PLANET IECS-1116-DI Industrial EtherCAT Slave I-O Module with Isolated 16-ch Digital Input-Output User Manual

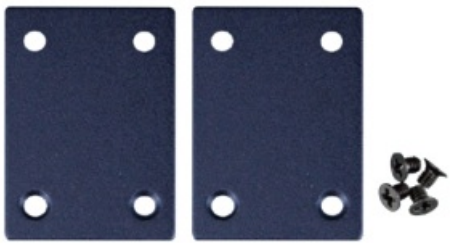
Industrial EtherCAT Slave I/O Module
with Isolated 16-ch Digital Input/Output

IECS-1116-DI/IECS-1116-DO
User's Manual

Contents

Package Contents

Thank you for purchasing PLANET Industrial EtherCAT Slave I/O Module with Isolated 16-ch Digital Input/Output, IECS-1116-DI or IECS- 1116-DO. In the following sections, the term “Industrial EtherCAT Slave I/O Module” means the IECS-1116-DO or IECS-1116-DO. Open the box of the Industrial EtherCAT Slave I/O Module and carefully unpack it. The box should contain the following items:

Industrial EtherCAT Slave I/O Module x 1	User’s Manual x 1
	
Wall-mount Kit	
	

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

Product Features

- Built-in isolated 16 digital inputs (IECS-1116-DI)
- Built-in isolated 16 digital outputs (IECS-1116-DO)
- 2 x RJ45 bus interface
- LED indicators for the input status
- Removable terminal block connector
- 9 ~ 48 VDC wide input voltage range
- 700mA/ch high output current (IECS-1116-DO)
- Supports EtherCAT Distributed Clock (DC) mode and SyncManager mode
- EtherCAT conformance test tool verified

Product Specifications

Model		**IECS-1116-DI**	**IECS-1116-DO**
Digital Input			
Channels		16	—
Input Type		Wet (sink/source) / Dry (source)	—
Wet Contact	ON Voltage Level	3.5~50V	—
	OFF Voltage Level	4V max	—
Dry Contact	ON Voltage Level	Close to GND	—
	OFF Voltage Level	Open	—
Photo Isolation		3750V DC	—
Digital Output			
Channels		—	16
Output Type		—	Open collector (sink)
Load Voltage		—	3.5~50V
Max. Load Current		—	700mA per channel
Photo Isolation		—	3750 vrms
Communication Interface			
Connector		2 x RJ45	
Protocol		EtherCAT	

Distance between Stations	Max. 100m (100BASE-TX)
Data Transfer Medium	Ethernet/EtherCAT cable (min. cat5), shielded
Power	
Input Voltage Range	9~48V DC
Power Consumption	4W max.
Mechanical	
Dimensions (W x D x H)	32 x 87 x 135 mm
Installation	DIN-rail mounting
Case Material	IP40 metal
Environment	
Operating Temperature	-40~75 degrees C
Storage Temperature	-40~75 degrees C
Relative Humidity	5~95% (non-condensing)

Hardware Introduction

4.1 Three-View Diagram

The three-view diagram of the Industrial EtherCAT slave I/O module consists of two 10/100BASE-TX RJ45 ports, one removable 3-pin power terminal block and one removable 16-pin I/O terminal block. The LED indicators are also located on the front panel.

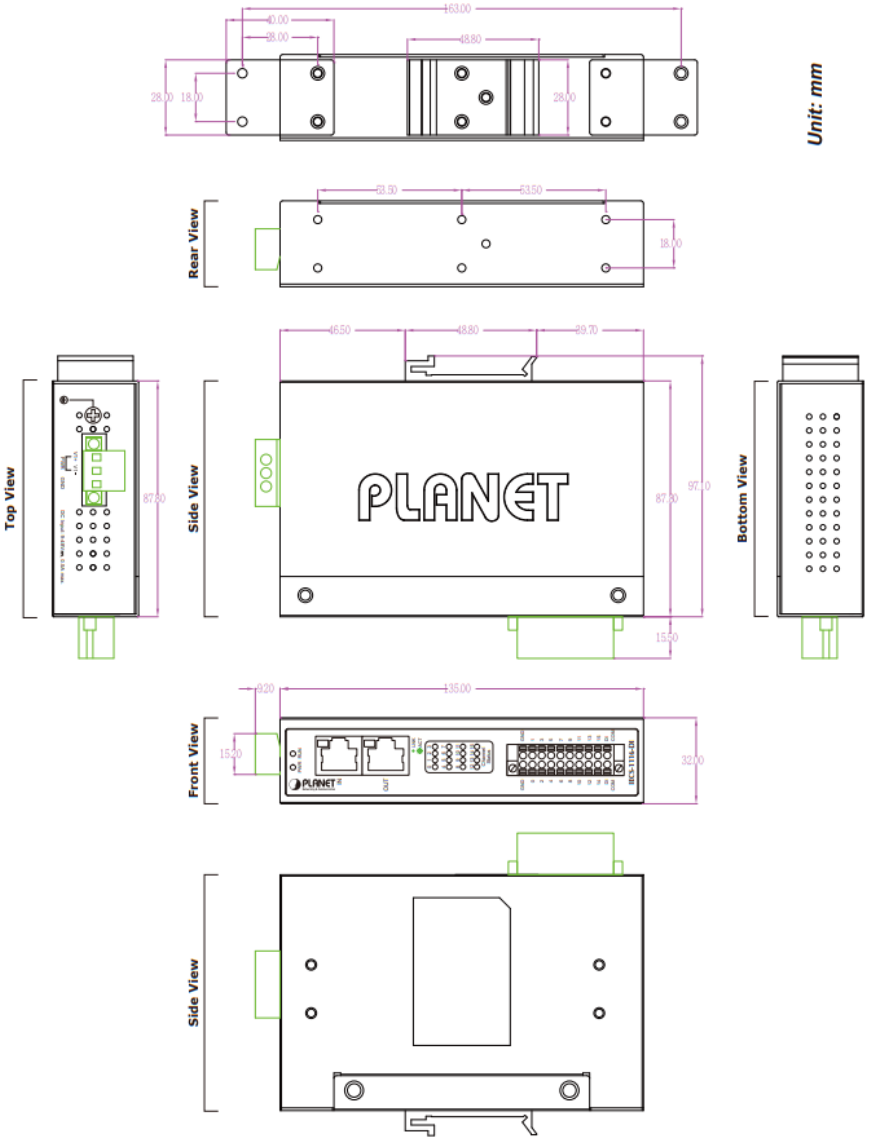


Figure 1: IECS-1116-DI/IECS-1116-DO Three-View Diagram

Front View

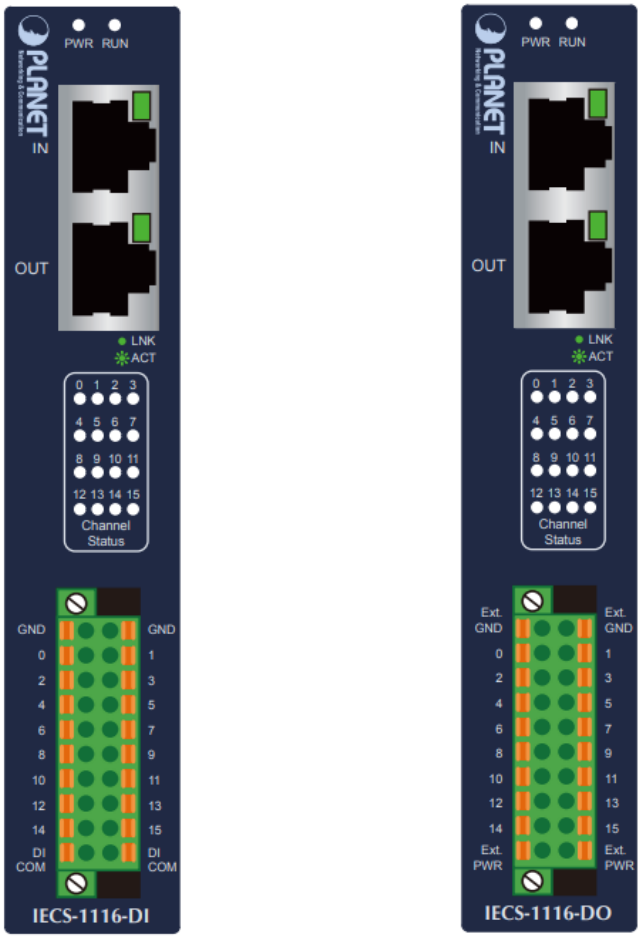


Figure 2: IECS-1116-DI/IECS-1116-DO Front View

LED Definition:
System

LED	Color	Function	
PWR	Green	Light	Power is activated.
		Off	Power is not activated.
Running	Green	Light	The device is in the state of operation.
		Single Flash	The device is in the state of operation without risk.
		Blinking	The device is ready to be operated.
		Off	The device is in the initialization mode.

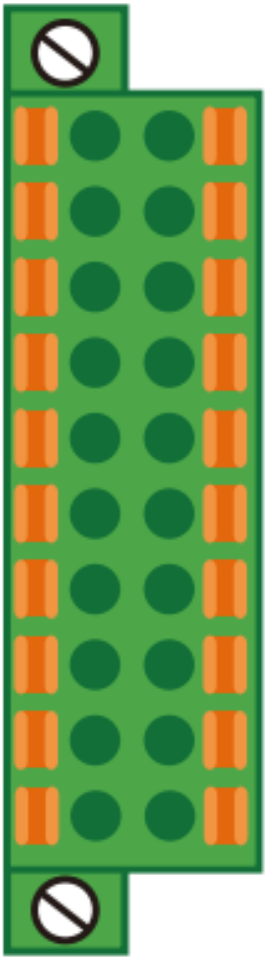
Per 10/100TX RJ45 Port (Port Input/Port Output)

LED	Color	Function	
LNK/ ACT	Green	Light	Indicating that the port is linked up.
		Blinking	Indicating that the module is actively sending or receiving data over that port.
		Off	Indicating that the port is linked down.

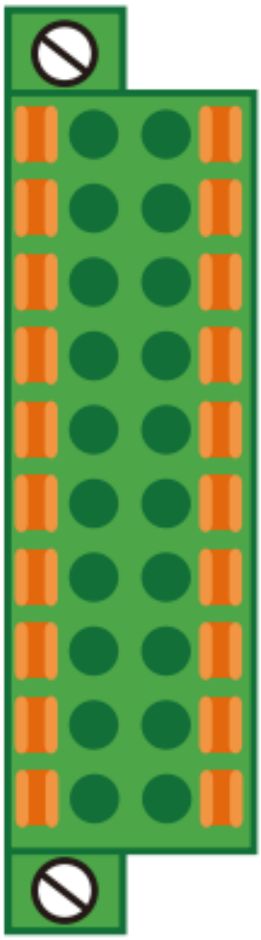
Per Digital Input/Output LED

LED	Color	Function	
DI	Green	Light	Input voltage is higher than the upper switching threshold voltage.
		Blinking	Indicating network packet delivery.
		Off	Input voltage is below the lower switching threshold voltage.
DO	Green	Light	Digital output status is “On”.
		Blinking	Indicating network packet delivery.
		Off	Digital output status is “Off”.

I/O Pin Assignment: IECS-1116-DI

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	GND		GND	2
3	DI0		DI1	4
5	DI2		DI3	6
7	DI4		DI5	8
9	DI6		DI7	10
11	DI8		DI9	12
13	DI10		DI11	14
15	DI12		DI13	16
17	DI14		DI15	18
19	DI.COM		DI.COM	20

IECS-1116-DO

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	Ext. GND		Ext. GND	2
3	DO0		DO1	4
5	DO2		DO3	6
7	DO4		DO5	8
9	DO6		DO7	10
11	DO8		DO9	12
13	DO10		DO11	14
15	DO12		DO13	16
17	DO14		DO15	18
19	Ext. PWR		Ext. PWR	20

Top View

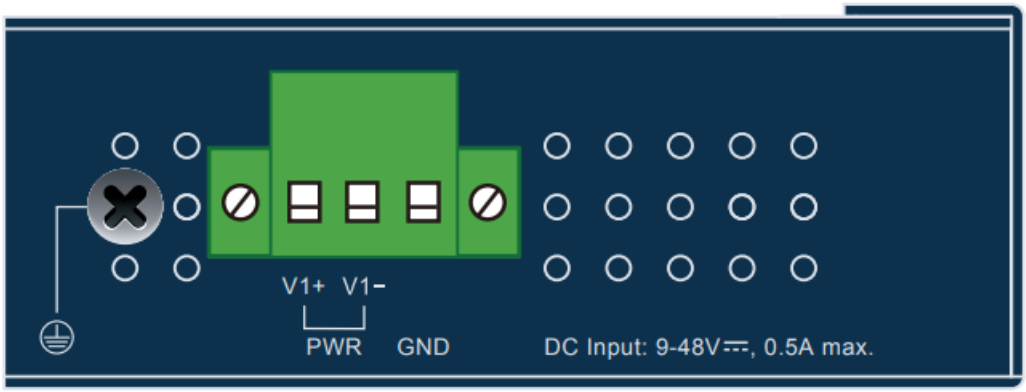
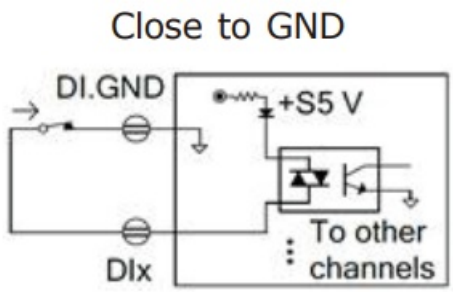
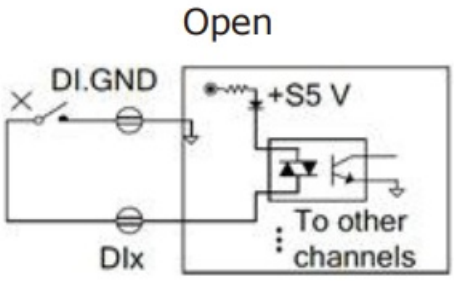
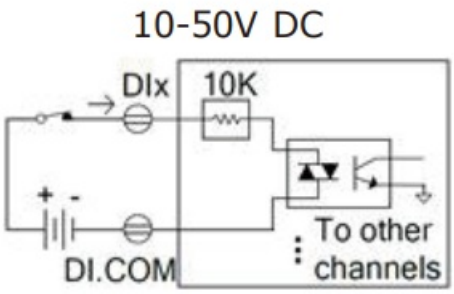
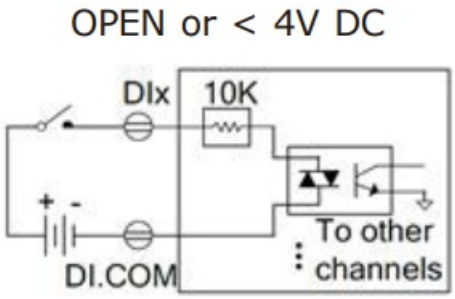
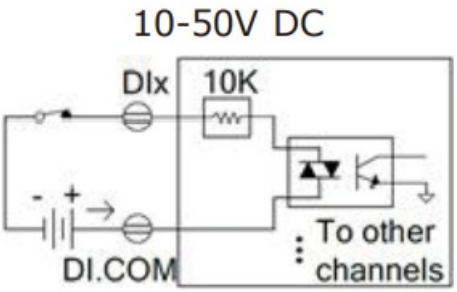
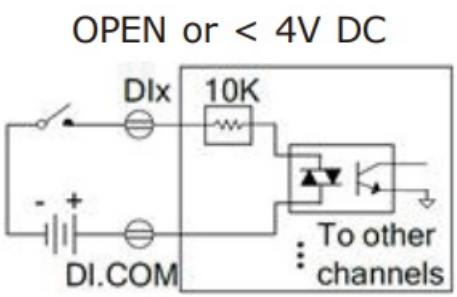
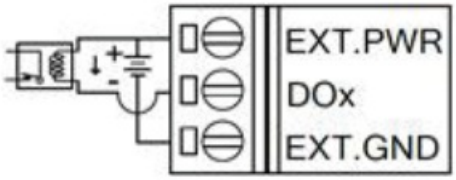
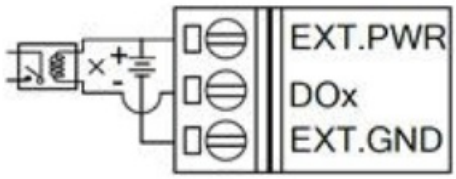
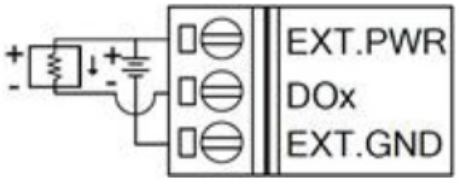
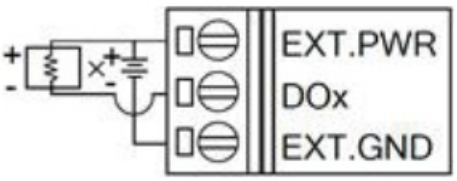


Figure 3: IECS-1116-DI/IECS-116-DO Top View

4.2 Wiring Digital and Digital Connections

Digital Input Wiring

Digital Input/ Counter	Readback as 1	Readback as 0
Dry Contact		
Sink		
Source		

Output Type	ON State Readback as 1	OFF State Readback as 0
Driver Relay		
Resistance Load		

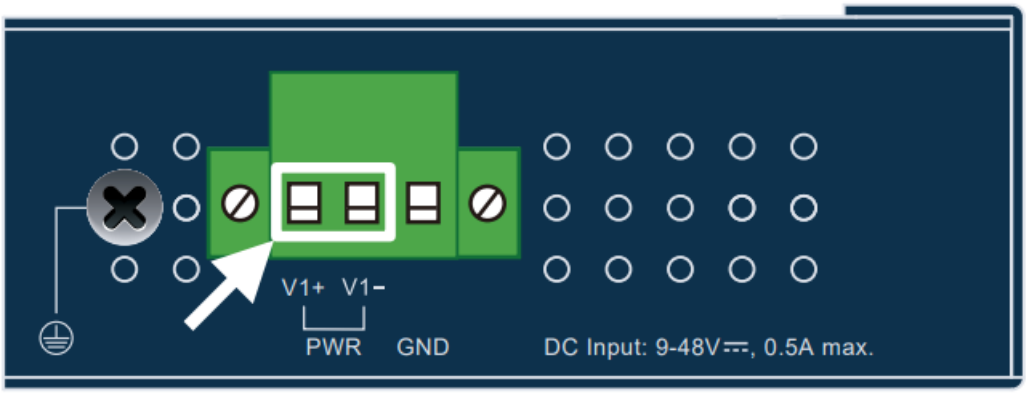
4.3 Wiring the Power Inputs

The 3-contact terminal block connector on the top panel of Industrial EtherCAT slave I/O module is used for one

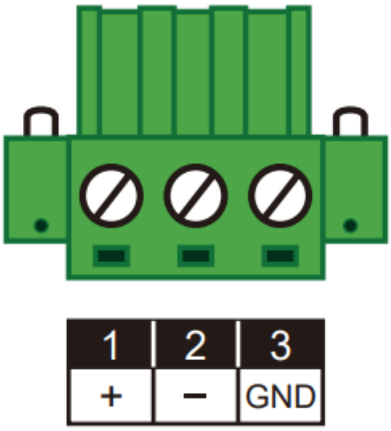
DC power input. Please follow the steps below to insert the power wire.

Note	When performing any of the procedures like inserting the wires or tightening the wire-clamp scre ws, make sure the power is OFF to prevent from getting an electric shock.

1. Insert positive and negative DC power wires into contacts 1 and 2 for POWER.



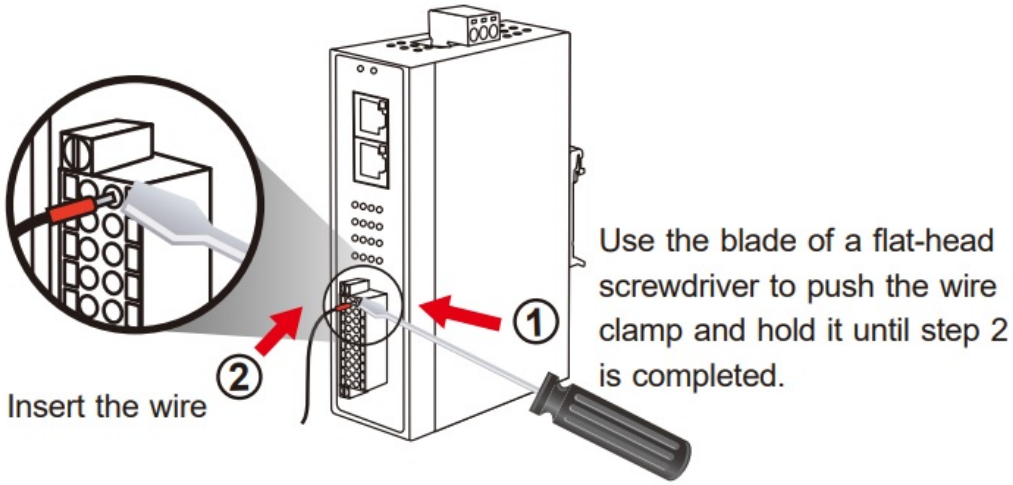
2. Tighten the wire-clamp screws for preventing the wires from loosening.



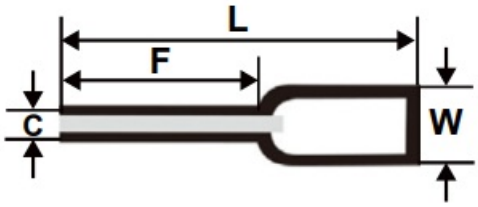
Note	1. The DC power input range is 9-48V DC. 2. The device provides input voltage polarity protection.

4.4 Wiring the Connector

- A tip for connecting the wire to the I/O connector

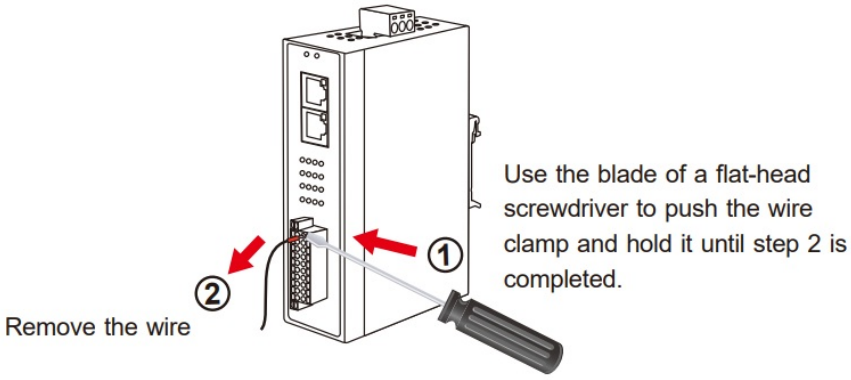


- Insulated Terminals Dimensions



Dimensions (Unit: mm)				
Item No.	F	L	C	W
CE007512	12.0	18.0	1.2	2.8

- A tip for removing the wire from the I/O connector



Installation

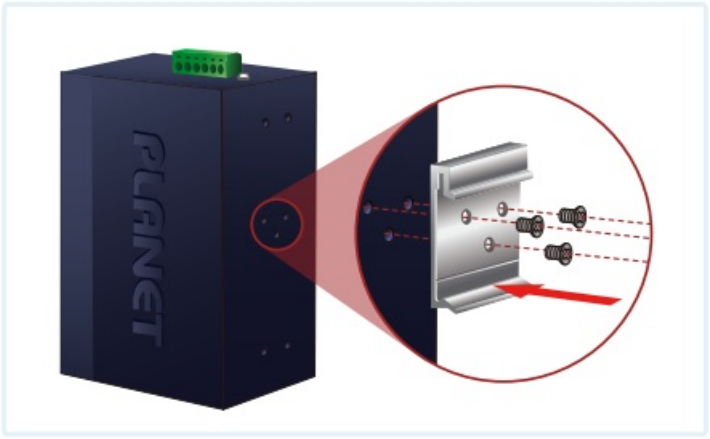
This section describes the functionalities of the Industrial EtherCAT slave I/O module's components and guides you to installing it on the DIN rail and wall. Please read this chapter completely before continuing.

Note	In the installation steps below, this manual uses PLANET IGS-801 8-port Industrial Gigabit Switch as an example. The steps for PLANET Industrial Slim-type Switch, Industrial Media/Serial Converter and Industrial PoE devices are similar.

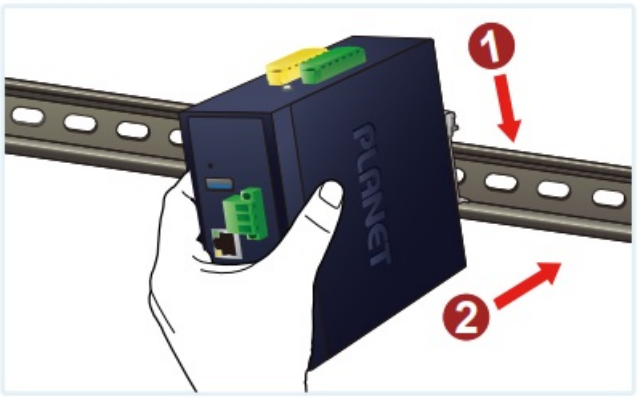
5.1 DIN-rail Mounting Installation

Refer to the following steps to install the Industrial EtherCAT Slave I/O Module on the DIN rail.

Step 1: The DIN-rail bracket is already screwed on the module as shown in the red circle.

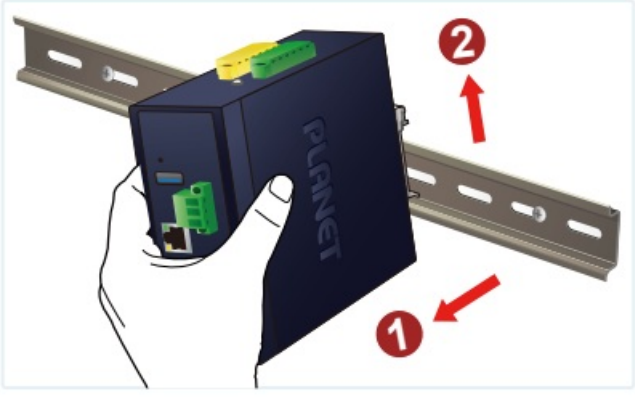


Step 2: Lightly insert the bottom of the module into the track.



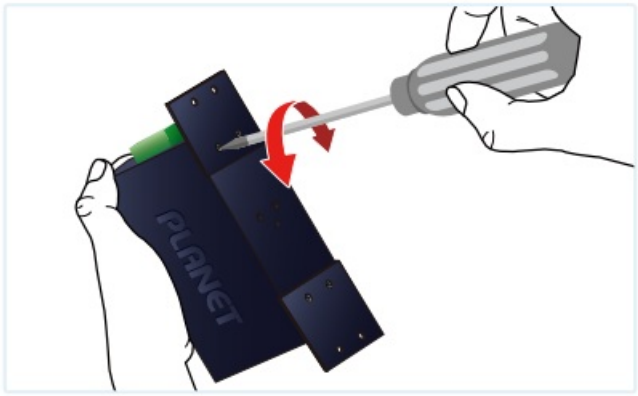
Step 3: Make sure the bracket is tightly secured on the DIN-rail track.

Step 4: To remove the module from the track, lightly pull out its bottom.

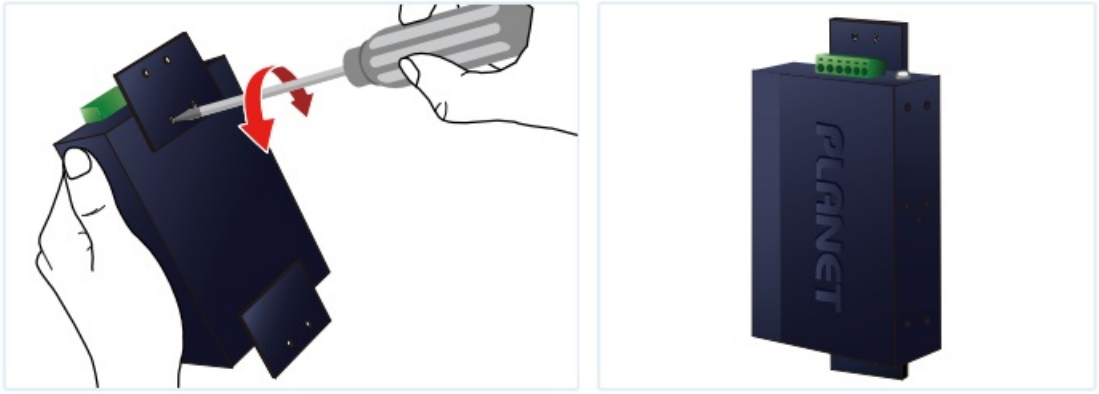


5.2 Wall-mount Plate Mounting

To install the Industrial EtherCAT slave I/O module on the wall, follow the instructions described below.
Step 1: Remove the DIN-rail bracket from the Industrial EtherCAT slave I/O module by loosening the screws.
Step 2: Screw one piece of the wall-mount plate on one end of the rear panel of the Industrial EtherCAT slave I/O module, and the other plate on the other end.



Step 3: And then screw the module on the wall to complete the installation.
Step 4: To remove the module from the wall, reverse the steps.
5.3 Side Wall-mount Plate Mounting



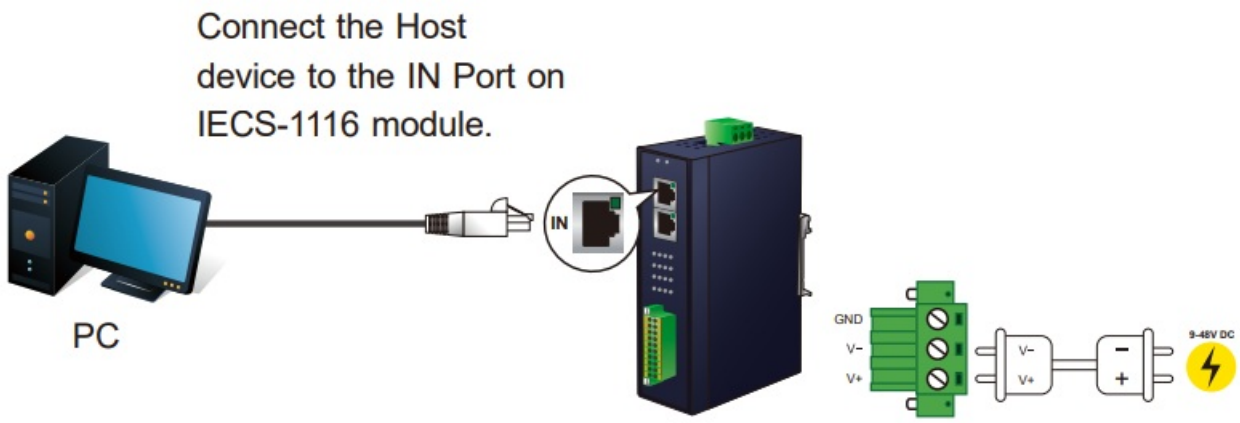
Caution You must use the screws supplied with the wall mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

Getting Started

This chapter provides a basic overview of how to configure and operate your IECS-1116 series.
6.1 Connecting the Power and the Host PC
Step 1: Connect both the IN port of the IECS-1116 Module and RJ45 Ethernet port of Host PC.
Ensure that the network settings on the Host PC have been correctly configured and are functioning normally. Ensure that the Windows firewall and any anti-virus firewall is properly configured to allow incoming connections; if not, temporarily disable these functions.

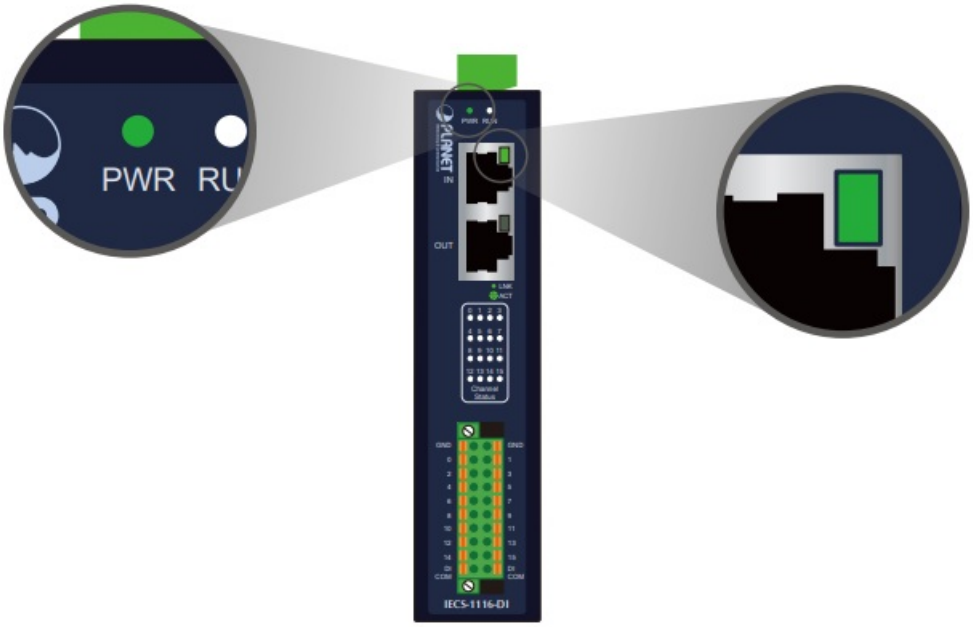
Note	Attaching an ESC (EtherCAT Slave Controller) directly to an office network will result in network fl ooding, since the ESC will reflect any frame – especially broadcast frames – back into the networ k (broadcast storm).

Step 2: Apply power to the IECS-1116 module.



Connect the V+ pin to positive terminal on a 9-48V DC power supply, and connect the V- pin to the negative terminal.

Step 3: Verify the “PWR”LED indicator on the IECS-1116 module is Green; “IN”LED indicator is Green.



6.2 Configuration and Operation

Beckhoff TwinCAT 3.x is the most commonly used EtherCAT Master software to operate the IECS-1116 module. Click on the link below to download Beckhoff TwinCAT 3.x: https://www.beckhoff.com/english.asp?download/default.htm

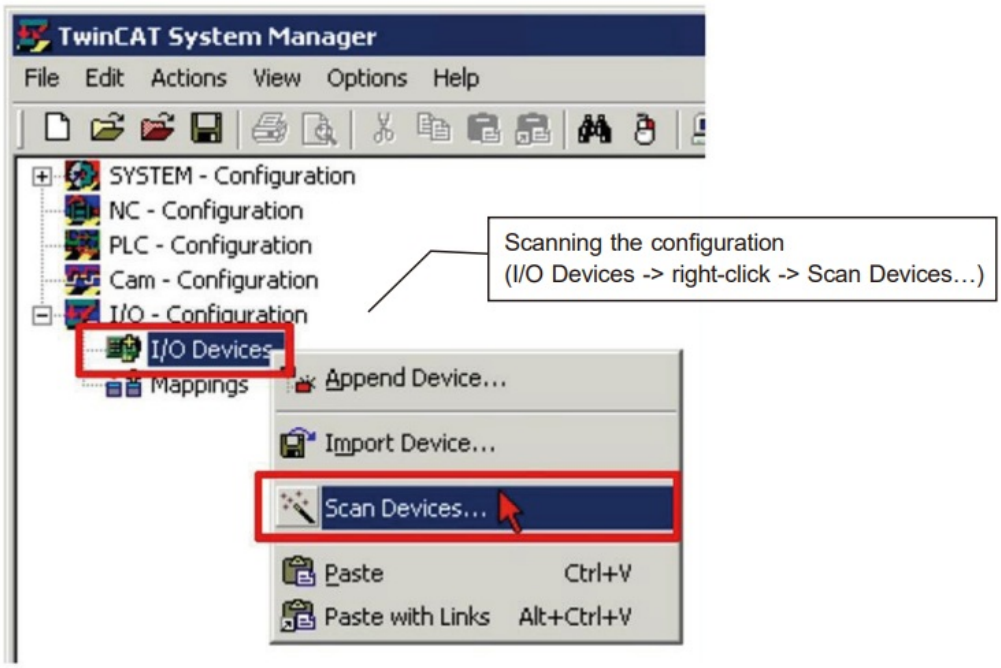
Inserting into the EtherCAT network

Note Installation of the latest XML device description (ESI). Make sure to use the latest installation description to install the latest XML device. This can be downloaded from PLANET website (**https://www.planet.com.tw/en/support/faq?method=keyword&keyword=IECS-1116**) and check the online FAQs for the installation of the XML device.

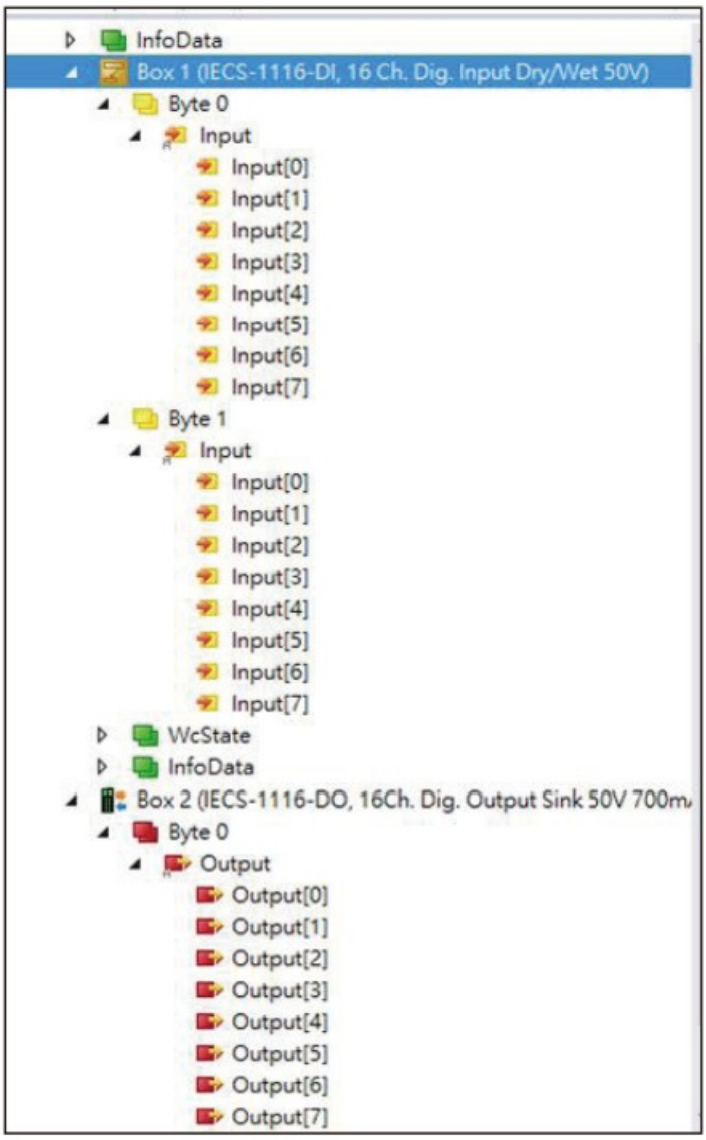
https://www.planet.com.tw/en/support/faq?method=keyword&keyword=IECS-1116

Step 1: Automatic Scanning.

- The EtherCAT system must be in the safe, de-energized state before the IECS-1116 module is connected to EtherCAT network.
- Switch on the operating voltage, open the TwinCAT System Managed (Config mode), and scan the devices as shown in the print screen instructions below. Acknowledge all dialogs with “OK”, so that the configuration is in the “FreeRun” mode.



Step 2: Configuration via TwinCAT
In the left-hand window of the TwinCAT System Manager, click on the brand of the EtherCAT Box you wish to configure (IECS-1116-DI/IECS- 1116-DO in this example). Click Dix or Dox to get and configure state.



Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource on PLANET web site first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQs:

http://www.planet.com.tw/en/support/faq.php

Support team mail address: support@planet.com.tw

Documents / Resources

	**PLANET IECS-1116-DI Industrial EtherCAT Slave I-O Module with Isolated 16-ch Digital Input-Output** [pdf] User Manual IECS-1116-DI, IECS-1116-DO, IECS-1116-DI Industrial EtherCAT Slave I-O Module with Isolated 16-ch Digital Input-Output, IECS-1116-DI, Industrial EtherCAT Slave I-O Module with Isolated 16-ch Digital Input-Output, Industrial EtherCAT Slave I-O Module, EtherCAT Slave I-O Module, Slave I-O Module, I-O Module, Module

References

- FAQ - PLANET Technology