



# SmartRail I/O – Ethernet Base HE599ETX300

## 1 INTRODUCTION

SmartRail I/O is a real-time, modular I/O system that supports a variety of Ethernet and Fieldbus Communication architectures. The SmartRail I/O Ethernet/IP Base (ETX300) utilizes Ethernet/IP communications, the popular Industrial Ethernet protocol based on Common Industrial Protocol (CIP) distributed by the Open DeviceNet Vendor Association (ODVA). Unlike other SmartRail I/O Bases (such as the HE599CNX100) which utilize Horner Controllers, the ETX300 supports third party PLCs and Ethernet IP Scanners, such as those from Rockwell Automation.

Each SmartRail I/O base can support up to 8 SmartRail I/O Modules, addressed with up to 256 digital and 64 analog I/O per base. The number of ETX300 bases allowed on a single network is defined by Controller memory limitations.

The ETX300 features a built-in unmanaged Ethernet switch for the convenience of wiring and system expansion. SmartRail I/O is not complex to configure – the ETX300 Ethernet/IP can be configured with a variety of manufacturer’s software suites that Support Ethernet/IP communications.

## 2 SPECIFICATIONS

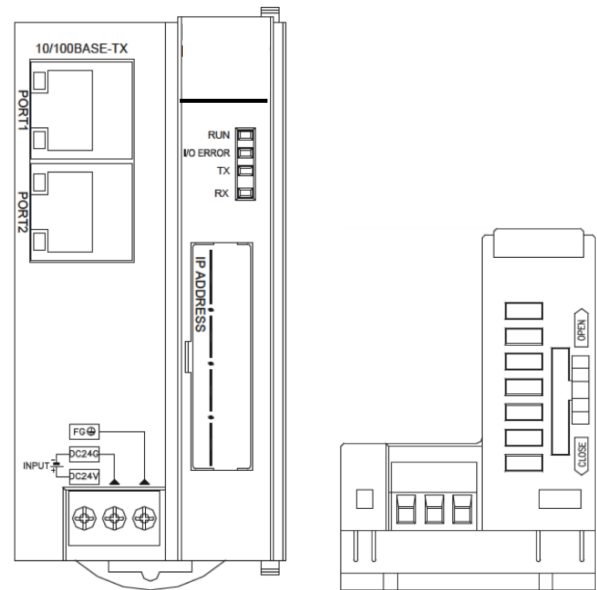
General Specifications			
Required Power (Steady State)	550mA @ 24 VDC <b>CLASS 2 POWER SUPPLY ONLY</b>		
Primary Power Range	19.2 – 28.8 VDC		
Output Power	1500mA @ 5 VDC		
Terminal Type	M3 Screw Type, Fixed		
Terminal Torque Rating	0.6 N-m (5.2 in-lb)		
Recommended Wire Size	14-18AWG (copper)		
Wire Stripping Length	7mm		
Relative Humidity	5 to 95% Non-condensing		
Operating Temp.	-5°C to +50°C		
Storage Temp.	-40°C to +75°C		
Dimensions (H x W x D)	90 x 45 x 60 mm [3.54 x 1.77 x 2.36 in]		
Weight	4oz. (114g)		
Vibration & Shock	Per IEC1131-2		
Noise Immunity	Per IEC1131-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4		
CE	Yes		
UL & C-UL	Class I, Div 2 Groups A, B, C & D		
Communications Specifications			
Data Transmission	10/100 Mbps		
Flow Control	Full/Half-duplex		
Connectors	RJ-45 (8P8C), 2 ports (AutoMDIX)		
Built-in Switch	Unmanaged type		
I/O Protocol	Ethernet/IP		
Inactivity Timeout	10sec		
IP configuration	Boot/p		
I/O Specifications			
Compatible I/O	SmartRail I/O		
Modules Supported (per base)	8		
Digital I/O, max (per base)	256 (Inputs + Outputs)		
Analog I/O, max (per base)	64 (Inputs + Outputs)		
I/O Limitations (per system)	2048 Digital In, 2048 Digital Out, 512 Analog In, 512 Analog Out		
Power Supplied for I/O modules	1500mA @ 5V DC maximum		
I/O Module 5V Power Usage (1500mA total available)			
8 DC In DIM510 30mA	16 DC In DIM610 40mA	32 DC In DIM710 50mA	8 DC Out DQM506 40mA
16 DC Out DQM606 60mA	32 DC Out DQM706 120mA	8 Relay Out DQM502 230mA	16 Relay Out DQM602 420mA
8DC + 8 Relay DIQ512 250mA	4 Analog In ADC170 50mA	4 RTD In RTD100 100mA	4 T-couple In THM100 100mA
4 Anlg. Out (mA) DAC106 120mA	4 Analog Out (V) DAC101 70mA	2 Analog In + 2 Analog Out MIX116 100mA	

## 3 INSTALLATION

### 3.1 Physical Installation

The ETX300 is compact (45mm W x 90mm H x 60mm D), and mounts on DIN-rail. Each I/O module installed adds width in increments of 20mm (for DC & analog I/O) or 27mm (for relay I/O).

Modules can be added either before or after the ETX300 base has been installed on the DIN-rail.



ETX300 Front View

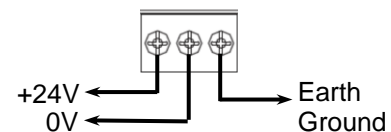
ETX300 Bottom View

I/O modules are physically added with the following procedure:

1. Remove the cover (if present) for the expansion connector from the ETX300 base, and for all but the rightmost I/O module.
2. Make sure that the locks on the top and bottom of the ETX300 base are slid all the way to the front in the "Open" position.
3. Align the first I/O module to the right of the ETX300 base using the alignment features in the plastic case.
4. After affixing the module securely, slide the locks on the top and bottom of the base all the way to back in the "Close" position.
5. Repeat steps 2-4 above until all modules are affixed.
6. Hang the ETX300 base and all the affixed I/O modules to the top of the DIN-rail, and secure them by sliding the DIN-rail latches to the "up" position.

### 3.2 Wiring

Each SmartRail ETX300 Base requires 24VDC power, and an appropriate Earth Ground connection for normal operation. Port 1 & Port 2 are AutoMDIX RJ45 ports (8P8C), compatible with both straight through and crossover cables. Horner APG offers high-quality cables in a variety of convenient lengths.



24VDC Power Supply & Earth Ground Terminals

## 5 SAFETY

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or Non-hazardous locations only

### WARNING - EXPLOSION HAZARD -

Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous

### WARNING - EXPLOSION HAZARD -

Substitution of any component may impair suitability for Class I, Division 2

### WARNING – POSSIBLE EQUIPMENT DAMAGE

Remove power from the I/O Base and any peripheral equipment connected to this local system before adding or replacing this or any module.

When found on the product, the following symbols specify:



**Warning:** Consult user documentation.



**Warning:** Electrical Shock Hazard.

- All applicable codes and standards need to be followed in the installation of this product.

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

**WARNING:** To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

**WARNING:** To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

**WARNING:** Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

**WARNING:** In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

**WARNING:** Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

## 6 TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

### North America:

Tel: 1-877-665-5666

Fax: 317 639-4279

Web: <http://www.heapg.com>

Email: [techsppt@heapg.com](mailto:techsppt@heapg.com)

### Europe:

Tel: +353-21-4321266

Fax: +353-21-4321826

Web: <http://www.horner-apg.com>

Email: [tech.support@horner-apg.com](mailto:tech.support@horner-apg.com)

No part of this publication may be reproduced without the prior agreement and written permission of Horner APG, Inc. Information in this document is subject to change without notice.