ET-7000/PET-7000 Series (Web based)

ET-7016
Regular Ethernet Version

PET-7016
PoE Version

Strain Gauge Multifunction Module

Features

- PoE and Regular Ethernet Options
- Built-in Web Server
- Web HMI
- Support for both Modbus/TCP and Modbus/UDP Protocols
- Communication Security
- Dual Watchdog
- Wide Operating Temperature Range: -25 °C ~ +75 °C
- I/O Pair Connection
- Built-in I/O
  - ☐ Strain Gauge Input: 2 Channels
  - ☐ AO: 1 Channels
  - ☐ DI/Counter: 2 Channels
  - ☐ DO: 2 Channels

Introduction

The ET-7016/PET-7016 is a web-based Ethernet I/O module that features a built-in web server which allows remote configuration, I/O monitoring and I/O control simply by using a regular web browser. Remote control is as easy as surfing the Internet. In addition, the web HMI function means that programming or HTML skills are no longer required so creating dynamic and attractive web pages for I/O monitoring and I/O control purposes will be more fun for engineers in the future. The ET-7016/PET-7016 offers easy and safe access for users at anytime and from anywhere, and also supports the Modbus/TCP protocol that ensures perfect integration with SCADA software. Furthermore, the PET-7016 features "PoE", meaning that not only is data transmitted through an Ethernet cable but also power making installation of the PET-7016 a piece of cake. Imagine no more unnecessary wires with only an Ethernet cable being required to take care of everything in the field.

The ET-7016/PET-7016 is a strain gauge module providing are 2 analog input channels, 1 excitation voltage output channel, 2 digital input channels and 2 digital output channels module. It provides a programmable input range on all analog inputs (+/-1 mV, +/-50 mV, +/-100 mV, +/-500 mV, +/-1 V, and +/-2.5 V) and supports full-bridge, half-bridge, and quarter-bridge. The range for each analog input is allowed to be configured individually. Excitation voltage output can be in the range of 0 ~ 10 V with a 60 mA driving efficiency. Digital outputs can also be set as alarm outputs. The ET-7016/PET-1016 can also provide long-distance strain gauge measurement that compensates for the loss of voltage resulting from long-distance measurements.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.

System Specifications

Models	ET-7016	PET-7016
Software		
Built-in Web Server	Yes	
Web HMI	Yes	
I/O Pair Connection	Yes	
Communication		
Ethernet Port	10/100 Base-TX with Auto MDI/MDI-X	
Protocol	Modbus/TCP, Modbus/UDP	
Security	ID, Password and IP Filter	
Dual Watchdog	Yes, Module (0.8 seconds), Communication (Programmable)	
LED Indicators		
L1 (System Running)	Yes	
L2 (Ethernet Link/Act)	Yes	
L3 (Ethernet 10/100 M Speed)	Yes	
PoE Power	-	Yes
2-Way Isolation		
Ethernet	1500 V_{DC}	-
I/O	2500 V_{DC}	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	
Power Requirements		
Reverse Polarity Protection	Yes	
Powered from Terminal Block	Yes, 10 ~ 30 V_{DC}	Yes, 12 ~ 48 V_{DC}
Powered from PoE	-	Yes, IEEE 802.3af, Class1
Consumption	4.2 W	5.3 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 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +80 °C	
Humidity	10 ~ 90% RH, Non-condensing	

☑ I/O Specifications

Strain Gauge Input

Channels	2 (Differential)
Type	+/-15 mV, +/-50 mV, +/-100 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-20mA, 10 ~ 20 mA, 4 ~ 20 mA
Strain Gauge Type	Full-Bridge, Half-Bridge, and Quarter-Bridge
Individual Channel Configuration	Yes
Resolution	16-bit
Sampling Rate	10 Samples/Second (Total)
Accuracy	+/-0.05%
Zero Drift	+/-0.5 µV/°C
Span Drift	+/-25 ppm/°C
Overvoltage Protection	30 V_{DC}
Input Impedance	Voltage Input: >400 kΩ, Current Input: 125 Ω
Common Mode Rejection	150 dB min.
Normal Mode Rejection	100 dB

Excitation Voltage Output

Channels	1
Output Range	0 ~ 10 V
Max. Output Load Current	60 mA
Accuracy	+/-0.05% of FSR
Drift	+/- 50 ppm/°C
Power-on Value	Yes

Digital Input/Counter

Channels		2
Contact		Wet (Sink or Source)
Off Voltage Level		+1 V_{DC} Max.
On Voltage Level		+3.5 V_{DC} ~ +50 V_{DC}
Counters	Channels	2
	Max. Count	4,294,967,285 (32-bit)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Overvoltage Protection		70 V_{DC}

Digital Output

Channels	2
Type	Isolated Open Collector (Sink)
Max. Load Current	700 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

☑ Excitation Voltage

Strain Gauge	Quarter-Bridge	Half-Bridge	Full-Bridge
120R	7.0V	7.0V	3.5V
350R	10V	10V	10V

☑ Ordering Information

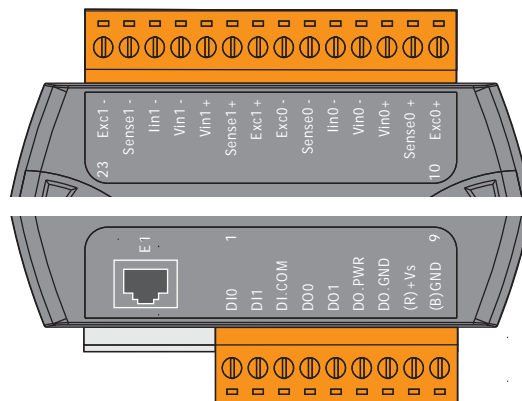|	
ET-7016 CR	2-channel strain gauge, 2-channel digital input and 2-channel digital Output module (RoHS)
PET-7016 CR	2-channel strain gauge, 2-channel digital input and 2-channel digital Output PoE module (RoHS)

☑ Accessories

	NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch; requires a 24 V_{DC} Input (RoHS)
	NS-205PSE CR	Unmanaged Ethernet switch with 4-PoE and 1 RJ45 uplink; requires a 48 V_{DC} Input (RoHS)
	NS-205PSE-24V CR	Unmanaged Ethernet switch with 4-PoE and 1 RJ45 uplink; requires a 24 V_{DC} Input (RoHS)
	MDR-20-24 CR	24V/1A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
	DIN-KA52F-48 CR	48V/0.52A, 25 W Power Supply with DIN-Rail Mounting (RoHS)

☑ Pin Assignments

Top row (23 ... 10): Exc1 -, Sense1 -, Iin1 -, Vin1 -, Vin1 +, Sense1 +, Exc1 +, Exc0 -, Sense0 -, Iin0 -, Vin0 -, Vin0+, Sense0 +, Exc0+

Bottom row (1 ... 9): DI0, DI1, DI.COM, DO0, DO1, DO.PWR, DO.GND, (R)+Vs, (B)GND

☑ Wire Connections

Bridge Sensor/Load Cell/Strain Gauge

Full Bridge	Half Bridge	Quarter Bridge
Vin+, Vin-, Exc +, Sense +, Sense -	Vin+, Vin-, Exc +, Sense +, Sense -, Exc -	Vin+, Vin-, Exc +, Sense +, Sense -, Exc - — Customer Supplied

Analog Input

Voltage Input	Current Input
mV/V (V): Vin+, Vin-	mA -: Vin+, Vin-, Iin-

Analog Output

Volt-Meter (V): Exc +, Sense +, Sense -, Exc -

Digital Input/ Counter	Readback as 1	Readback as 0
	+10 ~ +50 V_{DC}	OPEN or <4 V_{DC}
Sink	DIx 10K, DI.COM, To other channels	DIx 10K, DI.COM, To other channels
	+10 ~ +50 V_{DC}	OPEN or <4 V_{DC}
Source	DIx 10K, DI.COM, To other channels	DIx 10K, DI.COM, To other channels

Output Type	ON State Readback as 1	OFF State Readback as 0
Drive Relay	DO.PWR, DOx, DO.GND	DO.PWR, DOx, DO.GND
Resistance Load	DO.PWR, DOx, DO.GND	DO.PWR, DOx, DO.GND