UNIVERSAL REMOTE I/O MODULES, DIN RAIL MOUNTABLE MODBUS® I/O

HE359 Series

- **Connects Via 2-Wire RS485 Modbus RTU to Any Programmable Logic Controller (PLC)**
- **A Total of 31 I/O Modules May be Daisy-Chained on a Single RS485 Link**
- **Optical Isolation**
- **Response Time Suitable for Most Analog Applications**
- **Cost Effective Addition Per Point**
- **Fits in the Smallest Panels: 17.5 x 100 x 120 mm (0.69 x 3.94 x 4.72")**
- **12 Different I/O Modules Including:**
  - **DC In, DC Out**
  - **DC In, Relay Out**
  - **Analog In, Analog Out**
  - **RTD**
  - **Thermocouple**

(L to R) HE359DAC007, HE359ADC107 and HE359RTD100.

Remote I/O, or distributed I/O, offers several advantages over the traditional local I/O found on a Programmable Logic Controller (PLC). First, it allows you to locate the I/O modules close to the process that is being monitored or controlled. This greatly improves noise immunity, as the weak sensor signals are converted to digital signals before being transmitted long distances through a noisy plant environment. TRODEX universal remote I/O modules use a simple 2-wire RS485 link using Modbus RTU protocol, which is supported by most programmable logic controllers. A second advantage is that remote I/O greatly reduces the wiring at the main control panel, saving time and money when repairs and upgrades are necessary. Adding additional sensors and control signals is as easy as connecting to the already installed RS485 link and modifying the PLC program to utilize the new I/O. In addition, remote I/O allows you to expand your process control system beyond the local I/O capabilities of your PLC. You can add thermocouple, RTD, pressure, and flow sensors to a PLC that doesn't support these types of inputs. With remote I/O, your process application is no longer dependent on your controller choice.

SPECIFICATIONS

Number of Channels:
4: HE359ADC107, HE359ADC120, HE359DAC007, HE359RTD100, HE359THM100, HE359DIQ512
8: HE359ADC207, HE359ADV220, HE359DAC107, HE359DAC201, HE359THM200
12: HE359DIM610

Input Ranges:
±10V: HE359ADC107, HE359ADC207
±20 mA: HE359ADC120, HE359ADV220
12/24 Vdc: HE359DIM610, HE359DIQ512
RTD Pt-100, Ni-100, Pt-1000, Ni-1000; 0 to 2000 Ω, **0 to 500 Ω:** HE359RTD100
J, K, R, S, B, E, T, N; ±50 mV, ±100 mV, ±500 mV, **±1V:** HE359THM100, HE359THM200

Output Ranges:
0 to 20 mA or 0 to 10V: HE359DAC007, HE359DAC107
0 to 10V: HE359DAC201

OFF Voltage Level: 0 to 3 Vdc (HE359DIM610, HE359DIQ512)

ON Voltage Level: 10 to 30 Vdc (HE359DIM610, HE359DIQ512)

Resolution:
16-bit: HE359ADC107, HE359ADC207, HE359ADC120, HE359ADC220
1 µA or 1 mV: HE359DAC007, HE359DAC107
1 mV: HE359DAC201
0.1°C or 0.1 Ω: HE359RTD100
0.1°C or 0.001 mV: HE359THM100, HE359THM200

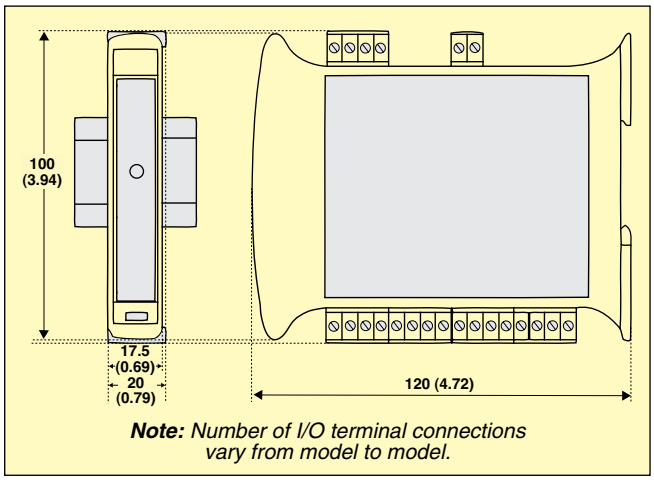
RTD Excitation Current (HE359RTD100):
350 µA, typical

Accuracy:
±0.1% FS: HE359RTD100, HE359THM100, HE359THM200

Load Resistance:
Voltage: >5 kΩ (HE359DAC007, HE359DAC107, HE359DAC201)
Current: <500 Ω (HE359DAC007, HE359DAC107)

Output Calibration:
Voltage: ±10 mV (HE359DAC007, HE359DAC107, HE359DAC201)
Current: ±20 µA (HE359DAC007, HE359DAC107)

Input Impedance:
1 MΩ: HE359ADC107, HE359ADC207
<50 Ω: HE359ADC120, HE359ADC220
4.7 kΩ: HE359DIM610, HE359DIQ512
>10 MΩ: HE359THM100, HE359THM200
Relay Outputs Per Module (HE359DIQ512):
4 (2 SPDT, 2 SPST)
Max Switching Power (HE359DIQ512):
2A @ 250 Vac, 2A @ 30 Vdc
Min Load (HE359DIQ512): 5 Vdc, 10 mA
Max Voltage (HE359DIQ512): 250 Vac, 110 Vdc
Linearity: ±0.1%
External Power Supply Voltage:
10 to 30 Vdc: HE359ADC107, HE359ADC207, HE359ADC120, HE359ADC220, HE359DIM610, HE359RTD100, HE359THM100, HE359THM200
18 to 30 Vdc: HE359DAC007, HE359DAC107, HE359DAC201
Required Power (Steady State):
30 mA @ 24 Vdc, Typical: HE359ADC107, HE359ADC207, HE359ADC120, HE359ADC220, HE359DAC201, HE359RTD100, HE359THM100, HE359THM200
30 mA @ 24 Vdc, Typical (100 mA max): HE359DAC007, HE359DAC107
35 mA @ 24 Vdc,Typical: HE359DIM610
45 mA @ 24 Vdc, Typical: HE359DIQ512
Required Power (Inrush): Negligible
Isolation: 2000 Vac for 60 seconds (input/power and input/comms)
PLC Update Rate:
Determined by Communications with OCS: HE359DIM610, HE359RTD100, HE359THM100, HE359HTM200
20 mS min: HE359DIQ512
Thermal Drift (HE359DAC201): 100 ppm max
Terminal Type: Screw type, removable
Storage Temperature: -40 to 85°C (-40 to 185°F)
Operating Temperature: -10 to 60°C (14 to 140°F)
Relative Humidity (Non-Condensing):
5 to 95%: HE359ADC107, HE359ADC207, HE359DAC007, HE359DAC107, HE359DAC201, HE359DIM610, HE359DIQ512, HE359RTD100, HE359THM100, HE359THM20
5 to 90%: HE359ADC120, HE359ADC220



Note: *Number of I/O terminal connections vary from model to model.*

Dimensions: 17.5 W x 100 H x 120 mm D (0.69 x 3.94 x 4.72")
Weight: 150 g (6 oz); 210 g (8.4 oz) HE359DIQ512 only
Communications: MODBUS®/RTU (binary) RS485 half duplex
Default Communications Parameters:
38400 baud, N, 8, 1, no h/s default modbus ID 1
Supported MODBUS Commands:
1, 2, 3, 4, 5, 6, 8, 15, 16

Accessories

MODEL NO.	DESCRIPTION
XBANS3575P	DIN rail, 35 x 7.5 mm x 2 m (1.4 x 0.30" x 6.6'), slotted
XBANS3575U	DIN rail, 35 x 7.5 mm x 2 m (1.4 x 0.30" x 6.6'), solid
XBANS3515P	DIN rail, 35 x 15 mm x 2 m (1.4 x 0.30" x 6.6'), slotted
XBANS3515U	DIN rail, 35 x 15 mm x 2 m (1.4 x 0.30" x 6.6'), solid
ELC-PS01	ELC power supply, 24 W, 1 A
ELC-PS02	ELC power supply, 24 W, 2 A

To Order

MODEL NO.	DESCRIPTION
HE359DIQ512	I/O module, 4 DC inputs (12/24 Vdc), 4 relay outputs (250 Vac, 30 Vdc, 2A max)
HE359DIM610	I/O module, 12 DC inputs (12/24 Vdc)
HE359ADC107	I/O module, 4 analog inputs, voltage (±10 Vdc), 1 mV resolution
HE359ADC120	I/O module, 4 analog inputs, current (4 to 20 mA), 1µA resolution
HE359ADC207	I/O module, 8 analog inputs, voltage (±10 Vdc), 1 mV resolution
HE359ADC220	I/O module, 8 analog inputs, current (4 to 20 mA), 1µA resolution
HE359RTD100	I/O module, 4 RTD inputs (Pt-100, Ni-100, Pt-1000, Ni-1000) or resistance inputs (0 to 2000 Ω), 0.1°C resolution
HE359THM100	I/O module, 4 thermocouple inputs (Types J, K, R, S, B, E, T, N) or millivolt inputs (±1000 mV, max), 0.1°C resolution
HE359THM200	I/O module, 8 thermocouple inputs (Types J, K, R, S, B, E, T, N) or millivolt inputs (±1000 mV, max), 0.1°C resolution
HE359DAC007	I/O module, 2 analog outputs, selectable between voltage (0 to 10 Vdc) and current (0 to 20 mA), 1 mV/1 µA resolution
HE359DAC107	I/O module, 4 analog outputs, selectable between voltage (0 to 10 Vdc) and current (0 to 20 mA), 1 mV/1 µA resolution
HE359DAC201	I/O module, 8 analog outputs, voltage (0 to 10 Vdc), 1 mV resolution

Ordering Examples: HE359THM100, *I/O module, 4 thermocouple inputs.*
HE359RTD100, *I/O module, 4 RTD inputs.*