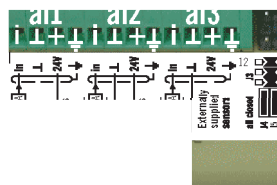




# ETH-A7-3A4IO < I

ethernode® analog/digital i/o



3A4IO comes in two versions that differ in their terminal assignments. One version that has thermocouple current inputs and a voltage input. The other version has 4..20mA

### Ethernet



Use a common LSA punch tool to connect either patch cable or wiring cable to the two LSA terminal strips provided. Colour assignment is per TIA-568B, only the left strip connections (1/2 + 3/6) are used on ethernode for data. The right strip can be used for non-standard remote powering, applying 48V AC or DC to the brown and blue terminals (either polarity) for a PoE supply.

### SERO: RS232, SER1: RS232 or RS422/485

SERO is RS232 only with no handshake signals. By default (EEPROM option) it is the terminal connection to the SYSMON software tool.

SER1 can be set by software to be RS232 with a handshake pair or RS422/485 full duplex. In RS485 mode the two jumper switches marked "HDUP" can be set (please set both!) to ON to use the A/B or Y/Z pair for both transmit and reception (**half duplex** operation).

If you are at the physical end of a cable in RS485 mode, please set the "TERM" jumper switch(es) to ON to **terminate** the line properly: One switch for half duplex, both for full duplex.

### Power and digital i/o

All terminals named 24V are interconnected as all terminals named 0V are.

In the center of the lower terminal row there's a pair of terminals marked PWR and +24V/0V. This is the power input from an external 24V supply or - in the PoE ethernet powered version - the 24V power output of the PoE supply. Please note that only 150 to 200mA are available from PoE, depending on ambient temperature for external relays and initiator supply. A foldback regulator limits the available current. If you need more power, then you might feed external power into the same pins. Please note that excessive voltages fed into this port (>28V) might destroy the PoE power supply.

To the left of the PWR are the four **outputs** that supply 24V from the 24V power "rail" into an external grounded load. Terminals (0V) are provided for the ground return. Outputs are short-circuit-proof FET switches BTS721L1 with auto current-limiting.

To the right are four digital **inputs**, all with an associated +24V-terminal to supply a mechanical switch, but two (I3, I4) only with a 0V (GND) terminal needed for electronic initiators (a space constraint).

### Analog inputs

0/4..20mA current inputs can be attached in various ways:

**Do not modify the ON/closed setting of any of the jumpers J3..J5 between the analog inputs and the serial lines!**

### Technical data

**Power input:** 24V +/-15%@150mA, fused 10A max. Or PoE supply option according to IEEE802.3af: 44..57V@240mA in turn supplying 24V at 150..200mA max. to external sensors.

**Ambient temperature:** -40..+50 °C.

**24V digital outputs:** Opto-isolated BTS721L1 high side driver, 1A+ per channel, can be joined for higher current. Current and overtemperature limited. Max. switching time 400µs.

**24V digital inputs:** Opto-isolated inputs 18..30V DC. Input low-pass filter to catch spikes < 100µs.

**Analog inputs 0/4..20mA:** 2- or 3-wire input. Input range 0..24mA to detect sensor or conditioner malfunction, for example 2mA with open sensor or 22mA with sensor short - see the datasheet of your signal conditioner circuit.

Gain error < 0.01% (~2µA), gain drift typ. < 115ppm (~2.3µA/K).

Offset drift < 0.02µV/K (~0.0008µA/K). Total input resistance 440 Ohm +/-1%.

Resistors are provided for a certain input protection. They will, however, not withstand a 24V voltage for longer than a

### Software Setup

To get connected, attach a PC with a serial terminal program, "wLGO" by preference, to the SER0 port at 19200bd 8N1. Alternatively, use Telnet over Ethernet by opening the previously set IP address of the device (Enter "help ipset" at the Sysmon monitor prompt).

The mCAT firmware on each device provides the 24V and analog i/o as logical devices in the "Express-I/O" hardware abstraction layer. See the mCAT documentation for details.

Express-I/O is also available for a quick test from SYSMON. Some examples:

- xlist modules Shows available hardware: BUS=CPU MODULE=01h TYPE=NETA7-DIN CHANNELS=04...
- xin cpu.1.0 Returns the value (0 or 1) of input 1 (channel 0) on module 1 (DIN) of the CPU-board
- xout cpu.2.3 1 Switches on (=1) output 4 of the output "module" 2 of the board
- xin cpu.3.1 Reads the analog value in microamps of input 2 (channel 1) of the cpu board
- xin i2c.1.2 Reads the digital input 3 (channel 2) of the inputs (1) of the ETH-414RHV extension to 3A4IO.