AMAX-2750SY Series

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

User Manual

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2nd Edition

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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.

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

Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.

Step 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-2750 Series Slave Module
- Quick Start User Manual
- 2-pin Terminal
- 3-pin Terminal
- 40-pin Terminal x 2
- Startup User Manual

Contents

CHAPTER 1

Introduction

This chapter gives an overview of the product features, and specifications for AMAX-2750SY Series

Sections include:

- Features
- Specifications

Chapter 1 Introduction

Products in the AMAX-2750SY 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

- DIN-rail mounting
- Max. 20Mbps transfer rate
- Onboard terminal for direct wiring
- Easy installation with RJ45 phone jack and LED diagnostic
- LED indicator for each IO channel
- Highly integrated and compact size
- 2500 Vrms isolation protection

1.2 Specifications

1.2.1 General

BUS TYPE	AMONet RS-485
Certifications	CE
Connectors	RJ45 (AMONet), Detachable Screw Terminal (I/O)
LED Indicators	Power, Run, Error, Isolated Digital I/O
Power Consumption	AMAX-2752SY: 1W typical, 13W max. AMAX-2754SY: 1W typical, 5W max. AMAX-2756SY: 1W typical, 8W max.
Power Supply	24V±10%, ripple within 200mV (CN1)
Power Supply for Digital Input/Output (EXT_VCC)	10-30V (CN2)

1.2.2 Isolated Digital Input

Channels	16(AMAX-2756SY) 32(AMAX-2752SY)
Digital Input	Dry contact (but need EXT_VCC)
Isolation Protection	$2500V_{RMS}$
Opto-Isolator Response Time	18 us
Input Impedance	2.4K

1.2.3 Isolated Digital Output

Channels	16(AMAX-2756SY) 32(AMAX-2754SY)
Output type	Sink (NPN) (open collector Darlington)
Isolation Protection	$2500V_{RMS}$
Output Voltage	5-30V
Sink Current	500mA for 1 channel 150mA for 8 channel, total 1.1A max.

CHAPTER 2

Hardware Functionality

This chapter shows the hardware functionality of AMAX-2750SY Series

Sections include:

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

Chapter 2 Hardware Functionality

2.1 Dimensions

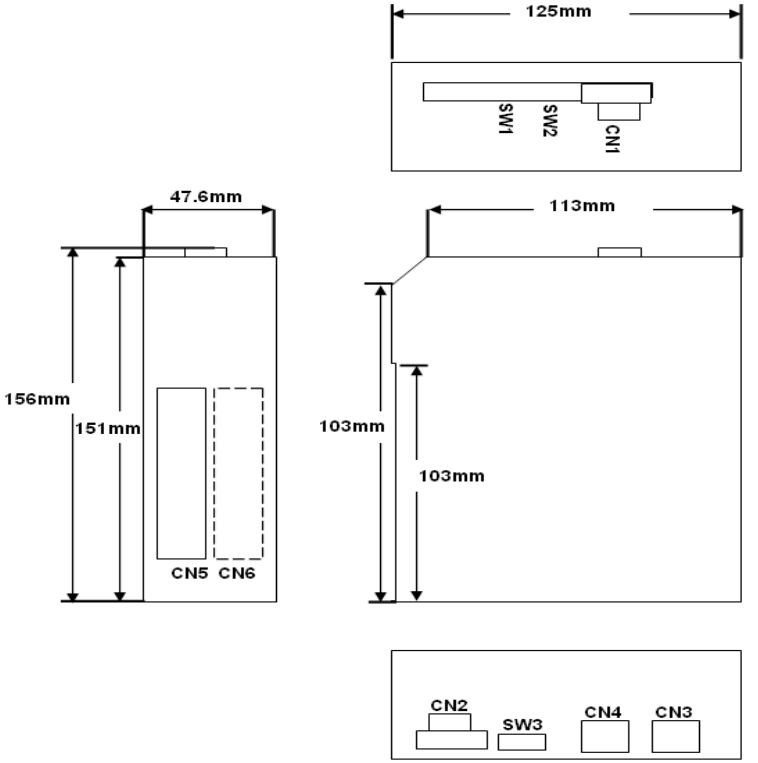


Figure 2.1: AMAX-2750SY Series Dimensions

Name	Description
CN1	Module Power
CN2	External Power
CN3	AMONet Connector
CN4	AMONet Connector
CN5	Digital I/O Connector
CN6	Digital I/O Connector
SW1	BoardID Switch
SW2	Configuration Setting
SW3	Configuration Setting

2.2 Power Connector

2.2.1 Module Power Connector (CN1)

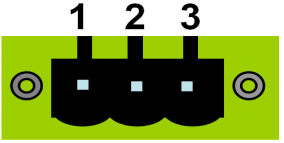


Table 2.1: Module Power Connector Pin Assign (CN1)	
Pin	**Signal Name**
1	+VS (10~30V)
2	GND
3	Field Ground

2.2.2 External Power Connector (CN2)

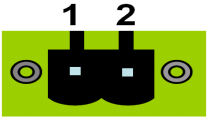


Table 2.2: External Power Connector Pin Assign(CN2)	
Pin	**Signal Name**
1	+EVS (10~30V)
2	EGND

Note: *An external power supply applying to CN2 is required when using DO connections*

2.3 AMONet Interface

2.3.1 AMONet Extension (CN3, CN4)

Pin	Label	Description
1	FG	Field Ground
2	FG	Field Ground
3	RS485+	High Speed RS-485 protocol
4	FG	Field Ground
5	FG	Field Ground
6	RS485-	High Speed RS-485 protocol
7	FG	Field Ground
8	FG	Field Ground

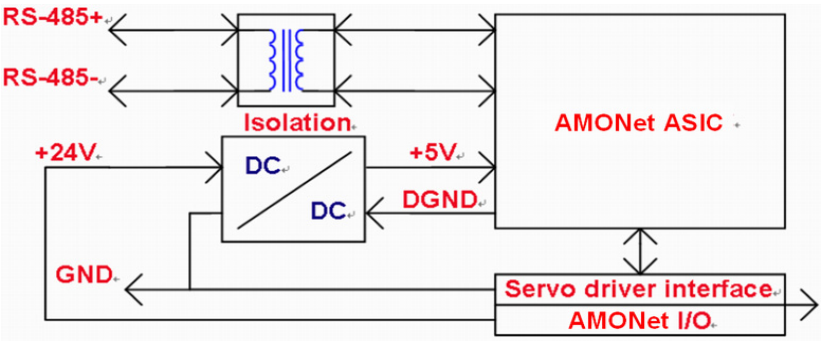


Figure 2.2: RS-485 Extension Port

2.3.2 AMONet Extension Interface

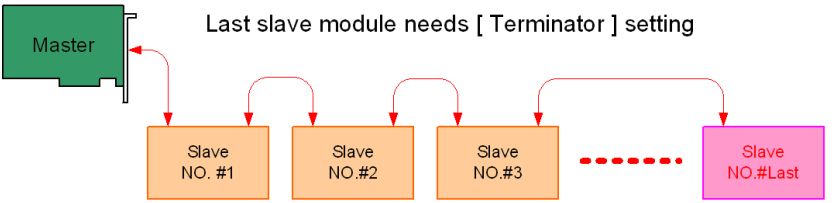


Figure 2.3: AMONet Slave Module Address Setting

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	ON	OFF
1	SPD1	Baud-Rate Setting	0	1
2	SPD0		0	1
3	TUD	Time-Out Status Latch	Enable	Disable
4	TM	Specify watchdog timer time	N.C.	N.O.
5	BRK	*Break & Rescan Communication	Disable	Enable
Note: BRK is reserved				
How to Use the Baud-Rate Setting				
SPD1	SPD0	Baud-Rate Setting		
OFF	OFF	20MHz (1/4 system clock)		
OFF	ON	10MHz (1/8 system clock)		
ON	OFF	5MHz (1/16 system clock)		
ON	ON	2.5MHz (1/32 system clock)		

Note: default system clock = 80 MHz

Default Setting: All the switches are in OFF status

TUD: When TUD = HIGH --- The LSI keeps its current status.When the TUD = LOW --- Reset I/O port output, and immediately stops pulse output (stop operation).

TM

TM	20M	10M	5M	2.5M
ON	20ms	40ms	80ms	160ms
OFF	5ms	10ms	20ms	40ms

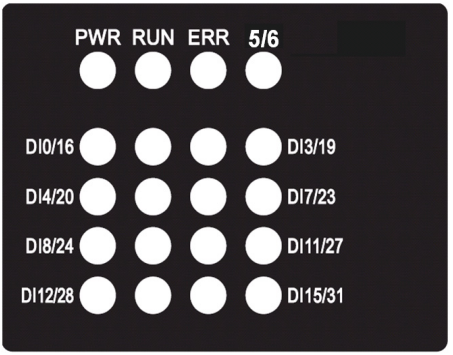
2.6 Configuration Setting (SW3)

Switch	Label	ON	OFF
1	No Use		
2	Terminal Resistor	With TR	Without TR

Default Setting: All the switches are in OFF status

2.7 LED Definition

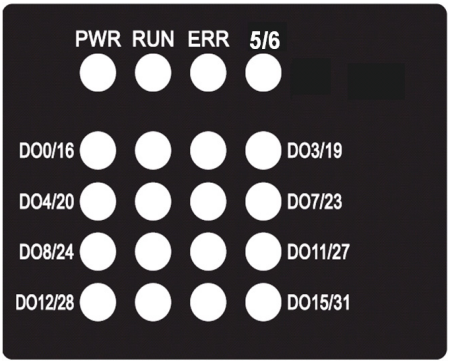
2.7.1 AMAX-2752



LED	Description
PWR	Power
RUN	Communication
ERR	Communication Error
5/6	LED Working for CN5/CN6*
DI<0~31>	Isolated Digital Input

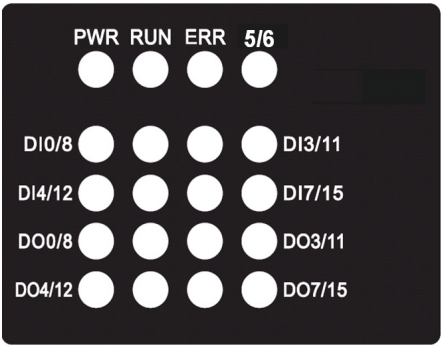
*** OFF:**CN6 **ON:**CN5

2.7.2 AMAX-2754



LED	Description
PWR	Power
RUN	Communication
ERR	Communication Error
5/6	LED Working for CN5/CN6*
DO<0~7>	Isolated Digital Output

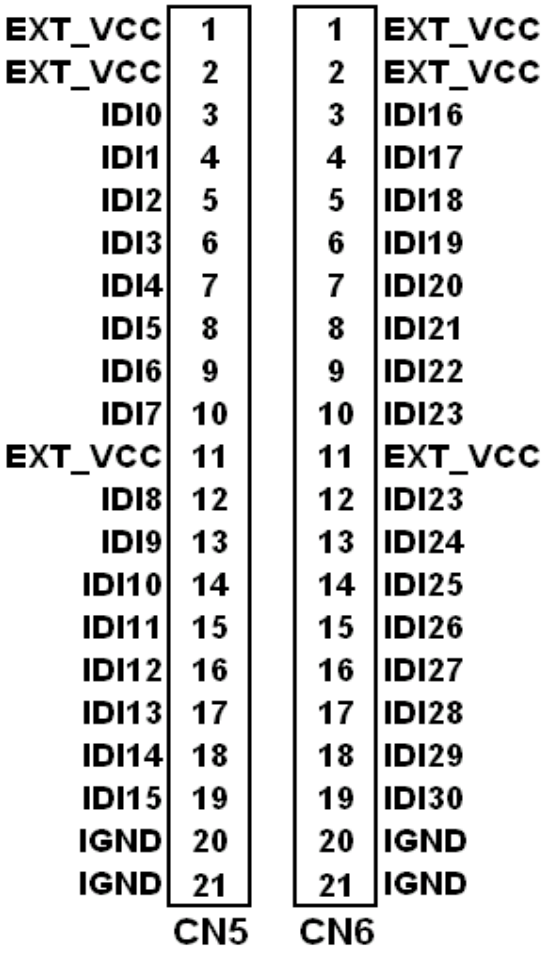
2.7.3 AMAX-2756



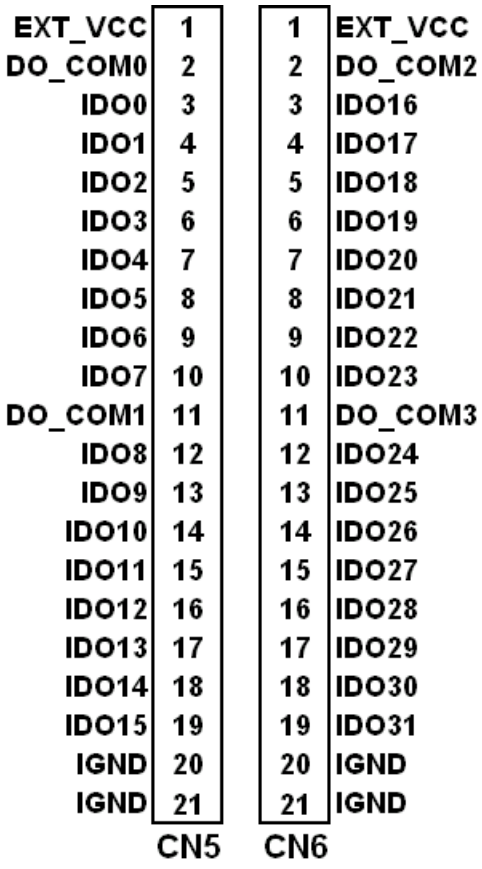
LED	Description
PWR	Power
RUN	Communication
ERR	Communication Error
5/6	LED Working for CN5/CN6*
DO<0~31>	Isolated Digital Output

2.8 Pin Definitions

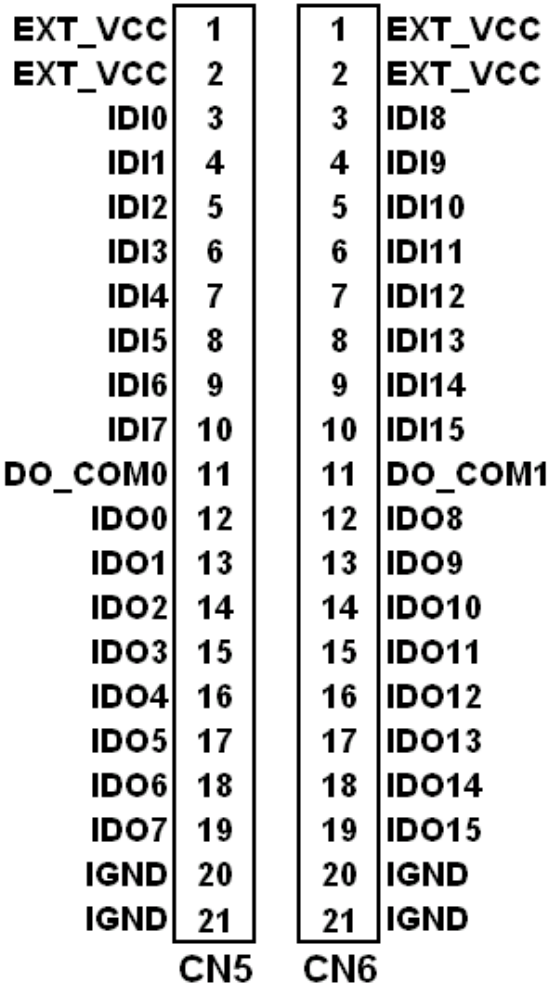
2.8.1 AMAX-2752SY



2.8.2 AMAX-2754SY



2.8.3 AMAX-2756SY



Pin	Reference	Direction	Description
IDI<0~31>	GND	Input	Isolated digital input channels
IDO<0~31>	DO_COM	Output	Isolated digital output channels
DO_COM0	-	Input	Common pin for inductive loads of DO0~7
DO_COM1	-	Input	Common pin for inductive loads of DO8~15
DO_COM2	-	Input	Common pin for inductive loads of DO16~23
DO_COM3	-	Input	Common pin for inductive loads of DO24~31
EXT_VCC	GND	Output	External voltage supply*
IGND	-	-	Isolated ground

***NOTE:** The total output current of the "**EXT_VCC**" pins on each connector (CN5/CN6) is limited to 1000mA (Output voltage: 10~30V, based on the external power supply)

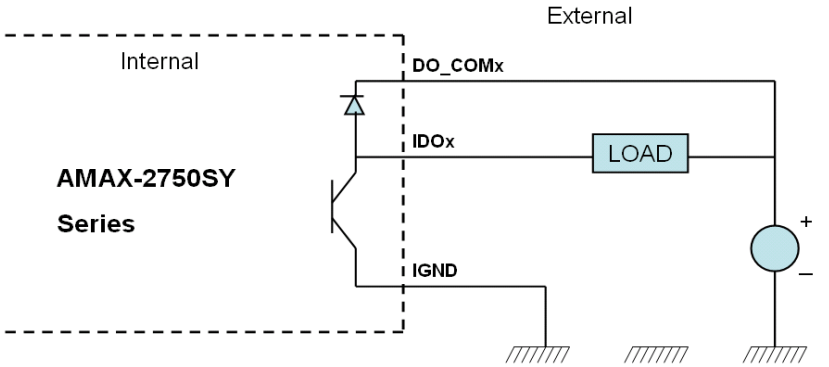
2.9 Signal Connection

Isolated Digital Output

Each of isolated output channels comes equipped with a Darlington transistor. Every 8 output channels share common collectors and integral suppression diodes for inductive loads.

Note: If an external voltage (10 ~ 30 VDC) is applied to an isolated output channel while it is being used as an output channel, the current will flow from the external voltage source to the card. Please take care that the current through each IDO pin not exceed 500 mA.

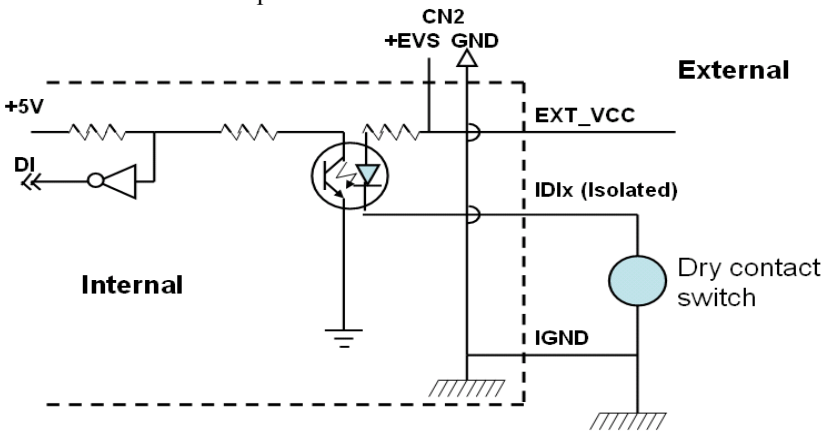
The figure below shows how to connect an external output load to the modules' isolated output channels.



Note: An external power supply (10~30VDC) through CN2 is required.

Isolated Digital Input

Figure 3-3 shows how to connect an external input source to one of the module's isolated input channels



2.10 Field Wiring Considerations

When you use AMAX-2750SY SERIES to acquire data from outside, noises in the environment might significantly affect the accuracy of your measurements if due cautions are not taken. The following measures will be helpful to reduce possible interference running signal wires between signal sources and the AMAX-2750SY SERIES.

The signal cables must be kept away from strong electromagnetic sources such as power lines, large electric motors, circuit breakers or welding machines, since they may cause strong electromagnetic interference. Keep the analog signal cables away from any video monitor, since it can significantly affect a data acquisition system.

If the cable travels through an area with significant electromagnetic interference, you should adopt individually shielded, twisted-pair wires as the analog input cable. This type of cable has its signal wires twisted together and shielded with a metal mesh. The metal mesh should only be connected to one point at the signal source ground.

Avoid running the signal cables through any conduit that might have power lines in it.

If you have to place your signal cable parallel to a power line that has a high voltage or high current running through it, try to keep a safe distance between them. Or place the signal cable in a right angle to the power line to minimize the undesirable effect.