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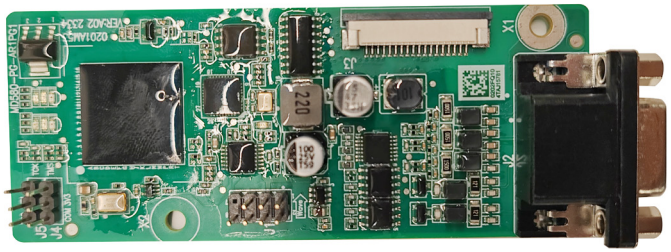

MD580-PG-AS1

19012865A00

Sin-cos & SSI Dual Encoder PG Card User Guide

Preface

MD580-PG-AS1 is a sin-cos and SSI dual encoder expansion card that supports fully closed-loop control scenarios. The card is connected to the control board by using the FPC cable, and provides the universal DB15 connector which requires a DB15 male connector customized according to the pin sequences defined in the user guide. The sin-cos encoder is used to detect the sin-cos signal input of the incremental encoder, and the SSI encoder is used to detect the signal input of the absolute encoder adopting the universal serial port protocol. The power interface supports power supplies of 5 V, 12 V and 24 V for encoders. The card also supports Hiperface encoder signal input.

Product Information

■ Terminal arrangement and description

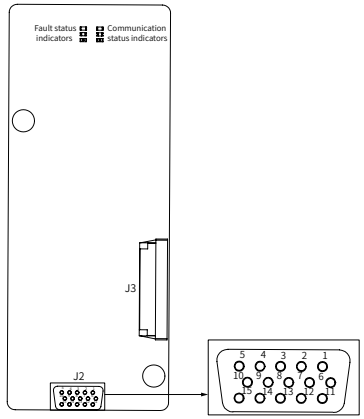

Figure 1 MD580-PG-AS1 terminal arrangement

Type	Pin No.	Pin name	Function	Wiring description	Recommended cable specifications
Sin-cos & SSI dual encoder card (J2)	3	Z+	Z signal of the incremental encoder (+)	Twisted pair	Quad-conductor shielded twisted pair cable Cross-sectional area: 0.5mm²~2.5 mm² It is recommended to use a cable with a large cross-sectional area to reduce power consumption and signal loss.
	8	Z-	Z signal of the incremental encoder (-)		
	1	SIN+	SIN signal of the incremental encoder (+)	Twisted pair	
	6	SIN-	SIN signal of the incremental encoder (-)		
	2	COS+	COS signal of the incremental encoder (+)	Twisted pair	
	7	COS-	COS signal of the incremental encoder (-)		
	14	12V	12 V power supply of the encoder	-	
	15	COM	Encoder power supply ground	-	
	4	DATA+	Data signal of the SSI/ Hiperface encoder (+)	Twisted pair	
	9	DATA-	Data signal of the SSI/ Hiperface encoder (-)		
	11	5V	5 V power supply of the encoder	-	
	12	COM	Encoder power supply ground	-	
	13	24V	24 V power supply of the encoder	-	
	5	CLK+	Clock output signal of the SSI encoder (+)	Twisted pair	
	10	CLK-	Clock output signal of the SSI encoder (-)		
Communication interface with the control board (J3)	An 18-pin FPC interface to connect to the PG card slot on the control board of the AC drive			-	-

■ Indicator descriptions

Name	Status	Description
Fault status indicator	Red	Sin-cos encoder fault (UART communication timeout, UART communication frame error, or CRC error)
	Yellow	SSI encoder fault (frame error or invalid data)
	Green	Normal
Communication status indicator	Red	SPI communication fault (CRC fault or PG card not activated)
	Green	Communication normal
	Yellow	Reserved

■ Technical specifications

Item	Description
Encoder power supply	5V/300mA，12V/200mA，24V/100mA Precision: ±5%
Sin-cos encoder	Differential voltage: 0.6-1.2 Vpp; typical value: 1.0 Vpp
	Maximum common mode voltage: 3 V
	Bandwidth: 500 kHz
SSI encoder	Resolution: 32 bits
	Maximum communication rate: 2 Mbps
	Data input: Differential line receiver, compliant with EIA RS485 requirements on signals CLOCK+ and CLOCK-
	Data output: Differential line receiver, compliant with EIA RS485 requirements on signals DATA+ and DATA-
Hiperface encoder	Baud rate: 600/1200/2400/4800/9600/19,200/38,400
	Data output: Differential line receiver, compliant with EIA RS485 requirements on signals DATA+ and DATA-

Installation and Wiring

■ Installation instructions

Use M3×8 screws to install MD580-PG-AS1 to the dedicated expansion card slot of the AC drive. The figure below illustrates the installation using the MD580S as an example.

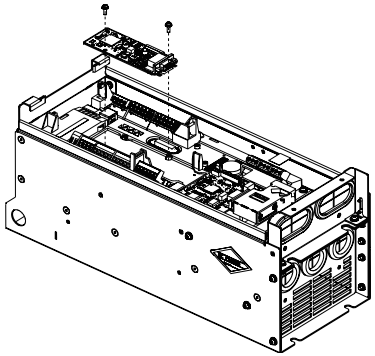

Figure 2 Installation of MD580-PG-AS1

■ Wiring Instructions

Connect the wires as per the diagram below.

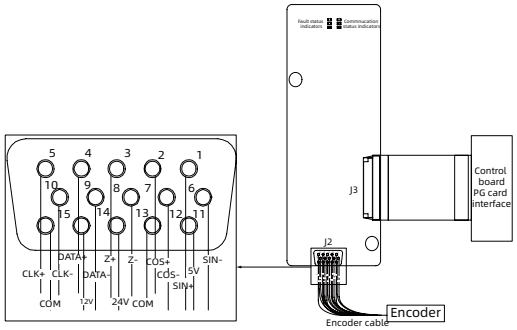

Figure 3 Wiring of MD580-PG-AS1

■ Relationship between the length and the cross-sectional area of the encoder cables

The longer the encoder cable, the greater the cable resistance, and consequently, the larger the voltage drop across the cable resistance for both the encoder power supply and encoder signals. For long-distance applications, improper cable specification will cause the encoder and PG card to malfunction due to signal attenuation induced by cable resistance.

Refer to the table below and select appropriate cables based on the on-site cable length. The cable specification is expressed by AWG, which is the US standard measurement for the cross-sectional area of cables.

Sin-cos encoder: Select a shielded twisted pair for the encoder cable. The recommended length is 10 m or below.

Table 1 Relationship between the length and the cross-sectional area of the SSI encoder cable

Cable Length (m)	Specification (AWG)
10	≤ 20
20	
30	
40	
50	≤ 18
80	

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The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, Operations must comply with this guide, especially alarm notices and safety instructions. Qualified personnel can identify the risks of the product/system and prevent possible dangers.

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2) Within the warranty period, maintenance will be charged for the following damage:
   a. Equipment damage caused by improper use or unauthorized repair or retrofit
   b. Equipment damage caused by fire, flood, abnormal voltage, other disasters and secondary disasters
   c. Hardware damage caused by falling or transportation
   d. Operations not following the user instructions
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3) If the equipment is faulty or damaged, fill in the Product Warranty Card correctly.
4) Maintenance is charged according to the latest Maintenance Price List of Inovance.
5) The Product Warranty Card is not re-issued. Keep the card and present it to the maintenance personnel during maintenance.
6) If there is any problem during the service, contact Inovance or Inovance agents.
7) This agreement shall be interpreted by Inovance.

INOVANCE Product Warranty Card

Customer Information	Company address:	
	Company name: Post code:	Contact: Tel.:
Product Information	Product model:	
	Product barcode (attached here):	
	Agent name:	
Fault Information	Fault details Recorder:	

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