Features

- 8-channels PWM Output and 8-channels 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 ~ +75°C

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

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

Introduction

The I-7088 provides 8-channel PWM output and 8-channel counter input, and can be used to develop powerful and cost-effective analog control systems. PWM (Pulse Width Modulation) is a powerful technique for controlling analog circuits that uses digital outputs to generate a waveform with a variable duty cycle and frequency which can be used to control analog circuits. It can be used to control 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 PWM outputs depending on your situation. 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 Modbus RTU and DCON protocols, which can be configured via software, and all hardware specifications are the same as the I-7088.

Applications

Controlling the position/speed of motors
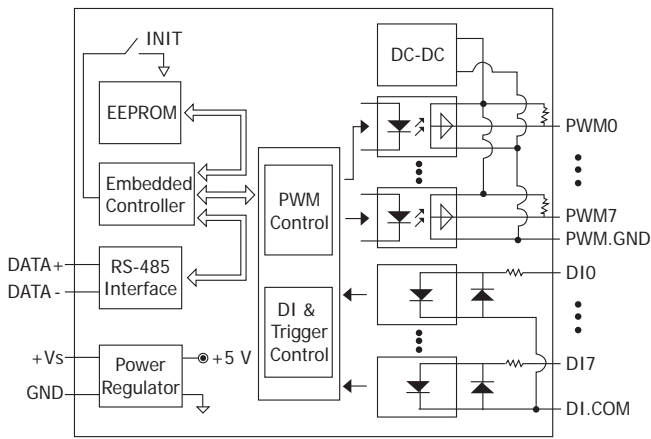Dimming the brightness of lamps
Controlling the speed of fans

System Specifications

Model	I-7088	I-7088D	M-7088	M-7088D
Communication				
Interface	RS-485			
Format	(N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1)			
Baud Rate	1200 ~ 115200 bps			
Protocol	DCON		Modbus RTU, DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)			
LED Indicator/Display				
System LED Indicator	Yes, 1 LED as Power/Communication Indicator			
I/O LED Indicator	-			
7-Segment LED Display	-	Yes	-	Yes
Isolation				
Intra-module Isolation, Field-to-Logic	2500 VDC			
EMS Protection				
ESD (IEC 61000-4-2)	+/-4 kV			
EFT (IEC 61000-4-4)	+/-4 kV			
Power				
Reverse Polarity Protection	Yes			
Input Range	10 ~ 30 VDC			
Consumption	2.9 W	3.4 W	2.9 W	3.4 W
Mechanical				
Dimensions (W x L x H)	72 mm x 123 mm x 35 mm			
Installation	DIN-Rail or Wall Mounting			
Environment				
Operating Temperature	-25 ~ +75°C			
Storage Temperature	-40 ~ +85°C			
Humidity	10 ~ 95% RH, Non-condensing			

I/O Specifications

Model		I-7088	I-7088D	M-7088	M-7088D
Digital Input					
Channels		8			
Contact		Wet			
Sink/Source (NPN/PNP)		Sink			
On Voltage Level		+3.5 ~ +5 VDC			
Off Voltage Level		+1 VDC Max.			
Programmable Filter		-			
Programmable Threshold Voltage		-			
Counter Bits		32-bit			
Counter Mode		Up			
Encoder Mode		-			
Frequency Mode		-			
Virtual Battery Backup		Yes			
Frequency Accuracy		-			
Max. Speed		1 MHz			
Digital Output					
Channels		8			
Type		PWM, TTL			
Sink/Source (NPN/PNP)		Sink			
Load Voltage		+3.5 ~ +5 VDC			
Max. Load Current	Sink	+5 VDC @ 10 mA/Channel			
	Source	+5 VDC @ 1 mA/Channel			
PWM	Frequency	1 Hz ~ 500 KHz			
	Duty Cycle	0.1 ~ 99.9%			
	Mode	Burst, Continuous			
	Burst Count	1 ~ 65535			
	Trigger Start	Hardware or Software			
Power-on Value		-			
Safe Value		-			

I-7088/I-7088D/M-7088/M-7088D

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■ Internal I/O Structure

■ Pin Assignments

Top row (right to left): 26 PWM.GND, PWM.GND, PWM.GND, PWM.GND, PWM.GND, PWM 7, PWM 6, PWM 5, PWM 4, PWM 3, PWM 2, PWM 1, 14 PWM 0

Bottom row (left to right): 1 DI0, DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI.COM, (Y)DATA+, (G)DATA-, (R)+Vs, (B)GND 13
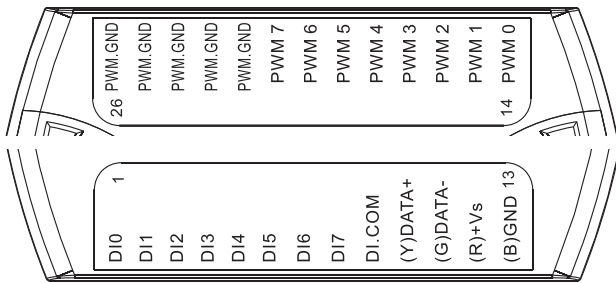
■ Wire Connections

Input Type	ON State Readback as 1	OFF State Readback as 0
Relay Contact	Relay ON — Relay Close	Relay OFF — Relay Open
TTL/ CMOS Logic	Voltage > 5 V — Logic Level High / Logic GND	Voltage < 0.8 V — Logic Level Low / Logic GND
PNP Output	Open Collector ON — ON	Open Collector OFF — OFF
NPN Output	Open Collector ON — ON	Open Collector OFF — OFF

Output Type	ON State Readback as 1	OFF State Readback as 0
Sink	Relay ON — +5VDC, PWMx DO.GND	Relay OFF — +5VDC, PWMx DO.GND
Soure	Relay ON — PWMx DO.GND	Relay OFF — PWMx DO.GND

■ Ordering Information

I-7088-G CR	8-channel PWM Output and 8-channel High Speed Counter Module with DCON Protocol (Gray Cover) (RoHS)
I-7088D-G CR	I-7088 with 7-segment LED Display (Gray Cover) (RoHS)
M-7088-G CR	8-channel PWM Output and 8-channel High Speed Counter Module with DCON and Modbus Protocol (Gray Cover) (RoHS)
M-7088D-G CR	M-7088 with 7-segment LED Display (Gray Cover) (RoHS)

■ 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)
	SG-3000 series	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Inputs