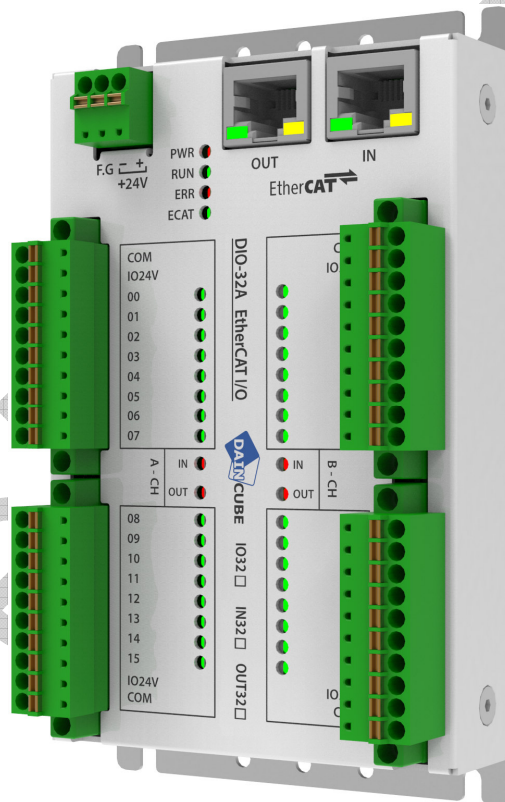


DIO-32A

User's manual

(R1) Version

DAINCUBE Corp.
EtherCAT slave I/O module with Isolated



DIO-32A Hardware user's manual
Form 140108F-180703— July, 2018

DAINCUBE Corp.
Web: www.daincube.com
E-mail: support@daincube.com
Tel: 82-32-329-9783~4
Fax: 82-32-329-9785
#401-701, Bucheon TechnoPark 4-Danji,
655 Pyeongcheon-ro, Wonmi-gu, Bucheon-Si,
Gyeonggi-Do, Republic of Korea

Preface

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This documentation is intended for qualified audience only. The product described herein is not an end user product. It was developed and manufactured for further processing by trained personnel.

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Product support

DAINCUBE Corp.

Web: www.daincube.com

E - MAIL: support@daincube.com

Safety precautions

Be sure to observe all of the following safety precautions.

Strict observance of these warning and caution indications are a MUST for preventing accidents, which could result in bodily injury and substantial property damage. Make sure you fully understand all definitions of these terms and related symbols given below, before you proceed to the manual.

Symbols

The following symbols may be used in this specification:



Warning

Warnings indicate conditions that, if not observed, can cause personal injury.



Caution

Cautions warn the user about how to prevent damage to hardware or loss of data.



Note

Notes call attention to important information that should be observed.

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Preliminary

1. Introduction

Thank you very much for purchasing our product.

Improper usage or mishandling may result in a product not only being unable to deliver full functions but also produce unexpected troubles or shorten the product's life.

Please read this manual carefully, and operate the product properly by paying attention to its handling. When operating the product, always keep this manual at hand and read the relevant items as required.

1.1. General precautions

- Be sure to read this Instruction Manual for proper use of this product.
- Part or all of this Instruction Manual may not be used or reproduced without permission.
- Please take note that we shall not be liable for any effects resulting from using this Instruction manual.
- This manual may be modified when necessary because of improvement of the product, modification or changes in specifications.
- Some drawings in this manual are shown as a typical example and may differ from the shipped product.

2. Safety information

- Before unpacking and installing the product or adding devices on it, carefully read all the manuals that came with the package.
- Avoid using product in extreme dust, humidity and temperature conditions. Do not place the product in wet area.
- Before carrying out assembly and adjustment work or maintenance and inspection work of the machine, be sure to disconnect the power cord. Otherwise, electric shock may result.
- After turning OFF power, wait at least five minutes before servicing the product. Otherwise, residual electric charges may result in electric shock.

Warning

- Be sure to check grounding before you use the unit. Danger of personal injury due to electric shock!
- Be sure to use the unit within the voltage range indicated.
- The operator must have a sufficient educational level and must know details of intended use described in the user's manual.
- Be sure to check the wiring to the main unit.
- When the user (customer) extends wiring, malfunction may occur due to faulty wiring. In this case, inspect wiring thoroughly and check it for properness before turning on the power.
- Before operating the unit, be sure to check that there is no danger in or around the operating range.
- Do not allow water or oil to get on the unit and the power cord.
- Install the unit in a place which can endure its weight and conditions while running.
- Take care not to squeeze and thus damage the cable with any object.
- Do not lay the cable over sharp edges to avoid damaging the cable sheath.
- Check the mounting screws regularly so that they are always firmly tightened.
- Never touch terminals directly or internal parts of controller.
- Do not disassemble or modify the product.
- Before carrying out assembly and adjustment work or maintenance and inspection work of the machine, be sure to disconnect the power cord.
- Connect the power supply after completing the adjustment of all the cables and switches.

Caution

- After the shutdown window, turn off the power supply. Otherwise the components could be destroyed or undefined signals could occur.
- To prevent the equipment from falling to the ground.

- Never lay the device onto unstable surfaces. It could fall to ground and thus be damaged.
- It is recommended to use the unit in an environment where no electrical noise is present.
- In noisy environments, use a filter fitted.
- Never lay the device close to heat sources or into direct sunlight.
- Avoid exposing the device to mechanical vibrations, excessive dust, and humidity or to strong magnetic fields.
- Make sure that no foreign objects or liquids can penetrate into the device.
- Wipe the power plug with a clean, dry cloth periodically to eliminate dust.
- Always pay special attention to the robot's movement in the Teaching Mode.

3. Warranty and warranty coverage

The DIO-32A that you purchased has been delivered upon completion of our strict shipping test.

3.1. Warranty period

The warranty period is as follows:

- 12 months after our shipment.

3.2. Scope of the warranty

Where a defective condition occurs during proper use conditions and obviously under the responsibility of the manufacturer, within the term above, we shall repair the product without charge.

However, any items that apply to the following are excluded from the warranty coverage.

- The warranty is not valid if the defect is due to accidental damage, mishandling, misuse, voltage fluctuation, high/low voltage or natural disaster.
- If the product is repaired or tried to repair from unauthorized personal/Repair Shop.
- If the product serial number is tempered.
- The product is defective due to wear of parts, which can be considered as consumable parts by the nature. (such as a cable)
- Defects resulting from changes over time such as natural color fading of paint.
- Defects resulting from mishandling or improper use.
- Defects resulting from an inadequacy or error in maintenance and inspection.
- Defects resulting from the use of any part other than our genuine parts.
- Defects resulting from a modification not approved by us or our dealers.

Only a delivered product shall be singly warranted, and no damage induced by the defect of the delivery product can be warranted. For repair, transport the product to our factory.

3.3. Service coverage

The cost of a delivered product does not include expenses for program creation and engineer dispatching. Therefore, the following are charged separately even within the warranty term:

- Maintenance and inspection.
- Technical guidance and technical training in the operating instructions.
- Technical guidance and technical training on program-related matters such as program creation.

4. Overview

This section briefly describes the features, configuration, and usage of the DIO-32A (EtherCAT I/O).

4.1. Features

- Simple and intuitive design for user-friendly use.
 - Various mounting methods are available.
 - Slim and compact size requires a small mounting space.
- Reverse voltage, overcurrent, over voltage (surge) protection circuit built-in.
- On the fly processing: EtherCAT
- Powerful MCU handles efficient network traffic.
- Distance between Stations up to 100 m (100BASE-TX)
- Support daisy chain connection
- EtherCAT conformance test tool verified
- Removable terminal block connector
- LED indicators for the I/O status
- Built-In digital I/O
- RoHS compliant

4.2. MODEL NO.

This section describes the DIO-32A product type.

Model	I/O	Contents
DIO-32A-IN	32-ch input	➤ Bi-directional input isolated by photo coupler
DIO-32A-OUT	32-ch output(NPN)	➤ TR (NPN) output isolated by photo coupler
DIO-32A-IO	16-ch input/16-ch output(NPN)	➤ 16 channel input / 16 channel output module

Confirm that the model number described on the product is exactly what you ordered.

5. Specifications

5.1. General

Item	Contents
Power Supply	➤ 12~26Vdc
Connectors	➤ 3-PIN 3.5 mm terminal * 1 (Power) : Reverse Protection ➤ RJ-45 * 2 (EtherCAT)
Power Consumption	➤ Typical 24Vdc/50mA (max.24Vdc/100mA)
Environment	➤ Operating temperature: 0°C to +50°C ➤ Storage temperature: -20°C to +70°C ➤ Humidity : 10% to 85% (Non-condensing) ➤ Altitude: Max. 2000 meters ➤ Pollution Degree 2(acc. to IEC 61131-2) ➤ Indoor Use Only
Cooling method	➤ Ambient
Mounting	➤ any orientation, Wall Mount, DIN rail
Metal Case Paint color	➤ EGI Coating, Ivory color
Size	➤ 136 x 80 x 37.5 mm(WxDxH)
weight	➤ About 365g
Certification	➤ KC,CE Class A

 **NOTE:** Not following the prescribed specifications may cause damage to the product.

5.2. IO

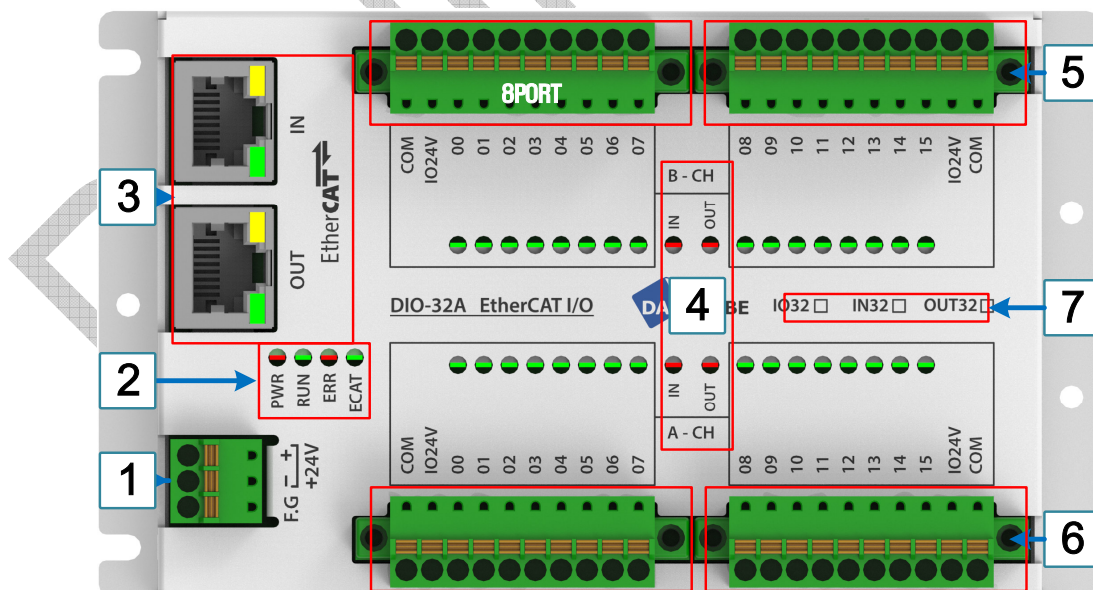
Item		Contents
I/O Power Supply		➢ 12~26Vdc
I/O power consumption		➢ Typical 24Vdc/50mA (max.24Vdc/100mA)
I/O Connections		➢ 8-PIN 3.5 mm terminal * 4 (I/O): Reverse Protection
I/O State indicators		➢ LED display (Green)
Number of circuits per common		➢ 16 /common
Digital In	Input Voltage	➢ Logic 0 : 6.5VDC (Max) ➢ Logic 1 : 8.5VDC (Min)
	Load Voltage	➢ 11~30 V _{DC} ,
Digital out (NPN)	Load Current	➢ 500mA/ch (sink) @ 25°C, 350mA/ch (sink) @ 60°C
	Isolation method	➢ Photo coupler isolation
Response Delay Time		➢ 100μs
Isolation Resistance		➢ Over 100MΩ
Isolation Voltage		➢ 3750 Vrms (min)

5.3. EtherCAT

Item	Contents
Communication protocol	➢ Dedicated protocol for EtherCAT
Data Transfer Medium	➢ Cat.5e SFTP cable (Min), Cat.7 SFTP RJ-45 plug (Min)
Communication Distance	➢ Max.100 m (100BASE-TX)
Communication Cycle Time	➢ 250 us(Max)
Data Transfer Rates	➢ 100 Mbps

6. Appearance


6.1. Interface configuration



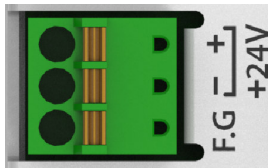
1	Power	Terminal Block 3pin/3.5mm pitch (15EDGKD-3.5-03P)
2	States indicator	PWR: Power on RUN: Normal operation ERR: Error ECAT: EtherCAT States
3	Two RJ45 connectors	EtherCAT network IN EtherCAT network OUT

4	Type indication of IO	IN or OUT type indication
5	B-CH	Terminal 10pin/3.5mm Pitch (15EDGKDM-3.5-10P)
6	A-CH	Terminal 10pin/3.5mm Pitch (15EDGKDM-3.5-10P)
7	Product model (V mark)	DIO32: 16-ch input / 16-ch output IN32: 32-ch input OUT32: 32-ch output

[Figure 6.1] DIO-32A Appearance

 **NOTE:** The Ethernet cable must be used the industrial EtherCAT dedicated cable.

6.1.1. Power



Item	Contents
+(+24V)	Power IN
-(+24V)	GROUND
F.G	Earth ground

6.1.2. States indicator

When the power is input, the built-in MCU checks each function and turns on each LED.

LED	Description
PWR	➤ The system power is turned on
RUN	➤ ON: Normal ➤ Blinking: Initialization, function check, waiting for communication connection
ERR	➤ ON: H / W failure. ➤ Blinking: Error occurred during operation. Ex) Removing a communication line
ECAT	➤ EtherCAT State Indicator

■ EtherCAT State Indicator

LED	Status	Condition
Off	Init	INIT = <i>Initialization state.</i>
Blinking	Pre-Operational	PREOP = <i>Pre-Operational state.</i>
Single flash	Safe-Operational	SAFEOP = <i>Safe-Operational state.</i>
On	Operational	OP = <i>Operational state.</i>

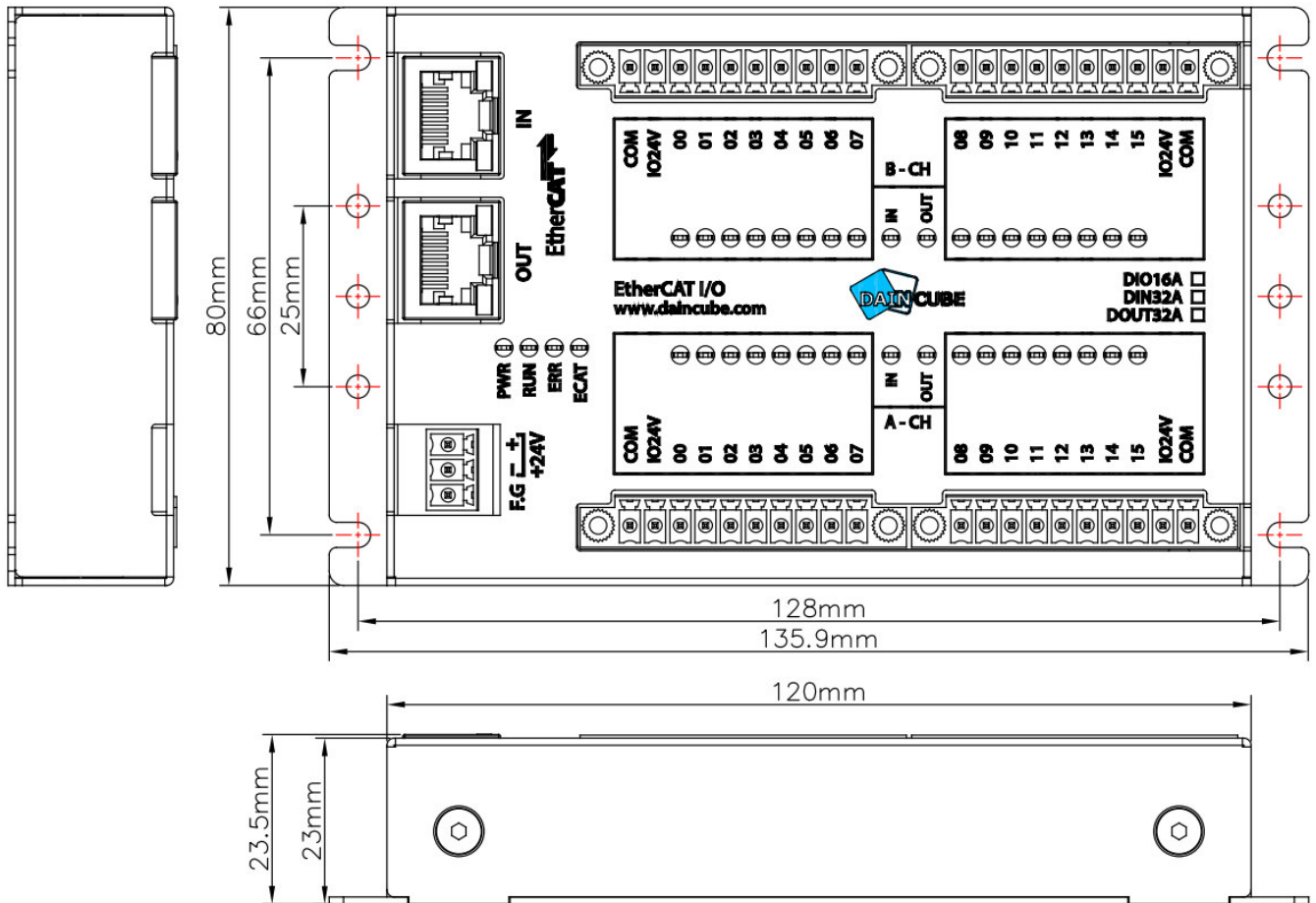
6.1.3. I/O Terminal

Type	Signal	Contents
INPUT	COM	Common: Power Or GND
	IO24V	Not connected
	00~15	16 IN Port
OUTPUT	COM	Ground
	IO24V	Output Power: +24Vdc
	00~15	16 Out Port

6.2. Dimension

■ Appearance Dimensions: 136 mm x 80 mm x 23.5mm (L x W x H)

All dimensions are in millimeters.



[Figure 6.2] DIO-32A Appearance Dimensions

7. Install the product

Be sure to turn off the power before wiring.
When repairing or replacing, be sure to turn off the power.

7.1. Product opening and inspection

This product has passed the performance test and defect inspection before shipment.
As soon as you receive the product, check for physical damage or defective product during shipment.
If any damage or defect is found, contact the place of purchase or our company immediately.

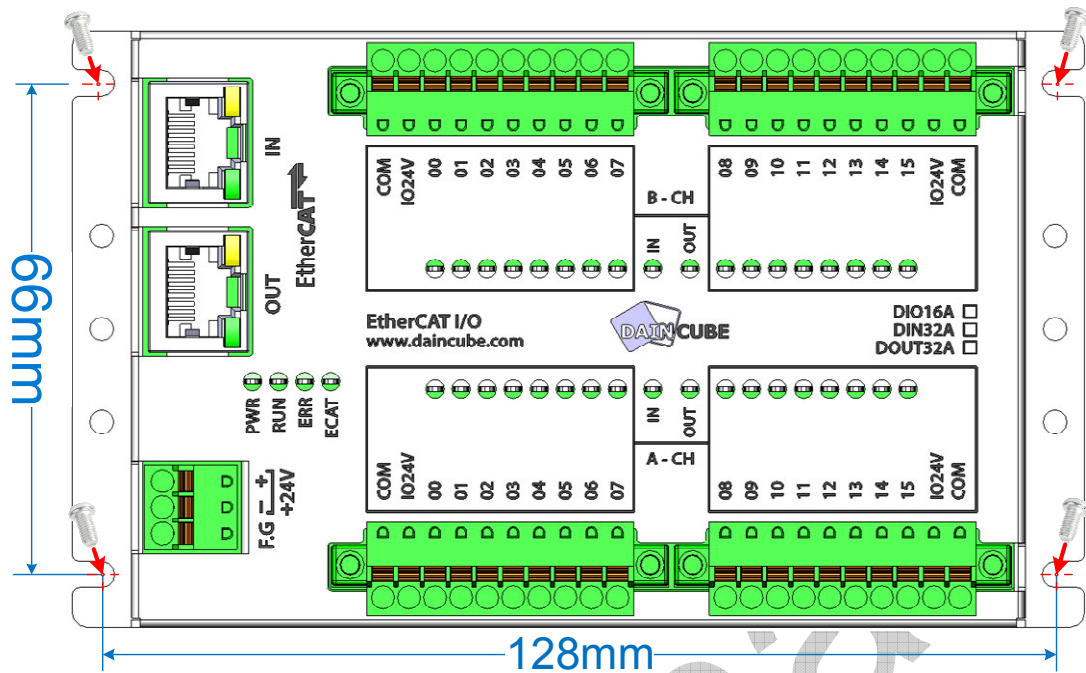
NOTE: If repackaging is required, please keep the original packing materials.

7.2. Mounting

Before installing the product, please consider the electrical specifications and environment for safe operation.
The input power (DC + 24V) should be a clean control power separate from the machine's motor power.
Be sure to install the AC power with a certain distance from the AC power or the motor.
The installation of the DIO-32A should be firmly and firmly secured so that it will not fall or fall.

7.2.1. Mounting Holes

Four M3 sized tapped holes are required for mounting.

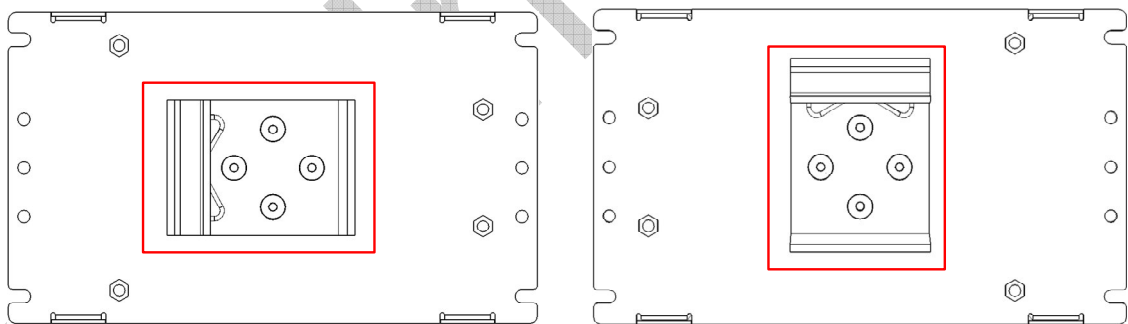


[Figure 7.1] Mounting holes position drawing

7.2.2. Din Rail mounting

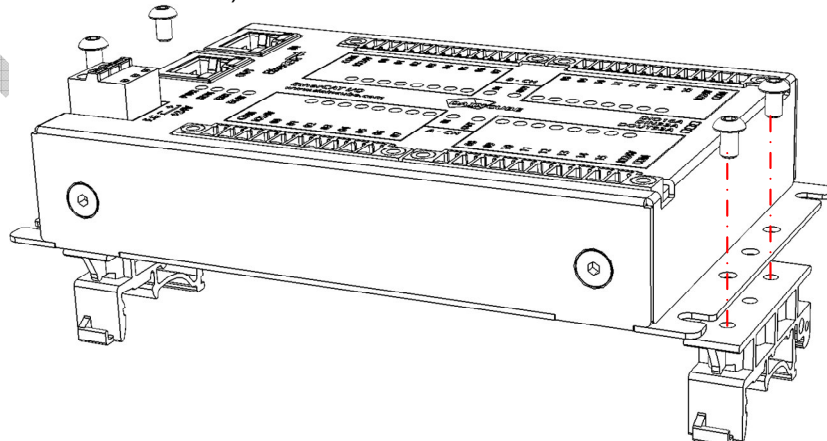
■ Mounting method using DIN rail adapter.

- Back side (vertical installation): DM-A35-35mm (Contact customer support)



[Figure 7.2] Din-rail adapter for Back Side

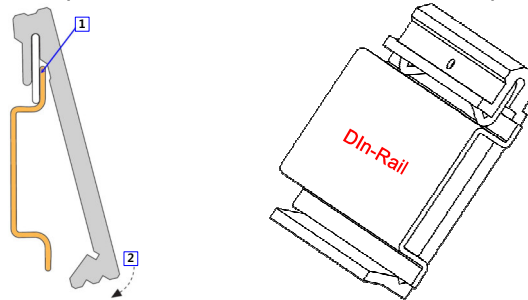
- For floor (horizontal installation): PHOENIX 1201578



[Figure 7.3] Din-rail adapter for horizontal use

➤ DM-A35-35mm

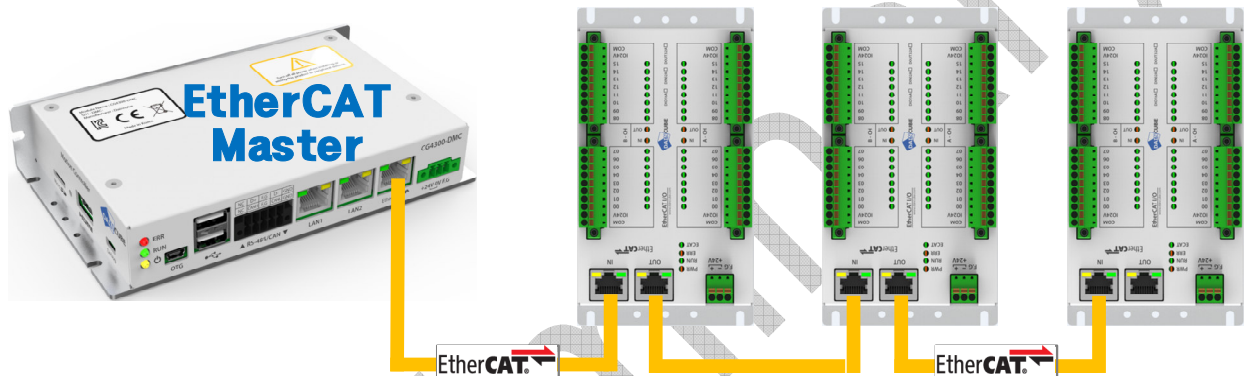
First, hang part 1 of the Dain-rail adapter on the Dain-rail. Pull down the part2 and walk.



[Figure 7.4] DM-A35-35mm

7.3. EtherCAT connection

EtherCAT supports a variety of connection topologies including tree, daisy chain, star, and ring. The simplest connection method is to connect using the "daisy-chain" topology as shown below.



[Figure 7.5] EtherCAT daisy-chain connection

■ Cautions when wiring the EtherCAT cable

- The Ethernet cable must be used the industrial EtherCAT dedicated cable.
- Securely attach the connector of the EtherCAT cable. It causes severe problem in case of a faulty.
- Make sure that the EtherCAT cable is at least 10 cm away from the power line or inductive noise.
- Never disconnect the EtherCAT cable during operation.

7.3.1. EtherCAT cable

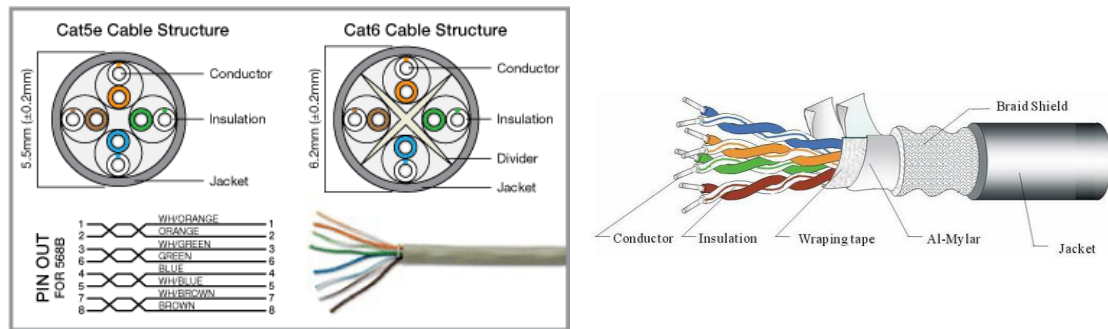
■ Recommended specification for EtherCAT cable

- Cable Minimum recommended: CAT.5e / 6 SFTP or higher
- Plug: STP CAT.5e RJ-45 8P8C (Metal Housing)

⚠ **Cautions:** Be sure to connect shield between cable and plug.

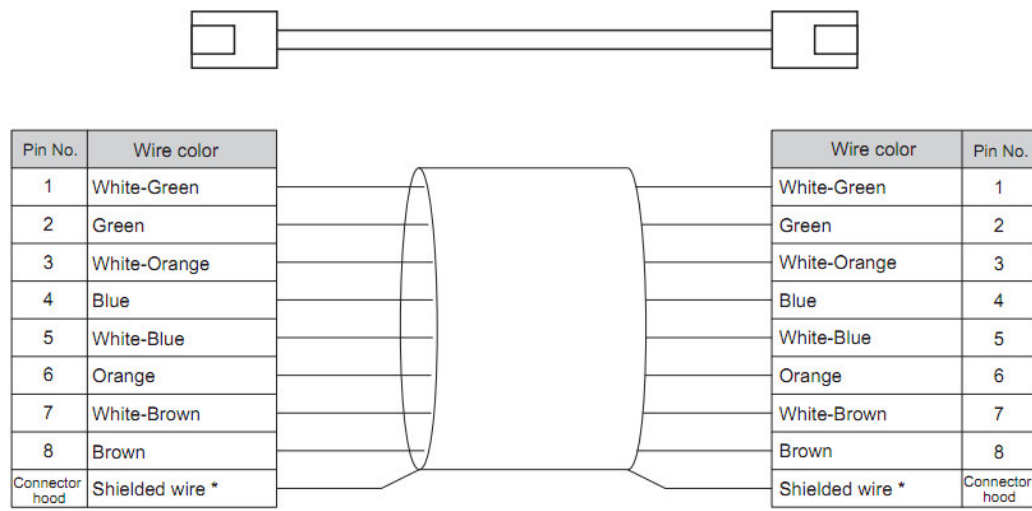


[Figure 7.6] STP CAT.5e Metal plug



[Figure 7.7] CAT5E-SFTP, Cat6-SFTP Cable

■ Straight through patch



* Connect the shielded wire of the cable to the connector hood at both ends of the cable.

[Figure 7.8] 1:1 Cable Pin Configuration

7.4. EtherCAT Process Data Object

This chapter describes the DIO-32A EtherCAT communication specifications.

7.4.1. DIO-32A-IO : 16-ch input/16-ch output(NPN)

■ Input 16

Index	Sub-Index	BitLen	Bit Position	Name
6000h	1	8	0 ~ 7	User Input 1 ~ 8
	2	8	0 ~ 7	User Input 9 ~ 16
	3	8	0 ~ 7	Reserved
	4	8	0 ~ 7	Reserved

■ Output 16

Index	Sub-Index	BitLen	Bit Position	Name
7000h	1	8	0 ~ 7	User Output 1 ~ 8
	2	8	0 ~ 7	User Output 9 ~ 16
	3	8	0 ~ 7	Reserved
	4	8	0 ~ 7	Reserved

7.4.2. DIO-32A-IN: 32-ch input

■ Input 32

Index	Sub-Index	BitLen	Bit Position	Name
6000h	1	8	0 ~ 7	User Input 1 ~ 8
	2	8	0 ~ 7	User Input 9 ~ 16
	3	8	0 ~ 7	User Input 17 ~ 24
	4	8	0 ~ 7	User Input 25 ~ 32

■ Output 0

Index	Sub-Index	BitLen	Bit Position	Name
7000h	1	8	0 ~ 7	Reserved
	2	8	0 ~ 7	Reserved
	3	8	0 ~ 7	Reserved
	4	8	0 ~ 7	Reserved

7.4.3. DIO-32A-OUT: 32-ch output (NPN)

■ Input 0

Index	Sub-Index	BitLen	Bit Position	Name
6000h	1	8	0 ~ 7	Reserved
	2	8	0 ~ 7	Reserved
	3	8	0 ~ 7	Reserved
	4	8	0 ~ 7	Reserved

■ Output 32

Index	Sub-Index	BitLen	Bit Position	Name
7000h	1	8	0 ~ 7	User Output 1 ~ 8
	2	8	0 ~ 7	User Output 9 ~ 16
	3	8	0 ~ 7	User Output 17 ~ 24
	4	8	0 ~ 7	User Output 25 ~ 32

7.5. Isolated Digital Input

- Digital Input module is composed of 8 Port units and supports both bidirectional inputs.
- Supports both NPN and PNP connections.

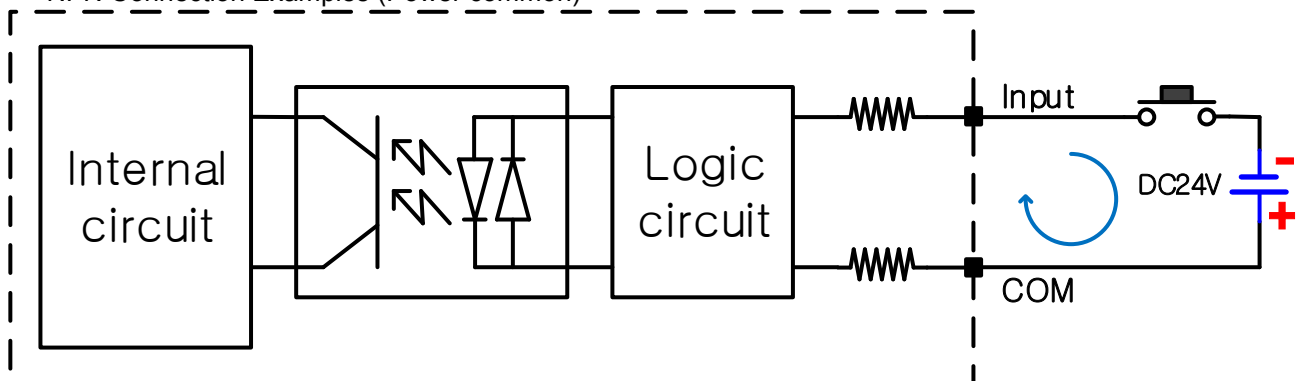
⚠ Cautions: Input module does not use IO24V terminal.

DIO-32A supports both PNP and NPN input methods.

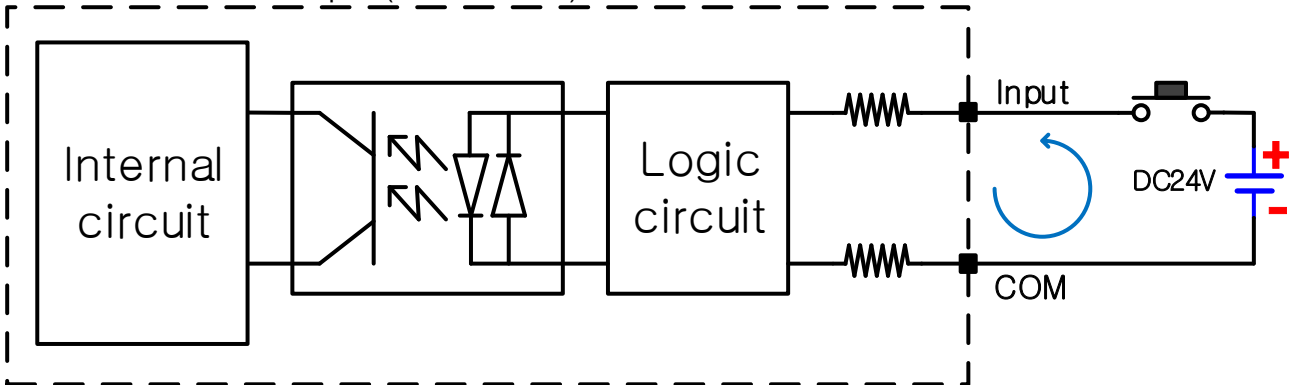
Connect to GND common or POWER common according to PNP and NPN method.

The sensor type determines whether to use PNP (COM-) or NPN (COM +).

■ NPN Connection Examples (Power common)



■ PNP Connection Examples (GND Common)



7.6. Isolated Digital Output

Each output port is composed of NPN type 16Port unit.

The maximum sink current per output is 350mA.

If a current higher than the allowable current is required, use an external part such as a relay.

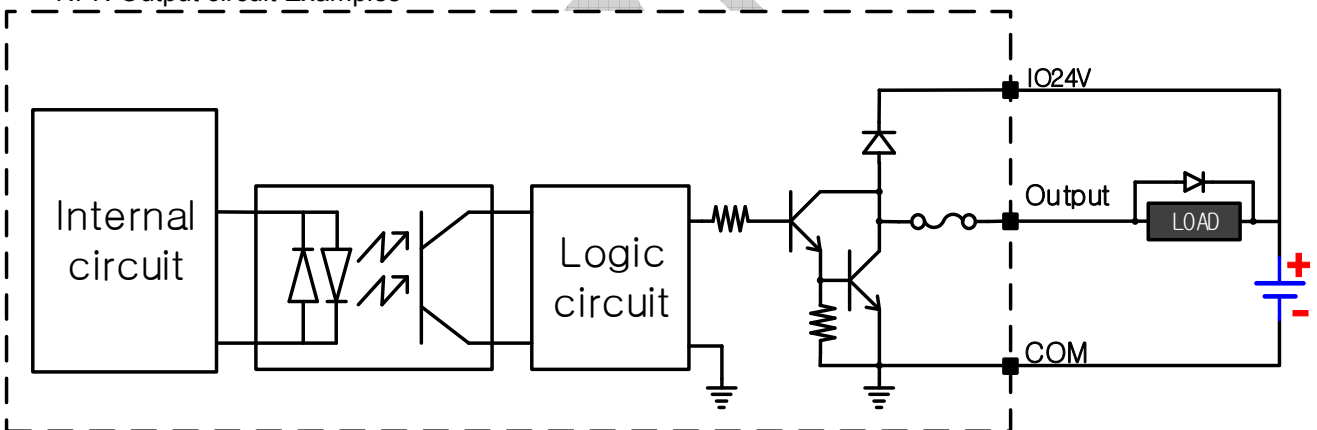
The output port is by default the output latch type.

Keep last output when communication connection is lost.

NOTE: The output must be configured as a common GND. Be sure to connect GND to COM terminal.

Connect the output power to the IO24V terminal.

■ NPN Output circuit Examples



8. Wiring

⚠ POINTS OF CAUTION

- Do not install cables (power supply, input, communication) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.


8.1. Power

- The input power source should be a clean source with a voltage variation rate within $\pm 5\%$.
- Power lines are twisted as densely as possible, and should be connected as short as possible.

- Please use power with less Noise between lines and ground.
- If Noise is more or larger, use an isolation transformer or Noise Filter.
- Power-line should be used the thickest (2mm or more). So that no voltage fluctuations.
- Separate the motor wiring and the DC power and signal line wiring as far as possible. Please drop as possible over 100mm.
- Please separate the DC24V line from the motor line.
- Lightning-proof Surge absorber should be used to safety from such as lightning strikes and surges. Install the surge protector.

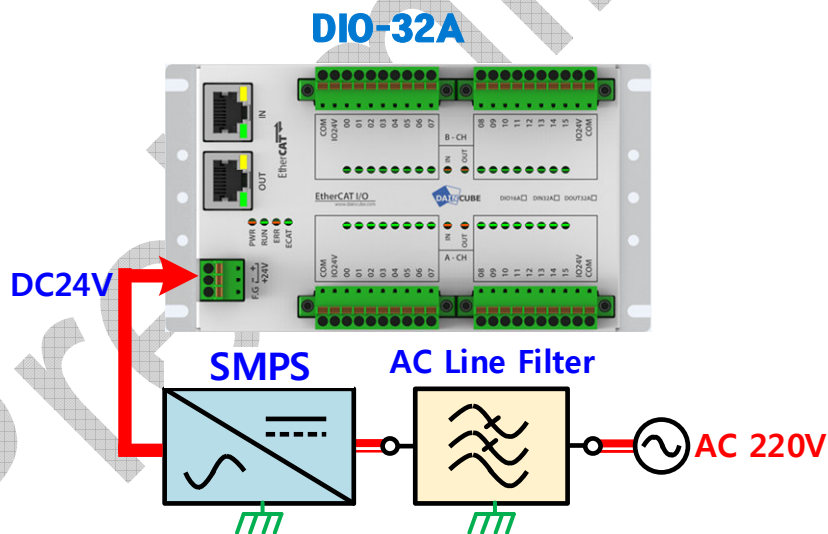


[Figure 8-1] Surge absorber

 **Note:** Surge absorber should be selected to allow the voltage is higher than the maximum input voltage.

8.2. Noise Filter

- EMI: Electro Magnetic Interference
- EMS: Electro Magnetic Susceptibility





[Figure 8-2] Apply a noise filter

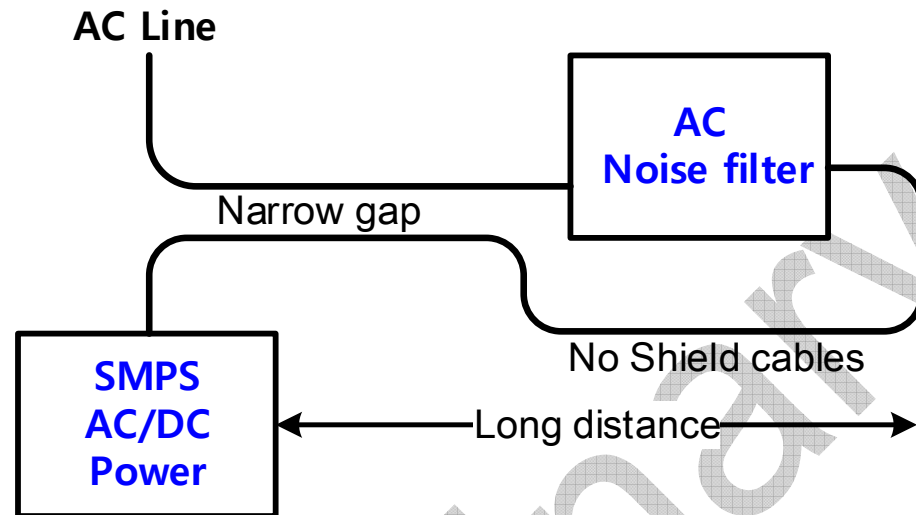
- Noise Filter must be installed on AC220V line. Motor noise so that it does not directly affect.
- Electronic components are caused the problems such as short lifetime or a deterioration or malfunction because of intense noise.



[Figure 8-3] AC noise filter

 Warning	Make sure the AC filter capacitor safety (PE) ground and connected correctly. You can avoid injury and / or damage to the equipment.
---	---

 **Note:** The filter is an essential element of protection against electromagnetic disturbance. Filters prevent emitted interference acting on the power line and vice versa.




[Figure 8-4] Noise filter incorrect installation

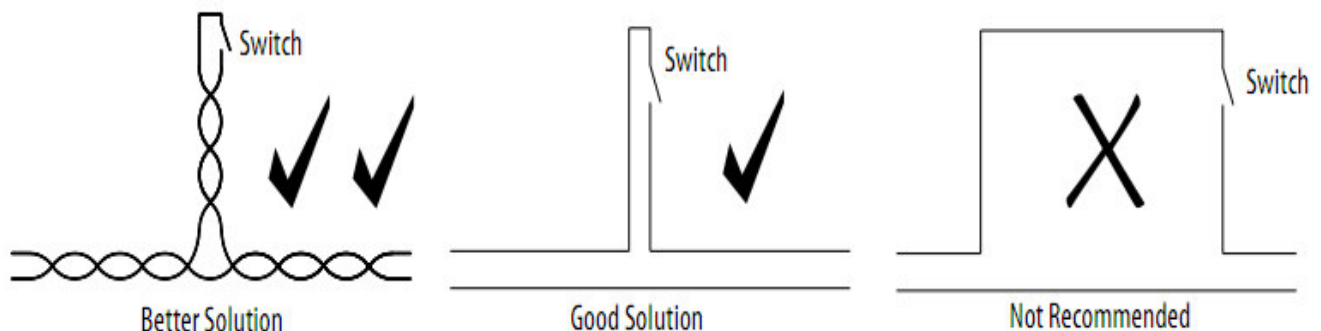
- The supply cable to the noise filter and outgoing cables from the noise filter must not run parallel to each other (see illustration):

8.3. Method wiring


- (1) Signal and communication cables is placing a high-voltage cable or power line over a distance of 10cm, please not affected by the noise and magnetic field
- (2) If possible use separate ducts for power cables and control lines.
- (3) All cable should be the Shield cable.

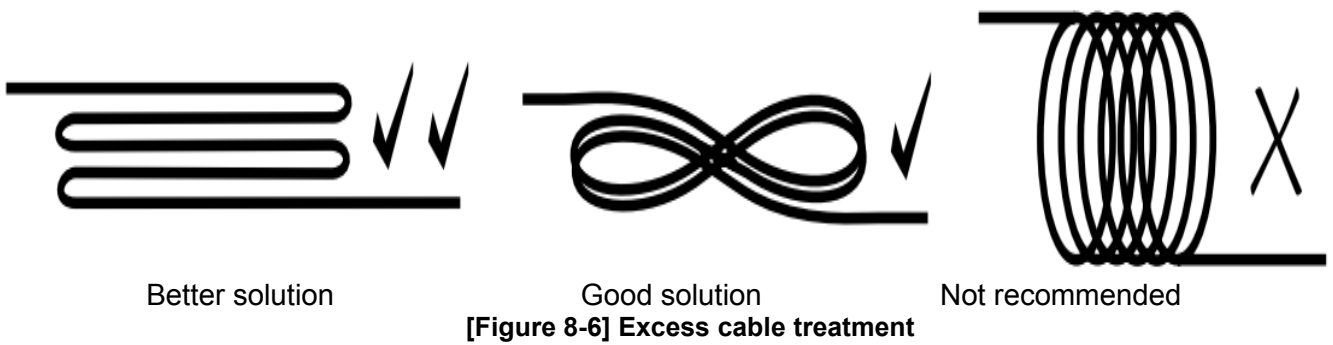
 Note	According to the NFPA79 approved by the United States, when the shielded wire is not used for wiring between a servo amplifier and a servo motor, the wiring must be insulated from wiring of other control or signal circuits. (Example: 100 mm or more for 20 A or less)
--	--

(4) Minimizing the loops

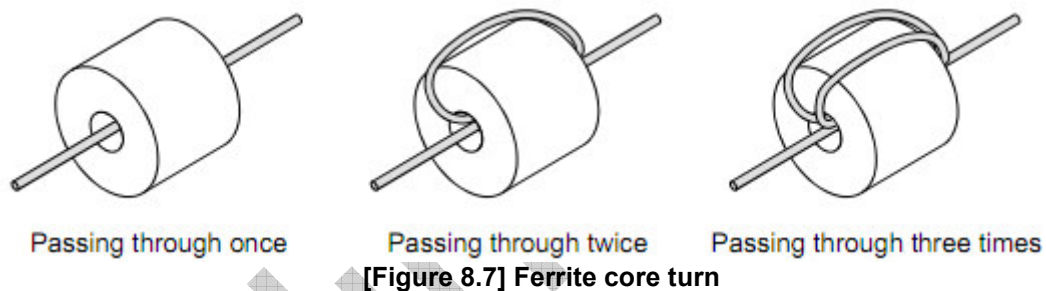


[Figure 8-5] Avoiding loops in wiring designs

 **Note:** Wires that form a loop make an efficient antenna. Run feed and return wires together rather than allowing a loop to form. Twisting the pair further reduces the antennae effects and can significantly reduce EMI.

(5) Excess cable**(6) Cabling instructions:**

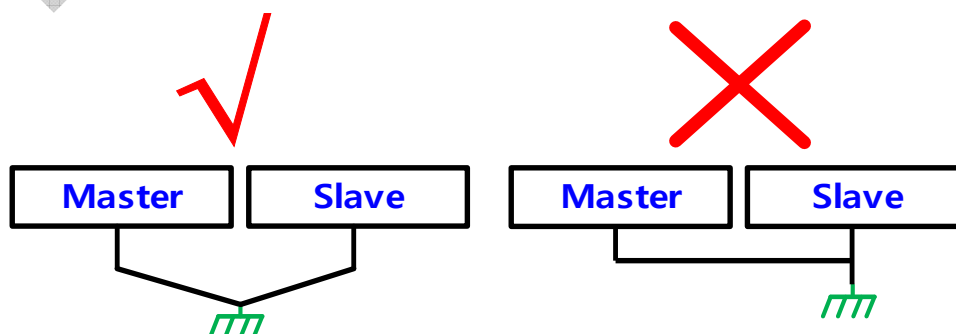
- Do not coil excess cable of different types (for example, motor power and feedback) together. An efficient transformer is formed at HF.
- Cable lengths should ideally be trimmed to fit the application.
- If excess cable cannot be trimmed, it should be laid in an 'S' or figure eight pattern (refer to the figure below).

(7) Ferrite core**■ Ferrite core turn**

 **Note:** Using ferrite cores, increase the maximum number of turns around the ferrite for optimum results.

8.4. Earthing

- The F.G pin in a circle Connector must be wired to the F.G terminal of the SMPS.
- Earth pin on LAN1 and LAN2 is a signal Shield.
- Earth wire should be used more than 2 mm.
- The length of the ground line is as short as possible.
- AC Power Earth and control system Ground are must be isolated.

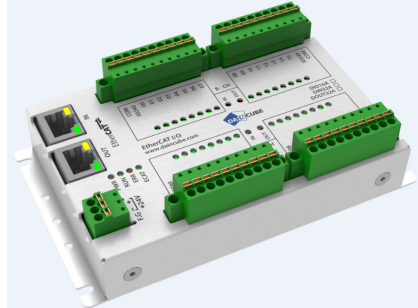
**[Figure 8-8] Earth wiring methods**

9. Package



9.1.Packing list

The package configuration of DIO-32A is shown below.

■ Basic parts

Item	Photo	Description	Quantity
DIO-32A-IN DIO-32A-OUT DIO-32A-IO		Basic configuration ✓ Main part	1

■ Option and accessories Parts

Item	photo	Description	Quantity
DIN Rail adapters PHOENIX 1201578		*Option	2
DIN Rail adapters DM-A35-35mm		*Option	1

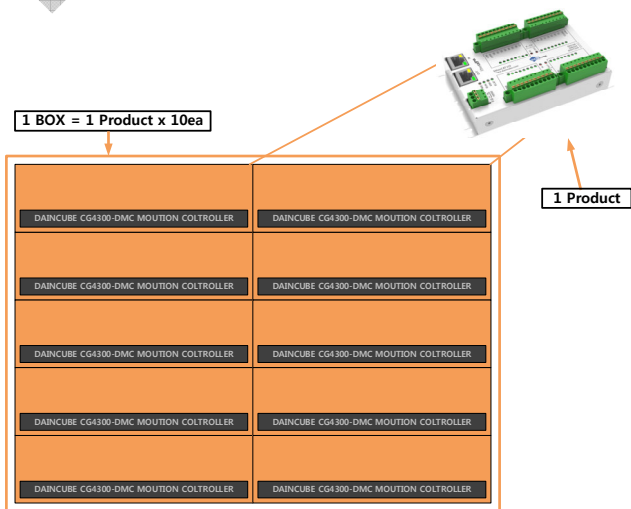
[Table 9-1] Packing list

 **Note:** Please make sure there are no missing parts of the items listed in the checklist above

Note: Available for individual purchase by package

9.2. Packaging & Labels

■ Packing product: 1Box = 1Product x 10ea



[Figure 9-1] Carton box

10. General care and maintenance

Your device is a product of superior design and craftsmanship and should be treated with care.



The following suggestions will help you.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage cable, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not attempt to open the device.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

10.1. Cleaning

For cleaning the DIO-32A, use a soft cloth dampened with a small amount of water or a mild cleaning agent.

11. EC directives and standards

The list of safety standards on the robot. This section does not cover the safety design methods and safety equipment installation.

11.1. EC directives

2006/42/EC Directive for the safety of machinery with the application MD 2006/42/EC
 2004/108/EC EMC directive
 2011/65/EC RoHS directive

11.2. Standards

EN ISO 12100: Safety of machinery - General principles for design – Risk assessment and risk reduction
 EN ISO 13849-1: Safety of machinery, safety related parts of control systems
 -Part 1: General principles for design
 EN ISO 13850: Safety of machinery - Emergency stop - Principles for design
 EN ISO 10218-1: Robots for industrial environments - Safety requirements -Part1 Robot
 EN ISO 9787: Robots and robotic devices -- Coordinate systems and motion nomenclatures
 EN ISO 9283: Manipulating industrial robots, performance criteria, and related test methods
 EN ISO 13732-1: Ergonomics of the thermal environment - Part 1

EN 61000-6-4(2007+A1:2011): Terminal disturbance voltage, Radiated disturbance
 EN 61000-3-2:2014: Harmonic Distortion
 EN 61000-3-3:2013: Voltage fluctuations & flicker
 EN 61000-6-2:2005: Include below test types
 EN 61000-4-2:2009: Electrostatic discharge
 EN 61000-4-3:2006 +A1:2008+A2:2010: Radiated, radio-frequency, electromagnetic field

EN 61000-4-4:2004 +A1:2010: Electrical fast transient / burst
 EN 61000-4-5:2006: Surge
 EN 61000-4-6:2009: Conducted disturbances, induced by radio-frequency fields
 EN 61000-4-8:2010: Power frequency magnetic field
 EN 61000-4-11:2004: Voltage dips, short interruptions and voltage variations

Korea Standard

KN 61000-6-3 : Conducted tests (mains port), electromagnetic conduction test (communication ports)
 KN 14-1 : Discontinuous disturbance test
 KN 61000-6-3 : Electromagnetic radiation test
 KN 61000-6-1, KN 61000-4-2: Electrostatic discharge immunity test
 KN 61000-6-1, KN 61000-4-3: Radiated RF electromagnetic field immunity test
 KN 61000-6-1, KN 61000-4-4: EFT/Burst immunity test
 KN 61000-6-1, KN 61000-4-5: Surge immunity test
 KN 61000-6-1, KN 61000-4-6: Conducted immunity test
 KN 61000-6-1, KN 61000-4-8: Power frequency magnetic field immunity test
 KN 61000-6-1, KN 61000-4-11: Voltage drop and momentary power failure immunity test

12. Reference list

A list of installation related reference materials.
Please refer to the documents below for more details.

- Mitsubishi -EMC Installation Guidelines for General-Purpose AC Servo.
- YASKAWA: AC Servo Drive Technical Manual
- LS Industrial Systems: AC Servo Drive user's Manual
- Control Techniques: Motor Drives Installer's Guide.
- DELTA: EMC Standard Installation Guide for AC Motor Drives.
- Electrical design method considering EMC
- Rockwell Automation : Servo Drive Installation



Check the local regulations for disposal of electronic products.

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste.

Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



We hereby declare that the product is in compliance with the essential requirements and other relevant provisions of European Directive 2014/30/EC (The Electromagnetic Compatibility Directive).



We hereby declare that the product is in compliance with the essential requirements and other relevant provisions of Korea Directive (EMC standards)
 Standard: Information Communication equipment such notice with regard to the assignment and management of the laboratory