

This guide provides basic information for Unitronics' Models 230/260/280/290 (Non-color Screens).

### General Description

Vision OPLCs are programmable logic controllers that comprise an integral operating panel containing a graphic LCD screen and a keyboard. All models offer the same PLC features. Operating panel features differ according to model.



V230  
LCD + Keyboard



V260  
LCD + Keyboard



V280  
Touchscreen + Keyboard



V290  
Touchscreen only

### Communications

- All Vision controllers comprise 2 RS232 ports and a CANbus port.
- The user can order and install an additional port. Available port types are: RS232/RS485, and Ethernet.

### I/O Options

Vision supports up to 171 digital, high-speed, and analog I/Os via:

- **Snap-in I/O Modules**  
Plug into the back of the controller to provide an on-board I/O configuration.
- **I/O Expansion Modules**  
Via I/O expansion port, connect up to 8 I/O Expansion Modules per controller.



### Programming

Write both the HMI and Ladder control application using VisiLogic freeware.



The Vision User Guide and the product's technical specification sheet contain additional information. These documents are located on the Unitronics' Setup CD. They may also be downloaded from the Technical Library at [www.unitronics.com](http://www.unitronics.com).

### Standard Kit Contents

Vision controller	Programming cable + RS232 adapter
Mounting brackets (x4)	Grounding hardware
3 pin power supply connector	Rubber seal
5-pin CANbus connector	Extra set of keyboard slides, according to model
CANbus network termination resistor	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.
<i>Caution</i>	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.

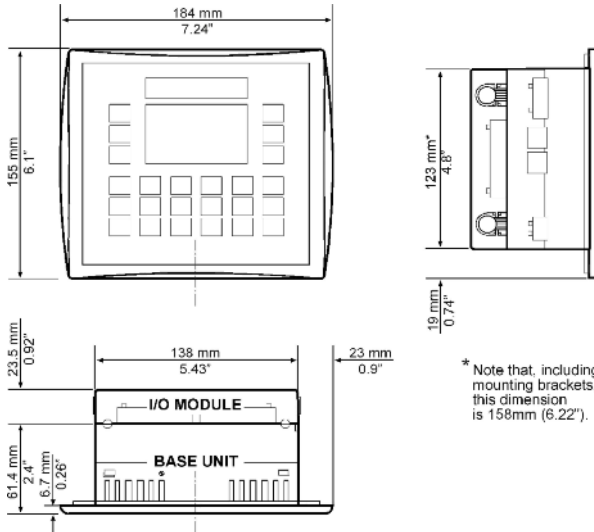
## Environmental Considerations

-  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.

# Mounting

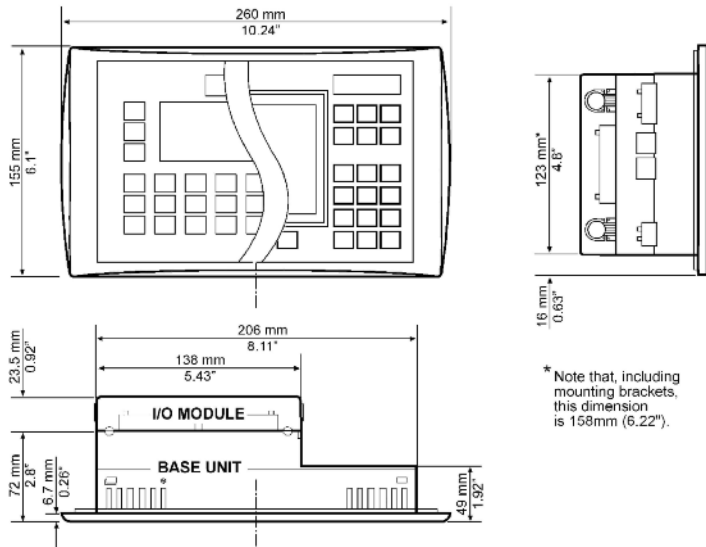
## Dimensions

### V230



\* Note that, including mounting brackets, this dimension is 158mm (6.22").

### V260/280/290



\* Note that, including mounting brackets, this dimension is 158mm (6.22").

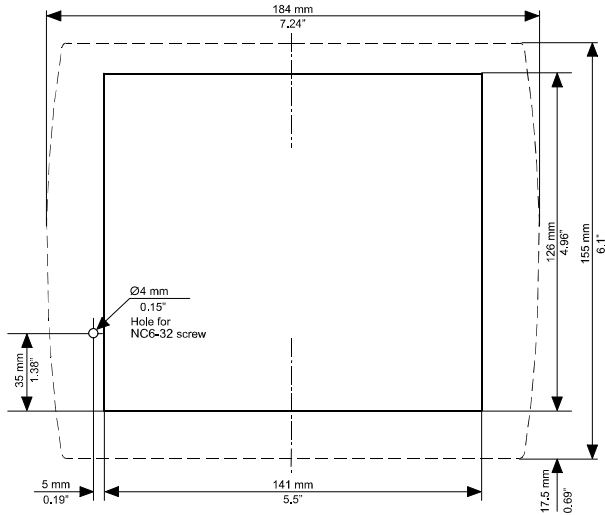
## Panel mounting

Before you begin, note that:

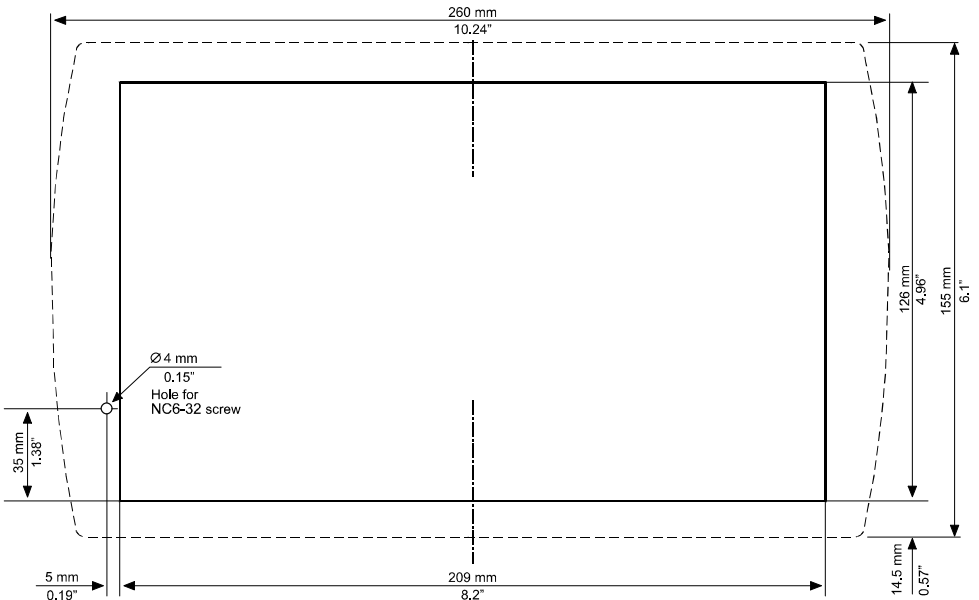
- The mounting panel cannot be more than 5 mm thick.
- To minimize electromagnetic interference, mount the controller on a metal panel and earth the power supply according to the details on page 5.

1. Make a panel cut-out that suits your model controller.

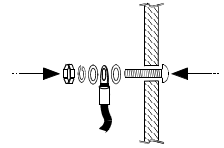
### V230 Cut-out Dimensions



### V260/280/290 Cut-out Dimensions



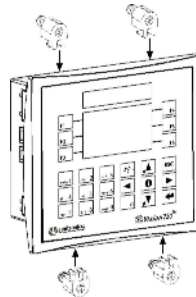
2. If you mount the controller on a metal panel, earth the power supply:
  - a. Bore a hole to suit the NC6-32 screw supplied with the kit.
  - b. Scrape panel paint away from the contact area to ensure a conductive connection.
  - c. Drive the screw into the hole.
  - d. Place the following hardware screw's shank, in the order shown in the accompanying figure: washer, ring cable shoe, second washer, spring, and nut.



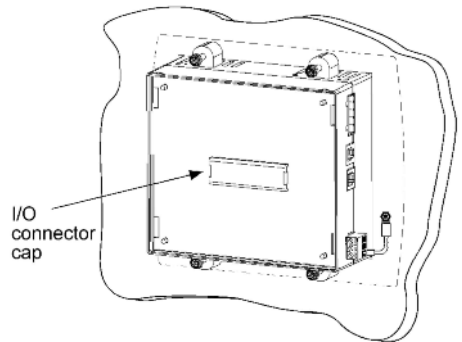
**Note:**

**The wire used to earth the power supply must not exceed 10 cm in length. If your conditions do not permit this, do not earth the power supply.**

3. Slide the controller into the cut-out, ensuring that the rubber seal is in place.
4. Push the 4 mounting brackets into their slots on the sides of the controller as shown in the figure to the right.
5. Tighten the bracket screws against the panel. Hold the bracket securely against the unit while tightening the screw.



6. When properly mounted, the controller is squarely situated in the panel cut-out as shown in the figure to the right.



## I/O Modules

I/Os are integrated into the system via Snap-in Modules and I/O Expansion Modules. Installation instructions and other data may be found in the module's technical specification sheet.

## Wiring: General



- Do not touch live wires.



- Unused pins should not be connected. Ignoring this directive may damage the device.

### 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.

Use crimp terminals for wiring; use 26-14 AWG wire (0.13 mm<sup>2</sup>–2.08 mm<sup>2</sup>).

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

## Power Supply

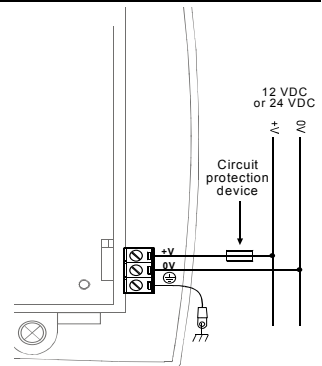
The controller requires an external 12 or 24VDC power supply. The permissible input voltage range is 10.2-28.8VDC, with less than 10% ripple.



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



- You must use an external circuit protection device.
- 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.
- To avoid electromagnetic interference, earth the power supply as described on page 5.



## Communication Ports



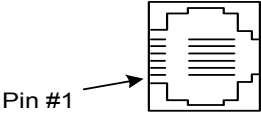
- Turn off power before making communications connections.
- Signals are related to the controller's 0V; this is the same 0V used by the power supply.

**Caution** ▪ Always use the appropriate port adapters.

### RS232

Vision comprises RJ-11 type serial ports. Use them to download programs from a PC, and to communicate with RS232 devices and applications, such as SCADA.

**Caution** ▪ The RS232 port is not isolated.

Adapter Pin #	Function	Controller Port
1	DTR signal*	
2	0V reference	
3	TxD signal	
4	RxD signal	
5	0V reference	
6	DSR signal*	

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

## CANbus

These controllers comprise a CANbus port. Use this to create a decentralized control network of up to 63 controllers, using either Unitronics' proprietary CANbus protocol or CANopen.

The CANbus port is galvanically isolated.

### CANbus Wiring

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

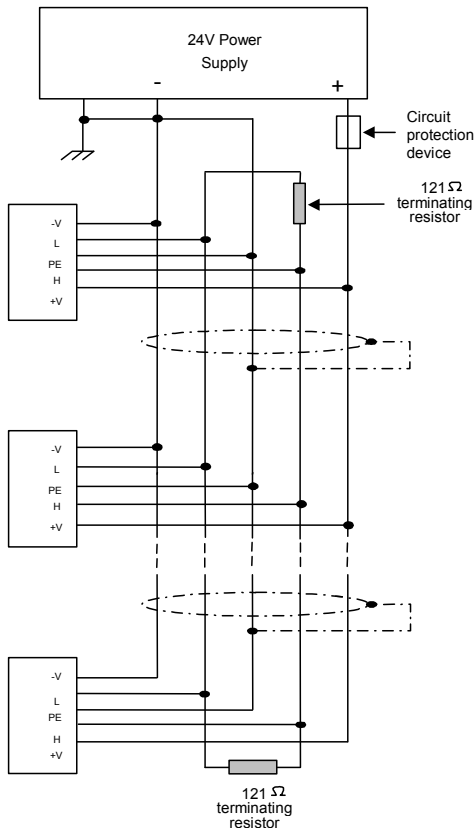
**Network terminators:** These are supplied with the controller. Place terminators at each end of the CANbus network.

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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