

CONPROSYS Robust I/O Series  
Modbus-RTU RS-485 Remote I/O  
Thermocouple Input 16bit 10ch  
**CPSR-M7018ZGS**



\* Specifications, color and design of the products are subject to change without notice.

## Features

10 Analog Inputs  
Provides Stable and Consistent Temperature Output  
Current, Voltage, and Thermocouple Inputs  
High Over-voltage Input Protection  
High Common Voltage Protection  
Individual Channel Configuration  
Open Thermocouple Detection  
Built-in Dual Watchdog

The product is a 10-channel Analog Input module that measures thermocouples, voltage, and current inputs.

It has an RS-485 interface and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. The enhanced design improves thermocouple measurement accuracy. The module provides overvoltage protection of up to 240 Vrms and per-channel open wire detection for the thermocouple and +4 - +20 mA input channels.

- \* The contents in this document are subject to change without notice.
- \* Visit the CONTEC website to check the latest details in the document.
- \* The information in the data sheets is as of July, 2025.

## Specifications

### System specification

| Model                       | Description                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------|
| CPU Module                  |                                                                                     |
| Watchdog Timer              | Module, Communication (Programmable)                                                |
| Isolation                   |                                                                                     |
| Intra-module Isolation      | 3000 VDC                                                                            |
| EMS Protection              |                                                                                     |
| EFT (IEC 61000-4-4)         | ±4 kV for Power Line                                                                |
| ESD (IEC 61000-4-2)         | ±4 kV Contact for Each Terminal                                                     |
| Surge (IEC 61000-4-5)       | ±0.5 kV for Power Line                                                              |
| 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                    | Modbus RTU <sub>1</sub>                                                             |
| Power                       |                                                                                     |
| Reverse Polarity Protection | Yes                                                                                 |
| Input Range                 | +10 - +30 VDC                                                                       |
| Consumption                 | 1.0 W                                                                               |
| Mechanical                  |                                                                                     |
| Dimensions (mm)             | CPSR-M7018ZGS: 73(W) x 116(L) x 34(H)<br>CPSR-DB1820: 65(W) x 78(L) x 22(H)         |
| Installation                | DIN-Rail Mounting                                                                   |
| Environment                 |                                                                                     |
| Operating Temperature       | -25 - +75 °C                                                                        |
| Storage Temperature         | -40 - +85 °C                                                                        |
| Humidity                    | 10 - 95% RH, Non-condensing                                                         |
| Standard                    | VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA |

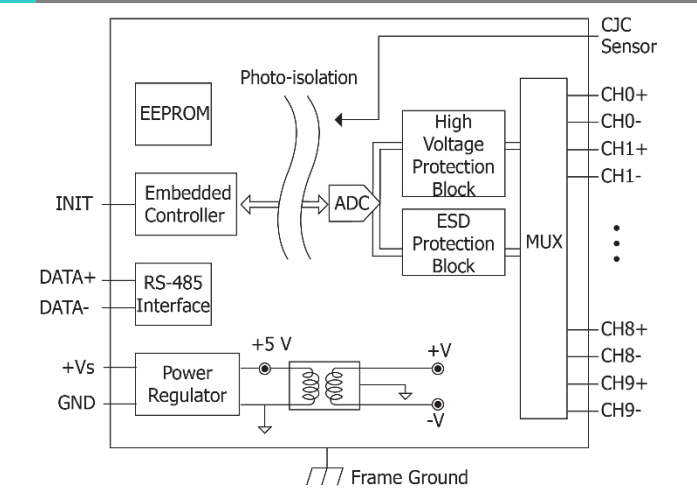
### I/O specification

| Item                             | Description                                                                          |
|----------------------------------|--------------------------------------------------------------------------------------|
| <b>Analog Output</b>             |                                                                                      |
| Channels                         | 10 Differential                                                                      |
| Type                             | Voltage, Current, Thermocouple                                                       |
| Sensor Types                     | Thermocouple: J, K, T, E, R, S, B, N, C, L, M, LDIN43710                             |
| Range                            | Voltage: ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V                              |
|                                  | Current: ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA (requires an optional external 125 Ω resistor) |
| Resolution                       | 16-bit                                                                               |
| Accuracy                         | 0.1% of FSR                                                                          |
| Sampling Rate                    | 10 Hz (Total)                                                                        |
| Input Impedance                  | > 400 kΩ                                                                             |
| Common Voltage Protection        | ±200 VDC                                                                             |
| Overvoltage Protection           | 240 Vrms                                                                             |
| Individual Channel Configuration | Yes                                                                                  |
| Open Wire Detection              | For Thermocouple and 4 - 20 mA                                                       |

Measuring temperature range

| Type Code | Thermocouple Type           | Temperature Range |
|-----------|-----------------------------|-------------------|
| 0E        | Type J Thermocouple         | -210°C ~ 760°C    |
| 0F        | Type K Thermocouple         | -270°C ~ 1372°C   |
| 10        | Type T Thermocouple         | -270°C ~ 400°C    |
| 11        | Type E Thermocouple         | -270°C ~ 1000°C   |
| 12        | Type R Thermocouple         | 0°C ~ 1768°C      |
| 13        | Type S Thermocouple         | 0°C ~ 1768°C      |
| 14        | Type B Thermocouple         | 0°C ~ 1820°C      |
| 15        | Type N Thermocouple         | -270°C ~ 1300°C   |
| 16        | Type C Thermocouple         | 0°C ~ 2320°C      |
| 17        | Type L Thermocouple         | -200°C ~ 800°C    |
| 18        | Type M Thermocouple         | -200°C ~ 100°C    |
| 19        | Type LDIN43710 Thermocouple | -200°C ~ 900°C    |

Internal I/O Structure



Wire Connections

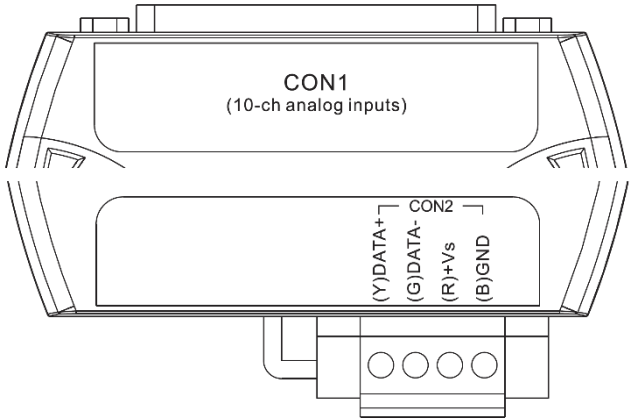
**Voltage Input**

**Current Input**

Requires an optional external 125 Ω resistor

**Thermocouple**

Pin Assignments



| CON1           |          |                                                                                      |                               |                |
|----------------|----------|--------------------------------------------------------------------------------------|-------------------------------|----------------|
| Pin Assignment | Terminal |  | No.                           | Pin Assignment |
| +5V            | 01       |                                                                                      | 14                            | AGND           |
| CJC            | 02       |                                                                                      | 15                            | CH 0+          |
| CH 0 -         | 03       |                                                                                      | 16                            | CH 1+          |
| CH 1 -         | 04       |                                                                                      | 17                            | CH 2+          |
| CH 2 -         | 05       |                                                                                      | 18                            | CH 3+          |
| CH 3 -         | 06       |                                                                                      | 19                            | CH 4+          |
| CH 4 -         | 07       |                                                                                      | 20                            | CH 5+          |
| CH 5 -         | 08       |                                                                                      | 21                            | CH 6+          |
| CH 6 -         | 09       |                                                                                      | 22                            | CH 7+          |
| CH 7 -         | 10       |                                                                                      | 23                            | CH 8+          |
| CH 8 -         | 11       |                                                                                      | 24                            | CH 9+          |
| CH 9 -         | 12       |                                                                                      | 25                            | N.C.           |
| N.C.           | 13       |                                                                                      | Shield                        | F.G.           |
|                |          |                                                                                      | 25-pin Female D-Sub Connector |                |

CPSR-DB1820

