



## I-87084W

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

### Introduction

The I-87084W 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 individual 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 is valid for both non-isolated and isolated and can filter out noise where the high/low pulse width is smaller than the minimum high/low width of the digital filter. The I-87084W provides a virtual battery backup function in counter mode, and isolated or non-isolated mode is jumper-selectable.

### System Specifications

COM Ports	
Port	RS-485
Data Format	N, 8, 1
Baud Rate	1200 ~ 115200 bps
Protocol	DCON
CPU Module	
Dual Watchdog	Module (1.6 Seconds), Communication (Programmable)
LED Indicators	
System LED Indicator	1
I/O LED Indicator	8
Isolation	
Intra-module Isolation, Field-to-Logic	2000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for Each Terminal, ±8 kV Air for Random Point
Power	
Consumption	0.6 W
Mechanical	
Dimensions (W x L x H)	30 mm x 115 mm x 102 mm
Environment	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-40 ~ +85 °C
Humidity	10 ~ 95 % RH, Non-condensing

### Features

- 8 Up Counter/Frequency or 4 Encoder Input Channels
- Programmable Digital Filter
- Isolated or Non-isolated Input
- 32-bit Counter
- Individual Channel Configuration
- Virtual Battery Backup to Preserve Counter Values
- Maximum Frequency of up to 1 MHz
- Preset Values for Counter Input



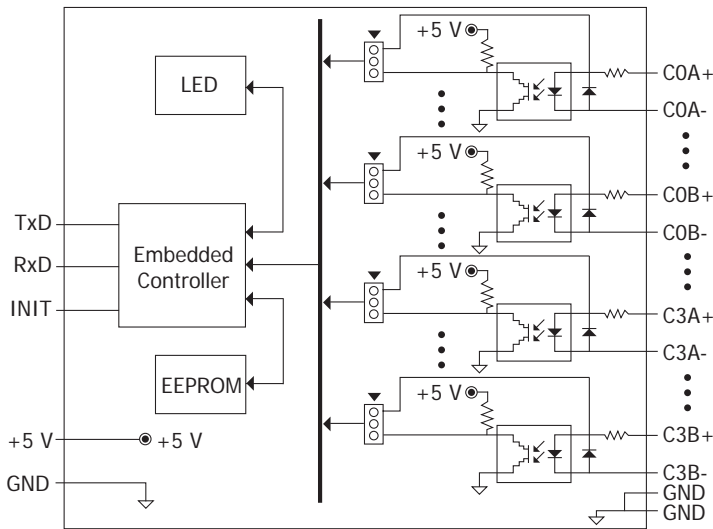
### I/O Specifications

Counter/Frequency/Encoder Input		
Channels		4-ch Up/Down Counter (CW/CCW) 4-ch Dir/Pulse Counter (Bi-direction) 4-ch A/B Phase (Quadrant Counting) 8-ch Up Counter 8-ch Frequency
Contact		Wet
Sink/Source (NPN/PNP)		Sink
Counter/Encoder-bits		32-bit (4, 294, 967, 295)
ON Voltage Level	Isolated	+3.5 VDC ~ +30 VDC
	Non-isolated	+2.4 VDC ~ +5 VDC
OFF Voltage Level	Isolated	+1 VDC Max.
	Non-isolated	+0.8 VDC Max
Programmable Digital Filter		1 ~ 32767 μs
Individual Channel Configuration		Yes
Counter Mode		Up or Up/Down
Encoder Mode		CW/CCW, Dir/Pulse, AB Phase
Frequency Mode		Yes
Max. Speed	Isolated	3.5 VDC ~ 10 VDC: 200 kHz 10 VDC ~ 30 VDC: 150 kHz
	Non-isolated	1 MHz
Frequency Accuracy		1 k ~ 200 k Hz = ±0.025 % of Input Frequency (Note1) 200 k ~ 1 M Hz = ±0.1 % of Input Frequency
Virtual Battery Backup to preserve Counter Values		Yes

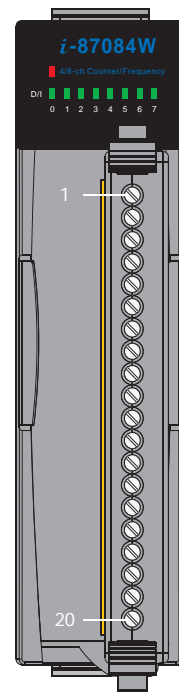
### Note

Frequency Range	Frequency Error (Typical)
1 ~ 10	0.01 Hz
10 ~ 10 K	0.5 Hz
10 K ~ 100 K	15 Hz
100 K ~ 200 K	30 Hz

## Internal I/O Structure



## Pin Assignments

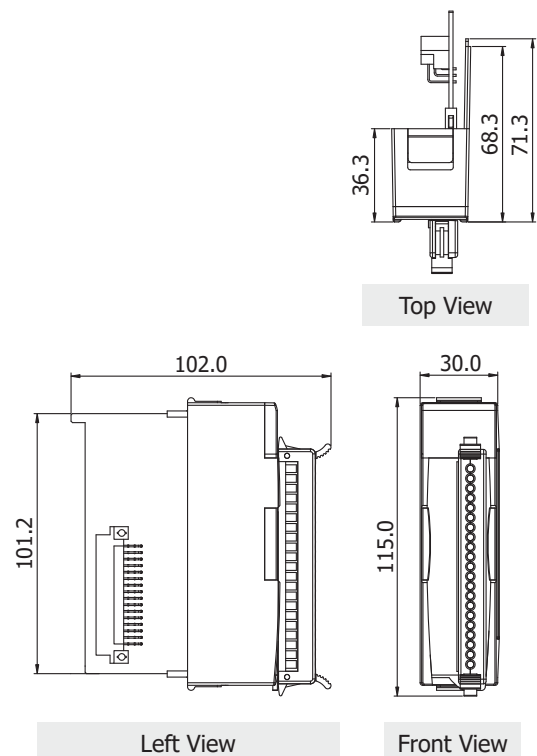


Terminal No.	Pin Assignment
01	C0A+
02	C0A-
03	C0B+
04	C0B-
05	C1A+
06	C1A-
07	C1B+
08	C1B-
09	C2A+
10	C2A-
11	C2B+
12	C2B-
13	C3A+
14	C3A-
15	C3B+
16	C3B-
17	GND
18	GND
19	N.C
20	N.C

## Wire Connections

Counter Type	Isolated	Non-Isolated
<b>Dir/Pulse</b>	Pulse+ □ CxA+ Pulse □ CxA- Dir+ □ CxB+ Dir- □ CxB-	Pulse+ □ CxA+ Dir+ □ CxB+ Pulse- & Dir- □ GND
<b>Up/Down</b>	Up+ □ CxA+ Up- □ CxA- Down+ □ CxB+ Down- □ CxB-	Up+ □ CxA+ Down+ □ CxB+ Up- & Down- □ GND
<b>UP</b>	Up0+ □ CxA+ Up0- □ CxA- Up1+ □ CxB+ Up1- □ CxB-	Up0+ □ CxA+ Up1+ □ CxB+ Up0- & Up1- □ GND
<b>A/B Phrase</b>	A0+ □ CxA+ A0- □ CxA- B0+ □ CxB+ B0- □ CxB-	A0+ □ CxA+ B0+ □ CxB+ A0- & B0- □ GND
Frequency Type	Isolated	Non-Isolated
<b>Frequency</b>	Freq0+ □ CxA+ Freq0- □ CxA- Freq1+ □ CxB+ Freq1- □ CxB-	Freq0- □ CxA+ Freq1- □ CxB+ Freq0- & Freq1- □ GND

## Dimensions (Unit: mm)



## Ordering Information

<b>I-87084-G CR</b>	4/8-channel Counter/Frequency/Encoder Module (RoHS)
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