



**M-7028**

**M-7028D**

8-channel Analog Output Module

## Features

- 8-channel Analog Output
- Source Type Current Output
- 12-bit Analog Output
- Individual Channel Configuration
- Open Wire Detection for Current Output
- RF Immunity
- 8 kV ESD Protection
- Power-on Value Setting
- Safe Value Setting
- Wide Operating Temperature Range: -25 to +75°C



## Introduction

The M-7028 is a 12-bit, 8-channel analog output module. It provides a programmable output range on all analog output 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 the module also features per-channel open wire detection for the +4 ~ +20 mA output, together with 8 kV ESD Protection as well as 3000 VDC intra-module isolation. Options for configuring power-on and safe values are also included.

## Applications

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

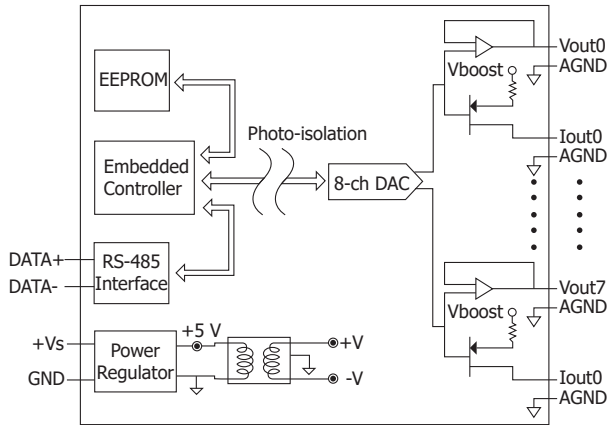
## System Specifications

| Model                                  | M-7028  | M-7028D                                      |
|--|---|--|
| <b>Communication</b>                   |   |  |
| Interface                              | RS-485  |  |
| Bias Resistor                          | Yes   |  |
| Format                                 | (N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1)                 |  |
| Baud Rate                              | 1200 to 115200 bps                                      |  |
| Protocol                               | Modbus RTU, DCON  |  |
| Dual Watchdog                          | Yes, Module (1.6 Seconds), Communication (Programmable) |  |
| <b>LED Indicators/Display</b>          |   |  |
| System LED Indicator                   | Yes, 1 as Power/Communication Indicator                 |  |
| I/O LED Indicators                     | -   | 8 LEDs as Analog Output and Fault Indicators |
| 7-segment LED Display                  | -   |  |
| <b>Isolation</b>                       |   |  |
| Intra-module Isolation, Field-to-Logic | 3000 Vdc  |  |
| <b>EMS Protection</b>                  |   |  |
| ESD (IEC 61000-4-2)                    | ±8 kV Contact for each Terminal                         |  |
| RS Immunity (IEC 61000-4-3)            | 3 V/m, 80 MHz ~ 1 GHz                                   |  |
| EFT (IEC 61000-4-4)                    | ±4 kV for Power Line                                    |  |
| Surge (IEC 61000-4-5)                  | -   |  |
| <b>Power</b>                           |   |  |
| Reverse Polarity Protection            | Yes   |  |
| Input Range                            | +10 ~ +30 V <sub>DC</sub>                               |  |
| Consumption                            | 4.3 W   | 4.8 W  |
| <b>Mechanical</b>                      |   |  |
| Dimensions (L x W x H)                 | 123 mm x 72 mm x 35 mm                                  |  |
| Installation                           | DIN-Rail or Wall Mounting                               |  |
| <b>Environment</b>                     |   |  |
| Operating Temperature                  | -25 to +75°C  |  |
| Storage Temperature                    | -40 to +85°C  |  |
| Humidity                               | 10 to 95% RH, Non-condensing                            |  |

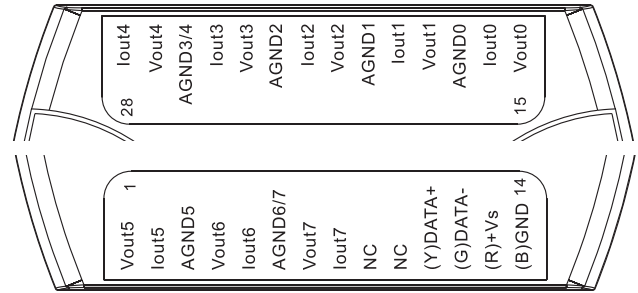
## I/O Specifications

| Model                     | M-7028  | M-7028D                |
|---------------------------|---|------------------------|
| <b>Analog Output</b>      |   |                        |
| Channels                  | 8   |                        |
| Current Output Wiring     | Source  |                        |
| Range                     | 0 ~ +5 V <sub>DC</sub><br>±5 V <sub>DC</sub><br>0 ~ +10 V <sub>DC</sub><br>±10 V <sub>DC</sub><br>0 ~ +20 mA<br>+4 ~ +20 mA |                        |
| Resolution                | 12-bit  |                        |
| Accuracy                  | ±0.1% of FSR  |                        |
| DA Output Response Time   | 10 ms per channel   |                        |
| Programmable Output Slope | Voltage   | 0.0625 ~ 512 V/Second  |
|                           | Current   | 0.125 ~ 1024 mA/Second |
| Current Output Capacity   | 500 Ω   |                        |
| Voltage Output Capability | 10 V @ 10 mA  |                        |
| Open Wire Detection       | Yes, for the 4 ~ 20 mA output   |                        |
| Power-on Value            | Yes, Programmable   |                        |
| Safe Value                | Yes, Programmable   |                        |

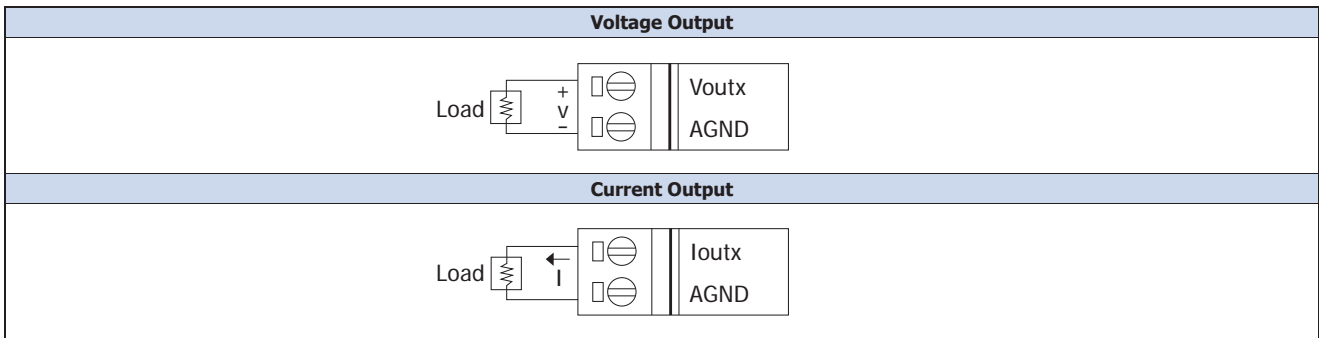
## Internal I/O Structure



## Pin Assignments



## Wire Connections



## Ordering Information

|                     |  |
|---------------------|--|
| <b>M-7028-G CR</b>  | 8-channel Analog Output Module using the DCON and Modbus Protocols (Gray Cover) (RoHS) |
| <b>M-7028D-G CR</b> | M-7028 with 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) |