Vision™ OPLC™

Installation Guide
V570-57-T34

This guide provides basic information for Unitronics' controller V570-57-T34. The V570-57-T34 offers the following onboard I/Os via HE-10 connectors:

- 16 isolated Digital Inputs, configurable via wiring to include2 HSC/Shaft-encoder Inputs
- 2 Analog Inputs
- 16 isolated Transistor Outputs

Note that you cannot wire HE-10 I/Os directly into the PLC. HE-10 connector cables. DIN-rail connector units are available by separate order. Check the Accessories section in the V570-57-T34 technical specifications for additional information.

Using your own cable, you can also connect the PLC I/Os directly to your machine.

General Description

V570 OPLCs are programmable logic controllers that comprise a built-in operating panel containing a 5.7" Color Touchscreen which displays a virtual keyboard when the application requires the operator to enter data. Some models also offer an on-board I/O configuration.

Communications

- 2 isolated RS232/RS485 ports
- Isolated CANbus port
- The user may order and install an Ethernet port
- Communication Function Blocks include: SMS, GPRS, MODBUS serial/IP. Protocol FB enables PLC to communicate with almost any external device, via serial or Ethernet communications

I/O Options

V570 supports digital, high-speed, analog, weight and temperature measurement I/Os via:



- On-board I/O configuration
  Model-dependent
- Snap-in I/O Modules
  Plug into the back of the controller to provide an on-board I/O configuration
- I/O Expansion Modules
  Local or remote I/Os may be added via expansion port or CANbus.

Installation instructions and other data may be found in the module's technical specification sheet.

Information Mode

This mode enables you to:

- View & Edit operand values, COM port settings, RTC and screen contrast/brightness settings
- Calibrate the touchscreen
- Stop, initialize, and reset the PLC

To enter Information Mode, press the <i> button for several seconds.

Programming Software, & Utilities

The Unitronics Setup CD contains VisiLogic software and other utilities

- VisiLogic
  Easily configure hardware and write both HMI and Ladder control applications; the Function Block library simplifies complex tasks such as PID. Write your application, and then download it to the controller via the programming cable included in the kit.
- Utilities
  Includes UniOPC server, Remote Access for remote programming

and diagnostics, and DataXport for run-time data logging.

To learn how to use and program the controller, as well as use utilities such as Remote Access, refer to the VisiLogic Help system.

Removable Memory Storage	SD card: store datalogs, Alarms, Trends, Data Tables; export to Excel; backup Ladder, HMI & OS and use this data to 'clone' PLCs. For more data, refer to the *SD* topics in the VisiLogic Help system.
Data Tables	Data tables enable you to set recipe parameters and create datalogs.

Additional product documentation is in the Technical Library, located at www.unitronics.com.

Technical support is available at the site, and from support@unitronics.com.

Standard Kit Contents

- Vision controller
- 3 pin power supply connector
- 5 pin CANbus connector
- CANbus network termination resistor
- Battery (not installed)
- Programming cable + RS232 adapter
- Mounting brackets (x4)
- Rubber seal
- Unitronics' Setup CD

Danger Symbols

When any of the following symbols appear, read the associated information carefully.

Symbol	Meaning	Description
⚡	Danger	The identified danger causes physical and property damage.
⚠	Warning	The identified danger could cause physical and property damage.
Caution	Caution	Use caution.

- Before using this product, the user must read and understand this document.
- All examples and diagrams are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.
- Please dispose of this product according to local and national standards and regulations.
- Only qualified service personnel should open this device or carry out repairs.

⚡ Failure to comply with appropriate safety guidelines can cause severe injury or property damage.

⚠
- Do not attempt to use this device with parameters that exceed permissible levels.
- To avoid damaging the system, do not connect/disconnect the device when power is on.

Environmental Considerations

⚡
- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards given in the product's technical specification sheet.

⚠
- Ventilation: 10mm space required between controller's top/bottom edges & enclosure walls.
- Do not place in water or let water leak onto the unit.
- Do not allow debris to fall inside the unit during installation.
- Install at maximum distance from high-voltage cables and power equipment.

Inserting the Battery

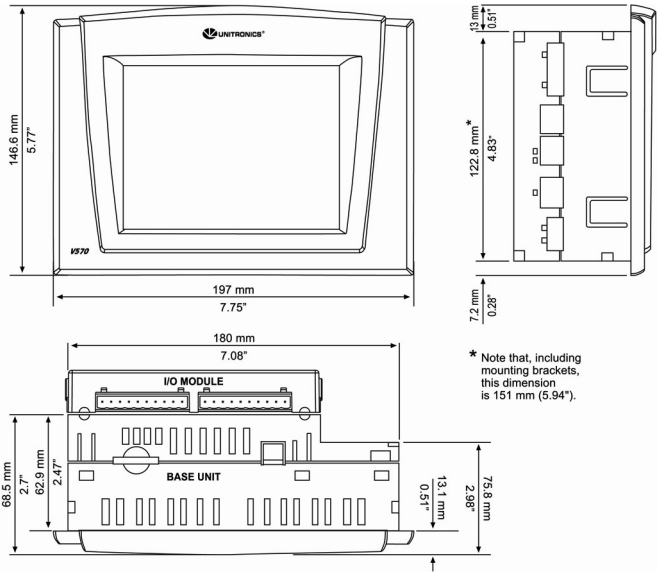
In order to preserve data in case of power-off, you must insert the battery.

The battery is supplied taped to the battery cover on the rear of the controller.

1. Remove the battery cover shown on page 4. The polarity (+) is marked on the battery holder and on the battery.
2. Insert the battery, ensuring that the polarity symbol on the battery is:
   - facing up
   - aligned with the symbol on the holder
3. Replace the battery cover.

Mounting

Dimensions



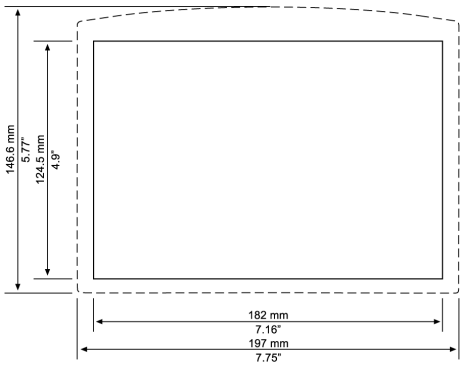
Note that the LCD screen may have a single pixel that is permanently either black or white.

Panel Mounting

Before you begin, note that the mounting panel cannot be more than 5 mm thick.

1. Make a panel cut-out according to the dimensions in the figure to the right.

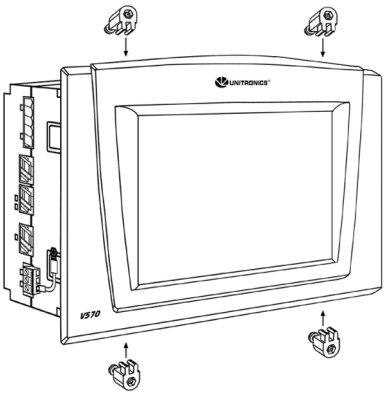
2. Slide the controller into the cut-out, ensuring that the rubber seal is in place.

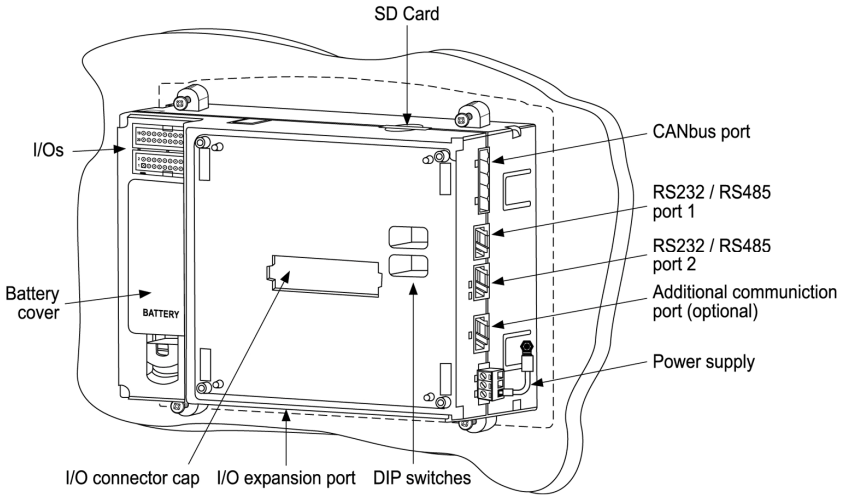


3. Push the 4 mounting brackets into their slots on the sides of the controller as shown in the figure to the right.

4. Tighten the bracket screws against the panel. Hold the bracket securely against the unit while tightening the screw.

5. When properly mounted, the controller is squarely situated in the panel cut-out as shown below.





Wiring

⚠	▪ Do not touch live wires.
⚠	▪ Install an external circuit breaker. Guard against short-circuiting in external wiring. ▪ Use appropriate circuit protection devices. ▪ Unused pins should not be connected. Ignoring this directive may damage the device. ▪ Double-check all wiring before turning on the power supply.
Caution	▪ To avoid damaging the wire, do not exceed a maximum torque of 0.5 N·m (5 kgf·cm). ▪ Do not use tin, solder, or any substance on stripped wire that might cause the wire strand to break. ▪ Install at maximum distance from high-voltage cables and power equipment.

Wiring Procedure

Use crimp terminals for wiring; use 26-12 AWG wire (0.13 mm ^{2}–3.31 mm^2).

1. Strip the wire to a length of 7±0.5mm (0.250–0.300 inches).
2. Unscrew the terminal to its widest position before inserting a wire.
3. Insert the wire completely into the terminal to ensure a proper connection.
4. Tighten enough to keep the wire from pulling free.

- Input or output cables should not be run through the same multi-core cable or share the same wire.
- Allow for voltage drop and noise interference with input lines used over an extended distance. Use wire that is properly sized for the load.

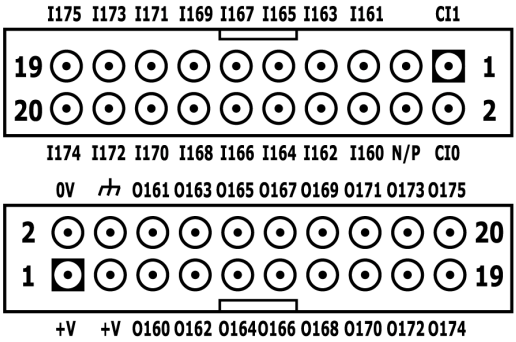
I/Os

This model comprises a total of 16 digital inputs, 2 analog inputs and 16 outputs.

1. Input functionality can be adapted as follows:
   All 16 inputs may be used as digital inputs. All 16 may be wired in a group, via a pin on the connector, as either npn or pnp. In addition, according to jumper settings and appropriate wiring:
   - Inputs 160 & 162 can function as either a high-speed counter, as part of a shaft-encoder, or as a normal digital input
   - Inputs 161 & 163 can function as either a counter reset, as part of a shaft-encoder, or as a normal digital input
   - If inputs 160 & 162 is set as a high-speed counter (without reset), inputs 161 & 163 can function as normal digital inputs
2. Output functionality is as follows:
   - All 15 (161-175) outputs are pnp outputs
   - Output 160 is an npn - High Speed Output

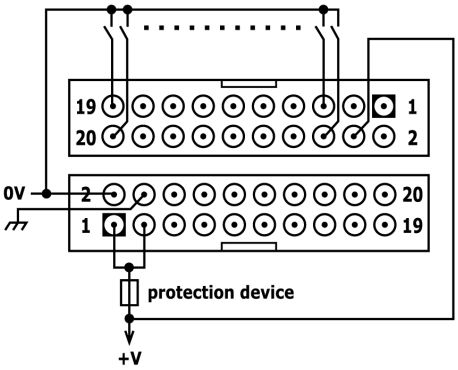
I/O Wiring (HE-10 connectors)

I/O Configuration

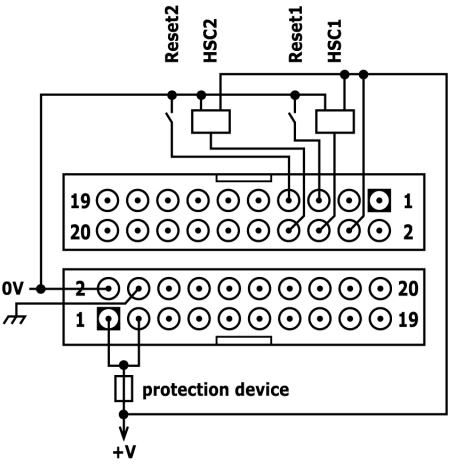


npn (sink) Input Wiring

Input wiring

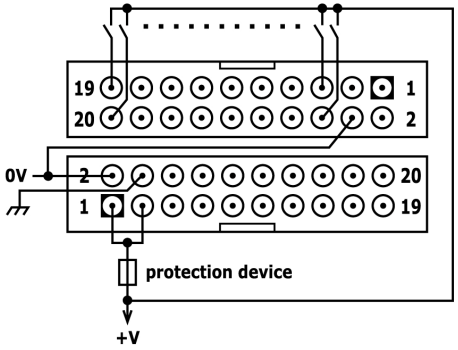


HSC input wiring

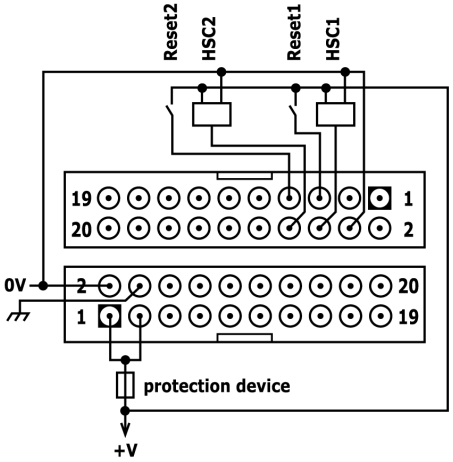


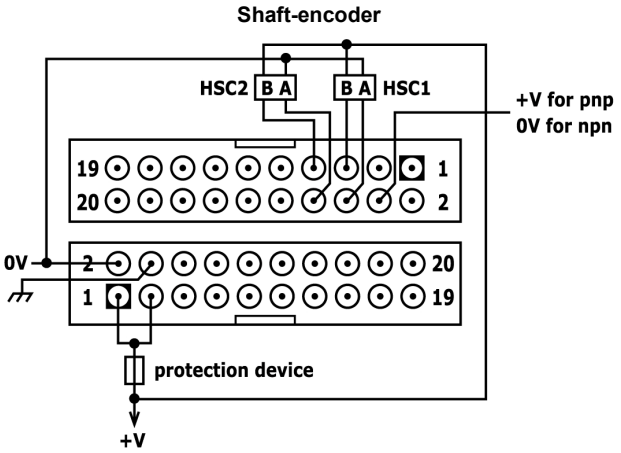
pnp (source) Input Wiring

Input wiring



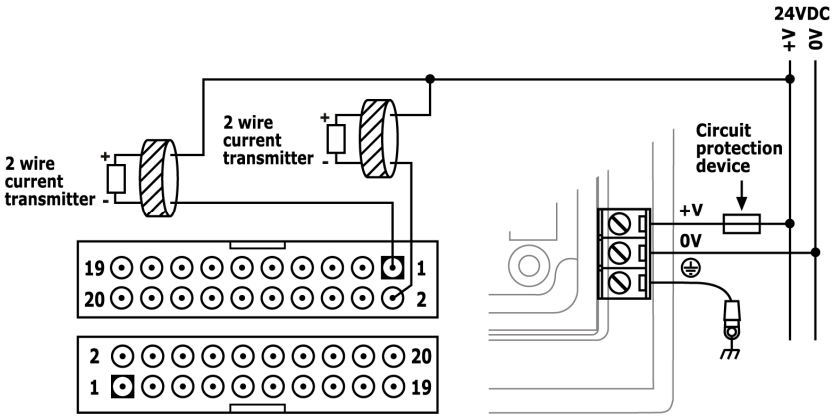
HSC input wiring



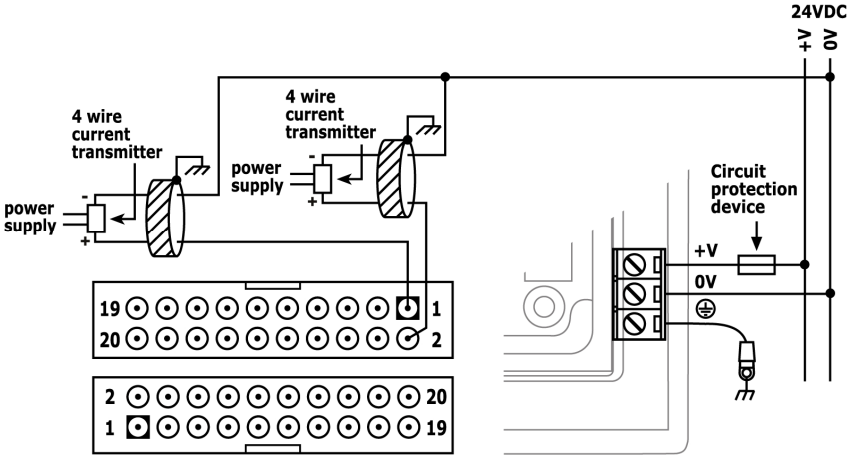


Analog Input Wiring

Analog input wiring, current (2-wire)



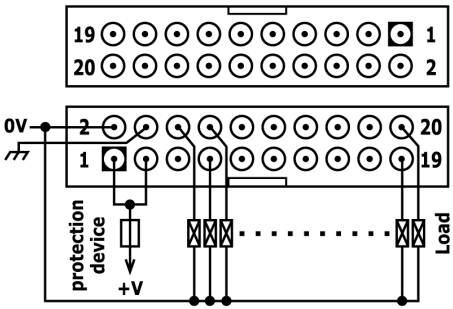
Analog input wiring, current/voltage (4-wire)



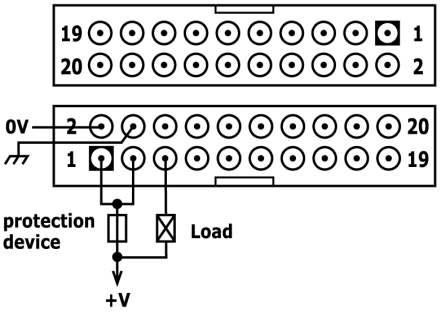
- Shields should be connected at the signal's source.
- Analog inputs are not isolated. They relate to the controller's main power supply.

Output Wiring

Transistor Outputs (pnp)



Transistor High Speed Output (npn)

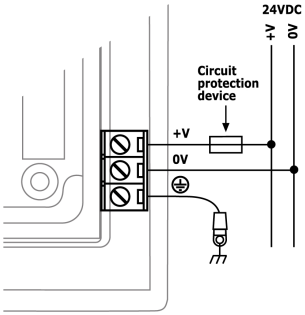
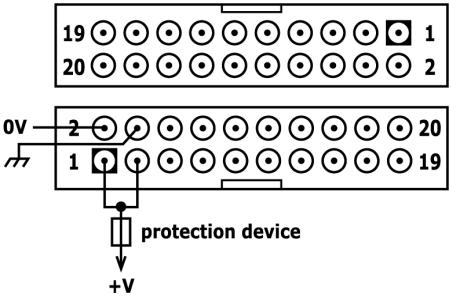


Power Supply

The controller and the digital IO require an external 24VDC power supply.

- A non-isolated power supply can be used if a 0V signal is connected to the chassis.

- Install an external circuit breaker. Guard against short-circuiting in external wiring.
- Double-check all wiring before turning on the power supply.
- Do not connect either the 'Neutral or 'Line' signal of the 110/220VAC to device's 0V pin.
- In the event of voltage fluctuations or non-conformity to voltage power supply specifications, connect the device to a regulated power supply.

Controller Power Supply	Digital I/O Power Supply
	

Earthing the Power Supply

To maximize system performance, avoid electromagnetic interference by:

- Mounting the controller on a metal panel.
- Earthing the controller's power supply: connect one end of a 14 AWG wire to the chassis signal; connect the other end to the panel.

Note: If possible, the wire used to earth the power supply should not exceed 10 cm in length. However, it is recommended to earth the controller in all cases.

Communication Port

This series comprises 2 RS232/RS485 serial ports and a CANbus port.

- Turn off power before making communications connections.

Caution

- Always use the appropriate port adapters.

The serial ports are type RJ-11 and may be set to either RS232 or RS485 via DIP switches, in accordance with the table shown below.

By factory default, the port is set to RS232, termination ON.

- Use RS232 to download programs from a PC, and to communicate with serial devices and applications, such as SCADA.
- Use RS485 to create a multi-drop network containing up to 32 devices.

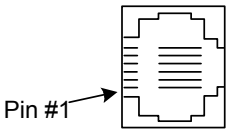
Pinouts

The pinouts below show the PLC port signals.

To connect a PC to a port that is set to RS485, remove the RS485 connector, and connect the PC to the PLC via the programming cable. Note that this is possible only if flow control signals are not used (which is the standard case).

RS232	
Pin #	Description
1*	DTR signal
2	0V reference
3	TXD signal
4	RXD signal
5	0V reference
6*	DSR signal

RS485**		**Controller Port**
Pin #	Description	
1	A signal (+)	
2	(RS232 signal)	
3	(RS232 signal)	
4	(RS232 signal)	
5	(RS232 signal)	
6	B signal (-)	



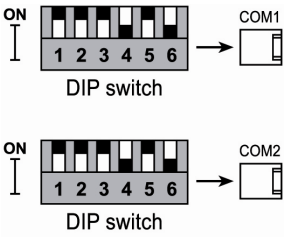
*Standard programming cables do not provide connection points for pins 1 and 6.

**When a port is adapted to RS485, Pin 1 (DTR) is used for signal A, Pin 6 (DSR) signal for signal B.

RS232/RS485: DIP Switch Settings

The settings below are for each COM port.

	Switch Settings					
	1	**2**	**3**	**4**	**5**	**6**
RS232*	**ON**	**ON**	**ON**	OFF	**ON**	OFF
RS485	OFF	OFF	OFF	**ON**	OFF	**ON**
RS485 with termination**	**ON**	**ON**	OFF	**ON**	OFF	**ON**

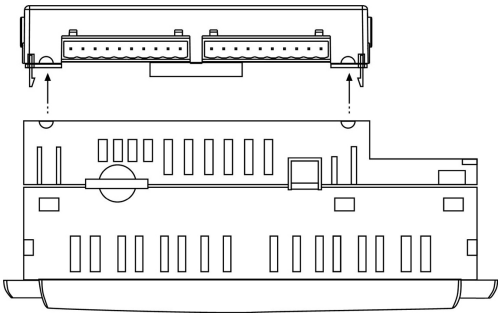


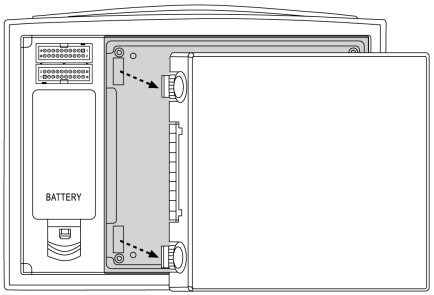
*Default factory setting

**Causes the unit to function as an end unit in an RS485 network

Removing a Snap-in I/O Module

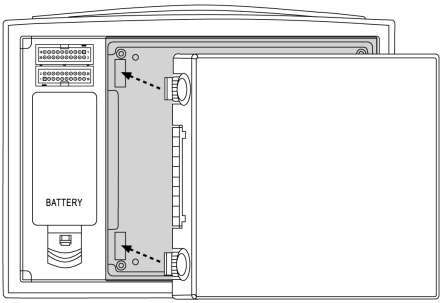
1. Locate the four buttons on the sides of the controller, two on either side.
2. Press the buttons and hold them down to open the locking mechanism.
3. Gently rock the module from side to side, easing the module from the controller.

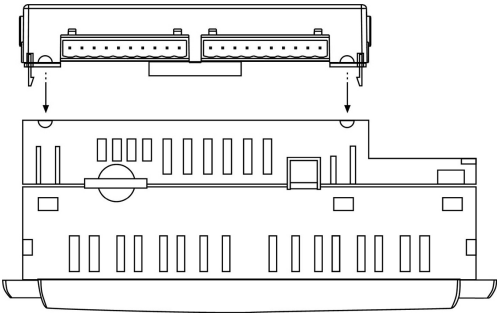




Re-installing a Snap-in I/O Module

1. Line the circular guidelines on the controller up with the guidelines on the Snap-in I/O Module as shown below.
2 Apply even pressure on all 4 corners until you hear a distinct ‘click’. The module is now installed. Check that all sides and corners are correctly aligned.





CANbus

These controllers comprise a CANbus port. Use this to create a decentralized control network using one of the following CAN protocols:

- CANopen: 127 controllers or external devices
- CANLayer 2
- Unitronics' proprietary UniCAN: 60 controllers, (512 data bytes per scan)

The CANbus port is galvanically isolated.

CANbus Wiring

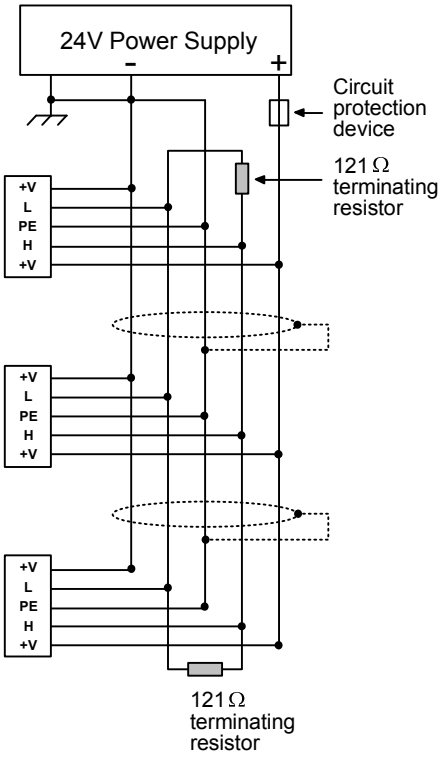
Use twisted-pair cable. DeviceNet® thick shielded twisted pair cable is recommended.

Network terminators: These are supplied with the controller. Place terminators at each end of the CANbus network.

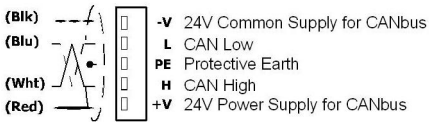
Resistance must be set to 1%, 121Ω, 1/4W.

Connect ground signal to the earth at only one point, near the power supply.

The network power supply need not be at the end of the network



CANbus Connector



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