



### Features

- 8 Up Counter/Frequency Channels or 4 Encoder Input Channels
- Programmable Digital Filter.
- Isolated or Non-isolated Input
- Virtual Battery Backup for Counter Values
- +/-4 kV ESD Protection
- Preset Values for Counter Input
- RoHS Compliant
- Wide Operating Temperature Range: -25 ~ +75°C



### Introduction

The I-87084W-G is a 32-bit hardware high-speed Counter/Frequency/Encoder Input Module with "Up Counter", "Frequency", "Up/Down Counter", "Dir/Pulse Counter" and "A/B Phase Counter" modes. It has a variety of mode combinations for all 8 channels, which That means that it can use some channels in "Up Counter" mode and others in "Frequency" or "A/B Phase". The I-87084W provides a virtual battery backup function in counter mode, and isolated or non-isolated mode is jumper-selectable.

### Applications

Counter Measurement, Frequency Measurement and Encoder Motion Control.

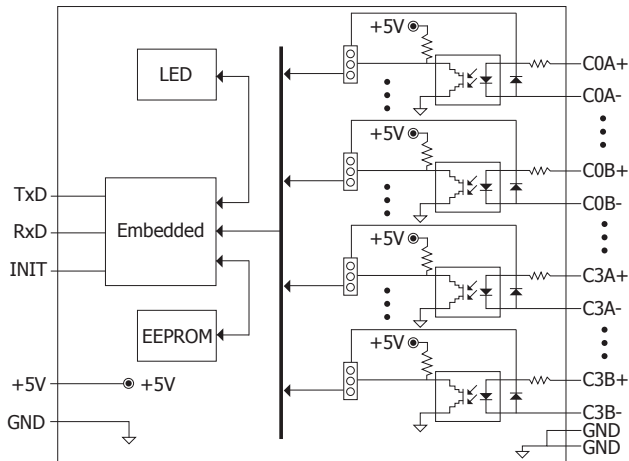
### System Specifications

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

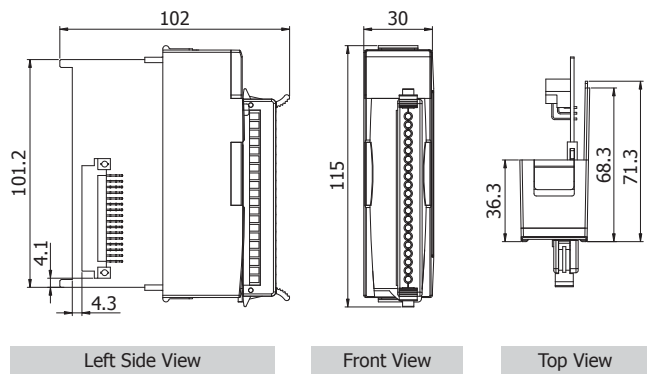
### I/O Specifications

Counter/Frequency/Encoder Input		
Channels	8	
Type	Counter, Frequency or Encoder	
Mode	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	
Isolated	On Voltage Level	+3.5 V <sub>dc</sub> ~ +30 V <sub>dc</sub>
	Off Voltage Level	+1 V <sub>dc</sub> Max.
Non-isolated	On Voltage Level	+2.4 V <sub>dc</sub> ~ +5 V <sub>dc</sub>
	Off Voltage Level	+0.8 V <sub>dc</sub> Max.
	Threshold Voltage	Fixed
Digital Noise Filter	1 ~ 32767 μs	
Counter	Up or Up/Down	
Encoder	CW/CCW, Dir/Pulse, AB Phase	
Max.Counts	32-bits (4,294,967,295)	
Max. Speed	Isolated	3.5 V <sub>dc</sub> ~ 10 V <sub>dc</sub> : 200 kHz 10 V <sub>dc</sub> ~ 30 V <sub>dc</sub> : 150 kHz
	Non-isolated	1 MHz
Frequency Accuracy	±0.4% of Input Frequency	
Virtual Battery Backup for Counter Value	Yes	

### Internal I/O Structure



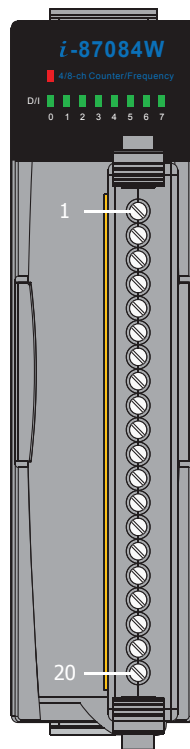
### Dimensions (Units: mm)



### Wire Connections

Counter Type	Isolation	Non-isolation
Dir/Pulse	Vin+ (Pulse)  CxA+ Vin- (Pulse)  CxA- Vin+ (Dir)  CxB+ Vin- (Dir)  CxB-	Vin+ (Pulse)  CxA+ Vin+ (Dir)  CxB- Vin- (Pulse) & Vin- (Dir)  GND
Up/Down	Vin+ (Up)  CxA+ Vin- (Up)  CxA- Vin+ (Down)  CxB+ Vin- (Down)  CxB-	Vin+ (Up)  CxA+ Vin+ (Down)  CxB+ Vin- (Up) and Vin- (Down)  GND
Up	Vin+ (Up0)  CxA+ Vin- (Up0)  CxA- Vin+ (Up1)  CxB+ Vin- (Up1)  CxB-	Vin+ (Up0)  CxA+ Vin+ (Up1)  CxB+ Vin- (Up0) & Vin- (Up1)  GND
Quadrant	Vin+ (A0)  CxA+ Vin- (A0)  CxA- Vin+ (B0)  CxB+ Vin- (B0)  CxB-	Vin+ (A0)  CxA+ Vin+ (B0)  CxB+ Vin- (A0) & Vin- (B0)  GND
Frequency Type	Isolation	Non-isolation
Frequency	Vin+ (Freq0)  CxA+ Vin- (Freq0)  CxA- Vin+ (Freq1)  CxB+ Vin- (Freq1)  CxB-	Vin- (Freq0)  CxA+ Vin- (Freq1)  CxB+ Vin- (Freq0) & Vin- (Freq1)  GND

### 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

### Ordering Information

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