Backplane Systems
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**ET-7019Z**
**PET-7019Z**

**ET-7219Z**
**PET-7219Z**

Ethernet I/O Module with 10-channels universal AI,
6/3-channels DO

## Features

- Built-in Web Server
- Web HMI
- Support for both Modbus TCP and Modbus UDP Protocols
- Communication Security
- 2-port Ethernet Switch for Daisy-Chain Topology
- Dual Watchdog
- Wide Operating Temperature Range: -25 ~ +75°C
- I/O Pair Connection
- Built-in I/O
  - AI: 10 Channels with 240 $V_{rms}$ Overvoltage Protection
  - DO: 6/3 Channels

## Introduction

The "Z" version is another milestone in the development of the thermocouple series and is a testament to the excellence of ICP DAS products. The ET-7019Z/PET-7019Z/ET-7219Z/PET-7219Z is specifically designed for extremely accurate thermocouple measurement and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. Current input and voltage input are both supported. Another feature is that its ten input channels can be individually configured for different kinds of analog input. Open thermocouple detection and ESD/EFT/Surge protection mechanisms are also included. The six/five digital output channels can be set as alarm outputs with short-circuit protection and overload protection.

## System Specifications

| Models | ET-7019Z | PET-7019Z | ET-7219Z | PET-7219Z |
|---|---|---|---|---|
| **Software** | | | | |
| Built-in Web Server | Yes | | | |
| Web HMI | Yes | | | |
| I/O Pair Connection | Yes | | | |
| **Communication** | | | | |
| Ethernet Port | 1 x RJ-45, 10/100 Base-TX | | 2 x RJ-45, 10/100 Base-TX, Swtich Ports | |
| PoE | - | Yes | - | Yes |
| Protocol | Modbus TCP, Modbus UDP | | | |
| Security | ID, Password and IP Filter | | | |
| Dual Watchdog | Yes, Module (0.8 seconds), Communication (Programmable) | | | |
| **LED Indicators** | | | | |
| for System Running | Yes | | | |
| for Ethernet Link/Act | Yes | | | |
| for DI/DO status | - | | Yes | |
| for PoE Power | - | Yes | - | Yes |
| **2-Way Isolation** | | | | |
| Ethernet | 1500 $V_{DC}$ | - | 1500 $V_{DC}$ | - |
| I/O | 2500 $V_{DC}$ | | | |
| **EMS Protection** | | | | |
| ESD (IEC 61000-4-2) | ±4 kV Contact for Each Terminal and ±8 kV Air for Random Point | | | |
| EFT (IEC 61000-4-4) | ±4 kV for Power Line | | ±2 kV for Power Line | |
| Surge (IEC 61000-4-5) | ±0.5 kV for Power Line | | ±2 kV for Power Line | |
| **Power** | | | | |
| Reverse Polarity Protection | Yes | | | |
| Powered from Terminal Block | 10 ~ 30 $V_{DC}$ | 12 ~ 48 $V_{DC}$ | 12 ~ 48 $V_{DC}$ | 12 ~ 48 $V_{DC}$ |
| Powered from PoE | - | Yes, IEEE 802.3af, Class1 | - | Yes, IEEE 802.3af, Class1 |
| Consumption | 2.6 W (Max.) | 2.9 W (Max.) | 3.4 W (Max.) | 3.6 W (Max.) |
| **Mechanical** | | | | |
| Dimensions (L x W x H) | 123 mm x 72 mm x 35 mm | | 120 mm x 76 mm x 38 mm | |
| Installation | DIN-Rail or Wall Mounting | | | |
| **Environment** | | | | |
| Operating Temperature | -25 ~ +75°C | | | |
| Storage Temperature | -30 ~ +80°C | | | |
| Humidity | 10 ~ 90% RH, Non-condensing | | | |

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## ▪ I/O Specifications

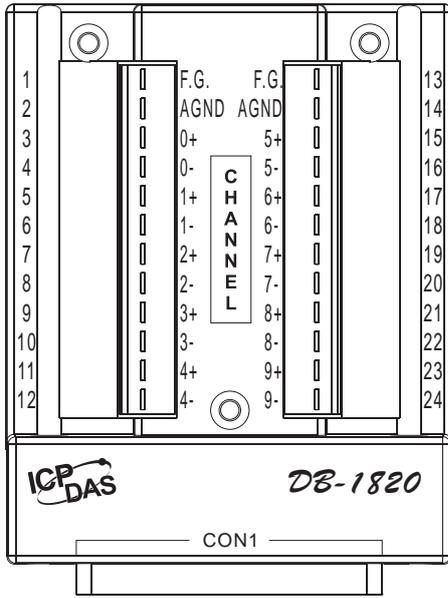| Models | ET-7019Z | PET-7019Z | ET-7219Z | PET-7219Z |
|---|---|---|---|---|
| **Thermocouple Input** | | | | |
| Channels | 10 (Differential) | | | |
| Sensor Type | +/-15 mV, +/-50 mV, +/-100 mV, +/-150 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-5 V, +/-10 V, | | | |
| | +/-20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper Selectable) | | | |
| | Thermocouple (J, K, T, E, R, S, B, N,  C, L, M, and L$_{DIN43710}$) | | | |
| Individual Channel Configuration | Yes | | | |
| Resolution | 16-bit | | | |
| Sampling Rate | 10 Samples/Second (Total) | | | |
| Accuracy | +/-0.1% of FSR or better | | | |
| Zero Drift | +/-0.5 µV/°C | | | |
| Span Drift | +/-25 ppm/°C | | | |
| Over Voltage Protection | 240 V$_{rms}$ | | | |
| Input Impedance | >300 kΩ | | | |
| Common Mode Rejection | 86 dB Min. | | | |
| Normal Mode Rejection | 100 dB | | | |
| Temperature Output Consistency | Yes | | | |
| Stable Temperature Output in the Field | Yes | | | |
| Open Wire Detection | Yes | | | |
| Virtual Channel to Channel Isolation | +/-400 V$_{DC}$ | | | |
| **Digital Output** | | | | |
| Channels | 6 | | 3 | |
| Type | Isolated Open Collector | | | |
| Sink/Source (NPN/PNP) | Sink | | | |
| Max. Load Current | 700 mA/Channel | | 650 mA/Channel | |
| Load Voltage | 5 V$_{DC}$ ~ 50 V$_{DC}$ | | | |
| Overvoltage Protection | 60 V$_{DC}$ | | | |
| Overload Protection | 1.4 A | | | |
| Short-circuit Protection | Yes | | | |
| Power-on Value | Yes, Programmable | | | |
| Safe Value | Yes, Programmable | | | |

## ▪ Wire Connections

**Voltage Input (Default)**
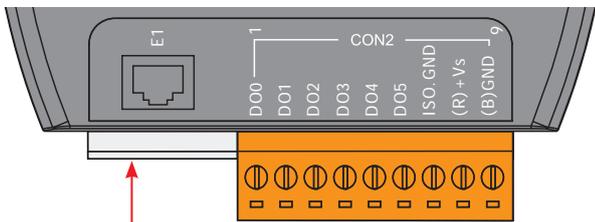
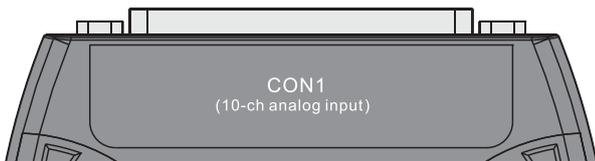**Thermocouple Input (Default)**

**Current Input**

| Digital Output | ON State Readback as 1 | OFF State Readback as 0 |
|---|---|---|
| Open Collector (Sink) | | |

# Pin Assignments

## DB-1820



CON1

## DN-1822



CON1

CON1
(10-ch analog input)

E1

CON2

DO0 DO1 DO2 DO3 DO4 DO5 ISO.GND (R)+Vs (B)GND
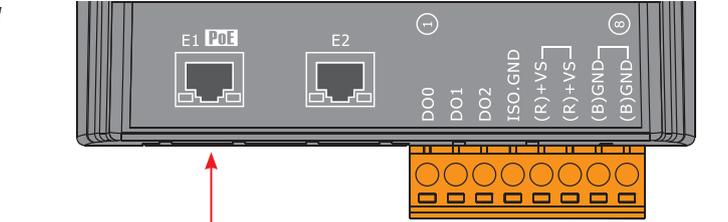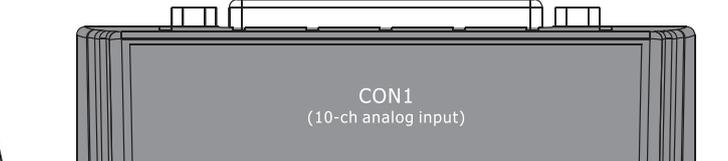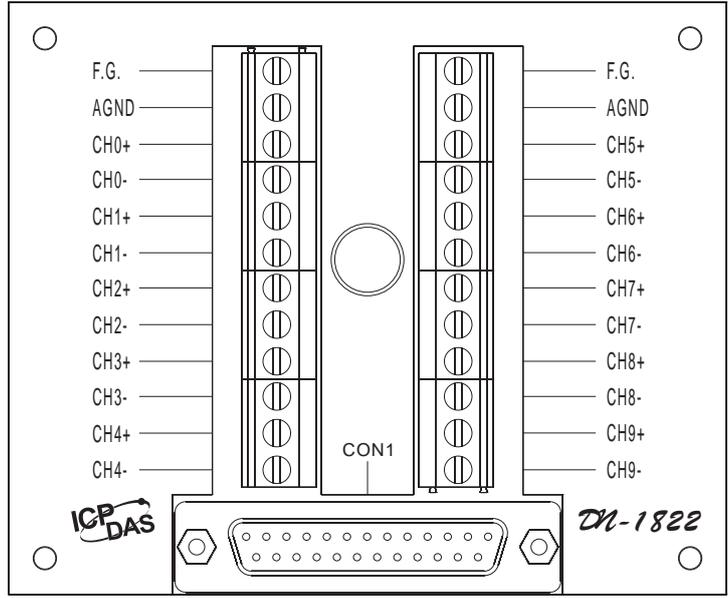
**ET-7019Z:** +10 ~ +30 V$_{DC}$
**PET-7019Z:** +12 ~ +48 V$_{DC}$

**PET-7019Z:** PoE

CON1
(10-ch analog input)

E1 PoE   E2

DO0 DO1 DO2 ISO.GND (R)+VS (R)+VS (B)GND (B)GND

**ET-7219:** +10 ~ +30 V$_{DC}$
**PET-7219:** +12 ~ +48 V$_{DC}$

**PET-7219:** PoE

# Dimensions (Units: mm)

## DB-1820



| | | |
|---|---|---|
| Front View | Rear View | Left Side View |



| | |
|---|---|
| Top View | Bottom View |

## DN-1822



| | |
|---|---|
| Front View | Rear View |



| | | |
|---|---|---|
| Right Side View | Left Side View | Top View |
| | | Bottom View |
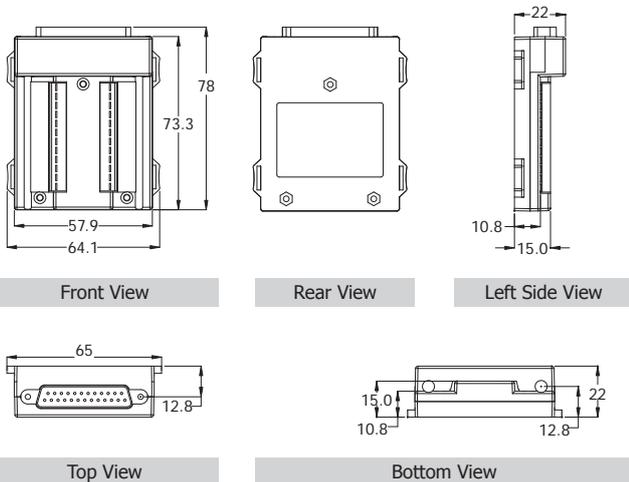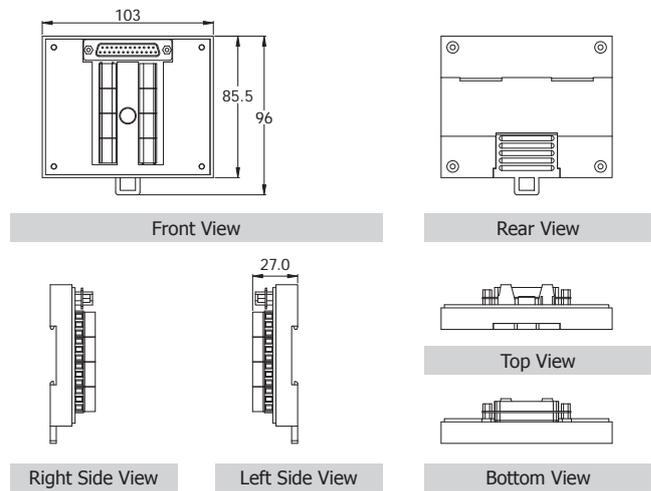
## ■ Ordering Information

| | |
|---|---|
| **ET-7019Z/S CR** | Ethernet I/O Module with 10-channels universal AI, 6-channels DO with DB-1820 Daughter Board (RoHS) |
| **PET-7019Z/S CR** | PoE Ethernet I/O Module with 10-channels universal AI, 6-channels DO with DB-1820 Daughter Board (RoHS) |
| **ET-7219Z/S CR** | Ethernet I/O Module with 2-port Ethernet Switch with 10-channels universal AI, 3-channels DO with DB-1820 Daughter Board (RoHS) |
| **PET-7219Z/S CR** | PoE Ethernet I/O Module with 2-port Ethernet Switch with 10-channels universal AI, 3-channels DO with DB-1820 Daughter Board (RoHS) |
| **ET-7019Z/S2 CR** | Ethernet I/O Module with 10-channels universal AI, 6-channels DO with DN-1822 Daughter Board and a 1.8 m Cable (RoHS) |
| **PET-7019Z/S2 CR** | PoE Ethernet I/O Module with 10-channels universal AI, 6-channels DO with DN-1822 Daughter Board and a 1.8 m Cable with PoE (RoHS) |
| **ET-7219Z/S2 CR** | Ethernet I/O Module with 2-port Ethernet Switch with 10-channels universal AI, 3-channels DO with DN-1822 Daughter Board and a 1.8 m Cable (RoHS) |
| **PET-7219Z/S2 CR** | PoE Ethernet I/O Module with 2-port Ethernet Switch with 10-channels universal AI, 3-channels DO with DN-1822 Daughter Board and a 1.8 m Cable with PoE (RoHS) |

Front    Rear

**ET-7019Z/S** = DB-1820 Connects to the ET-7019Z Directly
**PET-7019Z/S** = DB-1820 Connects to the PET-7019Z Directly
**ET-7219Z/S** = DB-1820 Connects to the ET-7219Z Directly
**PET-7219Z/S** = DB-1820 Connects to the PET-7219Z Directly

**ET-7019Z/S2** = DN-1822 Connects to the ET-7019Z Directly
**PET-7019Z/S2** = DN-1822 Connects to the PET-7019Z Directly
**ET-7219Z/S2** = DN-1822 Connects to the ET-7219Z Directly
**PET-7219Z/S2** = DN-1822 Connects to the PET-7219Z Directly

## ■ Accessories

**CD-25015**
15 cm Cable +DB-1820

**4PAPP-006-G**

**PET-7019Z/S +CD-25015 +4PAPP-006-G**

**CD-2518D**
1.8 m Cable +DB-1820

**PET-7019Z/S +CD-2518D**
**PET-7219Z/S +CD-2518D**