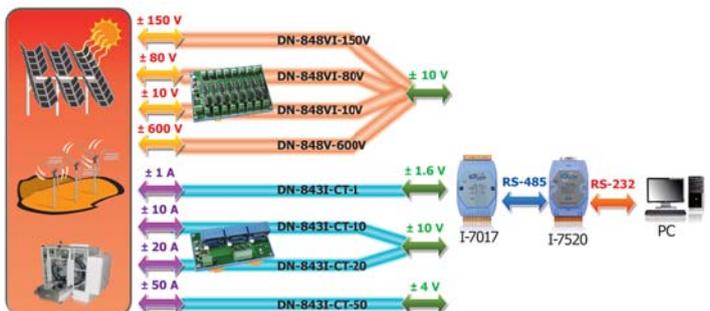


## 2.2.1. Voltage & Current Input Module

Voltage & Current Input Module									
Model Name	I-7012(D)	I-7012F(D)	I-7017 M-7017	I-7017F	M-7017H	M-7017HL	I-7017C M-7017C	I-7017FC	
Pictures									
Channels	1		8		8				
Wiring	Differential		Differential (Note 1)		Differential				
Input Range	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA (requires optional external 125 Ω resistor)		±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA (requires optional external 125 Ω resistor)		±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA (requires optional external 125 Ω resistor)		±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V		
Resolution	16-bit	12/16-bit	16-bit	12/16-bit	16-bit		16-bit	12/16-bit	
★ Accuracy	Normal mode	0.1%		0.1%		0.1%		0.1%	
	Fast mode	-	0.5%		-		0.5%		-
★ Sampling Rate	Normal mode	10 Hz		10 Hz (Total)		40 Hz (Total)		10 Hz (Total)	
	Fast mode	-	100 Hz		-		60 Hz (Total)		800 Hz (Total)
Input Impedance	20 MΩ		20 MΩ		10 MΩ		20 MΩ		
Common Voltage Protection	±10 Vdc		±15 Vdc		±15 Vdc	±5 Vdc	±15 Vdc		
★ Individual Channel Configuration	-		-		Yes		-		
★ Overvoltage Protection	±15 Vdc		±120 Vdc		±15 Vdc	±5 Vdc	±120 Vdc		
Overcurrent Protection	-		-		-		Yes		
Virtual Channel to Channel Isolation	±30 Vdc		±15 Vdc		±5 Vdc	±30 Vdc			
<b>System</b>									
★ Dual Watchdog	Yes								
ESD (IEC 61000-4-2)	±2 kV		±2 kV for I-7017 ±4 kV for M-7017	±2 kV	±4 kV		±2 kV	±4 kV	
EFT (IEC 61000-4-4)	-		±4 kV for M-7017	-	±4 kV		±4 kV		
Intra-Module Isolation, Field-to-Logic	3000 Vdc				2500 Vdc		3000 Vdc		
Power Input	10 ~ 30 Vdc								
Power Consumption	1.3 W; 1.9 W for (D) version		1.3 W		1.8 W		1.7 W	1.3 W	
<p><b>Note1:</b> I-7017 and I-7017F are 6-channel differential and 2-channel single-ended, or 8-channel differential. M-7017 is 8-channel differential.</p> <p><b>Note2:</b> I-7012(D) and I-7012F(D) both include 1 DI and 2 DO channels. The specification is as follows</p>									
<b>Digital Input</b>			<b>Digital Output</b>						
Channels	1		Channels	2					
Contact	Dry		Type	Open Collector					
Sink/Source (NPN/PNP)	Source		Sink/Source (NPN/PNP)	Sink					
On Voltage Level	Close to GND		Load Voltage	3.5 ~ 30 Vdc					
Off Voltage Level	Open		Max. Load Current	30 mA/Channel					
Counter (50 Hz, 16-bit)	Yes		Power-on Value	Yes					
Input Impedance	3 kΩ		Safe Value	Yes					
Overvoltage Protection	±30 Vdc								

### 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)



### Heavy Industrial Grade

To work well in heavy industrial environment, the hardware of module need special design to against noise, surge, EFT. For this purpose, we provide several heavy industrial grade analog modules.

- 1. Common Voltage Protection
- 2. Overvoltage Protection
- 3. ESD (IEC 61000-4-2)
- 4. EFT (IEC 61000-4-4)

2  
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RS-485 I/O Products

Voltage & Current Input Module (Heavy Industrial Grade)							
Model Name	M-7002	M-7003	I-7017R	I-7017R-A5	I-7017RC	I-7017Z	
			M-7017R	M-7017R-A5	M-7017RC	M-7017Z	
Pictures	<b>NEW</b> 	<b>Available soon</b> 					
Channels	4	8	8		8	10/20 (Note 1)	
Wiring	Differential	5-channel differential and 3-channel single-ended	Differential		Differential	Diff./Single-Ended	
Input Range	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper selectable)		±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA (requires optional external 125 Ω resistor)	±50 V, ±150 V	±20 mA, 0~20 mA, 4~20 mA	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper selectable)	
Resolution	12/16-bit		12/16-bit		12/16-bit		
Accuracy	Normal mode	0.1%		0.1%		0.1%	
	Fast mode	0.5%		0.5%		0.5%	
Sampling Rate	Normal mode	10 Hz (Total)		10 Hz (Total)		10 Hz (Total)	
	Fast mode	60 Hz (Total)		60 Hz (Total)	50 Hz (Total)	60 Hz (Total)	
Input Impedance	Differential	2 MΩ	20 MΩ	2 MΩ	290 kΩ	2 MΩ	
	Single-ended	-	10 MΩ	-	-	1 MΩ	
Common Voltage Protection	±200 Vdc	±15 Vdc	±200 Vdc				
Individual Channel Configuration	Yes	-	Yes				
Overvoltage Protection	240 Vrms	120 Vdc	240 Vrms	±200 Vdc	240 Vrms	240 Vrms	
Overcurrent Protection	Yes	-	Yes				
Virtual Channel to Channel Isolation	±400 Vdc	±30 Vdc	±400 Vdc				
<b>System</b>							
Dual Watchdog	Yes						
ESD (IEC 61000-4-2)	±4 kV						
EFT (IEC 61000-4-4)	±4 kV						
Surge (IEC 61000-4-5)	±3 kV			0.5 kV			
Intra-Module Isolation, Field-to-Logic	2500 Vdc			3000 Vdc			
Power Input	10 ~ 30 Vdc						
Power Consumption	1.9 W	1.8 W	1.3 W		1.3 W	2.0 W	
<b>Note1:</b> Differential wiring can be used for voltage input and current input. Single-Ended wiring can be used for voltage input only.							
<b>Digital Input for M-7002</b>			<b>Relay Output for M-7002 and M-7003</b>				
Channels	5		Channels	4			
Contact	Wet		Type	Power Relay (Form A)			
Sink/Source (NPN/PNP)	Sink/Source		Contact Rating	5 A @ 250 VAC / 5 A @ 30 Vdc			
On Voltage Level	3.5 ~ 30 Vdc		Surge Strength	3000 Vdc			
Off Voltage Level	+1 Vdc Max.		Operate Time	3 ms			
Counter (100Hz, 16-bit)	Yes		Release Time	2 ms			
Input Impedance	10 kΩ		Mechanical Endurance	2 × 10 <sup>7</sup> ops.			
Overvoltage Protection	±70 Vdc		Electrical Endurance	10 <sup>5</sup> ops.			
Isolation Voltage	3750 Vrms		Power-on Value	Yes			
			Safe Value	Yes			

### Overvoltage Protection

Many of our analog input modules provide high overvoltage protection for the analog input channels. When user picks wrong line accidentally or high voltage spike is applied to the analog input terminals, the module will not be broken and can still get the correct readings. This feature improves the reliability, reduces maintenance frequency, and makes the whole system more robust.

