



Making Data Acquisition Easy

CAGE/NCAGE CODE: 3FNFO

PISO-ENCODER300U

PCI Bus, 3-axis Encoder Input Card

Quick Start Guide

Product Website:

http://www.icpdas-usa.com/piso_encoder_300_600.html

1. Introduction

PISO-ENCODER/300/600 has a 3-axis or 6-axis encoder counter. Each axis has a 32-bit, true counter with maximum counting rate of 1MHz. The Index reset resets by using a C+/C- channel, which will reset every revolution. The hardware reset resets by an external pin (HR1 ~ HR6). The HR1 ~ HR6 also can be a digital input. 8-channel digital outputs are also provided. 2500Vrms photo couplers isolate the digital I/O. This board provides DOS, windows 95 and windows NT drivers.



Model: PISO-ENCODER300U



2. Pins assignment

The pins assignment of PISO-Encoder600(U) board is shown in the following figure. The power source of every encoder channel is designed for the DC 5V power source of host computer's PCB. Therefore, do not connect those pins with other DC 5V external power source. And the maximum current of each encoder power is 100mA. Besides, user should apply external DC 24V power source across pins of EXT_VCC and EXT_GND in order to use digital inputs and outputs provided in PISO-Encoder600(U)0. Hence, the digital inputs and outputs of PISO-Encoder600(U) will work correctly based on the commands in digital output register (section 2.2.3) and digital input register (section 2.2.4). The detailed description of pins' function for PISO-Encoder600(U) is listed in Table 1.

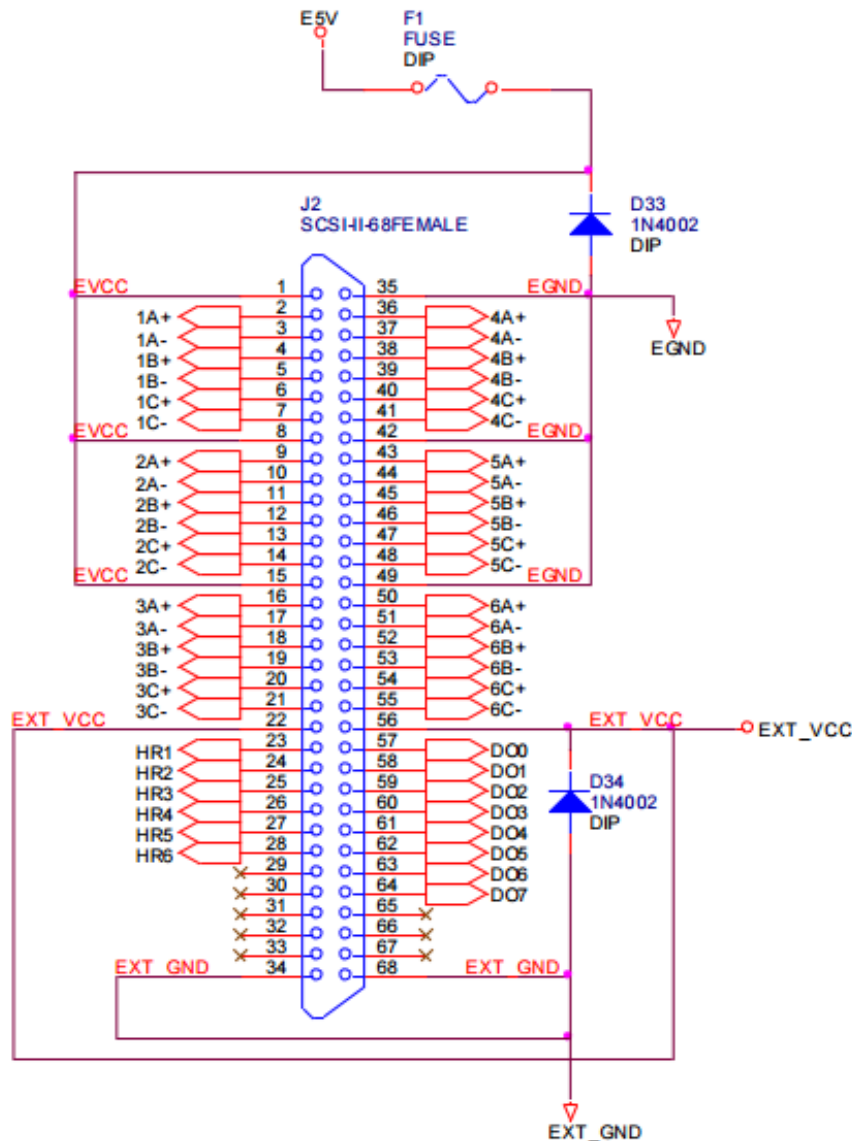




Table1: J2 SCSI-II 68-pins connector

pin name	pin number	description
EVCC	1	encoder power +5V output, 100mA only, don't connect to others external +5V.
1A+	2	X1-axis A+ input
1A-	3	X1-axis A- input
1B+	4	X1-axis B+ input
1B-	5	X1-axis B- input
1C+	6	X1-axis C+ input
1C-	7	X1-axis C- input
EVCC	8	encoder power +5V output, 100mA only, don't connect to others external +5V.
2A+	9	X2-axis A+ input
2A-	10	X2-axis A- input
2B+	11	X2-axis B+ input
2B-	12	X2-axis B- input
2C+	13	X2-axis C+ input
2C-	14	X2-axis C- input
EVCC	15	encoder power +5V output, 100mA only, don't connect to others external +5V.
3A+	16	X3-axis A+ input
3A-	17	X3-axis A- input
3B+	18	X3-axis B+ input
3B-	19	X3-axis B- input
3C+	20	X3-axis C+ input
3C-	21	X3-axis C- input
EXT_VCC	22	external power VCC(+24V) input
HR1	23	X1-axis hardware reset input pin
HR2	24	X2-axis hardware reset input pin
HR3	25	X3-axis hardware reset input pin
HR4	26	X4-axis hardware reset input pin (PISO- Encoder600(U) only)
HR5	27	X5-axis hardware reset input pin (PISO- Encoder600(U) only)
HR6	28	X6-axis hardware reset input pin (PISO- Encoder600(U) only)
NC	29,30,31, 32,33	Not used
EXT_GND	34	external power ground



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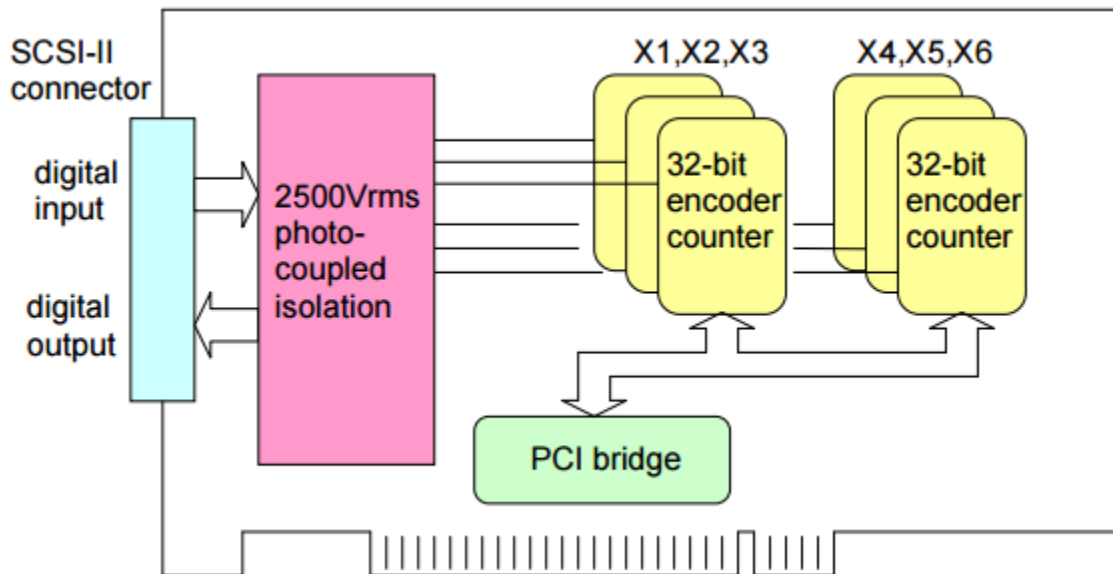
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EGND	35	encoder power ground
4A+	36	X4-axis A+ input (PISO-Encoder600(U) only)
4A-	37	X4-axis A- input (PISO-Encoder600(U) only)
4B+	38	X4-axis B+ input (PISO-Encoder600(U) only)
4B-	39	X4-axis B- input (PISO-Encoder600(U) only)
4C+	40	X4-axis C+ input (PISO-Encoder600(U) only)
4C-	41	X4-axis C- input (PISO-Encoder600(U) only)
EGND	42	encoder power ground
5A+	43	X5-axis A+ input (PISO-Encoder600(U) only)
5A-	44	X5-axis A- input (PISO-Encoder600(U) only)
5B+	45	X5-axis B+ input (PISO-Encoder600(U) only)
5B-	46	X5-axis B- input (PISO-Encoder600(U) only)
5C+	47	X5-axis C+ input (PISO-Encoder600(U) only)
5C-	48	X5-axis C- input (PISO-Encoder600(U) only)
EGND	49	encoder power ground
6A+	50	X6-axis A+ input (PISO-Encoder600(U) only)
6A-	51	X6-axis A- input (PISO-Encoder600(U) only)
6B+	52	X6-axis B+ input (PISO-Encoder600(U) only)
6B-	53	X6-axis B- input (PISO-Encoder600(U) only)
6C+	54	X6-axis C+ input (PISO-Encoder600(U) only)
6C-	55	X6-axis C- input (PISO-Encoder600(U) only)
EXT_VCC	56	external power VCC(+24V) input
DO0	57	digital output 0
DO1	58	digital output 1
DO2	59	digital output 2
DO3	60	digital output 3
DO4	61	digital output 4
DO5	62	digital output 5
DO6	63	digital output 6
DO7	64	digital output 7
NC	65,66,67	Not used
EXT_GND	68	external power ground



3. System Block Diagram

The PISO-Encoder600(U) has a 6-axis encoder counter. And each axis has a 32-bit true counter with maximum counting rate of 1MHz. It also offers three different types of the counting mode, which are QUADRANT mode, CW_CCW mode, and PULSE_DIR mode. User should choose the correct mode based on actual type of encoder. Otherwise, the PISO-Encoder600(U) will not work properly. Besides, PISOEncoder600(U) also provides 3 different functions of counter resetting mode including register reset, index reset and hardware reset. The Index reset function is used to reset encoder counter through using a C+/C- channel signal during every revolution. The hardware reset function is adopted to reset encoder counter by a pre-defined external signal pin, namely HR1~HR6. Furthermore, when PISO-Encoder600(U) is not set on the hardware reset mode, the pins of HR1~HR6 can be open as digital inputs. In addition, PISO-Encoder600(U) also offers 8 channels of digital output. Every digital output and input (digital I/O) is photo-coupled isolated up to 2500Vrms. The detailed function block diagram of PISO-Encoder600(U) is demonstrated and summarized in the following figure.



4. Hardware address selection

The hardware address of PISO-Encoder600(U) board can be set as 0~15 by DIP switch A0~A3 on the PISO-Encoder600(U) board, as shown in Figure 2. The factory hardware address setting is Hex 00. If the default address of this card is used by other device, user can change the setting to various base addresses. The addressing of PCI bus is defined in Table 1. According to the hardware address setting, programmer should call function ENC6_REGISTRATION(cardNo, address) to confirm with the hardware setting in the beginning of the program. The more detailed description for function of ENC6_REGISTRATION() will be presented in chapter 3.

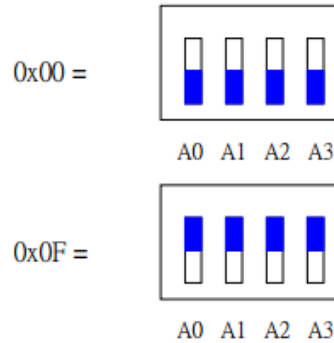


Figure 2 Hardware address selection

Table 1: Hardware address setting

PCI Address	A0	A1	A2	A3
0*	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
10	0	1	0	1
11	1	1	0	1
12	0	0	1	1
13	1	0	1	1
14	0	1	1	1
15	1	1	1	1

Note: On=0, OFF=1 , * factory setting