









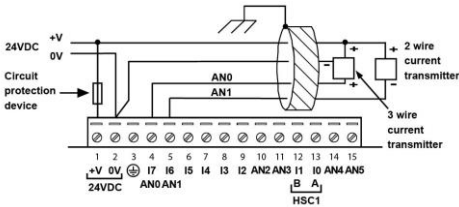




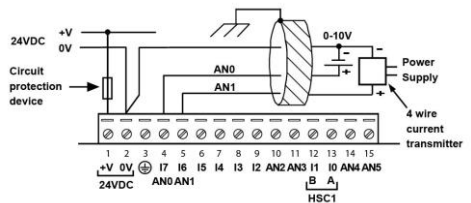


### Analog Input

Current connections (2/3-wire)



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

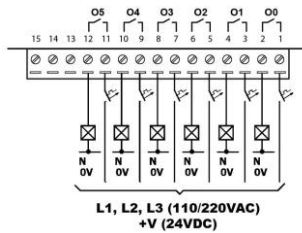


Shields should be connected at the signal's source.

The 0V signal of the analog input must be connected to the controller's 0V.

Please notice that AN2 to AN5 may be used as analog current inputs only.

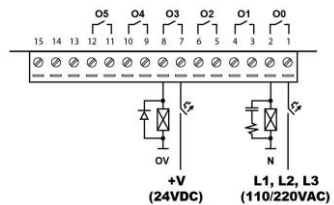
### Relay Outputs



### Increasing Contact Life Span

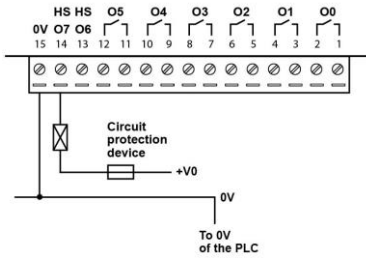
To increase the life span of the relay output contacts and protect the device from potential damage by reverse EMF, connect:

- A clamping diode in parallel with each inductive DC load
- An RC snubber circuit in parallel with each inductive AC load





**nPN Outputs (TR6 Only)**



**Power Supply**

The controller requires an external 24VDC power supply.



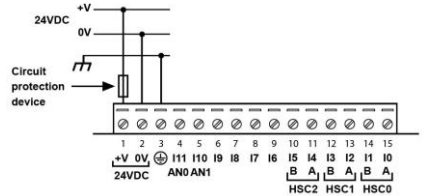
- The power supply must include double insulation. Outputs must be rated as SELV/PELV/Class2/Limited Power.

- Use separate wires to connect the functional earth line (pin 3) and the 0V line (pin 2) to the system earth ground.

- 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.



**Earthing the PLC+HMI**

To maximize system performance, avoid electromagnetic interference by:

- Mounting the controller on a metal panel.
- Connect each common and ground connection directly to the earth ground of your system.
- For ground wiring uses the shortest and thickest possible wire.

**Communication**

- **V130/V130J**  
These models comprise a built-in RS232/RS485 serial port (Port 1)
- **V430J/V350/V350J**  
These models comprise built-in ports: 1 USB and 1 RS232/RS485 (Port 1).

Note that physically connecting a PC to the controller via USB suspends RS232/RS485 communications via Port 1. When the PC is disconnected, RS232/RS485 resumes.

**RS232/RS485 Port**



- Turn off power before making communications connections.

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

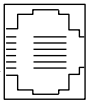
- Signals are related to the controller's 0V; the same 0V is used by the power supply.

**Caution** ▪ The serial port is not isolated. If the controller is used with a non-isolated external device, avoid potential voltage that exceeds  $\pm 10V$ .

- 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.

RS232		RS485**		Controller Port
Pin #	Description	Pin #	Description	
1*	DTR signal	1	A signal (+)	
2	0V reference	2	(RS232 signal)	
3	TXD signal	3	(RS232 signal)	
4	RXD signal	4	(RS232 signal)	
5	0V reference	5	(RS232 signal)	
6*	DSR 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, and Pin 6 (DSR) signal is used for signal B.

Note that it is possible to establish a PC to PLC connection using RS232 even when the PLC is set to RS485 (this eliminates the need to open the controller to set jumpers).

To do so, remove the RS485 connector (pins 1 & 6) from the PLC and connect a standard RS232 programming cable.

Note that this is possible only if DTR and DSR signals of RS232 are not used (which is the standard case).

**Setting RS232/RS485 Communication Parameters, V130/V350/V130J/V350J**

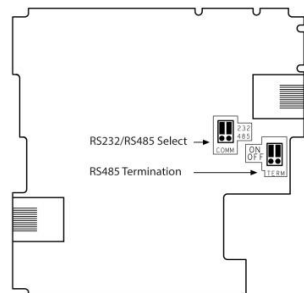
This port may be set to either RS232 or RS485 via jumper.

The accompanying figure shows the jumper factory default settings.

These jumpers may be used to:

- Set communications to RS485, by setting both COMM jumpers to '485'.
- Set RS485 termination, by setting both TERM jumpers to 'OFF'.

To access the jumpers, you must open the controller according to the instructions on page 11.



**Setting RS232/RS485 Communication Parameters, V430J**

This port may be set to either RS232 or RS485 via DIP switches:

The table shows the DIP switches factory default settings. Use the table to adapt the settings.

Switch Settings
-----------------

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

\* Default factory setting

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

## USB Port

**Caution**   ▪ The USB port is not isolated.  
Make sure that the PC and the controller are grounded to same potential.

The USB port may be used for programming, OS download, and PC access.

## Opening the Controller



- Before performing these actions, touch a grounded object to discharge any electrostatic charge.
- Avoid touching the PCB board directly. Hold the PCB board by its connectors.

1. Turn off the power supply, disconnect, and dismount the controller.
2. The back cover of the controller comprises 4 screws, located in the corners.  
Remove the screws, and pull off the back cover.

## Changing I/O Settings

After opening the controller and exposing the I/O board, you can change the jumper settings according to the table shown above.

## Changing Communication Settings (V130/V350/V130J/V350J Only)

1. To access the communication jumpers, hold the I/O PCB board by its top and bottom connectors and steadily pull the board off.
2. Locate the jumpers, and then change the settings as required, according to the jumpers' settings shown on page 10.

## Closing the Controller

1. Gently replace the board. Make certain that the pins fit correctly into their matching receptacle.  
Do not force the board into place; doing so may damage the controller.
2. Replace the back cover of the controller and fasten the corner screws.

**Note that you must replace the back cover securely before powering up the controller.**

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