UniStream™ CPU-for-Panel

Installation Guide
USC-P-B10

Unitronics' UniStream™ platform comprises control devices that provide robust, flexible solutions for industrial automation.

This guide provides basic installation information for the UniStream™ CPU-for-Panel.

Technical specifications may be downloaded from the Unitronics website.

The UniStream™ platform comprises CPU controllers, HMI panels, and local I/O modules that snap together to form an all-in-one Programmable Logic Controller (PLC).

Expand the I/O configuration using a Local Expansion Kit or remotely via CANbus.



CPU-for-Panel



CPU-for-Panel

CPUs are Programmable Logic Controllers (PLCs), the heart of the UniStream™ platform.

The CPU-for-Panel cannot operate independently. It must be plugged into the back of a UniStream™ HMI panel. The panel provides the CPU's power source. The CPU-for-Panel comprises:

- IO/COM Bus connector for interfacing Uni-I/O™ & Uni-COM™ modules
- Isolated RS485 and CANbus ports
- Backup battery

HMI Panels

Available in different dimensions

A high-resolution touch screen provides the operator interface for the system and the physical foundation for a PLC+HMI+I/Os all-in-one controller.

The DIN-rail structure on the panel's back is designed to physically support a CPU-for-Panel controller, Uni-I/O™ and/or Uni-COM™ modules.

Each panel comprises:

- AUX connector to support the CPU
- 1 audio-out 3.5mm jack
- 1 microSD slot
- 2 type A, USB host ports and 1 Mini-B USB device port
- 2 Ethernet ports, RJ45, 10/100 Mbps
- 1 power input connector, 12/24 VDC

I/O Options

Integrate I/Os into your system by using:

- On-board I/Os: snap onto the panel for an all-in-one configuration
- Local I/O via a Local Expansion Kit
- Remote I/O via EX-RC1

Programming Software

All-in-one UniLogic™ software, for hardware configuration, communications, and HMI/PLC applications, available as a free download from Unitronics web site.

Use of this product is subject to a Unitronics Controller License Agreement, a copy of which can be found at http://unitronics.com/unistream/Agreements/UniLic1.pdf

Before You Begin

Before installing the device, the installer must:

- Read and understand this document.
- Verify the Kit Contents.

Note that the CPU-for-Panel is intended to be installed on the back of an HMI panel.

Alert Symbols and General Restrictions

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.*

- 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.
- This product should be installed only by qualified personnel.



- 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.
- Do not connect/disconnect the device when power is on.

Environmental Considerations

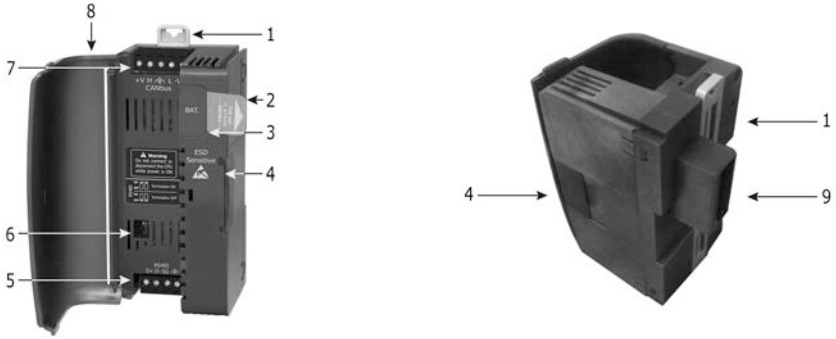


- Ventilation: 10mm (0.4”) of space is required between the device top/bottom edges and the enclosure’s walls.
- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards and limitations given in the product’s technical specification sheet.
- 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.

Kit Contents

- 1 CPU-for-Panel
- 1 lithium battery, 3V, CR2032.
  The battery is installed; pull out plastic tab to activate it.
- 1 RS485 terminal block
- 1 CANbus terminal block
- 1 CANbus termination resistor
- 1 set of module numbering stickers.
  Numbering instructions are in Uni-I/O™ & Uni-COM™ module installation guides.

CPU-for-Panel Diagram



CPU-for-Panel Front and Rear View

1	DIN-rail clips
2	Battery pull-tab (remove during installation)
3	Battery compartment cover
4	IO/COM Bus connector, shipped covered. Leave covered when not in use.
5	RS485 connector
6	RS485 termination selection DIP switch
7	CANbus connector
8	CPU door
9	CPU connector to panel

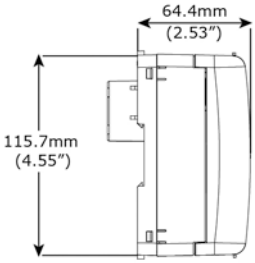
Installation Space Considerations

Allocate space for:

- The HMI Panel including the CPU and any modules that will be installed on it
- Opening the doors of the CPU and modules

For exact dimensions, please refer to the Mechanical Dimensions shown below.

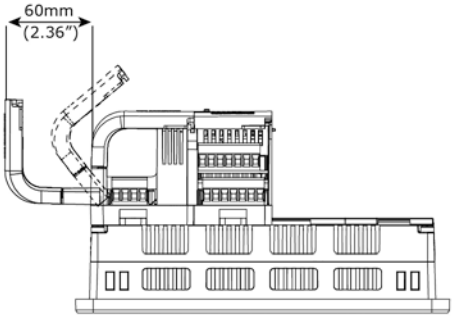
CPU-for-Panel Mechanical Dimensions



Side View



Front View



Battery: Back-up, Installation, and Replacement

Backup

In order to preserve back-up values for RTC and system data in the event of power off, the battery must be connected.

Battery Installation

The CPU is shipped with a battery installed, but with a plastic Battery pull-tab inserted in the battery compartment. Pull out the Battery pull-tab during installation in order to connect the battery.

Battery Replacement

⚠ ▪ Use proper precautions to prevent Electro-Static Discharge (ESD) while servicing the battery.

Caution ▪ To preserve back-up values for RTC and system data during battery replacement, the CPU-for-Panel must be powered from the HMI Panel.

1. Open the CPU door and remove the battery cover.
2. Remove the used battery and insert the new one, ensuring that the polarity is aligned with the polarity drawing as shown in the accompanying figure.
3. Replace the battery cover.
4. Dispose of the used battery according to local and national standards and regulations.



Battery Polarity

Installation

⚠
- Turn off system power before connecting or disconnecting any modules or devices.
- Use proper precautions to prevent Electro-Static Discharge (ESD).

The AUX connector on the back of the HMI panel provides the connection point for the CPU-for-Panel, including power.

The DIN-rail type structure on the back of the panel provides the physical support.

1. Remove the AUX connector cover from the panel (the cover may be saved for future use).
2. If a Uni-I/O™ or Uni-COM™ module, or a Local Expansion Kit is to be connected to the CPU-for-Panel, remove the IO/COM Bus connector cover.
3. Plug the CPU-for-Panel into the HMI Panel AUX connector. If an adjacent module is already installed, slide the CPU-for-Panel into place via the guide tunnels shown in the accompanying figure.
4. Verify that the DIN-rail clips located on the top and bottom of the CPU-for-Panel have snapped onto the DIN-rail structure on the back of the panel.



Removing the CPU-for-Panel

1. Power off the HMI Panel before removing the CPU-for-Panel.
2. Disconnect the RS485 and the CANbus connectors (if relevant).
3. Disconnect the module connected to the CPU (by pushing its Bus Connector lock to the right).
4. On the CPU-for-Panel pull the top DIN-rail clip up and the bottom clip down.
5. Pull the CPU-for-Panel out of its place.

About the CPU's IO/COM Bus Connector

The IO/COM Bus connector on right side of the CPU-for-Panel provides the electrical connection point for a Uni-I/O™ or Uni-COM™ module or Local Expansion kit. The connector is shipped covered by a protective cover, protecting the connector from debris, damage, and ESD.

⚠
- When no module is connected to the CPU, its IO/COM Bus Connector Cover must remain installed.
- Turn off system power before connecting or disconnecting modules.

Wiring

⚠
- This equipment is designed to operate only at SELV/PELV/Class 2/Limited Power environments.
- All power supplies in the system must include double insulation. Power supply outputs must be rated as SELV/PELV/Class 2/Limited Power.
- Do not connect either the 'Neutral' or 'Line' signal of the 110/220VAC to device's 0V point.
- Do not touch live wires.
- All wiring activities should be performed while power is OFF.
- Unused points should not be connected (unless otherwise specified). Ignoring this directive may damage the device.
- Double-check all wiring before turning on the power supply.

Caution
- To avoid damaging the wire, use 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.

Wiring Guidelines

In order to ensure that the device will operate properly and to avoid electromagnetic interference:

- Use a metal cabinet. Make sure the cabinet and its doors are properly earthed.
- Use wires that are properly sized for the load.

NOTE For detailed information, refer to the document System Wiring Guidelines, located in the Technical Library in the Unitronics' website.

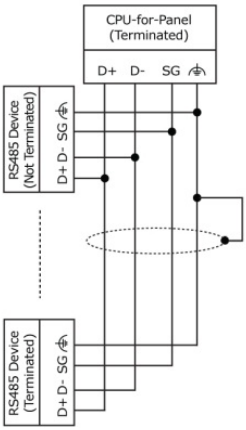
Communication Ports

⚠ ▪ Turn off power before making any communications connections.

RS485

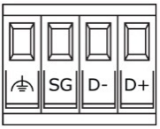
Use the RS485 port to create a multi-drop network.

The CPU-for-Panel is shipped with a 4 pin RS485 terminal block. This connector is marked with a pin assignment that is identical to the corresponding marking on the CPU-for-Panel.



RS485 Wiring

D+	Tx/Rx+ (B)
D-	Tx/Rx– (A)
SG	Signal Ground
⏚	Functional Ground



- Use shielded twisted-pair cable, in compliance with EIA RS485 specifications.
- When wiring each node, connect the cable shield to the functional ground point of the RS485 terminal block.

Caution ▪ In order to avoid ground-loops, do not connect the RS485 functional ground terminal to the earth of the system, as it is internally connected to the HMI panel's functional ground point.

RS485 Termination

Use the DIP switches shown in the panel diagram on page 3 to set the RS485 termination according to the accompanying table.

The device is shipped with both its DIP switches set to ON; change settings if the device is not at one of the ends of the RS485 network.

Position		DIP Switch State
1	2	
ON	ON	Terminated (factory default)
OFF	OFF	Not Terminated

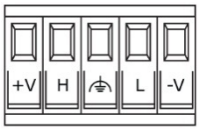
CANbus

Use the CANbus port for all CANbus communications including integration of Remote I/Os via EX-RC1.

The CPU-for-Panel is shipped with a 5 pin CANbus terminal block. This connector is marked with a pin assignment that is identical to the corresponding marking on the CPU-for-Panel.

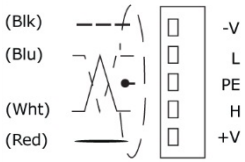
CANbus Wiring

+V CANbus Power Supply (see Note)
H CAN High
⏚ Functional Ground
L CAN Low
-V CANbus Power & Signal Common



- Use a shielded twisted-pair cable. DeviceNet®, shielded twisted-pair cable is recommended.
- When wiring each node, connect the cable shield to the functional ground point of the CANbus terminal block.
- Connect the CANbus cable shield to the system earth at only one point near the power supply.

DeviceNet® cable connection:

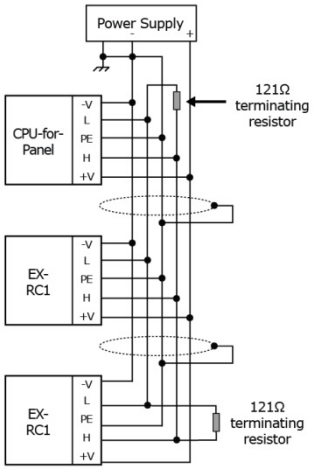


NOTE The CPU-for-Panel CANbus port is internally powered and does not require an external power-supply. This means that you can either connect the +V point in the CPU's CANbus connector to an external power supply, or leave it unconnected.

Do not use the +V point for any other purpose.

CANbus Termination

Place termination resistors at each end of the CANbus network. Resistance must be set to 121Ω, 1/4W, 1%.



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