



### Features

- 3-Axis Encoder Inputs
- 1 MHz Input Rate
- 32-bit Count Range
- Quadrant, Pulse/Dir, CW/CCW
- 2500 Vrms Optical Isolation
- Built-in Virtual Battery Backup for I-7083B(D)
- Dual Watchdog
- Wide Operating Temperature Range: -25 ~ +75°C



### Introduction

The I-7083 and I-7083B are 3-axis high speed encoder modules. Each axis on the module can be independently configured as one of Quadrant, Pulse/Dir or CW/CCW input mode with a maximum input rate of 1 MHz. The high-end specifications of the I-7083/I-7083B and complete software support make it ideal for a wide range of applications in position measurement of motion systems working in industrial and laboratory environments. The I-7083B is an improved version of I-7083 with virtual battery backup function for counter value.

### System Specifications

| Model                                  | I-7083   | I-7083B | I-7083D    | I-7083BD |
|--|--|---------|------------|----------|
| <b>Communication</b>                   |  |         |            |          |
| Interface                              | RS-485   |         |            |          |
| Bias Resistor                          | No (Usually supplied by the RS-485 Master. Alternatively, add a tM-SG4 or SG-785.) |         |            |          |
| Format                                 | N, 8, 1  |         |            |          |
| Baud Rate                              | 1200 to 115200 bps   |         |            |          |
| Protocol                               | DCON   |         |            |          |
| Dual Watchdog                          | Yes, Module (1.6 Seconds), Communication (Programmable)                            |         |            |          |
| <b>LED Indicators/Display</b>          |  |         |            |          |
| System LED Indicator                   | Yes, 1 as Power/Communication Indicator  |         |            |          |
| I/O LED Indicators                     | -  |         |            |          |
| 5-digit LED Display                    | -  |         | Yes        |          |
| <b>Isolation</b>                       |  |         |            |          |
| Intra-module Isolation, Field-to-Logic | 3000 Vdc   |         |            |          |
| <b>EMS Protection</b>                  |  |         |            |          |
| ESD (IEC 61000-4-2)                    | ±4 kV Contact for each Terminal  |         |            |          |
| EFT (IEC 61000-4-4)                    | ±4 kV for Power Line   |         |            |          |
| Surge (IEC 61000-4-5)                  | -  |         |            |          |
| <b>Power</b>                           |  |         |            |          |
| Reverse Polarity Protection            | Yes  |         |            |          |
| Input Range                            | +10 ~ +30 VDC (non-regulated)  |         |            |          |
| Consumption                            | 1.5 W Max.   |         | 1.7 W Max. |          |
| <b>Mechanical</b>                      |  |         |            |          |
| Dimensions (L x W x H)                 | 123 mm x 72 mm x 35 mm   |         |            |          |
| Installation                           | DIN-Rail or Wall Mounting  |         |            |          |
| <b>Environment</b>                     |  |         |            |          |
| Operating Temperature                  | -25 to +75°C   |         |            |          |
| Storage Temperature                    | -30 to +80°C   |         |            |          |
| Humidity                               | 10 to 90% RH, Non-condensing   |         |            |          |

### Applications

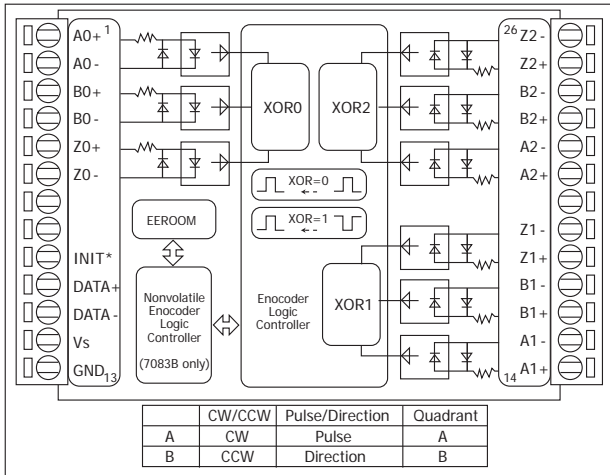
- Building Automation
- Machine Automation
- Remote Diagnosis
- Factory Automation
- Remote Maintenance
- Testing Equipment

### I/O Specifications

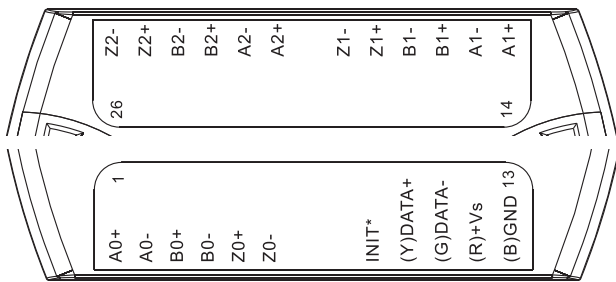
| Model                                    | I-7083   | I-7083D | I-7083B | I-7083BD |
|--|--|---------|---------|----------|
| <b>Digital Input</b>                     |  |         |         |          |
| Channels                                 | 3-axis   |         |         |          |
| Contact                                  | Wet  |         |         |          |
| Sink/Source (NPN/PNP)                    | Sink   |         |         |          |
| Resolution                               | 32-bit   |         |         |          |
| Max. Speed                               | 1 MHz  |         |         |          |
| On Voltage Level                         | 5 V: +3.5 ~ +5 Vdc<br>12 V with 1 kΩ External Resistor: +5 ~ +12 Vdc<br>24 V with 2 kΩ External Resistor: +7 ~ +24 Vdc |         |         |          |
| Off Voltage Level                        | +2 VDC Max.  |         |         |          |
| Encoder Mode                             | CW/CCW, Pulse/Dir, AB Phase  |         |         |          |
| Virtual Battery Backup for Counter Value | -  |         | Yes     |          |

I-7083/I-7083D/I-7083B/I-7083BD

### Internal I/O Structure



### Pin Assignments



### Wire Connections

| Input Type         | ON State<br>Readback as 1<br>Relay ON | OFF State<br>Readback as 0<br>Relay OFF |
|--------------------|---------------------------------------|---|
| Relay Contact      |                                       |   |
| TTL/<br>CMOS Logic |                                       |   |
| NPN Output         |                                       |   |
| PNP Output         |                                       |   |

### Ordering Information

|                      |   |
|----------------------|---|
| <b>I-7083-G CR</b>   | 3-axis, 32-bit Encoder Counter (Gray Cover) (RoHS)                  |
| <b>I-7083D-G CR</b>  | 3-axis, 32-bit Encoder Counter with LED Display (Gray Cover) (RoHS) |
| <b>I-7083B-G CR</b>  | 3-axis, 32-bit Encoder Counter (Gray Cover) (RoHS)                  |
| <b>I-7083BD-G CR</b> | 3-axis, 32-bit Encoder Counter with LED Display (Gray Cover) (RoHS) |

### Accessories

|  |                |  |
|--|----------------|--|
|  | tM-7520U CR    | RS-232 to RS-485 Converter (RoHS)  |
|  | tM-7561 CR     | USB to RS-485 Converter (RoHS)   |
|  | tM-SG4 CR      | RS-485 Pull-high/Pull-low and Termination Resistor Module (RoHS)                                       |
|  | I-7514U CR     | 4-channel RS-485 Hub (RoHS)  |
|  | SG-770 CR      | 7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)                               |
|  | SG-3000 Series | Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Input Transformers |

I-7083/I-7083D/I-7083B/I-7083BD