



## M-7084

4-/8-channel Counter/Frequency/Encoder Input Module

### Features

- 8 Up Counter/Frequency Channels or 4 Encoder Input Channels
- Programmable Digital Filter
- 32-bit Counter
- Individual Channel Configuration
- Virtual Battery Backup to Preserve Counter Values
- ±4 kV ESD Protection
- Preset Values for Counter Input
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



### Introduction

The M-7084 is a 32-bit high-speed Counter/Frequency/Encoder input module that offers a variety of mode options, including "Up Counter", "Frequency Input", "Up/Down Counter", "Direct/Pulse Counter" and "A/B Phase Counter" modes. The mode combinations can be individually set for all 8 channels, where some channels can be set to "Up Counter" mode and other channels can be simultaneously set to "Frequency", "Up/ Down Counter" or "Encoder input" mode. The built-in digital filter can filter out noise where the high/ low pulse width is smaller than the minimum high/low width of the digital filter. The M-7084W provides a virtual battery backup function in counter mode.

### Applications

Counter Measurement, Frequency Measurement and Encoder Motion Control.

### System Specifications

Model	M-7084
<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	Modbus RTU, DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
<b>LED Indicator</b>	
Power	1 LED, Red
<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)	±3 kV for Power Line
<b>Power</b>	
Reverse Polarity Protection	Yes
Input Range	+10 ~ +30 Vdc
Consumption	1.32 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

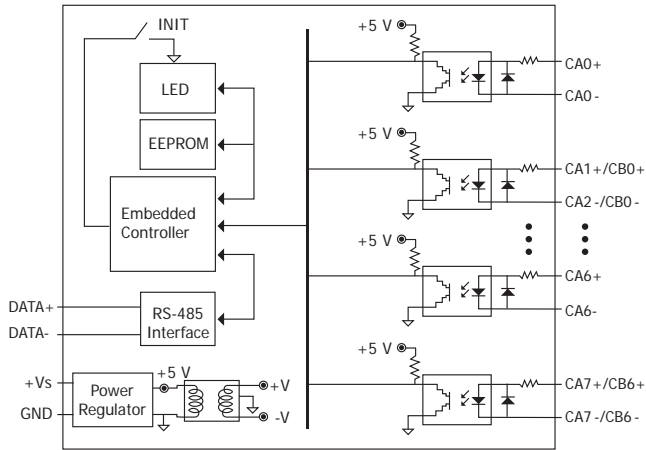
### I/O Specifications

Model	M-7084
<b>Counter/Frequency/Encoder Input</b>	
Channels	4-channel Up/Down Counter (CW/CCW) 4-channel Dir/Pulse Counter (Bi-direction) 4-channel A/B Phase (Quadrant Counting) 8-channel Up Counter 8-channel Frequency
Contact	Wet
Sink/Source (NPN/PNP)	Sink
Types	Counter, Frequency or Encoder
Counter/Encoder-bits	32-bit (4,294,967,295)
ON Voltage Level	+3.5 Vdc ~ +30 Vdc
OFF Voltage Level	+1 Vdc Max.
Programmable Digital Filter	1 ~ 32767 $\mu$ s
Individual Channel Configuration	Yes
Counter Mode	Up or Up/Down
Encoder Mode	CW/CCW, Dir/Pulse, AB Phase
Frequency Mode	Yes
Max. Speed	3.5 Vdc ~ 10 Vdc: 200 kHz 10 Vdc ~ 30 Vdc: 150 kHz
Frequency Accuracy	1 Hz~200 kHz = $\pm$ 0.025% of Input Frequency (Note1)
Virtual Battery Backup to preserve Counter Values	Yes

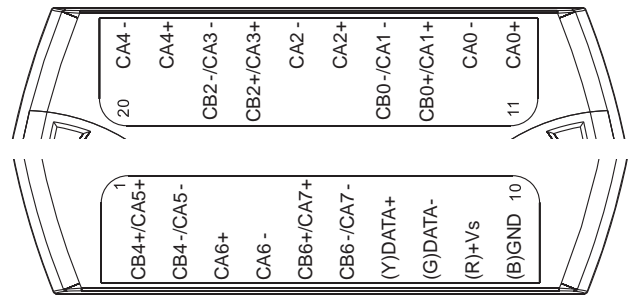
#### Note1:

Frequency Range	Frequency Error (typical)
1 Hz ~ 10 Hz	0.01 Hz
10 Hz ~ 10 KHz	0.5 Hz
10 KHz ~ 100 KHz	15 Hz
100 KHz ~ 200 KHz	30 Hz

## Internal I/O Structure



## Pin Assignments



## Wire Connections

	Counter Type
Up	Up+  CAX+ Up-  CAX-
Up/Down	Up+  CAX+ Up-  CAX- Down+  CBx+ Down-  CBx-
Dir/Pulse	Pulse+  CAX+ Pulse-  CAX- Dir+  CBx+ Dir-  CBx-
A/B Phase	A0+  CAX+ A0-  CAX- B0+  CBx+ B0-  CBx-
	Frequency Type
Frequency	Freq+  CAX+ Freq-  CAX-

## Ordering Information

<b>M-7084-G CR</b>	4-/8-channel Counter/Frequency/Encoder Input Module (RoHS)
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## Accessories

	<b>SG-770 CR</b> 7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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