AMAX-4800 Series
Industrial EtherCAT Slave Modules
Startup Manual

Packing List

Before installation, please check that the following items are included in the shipment:

1. AMAX-4800 module
2. Terminal blocks (see Specifications for more details)
3. Startup manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

User Manual

For more detailed information about this product, download the latest user manual from the Advantech website.

EtherCAT Slave Information File

The AMAX-4800 ESI file can be downloaded from the Advantech website at http://r.advantech.com/q5.

Every EtherCAT slave information (ESI) file contains the configuration data of an EtherCAT slave module. Various EtherCAT communication settings can be defined from the ESI files of connected slave units as well the network connection information. ESI files are saved to the configuration tool to provide network configuration data. Subsequently, the network configuration data can be downloaded to the EtherCAT master unit for configuring an EtherCAT network.

For more information on this and other Advantech products, please visit our website at

http://www.advantech.com

http://www.advantech.com/eplatform

For technical support and service, please visit our support website at

http://support.advantech.com

This manual is for the AMAX-4800 series modules.

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Overview

The AMAX-4800 series comprises industrial EtherCAT slave modules equipped with the EtherCAT protocol. The modules' compact size and integrated DIN rail mount kit ensure easy installation in cabinets. The modules also feature euro-type pluggable terminal blocks and LED indicators that facilitate system setup and maintenance. All modules are equipped with an isolation circuit that ensures current protection for demanding industrial applications.

Specifications

General

- **Connectors**
  - 10-pin terminal block (3.81 mm) *N
    (AMAX-4830/33/34/50 N = 4, AMAX-4855/56 N = 8, AMAX-4860 N = 3, AMAX-4862 N = 6)
  - 3-pin screw terminal block (3.81 mm) * 2 (power)
  - RJ-45 * 2 (EtherCAT)
- **Dimensions**
  AMAX-4830/33/34/50/60: 120 x 120 x 40 mm
  AMAX-4855/56/62: 168 x 120 x 40 mm
- **Operating Temperature:** -20 ~ 60 °C (32 ~ 140 °F)
- **Storage Temperature:** -40 ~ 70 °C (-40 ~ 158 °F)
- **Storage Humidity:** 5 ~ 95% RH (non-condensing)
- **Power Supply:** 10 ~ 30 V_{DC}

Communications

- **Interface:** EtherCAT
- **Data Transfer Medium:** Ethernet/EtherCAT cable (CAT5 min.), shielded
- **Distance Between Modules:** 100 m max.(100BASE-TX)
- **Communication Cycle Time**
  AMAX-4830/4833/4834/4850/4860: 200 us
  AMAX-4855/4856/4862: 250 us
- **Data Transfer Rates:** 100 Mbps
- **Configuration:** Not required

Digital Input

- **Channels**
  - AMAX-4830/4850/4862: 16 channels
  - AMAX-4833/4855/4856: 32 channels
  - AMAX-4860: 8 channels
- **Input Voltage**
  - Logic 0: 3 V max.
  - Logic 1: 10 V min. (30 V max.)
- **Isolation Protection:** 2,500 V_{DC}

Specifications (Cont.)

Digital Output

- **Channels**
  - AMAX-4830: 16 channels
  - AMAX-4834/4856: 32 channels
- **Load Voltage:** 5 ~ 40 V_{DC}
- **Load Current**
  - 350mA/channel (sink)@25 °C
  - 250mA/channel (sink)@60 °C
- **Isolation Protection:** 2,500 V_{DC}
- **Opto-Isolator Response Time:** 100 us

PhotoMOS Relay Output

- **Channels**
  AMAX-4850: 8 channels
  AMAX-4855: 16 channels
- **Relay Type:** PhotoMOS SPST (Form A)
- **Load Voltage:** 60 V (AC peak or DC)
- **Load Current:** 1.2A
- **Peak Load Current:** 4A @100 ms (1 pulse)
- **Isolation Protection:** 1,500 V_{DC}
- **Turn-On Time:** 1 ms typical
- **Turn-Off Time:** 0.6 ms typical

Relay Output

- **Channels**
  AMAX-4860: 8 channels
  AMAX-4862: 16 channels
- **Relay type:** Form A
- **Contact Rating (resistive):** 2A@250 V_{AC}, 2A@30 V_{DC}
- **Max. Switching Power:** 500VA , 60W
- **Max. Switching Voltage:** 270 V_{AC} , 125 V_{DC}
- **Resistance:** 30 mΩ max.
- **Operating Time:** 10 ms max.
- **Releasing Time:** 5 ms max.
- **Life Expectancy**
  - Mechanical: 2 x 10^7 ops. at no load
  - Electrical: 3 x 10^4 ops. @2A/250V_{AC}

Installation

1. Download the AMAX-4800 user manual and ESI file from the Advantech website http://r.advantech.com/q5.
2. Import the ESI file to create an EtherCAT network information (ENI) file using either
   (1) Advantech Common Motion Utility
   (with a PCI-1203 EtherCAT master card)
   (2) Other EtherCAT master software, such as
   TwinCAT or Acontis
3. Use the master utility to test AMAX-4800 modules

Declaration of Conformity

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential areas is likely to cause interference; in such cases, users are required to correct the interference at their own expense.

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. Advantech does provide shielded cables. Contact your local supplier for ordering information.

Rotate Switch

AMAX-4800 modules use two hexadecimal rotary switches to represent the slave ID (range: 0 ~ 255).

For example, if a user arranges the rotary switches following the sequence “4, F”, the slave ID will be set as “4 x 16 + F x 1= 79”.

Power

AMAX-4800 modules feature two power input terminals, an input power range of +10 to +30 V_{DC}, and power redundancy support. For modules connected to two power input sources, if one source is inactive or interrupted, the other power source can take over immediately. The AMAX-4800 modules can operate with only a single power source.

LEDs

Power Indicator

Indicator State	System State	Description
Off	Power off	The system is not on / power is off
On	Power on	The system is on / power is on

Run Indicator

Indicator State	Slave State	Condition
Off	Initialization	The device is in the Initialization state
Blinking	Pre-Operational	The device is in the Pre-Operational state
Single flash	Safe Operational	The device is in the Safe Operational state
On	Operational	The device is in the Operational state
Flickering	Bootstrap	The device is booting and has not yet entered the Initialization state / the device is in the Bootstrap state / firmware download in progress

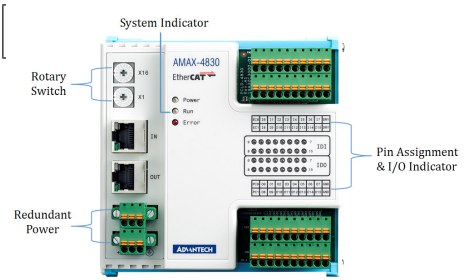
Error Indicator

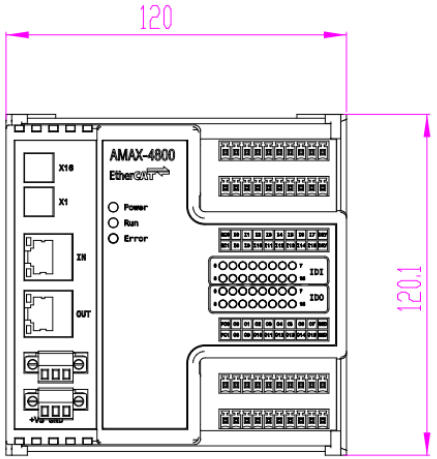
Indicator State	Error Name	Description
Off	No error	The device is in working condition
Blinking	Invalid configuration	General configuration error
Single flash	Local error	A slave device application has changed the EtherCAT state autonomously due to local error / the error indicator bit is set to 1 in the AL Status register
Double flash	Watchdog timeout	An application watchdog timeout has occurred

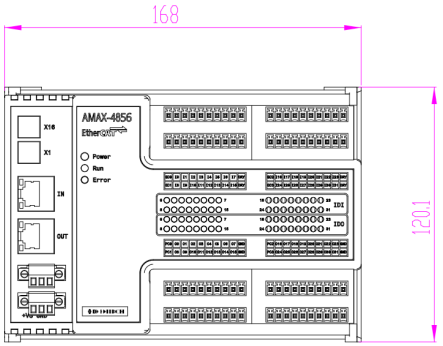
Link Indicator (on RJ-45)

Indicator State	Link	Activity	Description
On	Yes	No	Port open / connected
Flickering	Yes	Yes	Port open / connected

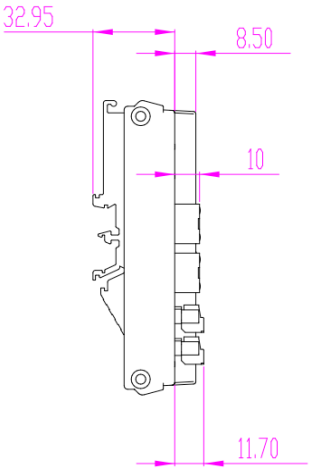
Dimensions







Dimensions (Cont.)

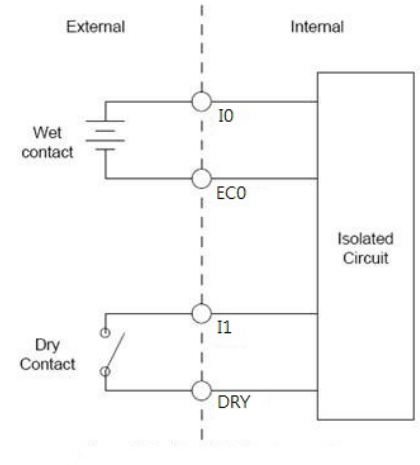


Connections

Isolated DI Connection

All isolated digital input channels accept voltages between 10 V_{DC} and 30 V_{DC}. Every eight input channels share one external common collector (channels 0 ~ 7 use EC0 and channels 8 ~ 15 use EC1).

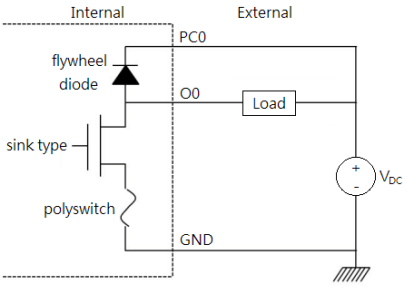
The diagram below shows how an external input source should be connected to the module's isolated inputs.

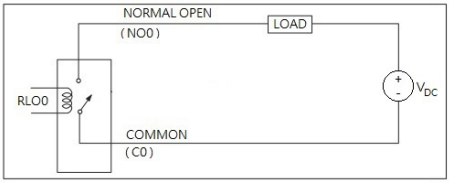


Connections (Cont.)

Isolated Digital Output

If an external voltage source (5 ~ 40 V) is connected to each isolated output channel (On) and the isolated digital output is turned on (350 mA max./channel), the module current will sink from the external voltage source. IDO modules provide EGND pins for IDO connection. The diagram below shows how an external output load should be connected to the module's isolated outputs.



Relay Output

The structures and connections of the relay outputs are shown in the diagram below.