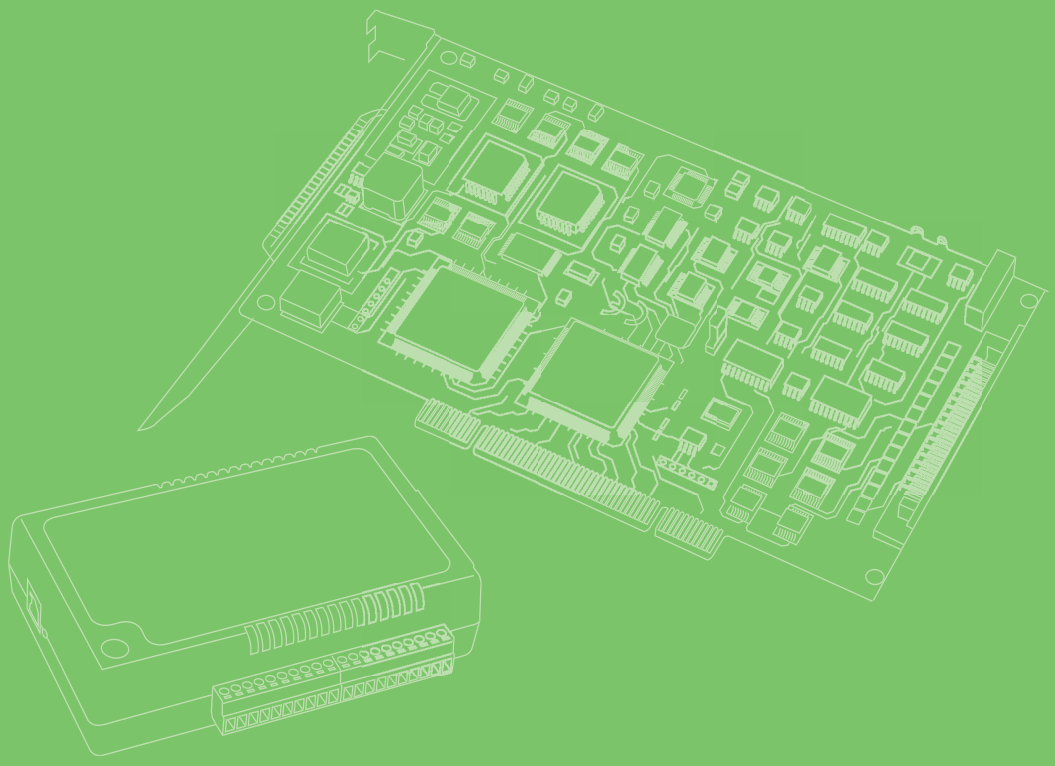

User Manual

AMAX-175x Series

Open Frame Type 32-ch AMONet RS-485 Isolated Digital I/O Slave Modules

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. 2003A17500 Edition 1

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Declaration of Conformity

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. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

In addition to this User Manual, the package should also include the following items:

- AMAX-175x Series Slave Module
- Quick Start User Manual
- User Manual

Contents

Chapter 1

Introduction

This chapter gives an overview of the product features, and specifications for AMAX-175x Series.

Sections include:

- Features
- Specifications

Products in the AMAX-175x Series are used to increase the number of digital input/ output channels for an AMONet RS-485 distributed motion control network. These extension slave modules connect serially by a simple and affordable Cat.5 LAN cable, reducing the wiring between driver and controller. This is very suitable for highly integrated machine automation applications.

1.1 Features

- Communication baud rate, 2.5Mbps, 5Mbps, 10Mbps and 20Mbps are supported and switchable
- Onboard screw terminal for direct wiring
- 2,500 VRMS Isolation voltage
- Suitable for DIN-rail mounting
- Board ID is switchable
- Easily visible LED indicators on board to do diagnosis

1.2 Specifications

1.2.1 General

BUS TYPE	AMONet RS-485
Certifications	CE, FCC Class A
Connectors	(1) RJ-45 x 2 are for communication port (2) I/O points use screw terminal type connector
LED Indicators	Power, Run, Status, Isolated Digital I/O
Power Consumption	600mW typical, 2 W max.
Power Supply for Module	VS: 24 Vdc ± 10%
Power Supply for Digital Input/Output	VEX: 10-30 Vdc

1.2.2 Isolated Digital Input

Channels	AMAX-1752: 32 DI AMAX-1756: 16 DI
Input type	Dry contact
Input voltage	△ V *= 0~3v(Low Level) / 10~30v(High Level) (30Vdc Max)
Input resistance	3.2KΩ
Input current	2mA Min.
Input delay	100us Max. (Isolation delay)
Input Isolation	2500Vdc

*NOTE: △V=| IDICOMx - IDIx |. For pin assignment definition, please refer to 2.6.1 to 2.6.3 for details. For signal connection, please refer to 2.7.2.

1.2.3 Isolated Digital Output

Channels	AMAX-1754: 32 DO AMAX-1756: 16 DO
Output type	Sink(NPN) (open collector Darlington)
Output control voltage	35Vdc Max.
Output sink current	500mA Max. (for each channel)
Output delay	250us Max. (photo coupler delay)
Output Isolation	2500Vdc

1.2.4 Environment

Operating Humidity	5 ~ 95 % RH, non-condernsing (refer to IEC 68-2-3)
Operating Temperature	0 ~ 65° C (refer to IEC 68-2-1,2) (32 ~ 149° F)
Storage Temperature	-25 ~ 85° C (-13 ~ 185° F))

Chapter 2

Hardware Functionality

This chapter shows the hardware functionality of AMAX-175x Series.

Sections include:

- PCB Board Layout
- Power Connector
- AMONet Interface
- BoardID Switch
- Configuration Setting
- LED Definition
- Pin Definition
- Signal Connection
- Field Wiring Considerations

AMAX-175x series is open frame type AMONET I/O modules which has on-board connectors for direct wiring and LED indicators to show the status. Here is the product dimension information:

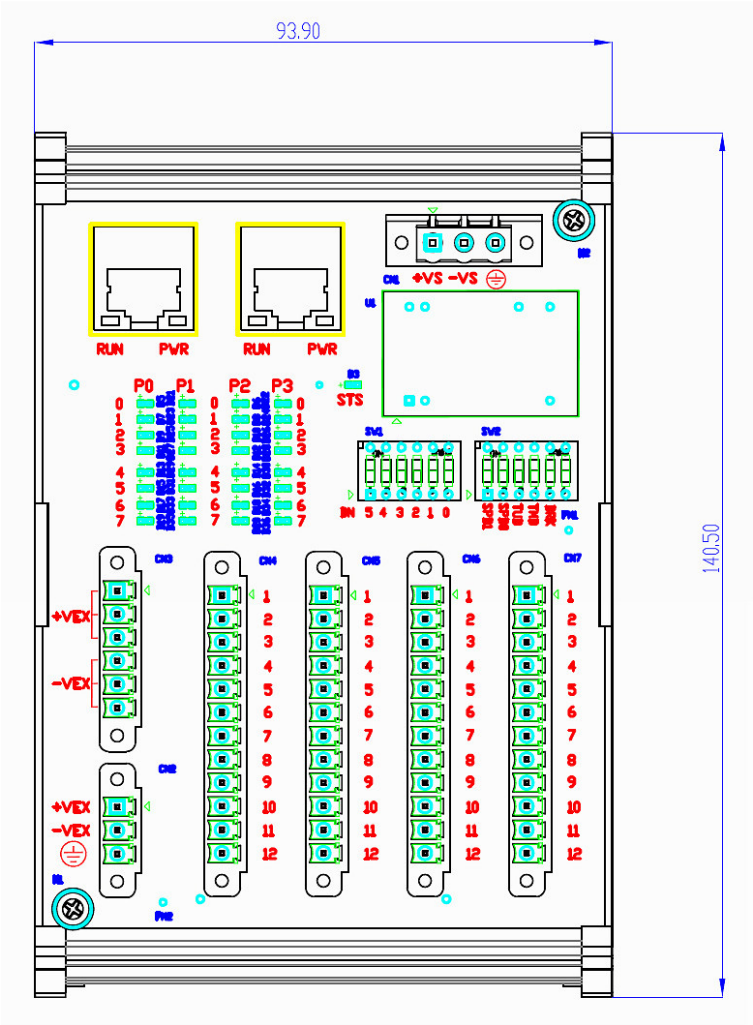


Figure 2.1 Top View

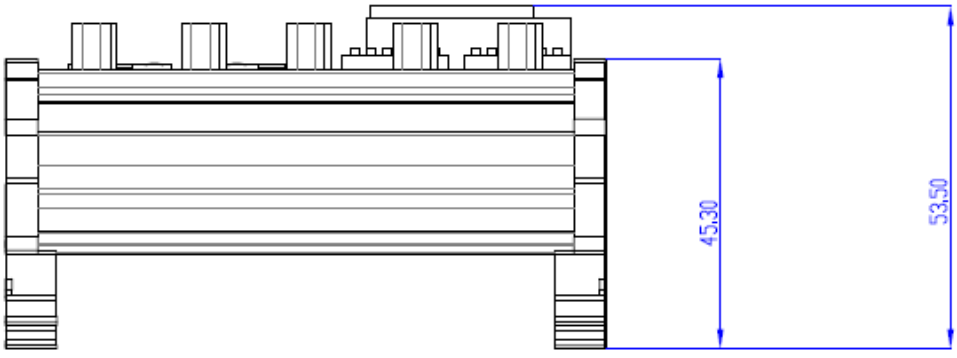


Figure 2.2 Middle View

Note! *The height does not include the male connector. The height of the male connector is 9mm.*

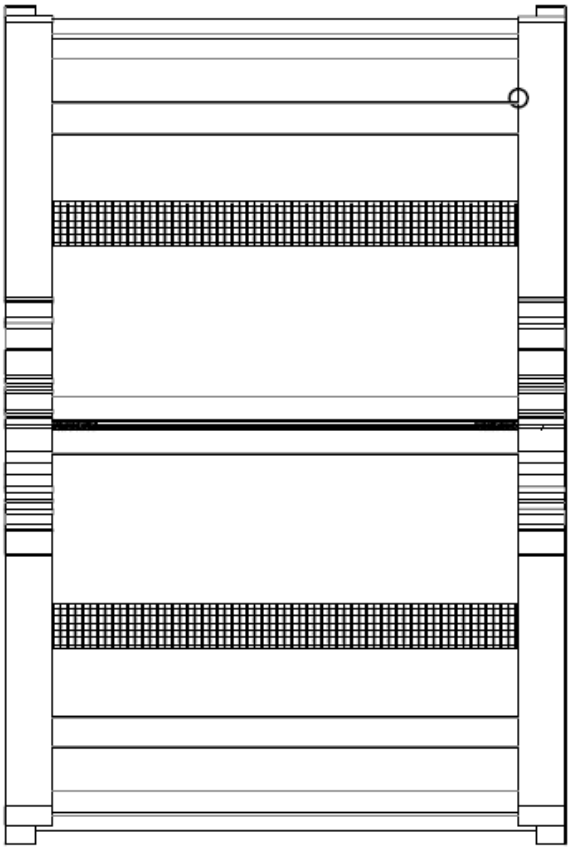


Figure 2.3 Bottom View

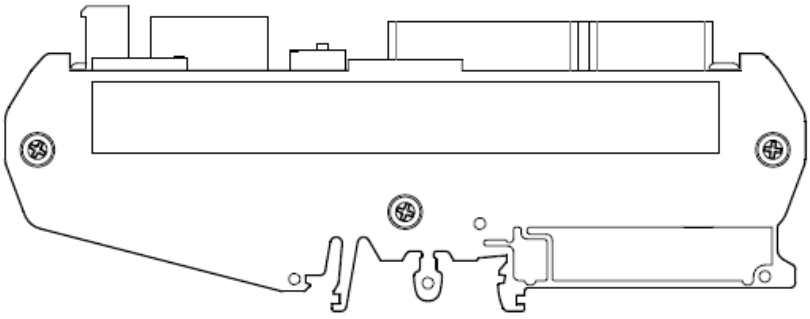
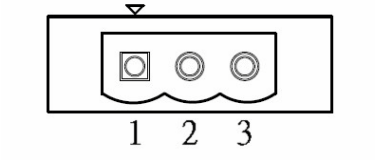


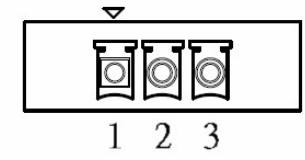
Figure 2.4 Side View

2.1 Module Power Connector(CN1)



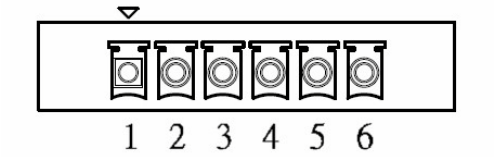
Pin	Descrption
1	+VS input 24 Vdc ± 10%
2	GND for VS
3	Field Ground

2.2 External Power Input Connector(CN2)



Pin	Descrption
1	+VEX (10-30 Vdc)
2	GND for VEX
3	Field Ground

2.3 External Power Output Connector(CN3)



Pin	Descrption
1~3	+VEX (10-30 Vdc)
4~6	GND for VEX

2.4 Board ID Switch (SW1)

Pin	Label	ON	OFF
1	DN5	1	0
2	DN4	1	0
3	DN3	1	0
4	DN2	1	0
5	DN1	1	0
6	DN0	1	0

Note: Node Number=32xDN5+16xDN4+8xDN3+4xDN2+2xDN1+DN0.

Default Setting: All the switches are in OFF status.

2.5 Configuration Setting (SW2)

Switch	Label	Description
1	SPD1	Baud-Rate Setting
2	SPD0	
3	TUD	Time-Out Status Latch
4	TMD	Specify watchdog timer time
5	BRK	*For internal use only, please keep in OFF
6		N/A

2.5.1 Baud-Rate Setting

SPD1	SPD0	
OFF	OFF	20 MHz
OFF	ON	10 MHz
ON	OFF	5 MHz
ON	ON	2.5 MHz

2.5.2 TUD

This terminal is used to set output conditions when the watchdog timer times out.

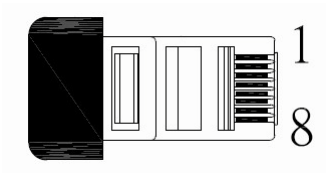
OFF	The output keeps its current status.
ON	The output is Reset.

2.5.3 TMD

When the interval between data packets sent from a master card (ex. PCI-1202U) is longer than the specified interval, the watchdog timer times out

	20 Mbps	10 Mbps	5 Mbps	2.5 Mbps
OFF	20 ms	40 ms	80 ms	160 ms
ON	5 ms	10 ms	20 ms	40 ms

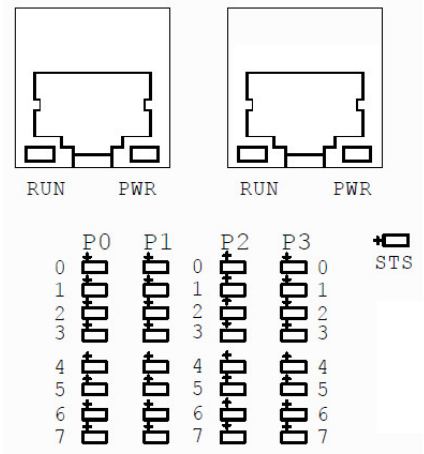
2.6 Terminal Resistor



	PIN
100Ω 1/4W Resistor	3
	6

Note! *Terminal Resistor is used for the last module only.*

2.7 LED Definition



LED	Descrption
PWR	Power indicator
RUN	Module in communication
STS	Communication status

2.7.1 AMAX-1752

LED	Descrption
P0 (0~7)	IDI0-<0~7>
P1 (0~7)	IDI1-<0~7>
P2 (0~7)	IDI2-<0~7>
P3 (0~7)	IDI3-<0~7>

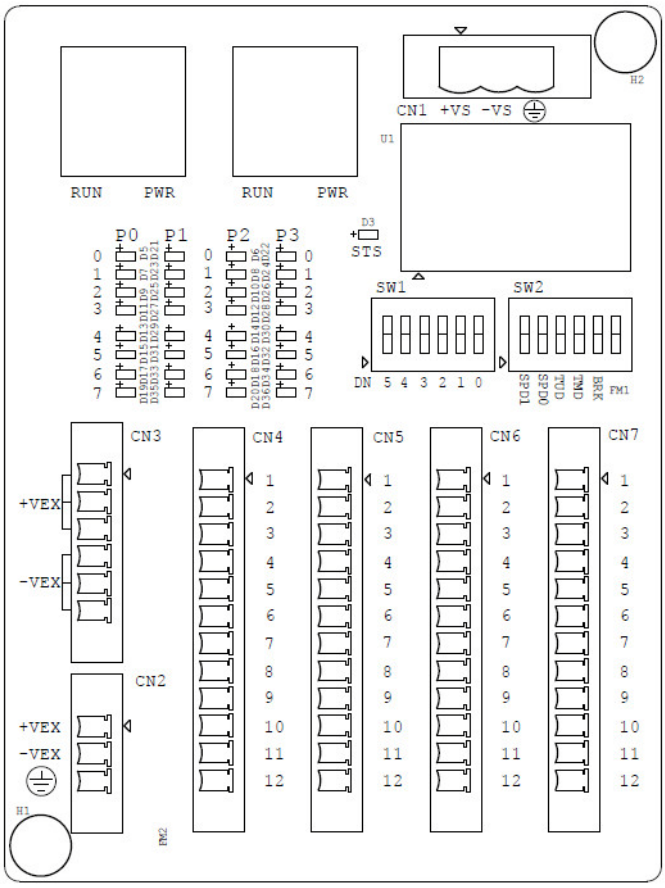
2.7.2 AMAX-1754

LED	Descrption
P0 (0~7)	IDO0-<0~7>
P1 (0~7)	IDO1-<0~7>
P2 (0~7)	IDO2-<0~7>
P3 (0~7)	IDO3-<0~7>

2.7.3 AMAX-1756

LED	Descrption
P0 (0~7)	IDI0-<0~7>
P1 (0~7)	IDI1-<0~7>
P2 (0~7)	IDO2-<0~7>
P3 (0~7)	IDO3-<0~7>

2.8 Pin Definitions



2.8.1 AMAX-1752 (32 DI)

	CN4		CN5		CN6		CN7
Pin1	IDI_COM0	**Pin1**	IDI_COM1	**Pin1**	IDI_COM2	**Pin1**	IDI_COM3
Pin2	IDI0-0 (DI0)	**Pin2**	IDI1-0 (DI8)	**Pin2**	IDI2-0 (DI16)	**Pin2**	IDI3-0 (DI24)
Pin3	IDI0-1 (DI1)	**Pin3**	IDI1-1 (DI9)	**Pin3**	IDI2-1 (DI17)	**Pin3**	IDI3-1 (DI25)
Pin4	-VEX	**Pin4**	-VEX	**Pin4**	-VEX	**Pin4**	-VEX
Pin5	IDI0-2 (DI2)	**Pin5**	IDI1-2 (DI10)	**Pin5**	IDI2-2 (DI18)	**Pin5**	IDI3-2 (DI26)
Pin6	IDI0-3 (DI3)	**Pin6**	IDI1-3 (DI11)	**Pin6**	IDI2-3 (DI19)	**Pin6**	IDI3-3 (DI27)
Pin7	IDI_COM0	**Pin7**	IDI_COM1	**Pin7**	IDI_COM2	**Pin7**	IDI_COM3
Pin8	IDI0-4 (DI4)	**Pin8**	IDI1-4 (DI12)	**Pin8**	IDI2-4 (DI20)	**Pin8**	IDI3-4 (DI28)
Pin9	IDI0-5 (DI5)	**Pin9**	IDI1-5 (DI13)	**Pin9**	IDI2-5 (DI21)	**Pin9**	IDI3-5 (DI29)
Pin10	-VEX	**Pin10**	-VEX	**Pin10**	-VEX	**Pin10**	-VEX
Pin11	IDI0-6 (DI6)	**Pin11**	IDI1-6 (DI14)	**Pin11**	IDI2-6 (DI22)	**Pin11**	IDI3-6 (DI30)
Pin12	IDI0-7 (DI7)	**Pin12**	IDI1-7 (DI15)	**Pin12**	IDI2-7 (DI23)	**Pin12**	IDI3-7 (DI31)

2.8.2 AMAX-1754 (32 DO)

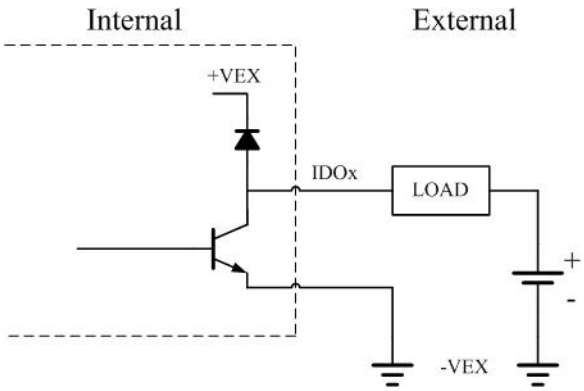
	CN4		CN5		CN6		CN7
Pin1	+VEX	**Pin1**	+VEX	**Pin1**	+VEX	**Pin1**	+VEX
Pin2	IDO0-0 (DO0)	**Pin2**	IDO1-0 (DO8)	**Pin2**	IDO2-0 (DO16)	**Pin2**	IDO3-0 (DO24)
Pin3	IDO0-1 (DO1)	**Pin3**	IDO1-1 (DO9)	**Pin3**	IDO2-1 (DO17)	**Pin3**	IDO3-1 (DO25)
Pin4	-VEX	**Pin4**	-VEX	**Pin4**	-VEX	**Pin4**	-VEX
Pin5	IDO0-2 (DO2)	**Pin5**	IDO1-2 (DO10)	**Pin5**	IDO2-2 (DO18)	**Pin5**	IDO3-2 (DO26)
Pin6	IDO0-3 (DO3)	**Pin6**	IDO1-3 (DO11)	**Pin6**	IDO2-3 (DO19)	**Pin6**	IDO3-3 (DO27)
Pin7	+VEX	**Pin7**	+VEX	**Pin7**	+VEX	**Pin7**	+VEX
Pin8	IDO0-4 (DO4)	**Pin8**	IDO1-4 (DO12)	**Pin8**	IDO2-4 (DO20)	**Pin8**	IDO3-4 (DO28)
Pin9	IDO0-5 (DO5)	**Pin9**	IDO1-5 (DO13)	**Pin9**	IDO2-5 (DO21)	**Pin9**	IDO3-5 (DO29)
Pin10	-VEX	**Pin10**	-VEX	**Pin10**	-VEX	**Pin10**	-VEX
Pin11	IDO0-6 (DO6)	**Pin11**	IDO1-6 (DO14)	**Pin11**	IDO2-6 (DO22)	**Pin11**	IDO3-6 (DO30)
Pin12	IDO0-7 (DO7)	**Pin12**	IDO1-7 (DO15)	**Pin12**	IDO2-7 (DO23)	**Pin12**	IDO3-7 (DO31)

2.8.3 AMAX-1756 (16 DI 16DO)

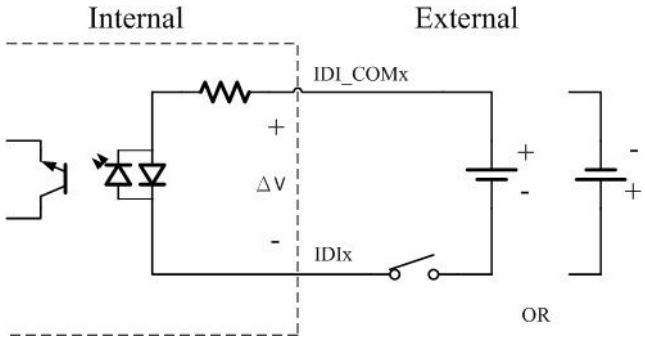
	CN4		CN5		CN6		CN7
Pin1	IDI_COM0	**Pin1**	IDI_COM1	**Pin1**	+VEX	**Pin1**	+VEX
Pin2	IDI0-0 (DI0)	**Pin2**	IDI1-0 (DI8)	**Pin2**	IDO2-0 (DO16)	**Pin2**	IDO3-0 (DO24)
Pin3	IDI0-1 (DI1)	**Pin3**	IDI1-1 (DI9)	**Pin3**	IDO2-1 (DO17)	**Pin3**	IDO3-1 (DO25)
Pin4	-VEX	**Pin4**	-VEX	**Pin4**	-VEX	**Pin4**	-VEX
Pin5	IDI0-2 (DI2)	**Pin5**	IDI1-2 (DI10)	**Pin5**	IDO2-2 (DO18)	**Pin5**	IDO3-2 (DO26)
Pin6	IDI0-3 (DI3)	**Pin6**	IDI1-3 (DI11)	**Pin6**	IDO2-3 (DO19)	**Pin6**	IDO3-3 (DO27)
Pin7	IDI_COM0	**Pin7**	IDI_COM1	**Pin7**	+VEX	**Pin7**	+VEX
Pin8	IDI0-4 (DI4)	**Pin8**	IDI1-4 (DI12)	**Pin8**	IDO2-4 (DO20)	**Pin8**	IDO3-4 (DO28)
Pin9	IDI0-5 (DI5)	**Pin9**	IDI1-5 (DI13)	**Pin9**	IDO2-5 (DO21)	**Pin9**	IDO3-5 (DO29)
Pin10	-VEX	**Pin10**	-VEX	**Pin10**	-VEX	**Pin10**	-VEX
Pin11	IDI0-6 (DI6)	**Pin11**	IDI1-6 (DI14)	**Pin11**	IDO2-6 (DO22)	**Pin11**	IDO3-6 (DO30)
Pin12	IDI0-7 (DI7)	**Pin12**	IDI1-7 (DI15)	**Pin12**	IDO2-7 (DO23)	**Pin12**	IDO3-7 (DO31)

2.9 Signal Connection

2.9.1 Isolated Digital Output



2.9.2 Isolated Digital Input



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All product specifications are subject to change without notice.