8	TERM	N/A

Table 3-10 CN1 / CN2 pin assignment

# 4. Configuration

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4.	Configuration .....	4-1
4.1	mega-ulink communication setup .....	4-2
4.2	HMI main window .....	4-3

## 4.1 mega-ulink communication setup

Download and install WinPcap for the first time usage of mega-ulink communication. When the installation is done, connect HIOM CN1 and CN11 (input 24Vdc) before opening Lightning. As Figure 4-1 shows, click “Communication setup...” in the “Tools” option. Then, select the radio button of “EtherCAT” and click the “EtherCAT...” button.

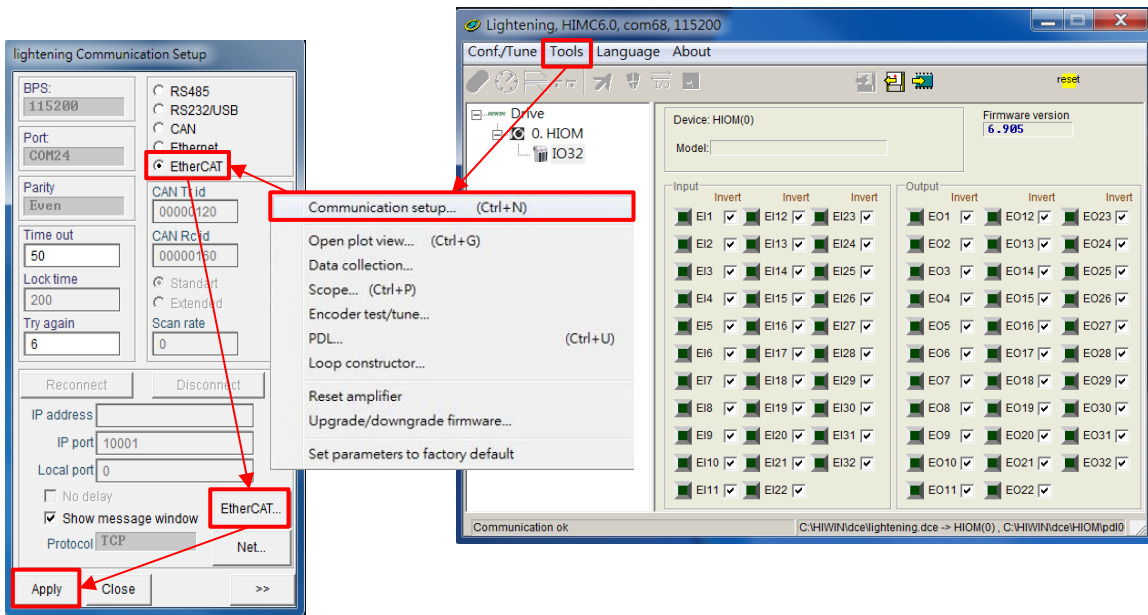


Figure 4-1

The “EtherCAT set up” window will appear to display all network cards in the computer, as Figure 4-2 shows. Select the network card connected to HIOM. After that, close the “EtherCAT set up” window and click the “Apply” button in the “lightning Communication Setup” window.

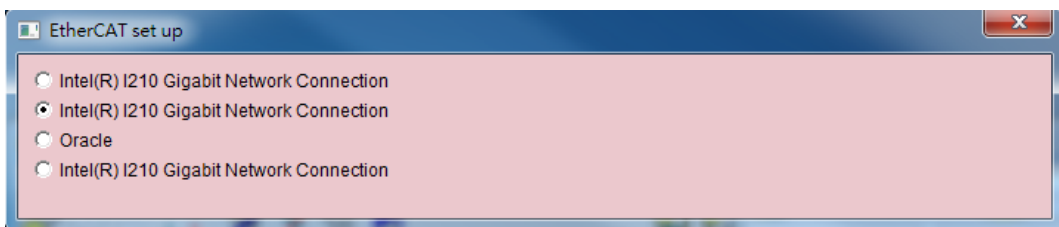


Figure 4-2

When the setting is done, the window of Figure 4-3 will appear. Users can get the number of connected axes from the information in the window. After going back to the Lightning main window, the connection is established, and “EtherCAT” is shown in the title.

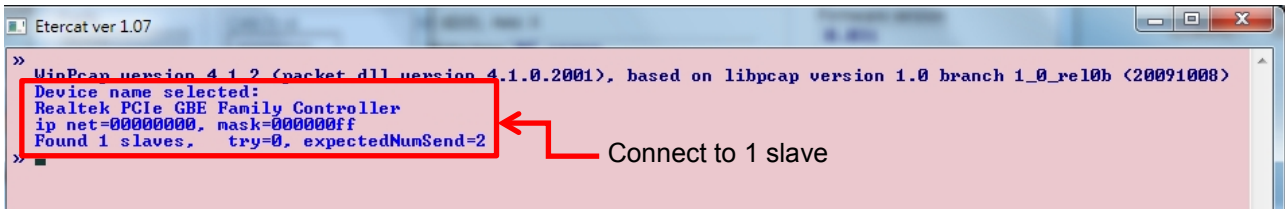


Figure 4-3

## 4.2 HMI main window

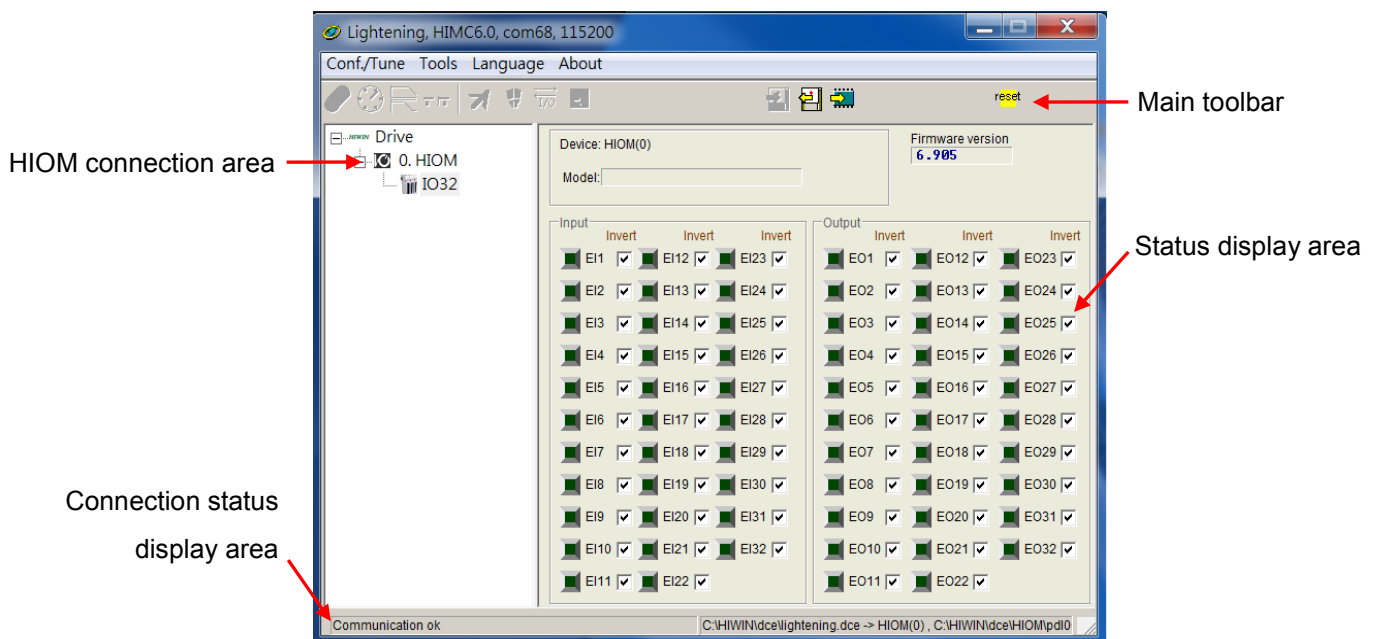





Figure 4-4

### ■ Main toolbar

-  : Load the file with I/O parameters to HIOM RAM
-  : Save current parameters in HIOM RAM to Flash
-  : Reset HIOM

**■ Digital input**Status indicator light →

If the light is green, the corresponding input pin has been activated. If the light is off, the corresponding input pin has not been activated.

Logic inverse setting (Invert) →

When the “Invert” option is checked, the trigger condition will be reversed.

**■ Digital output**Output state →

The current state of HIOM output pin is displayed here to be CLOSE or OPEN (the transistor is conducted or not conducted). This helps users know the state of the hardware signal on HIOM output to assist wiring debugging.

Invert state →

Based on the requirement, this option can be checked to reverse the polarity of the output state.

**Note: The internal logic of HIOM is not affected by this “Invert State” setting at all.**