



USB-87P1/USB-87P2/USB-87P4/USB-87P8

1/2/4/8-slot USB I/O Expansion Unit with Intelligent CPU Module (DCON Protocol)

Features

- One USB Port
- DCON Protocol (ASCII-based protocol)
- Hot Swap Allowed
- Auto Configuration
- LED Indicators for Fault Detection
- 1/2/4/8 Slot(s) for I-87K Modules
- Operating Temperature: -25 ~ +75 °C



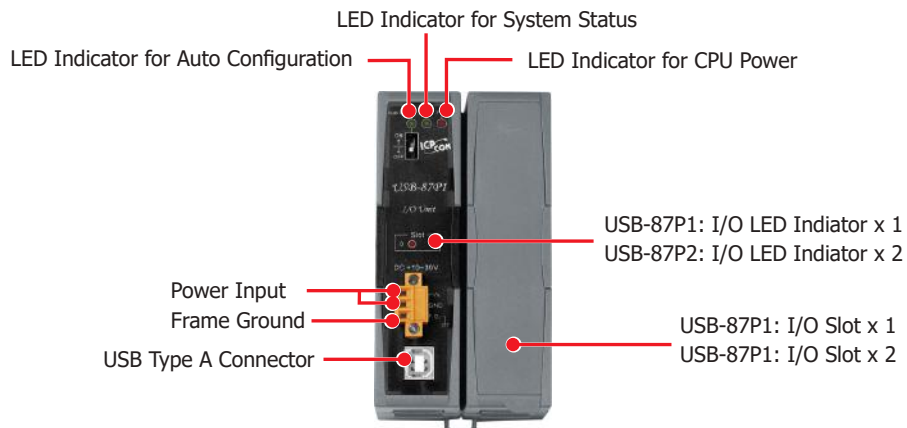
Introduction

USB-87P1/2/4/8 is an unit to expand I/O via the USB. It is designed to be used in harsh and noisy environment, so the hardware is manufactured with wide power input range (10 ~ 30 VDC), isolated power input and can operate under wide temperature (-25 ~ +75 °C). To simplify installation and maintenance of I/O modules, it provides many useful features, such as: hot swap allowed, auto configuration, LED indicators for fault detection, dual watchdog to keep alive, programmable power on and safe values for safety.

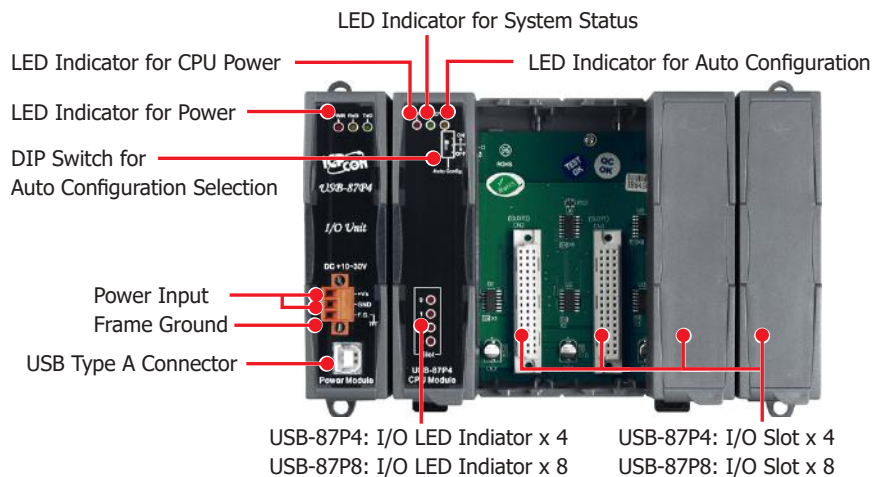
There are more than 30 I/O modules supported with the unit, including analog input/output, digital input/output, counter, frequency I/O modules. We provide various software development kits (SDK) and demos, such as DLL, Labview driver, InduSoft driver, Linux driver, OPC server. The I-87K series I/O modules plugged in the USB-87P1/2/4/8 can be easily integrated into variant software system.

Apparances

USB-87P1/USB-87P2



USB-87P4/USB-87P8

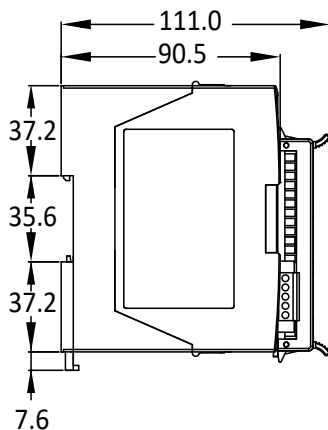


Specifications

Models	USB-87P1	USB-87P2	USB-87P4	USB-87P8
Communication Interface				
Port Type	1 x USB Type A Connector (3000 VDC Isolated)			
ESD Protection	+/- 4 K Contact Discharge and +/- 8 K Air Discharge			
Communication Protocol	DCON Protocol (ASCII Format)			
HMI				
DIP Switch	1-bit; 1 for Auto Configuration Selection			
LED Indicator				
I/O LED Indicator	1	2	4	8
System LED Indicator	1 x Power, 1 x System Status, 1 x Auto Configuration		1 x Power, 1 x CPU Power, 1 x System Status, 1 x Auto Configuration	
I/O Expansion				
I/O Type	I-87K series			
Slots	1	2	4	8
Mechanical				
Dimensions (W x H x D, unit: mm)	64 x 120 x 111	95 x 132 x 111	188 x 132 x 111	312 x 132 x 111
Installation	DIN-Rail, Wall mounting			
Environmental				
Operating Temperature	-25 ~ +75 °C			
Storage Temperature	-30 ~ +80 °C			
Humidity	10 ~ 90 % RH, Non-condensing			
Power				
Input Range	+10 ~ 30 VDC (1 kV Isolated)			
Reverse Polarity Protection	Yes			
Consumption	1.0 W		2.0 W	2.4 W
Power Board Driving	5.0 W	8.0 W	30.0 W	

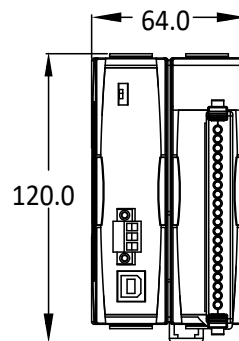
Dimensions (Units: mm)

USB-87P1/USB-87P2/USB-87P4/USB-87P8



Left Side View

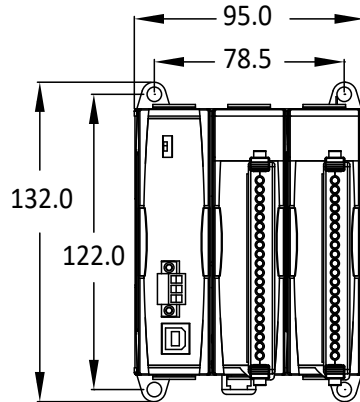
USB-87P1



Front View

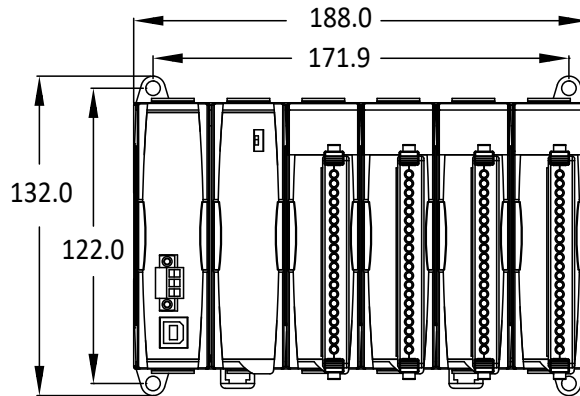
■ Dimensions (Units: mm)

USB-87P2



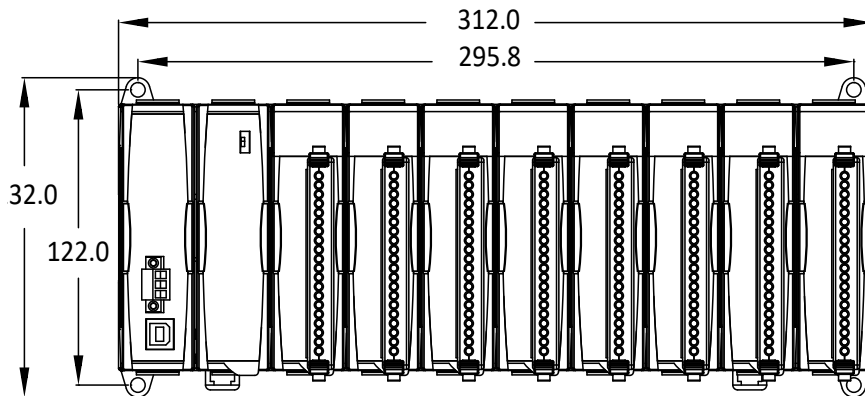
Front View

USB-87P4



Front View

USB-87P4



Front View

■ Ordering Information

USB-87P1-G CR	1-slot USB I/O Expansion Unit with Intelligent CPU Module (DCON Protocol) (Gray Cover) (RoHS)
USB-87P2-G CR	2-slot USB I/O Expansion Unit with Intelligent CPU Module (DCON Protocol) (Gray Cover) (RoHS)
USB-87P4-G CR	4-slot USB I/O Expansion Unit with Intelligent CPU Module (DCON Protocol) (Gray Cover) (RoHS)
USB-87P8-G CR	8-slot USB I/O Expansion Unit with Intelligent CPU Module (DCON Protocol) (Gray Cover) (RoHS)



I-87004W-G

4-port Digital Temperature Sensor Module with Daisy-Chain Wiring

Introduction

The I-87004W is a digital temperature sensor module that provides four ports for 2- or 3-wire DS18B20 digital temperature sensor input. The DS18B20 temperature sensor has a high accuracy of $\pm 0.5^\circ\text{C}$ when measuring temperatures between -10 and $+85^\circ\text{C}$, with a total measurement range of between -55 and $+125^\circ\text{C}$. Up to 20 DS18B20 sensors can be connected to each port on the I-87004W module in a daisy-chain arrangement with a maximum wiring distance of 100 meters. The I-87004W module is fully RoHS compliant, and features 4 kV ESD protection as well as 3000 Vdc intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	N81, N82, E81, O81
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicator	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal
	± 8 kV Air for Random Point
Power	
Power Consumption	0.5 W Max.
Mechanical	
Dimensions (L x W x H)	115 mm x 30 mm x 102 mm
Environment	
Operating Temperature	-25 to $+75^\circ\text{C}$
Storage Temperature	-30 to $+80^\circ\text{C}$
Humidity	10 to 90% RH, Non-condensing

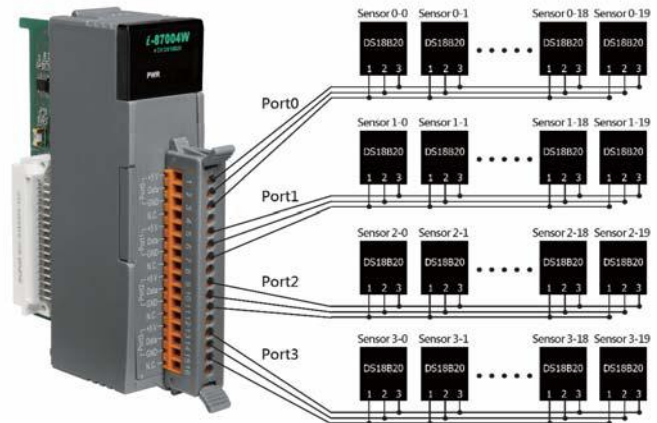
Features

- 4-Port DS18B20 Sensor Input Module
- 2/3-wire DS18B20 Wire Connection
- Max. 20 Sensors per Port
- Max. Distance of 100 m per Port when using Daisy-Chain Wiring
- Measures Temperatures from -55 to $+125^\circ\text{C}$
- $\pm 0.5^\circ\text{C}$ Accuracy from -10 to $+85^\circ\text{C}$
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation, Field to Logic



Applications

- Temperature Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring

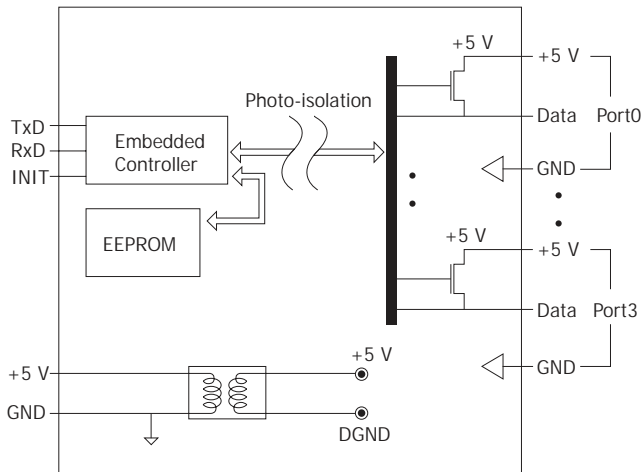


I/O Specifications

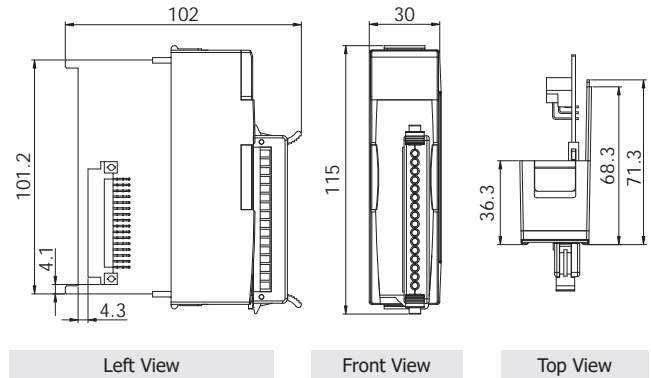
Temperature Measurement	
Port	4
Wiring	2-wire or 3-wire
Sensor Type	DS18B20
Temperature Measurement Range	-55°C to $+125^\circ\text{C}$
Resolution	12-bit
Accuracy	$\pm 0.5^\circ\text{C}$ (See Note 1)
Sampling Rate	1 Hz
Number of Sensors per Port	20
Sensor Wiring Length	Max. 100 m per Port

Note 1: $\pm 0.5^\circ\text{C}$ accuracy only applies for measurements between -10°C and $+85^\circ\text{C}$

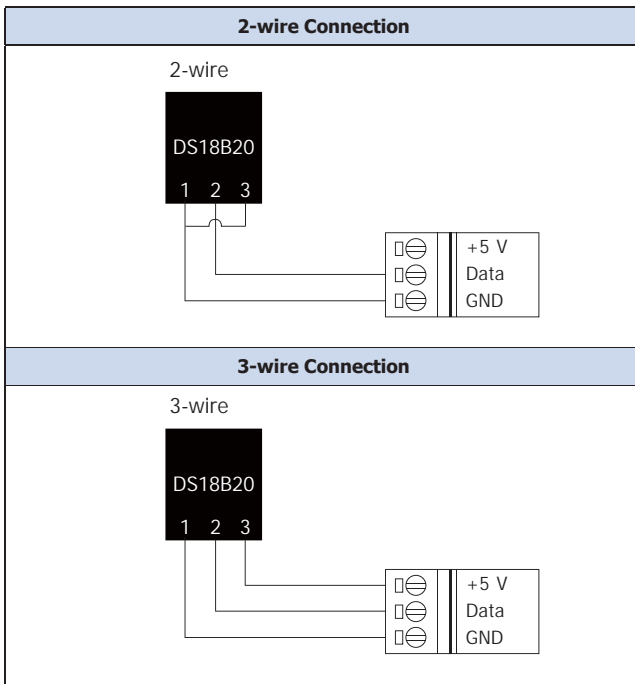
Internal I/O Structure



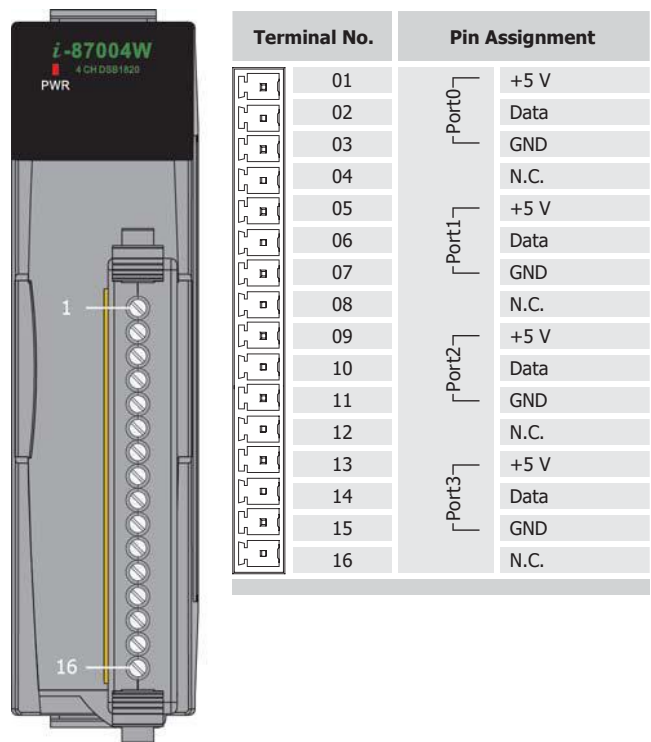
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87004W-G CR	4-Port Digital Temperature Sensor Module with Daisy-Chain Wiring (Gray Cover) (RoHS)
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Accessories

CA-TP1-M100-L020 CR	3-wire DS18B20, Stainless steel, 2M (-30 °C ~ 125 °C) (RoHS)
CA-TP1-M200-L020 CR	3-wire DS18B20, copper nickel plated, 2 M (-30 °C ~ 125 °C) (RoHS)
SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)



I-87005W-G

8-channel Thermistor Input and 8-channel Digital Output Module

Introduction

The I-87005W module is used for measuring temperature using a thermistor. The module supports a wide range of thermistors, and features individual channel configuration, which means that eight of the input channels can be individually configured for different kinds of thermistor. In addition, the I-87005W also provides 8 digital output channels that can be used for alarm output, and supports user-defined thermistor types, which can be added by specifying the Steinhart coefficients, if necessary. The inclusion of 3000 Vdc intra-module isolation and overvoltage protection for the thermistors on the I-87005W ensures that the module operates at a higher reliability.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.7 W Max.
Mechanical	
Dimensions (L × W × H)	114 mm × 30 mm × 95 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- Thermistor Input
- Individual Channel Configuration
- Open Wire Detection
- 8-channel Digital Output for Alarm Output
- 3000 Vdc Intra-module Isolation
- Overvoltage Protection for Thermistor Input
- User-defined Thermistor TypeS
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



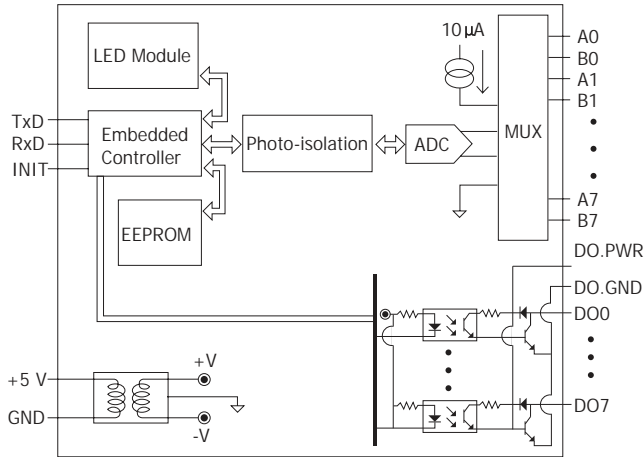
Applications

- Temperature Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring

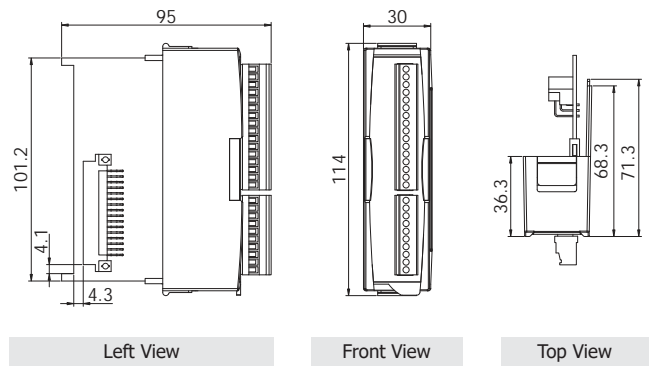
I/O Specifications

Thermistor Input	
Channels	8
Wiring	2 Wires
Sensor Type	Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined
Resolution	16-bit
Accuracy	±0.1% of FSR
Sampling Rate	8 Hz (Total)
Zero Drift	±0.5 µV/°C
Span Drift	±25 ppm/°C
Common Mode Rejection	113 dB
Normal Mode Rejection	100 dB
Input Impedance	>1 MΩ
Individual Channel Configuration	Yes
Resistance Measurement	200 kΩ
Open Wire Detection	Yes
Overvoltage Protection	120 VDC/110 VAC
Digital Output	
Output Channels	8
Output Type	Isolated Open-collector
Max. Load Current	700 mA/channel
Load Voltage	+5 to +50 VDC
Safe Value	Yes
Power-on Value	Yes

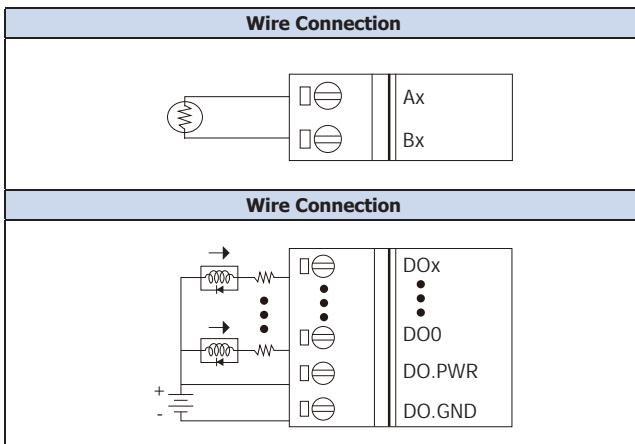
Internal I/O Structure



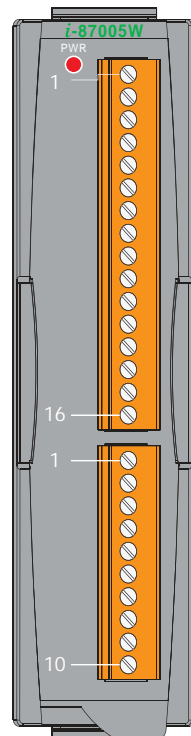
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	A0
02	B0
03	A1
04	B1
05	A2
06	B2
07	A3
08	B3
09	A4
10	B4
11	A5
12	B5
13	A6
14	B6
15	A7
16	B7
01	DO.PWR
02	DO.GND
03	DO0
04	DO1
05	DO2
06	DO3
07	DO4
08	DO5
09	DO6
10	DO7

Ordering Information

I-87005W-G CR	8-channel Thermistor Input and 8-channel Digital Output Module (Gray Cover) (RoHS)
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Accessories

CA-TM-P100-L020 CR	NTC Thermistor, Epoxy Resin Cable, 2 M (-40 °C ~ +80 °C) (RoHS)
CA-TM-P100-L050 CR	NTC Thermistor, Epoxy Resin Cable, 5 M (-40 °C ~ +80 °C) (RoHS)
SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)



I-87013W-G

4-channel RTD Input Module

Introduction

The I-87013W is a 4-channel RTD input module that is used for measuring temperature using RTD. The module supports 2/3/4-wire RTD sensor and features open wire detection. The I-87013W also provides 4 kV ESD protection and 3000 Vdc intra-module isolation.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.8 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 4-channel RTD Input
- Open Wire Detection
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



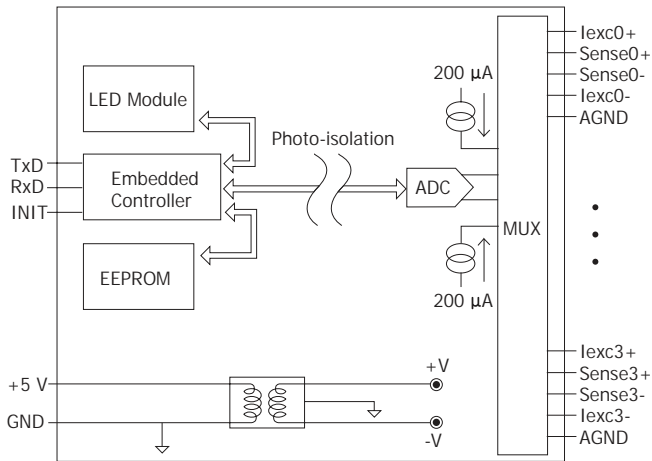
I/O Specifications

Analog Input	
Channels	4
Wiring	2/3/4-wire
Sensor Type	Pt100, Pt1000, Cu50, Ni120
Resolution	16-bit
Accuracy	±0.1% of FSR
Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz
Zero Drift	±0.5 µV/°C
Span Drift	±25 ppm/°C
Common Mode Rejection	150 dB min
Normal Mode Rejection	100 dB
Individual Channel Configuration	-
3-wire RTD Lead Resistance Elimination	Yes
Resistance Measurement	3.2 kΩ
Open Wire Detection	Yes
Overvoltage Protection	±25 VDC

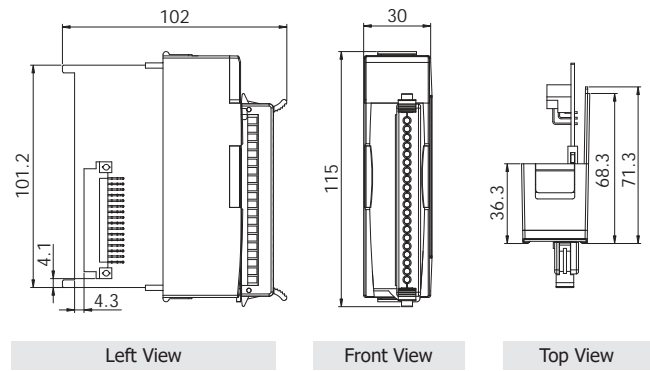
RTD Type Settings (TT)

Type Code	RTD Type	Temperature Range
20	Platinum 100, α= 0.00385	-100 to +100°C
21	Platinum 100, α= 0.00385	0 to +100°C
22	Platinum 100, α= 0.00385	0 to +200°C
23	Platinum 100, α= 0.00385	0 to +600°C
24	Platinum 100, α= 0.003916	-100 to +100°C
25	Platinum 100, α= 0.003916	0 to +100°C
26	Platinum 100, α= 0.003916	0 to +200°C
27	Platinum 100, α= 0.003916	0 to +600°C
28	Nickel 120	-80 to +100°C
29	Nickel 120	0 to +100°C
2A	Platinum 1000, α= 0.00385	-200 to +600°C

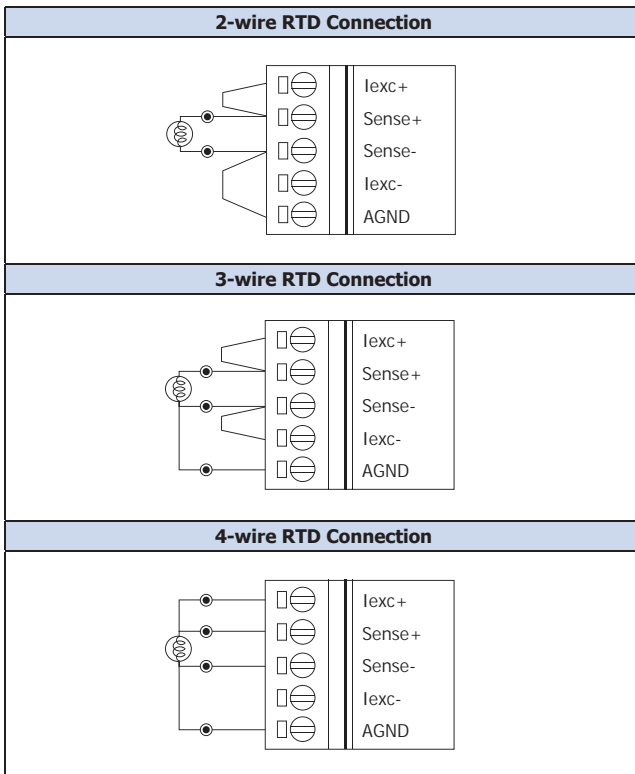
Internal I/O Structure



Dimensions (Units: mm)



Wire Connections




Pin Assignments

Terminal No.	Pin Assignment
01	Iexc0+
02	Sense0+
03	Sense0-
04	Iexc0-
05	AGND
06	Iexc1+
07	Sense1+
08	Sense1-
09	Iexc1-
10	AGND
11	Iexc2+
12	Sense2+
13	Sense2-
14	Iexc2-
15	AGND
16	Iexc3+
17	Sense3+
18	Sense3-
19	Iexc3-
20	AGND

Ordering Information

I-87013W-G CR	4-channel RTD Input Module (Gray Cover) (RoHS)
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Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87015W-G I-87015PW-G

7-channel RTD Input Module

Introduction

The I-87015W is a 7-channel RTD input module for measuring temperature using RTD. Each channel can be connected to a different kind of RTD sensor, which provides high overvoltage protection of 20 VDC, and also has an open circuit detection function for each channel of RTD input. The module is fully RoHS compliant and has 4 kV ESD protection and 3000 VDC module internal isolation.

The I-87015PW is specially designed for long-distance RTD measurement, and features automatic compensation function for three-wire RTD, so it can be accurately measured regardless of the wire length. It is a 7-channel RTD input module for measuring temperature using RTD. Each channel can be connected to a different kind of RTD sensor, which provides high overvoltage protection of 120 VDC, and also has an open circuit detection function for each channel of the RTD input. The module is fully RoHS compliant and has 4 kV ESD protection and 3000 VDC module internal isolation.

System Specifications

Model	I-87015W	I-87015PW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	14 as High/Low Alarm Signals	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 VDC	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
Power		
Power Consumption	1.0 W Max.	
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

NOTE: ICP DAS recommends selecting the I-87015PW for long-distance RTD Lines.

Features

- 7-channel RTD Input
- 3-wire RTD Lead Resistance Elimination for I-87015PW
- High Resolution: 16-bit
- Individual Channel Configuration
- Open Wire Detection
- Overvoltage Protection



Applications

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

I/O Specifications

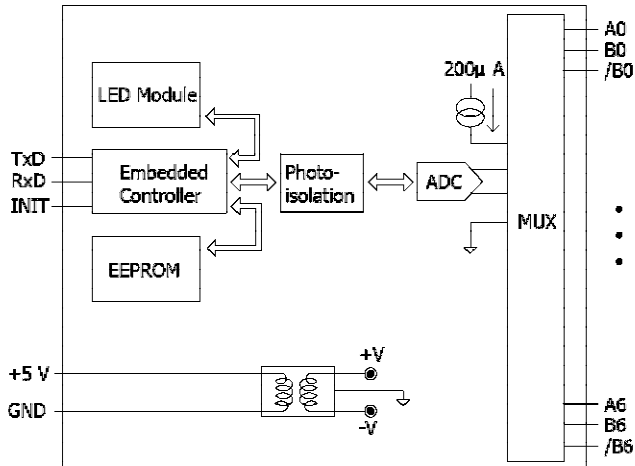
Model	I-87015W	I-87015PW
Analog Input		
Channels	7	
Wiring	2/3-wire	
Sensor Type	Pt100, Pt1000, Ni120, Cu50, Cu100, Cu1000	
Resolution	16-bit	
Accuracy	±0.05% of FSR	
-3dB Bandwidth	15.7 Hz	
Sampling Rate	12 Hz (Total)	
Zero Drift	±0.5 μV/°C	
Span Drift	±2.0 ppm/°C	
Common Mode Rejection	150 dB	
Normal Mode Rejection	100 dB	
Input Impedance	>1 MΩ	
Individual Channel Configuration	Yes	
3-wire RTD Lead Resistance Elimination	-	Yes
Resistance Measurement	3.2 kΩ	
Open Wire Detection	Yes	
Overvoltage Protection	±20 VDC	±120 VDC

RTD Type Settings (TT)

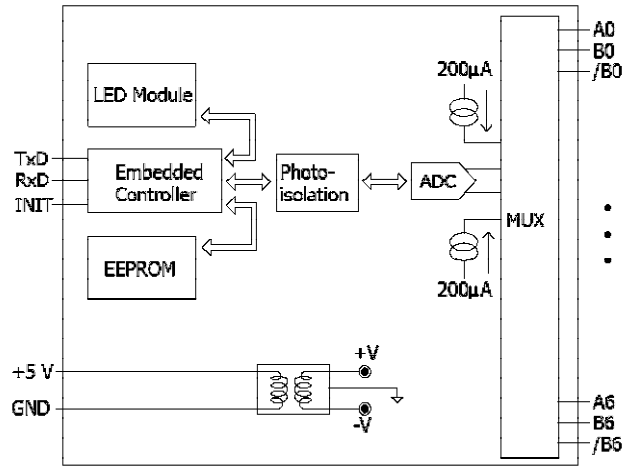
Type Code	RTD Type	Temperature Range
20	Platinum 100, α= 0.00385	-100 to +100°C
21	Platinum 100, α= 0.00385	0 to +100°C
22	Platinum 100, α= 0.00385	0 to +200°C
23	Platinum 100, α= 0.00385	0 to +600°C
24	Platinum 100, α= 0.003916	-100 to +100°C
25	Platinum 100, α= 0.003916	0 to +100°C
26	Platinum 100, α= 0.003916	0 to +200°C
27	Platinum 100, α= 0.003916	0 to +600°C
28	Nickel 120	-80 to +100°C
29	Nickel 120	0 to +100°C
2A	Platinum 1000, α= 0.00385	-200 to +600°C
2B	Cu 100 at 0°C, α= 0.00421	-20 to +150°C
2C	Cu 100 at 25°C, α= 0.00427	0 to +200°C
2D	Cu 1000 at 0°C, α= 0.00421	-20 to +150°C
2E	Platinum 100, α= 0.00385	-200 to +200°C
2F	Platinum 100, α= 0.003916	-200 to +200°C
80	Platinum 100, α= 0.00385	-200 to +600°C
81	Platinum 100, α= 0.003916	-200 to +600°C
82	Cu 50 at 0°C	-50 to +150°C
83	Nickel 100	-60 to +180°C

Internal I/O Structure

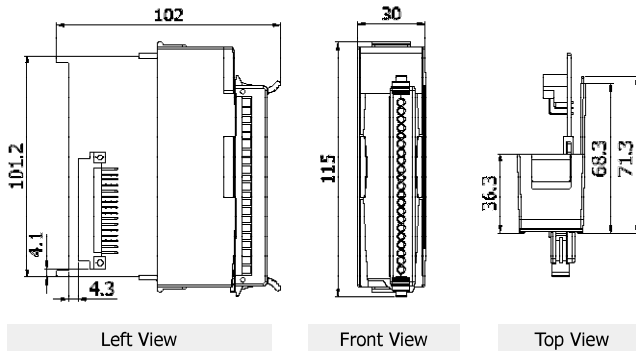
I-87015W



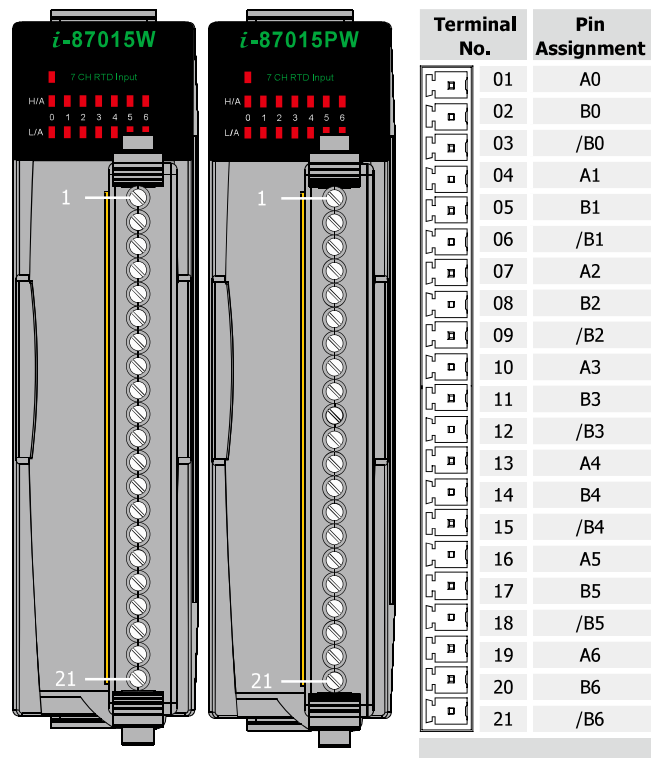
I-87015PW



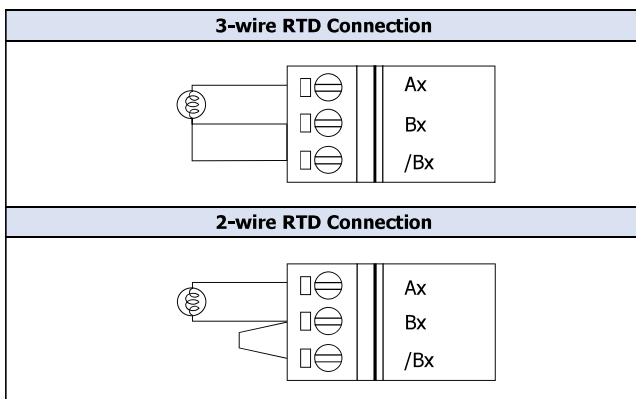
Dimensions (Units: mm)



Pin Assignments




Wire Connections



Ordering Information

I-87015W-G CR	7-channel RTD Input Module (Gray Cover) (RoHS)
I-87015PW-G CR	7-channel RTD Input Module with 3-wire Lead Resistance Elimination (Gray Cover) (RoHS)

Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87016W-G

2-channel Isolated Strain Gauge Input Module

Introduction

Around our surroundings, there are numerous examples of converting force into a measurable electrical output; In most cases, we need a strain gauge or a load cell. But the question is that how do we deal with these electrical outputs.

I-87016W is definitely your NO.1 choice! It not only processes the data from load cells or strain gauges, but also features linear mapping that generates intuitive and synchronic results for you; by user-defined correspondent table, I-87016W converts the data into weight directly!

Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Semiconductor Fabrication
- Control Systems

System Specifications

Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
Safe Value (When Host Fail or Communication Fail)	Yes	
Power-on Preset Value	Yes	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	4 as Digital Input/Digital Output status Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
Power		
Power Consumption	Typical	1.1 W
	Maximum	2.5 W
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

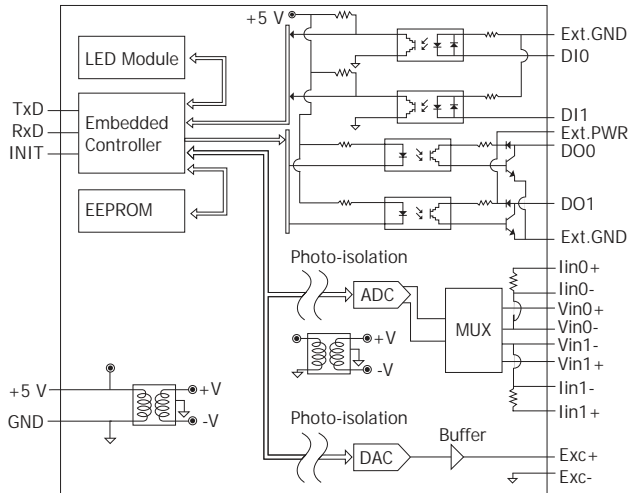
- Strain Gauge Measurement
- High Resolution: 16-bit
- Excitation Voltage Output : 0 ~ 10 V
- Individual Channel Configuration
- 2-channel Digital Inputs
- 2-channel Digital Outputs
- 3000 VDC Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



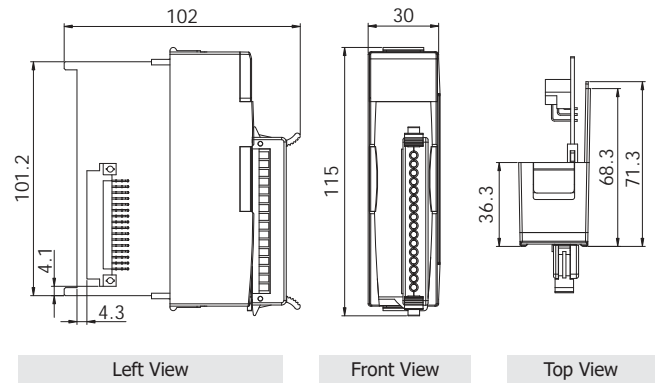
I/O Specifications

Analog Input		
Channels	2	
Range	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC -20 mA ~ +20 mA (No External Resistor Required)	
Strain Gauge Type	Full-bridge, Half-bridge, and Quarter-bridge	
Resolution	16-bit	
Individual Channel Configuration	Yes	
Accuracy	±0.05% of FSR (Voltage), ±0.1% of FSR (Current)	
Sampling Rate	10 Hz (Total)	
-3dB Bandwidth	15.7 Hz (10 Hz mode)	
Common Mode Rejection	150 dB min.	
Normal Mode Rejection	100 dB	
Input Impedance	> 400 kΩ (Voltage), 125 Ω (Current)	
Overvoltage Protection	30 VDC	
Long-distance Strain Gauge Measurement	Yes	
Individual Channel Configurable	Yes	
Excitation Voltage Output		
Channels	1	
Range	0 ~ +10 VDC	
Resolution	16-bit	
Max. Output Load current	80 mA	
Accuracy	±0.05% of FSR	
Output Capacity	10 VDC @ 80 mA	
Drift	±50 ppm/°C	
Digital Input		
Channels	2	
Contact	Wet	
Sink/Source (NPN/PNP)	Sink	
ON Voltage Level	+3.5 VDC ~ 50 VDC	
OFF Voltage Level	+1 VDC Max.	
Input Impedance	10 kΩ, 0.66 W	
Event Counter	Channels	2
	Max. Input Frequency	50 Hz
	Min. Pulse Width	10 ms
Channel-to-Channel Isolation	Yes	
Digital Output		
Channels	2	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+3.5 VDC ~ 50 VDC	
Max. Load Current	700 mA/channel	
External Power Reversed Protection and Short Circuit Protection	Yes	
Overheating Protection	Yes	

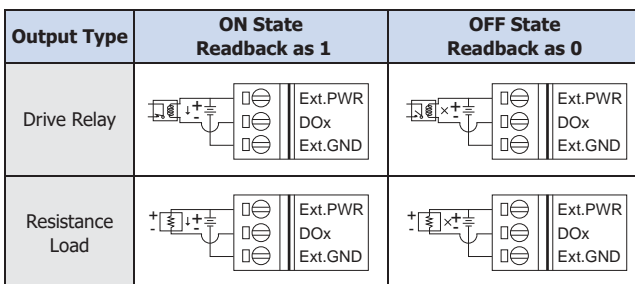
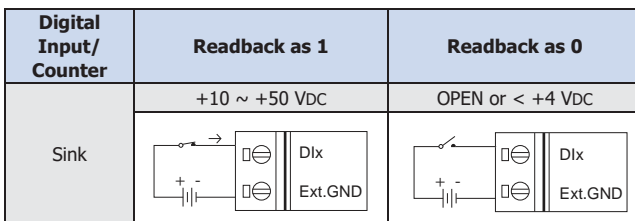
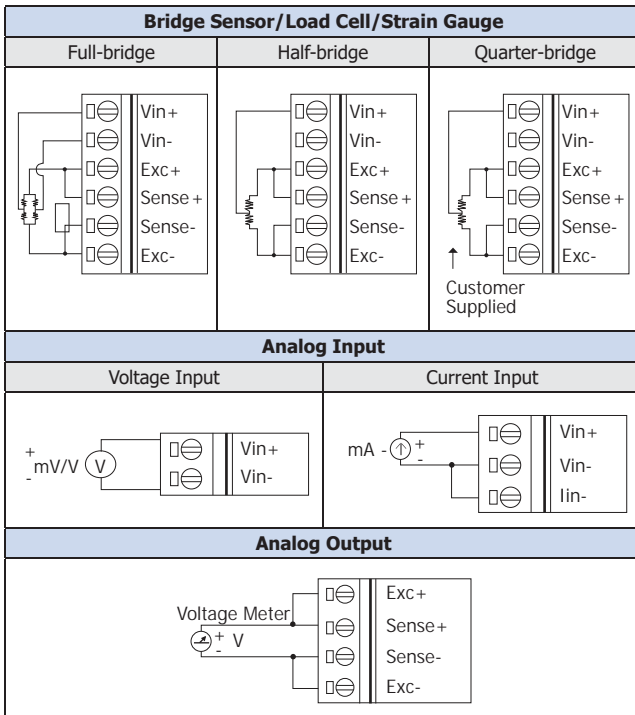
Internal I/O Structure



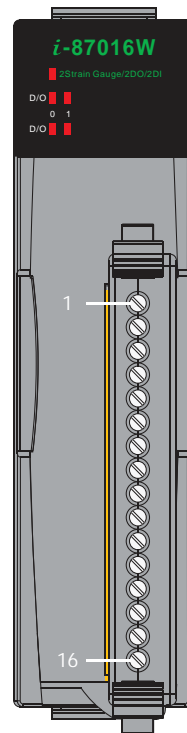
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	Vin0+
02	Vin0-
03	Iin0-
04	Vin1+
05	Vin1-
06	Iin1-
07	Exc+
08	Sense+
09	Sense-
10	Exc-
11	Ext.PWR
12	DO0/LO
13	DO1/HI
14	DI0/EV
15	DI1/EV
16	Ext.GND


Excitation Voltage

Strain Gauge	Quarter-bridge	Half-bridge	Full-bridge
120 R	9.0 V	9.0 V	4.5 V
350 R	10 V	10 V	10 V

Ordering Information

I-87016W-G CR	2-channel Isolated Strain Gauge Input Module (Gray Cover) (RoHS)
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Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87017DW-G

8-channel Differential/16-channel Single-Ended Analog Input Module with High Voltage Protection

Introduction

The I-87017DW is a 8-channel differential/16-channel single-ended analog input module. The analog input range is software selectable and supports ± 10 V, ± 5 V, ± 1 V, ± 500 mV, ± 150 mV, $0 \sim +20$ mA, $+4 \sim +20$ mA, and ± 20 mA. And all channels support 240 Vrms overvoltage protection in differential mode. Differential mode and single-ended mode is selected via jumper selectable jumpers.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal
	± 8 kV Air for Random Point
Power	
Power Consumption	1.3 W Max.
Mechanical	
Dimensions (W × L × H)	30 mm × 114 mm × 85 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Differential/16-channel Single-ended Analog Input
- D-Sub 37-Pin Connector
- 4 kV ESD Protection
- Dual Watchdog
- 3000 VDC Intra-module Isolation, Field-to-Logic



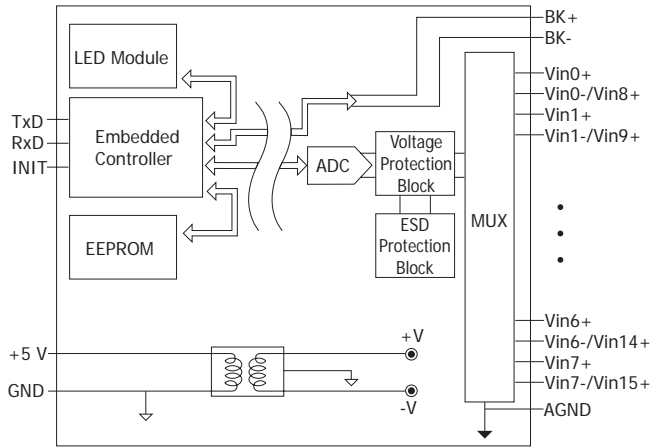
I-8017DW, I-8040W, I-8040PW, I-8041W, I-8041AW, I-8041PW, I-8042W, I-87017DW, I-87024DW, I-87028CDW, I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W with DN-37-381-A & DB37 Male to Female Cable (Optional)

I/O Specifications

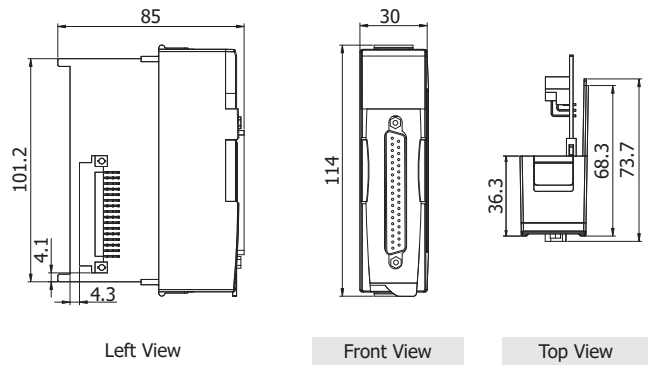
Analog Input		
Channels	8 Differential or 16 Single-ended, (See Note 1), Jumper Selectable	
Range	± 10 VDC, ± 5 VDC, ± 1 VDC, ± 500 mV, ± 150 mV, $0 \sim +20$ mA, $+4 \sim +20$ mA, -20 mA $\sim +20$ mA (Requires Optional External 125 Ω Resistor)	
Resolution	Normal Mode	16-bit
	Fast Mode	12-bit
Accuracy	Normal Mode	$\pm 0.1\%$ of FSR
	Fast Mode	$\pm 0.5\%$ of FSR
Sampling Rate	Normal Mode	16-bit, 10 Hz (Total)
	Fast Mode	12-bit, 50 Hz (Total)
-3dB Bandwidth	15.7 Hz	
Zero Drift	± 20 μ V/°C	
Span Drift	± 25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	Differential	2 M Ω
	Single-ended	1 M Ω
Individual Channel Configurable	Yes	
Open Daughter Board Detection	Yes	
Overvoltage Protection	Differential	240 Vrms
	Single-ended	150 Vrms

Note 1: Differential mode can be used for voltage input and current input. Single-Ended mode can be used for voltage input only.

Internal I/O Structure



Dimensions (Units: mm)



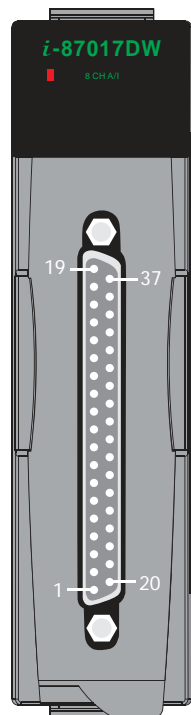
Wire Connections

Input Type	Differential	Single-ended
JP4 Jumper		
Voltage Input Wiring		
Current Input Wiring		

Note: When connecting to a current source, an optional external 125Ω resistor is required.

Daughter Board Detection	
Connect	Open

Pin Assignments



Pin Assignment	Terminal	No.	Pin Assignment
AGND	19	37	BK+
AGND	18	36	N/A
V7-/V15+	17	35	N/A
V7+	16	34	N/A
V6-/V14+	15	33	N/A
V6+	14	32	N/A
V5-/V13+	13	31	N/A
V5+	12	30	N/A
V4-/V12+	11	29	N/A
V4+	10	28	N/A
V3-/V11+	09	27	N/A
V3+	08	26	N/A
V2-/V10+	07	25	N/A
V2+	06	24	N/A
V1-/V9+	05	23	N/A
V1+	04	22	N/A
V0-/V8+	03	21	N/A
V0+	02	20	N/A
BK-	01		

37-pin Male D-Sub Connector

Ordering Information

I-87017DW-G CR	8/16-ch AI Module with High Overvoltage Protection (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)
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Accessories

	2AB125R	125 Ω, 0.1% DIP Resistor used for Current Type Input Modules
	DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
	DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
	CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
	CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87017RCW-G

4-port Digital Temperature Sensor Module with Daisy-Chain Wiring

Introduction

The I-87017RCW is an 8-channel current input module that is specifically designed to measure current only. Its user-friendly design saves both time and effort when measuring a current thanks to a built-in resistor, meaning that current can now be measured directly. The I-87017RCW is much more suitable for critically harsh environments since it also has 4 kV ESD protection and +/-200 VDC common voltage as current input protection, and also features 3000 VDC intra-module isolation together with open wire detection for +4 to +20 mA input. The sampling rate for the I-87017RCW is adjustable, meaning that either fast mode or normal mode can be selected.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.3 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8 Current Input Channels
- ±200 VDC Common Voltage Protection
- Supports both Fast and Normal Mode Sampling Rates
- Overcurrent Protection
- Built-in Resistor to simplify Current Measurement
- Open Wire Detection for +4 to +20 mA input
- 3000 VDC Intra-module Isolation
- 4 kV ESD Protection
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



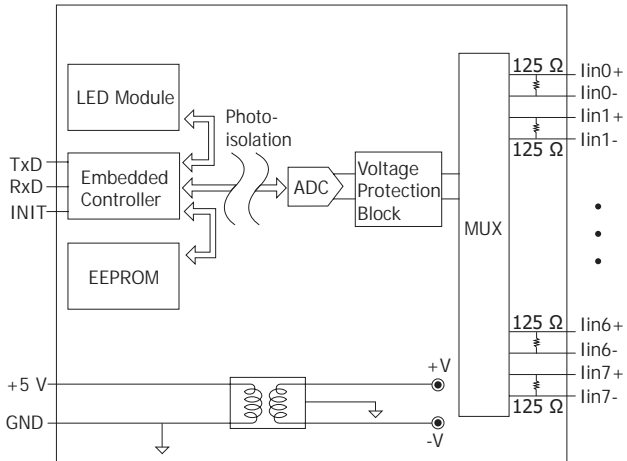
Applications

- Current Measurement
- Voltage Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring

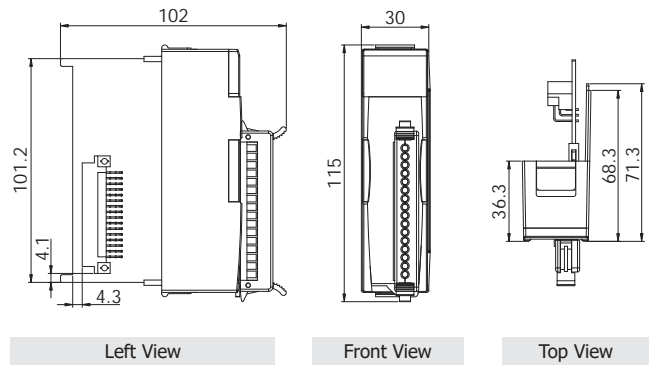
I/O Specifications

Analog Input		
Channels	8	
Wiring	Differential	
Range	0 ~ +20 mA, +4 ~ +20 mA, -20 mA ~ +20 mA (No External Resistor Required)	
Resolution	16-bit	
Accuracy	Normal Mode	±0.1% of FSR
	Fast Mode	±0.5% of FSR
Sampling Rate	Normal Mode	10 Hz (Total)
	Fast Mode	60 Hz (Total)
-3dB Bandwidth	15.7 Hz	
Zero Drift	±20 µV/°C	
Span Drift	±25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	125 Ω	
Common Voltage Protection	-200 VDC ~ +200 VDC	
Open Wire Detection	Yes, for +4 ~ +20 mA	
Overvoltage Protection	-	
Overcurrent Protection	Yes, 50 mA at 110 VDC	

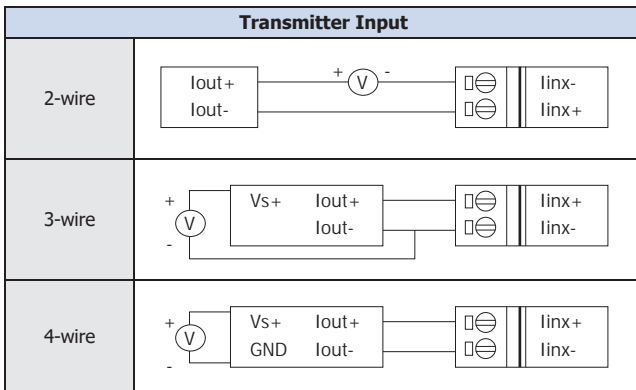
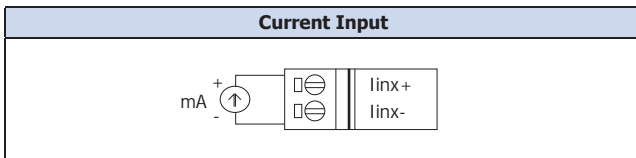
Internal I/O Structure



Dimensions (Units: mm)

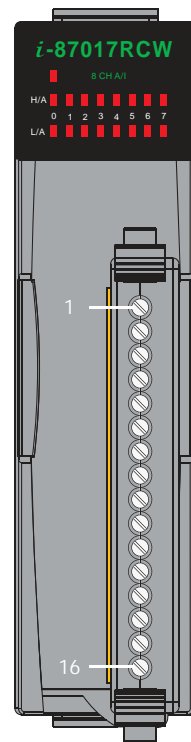


Wire Connections



Type	0D	07	1A
Signal	±20 mA	+4 ~ +20 mA	0 ~ +20 mA

Pin Assignments



Terminal No.	Pin Assignment
01	In0+
02	In0-
03	In1+
04	In1-
05	In2+
06	In2-
07	In3+
08	In3-
09	In4+
10	In4-
11	In5+
12	In5-
13	In6+
14	In6-
15	In7+
16	In7-

Ordering Information

I-87017RCW-G CR	8-channel Current Input Module with Overcurrent Protection using the DCON Protocol (Gray Cover) (RoHS)
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Accessories

DN-843V-600V CR	3-channel 600 V Voltage Attenuator (RoHS)
DN-848VI-80V CR	8-channel 80 V Voltage Attenuator (RoHS)
DN-848VI-150V CR	8-channel 150 V Voltage Attenuator (RoHS)
DN-843I-CT-1 CR	3-channel 1 A Current Transformer (RoHS)

DN-843I-CT-50 CR	3-channel 50 A Current Transformer (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-87017W-G I-87017RW-G

8-channel Analog Input Module

Introduction

The I-87017RW is an analog input module with an extremely high-quality protection mechanism where the overvoltage protection can be as high as 240 Vrms. The input type can be set to either voltage or current. The I-87017RW is an upgraded version of I-87017W, with the only differences being that the I-87017RW is more suitable for critically harsh environment. The sampling rate for the I-87017RW is can be adjusted to either fast mode or normal mode depending on individual requirements. The I-87017RW also provides 4 kV ESD protection as well as 3000 Vdc intra-module isolation.

System Specifications

Model	I-87017W	I-87017RW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	16 as High/Low Alarm Signals	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	1.3 W Max.	
Mechanical		
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 8-channel Analog Input
- Voltage or Current Input
- Overvoltage Protection
 - I-87017W: +/-35 VDC
 - I-87017RW: 240 Vrms
- Adjustable Sampling Rate
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation



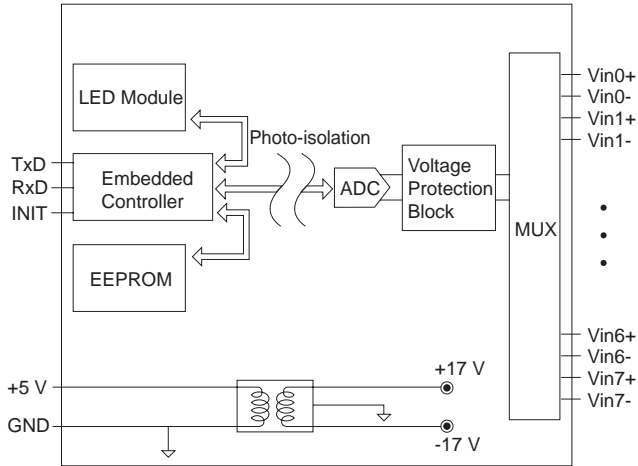
Applications

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

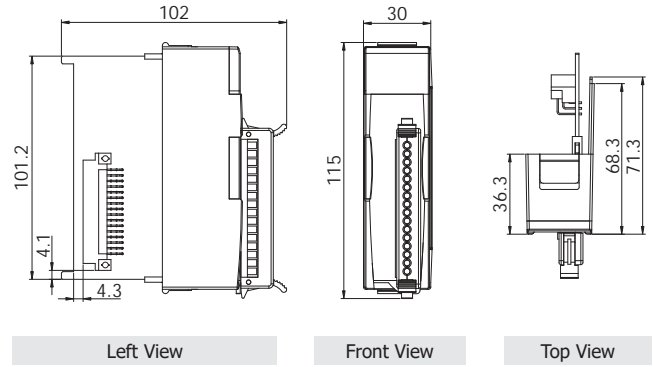
I/O Specifications

Model	I-87017W	I-87017RW
Analog Input		
Channels	8	
Wiring	Differential	
Range	±10 Vdc, ±5 VDC, ±1 VDC ±500 mV, ±150 mV 0 ~ +20 mA, +4 ~ +20 mA, -20 mA ~ +20 mA (Requires Optional External 125 Ω Resistor)	
Resolution	16-bit	
Accuracy	Normal Mode	±0.1% of FSR
	Fast Mode	±0.5% of FSR
Sampling Rate	Normal Mode	10 Hz (Total)
	Fast Mode	50 Hz (Total)
-3dB Bandwidth	Normal Mode	15.7 Hz
	Fast Mode	78.7 Hz
Zero Drift	±20 μV/°C	
Span Drift	±25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	20 MΩ	>2 MΩ
Overvoltage Protection	-35 VDC ~ +35 VDC	240 Vrms

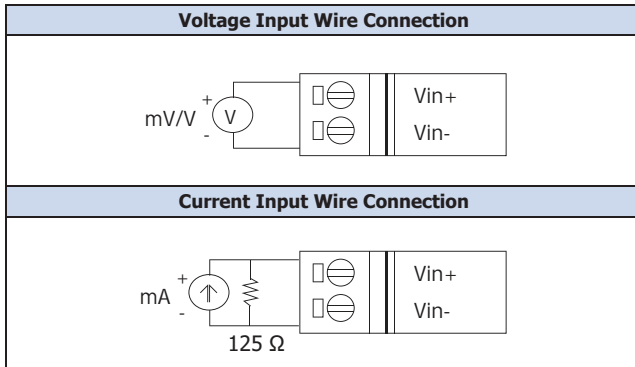
Internal I/O Structure



Dimensions (Units: mm)

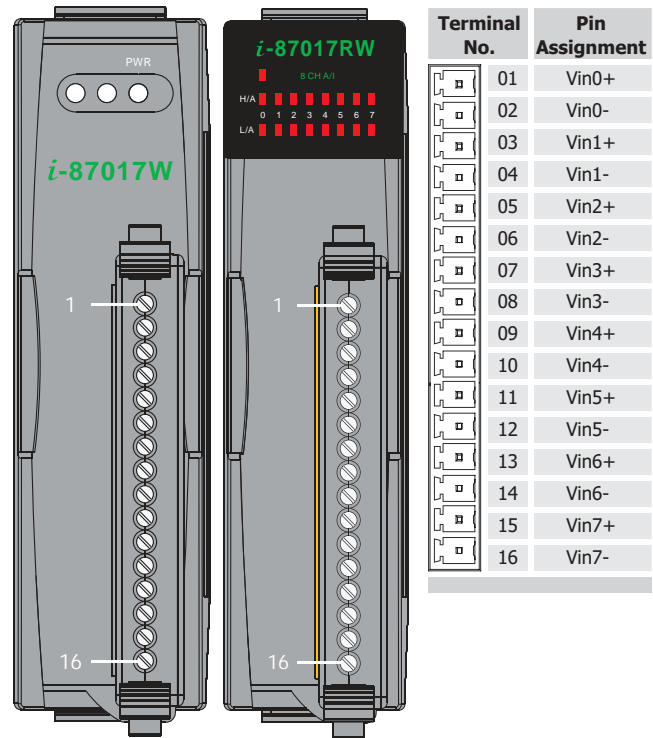


Wire Connections



Note: When connecting to a current source, an optional external 125 Ω resistor is required.

Pin Assignments



Ordering Information

I-87017W-G CR	8-channel Analog Input Module (Gray Cover) (RoHS)
I-87017RW-G CR	8-channel Analog Input Module with High Overvoltage Protection(Gray Cover) (RoHS)

Accessories

	2AB125R	125 Ω, 0.1% DIP Resistor used for Current Type Input Modules
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I-87017W-A5-G

8-channel High Voltage Analog Input Module

Introduction

The I-87017W-A5 module is especially designed for high voltage input, and has an input range of between -150 V and +150 V. The sampling rate for the I-87017W-A5 is adjustable and can be switched between fast mode and normal mode depending on specific requirements. The I-87017W-A5 also features 4 kV ESD protection as well as 3000 Vdc intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.3 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- High Voltage Analog Input: -150 V ~ +150 V
- Adjustable Sampling Rate
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



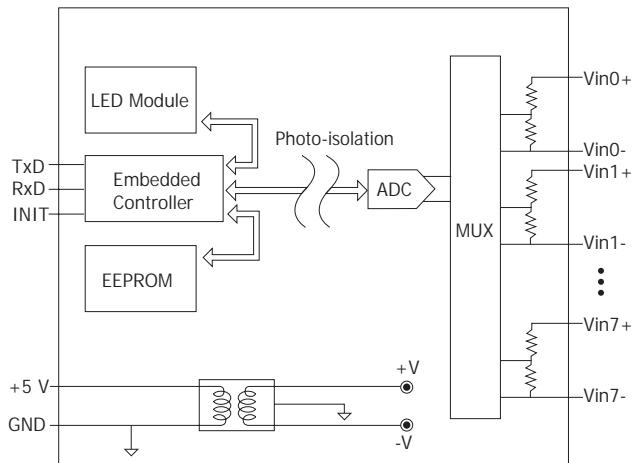
Applications

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

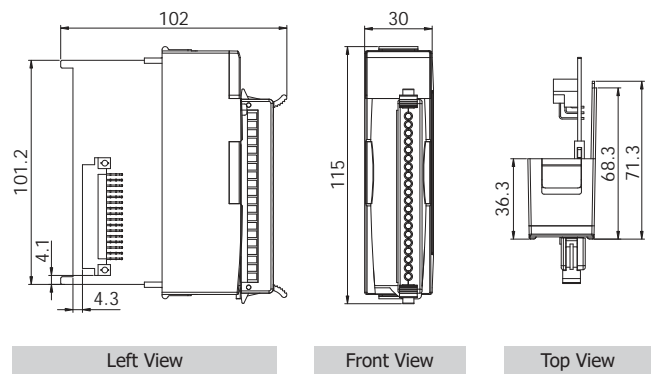
I/O Specifications

Analog Input		
Channels	8	
Wiring	Differential	
Range	±50 Vdc, ±150 Vdc	
Resolution	Normal Mode	16-bit
	Fast Mode	12-bit
Accuracy	Normal Mode	±0.1% of FSR
	Fast Mode	±0.25% of FSR
Sampling Rate	Normal Mode	16-bit, 10 Hz (Total)
	Fast Mode	12-bit, 50 Hz (Total)
-3dB Bandwidth	15.7 Hz	
Zero Drift	±20 µV/°C	
Span Drift	±25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	290 kΩ	
Overvoltage Protection	-200 Vdc ~ +200 Vdc	

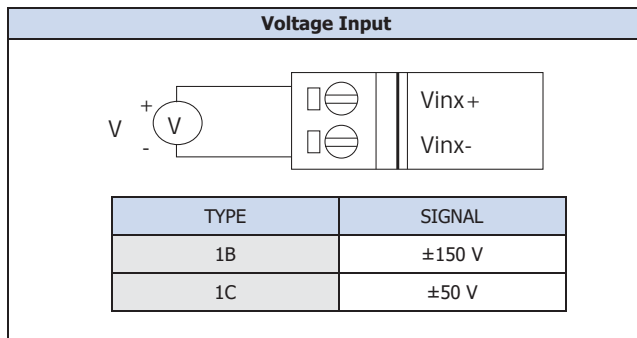
Internal I/O Structure



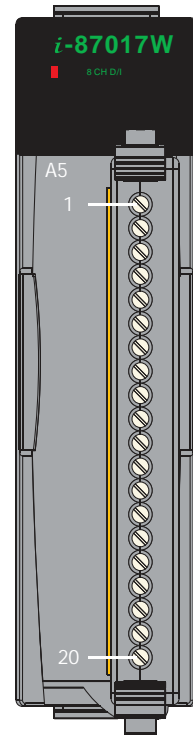
Dimensions (Units: mm)



Wire Connections



Pin Assignments




Terminal No.	Pin Assignment
01	Vin0+
02	Vin0-
03	Vin1+
04	Vin1-
05	Vin2+
06	Vin2-
07	Vin3+
08	Vin3-
09	Vin4+
10	Vin4-
11	Vin5+
12	Vin5-
13	Vin6+
14	Vin6-
15	Vin7+
16	Vin7-
17	AGND
18	AGND
19	FG
20	FG

Ordering Information

I-87017W-A5-G CR	8-channel High Voltage Analog Input Module (Gray Cover) (RoHS)
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Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87017W-RMS-G

8-channel True RMS Input Module

Introduction

The I-87017W-RMS is an 8-channel differential AC input module that is used to convert the AC input signals to their true RMS DC values. The RMS input range can be from +150 mVrms to +10 Vrms, and each channel can be configured individually. The I-87017W-RMS is a complete, high-accuracy, RMS-to-DC converter that computes the true RMS DC value of any complex waveform. It also features 4 kV ESD protection, 3000 Vdc intra-module isolation and +/-35 Vdc overvoltage protection.

Applications

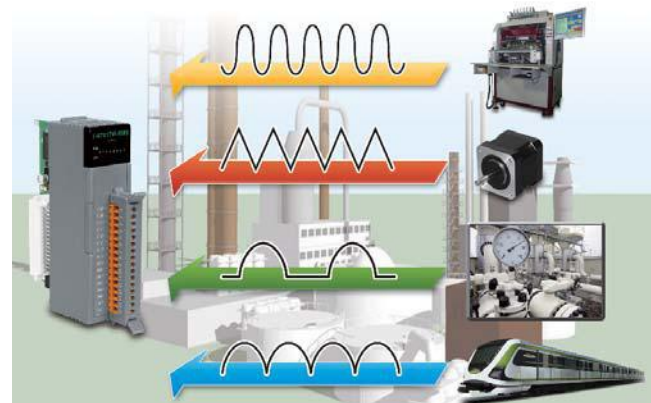
- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.0 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

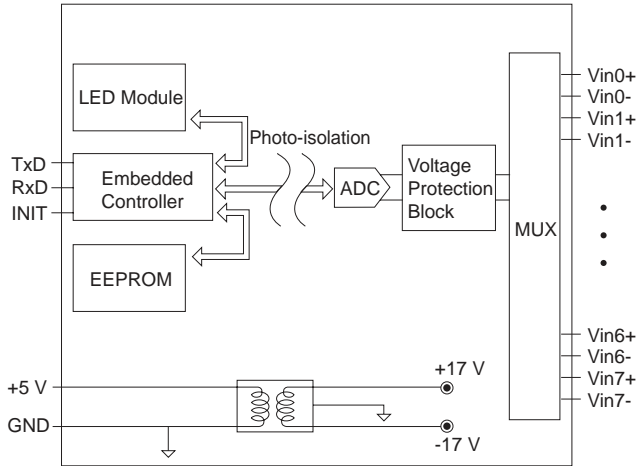
- 8-channel True RMS Input
- ±0.15% Factory Calibrated Accuracy
- The RMS input range can be from +150 mVrms to +10 Vrms
- Designed for Standard Operation with Frequencies of 45 Hz to 10 KHz
- 0.15% Additional Error to Crest Factor of 3
- Individual Channel Configurable
- 4 kV ESD Protection
- ±35 Vdc Overvoltage Protection
- 3000 Vdc Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



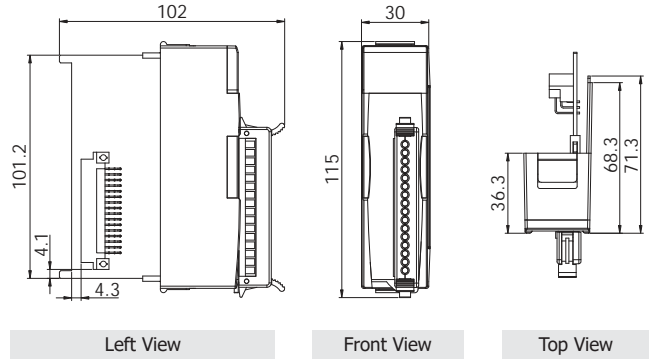
I/O Specifications

Analog Input		
Channels	8	
Wiring	Differential	
Range	0 ~ +10 Vrms, 0 ~ +5 Vrms, 0 ~ +1 Vrms, 0 ~ +500 mVrms, 0 ~ +150 mVrms	
Resolution	16-bit	
Accuracy	Sinuosid	
	50/60 Hz	±0.15% of FSR
	45 Hz to 10 kHz	±0.5% of FSR
	Non-Sinuosid	
	Crest Factor = 1 to 2	±0.2% of FSR
	Crest Factor = 2 to 3	±0.35% of FSR
DC	0 ~ +10 Vrms/ 0 ~ +5 Vrms/ 0 ~ +1 Vrms	±0.3% of FSR
	Other	±0.7% of FSR
	Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz	
Zero Drift	±20 µV/°C	
Span Drift	±25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	>2 MΩ	
Individual Channel Configuration	Yes	
Overvoltage Protection	±35 VDC	

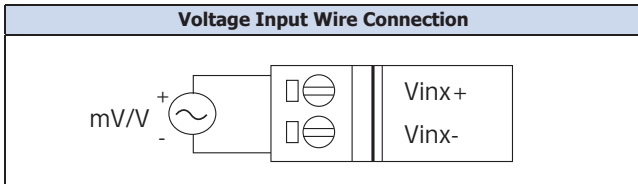
Internal I/O Structure



Dimensions (Units: mm)



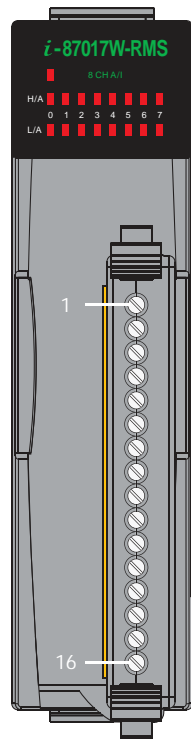
Wire Connections



Ordering Information

I-87017W-RMS CR	8-channel True RMS Input Module (Gray Cover) (RoHS)
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Pin Assignments



Terminal No.	Pin Assignment
01	Vin0+
02	Vin0-
03	Vin1+
04	Vin1-
05	Vin2+
06	Vin2-
07	Vin3+
08	Vin3-
09	Vin4+
10	Vin4-
11	Vin5+
12	Vin5-
13	Vin6+
14	Vin6-
15	Vin7+
16	Vin7-

Accessories

DN-843V-600V CR	3-channel 600 V Voltage Attenuator (RoHS)
DN-848VI-80V CR	8-channel 80 V Voltage Attenuator (RoHS)
DN-848VI-150V CR	8-channel 150 V Voltage Attenuator (RoHS)
DN-843I-CT-1 CR	3-channel 1 A Current Transformer (RoHS)

DN-843I-CT-50 CR	3-channel 50 A Current Transformer (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-87017ZW-G

10/20-channel Analog Input Module with High Voltage Protection

Introduction

The I-87017ZW is an analog input module that includes 10 differential or 20 single-ended analog input channels. It provides a programmable input range on all analog inputs. (± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA or $0 \sim +20$ mA) Each analog input can be configured for an individual range that provides 240 V_{rms} high overvoltage protection and 50 mA overcurrent protection at 110 VDC/VAC. Voltage and current inputs are jumper selectable. The sampling rate of the I-87017ZW is adjustable and is available in either fast or normal mode. The module also features per-channel open wire detection for $+4 \sim +20$ mA inputs that provides 4 kV ESD protection as well as 3000 VDC intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal ± 8 kV Air for Random Point
EFT (IEC 61000-4-4)	± 4 kV for Power
Power	
Power Consumption	2.0 W
Mechanical	
Dimensions (L x W x H)	115 mm x 30 mm x 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 10-channel Differential or 20-channel Single-ended Inputs
- Jumper Selectable Voltage or Current Input
- 240 V_{rms} Overvoltage Protection
- High Resolution: 16-bits
- Supports Fast Mode and Normal Mode
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation
- Individual Channel Configuration
- Dual Watchdog
- RoHS Compliance
- Wide Operating Temperature Range: -25 to +75°C



Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

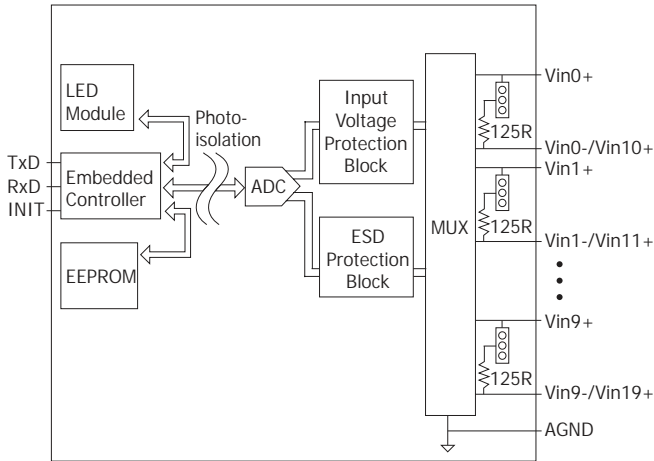
I/O Specifications

Analog Input			
Channels	10 Differential or 20 Single-ended (See Note 1), Jumper selectable		
Range	± 150 mV, ± 500 mV, ± 1 VDC, ± 5 VDC, ± 10 VDC, ± 20 mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (jumper selectable)		
Resolution	16-bit		
Accuracy	Normal Mode	$\pm 0.1\%$ of FSR	
	Fast Mode	$\pm 0.5\%$ of FSR	
Sampling Rate	Normal Mode	10 Hz (Total)	
	Fast Mode	50 Hz (Total)	
Band Width	Normal Mode	15.7 Hz	
	Fast Mode	78.7 Hz	
Zero Drift	± 20 μ V/°C		
Span Drift	± 25 ppm/°C		
Common Mode Rejection	86 dB		
Normal Mode Rejection	100 dB		
Input Impedance	Voltage	Differential	2 M Ω
		Single-ended	1 M Ω
Overvoltage Protection	Current	125 Ω	
		Differential	240 V _{rms}
Individual Channel Configuration	Yes	Single-ended	150 V _{rms}
		Overcurrent Protection	50 mA Max. at 110 VDC/VAC Max.

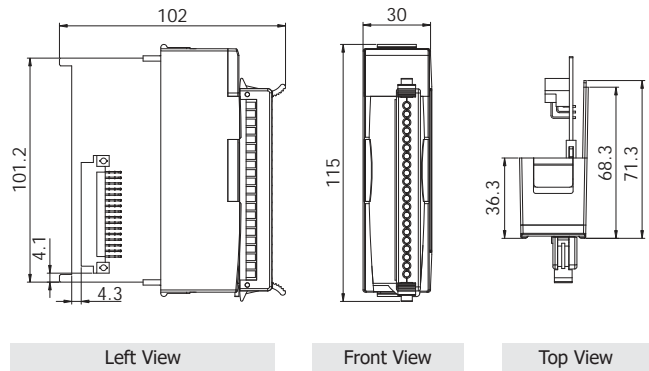
Note 1:

Differential mode can be used for either voltage input or current input. Single-Ended mode can only be used for voltage input.

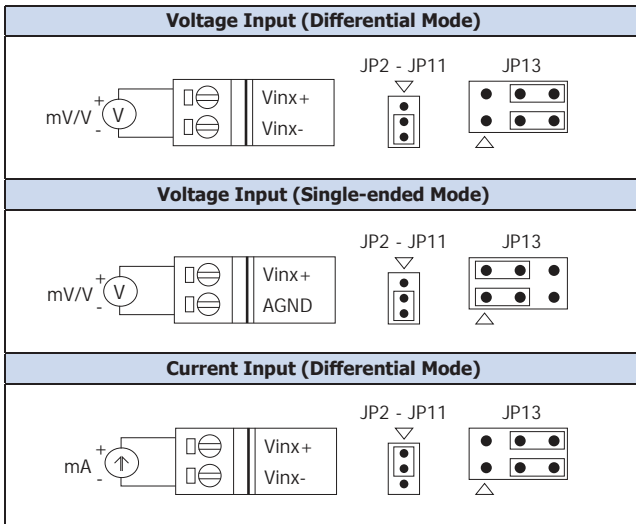
Internal I/O Structure



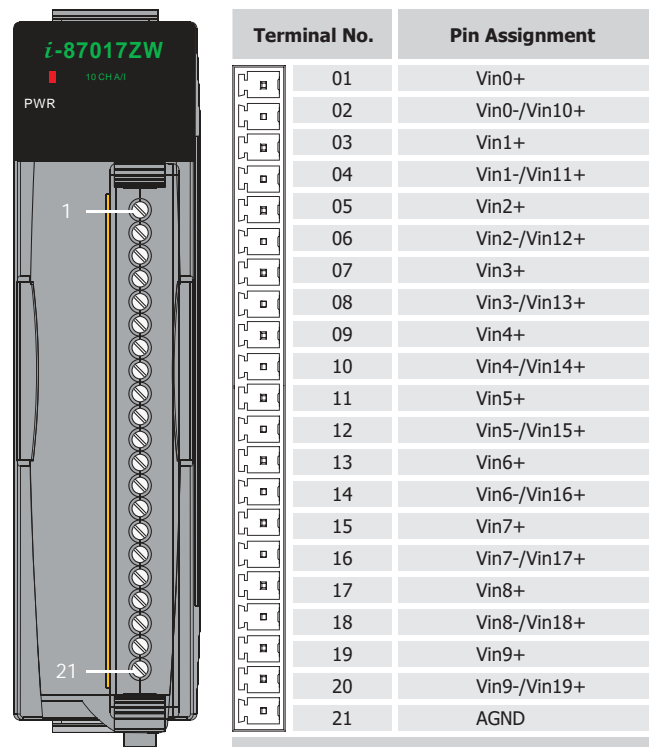
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87017ZW-G CR	10/20-channel Analog Input Module with High Voltage Protection (Gray Cover) (RoHS)
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Accessories

DN-843V-600V CR	3-channel 600 V Voltage Attenuator (RoHS)	DN-843I-CT-50 CR	3-channel 50 A Current Transformer (RoHS)
DN-848VI-80V CR	8-channel 80 V Voltage Attenuator (RoHS)	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
DN-848VI-150V CR	8-channel 150 V Voltage Attenuator (RoHS)	SG-3000 series	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Input
DN-843I-CT-1 CR	3-channel 1 A Current Transformer (RoHS)		



I-87018PW-G
8-channel Thermocouple Input Module

Features

- 8-channel Thermocouple Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240 Vrms Overvoltage Protection
- 4 kV ESD Protection
- Dual Watchdog
- 3000 Vdc Intra-module Isolation, Field-to-Logic



Introduction

The I-87018PW is an 8-channel thermocouple input module. The analog input range is software selectable and supports ± 15 mV, ± 100 mV, ± 500 mV, ± 1 V, ± 2.5 V, $0 \sim +20$ mA, $+4 \sim +20$ mA or ± 20 mA, and thermocouples of type J, K, T, E, R, S, B, N, C, L, M, and LDIN43710. It features automatic cold-junction compensation for each channel, and supports open thermocouple detection.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal ± 8 kV Air for Random Point
Power	
Power Consumption	0.7 W
Mechanical	
Dimensions (W × L × H)	I-87018PW 30 mm × 114 mm × 85 mm CN-1824 29 mm × 83 mm × 43 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

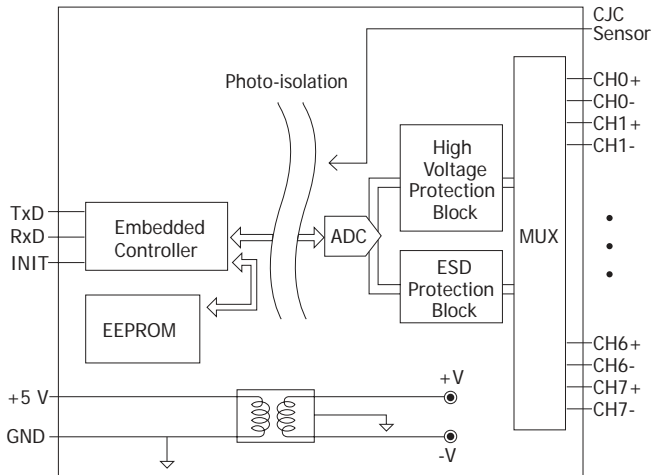
I/O Specifications

Analog Input	
Channels	8
Wiring	Differential
Sensor Type	± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 VDC, ± 2.5 VDC ± 20 mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (Requires Optional External 125 Ω Resistor) Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)
Temperature Output Consistency	Yes
Stable Temperature Output in the Field	Yes
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz
Zero Drift	± 0.5 μ V/°C
Span Drift	± 25 ppm/°C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Input Impedance	>400 k Ω
Individual Channel Configurable	Yes
Open Wire Detection	Yes
Overvoltage Protection	240 Vrms
CN-1824	
Wire Strip Length	4 ~ 5 mm
Wire Range	16 ~ 24 AWG

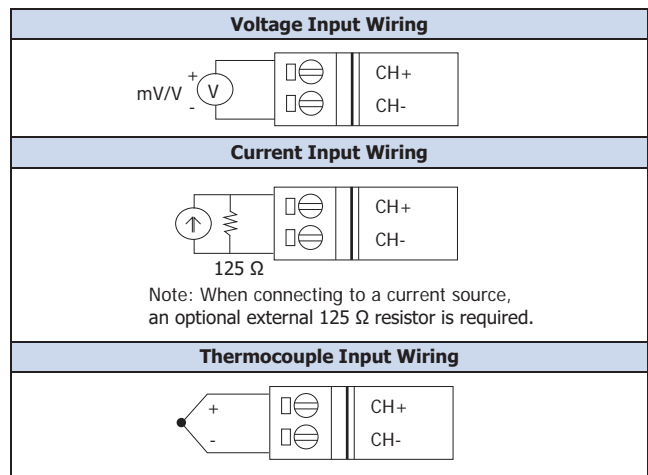
Thermocouple Type

Type	Temperature Range
J	-210 to +760°C
K	-270 to +1372°C
T	-270 to +400°C
E	-270 to +1000°C
R	0 to +1768°C
S	0 to +1768°C
B	0 to +1820°C
N	-270 to 1300°C
C	0 to 2320°C
L	-200 to +800°C
M	-200 to +100°C
LDIN43710	-200 to +900°C

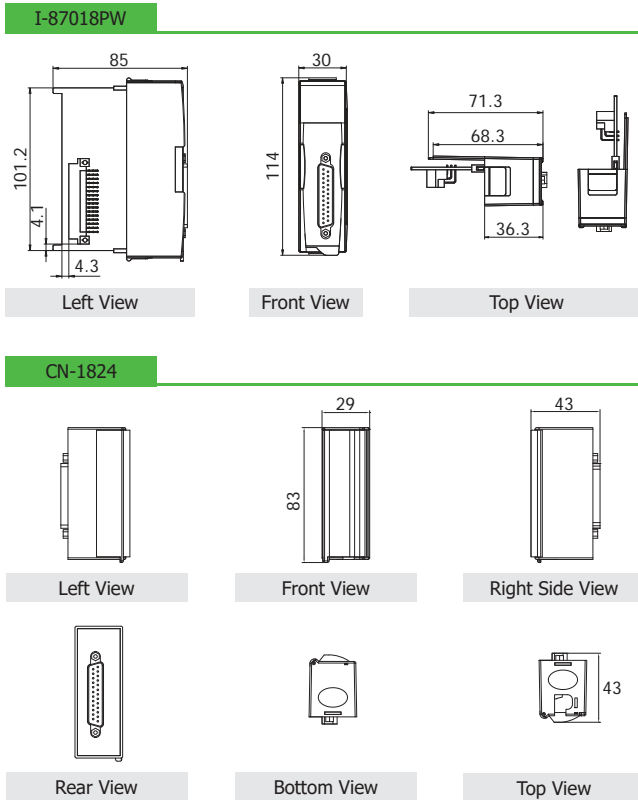
Internal I/O Structure



Wire Connections



Dimensions (Units: mm)



Pin Assignments

I-87018PW

Pin Assignment	Terminal No.	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	N.C.
N.C.	11	24	N.C.
N.C.	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

Ordering Information

I-87018PW-G CR	8-channel Thermocouple Input Module (Gray Cover) (RoHS). Includes the I-87018PW Module and a CN-1824 Daughter Board.
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Accessories

	2AB125R 125 Ω , 0.1% DIP Resistor used for Current Type Input Modules
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CN-1824

Pin Assignment Name	Pin Assignment Name
CH0+	CH 0+
CH0-	CH 0-
CH1+	CH 1+
CH1-	CH 1-
CH2+	CH 2+
CH2-	CH 2-
CH3+	CH 3+
CH3-	CH 3-
CH4+	CH 4+
CH4-	CH 4-
CH5+	CH 5+
CH5-	CH 5-
CH6+	CH 6+
CH6-	CH 6-
CH7+	CH 7+
CH7-	CH 7-
AGND	AGND
AGND	AGND



I-87018W-G I-87018RW-G

8-channel Thermocouple Input Module

Introduction

The I-87018W is an 8-channel analog input module that provides current input and voltage input, as well as thermocouple input. The I-87018RW is an upgraded version of I-87018W with an extremely high-quality protection mechanism where the overvoltage protection can be as high as 240 Vrms. The input type can be set to either current or voltage, as well as thermocouple. The only difference between the two modules is that the I-87018RW is more suitable for critically harsh environments. Moreover, the newly-added open thermocouple detection feature makes the I-87018RW more attractive than ever. Both the I-87018W and the I-87018RW also features 4 kV ESD protection and 3000 Vdc intra-module isolation.

Applications

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

System Specifications

Model	I-87018W	I-87018RW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	16 as High/ Low Alarm Signals
Isolation		
Intra-module Isolation, Field-to-Logic	3000 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
Power		
Power Consumption	0.8 W Max.	0.6 W Max.
Mechanical		
Dimensions (W × L × H)	I-87018W-G: 30 mm × 114 mm × 85 mm I-87018RW-G: 30 mm × 115 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 8-channel Analog Input
- Current Input, Voltage Input and Thermocouple Input
- High Resolution: 16-bit
- 3000 Vdc Intra-module Isolation
- Open Thermocouple Detection
- 240 Vrms Overvoltage Protection
- 4 kV ESD Protection



I/O Specifications

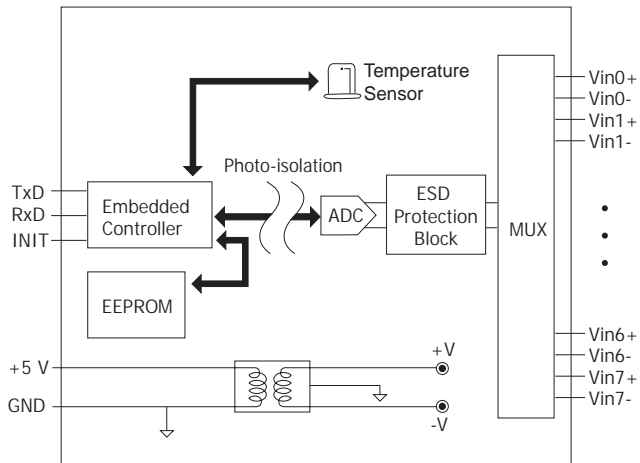
Model	I-87018W	I-87018RW
Analog Input		
Channels	8	
Wiring	Differential	
Sensor Type	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 Vdc, ±2.5 Vdc -20 mA ~ +20 mA (Requires Optional External 125 Ω Resistor) Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710)	
Resolution	16-bit	
Accuracy	±0.1% of FSR	
Sampling Rate	10 Hz (Total)	
-3dB Bandwidth	15.7 Hz	
Zero Drift	±0.5 μV/°C	±10 μV/°C
Span Drift	±25 ppm/°C	
Common Mode Rejection	150 dB	
Normal Mode Rejection	100 dB	
Input Impedance	>400 kΩ	
Open Wire Detection	-	Yes (Thermocouple)
Overvoltage Protection	-35 Vdc ~ +35 Vdc	240 Vrms

Note: ICP DAS recommends selecting the I-87018RW module for high accurate thermocouple measurement that features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field.

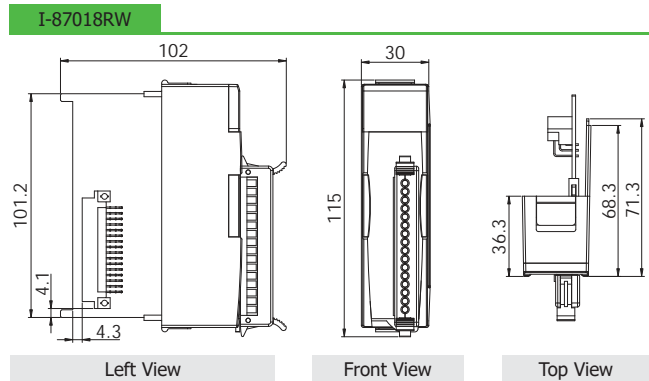
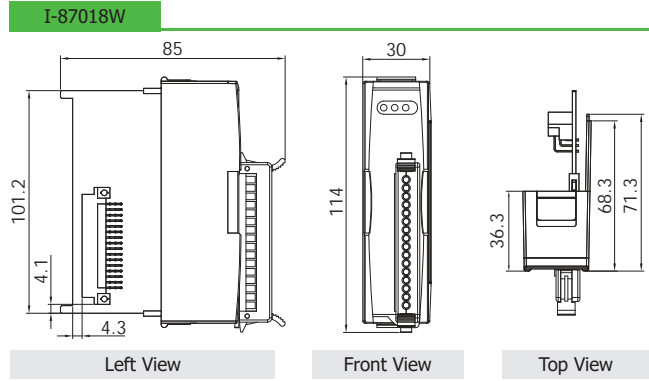
Thermocouple Type

Type	Temperature Range
J	-210 to +760°C
K	-270 to +1372°C
T	-270 to +400°C
E	-270 to +1000°C
R	0 to +1768°C
S	0 to +1768°C
B	0 to +1820°C
N	-270 to 1300°C
C	0 to 2320°C
L	-200 to +800°C
M	-200 to +100°C
LDIN43710	-200 to +900°C

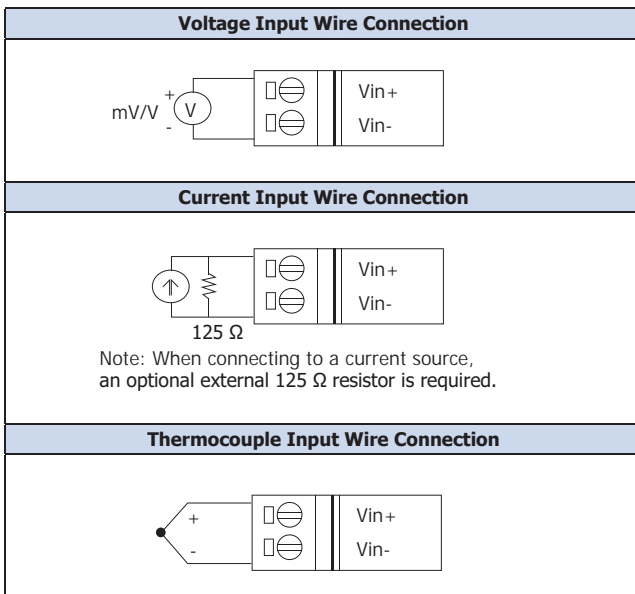
Internal I/O Structure



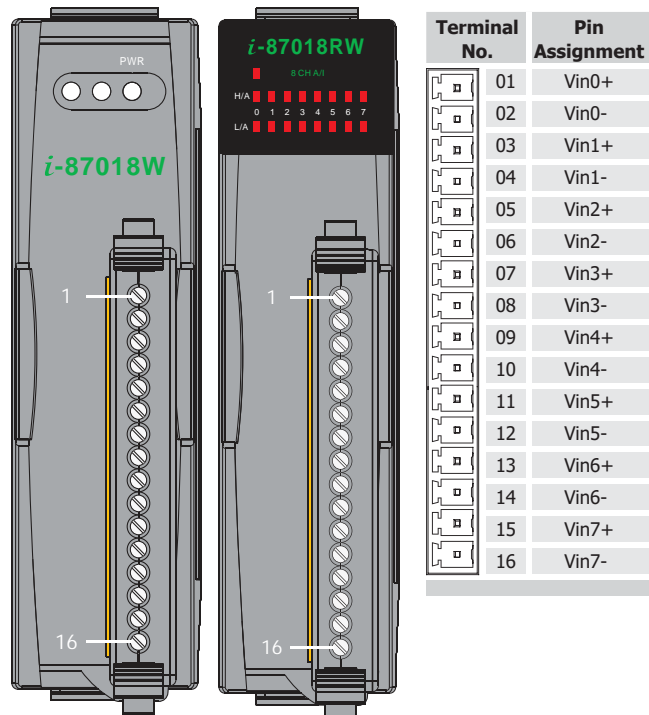
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87018W-G CR	8-channel Thermocouple Input Module (Gray Cover) (RoHS)
I-87018RW-G CR	8-channel Thermocouple Input Module with High Overvoltage Protection(Gray Cover) (RoHS)

Accessories

	2AB125R	125 Ω, 0.1% DIP Resistor used for Current Type Input Modules
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I-87018ZW-G/S **I-87018ZW-G/S2**

10-ch Thermocouple Input Module

Introduction

The "Z" version is another milestone in the development of I-87018 and a testament to excellence by ICP DAS R&D team. I-87018ZW is specifically designed for extremely accurate thermocouple measurement. It features automatic compensation for each channel. Current input and voltage input are supported. Another feature is that ten of its input channels can individually be configured with different kinds of analog input. I-87018ZW also got open thermocouple detection and many protection mechanisms.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point
Power	
Power Consumption	1.3 W
Mechanical	
Dimensions (W × L × H)	I-87018ZW 31 mm × 114 mm × 86 mm
	DB-1820 65 mm × 78 mm × 22 mm
	DN-1822 103 mm × 96 mm × 27 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing
DB-1820	
Wire strip length	4 ~ 5 mm
Wire Range	16 ~ 24 AWG

Features

- Current Input, Voltage Input and Thermocouple Input
- 240 Vrms Overvoltage Protection
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable temperature output in the field
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation
- 3750 Vrms Photo Isolation



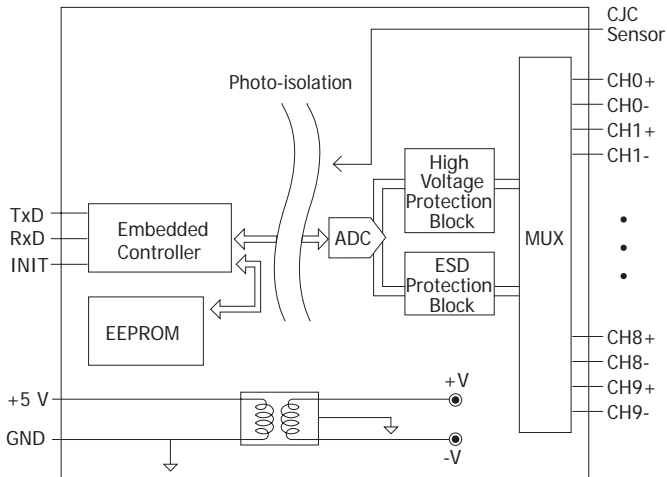
I/O Specifications

Analog Input	
Channels	10
Wiring	Differential
Sensor Type	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC
	±20 mA, 0 ~ +20 mA, +4 ~ +20 mA (Requires Optional External 125 Ω Resistor)
	Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710)
Temperature Output Consistency	Yes
Stable Temperature Output in the Field	Yes
Resolution	16-bit
Accuracy	±0.1% of FSR
Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz
Zero Drift	±0.5 μV/°C
Span Drift	±25 ppm/°C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Input Impedance	>400 kΩ
Individual Channel Configuration	Yes
Open Wire Detection	Yes
Overvoltage Protection	240 Vrms

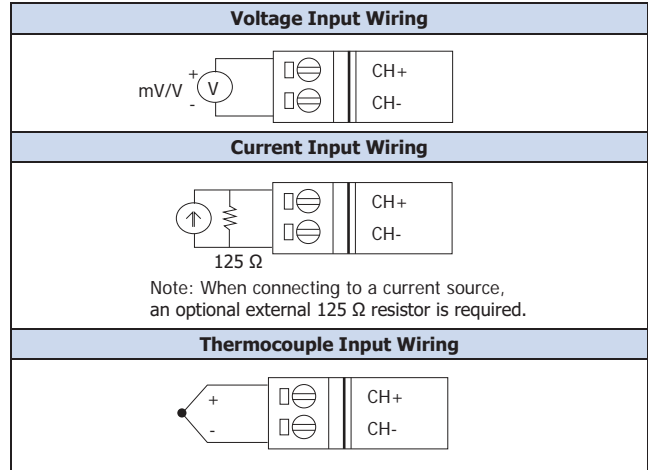
Thermocouple Type

Type	Temperature Range
J	-210 to +760°C
K	-270 to +1372°C
T	-270 to +400°C
E	-270 to +1000°C
R	0 to +1768°C
S	0 to +1768°C
B	0 to +1820°C
N	-270 to 1300°C
C	0 to +2320°C
L	-200 to +800°C
M	-200 to +100°C
LDIN43710	-200 to +900°C

Internal I/O Structure

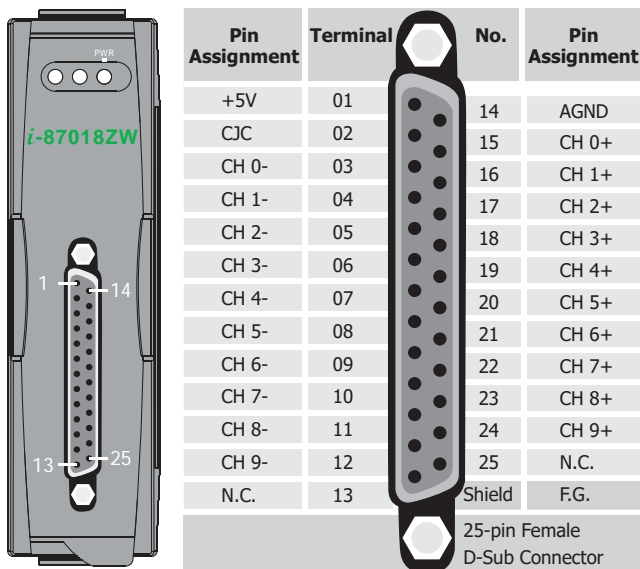


Wire Connections

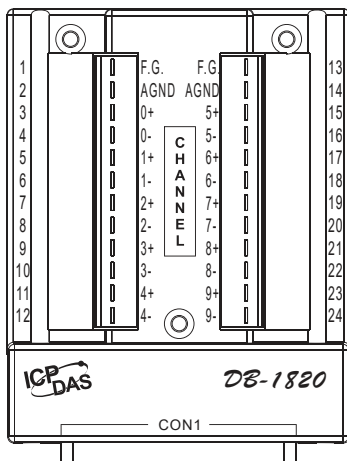


Pin Assignments

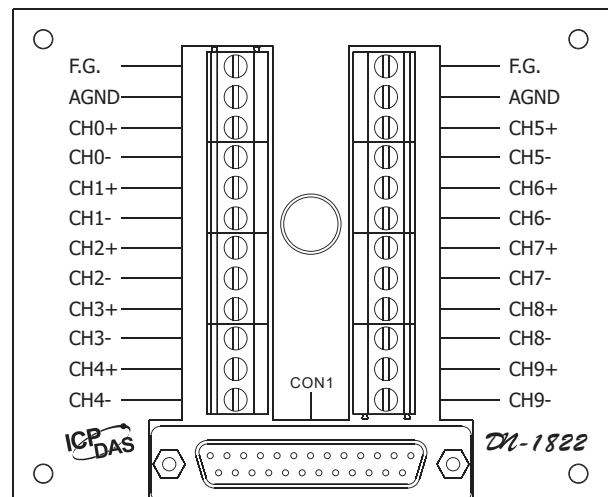
I-87018ZW



DB-1820

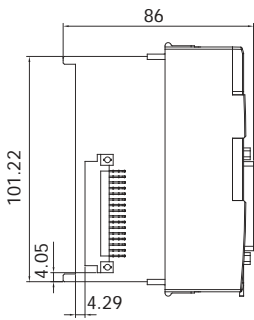


DN-1822

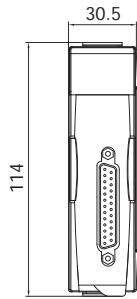


■ Dimensions (Units: mm)

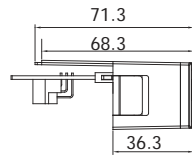
I-87018ZW



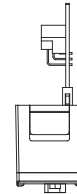
Left View



Front View

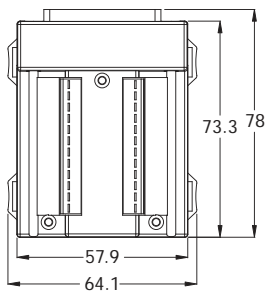


Top View

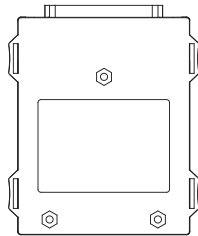


Top View

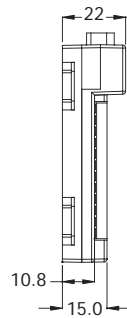
DB-1820



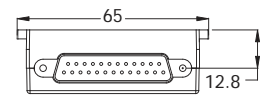
Front View



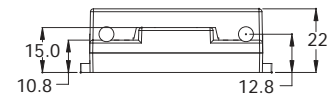
Rear View



Left View

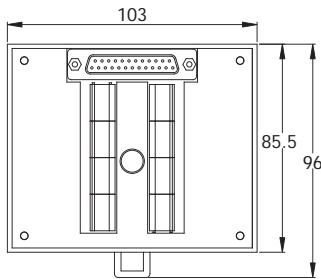


Top View

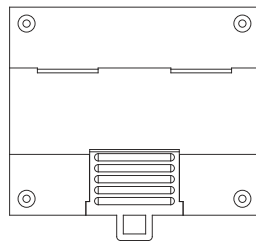


Bottom View

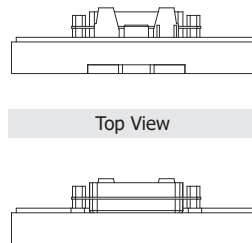
DN-1822



Front View

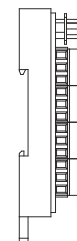


Rear View

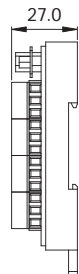


Top View

Bottom View





Left View








Right Side View

Ordering Information

I-87018ZW-G/S CR	10-ch Thermocouple Input Module with High Overvoltage Protection (RoHS) Includes DB-1820 Daughter Board
I-87018ZW-G/S2 CR	10-ch Thermocouple Input Module with High Overvoltage Protection (RoHS) Includes DN-1822 Daughter Board and CA-252518D-1 1.8 m Cable
 <p>I-87018ZW-G/S CR = I-87018ZW Connects DB-1820 Directly</p>	 <p>I-87018ZW-G/S2 CR = I-87018ZW Connect DN-1822 Directly</p>

Accessories

I-87018ZW-G/S & I-87018ZW-G/S2		
	2AB125R	125 Ω , 0.1% DIP Resistor used for Current Type Input Modules
I-87018ZW-G/S		
	CD-2518D CR	DB25 Male to Female 1.8 m Cable (180°) and DIN-Rail Mount for the DB-1820 (RoHS)
	CD-25015 CR	DB25 Male to Female 15 cm Cable (90°) and DIN-Rail Mount for the DB-1820 (RoHS)
 <p>I-87018ZW-G/S CR + CD-2518D</p>		 <p>CD-2518D</p>



I-87019PW-G

8-channel Universal Analog Input Module with High Overvoltage Protection

Introduction

The I-87019PW is a 8-channel universal analog input module with an RS-485 interface that is a specially designed for extremely accurate thermocouple measurement and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. The innovative design of the enhanced model ensures that thermocouple measurement is more accurate than with the earlier design. Besides the thermocouple inputs, the I-87019PW also supports voltage and current inputs. The voltage input range can be from ± 15 mV to ± 10 V, and the current input range can be either $+4 \sim +20$ mA, $0 \sim +20$ mA, or ± 20 mA. Up to 10 analog inputs of different types can be connected to a single module. Overvoltage protection of up to 240 V_{rms} is provided. The module also features per-channel open wire detection for thermocouple and $+4 \sim +20$ mA inputs.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1; N, 8, 2; E, 8, 1; O, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal
	± 8 kV Air for Random Point
Power	
Power Consumption	1.3 W
Mechanical	
Dimensions (L x W x H)	I-87019PW 114 mm x 30 mm x 86 mm
	CN-1824 83 mm x 29 mm x 43 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Analog Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240 V_{rms} Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 Vdc Intra-module Isolation, Field-to-Logic
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



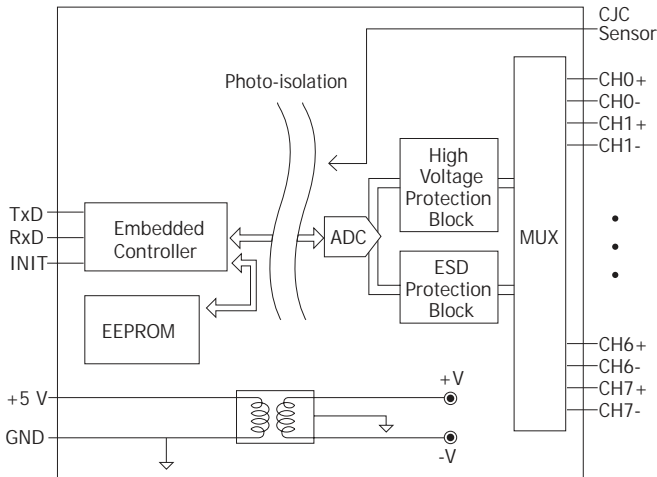
I/O Specifications

Analog Input	
Channels	8
Wiring	Differential
Sensor Type	± 15 mV, ± 50 mV, ± 100 mV, ± 150 mV, ± 500 mV, ± 1 Vdc, ± 2.5 Vdc, ± 5 Vdc, ± 10 Vdc
	-20 mA $\sim +20$ mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (Jumper Selectable)
	Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
Zero Drift	± 20 μ V/°C
Span Drift	± 25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: >400 k Ω , Current Input: 125 Ω
Individual Channel Configuration	Yes
Open Wire Detection	Yes, (Software Selectable)
Overvoltage Protection	240 V _{rms}
Common Voltage Protection	± 200 Vdc
Overcurrent Protection	Yes, 50 mA at 110 Vdc
Virtual Channel to Channel Isolation	Yes, 400 Vdc

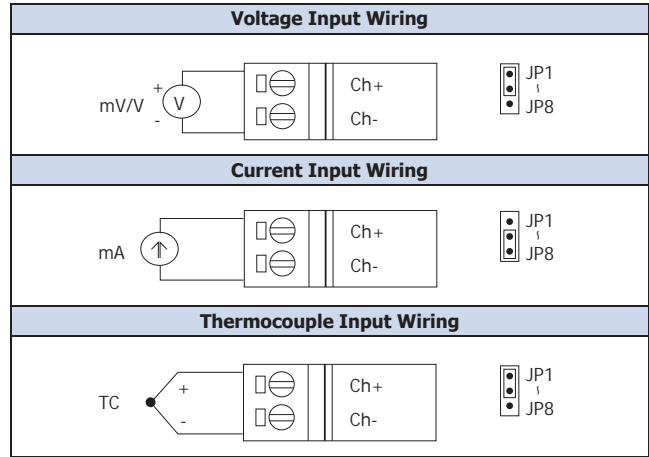
Thermocouple Type

Type Code	Type	Temperature Range
0E	J	-210 to +760°C
0F	K	-270 to +1372°C
10	T	-270 to +400°C
11	E	-270 to +1000°C
12	R	0 to +1768°C
13	S	0 to +1768°C
14	B	0 to +1820°C
15	N	-270 to +1300°C
16	C	0 to +2320°C
17	L	-200 to +800°C
18	M	-200 to +100°C
19	LDIN43710	-200 to +900°C

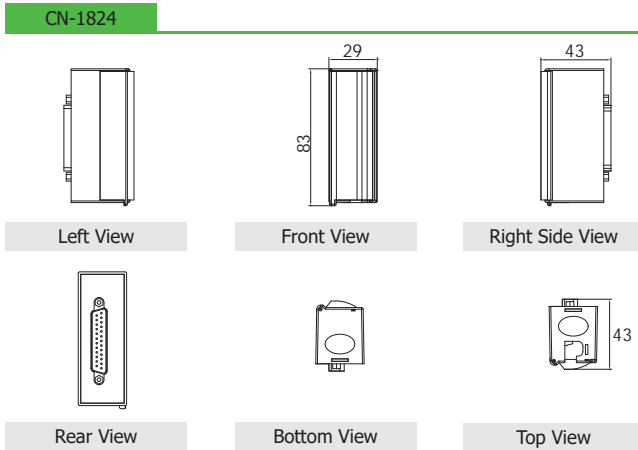
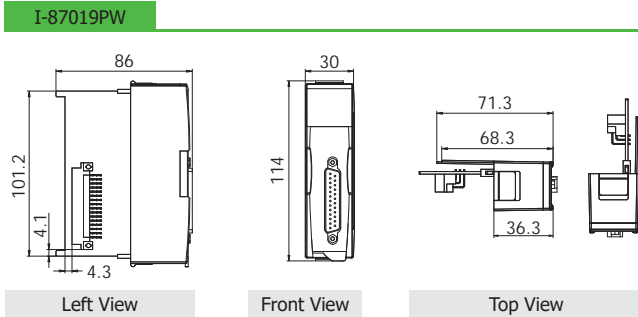
Internal I/O Structure



Wire Connections



Dimensions (Units: mm)



Pin Assignments

I-87019PW

Pin Assignment	Terminal No.	No.	Pin Assignment
+5 V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	N.C.
N.C.	11	24	N.C.
N.C.	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

Ordering Information

I-87019PW-G CR	8-channel Universal Analog Input Module (Gray Cover) (RoHS) Includes the I-87019PW Module and a CN-1824 Daughter Board.
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Accessories

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

CN-1824

Pin Assignment Name	Pin Assignment Name
CH0+	CH 0+
CH0-	CH 0-
CH1+	CH 1+
CH1-	CH 1-
CH2+	CH 2+
CH2-	CH 2-
CH3+	CH 3+
CH3-	CH 3-
CH4+	CH 4+
CH4-	CH 4-
CH5+	CH 5+
CH5-	CH 5-
CH6+	CH 6+
CH6-	CH 6-
CH7+	CH 7+
CH7-	CH 7-
AGND	AGND
AGND	AGND



I-87019RW-G

8-channel Universal Analog Input Module with High Overvoltage Protection

Introduction

I-87019RW features an extremely excellent protection mechanism where Overvoltage Protection is up to 240 Vrms. It has wider input range for voltage compared to I-87018R. I-87019RW measures voltage from $\pm 15\text{ mV} \sim \pm 10\text{ V}$. Its input type also includes current and thermocouple. An intuitive design is kept in this model; choosing to measure current or voltage is simply by a jumper. An external resistor is no longer needed. Eight of its input channels can individually be configured with different kinds of analog input. What's more, I-87019RW also got open thermocouple detection and many protection mechanisms.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	$\pm 4\text{ kV}$ Contact for each Terminal
	$\pm 8\text{ kV}$ Air for Random Point
Power	
Power Consumption	1.1 W Max.
Mechanical	
Dimensions (L x W x H)	115 mm x 30 mm x 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- Current Input, Voltage Input and Thermocouple Input
- Wider Input Range for Voltage
- 240 Vrms Overvoltage Protection
- Individual Channel Configuration
- Jumper Setting for Current or Voltage Measuring
- Open Thermocouple Detection
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



Applications

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

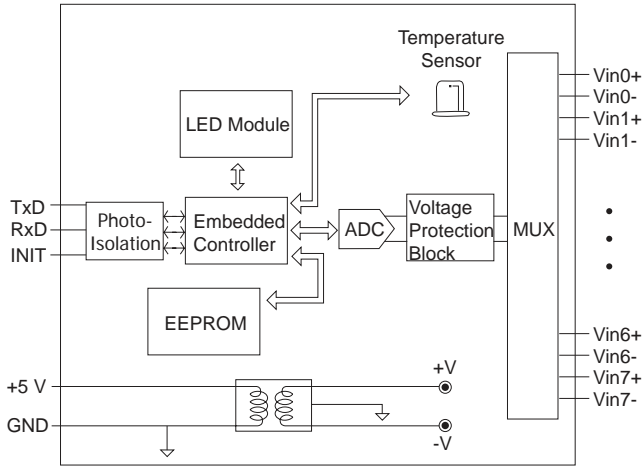
I/O Specifications

Analog Input	
Channels	8
Wiring	Differential
Sensor Type	$\pm 15\text{ mV}$, $\pm 50\text{ mV}$, $\pm 100\text{ mV}$, $\pm 150\text{ mV}$, $\pm 500\text{ mV}$, $\pm 1\text{ VDC}$, $\pm 2.5\text{ VDC}$, $\pm 5\text{ VDC}$, $\pm 10\text{ VDC}$
	-20 mA ~ +20 mA (Jumper Selectable)
	Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710)
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	8 Hz (Total)
Zero Drift	$\pm 20\ \mu\text{V}/^\circ\text{C}$
Span Drift	$\pm 25\text{ ppm}/^\circ\text{C}$
Common Mode Rejection	113 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: $> 2\text{ M}\Omega$, Current Input: 125 Ω
Individual Channel Configurable	Yes
Open Wire Detection	Yes
Overvoltage Protection	240 Vrms

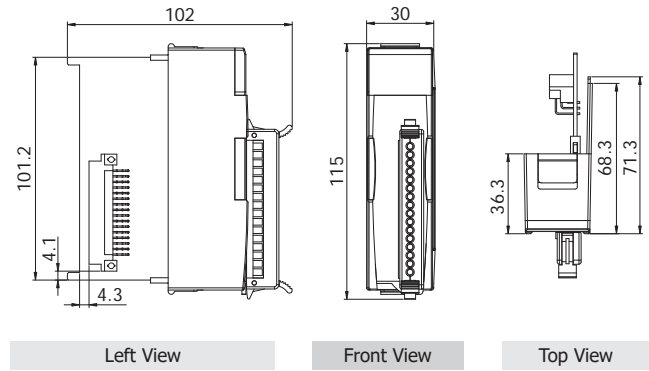
Thermocouple Type

Type Code	Type	Temperature Range
0E	J	-210 to +760°C
0F	K	-270 to +1372°C
10	T	-270 to +400°C
11	E	-270 to +1000°C
12	R	0 to +1768°C
13	S	0 to +1768°C
14	B	0 to +1820°C
15	N	-270 to +1300°C
16	C	0 to +2320°C
17	L	-200 to +800°C
18	M	-200 to +100°C
19	LDIN43710	-200 to +900°C

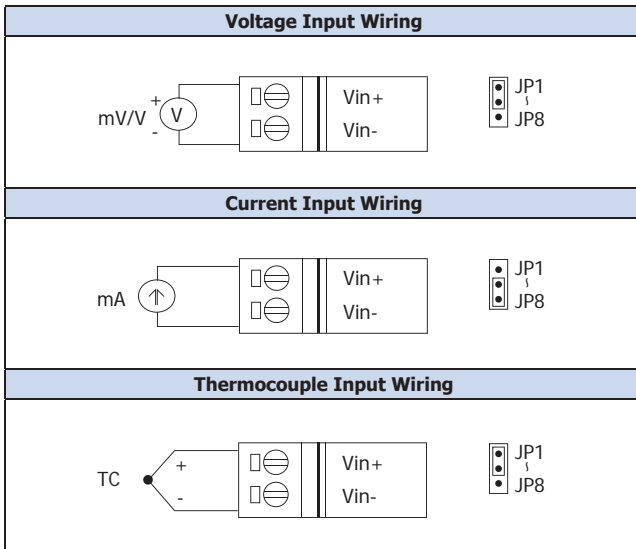
Internal I/O Structure



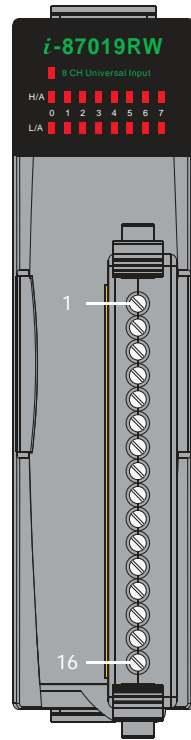
Dimensions (Units: mm)



Wire Connections



Pin Assignments



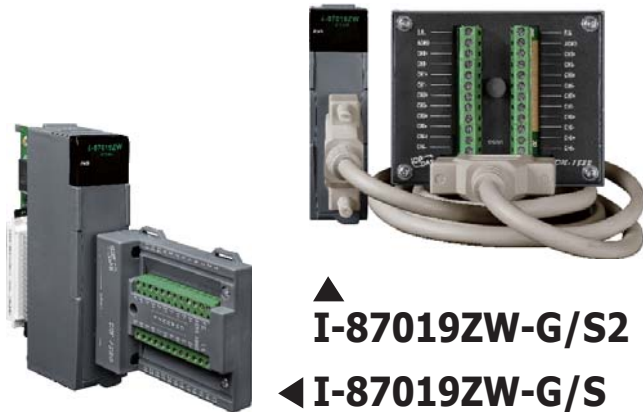
Terminal No.	Pin Assignment
01	Vin0+
02	Vin0-
03	Vin1+
04	Vin1-
05	Vin2+
06	Vin2-
07	Vin3+
08	Vin3-
09	Vin4+
10	Vin4-
11	Vin5+
12	Vin5-
13	Vin6+
14	Vin6-
15	Vin7+
16	Vin7-

Ordering Information

I-87019RW-G CR	8-channel Universal Analog Input Module with High Voltage Protection (Gray Cover) (RoHS)
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Accessories

	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



▲ I-87019ZW-G/S2

◀ I-87019ZW-G/S

10-ch Universal AI Module

Introduction

The I-87019ZW is a 10-channel universal analog input module with an RS-485 interface that is a specially designed for extremely accurate thermocouple measurement and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. The innovative design of the enhanced model ensures that thermocouple measurement is more accurate than with the earlier design. Besides the thermocouple inputs, the I-87019ZW also supports voltage and current inputs. The voltage input range can be from ± 15 mV to ± 10 V, and the current input range can be either $+4 \sim +20$ mA, $0 \sim +20$ mA, or ± 20 mA. Up to 10 analog inputs of different types can be connected to a single module. Overvoltage protection of up to 240 V_{rms} is provided. The module also features per-channel open wire detection for thermocouple and $+4 \sim +20$ mA inputs.

System Specifications

Communication		
Interface	RS-485	
Format	N, 8, 1; N, 8, 2; E, 8, 1; O, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal ± 8 kV Air for Random Point	
Power		
Power Consumption	1.4 W	
Mechanical		
Dimensions (W x L x H)	I-87019ZW	31 mm x 114 mm x 86 mm
	DB-1820	65 mm x 78 mm x 22 mm
	DN-1822	103 mm x 96 mm x 27 mm
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 10-channel Analog Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240 V_{rms} Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 Vdc Intra-module Isolation, Field-to-Logic



Applications

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

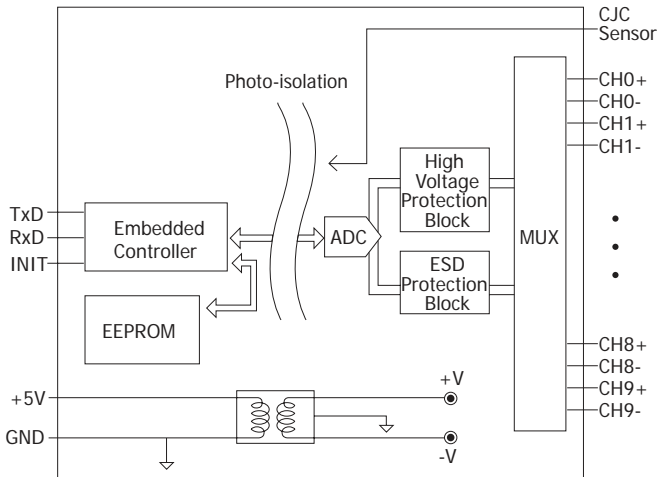
I/O Specifications

Analog Input	
Channels	10
Wiring	Differential
Sensor Type	± 15 mV, ± 50 mV, ± 100 mV, ± 150 mV, ± 500 mV, ± 1 VDC, ± 2.5 VDC, ± 5 VDC, ± 10 VDC -20 mA $\sim +20$ mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (Jumper Selectable) Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
Zero Drift	± 20 μ V/°C
Span Drift	± 25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: >400 k Ω , Current Input: 125 Ω
Individual Channel Configuration	Yes
Open Wire Detection	Yes, (Software Selectable)
Overvoltage Protection	240 V _{rms}

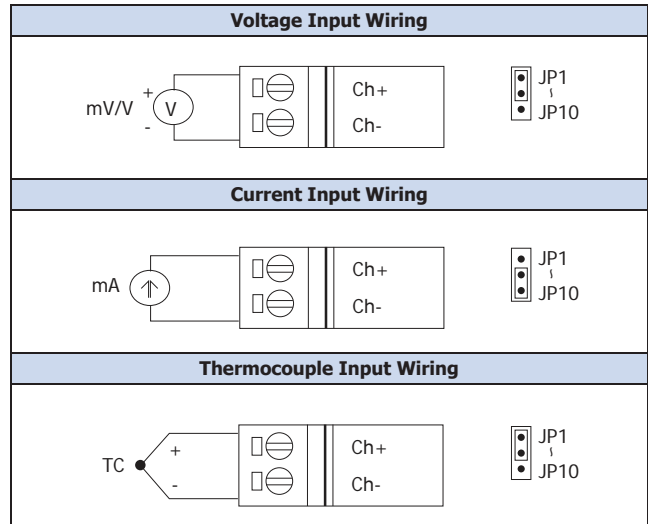
Thermocouple Type

Type Code	Type	Temperature Range
0E	J	-210 to +760°C
0F	K	-270 to +1372°C
10	T	-270 to +400°C
11	E	-270 to +1000°C
12	R	0 to +1768°C
13	S	0 to +1768°C
14	B	0 to +1820°C
15	N	-270 to +1300°C
16	C	0 to +2320°C
17	L	-200 to +800°C
18	M	-200 to +100°C
19	LDIN43710	-200 to +900°C

Internal I/O Structure

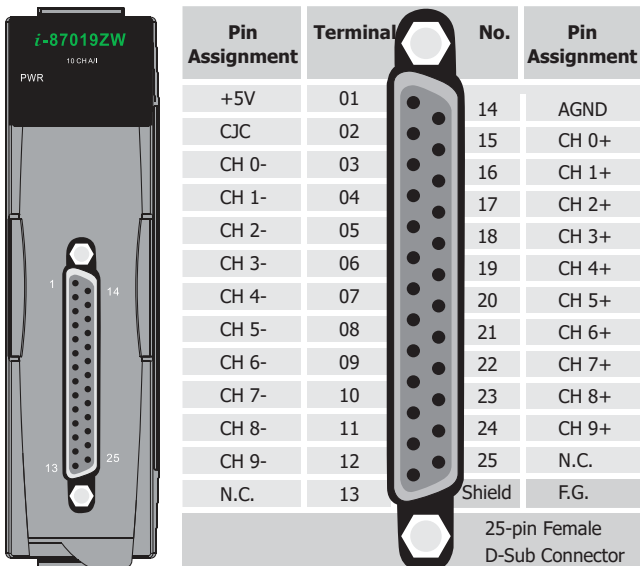


Wire Connections

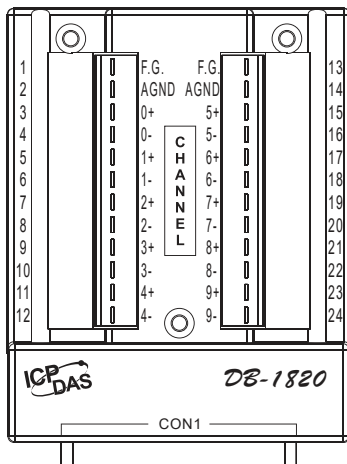


Pin Assignments

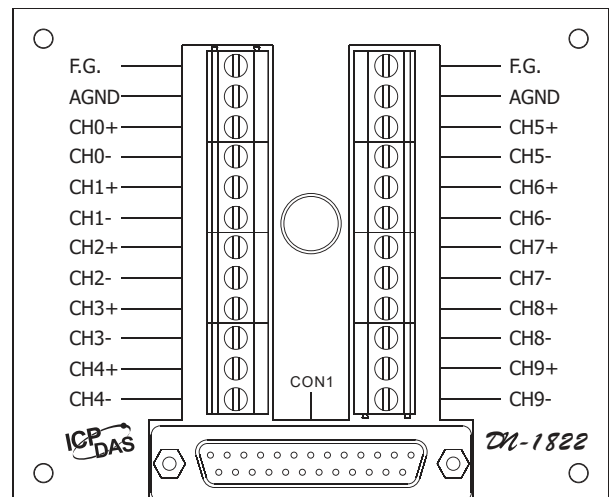
I-87019ZW



DB-1820

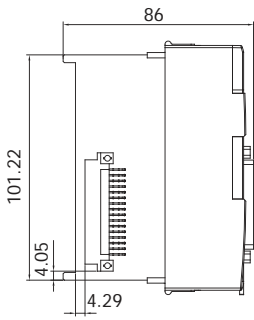


DN-1822

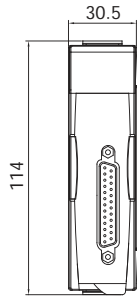


■ Dimensions (Units: mm)

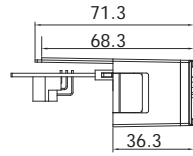
I-87019ZW



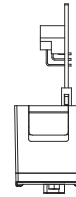
Left View



Front View

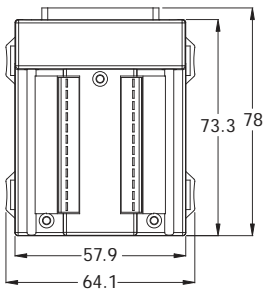


Top View

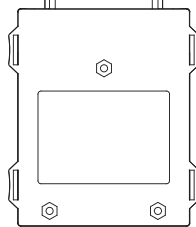


Top View

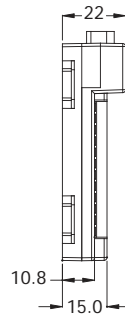
DB-1820



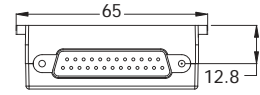
Front View



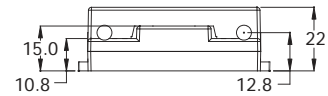
Rear View



Left View

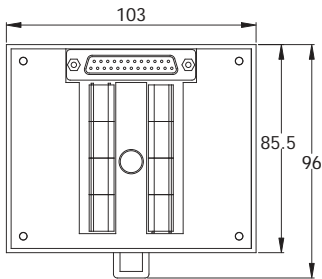


Top View

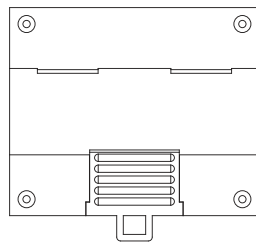


Bottom View

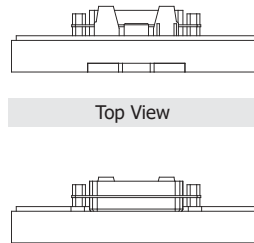
DN-1822



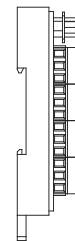
Front View



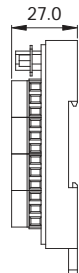
Rear View



Bottom View



Left View







Right Side View

Ordering Information

I-87019ZW-G/S CR	10-ch Universal AI Module with High Overvoltage Protection (RoHS) Includes DB-1820 Daughter Board
I-87019ZW-G/S2 CR	10-ch Universal AI Module with High Overvoltage Protection (RoHS) Includes DN-1822 Daughter Board and CA-252518D-1 1.8 m Cable
 <p>I-87019ZW-G/S CR = I-87019ZW Connects DB-1820 Directly</p>	 <p>I-87019ZW-G/S2 CR = I-87019ZW Connect DN-1822 Directly</p>

Accessories

	CD-2518D CR	DB25 Male to Female 1.8 m Cable (180°) and DIN-Rail Mount for the DB-1820 (RoHS)
	CD-25015 CR	DB25 Male to Female 15 cm Cable (90°) and DIN-Rail Mount for the DB-1820 (RoHS)
 <p>I-87018ZW-G/S CR + CD-2518D</p>	 <p>CD-2518D</p>	



I-87022W-G

2-channel Analog Output Module

Introduction

The I-87022W is a Sink Type Analog Output Module that includes 2 Analog Output channels, and provides options for configuring power-on and safe values. It also provides a programmable Analog output range (0 ~ +10 V, +4 ~ +20 mA or 0 ~ +20 mA), and each Analog Output can be configured for an individual range. The module provides an RF immunity level matching that defined in the IEC 61000-4-3 standard. Voltage or current output is jumper selectable, and the module also features per-channel open wire detection for +4 ~ +20 mA output, together with ±4 KV ESD protection and 3000 Vdc intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
RS Immunity (IEC 61000-4-3)	3 V/m, 80 MHz ~ 1 GHz
Power	
Power Consumption	1.8 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 2-channel Voltage or Current Output
- Individual Channel Configuration
- 3000 Vdc Intra-module Isolation
- 3 kV Channel-to-Channel Isolation
- Open Wire Detection for Current Output
- Readback Voltage or Current
- RF Immunity
- Configurable Power-on Value Settings
- Configurable Safe Value Settings
- 4 kV ESD Protection
- Wide Operating Temperature Range: -25 to +75°C



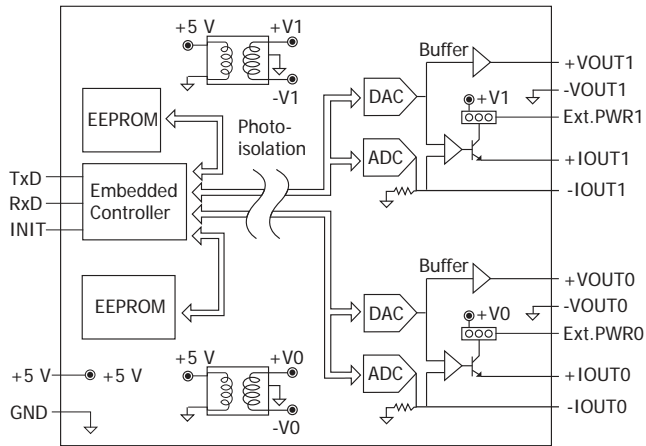
Applications

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

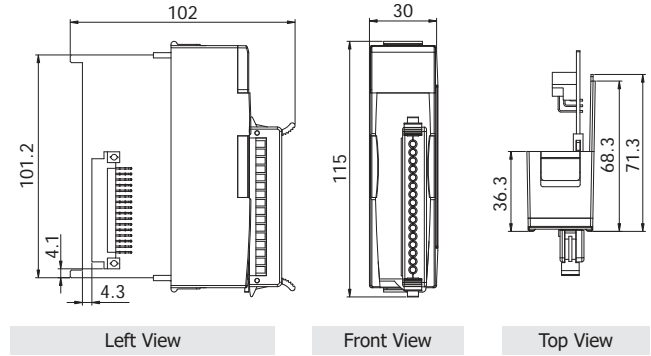
I/O Specifications

Analog Output		
Channels	2	
Current Output Wiring	Sink	
Range	0 ~ +10 V 0 ~ +20 mA +4 ~ +20 mA	
Resolution	12-bit	
Accuracy	±0.1% of FSR	
Readback Accuracy	±0.5% of FSR	
DA Output Response Time	10 ms for all Channel	
Programmable Output Slope	Voltage	0.0625 ~ 1024.0 V/Second
	Current	0.125 ~ 2048 mA/Second
Current Load Resistance	Internal Power: 500 Ω	
	External Power: 1050 Ω	
Voltage Output Capability	10 V @ 10 mA	
Channel-to-Channel Isolation	Yes, 3 kV	
Open Wire Detection	Yes, +4 ~ +20 mA	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	

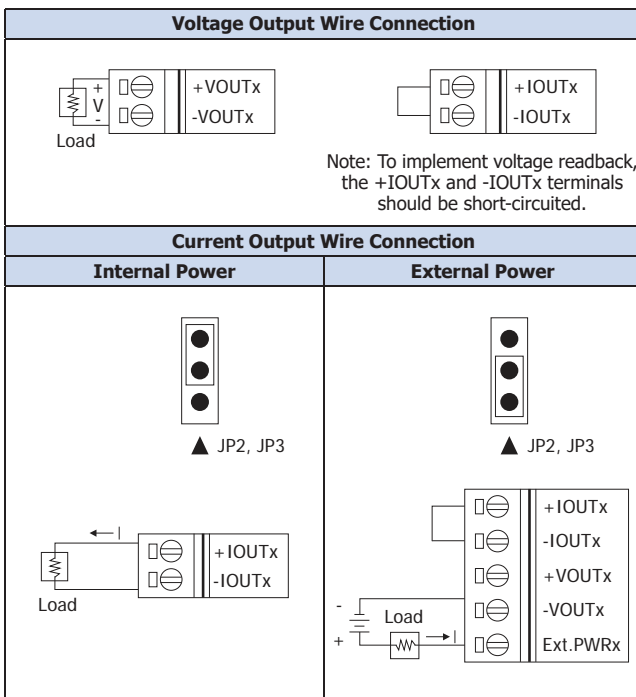
Internal I/O Structure



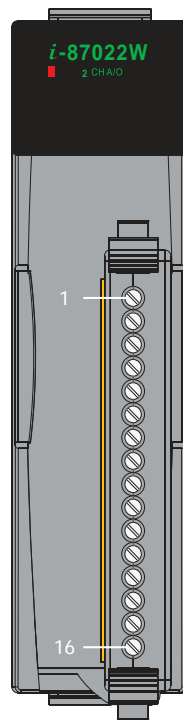
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	N/A
02	N/A
03	N/A
04	N/A
05	N/A
06	N/A
07	VOUT0+
08	VOUT0-
09	IOUT0+
10	IOUT0-
11	EXT.PWR0
12	VOUT1+
13	VOUT1-
14	IOUT1+
15	IOUT1-
16	EXT.PWR1

Ordering Information

I-87022W-G CR	2-channel 12-bit Analog Output Module with Channel-to-Channel Isolation (Gray Cover) (RoHS)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87024CW-G I-87024UW-G

4-channel Isolated Source Type Voltage or Current Output module

Introduction

The I-87024CW is a 4-channel current output module that features channel-to-channel isolation and also has qualification for 4 kV ESD protection and 1000 VDC intra-module isolation. Options for configuring power-on and safe values are also included.

The I-87024UW is a source type analog output module that includes 4 single-ended analog output channels, and provides options for setting power-on and safe value. It also provides a programmable output range analog outputs (0 ~ 5 V, ±5 V, 0 ~ 10 V, ±10 V, +4 ~ +20 mA or 0 ~ +20 mA), and each analog output can be configured for an individual range and provides an RF immunity level matching that defined by IEC 61000-4-3. The module also features per-channel open wire detection for +4 ~ +20 mA output, together with 4 kV ESD protection as well as 2500 Vdc intra-module isolation.

System Specifications

Model	I-87024CW	I-87024UW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	16 as High/Low Alarm Signals	-
Isolation		
Intra-module Isolation, Field-to-Logic	1000 Vdc	2500 Vdc
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
RS Immunity (IEC 61000-4-3)	-	3 V/m, 80 MHz ~ 1 GHz
Power		
Power Consumption	0.9 W Max.	
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- I-87024UW
 - 4-channel Voltage or Current Output
 - Individual Channel Configuration
 - 2500 Vdc Intra-module Isolation
- I-87024CW
 - 1 kV Channel-to-Channel Isolation
- Open Wire Detection for Current Output
- RF Immunity
- Short Circuit Protection
- Power-on Value
- Safe Value
- 4 kV ESD Protection
- Wide Operating Temperature Range: -25 to +75°C



Applications

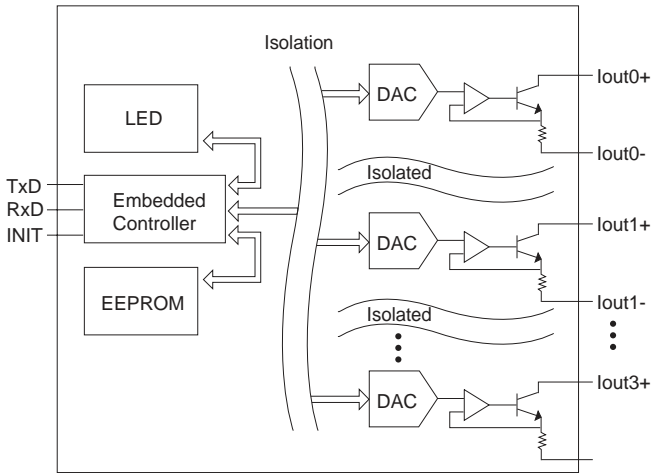
- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment

I/O Specifications

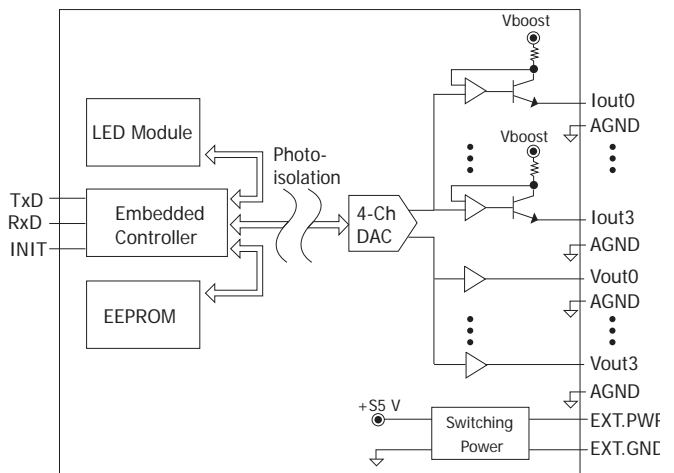
Model	I-87024CW	I-87024UW
Analog Output		
Channels	4	
Current Output Wiring	Sink	Source
Range	0 ~ +20 mA, +4 ~ +20 mA	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA
Resolution	12-bit	16-bit
Accuracy	±0.1% of FSR	±0.02% of FSR
Zero Drift	±0.2 μV/°C	
Span Drift	±25 ppm/°C	
DA Output Response Time	10 ms per channel	
Programmable Output Slope	Voltage	-
	Current	0.125 ~ 1024 mA/Second
Output Capacity	External +24 VDC @ 1050 Ω	1000 Ω
Channel-to-Channel Isolation	Yes, 1 kV	-
Open Wire Detection	Yes, +4 ~ +20 mA	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	
External Power Requirements		
Reverse Polarity Protection	-	Yes
Powered from Terminal Block	-	Yes, 15 ~ 30 Vdc
Consumption	-	4.0 W

Internal I/O Structure

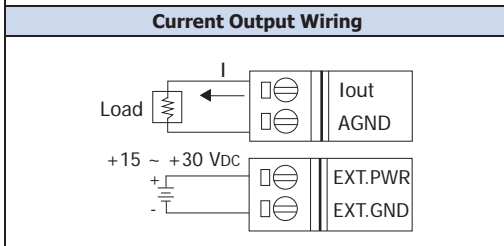
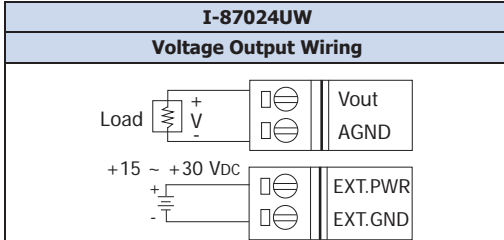
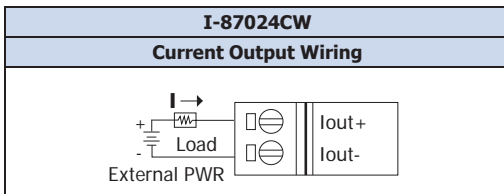
I-87024CW



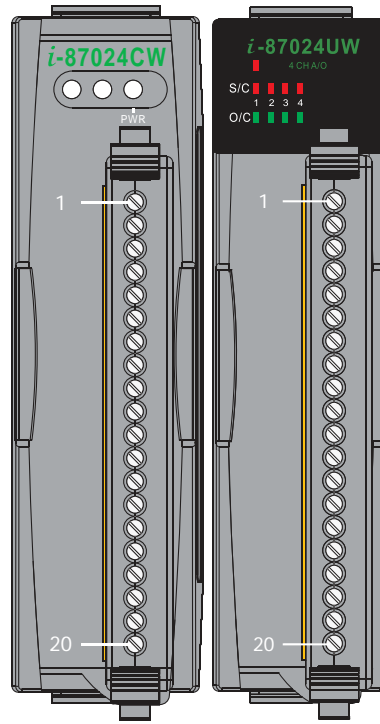
I-87024UW



Wire Connections

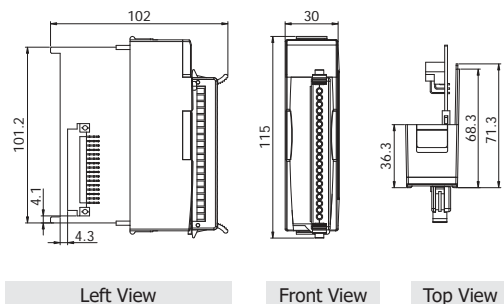


Pin Assignments



Terminal No.	Pin Assignment	
	I-87024CW	I-87024UW
01	N.C.	Iout0
02	N.C.	AGND
03	Iout0+	Iout1
04	Iout0-	AGND
05	N.C.	Iout2
06	N.C.	AGND
07	N.C.	Iout3
08	Iout1+	AGND
09	Iout1-	Vout0
10	N.C.	AGND
11	N.C.	Vout1
12	N.C.	AGND
13	Iout2+	Vout2
14	Iout2-	AGND
15	N.C.	Vout3
16	N.C.	AGND
17	N.C.	EXT.PWR
18	Iout3+	EXT.PWR
19	Iout3-	EXT.GND
20	N.C.	EXT.GND


Dimensions (Units: mm)



Ordering Information

I-87024CW-G CR	4-channel 12-bit Channel-to-Channel Isolated Current Output Module with Open-wire Detection (Gray Cover) (RoHS)
I-87024UW-G CR	4-channel 16-bit Isolated Source Type Voltage or Current Output Module (Gray Cover) (RoHS)

Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87024DW-G

4-channel 14-bit Analog Output Module

Introduction

The I-87024DW is a serial interface and 4-channel analog output module. The programmable analog outputs are 14-bit resolution and support an output range of 0 ~ 5 V, ±5 V, 0 ~ 10 V, ±10 V, 0 ~ +20 mA, or +4 ~ +20 mA.

Applications

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

System Specifications

Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	16 as High/Low Alarm Signals	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 VDC	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
RS (IEC 61000-4-3)	3 V/m, 80 MHz ~ 1 GHz	
Power		
Power Consumption	Typical	1.3 W
	Maximum	3.1 W (4-channel Output 20 mA at 10 V)
Mechanical		
Dimensions (W × L × H)	30 mm × 115 mm × 85 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 4-channel Analog Output
- D-Sub 37-Pin Connector
- 4 kV ESD Protection
- Dual Watchdog
- Configurable Power-on Value
- Configurable Safe Value
- 3000 VDC Intra-module Isolation, Field-to-Logic
- Open Daughter Board Detection
- RF Immunity

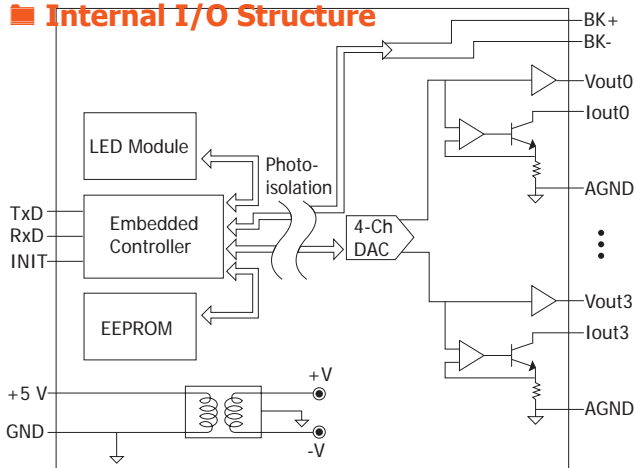


I-8017DW, I-8040W, I-8040PW, I-8041W, I-8041AW, I-8041PW, I-8042W, I-87017DW, I-87024DW, I-87028CDW, I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W with DN-37-381-A & DB37 Male to Female Cable (Optional)

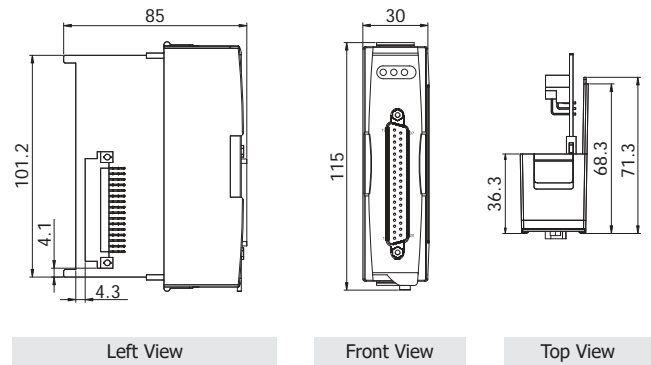
I/O Specifications

Analog Output		
Channels	4	
Current Output Wiring	Sink	
Range	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA	
Resolution	14-bit	
Accuracy	±0.1% of FSR	
Zero Drift	Voltage	±30 µV/°C
	Current	±0.2 µA/°C
Span Drift	±20 ppm/°C	
DA Output Response Time	10 ms per channel	
ESD Protection	4 kV (Contact for each channel)	
Programmable Output Slope	0.125 ~ 2048 mA/Second	
	0.0625 ~ 1024 V/Second	
Output Capacity	Voltage	10 VDC @ 20 mA
	Current	External +24 VDC @ 1050 Ω
Open Wire Detection	Yes	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	
Open Daughter Board Detection	Yes	

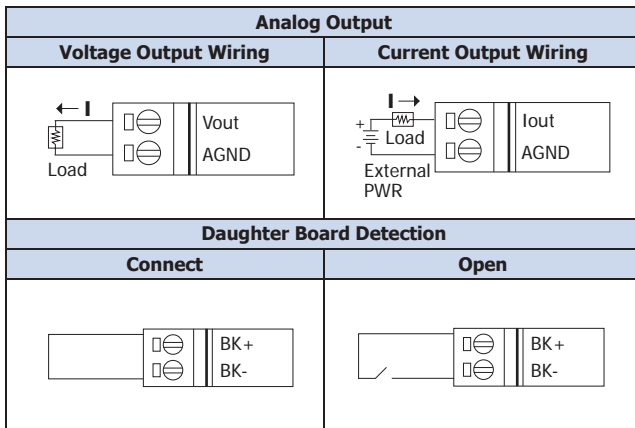
Internal I/O Structure



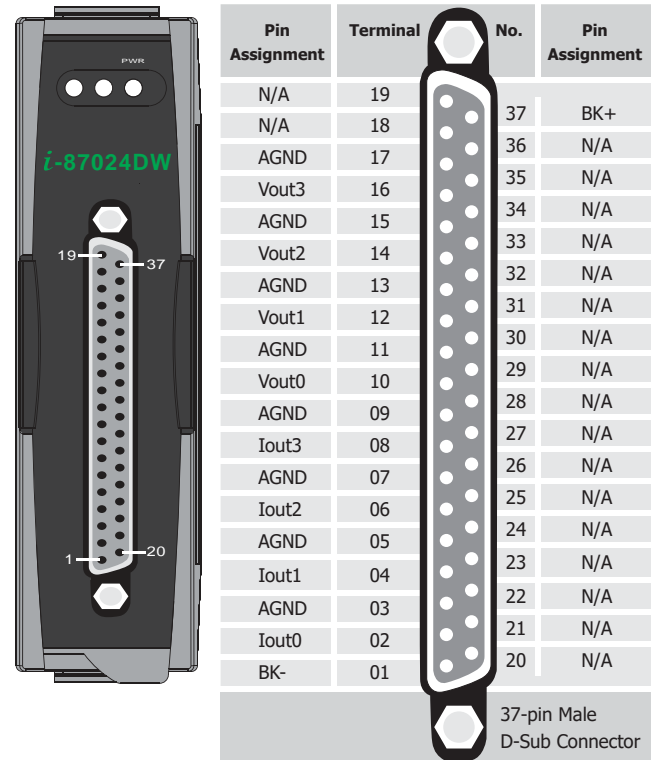
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87024DW-G CR	4-channel 14-bit Analog Output Module (Gray Cover) (RoHS)
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Accessories

DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87024W-G I-87024RW-G

4-channel 14-bit Analog Output Module

Introduction

The I-87024W is a 4-channel analog output module that provides either current or voltage output. There are options to set Power-on and safe values. The I-87024W also features 4 kV ESD protection and 3000 Vdc intra-module isolation.

The I-87024RW is a 4-channel analog output module. The programmable AO channels provide 14-bit resolution and support an output range of 0 ~ +5 V, ±5 V, 0 ~ +10 V, ±10 V, 0 ~ +20 mA, or +4 ~ +20 mA. The I-87024RW has the same specifications as the I-87024W, but the output quality is improved in a harsh environments.

System Specifications

Model	I-87024W	I-87024RW	
Communication			
Interface	RS-485		
Format	N, 8, 1		
Baud Rate	1200 to 115200 bps		
Protocol	DCON		
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)		
LED Indicators/Display			
System LED Indicators	Yes, 1 as Power/Communication Indicator		
I/O LED Indicators	-		
Isolation			
Intra-module Isolation, Field-to-Logic	3000 VDC		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal		
	±8 kV Air for Random Point		
Power			
Power Consumption	Typical	1.3 W Max.	1.1 W Max.
	Maximum	2.8 W (4-channels Output, 20 mA at 10 V)	3.2 W (4-channel Output, 20 mA at 10 V)
Mechanical			
Dimensions (L × W × H)	114 mm × 30 mm × 85 mm		
Environment			
Operating Temperature	-25 to +75°C		
Storage Temperature	-40 to +85°C		
Humidity	10 to 95% RH, Non-condensing		

Features

- Current Output or Voltage Output
- Power-on Value
- Safe Value
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



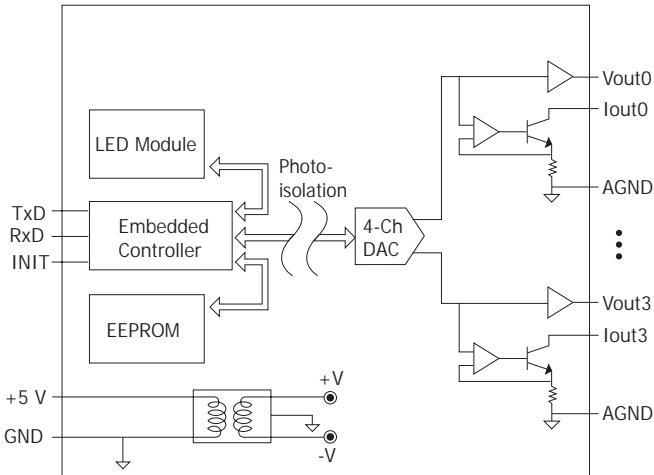
Applications

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

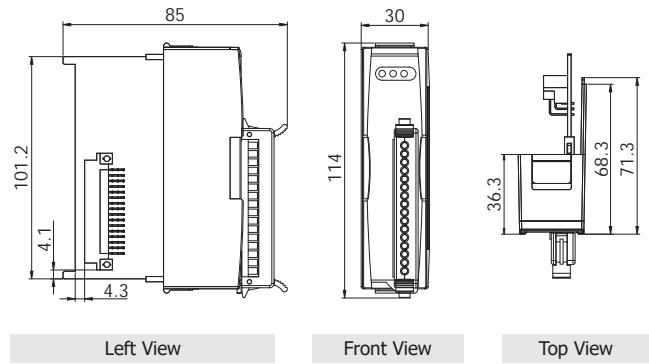
I/O Specifications

Model	I-87024W	I-87024RW
Analog Output		
Channels	4	
Current Output Wiring	Sink	
Range	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA	
Resolution	14-bit	
Accuracy	±0.1% of FSR	
Zero Drift	Voltage	±30 μV/°C
	Current	±0.2 μA/°C
Span Drift	±20 ppm/°C	
Analog Output Response Time	10 ms per channel	
Programmable Output Slope	0.125 to 2048 mA/second	
	0.0625 to 1024 V/second	
Output Capacity	Voltage	10 VDC @ 5 mA
	Current	External +24 VDC @ 1050 Ω
Open Wire Detection	-	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	

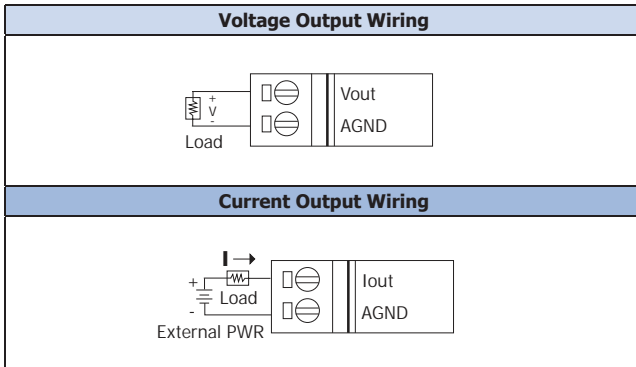
Internal I/O Structure



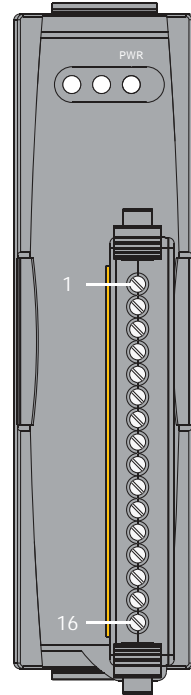
Dimensions (Units: mm)



Wire Connections



Pin Assignments




Terminal No.	Pin Assignment
01	Iout0
02	AGND
03	Iout1
04	AGND
05	Iout2
06	AGND
07	Iout3
08	AGND
09	Vout0
10	AGND
11	Vout1
12	AGND
13	Vout2
14	AGND
15	Vout3
16	AGND

Ordering Information

I-87024W-G CR	4-channel 14-bit Analog Output Module (Gray Cover) (RoHS)
I-87024RW-G CR	4-channel 14-bit Analog Output Module with RF Immunity (Gray Cover) (RoHS)

Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87026PW-G

6-channel Analog Input, 2-channel Analog Output,
2-channel Digital Input and 2-channel Digital Output Module

Introduction

The 87026PW is a multifunction module that includes 6 analog input channels, 2 analog output channels, 2 digital input channels, 2 digital output channels. It provides a programmable input range on all analog input (± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA or $0 \sim +20$ mA), analog outputs are 12-bit at ± 5 V, ± 10 V, $0 \sim +20$ mA or $+4 \sim +20$ mA and all digital outputs can be set as alarm output. Each analog input can be configured for an individual range and provides a high overvoltage protection of 240 Vrms. Voltage and current inputs/outputs are jumper selectable.

Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
	Yes, 2 as Digital Input indicator
	Yes, 2 as Digital Output indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	2500 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal ± 8 kV Air for Random Point
Power	
Power Consumption	1.8 W
Mechanical	
Dimensions (L x W x H)	115 mm x 30 mm x 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

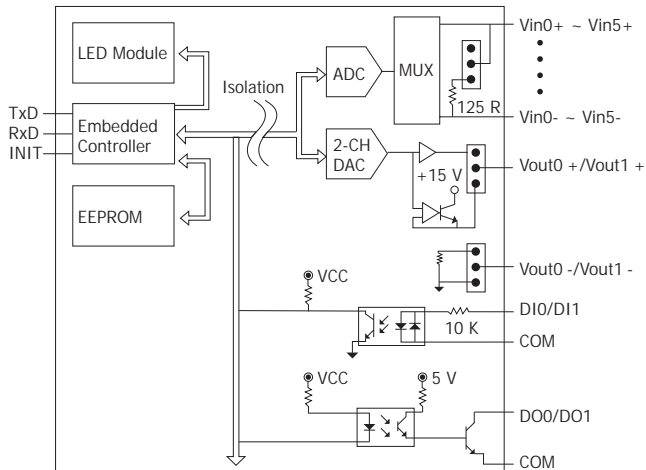
- Multifunction (6AI, 2AO, 2DI and 2DO)
- Supports Fast Mode and Normal Mode
- Individual Channel Configuration
- Open Wire Detection for Current Output
- Overload and Short Circuit Protection for Digital Output
- Configurable Power-on Value Settings
- Configurable Safe Value Settings
- 240 Vrms Overvoltage Protection for Voltage Input
- 70 Vdc Overvoltage Protection for Digital Input
- Jumper Selectable Voltage or Current Input/Output
- Dual Watchdog
- ± 4 kV Contact ESD Protection
- Wide Operating Temperature Range: -25°C to +75°C



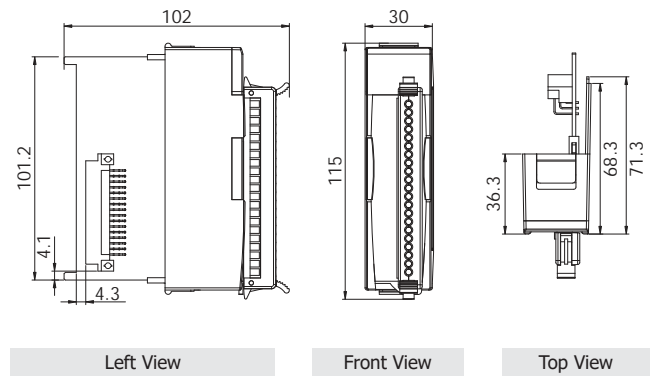
I/O Specifications

Analog Input		
Channels	6	
Wiring	Differential	
Range	± 150 mV, ± 500 mV, ± 1 VDC, ± 5 VDC, ± 10 VDC, ± 20 mA, (Jumper Selectable)	
Resolution	Normal Mode	16-bit
	Fast Mode	12-bit
Accuracy	Normal Mode	$\pm 0.1\%$ of FSR
	Fast Mode	$\pm 0.5\%$ or better
Sampling Rate	Normal Mode	10 Hz (Total)
	Fast Mode	60 Hz (Total)
Bandwidth	Normal Mode	15.7 Hz
	Fast Mode	78.7 Hz
Input Impedance	2 M Ω (Voltage), 125 Ω (Current)	
Common Mode Rejection	86 dB Min.	
Normal Mode Rejection	100 dB	
Overvoltage Protection	240 Vrms	
Individual Channel Configuration	Yes	
Analog Output		
Channels	2	
Range	$+0 \sim +5$ VDC, $+0 \sim +10$ VDC, ± 5 VDC, ± 10 VDC, $+0 \sim +20$ mA, $+4 \sim +20$ mA (Jumper Selectable)	
Resolution	12-bit	
Accuracy	$\pm 0.1\%$ of FSR	
Output Capacity	10 V @ 20 mA	
Current Load Resistance	500 Ω	
Power-on and Safe Values	Yes	
Open Wire Detection for Current Output	Yes, Only $+4 \sim +20$ mA.	
Digital Input		
Channels	2	
Type	Wet	
Sink/Source (NPN/PNP)	Sink	
ON Voltage Level	$+3.5$ VDC ~ 50 VDC	
OFF Voltage Level	$+1$ VDC Max.	
Input Impedance	10 k Ω , 0.66 W	
Counters	Channels	2
	Max. Count	32-bit
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Overvoltage Protection	70 VDC	
Channel-to-Channel Isolation	Yes	
Digital Output		
Channels	2	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	$+3.5$ VDC $\sim +50$ VDC	
Max. Load Current	700 mA/channel	
Overvoltage Protection	60 VDC	
Overload Protection	Yes	
Short Circuit Protection	Yes	
Power-on and Safe Values	Yes	

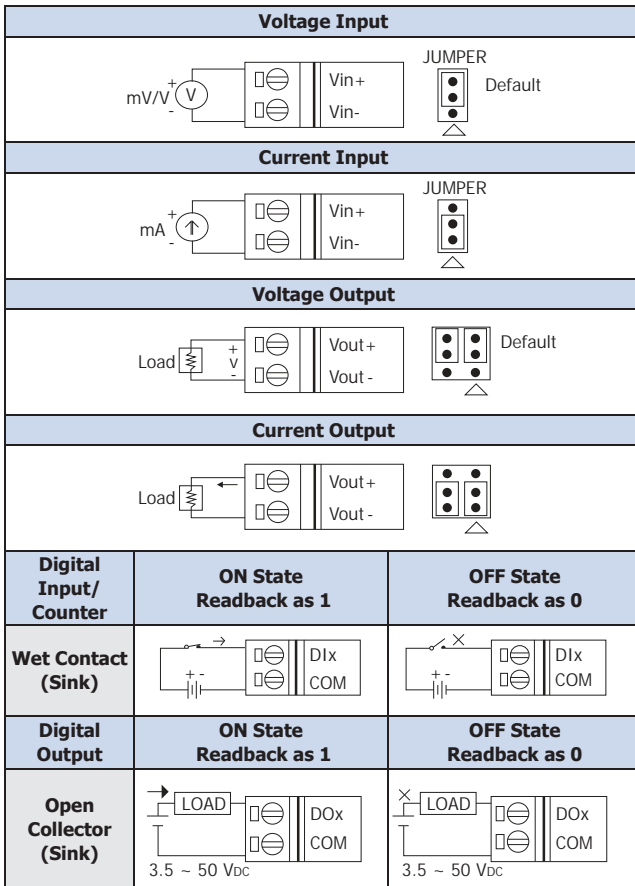
Internal I/O Structure



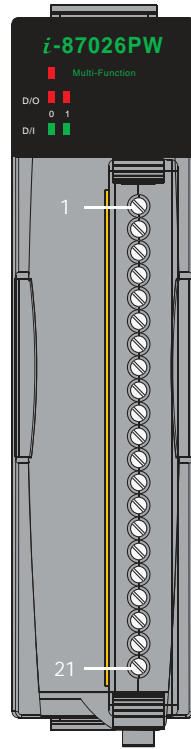
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	Vin0+
02	Vin0-
03	Vin1+
04	Vin1-
05	Vin2+
06	Vin2-
07	Vin3+
08	Vin3-
09	Vin4+
10	Vin4-
11	Vin5+
12	Vin5-
13	Vout0+
14	Vout0-
15	Vout1+
16	Vout2-
17	DO0
18	DO1
19	DI0
20	DI1
21	COM

Ordering Information

I-87026PW CR	6-channel Analog Input, 2-channel Analog Output, 2-channel Digital Input and 2-channel Digital Output Module (Gray Cover) (RoHS)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87028CDW-G

8-channel Isolated Analog Output Module

Features

- 3 kV Intra-module Isolation
- 3 kV Channel-to-Channel Isolation
- Open Wire Detection for Current Output
- Power-on Value Setting
- Safe Value Setting
- D-sub DB37 Wiring
- 4 kV ESD Protection



Introduction

The I-87028CDW is an 8-channel current output module that features 3 kVdc channel-to-channel isolation and also features per-channel open wire detection for +4 to +20 mA outputs, together with 4 kV ESD protection as well as 3 kVDC intra-module isolation. Options for configuring power-on and safe values are also included.



I-8017DW, I-8040W, I-8040PW,
I-8041W, I-8041AW, I-8041PW, I-8042W,
I-87017DW, I-87024DW, I-87028CDW,
I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W
with DN-37-381-A & DB37 Male to Female Cable
(Optional)

System Specifications

Model	I-87028CDW
Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1 W Max.
Mechanical	
Dimensions (W × L × H)	30 mm x 85mm x 114 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

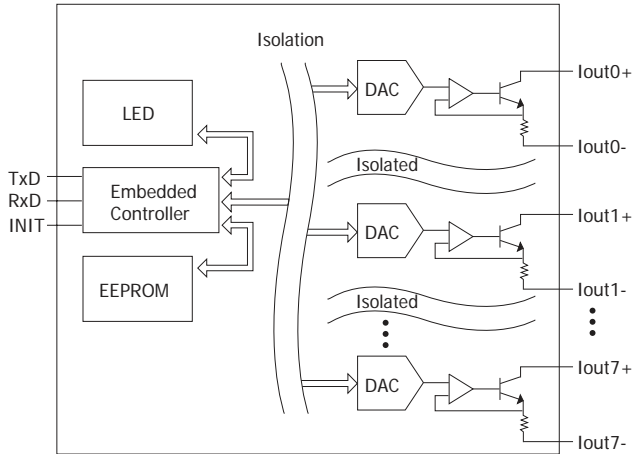
Applications

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

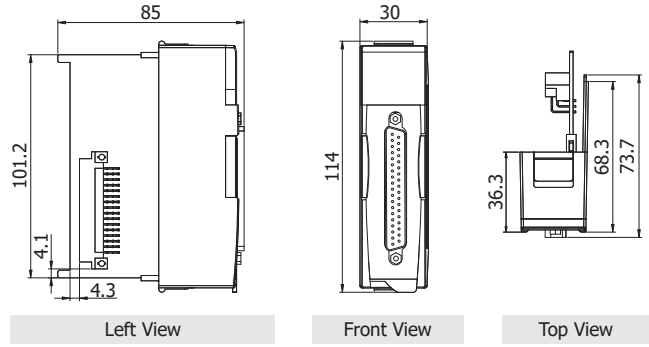
I/O Specifications

Model	I-87028CDW
Analog Output	
Channels	8
Connector	DB37
Current Output Wiring	Sink
Range	0 ~ +20 mA, +4 ~ +20 mA
Resolution	12-bit
Accuracy	±0.1% of FSR
DA Output Response Time	10 ms per channel
Programmable Output Slope	0.125 ~ 1024 mA/Second
Output Capacity	External +24 VDC @ 1050 Ω
Channel-to-Channel Isolation	Yes, 3000 VDC
Open Wire Detection	Yes, +4 ~ +20 mA
Power-on Value	Yes
Safe Value	Yes

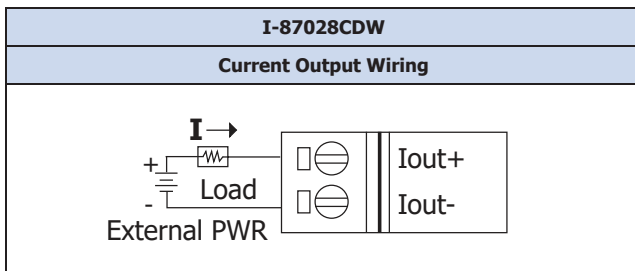
Internal I/O Structure



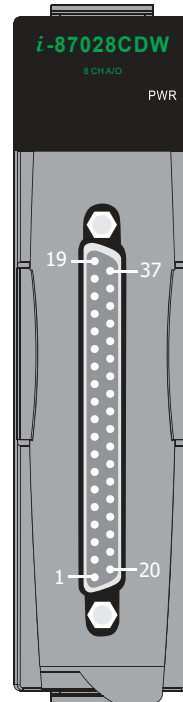
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Pin Assignment	Terminal	No.	Pin Assignment
Iout0+	19	37	N.C.
Iout0-	18	36	N.C.
Iout1+	17	35	N.C.
Iout1-	16	34	N.C.
N.C.	15	33	N.C.
Iout2+	14	32	N.C.
Iout2-	13	31	N.C.
Iout3+	12	30	N.C.
Iout3-	11	29	N.C.
N.C.	10	28	N.C.
Iout4+	09	27	N.C.
Iout4-	08	26	N.C.
Iout5+	07	25	N.C.
Iout5-	06	24	N.C.
N.C.	05	23	N.C.
Iout6+	04	22	N.C.
Iout6-	03	21	N.C.
Iout7+	02	20	N.C.
Iout7-	01		

37-pin Male D-Sub Connector

Ordering Information

I-87028CDW-G CR	8-ch Channel-to-channel Isolated Current Output Module with Open-wire Detection and DB37 Connector (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)
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Accessories

DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87028CW-G I-87028UW-G

8-channel Isolated Analog Output Module

Features

- I-87028UW
 - 8-channel Voltage or Current Output
 - Jumper Selectable Voltage or Current Output
 - Individual Channel Configuration
 - 2500 Vdc Intra-module Isolation
- I-87028CW
 - 1 kV Channel-to-Channel Isolation
- Open Wire Detection for Current Output
- RF Immunity
- Short Circuit Protection
- Power-on Value Setting
- Safe Value Setting
- 4 kV ESD Protection
- Wide Operating Temperature Range: -25 to +75°C



Introduction

The I-87028CW is an 8-channel current output module that features channel-to-channel isolation and also has qualification for 4 kV ESD protection and 1000 Vdc intra-module isolation. Options for configuring power-on and safe values are also included.

The I-87028UW is a source type analog output module that includes 8 single-ended analog output channels, and allows a programmable output range on all analog outputs channels (0 ~ 5 V, ±5 V, 0 ~ 10 V, ±10 V, +4 ~ +20 mA or 0 ~ +20 mA). Each analog output channel can be configured for an individual range and provides an RF immunity level matching that defined by the IEC 61000-4-3 standard. Voltage and current outputs are jumper selectable, and the module also features per-channel open wire detection for +4 ~ +20 mA outputs, together with 4 kV ESD protection as well as 2500 Vdc intra-module isolation. Options for configuring power-on and safe values are also included.

Applications

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

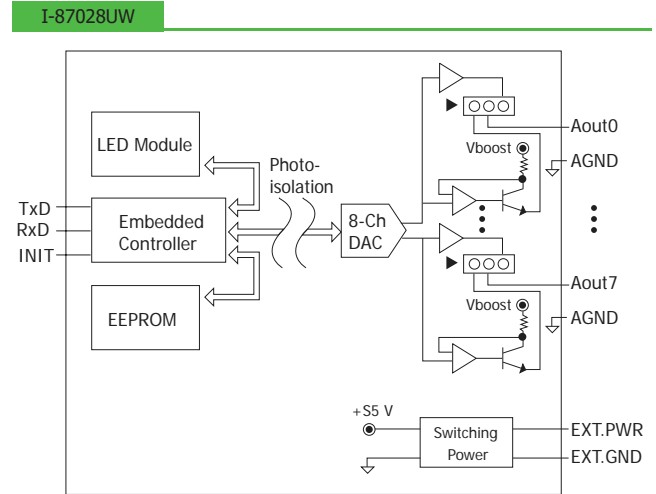
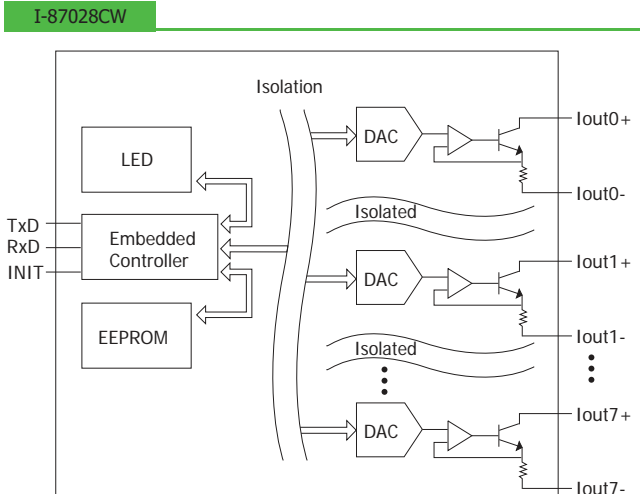
System Specifications

Model	I-87028CW	I-87028UW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	1 LED as Power/Communication Indicator	
I/O LED Indicators	-	<ul style="list-style-type: none"> ◆ O/C 8 LEDs as Open Wire Detection for current output Indicators ◆ S/C 8 LEDs as Short Circuit Detection for voltage output Indicators
Isolation		
Intra-module Isolation, Field-to-Logic	1000 Vdc	2500 Vdc
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
RS Immunity (IEC 61000-4-3)	-	3 V/m, 80 MHz ~ 1 GHz
Power		
Power Consumption	1.4 W Max.	0.9 W Max.
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

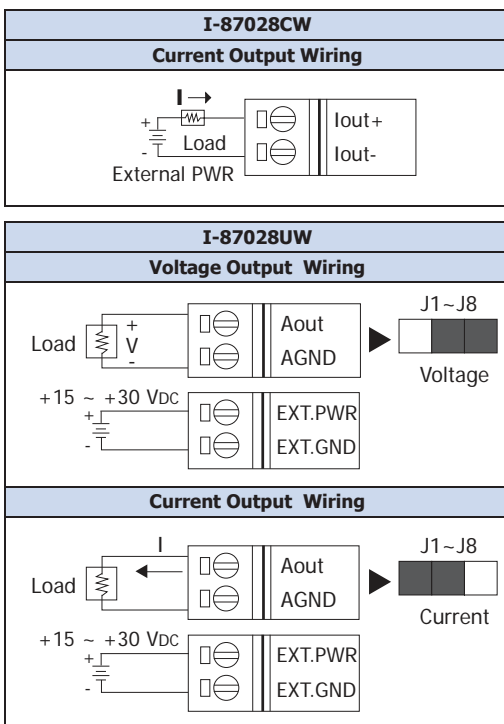
I/O Specifications

Model	I-87028CW	I-87028UW
Analog Output		
Channels	8	
Current Output Wiring	Sink	Source
Range	0 ~ +20 mA, +4 ~ +20 mA	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA
Resolution	12-bit	16-bit
Accuracy	±0.1% of FSR	±0.02% of FSR
Zero Drift	±0.2 μV/°C	
Span Drift	±25 ppm/°C	
DA Output Response Time	10 ms per channel	
Programmable Output Slope	Voltage	0.0625 ~ 512 V/Second
	Current	0.125 ~ 1024 mA/Second
Output Capacity	External +24 VDC @ 1050 Ω	1000 Ω
Channel-to-Channel Isolation	Yes, 1 kV	-
Open Wire Detection	Yes, +4 ~ +20 mA	+4 ~ +20 mA; 0 ~ 20 mA
Short Circuit Protection	-	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC
Power-on Value	Yes	
Safe Value	Yes	
External Power Requirements		
Reverse Polarity Protection	-	Yes
Powered from Terminal Block	-	Yes, 15 ~ 30 VDC
Consumption	-	7.0 W

Internal I/O Structure



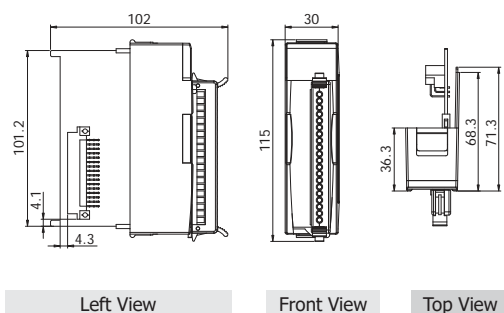
Wire Connections



Pin Assignments

Terminal No.	Pin Assignment	
	I-87028CW	I-87028UW
01	Iout0+	Aout0
02	Iout0-	AGND
03	Iout1+	Aout1
04	Iout1-	AGND
05	N.C.	Aout2
06	Iout2+	AGND
07	Iout2-	Aout3
08	Iout3+	AGND
09	Iout3-	Aout4
10	N.C.	AGND
11	Iout4+	Aout5
12	Iout4-	AGND
13	Iout5+	Aout6
14	Iout5-	AGND
15	N.C.	Aout7
16	Iout6+	AGND
17	Iout6-	EXT.PWR
18	Iout7+	EXT.PWR
19	Iout7-	EXT.GND
20	N.C.	EXT.GND

Dimensions (Units: mm)



Ordering Information

I-87028CW-G CR	8-channel 12-bit Channel-to-Channel Isolated Current Output Module with Open-wire Detection (Gray Cover) (RoHS)
I-87028UW-G CR	8-channel 16-bit Isolated Source Type Voltage or Current Output Module (Gray Cover) (RoHS)

Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87028VW-G I-87028VW-20V-G

8-channel Isolated Voltage Output Module

Introduction

The I-87028VW and I-87028VW-20V are 8-channel voltage output modules that feature 2000 Vdc channel-to-channel isolation, and provides for 4 kV ESD protection and 2000 Vdc intra-module isolation. Options for configuring power-on and safe values are also included.

System Specifications

Model	I-87028VW	I-87028VW-20V
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	
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	
RS Immunity (IEC 61000-4-3)	-	
Power		
Power Consumption	4 W Max.	
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- I-87028VW
- 0-10 V Voltage Output
- I-87028VW-20V
- 0-20 V Voltage Output
- 8-channel Voltage Output
- 2 kV Channel-to-Channel Isolation
- RF Immunity
- Short Circuit Protection
- Configurable Power-on Value Settings
- Configurable Safe Value Settings
- 4 kV ESD Protection
- Wide Operating Temperature Range: -25 to +75°C



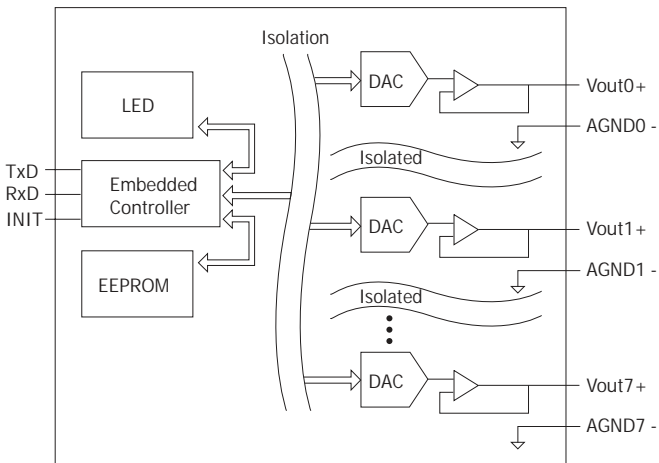
Applications

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

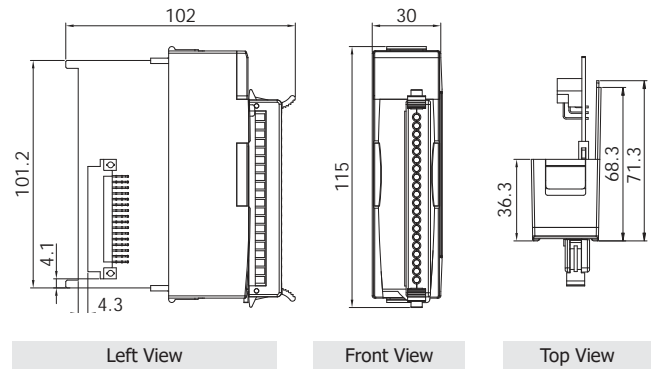
I/O Specifications

Model	I-87028VW	I-87028VW-20V
Analog Output		
Channels	8	
Current Output Wiring	-	
Range	0 ~ +10 Vdc	0 ~ +20 Vdc
Resolution	12-bit	
Accuracy	±0.15% of FSR	
Zero Drift	±0.2 μV/°C	
Span Drift	±25 ppm/°C	
DA Output Response Time	10 ms per channel	
Programmable Output Slope	Voltage 0.0625 ~ 512 V/Second	
Output Capacity	10 V @ 10 mA	20 V @ 5 mA
Channel-to-Channel Isolation	Yes, 2 kV	
Open Wire Detection	-	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	

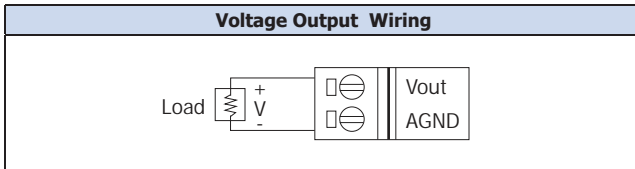
Internal I/O Structure



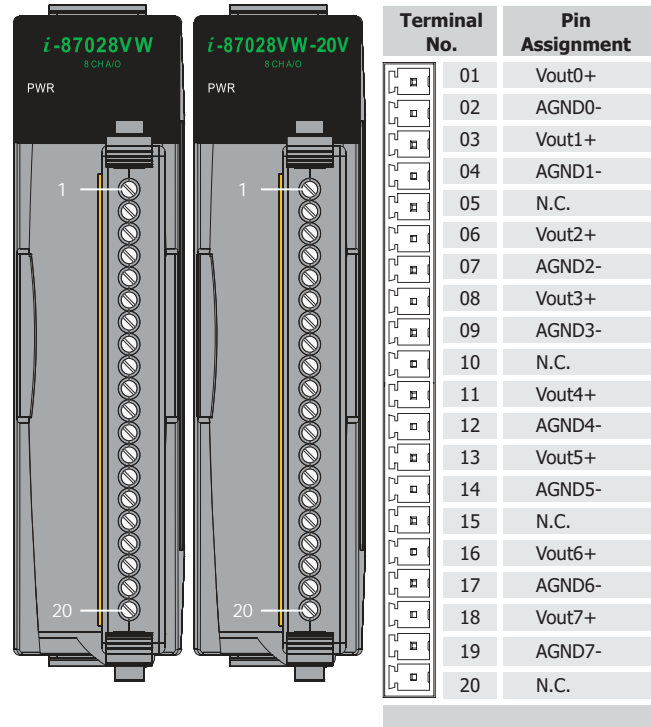
Dimensions (Units: mm)



Wire Connections




Pin Assignments



Ordering Information

I-87028VW-G CR	8-channel 12-bit Channel-to-Channel Isolated Voltage Output Module (0 ~ +10 Vdc) (Gray Cover) (RoHS)
I-87028VW-20V-G CR	8-channel 12-bit Channel-to-Channel Isolated Voltage Output Module (0 ~ +20 Vdc) (Gray Cover) (RoHS)

Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87037W-G

16-channel source type Isolated Digital Output Module

Introduction

The I-87037W provides 16 channels for digital output, each of which features Photocouple isolation. The I-87037W supports source type output with short circuit protection and each channel can drive 700 mA load. There are options for configuring power-on and safe digital output values. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided to enrich the noise protection ability for industrial environment.

Features

- Source Type Digital Outputs
- Photocouple Isolation
- 4 kV ESD Protection
- Dual Watchdog
- Power-on Value Setting
- Safe Value Setting
- Short Circuit Protection
- 3750 Vdc Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

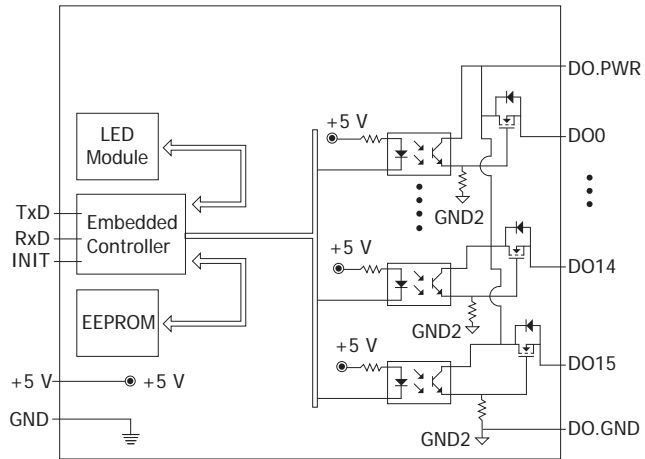
System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	2500 Vdc
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.41 W
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

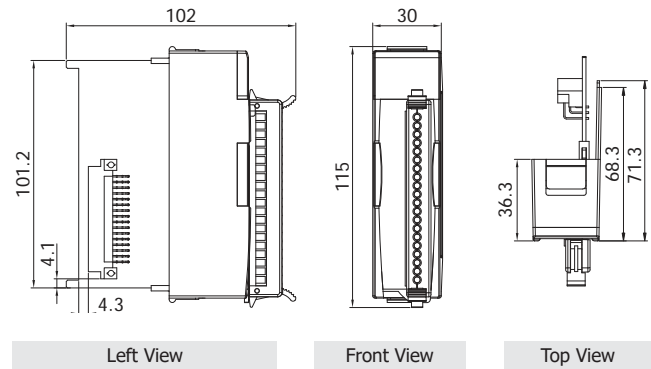
I/O Specifications

Digital Output	
Channels	16
Type	Open Emitter
Sink/Source (NPN/PNP)	Source
Load Voltage	+10 Vdc ~ +40 Vdc
Max. Load Current	700 mA/channel
Overvoltage Protection	47 Vdc
Overload Protection	Yes
Short Circuit Protection	Yes
Power-on Value	Yes
Safe Value	Yes

Internal I/O Structure



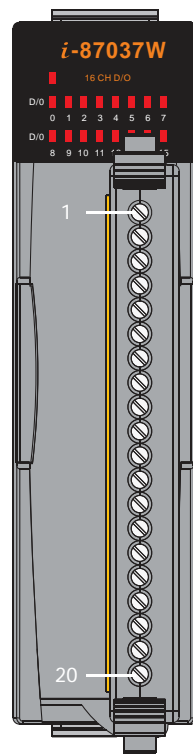
Dimensions (Units: mm)



Wire Connections

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
	Relay ON	Relay OFF
Drive Relay		
Resistance Load		

Pin Assignments



Terminal No.	Pin Assignment
01	DO0
02	DO1
03	DO2
04	DO3
05	DO4
06	DO5
07	DO6
08	DO7
09	DO8
10	DO9
11	DO10
12	DO11
13	DO12
14	DO13
15	DO14
16	DO15
17	DO.GND
18	DO.GND
19	DO.PWR
20	DO.PWR

Ordering Information

I-87037W-G CR	16-channel Source Type Isolated Digital Output Module (Gray Cover) (RoHS)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-8040W-G I-8040PW-G

32-channel Isolated Digital Input Module

Features

- Sink or Source Type Digital Input
- Photocouple-isolation protection
- Low Pass Filter for I-8040PW
- Optional Daughter board connectivity
- 3750 Vdc Intra-module Isolation



Introduction

The I-8040W/I-8040PW offer 32 channels for Digital Input, each of which features Photocouple-isolation. Either Sink Type or Source Type Input can be selected via wire connections. All channels ± 4 kV ESD protection and 3750 Vdc intra-module isolation. Paired with a daughter board such as the DN-37-381-A CR, wiring is easier than ever. The I-8040PW is suitable for +24 Vdc Digital Input systems and provides noise protection capabilities that enhance noise immunity in industrial environments. ICP DAS recommends selecting the "P" version of the Digital Input Module for industrial use.



I-8017DW, I-8040W, I-8040PW,
I-8041W, I-8041AW, I-8041PW, I-8042W,
I-87017DW, I-87024DW, I-87028CDW,
I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W
with DN-37-381-A & DB37 Male to Female Cable
(Optional)

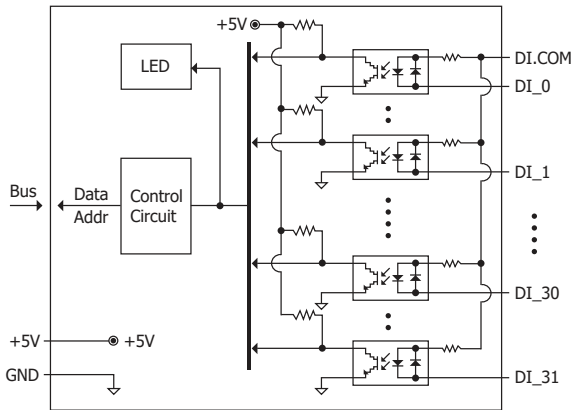
System Specifications

Model	I-8040W	I-8040PW
LED Indicators/Display		
System LED Indicator	1 LED as Power Indicator	
I/O LED Indicator	32 LEDs as Digital Input Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	± 4 kV Contact for each Terminal	
Power		
Power Consumption	0.65 W max.	1 W max.
Mechanical		
Dimensions (W x L x H)	30 mm x 114 mm x 85 mm	
Environment		
Operating Temperature	$-25 \sim +75$ °C	
Storage Temperature	$-40 \sim +85$ °C	
Humidity	10 ~ 90% RH, Non-condensing	

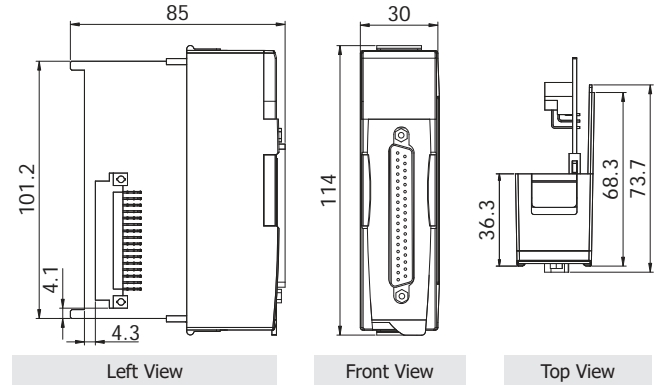
I/O Specifications

Model	I-8040W	I-8040PW
DC Digital Input		
Channels	32	
Type	Wet	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	+10 ~ +30 VDC	+19 ~ +30 VDC
OFF Voltage Level	+4 VDC Max.	+11 VDC Max.
Input Impedance	3 k Ω , 0.5W	
Low Pass Filter for I-8040PW		
Response time	OFF to ON	1 ms/5 ms/10 ms/20 ms/40 ms/70 ms (by Jumper select) or CPU parameter setting Default Setting is 10ms
	ON to OFF	1 ms/5 ms/10 ms/20 ms/40 ms/70 ms (by Jumper select) or CPU parameter setting Default Setting is 10ms

Internal I/O Structure



Dimensions (Units: mm)



Wire Connections

I-8040W		
Digital Input/Counter	ON State Readback as 0	OFF State Readback as 1
	+10 ~ +30 VDC	OPEN or < +4 VDC
Sink		
Source	+10 ~ +30 VDC	OPEN or < +4 VDC

I-8040PW		
Digital Input/Counter	ON State Readback as 0	OFF State Readback as 1
	+19 ~ +30 VDC	OPEN or < +11 VDC
Sink		
Source	+19 ~ +30 VDC	OPEN or < +11 VDC

Pin Assignments

Pin Assignment	Terminal	No.	Pin Assignment
DI.COM	19	37	DI.COM
NC	18	36	NC
NC	17	35	DI_31
DI_15	16	34	DI_30
DI_14	15	33	DI_29
DI_13	14	32	DI_28
DI_12	13	31	DI_27
DI_11	12	30	DI_26
DI_10	11	29	DI_25
DI_9	10	28	DI_24
DI_8	09	27	DI_23
DI_7	08	26	DI_22
DI_6	07	25	DI_21
DI_5	06	24	DI_20
DI_4	05	23	DI_19
DI_3	04	22	DI_18
DI_2	03	21	DI_17
DI_1	02	20	DI_16
DI_0	01		

37-pin Male D-Sub Connector

Ordering Information

I-8040W-G CR	32-ch Isolated DI (Wet, 10 ~ 30 VDC) Module (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)
I-8040PW-G CR	32-ch Isolated DI (Wet, 19 ~ 30 VDC) Module with Low Pass Filter (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)

Accessories

DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87040W-G I-87040PW-G

32-channel Isolated Digital Input Module with 16-bit Counters

Introduction

The I-87040W/I-87040PW offer 32 channels for digital input, each of which features photocouple isolation. Either sink- or source-type input can be selected via wire connections. All channels are able to be used as 16-bit counters and 32 LED indicators that can be used for monitoring DI channel status are also provided, together with 4 kV ESD protection and 3750 Vdc intra-module isolation. Paired with a daughter board such as the DN-37-381-A, wiring is easier than ever. The I-87040PW is suitable for +24 Vdc digital input systems and provides noise protection capabilities that enhance noise immunity in industrial environments. ICP DAS recommends selecting the "p" version of the digital input module for industrial use.

System Specifications

Model	I-87040W	I-87040PW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	32 as Digital Input Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	1.6 W Max.	
Mechanical		
Dimensions (W × L × H)	30 mm × 114 mm × 85 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- Sink- or Source-type Digital Inputs
- Photocouple Isolation
- All Channels can be used as 16-bit Counters
- Optional Daughter board connectivity
- 4 kV ESD Protection
- 3750 Vdc Intra-module Isolation
- D-sub DB37 Wiring
- Dual Watchdog



I-8017DW, I-8040W, I-8040PW, I-8041W, I-8041AW, I-8041PW, I-8042W, I-87017DW, I-87024DW, I-87028CDW, I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W with DN-37-381-A & DB37 Male to Female Cable (Optional)

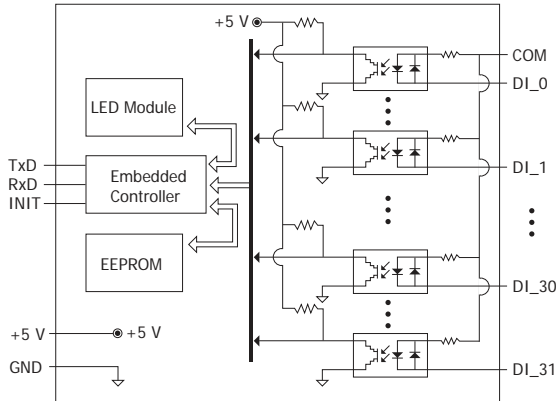
Applications

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

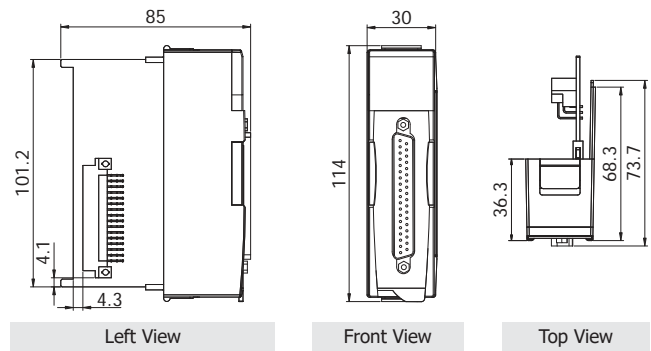
I/O Specifications

Model	I-87040W	I-87040PW
Digital Input		
Channels	32	
Type	Wet	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	+3.5 VDC ~ +30 VDC	+19 VDC ~ +30 VDC
OFF Voltage Level	+1 Vdc Max.	+11 Vdc Max.
Input Impedance	4.7 kΩ, 0.25 W	
Counters	Channels	32
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Overvoltage Protection	35 Vdc	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	-	

Internal I/O Structure



Dimensions (Units: mm)



Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
COM	19	37
NC	18	36
NC	17	35
DI_15	16	34
DI_14	15	33
DI_13	14	32
DI_12	13	31
DI_11	12	30
DI_10	11	29
DI_9	10	28
DI_8	09	27
DI_7	08	26
DI_6	07	25
DI_5	06	24
DI_4	05	23
DI_3	04	22
DI_2	03	21
DI_1	02	20
DI_0	01	

37-pin Male D-Sub Connector

Wire Connections

I-87040W		
Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
Sink	+4 ~ +30 VDC	OPEN or < +1 VDC
Source	+4 ~ +30 VDC	OPEN or < +1 VDC

I-87040PW		
Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
Sink	+19 ~ +30 VDC	OPEN or < +11 VDC
Source	+19 ~ +30 VDC	OPEN or < +11 VDC

Ordering Information

I-87040W-G CR	32-ch Isolated DI (Wet, 3.5 ~ 30 VDC) Module (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)
I-87040PW-G CR	32-ch Isolated DI (Wet, 19 ~ 30 VDC) Module (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)

Accessories

DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87042W-G

16-channel Isolated Digital Input &
16-channel Isolated Digital Output Module

Introduction

I-87042W offers 16 channels for digital input and 16 channels for digital output. Each of which features Photo-couple isolation. I-87042W supports sink type output with short-circuits protection. There are option for Power-on value and safe value for your consideration. About Input, you can chose sink type or source type input by wire connection. All channels are able to be used as 16-bit counter. I-87042W also has 32 LED indicators for channel status. 4 kV ESD protection and 3750 Vdc intra-module isolation are standard.

Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
Safe Value (When Host Fail or Communication Fail)	Yes
Power-on Preset Value	Yes
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	32 as Digital Input and Output Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3750 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.25 W ,±5% For Hardware
Mechanical	
Dimensions (W × L × H)	30 mm × 114 mm × 85 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- Digital Input for Sink Type or Source Type
- Digital Outputs for Sink Type
- Power-on Value Setting
- Safe Value Setting
- Photocouple Isolation
- 4 kV ESD Protection
- 3750 Vdc Intra-module Isolation



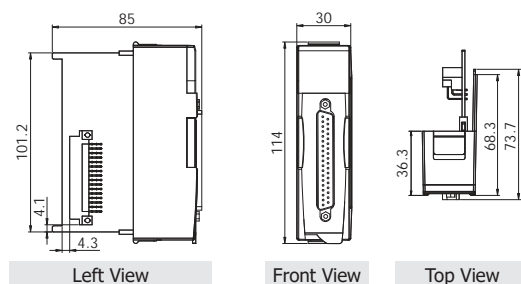
I-87042W and I-87042W
with DN-8K16P16R &
DB37 Male to Female Cable
(Optional)

I-8017DW, I-8040W, I-8040PW,
I-8041W, I-8041AW, I-8041PW, I-8042W,
I-87017DW, I-87024DW, I-87028CDW,
I-87040W, I-87040PW, I-87041W, I-87041PW and I-87042W
with DN-37-381-A & DB37 Male to Female Cable
(Optional)

I/O Specifications

Digital Input	
Channels	16
Type	One common for all Inputs
Sink/Source (NPN/PNP)	Sink, Source
ON Voltage Level	+3.5 VDC ~ 30 VDC
OFF Voltage Level	+1 VDC Max.
Input Impedance	3 kΩ
Counter (100 Hz, 16-bit)	Yes
Channel-to-Channel Isolation	Yes
Digital Output	
Channels	16
Type	Open Collector
Sink/Source (NPN/PNP)	Sink
Load Voltage	+5 VDC ~ +30 VDC
Max. Load Current	100 mA/Channel
Overload Protection	Yes
Short Circuit Protection	-
Power-on Value	Yes
Safe Value	Yes

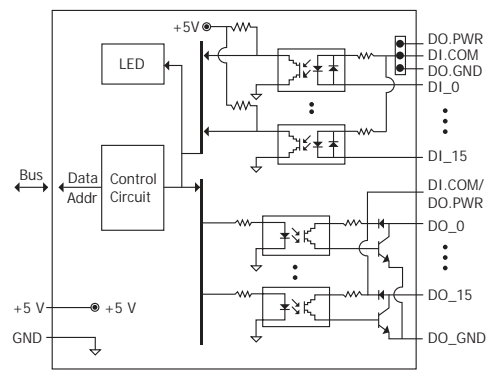
Dimensions (Units: mm)



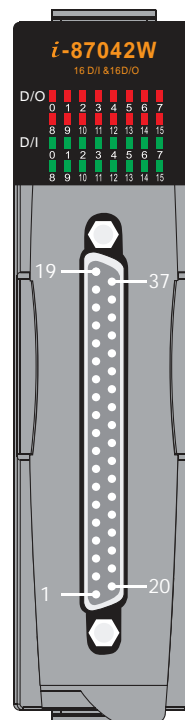
Wire Connections

Select Type		
Source Type	Sink Type	
Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact (Sink)	Relay ON 	Relay OFF
TTL/CMOS Logic (Sink)	Voltage > +3.5 V 	Voltage < +1 V
NPN Output (Sink)	Open Collector ON 	Open Collector OFF
PNP Output (Sink)	Open Collector ON 	Open Collector OFF
Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact (Source)	Relay ON 	Relay OFF
TTL/CMOS Logic (Source)	Voltage > +3.5 V 	Voltage < +1 V
NPN Output (Source)	Open Collector ON 	Open Collector OFF
PNP Output (Source)	Open Collector ON 	Open Collector OFF
Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay ON 	Relay OFF
Resistance Load		

Internal I/O Structure



Pin Assignments



Pin Assignment	Terminal	No.	Pin Assignment
DI.COM/DO.PWR	19	37	DI.COM/DO.PWR
DO.GND	18	36	DO.GND
DO.GND	17	35	DO_15
DI_15	16	34	DO_14
DI_14	15	33	DO_13
DI_13	14	32	DO_12
DI_12	13	31	DO_11
DI_11	12	30	DO_10
DI_10	11	29	DO_9
DI_9	10	28	DO_8
DI_8	09	27	DO_7
DI_7	08	26	DO_6
DI_6	07	25	DO_5
DI_5	06	24	DO_4
DI_4	05	23	DO_3
DI_3	04	22	DO_2
DI_2	03	21	DO_1
DI_1	02	20	DO_0
DI_0	01		

37-pin Male D-Sub Connector

Ordering Information

I-87042W-G CR	16-ch Isolated DI & 16-channel Isolated DO (Sink, NPN) Module (Gray Cover) (RoHS) Includes CA-4002F (DB37 connector Female with plastic cover)
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Accessories

	DN-8K16P16R CR	16-channel digital input terminal and 16-channel relay output board Female DB37 to Screw Terminal Board (Pitch= 3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3705A (DB37 Male to Female Cable, 90°, 50 CM)
	DN-37-A CR	Female DB37 to Screw Terminal Board (Pitch= 5.08 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
	DN-37-381-A CR	Female DB37 to Screw Terminal Board (Pitch=3.81 mm) with DIN-rail Mounting (RoHS) Include: CA-3710A (DB37 Male to Female Cable, 90°, 1 M)
	CA-3705A CR CA-3710A CR CA-3715A CR	DB37 Male to Female Cable, 90°, 0.5 M/1 M/1.5 M (RoHS)
	CA-3710AM CR CA-3720AM CR CA-3730AM CR CA-3750AM CR CA-37100AM CR	DB37 Male to Female, with Molded Cable, 45°, 1 M/2 M/3 M/5 M/10 M (RoHS)



I-87046W-G

16-channel Non-isolated Digital Input Module
for Long-distance Measurement

Introduction

The I-87046W is a 16-channel Digital Input module that can be used for long-distance measurement, with an effective distance of up to 500 meters for dry contact connections. All channels can be used as 16-bit counters and 4 kV ESD protection is provided. The I-87046W also includes 16 LED indicators that can be used to monitor the status of the Digital Input channels.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	-
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.0 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 16-channel Digital Input
- Dry Contact Digital Input Channels
- Long-distance Measurement
- All Channels can be used as 16-bit Counters
- ±4 kV ESD Protection
- All Channels Non-isolated
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



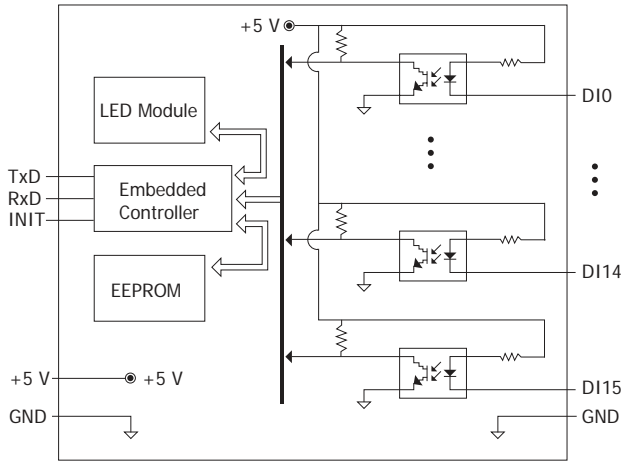
Applications

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

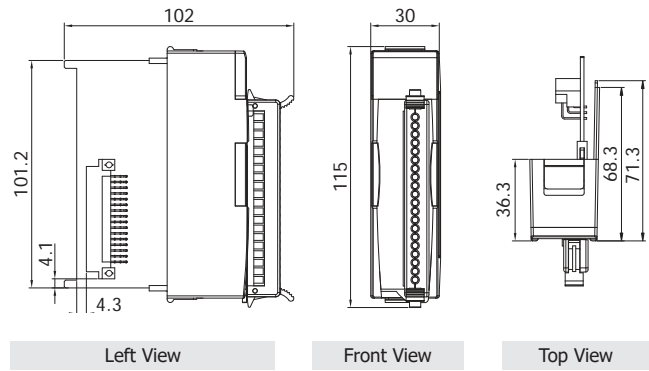
I/O Specifications

Digital Input		
Channels	16	
Type	Dry	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	Close to GND	
OFF Voltage Level	Open	
Counters	Channels	16
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	500 m Max.	

Internal I/O Structure



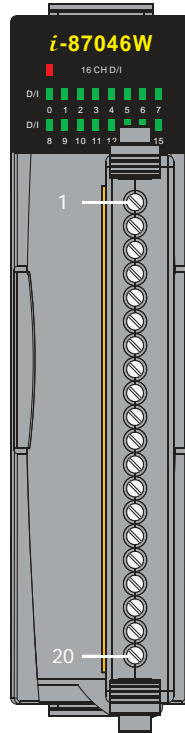
Dimensions (Units: mm)



Wire Connections

Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
	Close to GND (+1 VDC Max.)	OPEN (+4 VDC ~ +30 VDC)
Dry Contact		

Pin Assignments



Terminal No.	Pin Assignment
01	DI0
02	DI1
03	DI2
04	DI3
05	DI4
06	DI5
07	DI6
08	DI7
09	DI8
10	DI9
11	DI10
12	DI11
13	DI12
14	DI13
15	DI14
16	DI15
17	GND
18	GND
19	GND
20	GND

Ordering Information

I-87046W-G	16-channel Non-isolated Digital Input Module using the DCON Protocol (Gray Cover) (RoHS)
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Accessories

	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87051W-G

16-channel Non-isolated Digital Input Module

Introduction

The I-87051W is a 16-channel Digital Input module for dry contact wire connections with an effective distance of up to 100 meters. All channels can be used as 16-bit counters and 4 kV ESD protection is provided. The I-87051W also includes 16 LED indicators that can be used to monitor the status of the Digital Input channels.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	-
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point
Power	
Power Consumption	0.5 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 16-channel Digital Input
- Dry Contact Digital Input Channels
- All Channels can be used as 16-bit Counters
- All Channels Non-isolated
- ±4 kV ESD Protection
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



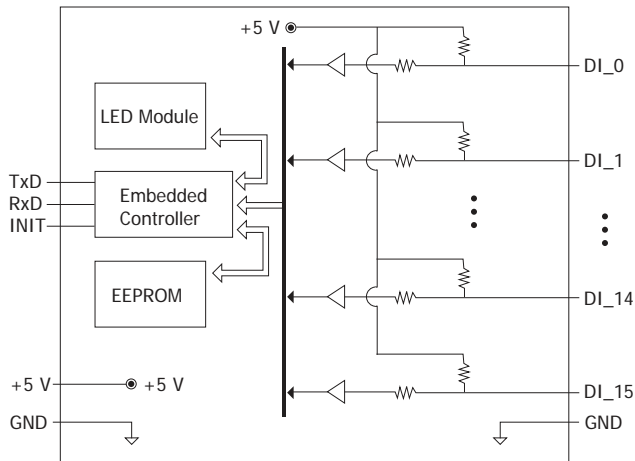
Applications

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

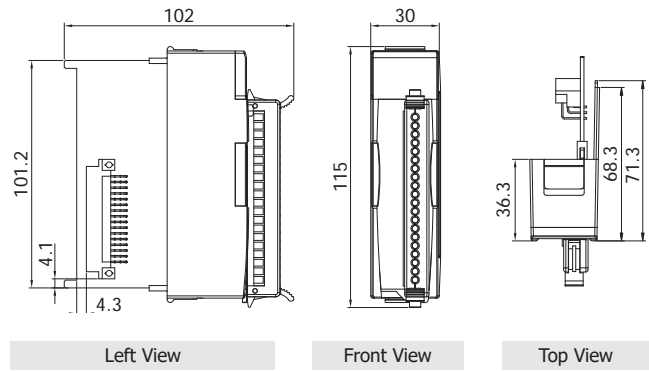
I/O Specifications

Digital Input		
Channels	16	
Type	Dry Contact	
Sink/Source (NPN/PNP)	Source	
ON Voltage Level	Close to GND	
OFF Voltage Level	Open	
Counters	Channels	16
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	100 m Max.	

Internal I/O Structure



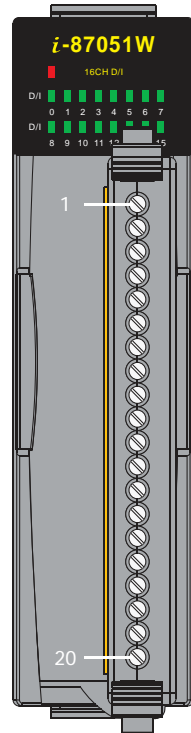
Dimensions (Units: mm)



Wire Connections

Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
	Close to GND (+1 VDC Max.)	OPEN (+4 VDC ~ +30 VDC)
Dry Contact		

Pin Assignments



Terminal No.	Pin Assignment
01	DI0
02	DI1
03	DI2
04	DI3
05	DI4
06	DI5
07	DI6
08	DI7
09	DI8
10	DI9
11	DI10
12	DI11
13	DI12
14	DI13
15	DI14
16	DI15
17	GND
18	GND
19	GND
20	GND

Ordering Information

I-87051W-G CR	16-channel Non-isolated Digital Input Module using the DCON Protocol (Gray Cover) (RoHS)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87052W-G

8-channel Isolated Digital Input Module

Introduction

The I-87052W module offers 8 fully independent differential Digital Input channels that feature 2 kV channel-to-channel Photocouple isolation. In addition, either sink- or source-type input can be selected via the wire connections, while all channels are able to be used as 16-bit counters. The I-87052W also includes 8 LED indicators that can be used to monitor the status of the Digital Input channels. 4 kV ESD protection and 5000 Vrms intra-module isolation are provided as standard.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as Digital Input Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	5000 Vrms
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.3 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Isolated Digital Input
- 2 kV Channel-to-Channel Isolation
- Sink- or Source-type Input
- 4 kV ESD Protection
- 5000 Vrms Isolation Voltage
- All Channels can be used as 16-bit Counters
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



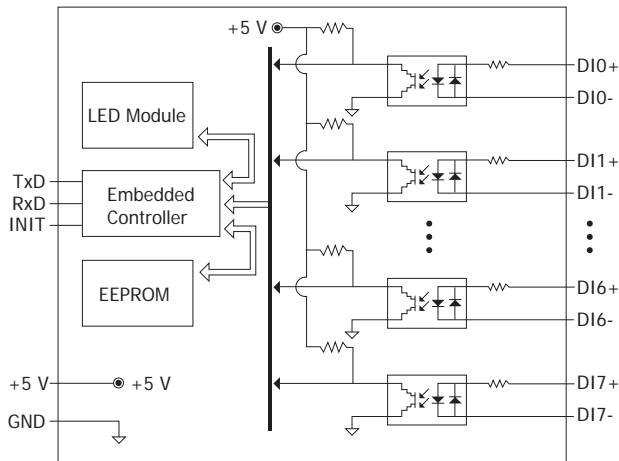
Applications

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

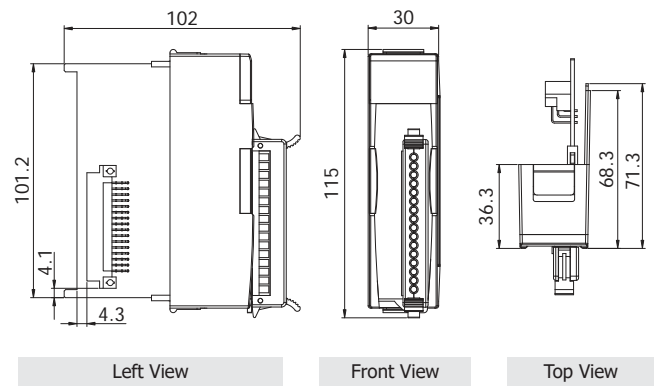
I/O Specifications

Digital Input		
Channels	8	
Type	Wet, Differential	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	+3.5 VDC ~ 30 VDC	
OFF Voltage Level	+1 VDC Max.	
Input Impedance	3 kΩ, 0.25 W	
Counters	Channels	8
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	Yes, 2 kV	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	-	

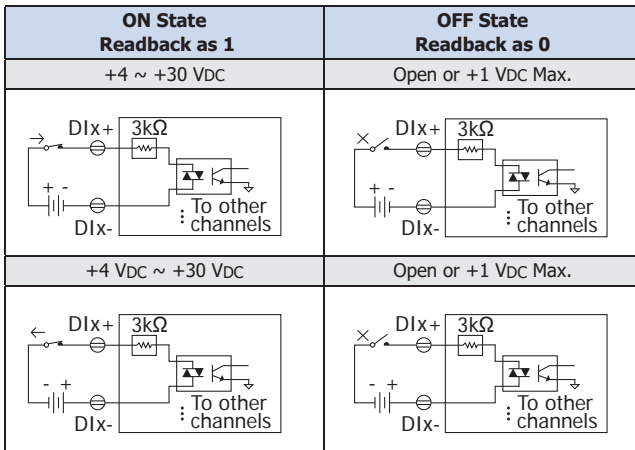
Internal I/O Structure



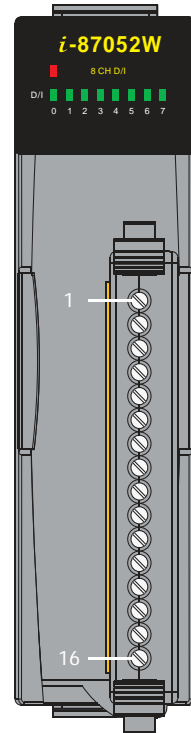
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	DI0+
02	DI0-
03	DI1+
04	DI1-
05	DI2+
06	DI2-
07	DI3+
08	DI3-
09	DI4+
10	DI4-
11	DI5+
12	DI5-
13	DI6+
14	DI6-
15	DI7+
16	DI7-

Ordering Information

I-87052W-G CR	8-channel Isolated Digital Input Module with 2 kV Channel-to-Channel Isolation using the DCON Protocol (Gray Cover) (RoHs)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHs)
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I-87053W-G I-87053PW-G I-87053W-A2-G

16-channel Isolated Digital Input Module with
16-bit Counters

Introduction

The I-87053W, I-87053PW and I-87053W-A2 offer 16 channels for digital input, catering for both dry and wet contact, with an effective distance for dry contact of up to 500 meters. All channels feature photocouple isolation, and can also be used as 16-bit counters. The I-87053W series provides 16 LED indicators that can be used to monitor the DI channel status. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided to enhance noise immunity capabilities in industrial environments. ICP DAS recommends selecting either the "P" or "A2" version of the digital input module for industrial use.

System Specifications

Model	I-87053W	I-87053PW	I-87053W-A2
Communication			
Interface	RS-485		
Format	N, 8, 1		
Baud Rate	1200 to 115200 bps		
Protocol	DCON		
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)		
LED Indicators/Display			
System LED Indicators	Yes, 1 as Power/Communication Indicator		
I/O LED Indicators	16 as High/Low Alarm Signals		
Isolation			
Intra-module Isolation, Field-to-Logic	3750 Vdc		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal		
	±8 kV Air for Random Point		
Power			
Power Consumption	0.8 W Max.		
Mechanical			
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm		
Environment			
Operating Temperature	-25 to +75°C		
Storage Temperature	-40 to +85°C		
Humidity	10 to 95% RH, Non-condensing		

Features

- 16-channel Digital Inputs
- Dry and Wet Contact, Selectable via Wire Connections
- Photocouple Isolation
- Long Distance Measurement
- 4 kV ESD Protection
- All Channels can be used as 16-bit Counters
- 3750 Vdc Intra-module Isolation
- Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C



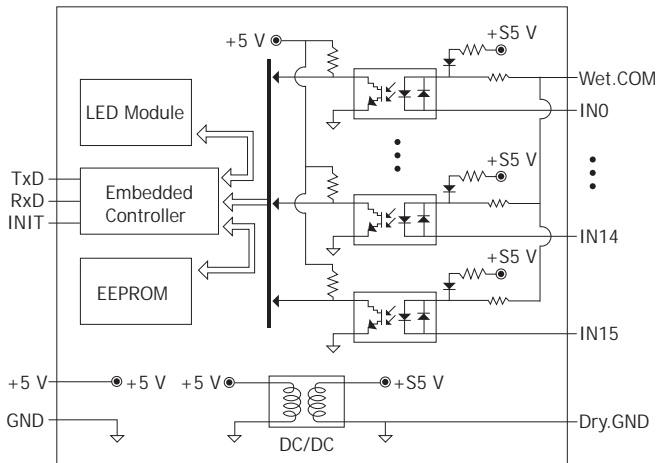
Applications

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

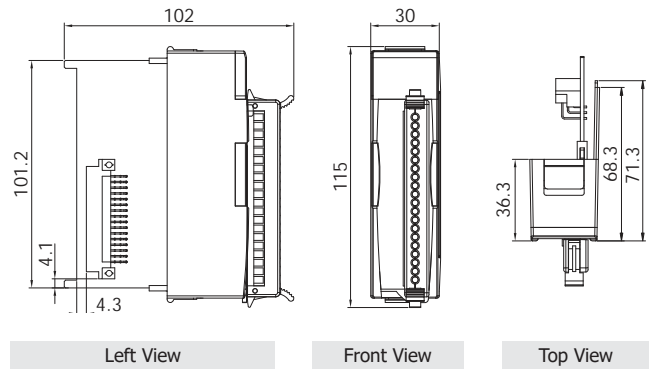
I/O Specifications

Model	I-87053W	I-87053PW	I-87053W-A2
Digital Input			
Channels	16		
Type	Dry, Wet		
Sink/Source (NPN/PNP)	Sink, Source		
Dry Contact	ON Voltage Level	Close to GND	
	OFF Voltage Level	Open	
Wet Contact	ON Voltage Level	+3.5 VDC ~ +30 VDC	+19 VDC ~ +60 VDC
	OFF Voltage Level	+1 VDC Max.	+11 VDC Max.
Input Impedance	3 kΩ, 1 W	3 kΩ, 1 W	10 kΩ, 1 W
Counters	Channels	16	
	Max. Count	16-bit (65535)	
	Max. Input Frequency	100 Hz	
	Min. Pulse Width	5 ms	
Channel-to-Channel Isolation	-		
Overvoltage Protection	50 VDC	50 VDC	100 VDC
Low Pass Filter	Yes		
Effective Distance for Dry Contact	500 m Max.		

Internal I/O Structure



Dimensions (Units: mm)

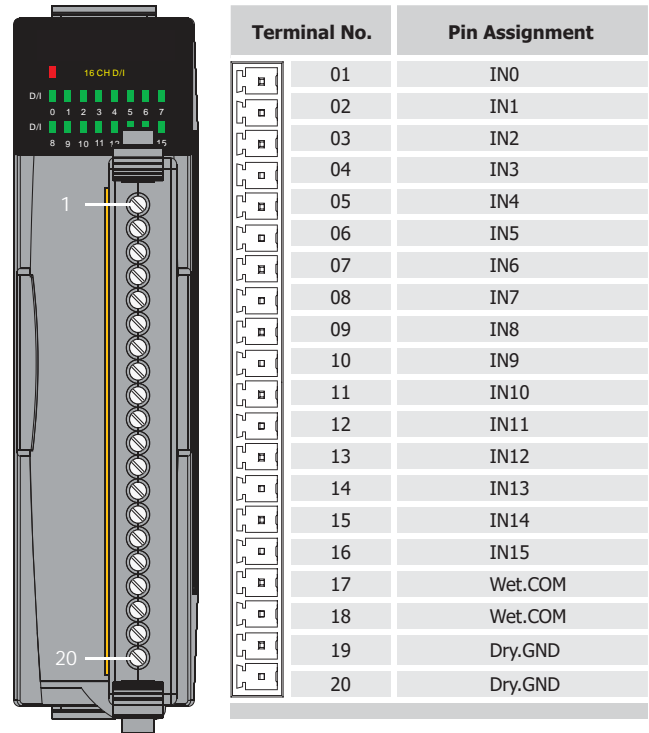


Wire Connections

Input Type	ON State Readback as 1	OFF State Readback as 0
	Close to GND	
		Open
Dry Contact		

Input Type	ON State Readback as 1	OFF State Readback as 0
I-87053W	+3.5 VDC ~ +30 VDC	+1 VDC Max.
I-87053PW	+19 VDC ~ +30 VDC	+11 VDC Max.
I-87053W-A2	+19 VDC ~ +60 VDC	+11 VDC Max.
Wet Contact (Sink)		
Wet Contact (Source)		

Pin Assignments



Ordering Information

I-87053W-G CR	16-channel Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)
I-87053PW-G CR	16-channel Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)
I-87053W-A2-G CR	16-channel Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)

Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87053W-A5-G I-87053W-E5-G

16-channel High-voltage Isolated Digital Input Module with 16-bit Counters

Introduction

The I-87053W-A5 and I-87053W-E5 provide 16 channels for high voltage digital input, each of which features photocouple isolation. The input voltage level can be as high as 150 VDC. In addition, either sink- or source-type digital input can be selected via wire connections, and all channels are able to be used as 16-bit counters. The effective distance for dry contact is up to 500 meters. The I-87053W-A5 and I-87053W-E5 also provide 16 LED indicators that can be used to monitor the DI channel status. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided to enhance noise immunity capabilities in industrial environments.

System Specifications

Model	I-87053W-A5	I-87053W-E5
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	16 as High/Low Alarm Signals	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	0.8 W Max.	0.3 W Max.
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 16-channel Digital Inputs
- 150 VDC High-voltage Digital Inputs
- Photocouple Isolation
- Long Distance Measurement
- All Channels can be used as 16-bit Counters
- 4 kV ESD Protection
- 3750 VDC Intra-module Isolation
- Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C



Applications

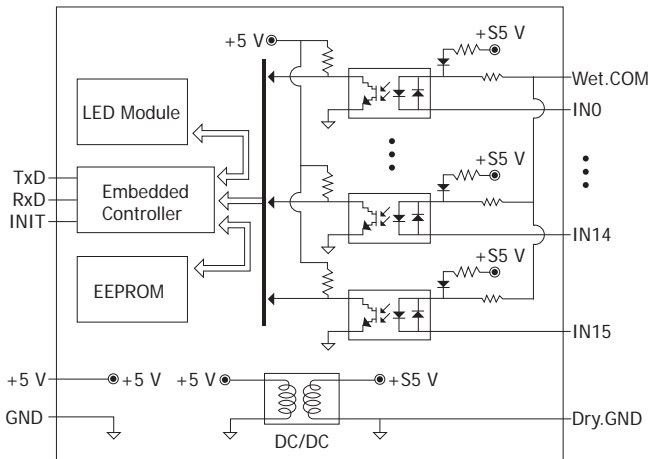
- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment

I/O Specifications

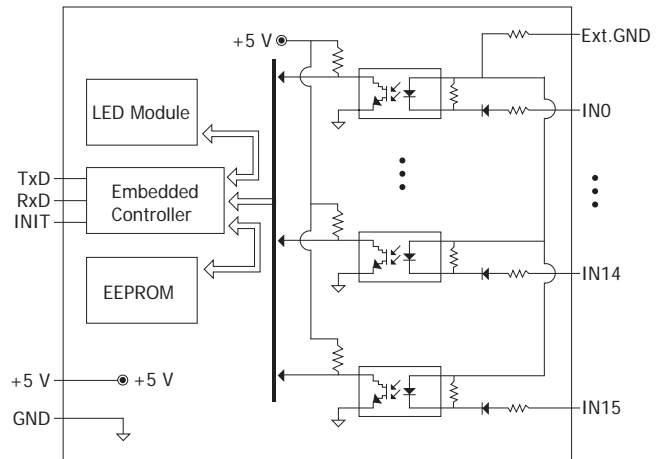
Model	I-87053W-A5	I-87053W-E5
Digital Input		
Channels	16	
Type	Dry, Wet	Wet
Sink/Source (NPN/PNP)	Sink, Source	Sink
Dry Contact	ON Voltage Level	Close to GND
	OFF Voltage Level	Open
Wet Contact	ON Voltage Level	+68 VDC ~ +150 VDC
	OFF Voltage Level	+48 VDC Max.
Input Impedance	50 kΩ, 1 W	50 kΩ, 0.5 W
Counters	Channels	16
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Overvoltage Protection	220 Vdc	150 Vdc
Low Pass Filter	Yes	
Effective Distance for Dry Contact	500 m Max.	-
Fuse Protection	-	Yes

Internal I/O Structure

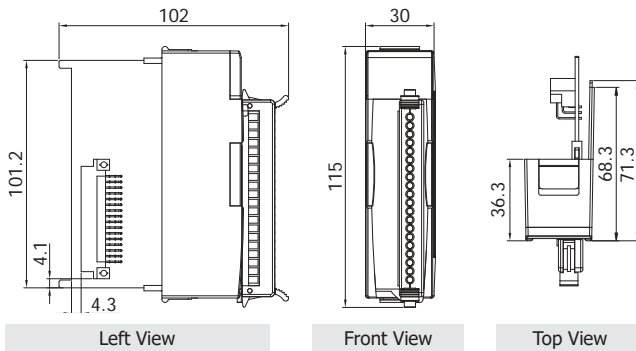
I-87053W-A5



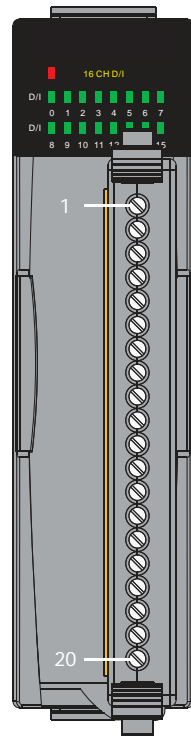
I-87053PW-E5



Dimensions (Units: mm)



Pin Assignments



Terminal No.	I-87053W-A5	I-87053PW-E5
	Pin Assignment	
01	IN0	IN0
02	IN1	IN1
03	IN2	IN2
04	IN3	IN3
05	IN4	IN4
06	IN5	IN5
07	IN6	IN6
08	IN7	IN7
09	IN8	IN8
10	IN9	IN9
11	IN10	IN10
12	IN11	IN11
13	IN12	IN12
14	IN13	IN13
15	IN14	IN14
16	IN15	IN15
17	Wet.COM	N.C.
18	Wet.COM	N.C.
19	Dry.GND	Ext.GND
20	Dry.GND	Ext.GND

Wire Connections

I-87053W-A5		
Input Type	ON State Readback as 1	OFF State Readback as 0
Dry Contact	Close to GND 	Open
Wet Contact (Sink)	+68 VDC ~ +150 VDC 	+48 VDC Max.
Wet Contact (Source)	+68 VDC ~ +150 VDC 	+48 VDC Max.

I-87053PW-E5		
Input Type	ON State Readback as 1	OFF State Readback as 0
Wet Contact (Sink)	+68 VDC ~ +150 VDC 	+48 VDC Max.

Ordering Information

I-87053W-A5-G	16-channel 68-150 VDC Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)
I-87053W-E5-G CR	16-channel 68-150 VDC Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)

Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87053W-AC1-G

16-channel AC Isolated Digital Input Module

Introduction

I-87053W-AC1 offers 16 channels for AC digital input. All of its channels are not only with isolation but also able to be used as counters. I-87053W-AC1 has 16 LED indicators for channel status as well as qualification for 4 kV ESD protection and 3750 Vrms intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators	
Power LED Indicator	Yes
I/O LED Indicator	16 LEDs as Digital Input Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3750 Vrms
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for Each Terminal
Power	
Power Consumption	1.5 W Max.
Mechanical	
Dimensions (L × W × H)	102 mm × 30 mm × 115 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-30 to +80°C
Humidity	10 to 90% RH, Non-condensing

Features

- 16-channel AC Digital Input
- Photo Couple Isolation
- Channel Status LED Indicators
- All Digital Channels Input can be used as Counters
- ±4 kV ESD Protection
- RoHS Compliant
- Wide Operating Temperature Range: -25 ~ +75°C



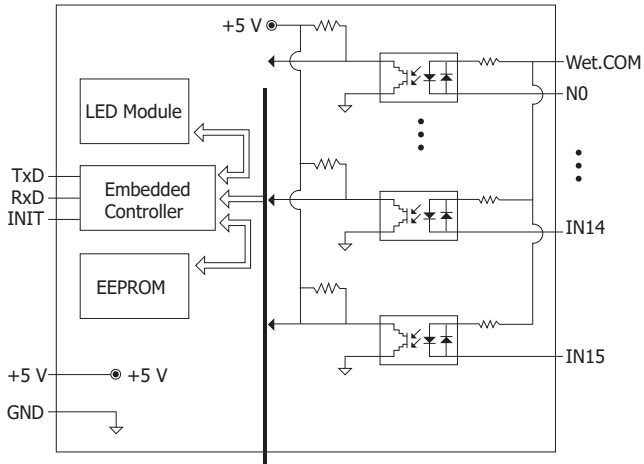
Applications

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

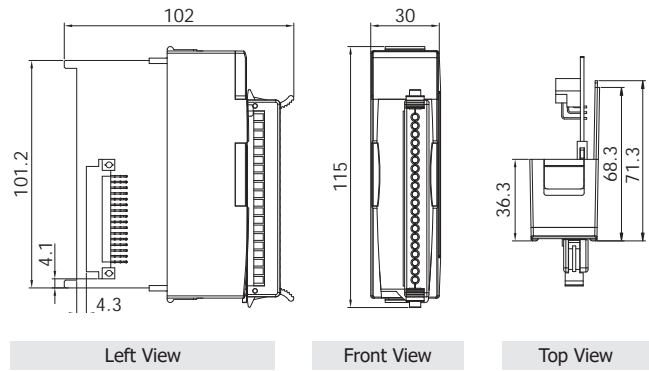
I/O Specifications

Digital Input		
Channels	16	
Type	Wet Contact	
ON Voltage Level	10 ~ 80 VAC	
OFF Voltage Level	3 VAC Max.	
AC Frequency	47 ~ 400 Hz (> 45 Hz min)	
Input Impedance	10 kΩ, 0.66 W	
Counters	Channels	16
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms

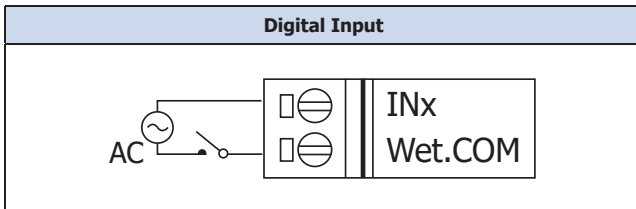
Internal I/O Structure



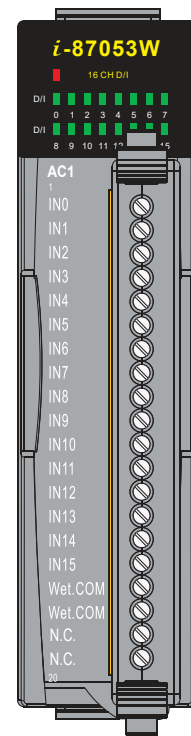
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Terminal No.	Pin Assignment
01	IN0
02	IN1
03	IN2
04	IN3
05	IN4
06	IN5
07	IN6
08	IN7
09	IN8
10	IN9
11	IN10
12	IN11
13	IN12
14	IN13
15	IN14
16	IN15
17	Wet.COM
18	Wet.COM
19	N.C.
20	N.C.

Ordering Information

I-87053W-AC1-G CR	16-channel AC Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)
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I-87054W-G

8-channel Isolated Digital Input and
8-channel Isolated Digital Output Module

Introduction

The I-87054W module offers 8 isolated Digital Input channels and 8 isolated Digital Output channels. Either sink- or source-type Digital Input can be selected via the wire connections, and all Digital Input channels are also able to be used as 16-bit counters. The I-87054W supports sink-type output with short circuit protection. The I-87054W includes 16 LED indicators that can be used to monitor the status of the Digital Input and Digital Output channels, and options are available for configuring both power-on and safe values. 4 kV ESD protection and 3750 Vdc intra-module isolation are provided as standard.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	3750 Vrms
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.7 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Isolated Digital Input and 8-channel Isolated Digital Output
- Sink-type Digital Output Channels with Overload Protection
- All Digital Input Channels can be used as 16-bit Counters
- Short-circuit and Overcurrent Protection
- 4 kV ESD Protection
- 3750 Vdc Intra-module Isolation
- Configurable Power-on Value
- Configurable Safe Value
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



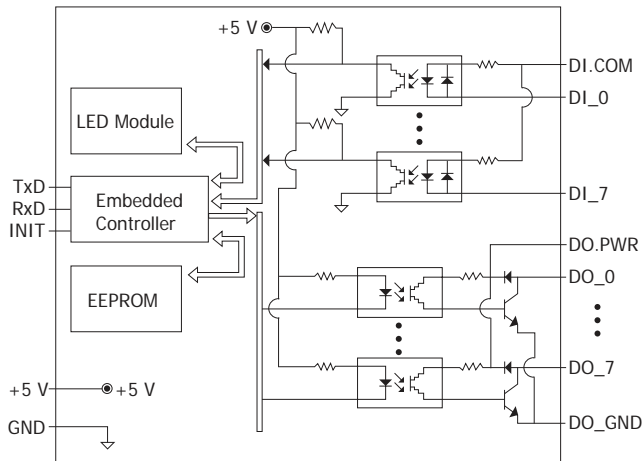
Applications

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

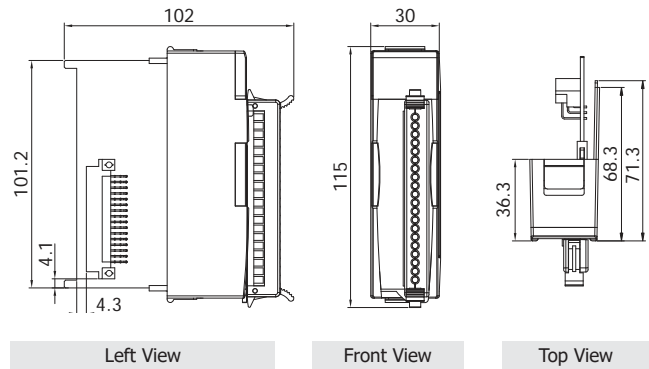
I/O Specifications

Digital Input		
Channels	8	
Type	Wet Contact	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	+3.5 VDC ~ +50 VDC	
OFF Voltage Level	+1 VDC Max.	
Input Impedance	10 kΩ, 0.66 W	
Counters	Channels	8
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	Yes	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	-	
Digital Output		
Channels	8	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+5 VDC ~ +50 VDC	
Max. Load Current	700 mA/channel	
Overvoltage Protection	60 VDC	
Overload Protection	Yes	
Short-circuit and Overcurrent Protection	Yes, 1.4 A	
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



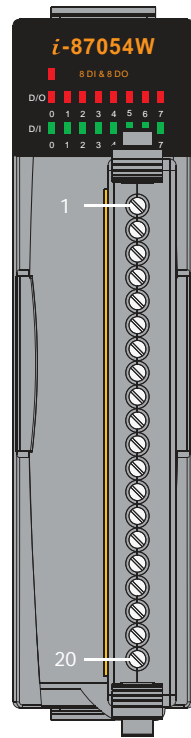
Dimensions (Units: mm)



Wire Connections

Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
Sink	<p>OPEN or $< +1$ VDC</p>	<p>$+4 \sim +30$ VDC</p>
Source	<p>OPEN or $< +1$ VDC</p>	<p>$+4 \sim +30$ VDC</p>
Output Type	ON State Readback as 1	OFF State Readback as 0
Digital Output (Resistance Load)		
Digital Output (Inductive Load)		

Pin Assignments



Terminal No.	Pin Assignment
01	DI.COM
02	DI0
03	DI1
04	DI2
05	DI3
06	DI4
07	DI5
08	DI6
09	DI7
10	DO0
11	DO1
12	DO2
13	DO3
14	DO4
15	DO5
16	DO6
17	DO7
18	DO.GND
19	DO.GND
20	DO.PWR

Ordering Information

I-87054W-G	8-channel Isolated Digital Input and 8-channel Isolated Digital Output Module using the DCON Protocol (Gray Cover) (RoHS)
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Accessories

	RM-104/108/116 4/8/16-channel 16 A Power Relay Board, 1 Form C
	RM-204/208/216 4/8/16-channel 8 A Power Relay Board, 2 Form C
	DN-SSR4 4-channel 1A Solid-state Relay Board, 1 Form A

	RM-22.22 1-channel 20 A Power Relay for Direct 35 mm Rail (EN 50022) Mounting, 2 Form A
	SG-770 CR 7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)



I-87055W-G

8-channel Non-isolated Digital Input and
8-channel Non-isolated Digital Output Module

Introduction

The I-87055W module offers 8 non-isolated Digital Input channels and 8 non-isolated Digital Output channels. All Digital Input channels are also able to be used as 16-bit counters. The I-87055W supports sink-type Digital Output and Digital Input with dry contact connections. The I-87055W includes 16 LED indicators that can be used to monitor the status of the Digital Input and Digital Output channels, and options are available for configuring both power-on and safe values. 4 kV ESD protection is provided for the Digital Input and Digital Output channels as standard.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	16 as High/Low Alarm Signals
Isolation	
Intra-module Isolation, Field-to-Logic	-
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 Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Non-isolated Digital Input and 8-channel Non-isolated Digital Output
- Sink-type Digital Output Channels
- Dry Contact Digital Input Channels
- All Digital Input Channels can be used as 16-bit Counters
- All Channels are Non-isolated
- 4 kV ESD Protection
- Configurable Power-on Value
- Configurable Safe Value
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



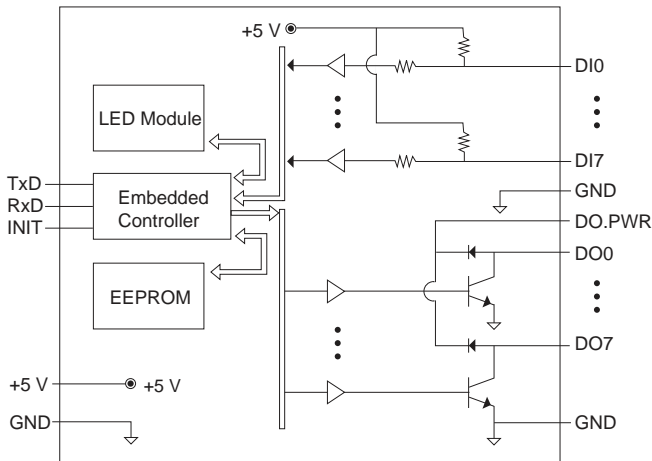
Applications

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

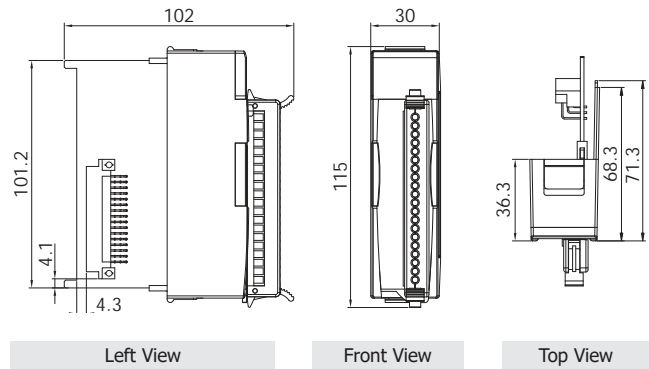
I/O Specifications

Digital Input		
Channels	8	
Type	Dry Contact	
Sink/Source (NPN/PNP)	Sink	
ON Voltage Level	Close to GND	
OFF Voltage Level	Open	
Counters	Channels	8
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	100 m Max.	
Digital Output		
Channels	8	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+5 VDC ~ +30 VDC	
Max. Load Current	100 mA/channel	
Short Circuit Protection	-	
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



Dimensions (Units: mm)

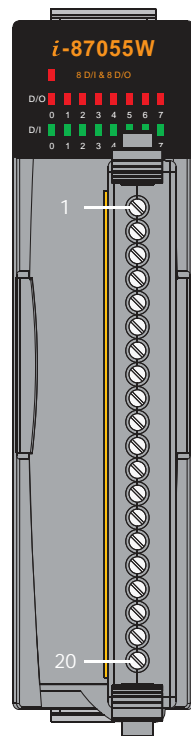


Wire Connections

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay ON 	Relay OFF
	Logic Level Low Logic GND ↓ 	Logic Level High Logic GND ↓
Open Collector	Open Collector ON 	Open Collector OFF

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay ON 	Relay OFF
	Resistance Load 	Resistance Load

Pin Assignments



Terminal No.	Pin Assignment
01	DI0
02	DI1
03	DI2
04	DI3
05	DI4
06	DI5
07	DI6
08	DI7
09	GND
10	GND
11	GND
12	DO0
13	DO1
14	DO2
15	DO3
16	DO4
17	DO5
18	DO6
19	DO7
20	DO.PWR

Ordering Information

I-87055W-G CR	8-channel Non-isolated Digital Input and 8-channel Non-isolated Digital Output Module using the DCON Protocol (Gray Cover) (RoHS)
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Accessories

	RM-104/108/116	4/8/16-channel 16A Power Relay Board, 1 Form C
	RM-204/208/216	4/8/16-channel 8A Power Relay Board, 2 Form C
	DN-SSR4	4-channel 1A Solid-state Relay Board, 1 Form A

	RM-22.22	1-channel 20 A Power Relay for Direct 35 mm Rail (EN 50022) Mounting, 2 Form A
	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)



I-87057W-G I-87057PW-G

16-channel Open Collector Isolated Digital Output Module

Introduction

I-87057W offers 16-channel sink type digital outputs. All channels features Photocouple isolation. I-87057W has 16 LED indicators for DO channel status. 4 kV ESD protection and 3750 V intra-module isolation are standard.

I-87057PW offers 16 channels for digital output, each of which features Photo-couple isolation. I-87057PW supports sink type output with short-circuits protection. There are options for power-on value and safe value for your consideration. I-87057PW has 16 LED indicators for DO channel status. 4 kV ESD protection, 3750 Vdc intra-module isolation are standard.

System Specifications

Model	I-87057W	I-87057PW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indictors	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	16 as High/Low Alarm Signals	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 Vrms	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	1.0 W Max.	0.4 W Max.
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- Support Digital Outputs (Sink Type)
- Photocouple Isolation
- 4 kV ESD Protection
- 3750 Vdc Intra-module Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



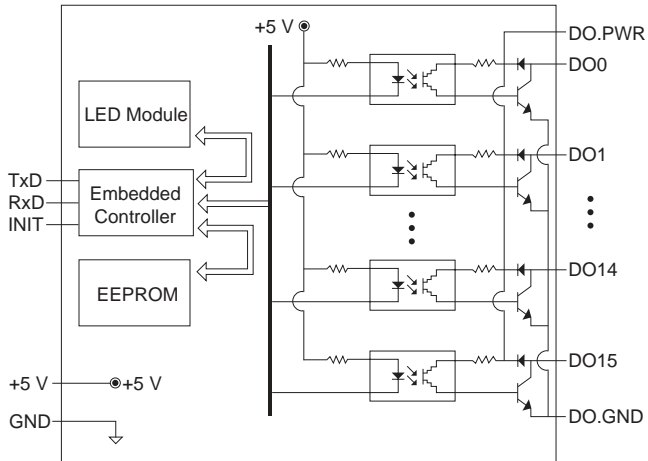
Applications

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

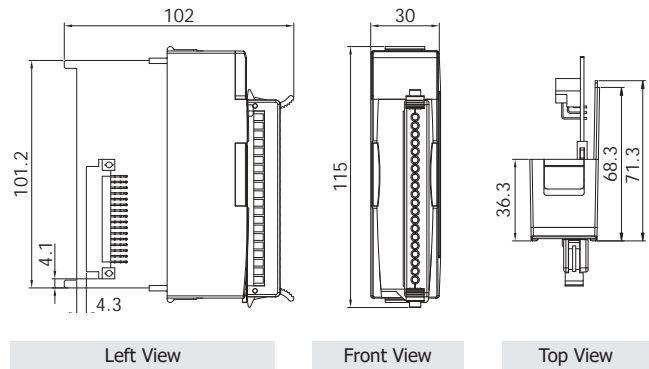
I/O Specifications

Model	I-87057W	I-87057PW
Digital Output		
Channels	16	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	5 VDC ~ 30 VDC	+5 VDC ~ +50 VDC
Max. Load Current	100 mA/channel	700 mA/channel
Output Voltage	-	+3.5 VDC ~ +50 VDC
Output Current	-	700 mA per Channel, Direct Drive Power Relay Module
Overvoltage Protection	-	60 VDC
Overload Protection	-	Yes
Short-circuit and Overcurrent Protection	-	Yes, 1.4 A
Thermal Overload Trip Temperature	-	150°C
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



Dimensions (Units: mm)



Wire Connections

Output Type	ON State Readback as 1	OFF State Readback as 0
Digital Output (Resistance Load)		
Digital Output (Inductive Load)		

Pin Assignments

Terminal No.	Pin Assignment
01	DO0
02	DO1
03	DO2
04	DO3
05	DO4
06	DO5
07	DO6
08	DO7
09	DO8
10	DO9
11	DO10
12	DO11
13	DO12
14	DO13
15	DO14
16	DO15
17	DO.GND
18	DO.GND
19	DO.PWR
20	DO.PWR

Ordering Information

I-87057W-G CR	16-channel Open Collector Isolated Digital Output Module (Gray Cover) (RoHS)
I-87057PW-G CR	16-channel Open Collector Isolated Digital Output Module (Gray Cover) (RoHS)

Accessories

	RM-104/108/116	4/8/16-channel 16A Power Relay Board, 1 Form C
	RM-204/208/216	4/8/16-channel 8A Power Relay Board, 2 Form C
	DN-SSR4	4-channel 1A Solid-state Relay Board, 1 Form A

	RM-22.22	1-channel 20 A Power Relay for Direct 35 mm Rail (EN 50022) Mounting, 2 Form A
	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)



I-87058W

I-87059W

Introduction

The I-87058W is an 8-channel AC/DC digital input module with high voltage isolation. The ON voltage level for the module range can be between 80 ~ 250 VAC/VDC, and all DI channels are also able to be used as 16-bit counters. The I-87059W is an 8-channel AC/DC digital input module with high voltage isolation. The ON voltage level for the module range can be between 10 ~ 80 VAC or 15 ~ 80 Vdc, and all DI channels are also able to be used as 16-bit counters.

The I-87058W and I-87059W include 8 LED indicators that can be used monitor DI channel status. 4 kV ESD protection and 5000 Vrms intra-module isolation are standard.

System Specifications

Model	I-87058W	I-87059W
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	8 as Digital Input Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	5000 Vrms	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	0.3 W Max.	
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 8-channel AC/DC Digital Input
- Low Pass Filter
- Photocouple Isolation
- All Digital Channels Input can be used as Counter
- I/O LED Display
- ±4 kV ESD Protection
- 5000 Vrms Intra-module Isolation
- 2 kV Channel-to-Channel Isolation
- Overvoltage Protection
- Wide Operating Temperature Range: -25 to +75°C



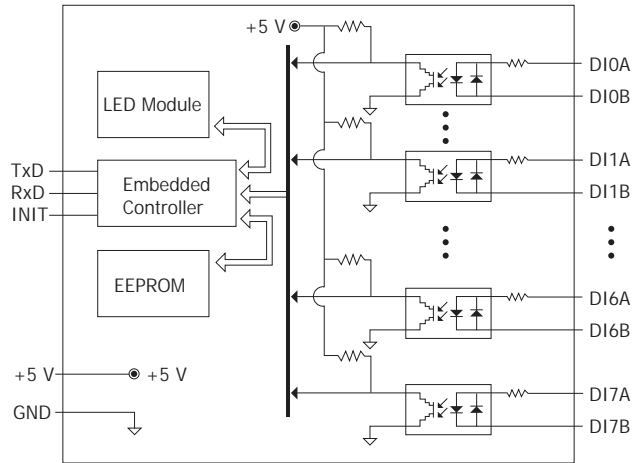
Applications

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

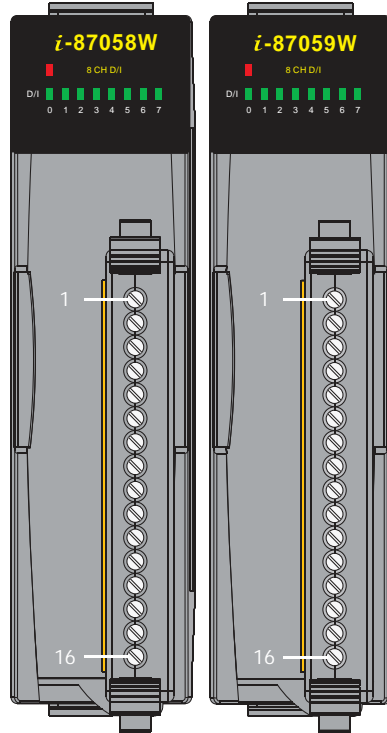
I/O Specifications

Model	I-87058W	I-87059W
Digital Input		
Channels	8	
Type	Differential	
Sink/Source (NPN/PNP)	-	
ON Voltage Level	80 ~ 250 VAC	10 ~ 80 VAC
	80 ~ 250 VDC	15 ~ 80 VDC
OFF Voltage Level	30 VAC/VDC Max.	3 VAC/VDC Max.
AC Frequency	50 ~ 400 Hz	
Input Impedance	68 kΩ, 2 W	10 kΩ, 1 W
Counters	Channels	8
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	Yes, 2 kV	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	-	
Overvoltage Protection	300 VAC/VDC Max.	100 VAC/VDC Max.

Internal I/O Structure

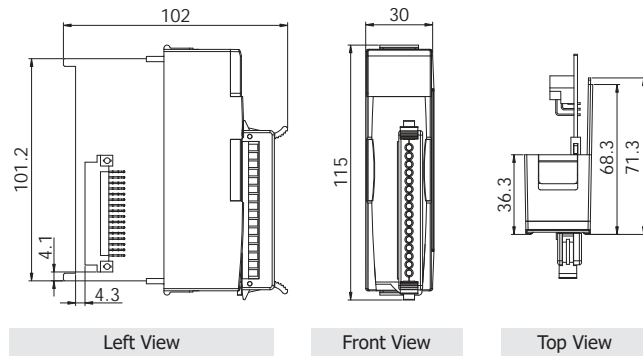


Pin Assignments



Terminal No.	Pin Assignment
01	DI0A
02	DI0B
03	DI1A
04	DI1B
05	DI2A
06	DI2B
07	DI3A
08	DI3B
09	DI4A
10	DI4B
11	DI5A
12	DI5B
13	DI6A
14	DI6B
15	DI7A
16	DI7B

Dimensions (Units: mm)



Wire Connections

Digital Input/Counter	ON State Readback as 1		OFF State Readback as 0	
	I-87058W	I-87059W	I-87058W	I-87059W
AC Digital Input	80 ~ 250 VAC	10 ~ 80 VAC	OPEN or <30 VAC Max.	OPEN or <3 VAC Max.
DC Digital Input	80 ~ 250 VDC	15 ~ 80 VDC	OPEN or <30 Vdc Max	OPEN or <3 VDC Max

Ordering Information

I-87058W-G CR	8-channel 80 to 250 VAC/VDC Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)
I-87059W-G CR	8-channel 10 to 80 VAC and 15 to 80 VDC Isolated Digital Input Module with 16-bit Counters (Gray Cover) (RoHS)

Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87061W I-87061PW
16-channel Power Relay Output Module

Introduction

The I-87061PW is a 16-channel Power Relay Output module where each Relay Output channel is independent. The I-87061W is a 16-channel power relay output module with the output channels partitioned into four groups, where each group provides four channels that share a single COM point. Both the I-87061W and I-87061PW modules include 16 LED indicators that can be used to monitor the status of the relay output, and options for configuring both power-on and safe relay output values are also available. 4 kV ESD protection and 3750 Vdc intra-module isolation are provided as standard to enhance the noise protection capabilities in harsh industrial environments.

System Specifications

Model	I-87061W	I-87061PW
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	Yes, 16 as Power Relay Output Indicators	
7-Segment LED Display	-	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 VDC	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	1.9 W Max.	
Mechanical		
Dimensions (W × L × H)	30 × 115 × 102 (mm)	30 × 114 × 110 (mm)
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- I-87061W
 - 16-channel Power Relay Output partitioned into four groups, where each group provides four channels that share a single COM point.
- I-87061PW
 - The I-87061PW is a 16-channel Power Relay Output module where each Relay Output channel is independent.
- ±4 kV ESD Protection
- 3750 VDC Intra-module Isolation
- Configurable Power-on Value Settings
- Configurable Safe Value Settings
- Dual Watchdog



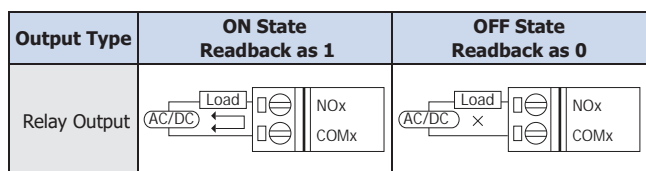
Applications

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

I/O Specifications

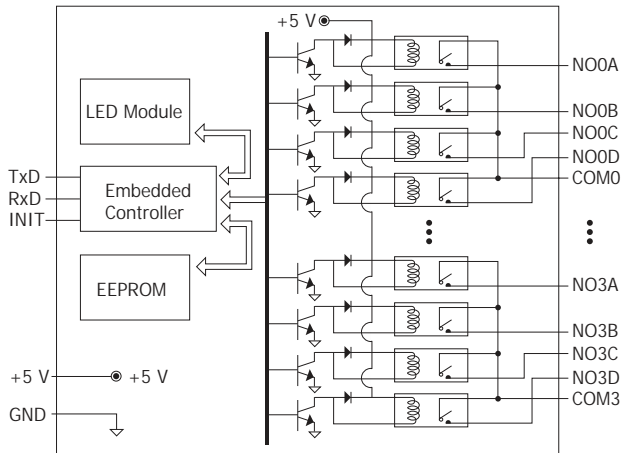
Model	I-87061W	I-87061PW
Relay Output		
Channels	16 (Form A)	
Type	Power Relay	
Wiring	Four groups, each group providing four channels that share a single COM point.	Differential
Form A Relay	Contact Rating	10 A @ 250 VAC/per Module COM point 10 A @ 24 Vdc/per Module COM point Max. Single Relay Load Current 5 A at 25°C
	Min. Contact Load	10 mA @ 5 V
	Contact Material	Silver Tin Alloy
	Operate Time	10 ms
	Release Time	5 ms
	Mechanical Endurance	2 × 10 ⁷ ops.
Electrical Endurance	1 × 10 ⁵ ops.	
Power-on Value	Yes	
Safe Value	Yes	

Wire Connections

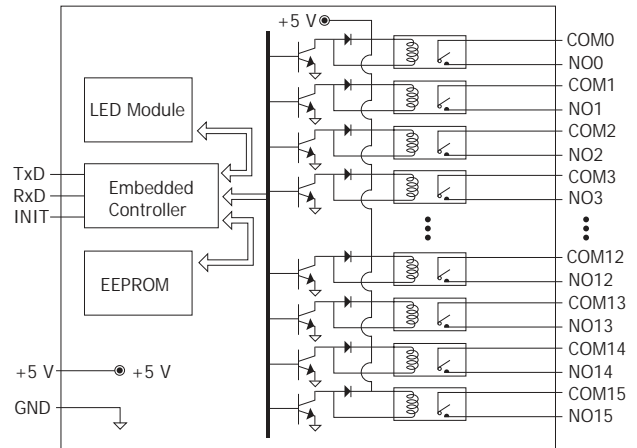


Internal I/O Structure

I-87061W

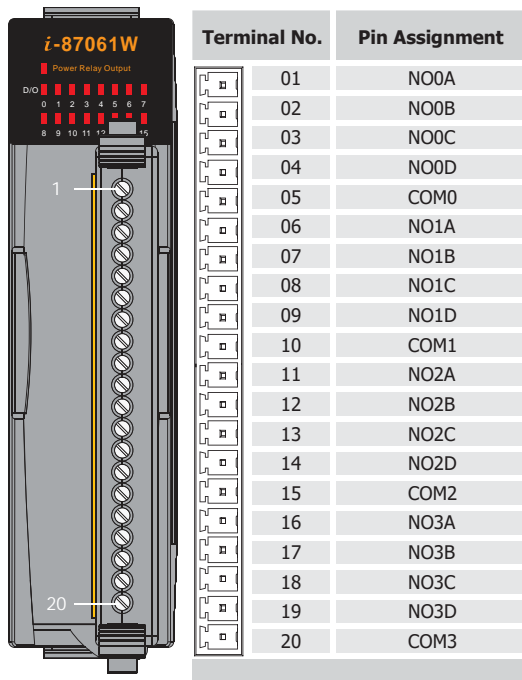


I-87061PW

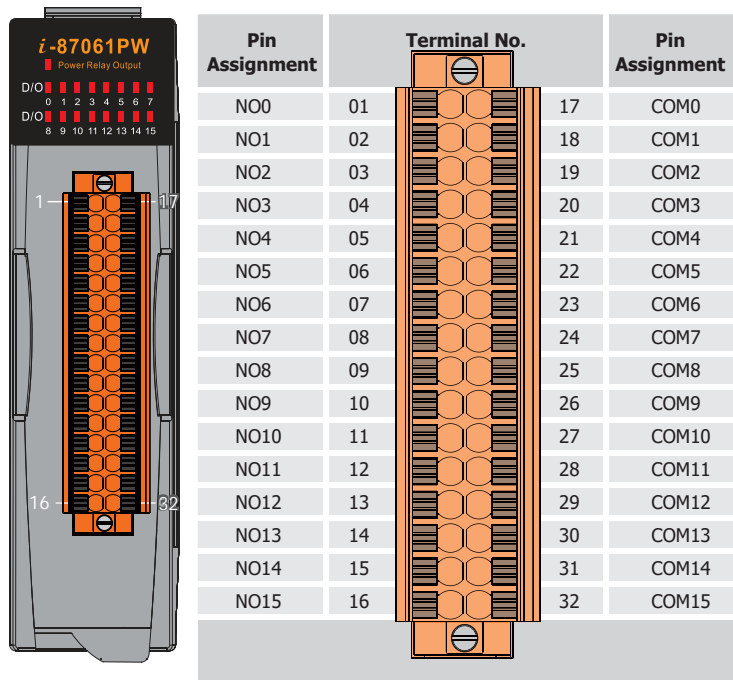


Pin Assignments

I-87061W

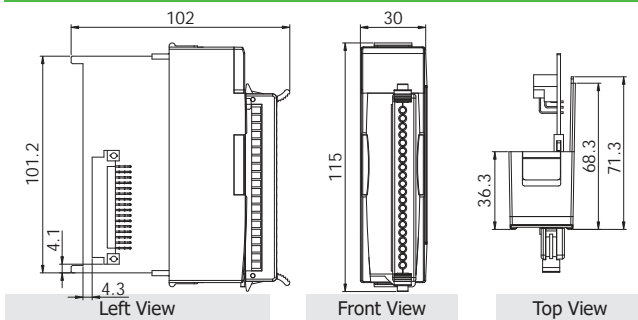


I-87061PW

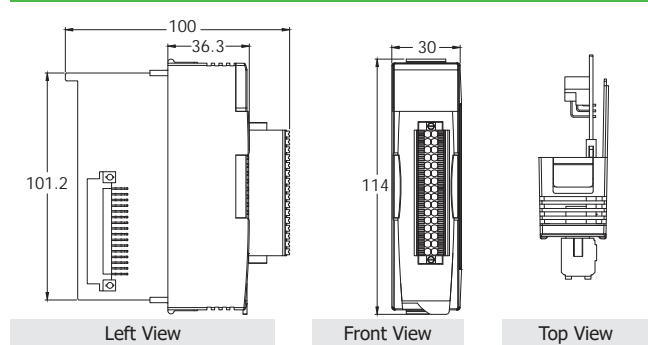


Dimensions (Units: mm)

I-87061W



I-87061PW



Ordering Information

I-87061W-G CR	16-channel Power Relay Output Module (4 groups, Each group provides 4-channels that share a single COM point) (Gray Cover) (RoHS)
I-87061PW-G CR	16-channel Power Relay Output Module (Each Relay Output Channel is Independent) (Gray Cover) (RoHS)



I-87063W

4-channel Isolated Digital Input and
4-channel Relay Output Module

Introduction

The I-87063W module provides 4 isolated Digital Input channels and 4 Form C Relay Output channels. All Digital Input channels can be used as 16-bit counters. In addition, either sink- or source-type Digital Input can be selected via the wire connections. The I-87063W includes 8 LED indicators that can be used to monitor the status of the Digital Input and Relay Output, and options are available for configuring power-on and safe values. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided to enhance the noise protection capabilities of the module in harsh industrial environments.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as Digital Input and Relay output Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3750 Vrms
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.5 W Max.
Mechanical	
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 4-channel Digital Input and 4-channel Relay Output
- Form C Power Relay Output
- Sink- and Source-type Digital Input Channels
- Digital Input Channels can be used as 16-bit Counters
- Configurable Power-on Value
- Configurable Safe Value
- 4 kV ESD Protection
- 3750 V_{DC} Intra-module Isolation



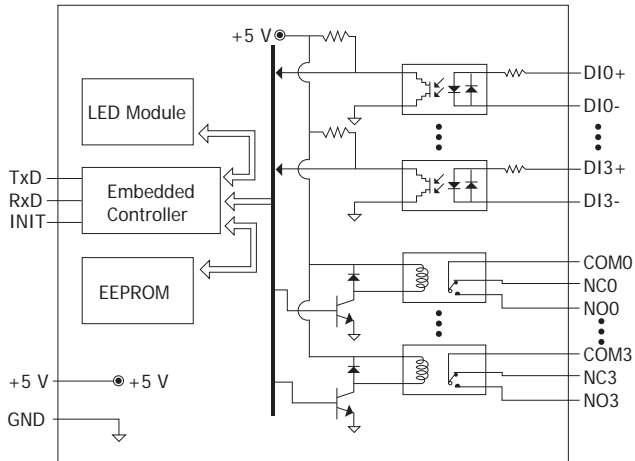
Applications

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

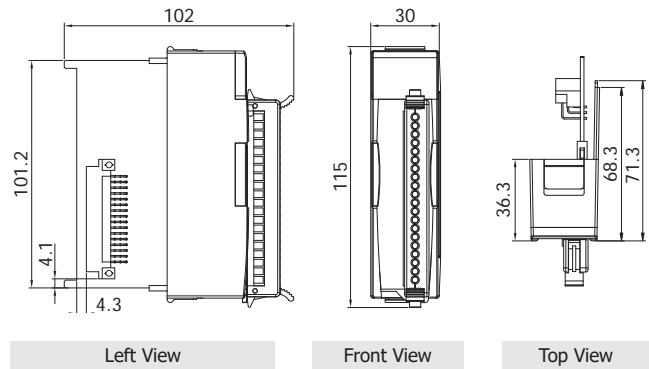
I/O Specifications

Digital Input		
Channels	4	
Type	Wet Contact	
Sink/Source (NPN/PNP)	Sink, Source	
ON Voltage Level	+3.5 VDC ~ +30 VDC	
OFF Voltage Level	+1 VDC Max.	
Input Impedance	3 kΩ, 0.25 W	
Counters	Channels	4
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Channel-to-Channel Isolation	-	
Low Pass Filter	Yes	
Effective Distance for Dry Contact	-	
Relay Output		
Channels	4 (Form C)	
Type	Power Relay	
Form C Relay	Contact Rating	5 A (NO)/3 A (NC) @ 30 VDC (Resistive Load) 5 A (NO)/3 A (NC) @ 277 VAC (Resistive Load)
	Min. Contact Load	100 mA @ 5 VDC
	Contact Material	Silver Tin Alloy
	Operate Time	10 ms (max.)
	Release Time	5 ms (max.)
	Mechanical Endurance	5 × 10 ⁶ ops.
Electrical Endurance	1 × 10 ⁵ ops.	
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



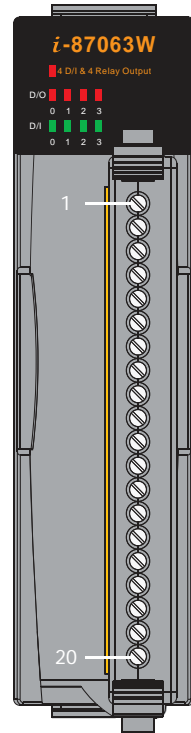
Dimensions (Units: mm)



Wire Connections

Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
Sink	OPEN or < +1 VDC	+4 ~ +30 VDC
Source	OPEN or < +1 VDC	+4 ~ +30 VDC
Output Type	ON State Readback as 1	OFF State Readback as 0
Relay Output		

Pin Assignments



Terminal No.	Pin Assignment
01	DI0+
02	DI0-
03	DI1+
04	DI1-
05	DI2+
06	DI2-
07	DI3+
08	DI3-
09	NO0
10	NC0
11	COM0
12	NO1
13	NC1
14	COM1
15	NO2
16	NC2
17	COM2
18	NO3
19	NC3
20	COM3

Ordering Information

I-87063W-G CR	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON Protocol (Gray Cover) (RoHS)
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I-87064W

8-channel Relay Output Module

Introduction

The I-87064W module provides 8 Form A Relay Output channels, and is an ideal solution for high-power applications. The I-87064W includes 8 LED indicators that can be used to monitor the status of the Relay Output channels, and options are available for configuring power-on and safe values. 4 kV ESD protection and 3000 Vdc intra-module isolation are also provided to enhance the noise protection capabilities of the module in harsh industrial environments.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as Power Relay Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	1.5 W Max.
Mechanical	
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel Power Relay Output
- Form A Power Relay Output
- 3000 Vdc Intra-module Isolation
- Configurable Power-on Value
- Configurable Safe Value



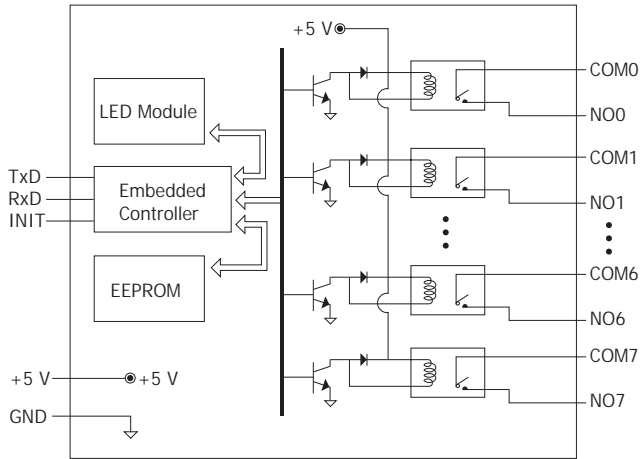
Applications

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

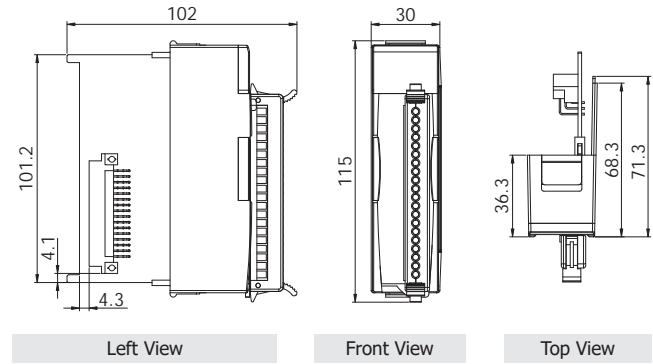
I/O Specifications

Relay Output		
Channels	8 (Form A)	
Type	Power Relay	
Form A Relay	Contact Rating	5 A @ 250 VAC (Resistive Load) 5 A @ 30 VDC (Resistive Load)
	Min. Contact Load	10 mA @ 5 VDC
	Contact Material	Gold-plated Silver Cadmium Alloy
	Operate Time	6 ms (Max.)
	Release Time	3 ms (Max.)
	Mechanical Endurance	2 × 10 ⁷ ops.
	Electrical Endurance	1 × 10 ⁵ ops.
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



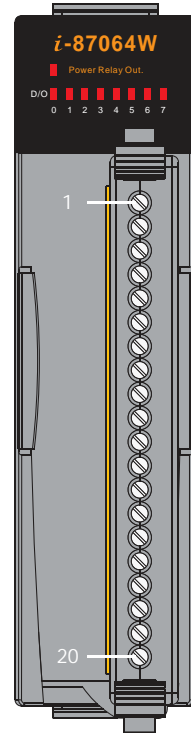
Dimensions (Units: mm)



Wire Connections

Output Type	ON State Readback as 1	OFF State Readback as 0
Relay Output		

Pin Assignments



Terminal No.	Pin Assignment
01	NO0
02	COM0
03	NO1
04	COM1
05	-
06	NO2
07	COM2
08	NO3
09	COM3
10	-
11	NO4
12	COM4
13	NO5
14	COM5
15	-
16	NO6
17	COM6
18	NO7
19	COM7
20	-

Ordering Information

I-87064W-G CR	8-channel Relay Output Module using the DCON Protocol (Gray Cover) (RoHS)
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I-87065W

8-channel AC SSR Output Module

Introduction

The I-87065W module provides 8 AC Solid State Relay (SSR) Output channels. In comparison to electromechanical relays, SSR technology provides a faster response time and greater electrical endurance. The integration of AC SSR technology also eliminates the potential for arcing, bouncing, or switching noise. The I-87065W includes 8 LED indicators that can be used to monitor the status of the SSR output, and options are available for configuring power-on and safe values. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided to enhance the noise protection capabilities of the module in harsh industrial environments.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as AC-SSR Output Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
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 Max.
Mechanical	
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel AC SSR Output
- Form A AC Solid State Relay Output
- Fast Operating/Release Time
- No Arcing, Bouncing, or Switching Noise
- 3000 VDC Intra-module Isolation
- Configurable Power-on Value
- Configurable Safe Value
- Fast Response Time
- Unlimited Relay Lifetime
- 4 kV ESD Protection



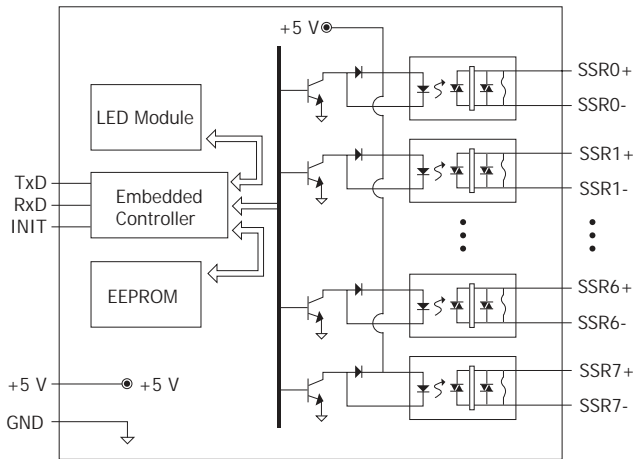
Applications

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

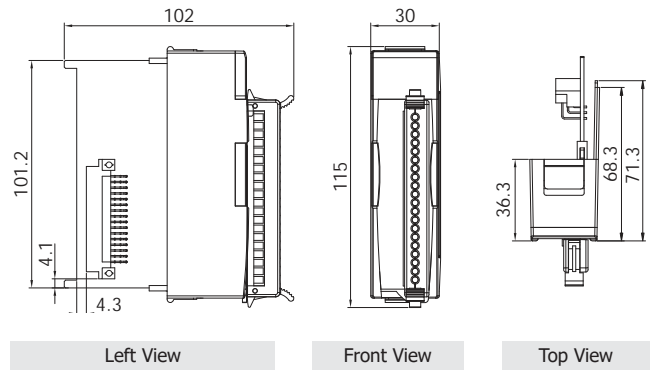
I/O Specifications

AC Solid State Relay Output		
Channels	8	
Type	AC SSR (Form A)	
Form A	Operating Voltage Range	+24 ~ +265 VAC
	Max. Load Current	1 A
	Leakage Current	1.5 mA
	Min. Operate Time	1/2 cycle + 1 ms
	Min. Release Time	1/2 cycle + 1 ms
	Dielectric Strength	2500 VAC
Electrical Endurance	Long Life, No Arcing, No Bounce, No Switching Noise	
Power-on Value	Yes	
Safe Value	Yes	

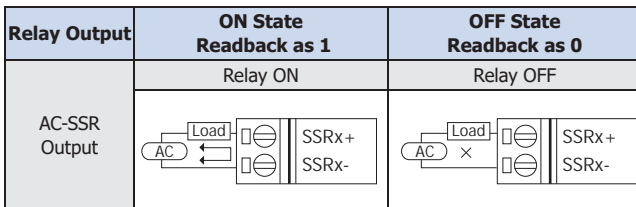
Internal I/O Structure



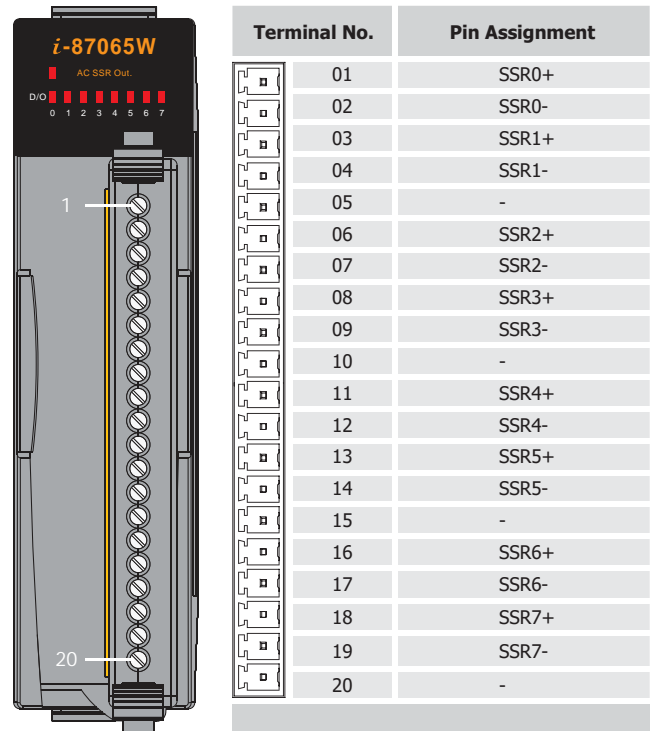
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87065W-G CR	8-channel AC SSR Output Module using the DCON Protocol (Gray Cover) (RoHS)
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I-87066W

8-channel DC SSR Output Module

Introduction

The I-87066W module provides 8 DC Solid State Relay (SSR) Output channels. In comparison to electromechanical relays, SSR technology provides a faster response time and greater electrical endurance. The integration of DC SSR technology also eliminates the potential for arcing, bouncing, and switching noise. The I-87066W includes 8 LED indicators that can be used to monitor the status of the SSR output, and options are available for configuring power-on and safe values. 4 kV ESD protection and 3000 Vdc intra-module isolation are also provided to enhance noise protection capabilities of the module in harsh industrial environments.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as DC-SSR Output Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3000 Vdc
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 Max.
Mechanical	
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8-channel DC SSR Output
- Form A DC Solid State Relay Output
- Fast Operating/Release Time
- No Arcing, Bouncing, or Switching Noise
- 3000 VDC Intra-module Isolation
- Configurable Power-on Value
- Configurable Safe Value
- Unlimited Relay Lifetime
- 4 kV ESD Protection



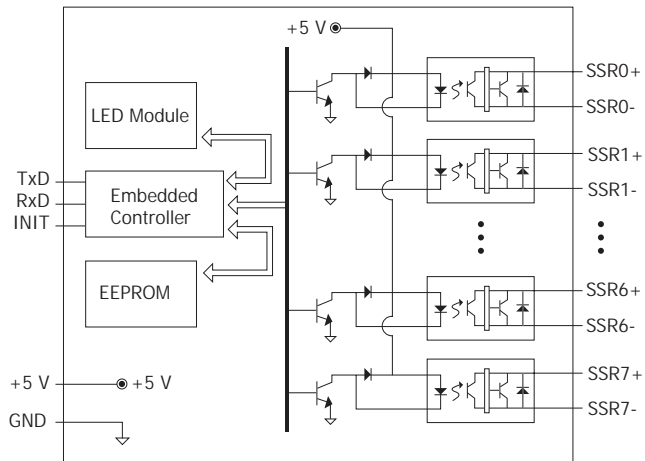
Applications

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

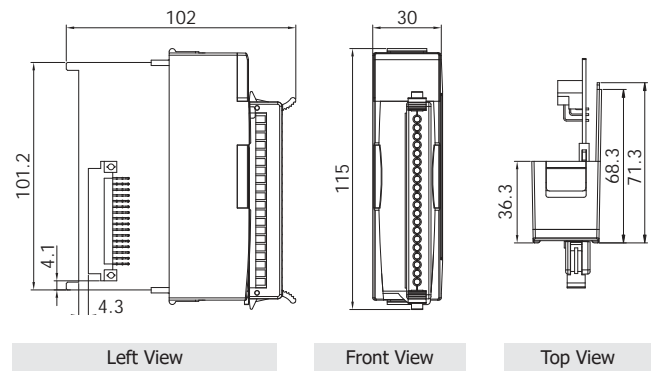
I/O Specifications

DC Solid State Relay Output		
Channels	8	
Type	DC SSR (Form A)	
Form A	Operating Voltage Range	+3 ~ +30 VDC
	Max. Load Current	1 A
	Leakage Current	0.1 mA
	Min. Operate Time	1 ms
	Min. Release Time	1 ms
	Dielectric Strength	3500 VDC
Electrical Endurance	Long Life, No Arcing, No Bounce, No Switching Noise	
Power-on Value	Yes	
Safe Value	Yes	

Internal I/O Structure



Dimensions (Units: mm)



Wire Connections

Output Type	ON State Readback as 1	OFF State Readback as 0
DC-SSR Output		

Pin Assignments

The photograph shows the physical module with a terminal block on the right side. The D/O indicator is visible at the top, showing a red LED for 'DC SSR Out.' and a row of seven LEDs numbered 0 to 7.

Terminal No.	Pin Assignment
01	SSR0+
02	SSR0-
03	SSR1+
04	SSR1-
05	-
06	SSR2+
07	SSR2-
08	SSR3+
09	SSR3-
10	-
11	SSR4+
12	SSR4-
13	SSR5+
14	SSR5-
15	-
16	SSR6+
17	SSR6-
18	SSR7+
19	SSR7-
20	-

Ordering Information

I-87066W-G CR	8-channel DC SSR Output Module using the DCON Protocol (Gray Cover) (RoHS)
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I-87068W I-87068W-2A

4-channel Form A Relay Output and
4-channel Form C Relay Output Module

Introduction

The I-87068W provides 4 Form A power relay output channels and 4 Form C power relay output channels. The I-87068W-2A provides 4 Form A signal relay output channels and 4 Form C signal relay output channels. Both include 8 LED indicators for monitoring the relay output status and provide options for configuring power-on and safe digital output values. 4 kV ESD protection and 3750 Vdc intra-module isolation are also provided. The I-87068W is the ideal solution for high power applications and the I-87068W-2A is the ideal solution for small signal switching.

System Specifications

Model	I-87068W	I-87068W-2A
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	8 as Power Relay Output Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 Vdc	2000 Vdc
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
Power		
Power Consumption	2.1 W Max.	1.2 W Max.
Mechanical		
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- Form A & Form C Relay Output
- Dual Watchdog
- Configurable Power-on Settings
- Configurable Safe Value Settings
- 4 kV ESD Protection



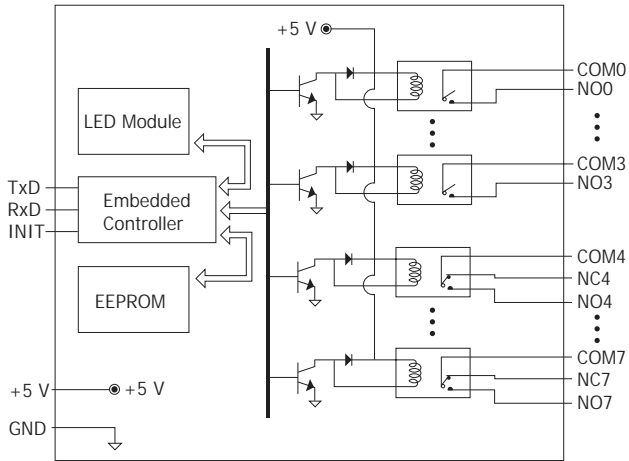
Applications

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

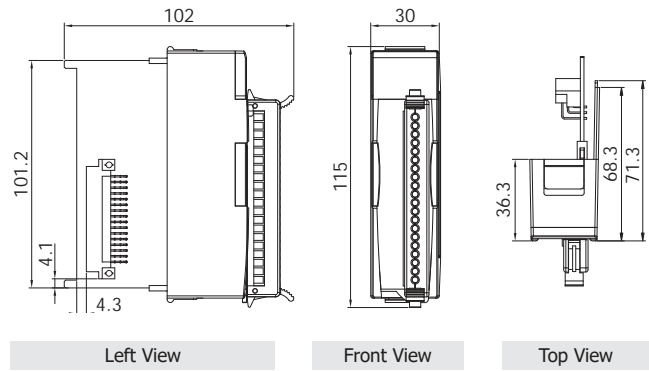
I/O Specifications

Model	I-87068W	I-87068W-2A		
Digital Output				
Channels	8 (Form A × 4, Form C × 4)			
Type	Power Relay	Signal Relay		
Contact Material	Silver, Silver Alloy	Silver Nickel, Gold-plated		
Form A	Contact Rating	Max. Load Current	8 A @ 28 VDC, 8 A @ 250 VAC	2 A @ 30 VDC 0.24 A @ 220 VDC 0.25 A @ 250 VAC
		Min. Load Current	100 mA @ 5 VDC	1 uA @ 100 uV
	Operate Time	15 ms (typical)	3 ms (typical)	
	Release Time	4 ms (typical)	4 ms (typical)	
	Mechanical Endurance	10 ⁷ ops	10 ⁸ ops	
	Electrical Endurance	10 ⁵ ops	2*10 ⁵ ops	
Form C	Contact Rating	Max. Load Current	5 A (NO)/3 A (NC) @ 30 VDC 5 A (NO)/3 A (NC) @ 277 VAC	2 A @ 30 VDC 0.24 A @ 220 VDC 0.25 A @ 250 VAC
		Min. Load Current	100 mA @ 5 VDC	1 uA @ 100 uV
	Operate Time	10 ms (typical)	3 ms (typical)	
	Release Time	5 ms (typical)	4 ms (typical)	
	Mechanical Endurance	10*10 ⁶ ops	10 ⁸ ops	
	Electrical Endurance	10 ⁵ ops	2*10 ⁵ ops	
Power-on Value	Yes			
Safe Value	Yes			

Internal I/O Structure



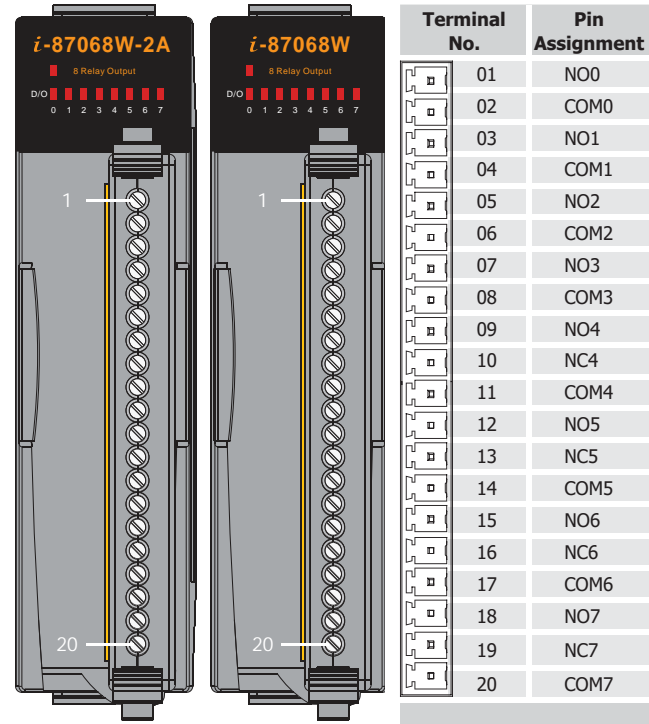
Dimensions (Units: mm)



Wire Connections

Output Type	ON State Readback as 1	OFF State Readback as 0
Form A Relay in RL0 ~ RL3		
Form C Relay in RL4 ~ RL7		

Pin Assignments



Ordering Information

I-87068W-G CR	4-channel Form A Power Relay Output and 4-channel Form C Power Relay Output Module (Gray Cover) (RoHS)
I-87068W-2A-G CR	4-channel Form A Signal Relay Output and 4-channel Form C Signal Relay Output Module (Gray Cover) (RoHS)



I-87069W I-87069PW

8-channel PhotoMOS Relay Output Module

Introduction

Both the I-87069W and the I-87069PW features eight Form A PhotoMOS relay output channels. In comparison to electromechanical relays, the PhotoMOS relays provide a faster response time, greater electrical endurance, higher vibration and shock resistance. There are also no arcing, no bounce, and no switching noise for the PhotoMOS relay. There are options for configuring power-on and safe digital output values, and both the I-87069W and the I-87069PW each include eight LED indicators that are used to display channel status as well as providing 4 kV ESD protection.

System Specifications

Model	I-87069W	I-87069PW
Communication		
Interface	RS-485	
Format	(N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power Indicator	
I/O LED Indicators	8 as PhotoMOS Output Indicators	
Isolation		
Intra-module Isolation, Field-to-Logic	5000 VDC	2000 VDC
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point	
EFT (IEC 61000-4-4)	±4 kV for Power	
Power		
Power Consumption	0.3 W (Max.)	
Mechanical		
Dimensions (W × L × H)	30 mm × 115 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-30 to +75°C	
Humidity	10 to 95% RH, Non-condensing	

Features

- 8 PhotoMos Relay Outputs
- 4 kV ESD Protection
- No Arcing, No Bounce, and No Switching Noise
- Photocouple Isolation
- Embedded Dual Watchdog
- Configurable Power-on Value Settings
- Configurable Safe Value Settings



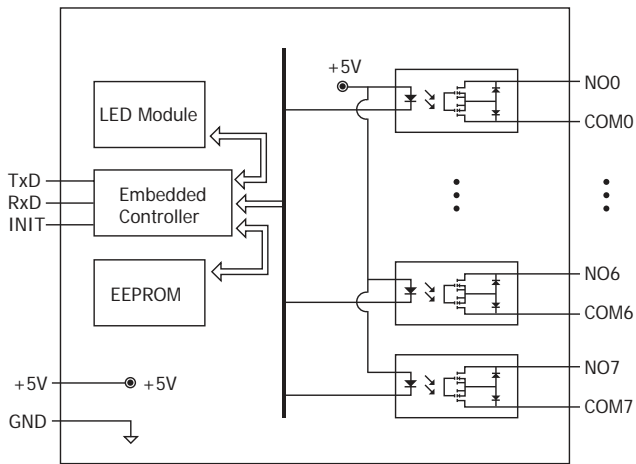
Applications

- All TypeS of On/Off Control
- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

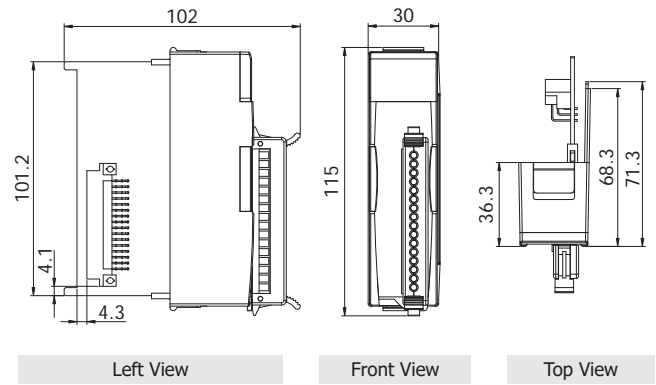
I/O Specifications

Model	I-87069W	I-87069PW
PhotoMOS Relay Output		
Output Channels	8	
Relay Type	PhotoMOS Relay, Form A	
Operating Load Voltage Range	350 V (AC peak or DC)	80 V (AC peak or DC)
Continous Load Current	0.13 A	1 A
Peak Load Current	0.4 A	3 A
Output Off State Leakage Current	1 uA	
Operating Time	2 ms (Max.)	5 ms (Max.)
Release Time	1 ms (Max.)	0.5 ms (Max.)
Electrical Endurance	No Arcing, No Bounce, and No Switching Noise	
Power-on Value	Yes	
Safe Value	Yes	

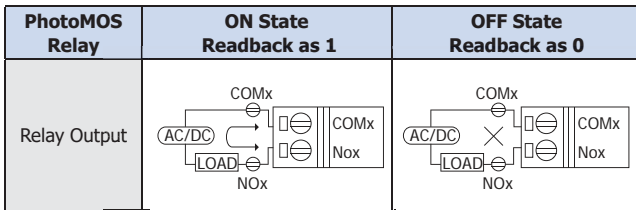
Internal I/O Structure



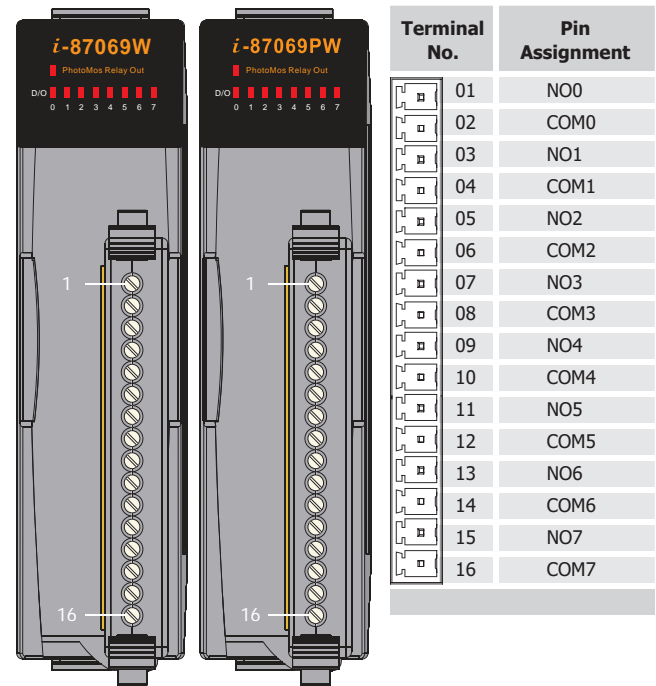
Dimensions (Units: mm)



Wire Connections



Pin Assignments



Ordering Information

I-87069W-G CR	8-channel PhotoMOS Relay Output Module (Gray Cover) (RoHS)
I-87069PW-G CR	8-channel PhotoMOS Relay Output Module (Gray Cover) (RoHS)



I-87082W

2-channel Counter/Frequency Input Module

Introduction

The I-87082W offers 2 high speed counter or frequency input channels and 2 digital output channels. Two types of digital input are provided, one for isolated input, and the other is for non-isolated input. The isolated input provides 3750 Vrms isolation voltage and the non-isolated input provides programmable threshold voltage level. The built-in digital filter is valid for both non-isolated and isolated input and can filter out noise where the high/low pulse width is smaller than the minimum high/low width of the digital filter. The maximum count is up to 32-bit and the maximum frequency is up to 100 kHz. The module also provides programmable alarm output with non-isolated open collectors.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as Counter/Frequency status Indicators
Isolation	
Intra-module Isolation, Field-to-Logic	3750 Vrms
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
Power	
Power Consumption	0.5 W Max.
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 2-channel Counter/Frequency Input
- 32-bit Counter
- Isolated or Non-isolated Input
- Programmable Alarm Output
- Programmable Digital Filter
- Programmable Threshold Voltage Level
- Maximum Frequency of up to 100 kHz
- Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C



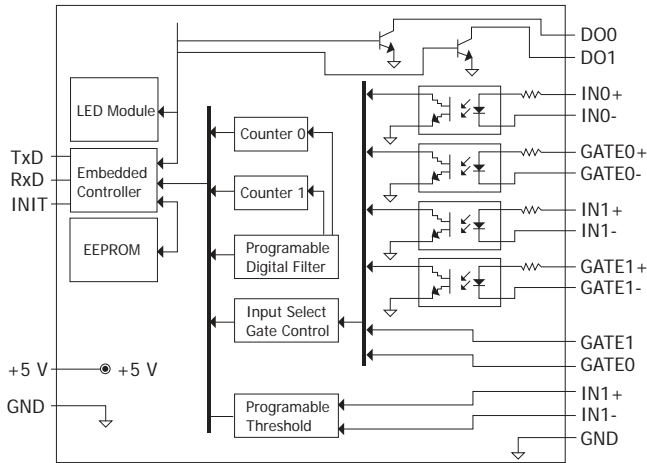
Applications

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

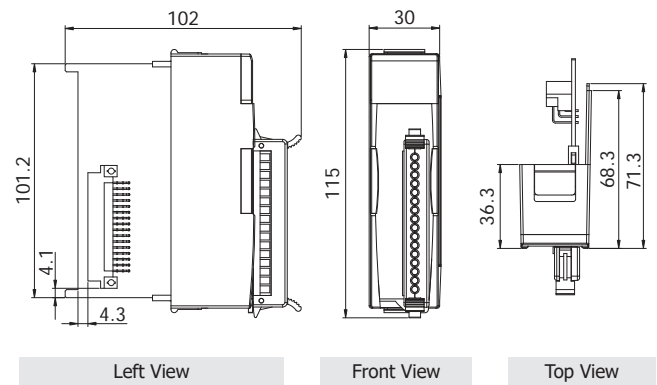
I/O Specifications

Counter/Frequency Input		
Channels	2	
Type	Counter or Frequency	
Isolated	ON Voltage Level	+3.5 VDC ~ +30 VDC
	OFF Voltage Level	+1 VDC Max.
Non-isolated	ON Voltage Level	0 ~ +5 VDC (Default > 2.4 VDC)
	OFF Voltage Level	0 ~ +5 VDC (Default < 0.8 VDC)
	Threshold Voltage	Programmable
Counter	Up	
Max. Counts	32-bits (4,294,967,295)	
Max. Counter/Frequency	100 kHz	
Digital Filter	2 ~ 65000 μs	
Frequency Accuracy	1 Hz or 10 Hz (software selectable)	
Programmable Alarm Mode	Mode 0	High Alarm Comparator on Counter 0 and Counter 1
	Mode 1	Two Steps High Alarm Comparator on Counter 1
Virtual Battery Backup for Counter Value	-	
Digital Output		
Channels	2	
Type	Sink, Open Collector	
Output Voltage	+5 VDC ~ +30 VDC	
Output Current	30 mA	
Alarm Output	Yes	

Internal I/O Structure



Dimensions (Units: mm)



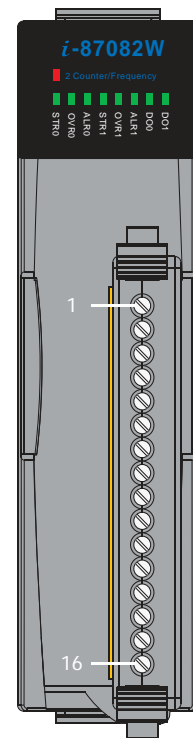
Wire Connections

Counter Type		
Isolation		Non-Isolation
Counter Input +	INx+	Counter Input +
Counter Input -	INx-	Gate Control
Gate Control+	GATEx+	Ground
Gate Control-	GATEx-	

Frequency Type		
Isolation		Non-Isolation
Frequency Input +	INx+	Frequency Input +
Frequency Input -	INx-	Don't be used
Don't be used	GATEx+	Frequency Input -
	GATEx-	

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
	ON State	OFF State
Resistance Load		
Inductance Load		

Pin Assignments



Terminal No.	Pin Assignment
01	DO0
02	DO1
03	IN0
04	GATE0
05	GND
06	IN1
07	GATE1
08	GND
09	IN0+
10	IN0-
11	GATE0+
12	GATE0-
13	IN1+
14	IN1-
15	GATE1+
16	GATE1-

Ordering Information

I-87082W-G CR	2-channel Counter/Frequency Input Module (Gray Cover) (RoHS)
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Accessories

	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87084W

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

Introduction

The I-87084W-G 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-G provides a virtual battery backup function in counter mode, and isolated or non-isolated mode is jumper-selectable.

System Specifications

Communication	
Interface	RS-485
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicators	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	8 as Digital Input Indicators
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	
Power Consumption	0.6 W
Mechanical	
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features

- 8 Up Counter/Frequency Channels 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
- ±4 kV ESD Protection
- Preset Values for Counter Input
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



Applications

- Counter measurement
- Frequency measurement
- Encoder motion control

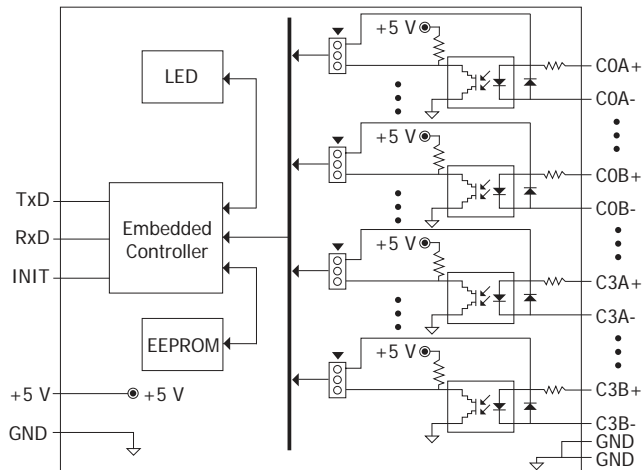
I/O Specifications

Counter/Frequency/Encoder Input		
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)	
Isolated	ON Voltage Level	+3.5 VDC ~ +30 VDC
	OFF Voltage Level	+1 VDC Max.
Non-isolated	ON Voltage Level	+2.4 VDC ~ +5 VDC
	OFF Voltage Level	+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 Hz ~ 200 kHz = ±0.025% of Input Frequency (Note1) 200 kHz ~ 1 MHz = ±0.1% of Input Frequency	
Virtual Battery Backup to preserve Counter Values	Yes	

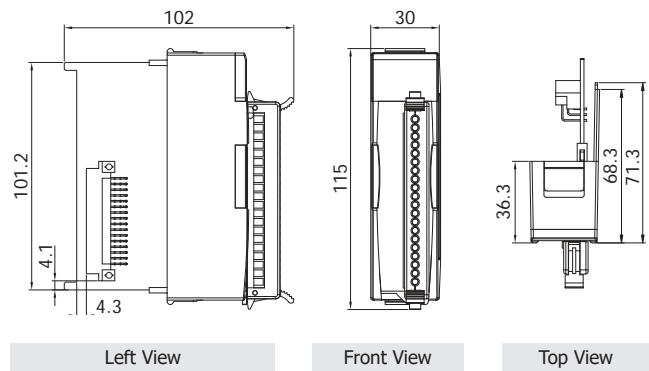
Note1:

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



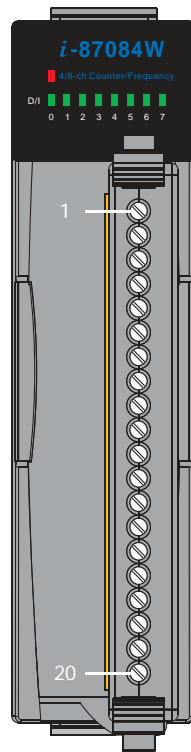
Dimensions (Units: mm)



Wire Connections

Counter Type	Isolated	Non-isolated
Dir/Pulse	Pulse+ CxA+ Pulse- CxA- Dir+ CxB+ Dir- CxB-	Pulse+ CxA+ Dir+ CxB+ Pulse- & Dir- GND
Up/Down	Up+ CxA+ Up- CxA- Down+ CxB+ Down- CxB-	Up+ CxA+ Down+ CxB+ Up- & Down- GND
Up	Up0+ CxA+ Up0- CxA- Up1+ CxB+ Up1- CxB-	Up0+ CxA+ Up1+ CxB+ Up0- & Up1- GND
A/B Phase	A0+ CxA+ A0- CxA- B0+ CxB+ B0- CxB-	A0+ CxA+ B0+ CxB+ A0- & B0- GND
Frequency Type	Isolated	Non-isolated
Frequency	Freq0+ CxA+ Freq0- CxA- Freq1+ CxB+ Freq1- CxB-	Freq0- CxA+ Freq1- CxB+ Freq0- & 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

I-87084W-G CR	4-/8-channel Counter/Frequency/Encoder Module (Gray Cover) (RoHS)
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Accessories

SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
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I-87088W

8-channel PWM Output and
8-channel High-speed Counter Module

Introduction

The I-87088W provides 8-channel PWM (Pulse Width Modulation) Output and 8-channel Counter Input, and can be used to develop powerful and cost-effective analog control systems. PWM is a powerful technique for controlling analog circuits that uses the Digital Output to generate a waveform with a variable duty cycle and frequency which can then be used to control an analog circuit in applications such as controlling the position or speed of motors, the brightness of lamps, or the speed of fans, etc. Either burst mode or continuous mode can be used for the PWM output depending on the application. In addition, all Digital Input channels can be used as high-speed counters with a speed of up to 1 MHz. The I-87088W/S allows the load voltage to be increased from +3.5 to +50 V for the 8-channels PWM (Pulse Width Modulation) output and the 8-channels high-speed counter.

Applications

- Controlling Motor Position/Speed
- Dimming Lamp Brightness
- Controlling Fan Speed

System Specifications

Model	I-87088W	I-87088W/S
Communication		
Interface	RS-485	
Format	N, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
Power	1 LED, Red	
Isolation		
Intra-module Isolation, Field-to-Logic	3750 VDC	
EMS Protection		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
Power		
Power Consumption	1.7 W Max.	
Mechanical		
Dimensions (L × W × H)	115 mm × 30 mm × 102 mm	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-30 to +80°C	
Humidity	10 to 95% RH, Non-condensing	

Features

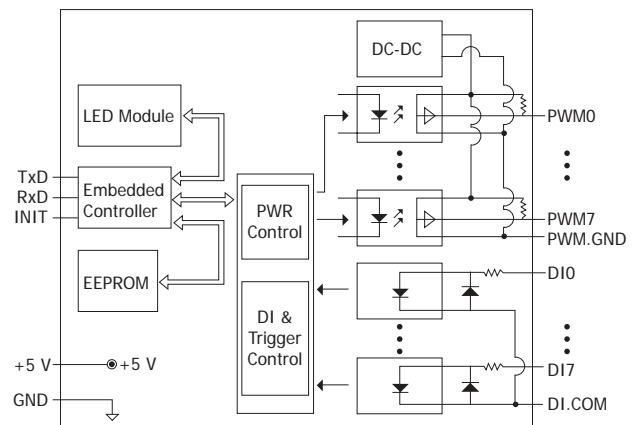
- 8-channel PWM Output and 8-channel Counter Input
- Burst Mode and Continuous Mode for PWM Output
- Software and Hardware Trigger Mode for PWM Output
- Individual and Synchronous PWM Output
- High-speed Counters
- 4 kV ESD and EFT Protection
- Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C



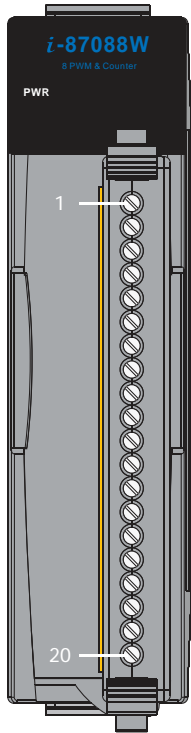
I/O Specifications

Model	I-87088W	I-87088W/S	
Digital Input			
Channels	8		
Contact	Wet		
Sink/Source (NPN/PNP)	Sink		
ON Voltage Level	+3.5 ~ +5 VDC	+3.5 ~ +50 VDC	
OFF Voltage Level	+1 VDC Max.	+4 VDC Max.	
Programmable Filter	-		
Programmable Threshold Voltage	-		
Counter Bits	32-bit		
Counter Mode	Up		
Encoder Mode	-		
Frequency Mode	-		
Virtual Battery Backup	Yes		
Max. Speed	1 MHz		
Digital Output			
Channels	8		
Type	PWM, TTL		
Sink/Source (NPN/PNP)	Sink		
Load Voltage	+3.5 ~ +5 VDC	+3.5 ~ +50 VDC	
Max. Load Current	Sink	+5 VDC @ 10 mA/ Channel	+50 VDC @ 200 mA/Channel
	Source	+5 VDC @ 1 mA/ Channel	-
PWM	Frequency	1 Hz ~ 500 KHz	
	Duty Cycle	0.1 to 99.9%	
	Mode	Burst, Continuous	
	Burst Count	1 to 65535	
	Trigger Start	Hardware or Software	
Power-on Value	-		
Safe Value	-		

Internal I/O Structure

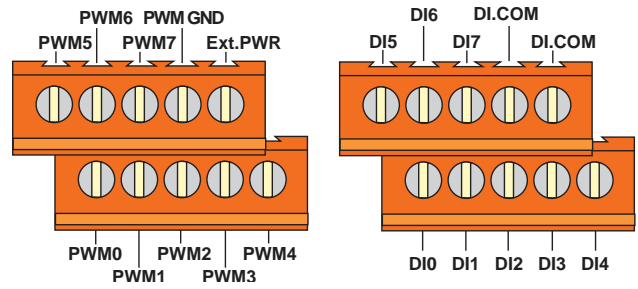


Pin Assignments

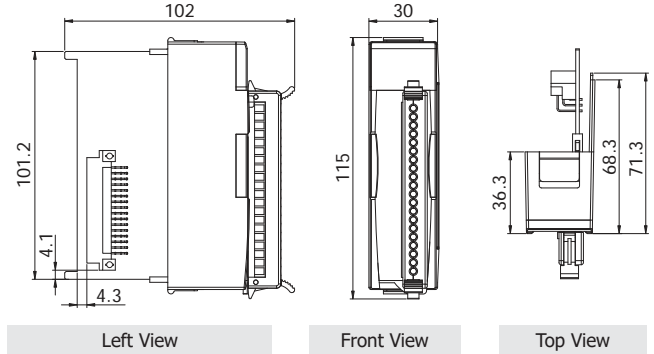


Terminal No.	Pin Assignment
01	PWM0
02	PWM1
03	PWM2
04	PWM3
05	PWM4
06	PWM5
07	PWM6
08	PWM7
09	PWM.GND
10	PWM.GND
11	DI0
12	DI1
13	DI2
14	DI3
15	DI4
16	DI5
17	DI6
18	DI7
19	DI.COM
20	DI.COM

DN-8P8C of I-87088W/S



Dimensions (Units: mm)

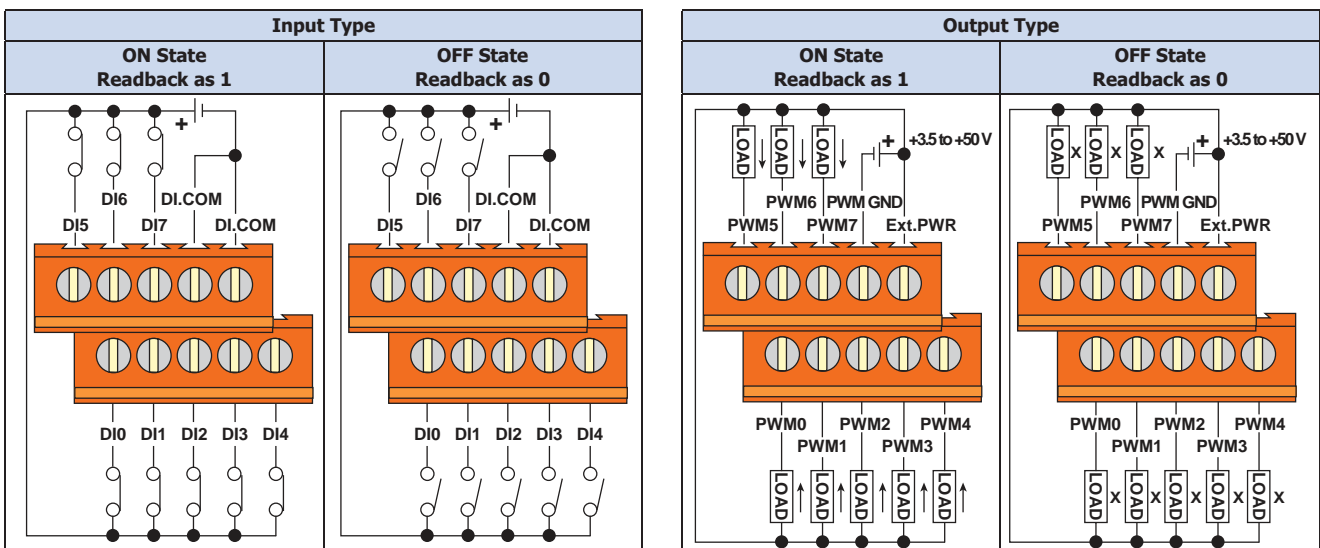


Wire Connections

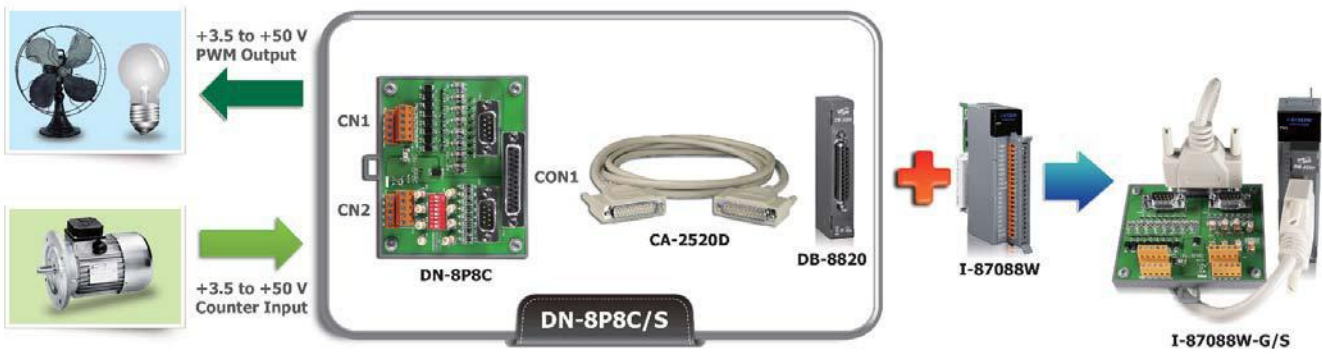
I-87088W

Input Type	ON State Readback as 1	OFF State Readback as 0
Relay Contact	Relay ON +5 Vdc + Relay Closed DIx DI.COM	Relay OFF +5 Vdc + Relay Open DIx DI.COM
Output Type	ON State Readback as 1	OFF State Readback as 0
Sink	+5 Vdc PWMx PWM.GND	+5 Vdc PWMx PWM.GND
Source	PWMx PWM.GND	PWMx PWM.GND

DN-8P8C of I-87088W/S



Applications





Ordering Information

I-87088W-G CR	8-channel PWM Output and 8-channel High-speed Counter Module (Gray Cover) (RoHS)
I-87088W-G/S CR	8-channel PWM Output and 8-channel High-speed Counter Module with DN-8P8C/S External Board (Gray Cover) (RoHS)

I-87088W-G/S = DN-8P8C/S Connects to the I-87088W Directly

Accessories

 SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
 DN-8P8C/S CR	8-channel Digital Output and 8-channel Counter Input Board, including a DB-8820 Daughterboard and a CA-2520D Cable.

