



**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 to +50 V for the 8-channels PWM (Pulse Width Modulation) output and the 8-channels high-speed counter.

### System Specifications

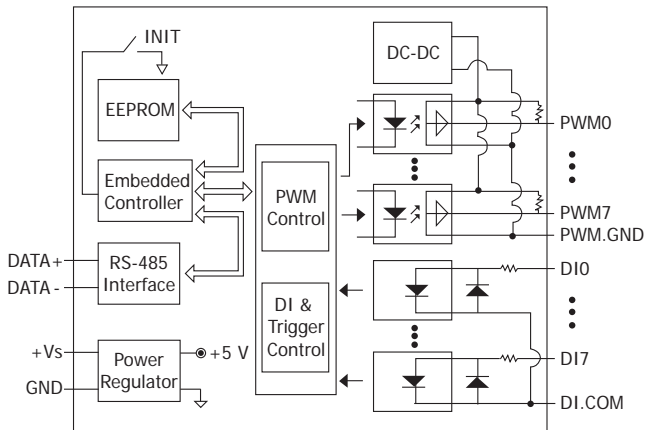
Model	I-7000 M-7000	7088 7088/S	7088D 7088D/S
<b>CPU Module</b>			
Watchdog Timer	Module, Communication (Programmable)		
<b>Display</b>			
Type	7088D, 88D/S	5-Digit 7 Segment LED Display	
<b>Memory</b>			
Battery Backup	Yes		
<b>Isolation</b>			
Intra-module Isolation	2500 VDC		
EMS Protection			
EFT (IEC 61000-4-4)	±4 kV for Power Line		
ESD (IEC 61000-4-2)	±4 kV Contact for Each Terminal		
<b>LED Indicators</b>			
Status	1 x Power and Communication		
<b>COM Ports</b>			
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		
<b>Power</b>			
Reverse Polarity Protection	Yes		
Input Range	+10 ~ +30 VDC		
Consumption	2.9 W	3.4 W	
<b>Mechanical</b>			
Dimensions (mm)	72 x 123 x 35 (W x L x H)		
Installation	DIN-Rail Mounting		

### I/O Specifications

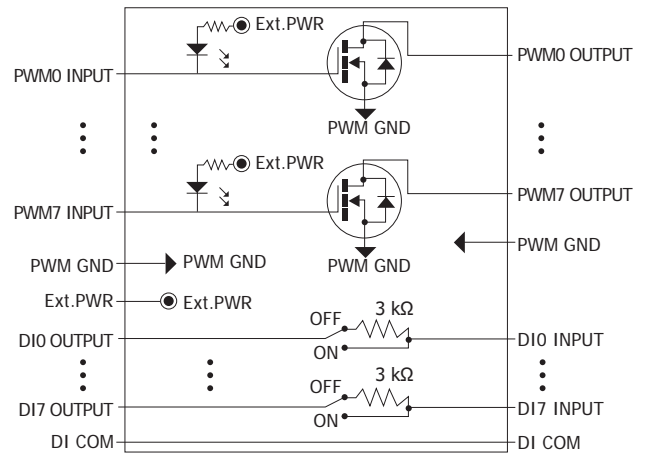
Model	I-7000 M-7000	7088 7088D	7088/S 7088D/S
<b>Counter/Frequency/Encoder Input</b>			
Channels	8		
Type	Counter		
Counter Mode	Up		
Counter/Encoder Bits	32-bit		
Sink/Source (NPN/PNP)	Sink		
ON Voltage Level	+3.5 ~ +5 VDC	+3.5 ~ +50 VDC	
OFF Voltage Level	+1 VDC Max.		
Max. Speed	1 MHz		
<b>PWM</b>			
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	200 mA @ +50 VDC/Channel	
	Source: 1 mA @ 5 VDC/Channel		
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		
<b>Environment</b>			
Operating Temperature	-25 ~ +75 °C		
Storage Temperature	-40 ~ +85 °C		
Humidity	10 ~ 95% RH, Non-condensing		

## Internal I/O Structure

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



DN-8P8C

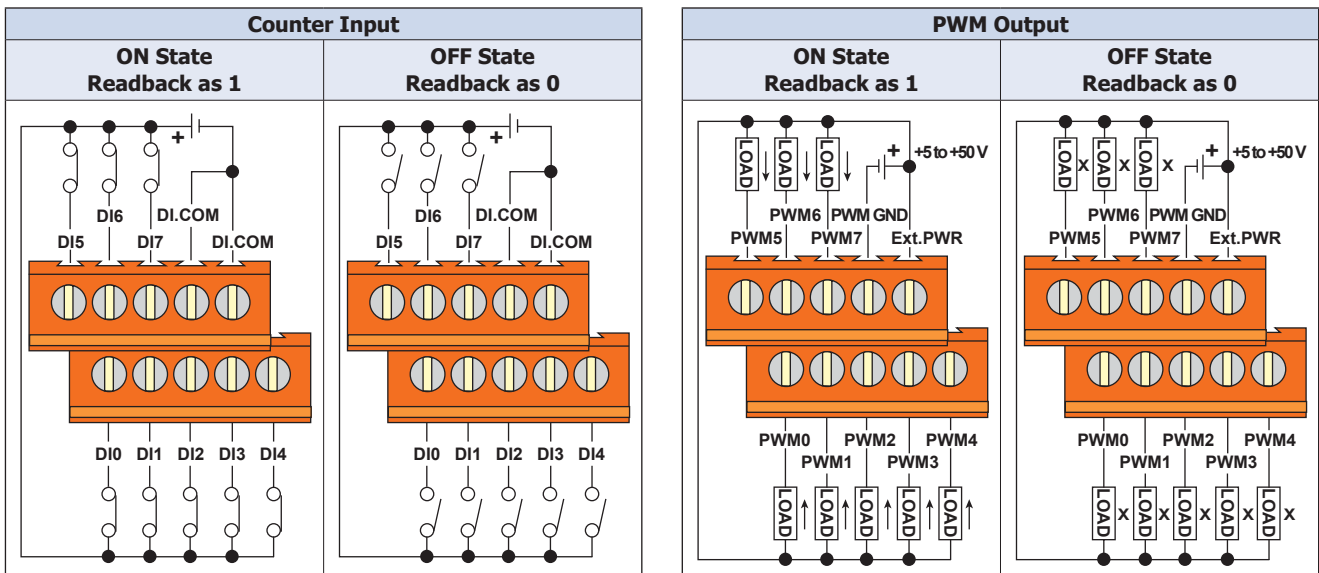


## Wire Connections

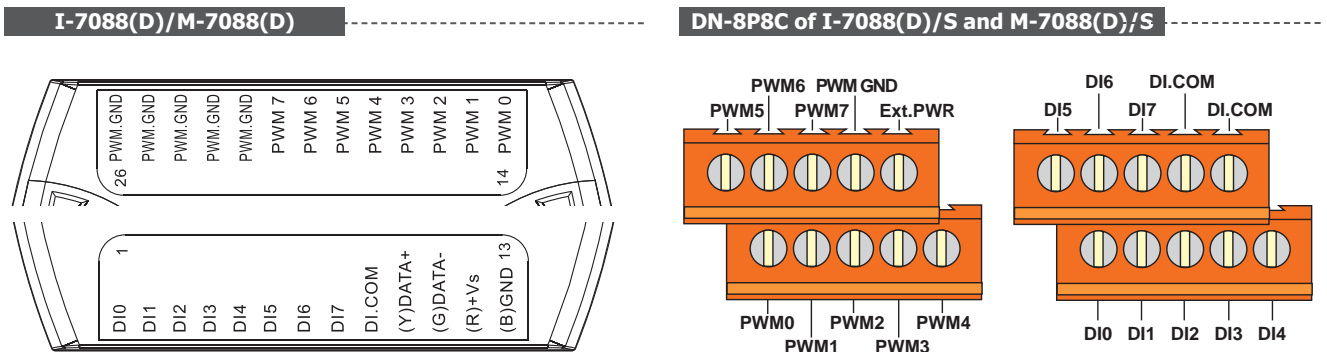
I-7088(D)/M-7088(D)

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

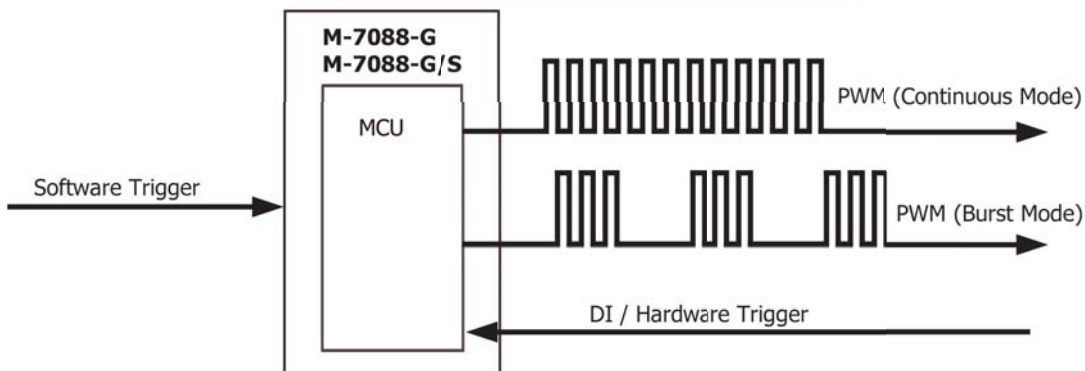
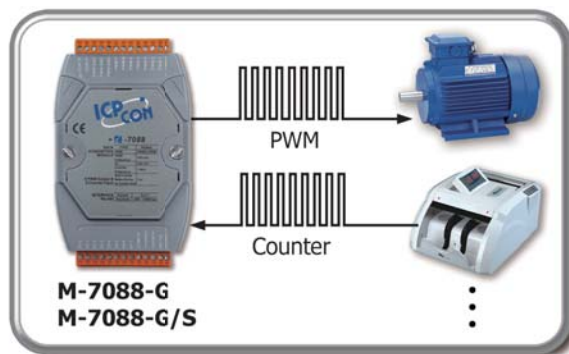
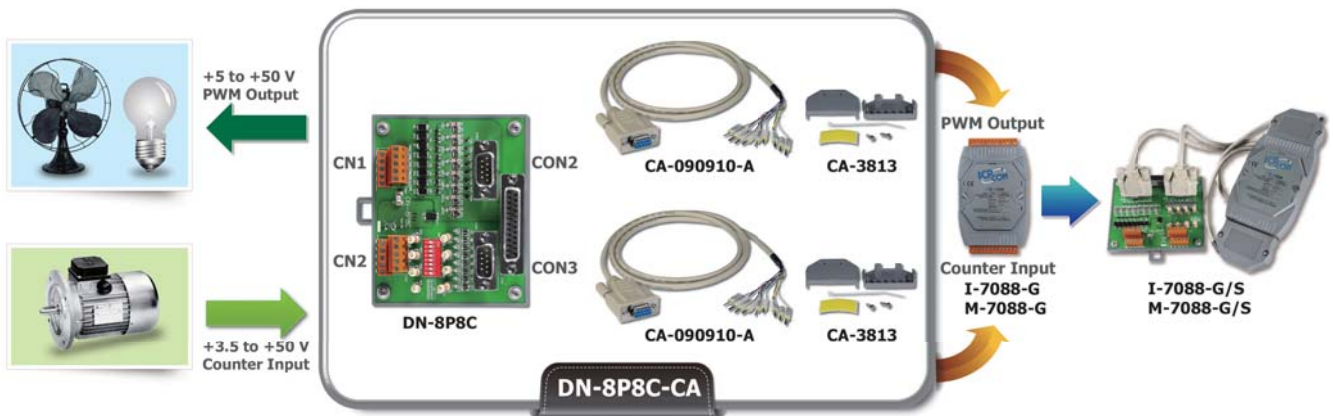


## Pin Assignments



## Applications

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




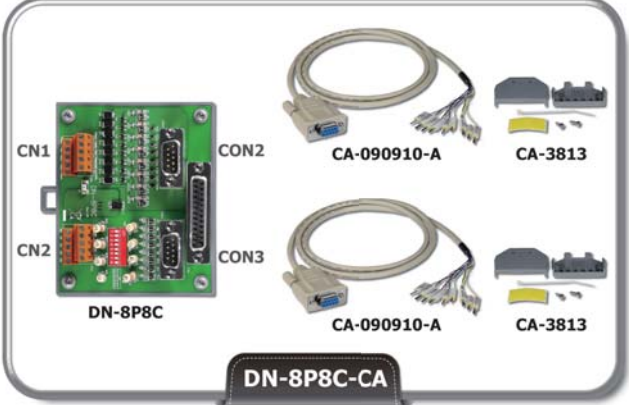







## Ordering Information

<b>I-7088-G CR</b>	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) using DCON Protocol (Gray Cover) (RoHS)
<b>I-7088D-G CR</b>	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) with LED Display using DCON Protocol (Gray Cover) (RoHS)
<b>M-7088-G CR</b>	8-ch PWM Output and 8-ch High-speed Counter Input Module (5 VDC) using DCON and Modbus Protocols (Gray Cover) (RoHS)
<b>M-7088D-G CR</b>	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)
<b>I-7088-G/S CR</b>	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)
<b>I-7088D-G/S CR</b>	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)
<b>M-7088-G/S CR</b>	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)
<b>M-7088D-G/S CR</b>	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

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