

I-7088(D) M-7088(D)

8-ch PWM Output and
8-ch High-speed Counter Input Module

Features

- 8 PWM Outputs and 8 Counter Inputs
- Burst Mode and Continuous Mode for PWM Output
- Software and Hardware Trigger Mode for PWM Output
- Individual and Synchronous PWM Output
- High-speed Counters
- Built-in Dual Watchdog

Introduction

The I-7088 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 M-7088 supports both the Modbus RTU and the DCON protocols, which can be configured via software, and all hardware specifications are the same as the I-7088. The I-7088(D)/S and M-7088(D)/S allows the load voltage to be increased from +3.5 ~ +50 V for the 8-channels PWM (Pulse Width Modulation) output and the 8-channels high-speed counter.

System Specifications

Model	I-7000 M-7000	7088 7088/S	7088D 7088D/S
CPU Module			
Watchdog Timer		Module, Communication (Programmable)	
Display			
Type	7088D, 88D/S	5-Digit 7 Segment LED Display	
Memory			
Battery Backup		Yes	
Isolation			
Intra-module Isolation		2500 VDC	
EMS Protection			
EFT (IEC 61000-4-4)		±4 kV for Power Line	
ESD (IEC 61000-4-2)		±4 kV Contact for Each Terminal	
LED Indicators			
Status		1 x Power and Communication	
COM Ports			
Ports		1 x RS-485	
Baud Rate		1200 ~ 115200 bps	
Data Format		(N, 8, 1), (N, 8, 2), (E, 8, 1), (O, 8, 1)	
Protocol		I-7000: DCON M-7000: Modbus RTU, DCON	
Power			
Reverse Polarity Protection		Yes	
Input Range		+10 ~ +30 VDC	
Consumption		2.9 W	3.4 W
Mechanical			
Dimensions (mm)		72 x 123 x 35 (W x L x H)	
Installation		DIN-Rail Mounting	

I/O Specifications

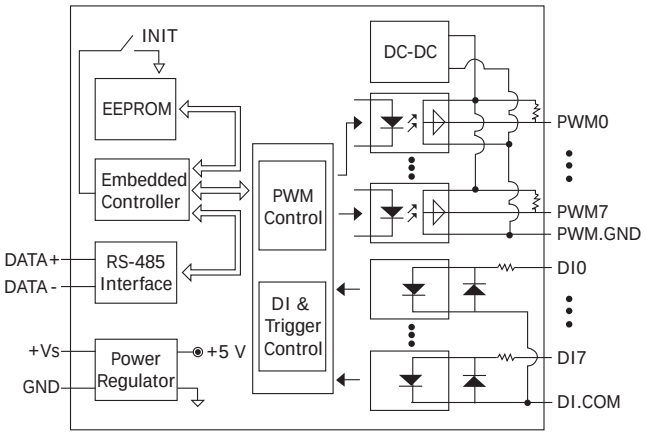
Model	I-7000 M-7000	7088(D)	7088(D)/S
Counter/Frequency/Encoder Input			
Channels		8	
Type		Counter	
Counter Mode		Up	
Counter/Encoder Bits		32-bit	
Sink/Source (NPN/PNP)		Sink	
ON Voltage Level		+3.5 ~ +5 VDC	+3.5 ~ +50 VDC
OFF Voltage Level		+1 VDC Max.	
Max. Speed		1 MHz	
PWM			
Channels		8	
Type		TTL	Open Collector
Sink/Source (NPN/PNP)		Sink, Source	Sink
Load Voltage		+5 VDC	+5 ~ +50 VDC
Load Current		Sink: 10 mA @ 5 VDC/Channel Source: 1 mA @ 5 VDC/Channel	200 mA @ +50 VDC/Channel
Frequency		1 Hz ~ 500 KHz	
Duty Cycle		0.1 ~ 99.9 %	
Mode		Burst, Continuous	
Burst Count		1 ~ 65535	
Trigger Start		Hardware or Software	

Environment	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-40 ~ +85 °C
Humidity	10 ~ 95% RH, Non-condensing

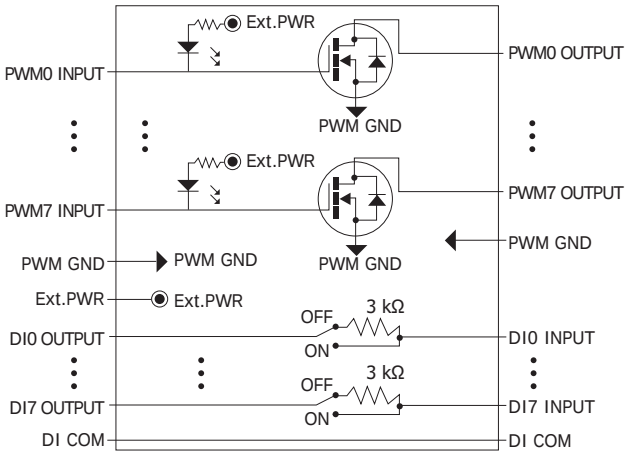
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Internal I/O Structure

I-7088(D)/M-7088(D)

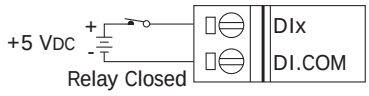
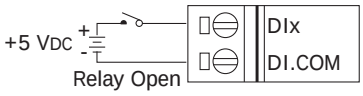


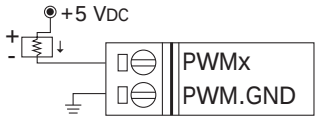
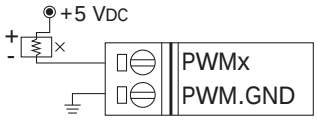
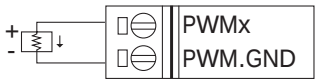
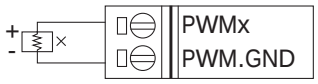
DN-8P8C



Wire Connections

I-7088(D)/M-7088(D)

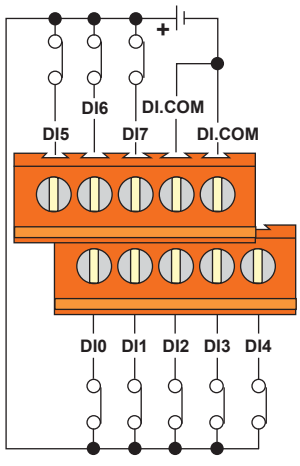
Counter Input	ON State Readback as 1	OFF State Readback as 0
Relay Contact	Relay ON	Relay OFF
		

PWM Output	ON State Readback as 1	OFF State Readback as 0
Sink		
Source		

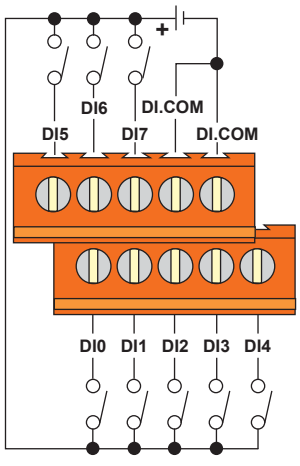
DN-8P8C of I-7088(D)/S and M-7088(D)/S

Counter Input

ON State Readback as 1

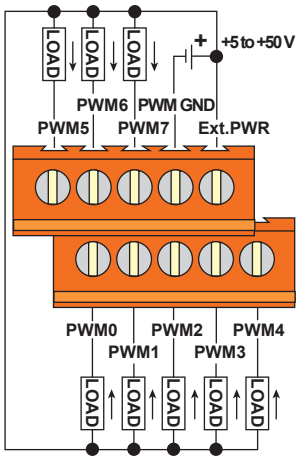


OFF State Readback as 0

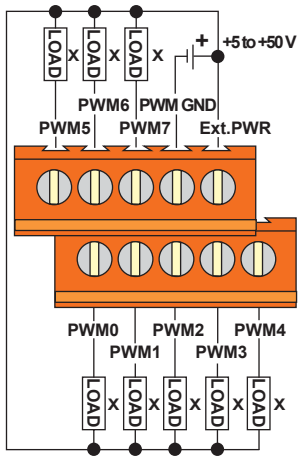


PWM Output

ON State Readback as 1



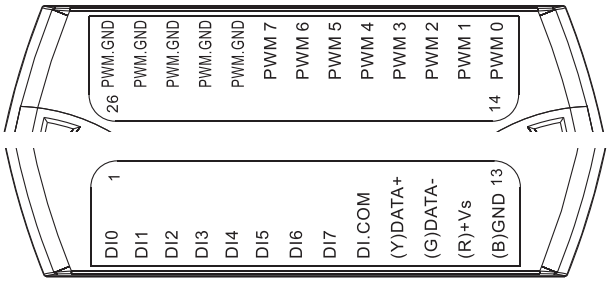
OFF State Readback as 0



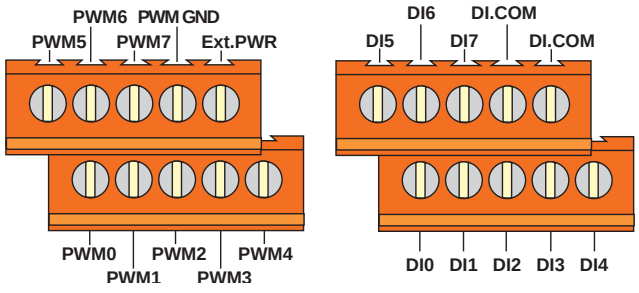
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Pin Assignments

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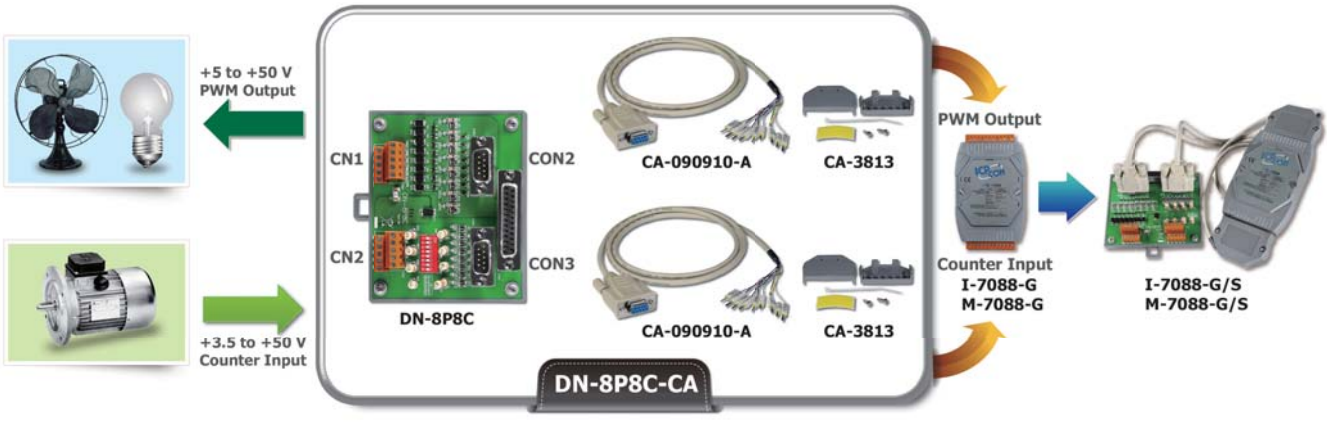


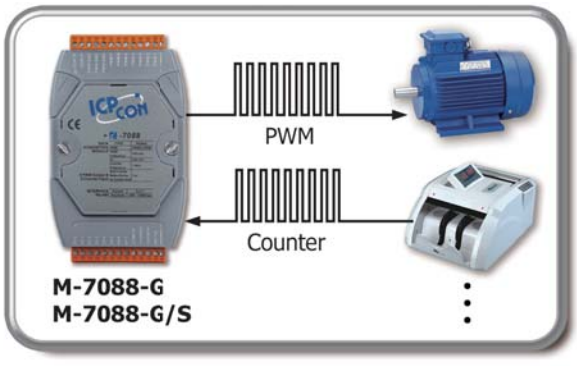
DN-8P8C of I-7088(D)/S and M-7088(D)/S

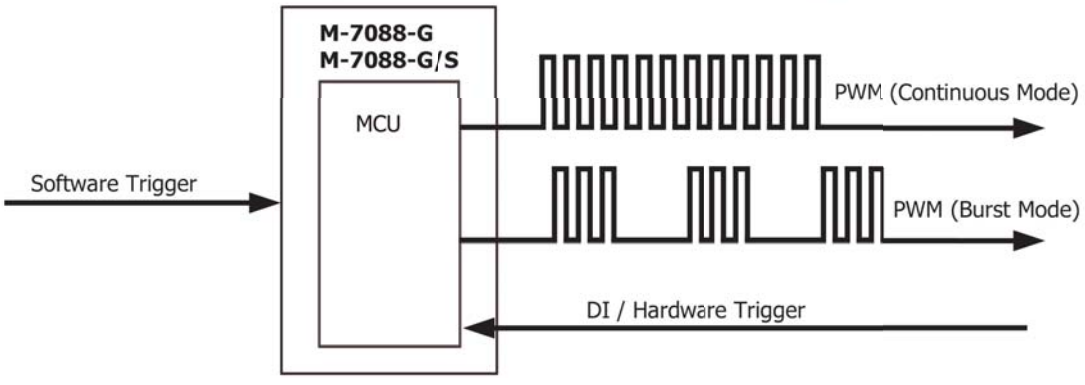


Applications

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







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Ordering Information

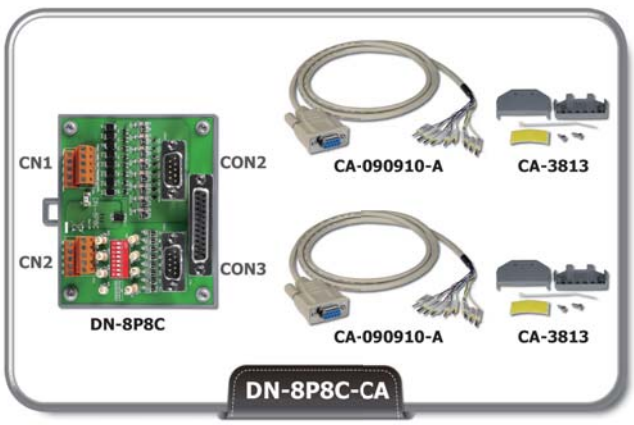
I-7088-G CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) using DCON Protocol (Gray Cover) (RoHS)
I-7088D-G CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) with LED Display using DCON Protocol (Gray Cover) (RoHS)
M-7088-G CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) using DCON and Modbus Protocols (Gray Cover) (RoHS)
M-7088D-G CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) with LED Display, using DCON and Modbus Protocols (Gray Cover) (RoHS)
I-7088-G/S CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (50 VDC) using DCON Protocol (Gray Cover) (RoHS) Includes DN-8P8C-CA (External Board and Cable)
I-7088D-G/S CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (50 VDC) with LED Display using DCON Protocol (Gray Cover) (RoHS) Includes DN-8P8C-CA (External Board and Cable)
M-7088-G/S CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (50 VDC) using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-8P8C-CA (External Board and Cable)
M-7088D-G/S CR	8-ch PWM Output and 8-ch High-speed Counter Input Module (50 VDC) with LED Display, using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-8P8C-CA (External Board and Cable)

I-7088-G/S = DN-8P8C-CA Connects to the I-7088 Directly
M-7088-G/S = DN-8P8C-CA Connects to the M-7088 Directly



Accessories

tM-7520U CR 	RS-232 to RS-485 Converter (RoHS)
tM-7561 CR 	USB to RS-485 Converter (RoHS)
tM-SG4 CR 	RS-485 Bias and Termination Resistor Module (RoHS)
I-7514U CR 	4-channel RS-485 Hub (RoHS)
SG-770 CR 	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
DN-8P8C-CA CR 	8-channel Digital Output and 8-channel Counter Input Board, including two CA-090910-A Cable and two CA-3813 Connector
CA-090910-A 	9-pin Female D-sub Cable for I/M-7088 Connector, 1 m
CA-3813 	Connector Casing for 13-pin, 3.81 mm Pitch or 14-pin, 3.5 mm Pitch



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