

UniStream® HMI Panel

User Guide

USP-070-B08, USP-070-C08, USP-070-B10, USP-070-C10,
USP-104-B10, USP-104-C10, USP-104-M10,
USP-156-B10, USP-156-C10

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

This guide provides basic installation information for the UniStream® HMI 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.



UniStream®
HMI Panel



UniStream®
CPU-for-Panel
Uni-I/O™
Modules

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.

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 in accordance to a separate installation guide supplied with the CPU-for-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.

- Caution
 - The UniStream® HMI Panel is designed to comply with NEMA 4X, IP66 and IP65. Note however that the Audio Protection Seal must remain plugged in for NEMA 4X and IP66, in which case the audio sound level from the internal speaker is significantly reduced.

UL Compliance

The following section is relevant to Unitronics' products that are listed with the UL.

The following models: USP-070-B08, USP-070-C08, USP-104-B10, USP-104-C10, USP-104-M10, USP-156-B10, USP-156-C10 are UL listed for Hazardous Locations.

The following models: USP-070-B08, USP-070-C08, USP-070-B10, USP-070-C10,

USP-104-B10, USP-104-C10, USP-104-M10, USP-156-B10, USP-156-C10 are UL listed for Ordinary Location.

UL Ordinary Location

In order to meet the UL ordinary location standard, panel-mount this device on the flat surface of Type 1 or 4 X enclosures

UL Ratings, Programmable Controllers for Use in Hazardous Locations, Class I, Division 2, Groups A, B, C and D

These Release Notes relate to all Unitronics products that bear the UL symbols used to mark products that have been approved for use in hazardous locations, Class I, Division 2, Groups A, B, C and D.

Caution

▪ This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D, or Non-hazardous locations only.



▪ Input and output wiring must be in accordance with Class I, Division 2 wiring methods and in accordance with the authority having jurisdiction.



▪ **WARNING—Explosion Hazard—**substitution of components may impair suitability for Class I, Division 2.

▪ **WARNING – EXPLOSION HAZARD –** Do not connect or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

▪ **WARNING –** Exposure to some chemicals may degrade the sealing properties of material used in Relays.

▪ This equipment must be installed using wiring methods as required for Class I, Division 2 as per the NEC and/or CEC.

Panel-Mounting

For programmable controllers that can be mounted also on panel, in order to meet the UL Haz Loc standard, panel-mount this device on the flat surface of Type 1 or Type 4X enclosures.

Communication and Removable Memory Storage

When products comprise either USB communication port, SD card slot, or both, neither the SD card slot nor the USB port are intended to be permanently connected, while the USB port is intended for programming only.

Removing / Replacing the battery

When a product has been installed with a battery, do not remove or replace the battery unless the power has been switched off, or the area is known to be non-hazardous.

Please note that it is recommended to back up all data retained in RAM, in order to avoid losing data when changing the battery while the power is switched off. Date and time information will also need to be reset after the procedure.

UL des zones ordinaires:

Pour respecter la norme UL des zones ordinaires, monter l'appareil sur une surface plane de type de protection 1 ou 4X

Certification UL des automates programmables, pour une utilisation en environnement à risques, Class I, Division 2, Groups A, B, C et D.

Cette note fait référence à tous les produits Unitronics portant le symbole UL - produits qui ont été certifiés pour une utilisation dans des endroits dangereux, Classe I, Division 2, Groupes A, B, C et D.

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- Attention**
- Cet équipement est adapté pour une utilisation en Classe I, Division 2, Groupes A, B, C et D, ou dans Non-dangereux endroits seulement.
 - Le câblage des entrées/sorties doit être en accord avec les méthodes de câblage selon la Classe I, Division 2 et en accord avec l'autorité compétente.
 -  **AVERTISSEMENT: Risque d'Explosion** – Le remplacement de certains composants rend caduque la certification du produit selon la Classe I, Division 2.
 - **AVERTISSEMENT - DANGER D'EXPLOSION** - Ne connecter pas ou ne débranche pas l'équipement sans avoir préalablement coupé l'alimentation électrique ou la zone est reconnue pour être non dangereuse.
 - **AVERTISSEMENT** - L'exposition à certains produits chimiques peut dégrader les propriétés des matériaux utilisés pour l'étanchéité dans les relais.
 - Cet équipement doit être installé utilisant des méthodes de câblage suivant la norme Class I, Division 2 NEC et /ou CEC.
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Montage de l'écran:

Pour les automates programmables qui peuvent aussi être monté sur l'écran, pour pouvoir être au standard UL, l'écran doit être monté dans un coffret avec une surface plane de type 1 ou de type 4X.

Communication et de stockage amovible de mémoire (carte mémoire)

Produits comprend un port USB de communication, soit un port carte SD ou les deux, ni le port SD, ni le port USB ne sont censés être utilisés en permanence, tandis que l'USB est destiné à la programmation uniquement.

Retrait / Remplacement de la batterie

Lorsqu'un produit a été installé avec une batterie, retirez et remplacez la batterie seulement si l'alimentation est éteinte ou si l'environnement n'est pas dangereux.

Veillez noter qu'il est recommandé de sauvegarder toutes les données conservées dans la RAM, afin d'éviter de perdre des données lors du changement de la batterie lorsque l'alimentation est coupée. Les informations sur la date et l'heure devront également être réinitialisées après la procédure

Kit Contents

- 1 HMI Panel: 7", 10.4" or 15.6"
- 7" panel, includes 4 mounting brackets
- 10.4" panel, includes 8 mounting brackets and 2 panel supports
- 15.6" panel, includes 10 mounting brackets and 2 panel supports
- 1 panel mounting seal
- 1 power terminal block

HMI Panel Diagram



HMI Panel Front and Rear View

1	Screen Protection	A plastic sheet attached to the HMI Panel screen for protection. Remove it during installation of the HMI Panel.
2	Audio Outlet Seal	Prevents dust accumulation in the small outlet that serves the HMI panel's embedded speaker.

Caution ▪ Keep the seal in place when the embedded speaker is not used. The seal must be kept in place for IP66 and NEMA 4X compliance.

3	DIN-rail structure	Physical support for the CPU-for-Panel, Uni-I/O™ and/or Uni-COM™ modules.
4	12/24VDC power input	Connection point for the HMI Panel's power source. Connect the Terminal Block supplied with the kit to the end of the power cable.
5	2 Ethernet (RJ45) ports	Support high-speed Ethernet communications.
6	USB Device	Use for application download and direct PC-UniStream® communication.
7	2 USB Host ports	Provide the interface for external USB devices.
8	microSD slot	Supports standard microSD cards.
9	Audio-out jack	In addition to the HMI Panel's embedded speaker outlet, this 3.5mm Audio-out jack enables you to connect external amplifiers and speakers.
10	Auxiliary connector (AUX)	Provides the electrical connection for the CPU-for-Panel.
11	Support Slots	Snap the supports (supplied with 10.4" and 15.6" panels only) into these slots, to hold it upright on a desk while programming.

Installation Space Considerations

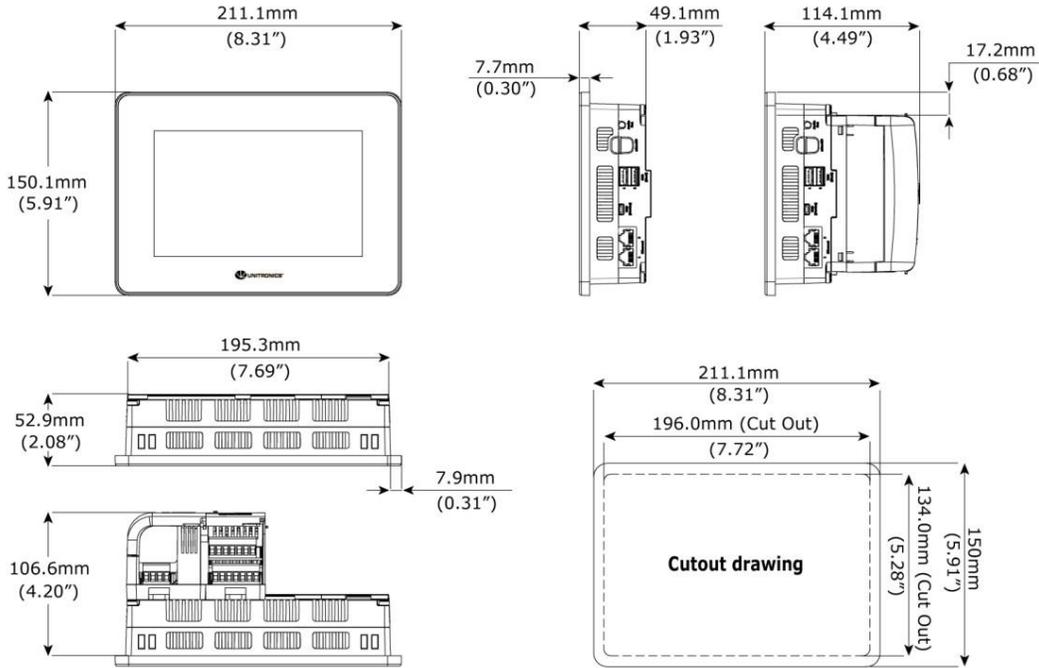
Allocate space for:

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

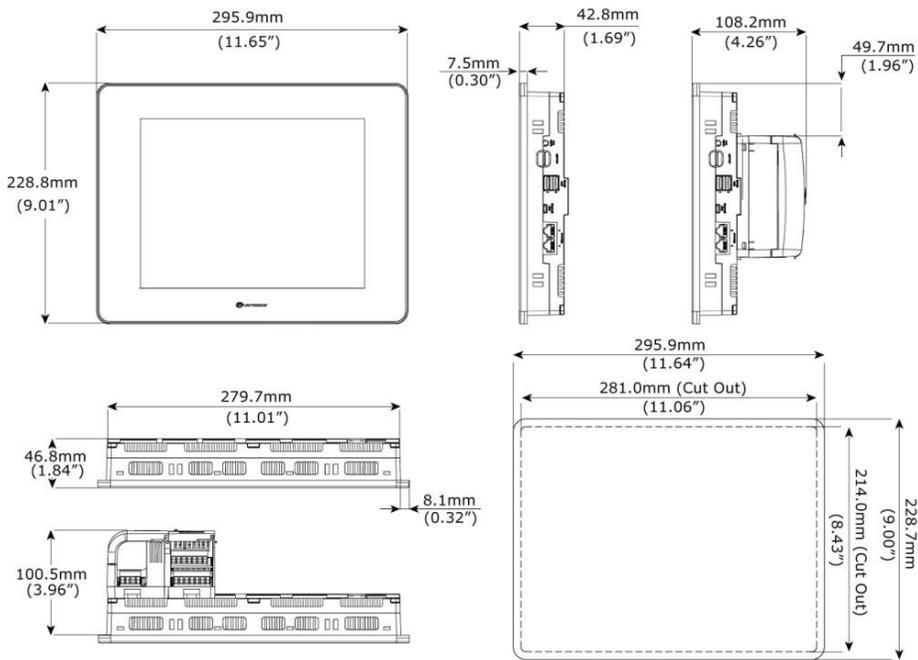
For exact dimensions, please refer to the Mechanical Dimensions shown below.

HMI Panel Mechanical Dimensions

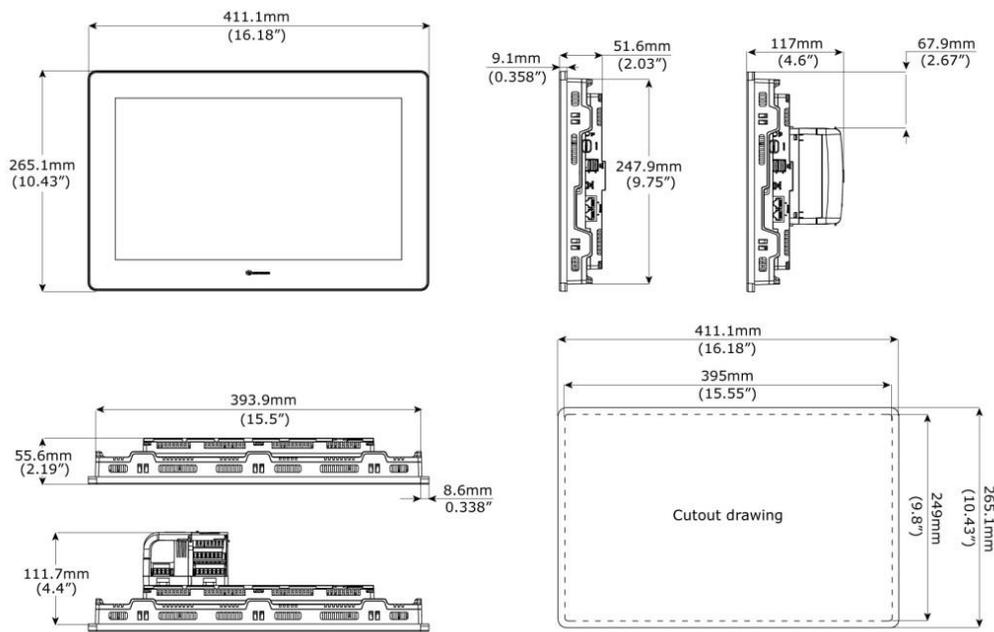
7" Panel



10.4" Panel



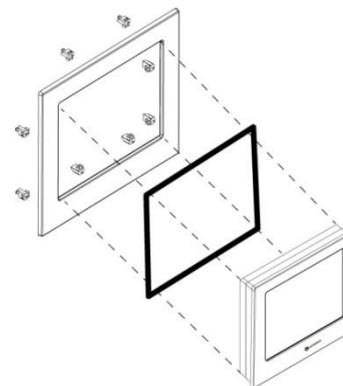
15.6" Panel



Panel Mounting

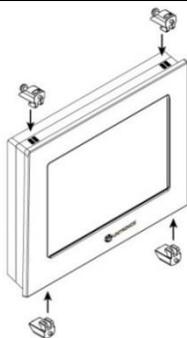
- NOTE**
- Mounting panel thickness must be less or equal to 5mm (0.2").
 - Ensure that the space considerations are met.

1. Prepare a panel cut-out according to the dimensions of your model as shown in the previous section.
2. Slide the panel into the cut-out, ensuring that the Panel Mounting Seal is in place as shown on the right.
3. Push the mounting brackets into their slots on the sides of the panel as shown below.
4. Tighten the bracket screws against the panel. Hold the brackets securely against the unit while tightening the screws. The torque required is 0.35 N·m (3.1 in-lb).

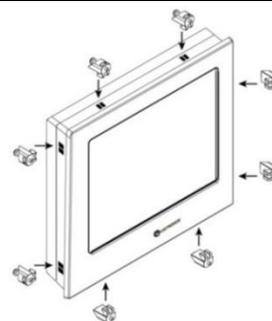


When properly mounted, the panel is squarely situated in the panel cut-out as shown below.

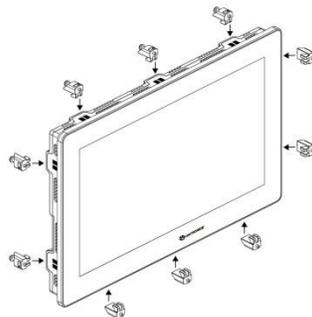
- Caution**
- Do not apply torque exceeding 0.35 N·m (3.1 in-lb) of torque to tighten the bracket screws. Using excessive force to tighten the screw can damage this product.



USP-070-xxx: 4 mounting brackets



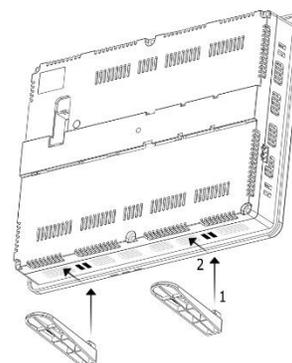
USP-104-xxx: 8 mounting brackets



USP-156-xxx: 10 mounting brackets

Panel Support Installation

1. Insert the Panel Support tabs into their location. Note that the exact location varies according to the panel model.
2. Pull on the Panel Support until it locks (clicks) into its place.



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.
 - Use over-current protection, such as a fuse or circuit breaker, to avoid excessive currents into the HMI Panel supply port.
 - 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 (4.4 in-lb).
 - 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 mm² –3.31 mm²).

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.
 - Individually connect each 0V point in the system to the power supply 0V terminal.
 - Individually connect each functional ground point (⏚) to the earth of the system (preferably to the metal cabinet chassis).
Use the shortest and thickest wires possible: less than 1m (3.3') in length, minimum thickness 14 AWG (2 mm²).
- Connect the power supply 0V to the earth of the system.

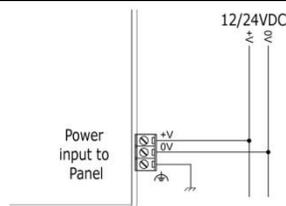
NOTE For detailed information, refer to the document System Wiring Guidelines, located in the Technical Library in the Unitronics' website.

Wiring the Power Supply

The UniStream[®] HMI Panel device requires an external 12/24VDC power supply.

- ⚠ ▪ In the event of voltage fluctuations or non-conformity to voltage power supply specifications, connect the device to a regulated power supply.

Connect the +V and 0V terminals as shown in the accompanying figure.



HMI Panel Interface Connections

Use the following:

Ethernet	CAT-5e shielded cable with RJ45 connector
USB Device	Use a standard USB cable, Type mini-B
USB Host	Standard USB cable with Type-A plug
microSD	Standard microSD
Audio Out	3.5mm stereo audio plug with shielded audio cable

Installing CPU-for-Panel, Uni-I/O™ & Uni-COM™ Modules

Refer to the Installation Guides provided with these modules.

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

Removing the Panel

5. Disconnect the power supply.
6. Remove all wiring and disconnect any installed devices according to the device's installation guide.
7. Unscrew and remove the mounting brackets, taking care to support the panel to prevent it from falling during this procedure.

Technical Specifications

Power Supply	USP-070-x08	USP-070-x10	USP-104-x10	USP-104-x10	USP-156-x10
Input voltage	12VDC or 24VDC				
Permissible range	10.2VDC to 28.8VDC				
Max. current consumption	1.35A@12VDC, 0.65A@24VDC	1.5A@12VDC, 0.75A@24VDC	1.62A@12VDC, 0.81A@24VDC		2.5A@12VDC, 1.25A@24VDC

Display	USP-070-x08	USP-070-x10	USP-104-x10	USP-104-M10	USP-156-x10
LCD type	TFT				
Backlight type	White LED				
Luminous intensity (brightness)	Typically 400 nits (cd/m ²), at 25°C				
Backlight longevity ⁽¹⁾	30k hours	50k hours			
Resolution (pixels)	800 x 480 (WVGA)	800 x 480 (WVGA)	800 x 600 (SVGA)		1366 x 768
Size	7"	7"	10.4"		15.6"
Viewing area Width x Height (mm)	154.08 x 85.92	152.4 x 91.44	211.2 x 158.4		344.23 x 193.53
Color support	65,536 (16bit)				16M (24bit)
Surface treatment	Anti-glare				
Touch screen	Resistive Analog			Capacitive multi-touch, 5-fingers	Resistive Analog
Actuation force (min)	> 80 g (0.176 lb)				

System

Processor	32 bit, 800MHz RISC Processor, with Graphic Accelerator
Internal memory	RAM: 512 MB ROM: 3GB system memory 1GB user memory
External memory	microSD or microSDHC card Size: up to 32GB, Data Speed: up to 200Mbps

Audio ⁽²⁾

Bit Rate	192kbps
Internal speaker	Audio compatibility: mono MP3 files. Frequency range: 500Hz to 20KHz
External audio	Audio compatibility: stereo MP3 files. Interface: 3.5mm Audio-out jack - use shielded audio cable of up to 3 m (9.84 ft). Impedance: 32Ω No isolation

Video

Support Formats	MPEG-4 Visual , AVC/H.264
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Communication

Ethernet port	
Number of ports	2
Port type	RJ45, 10BASE-T/100BASE-TX
Auto crossover	Yes
Auto negotiation	Yes
Isolation voltage	500VAC for 1 minute
Cable	Shielded CAT5e cable, up to 100 m (328 ft)
USB device ⁽³⁾	
Number of ports	1
Port type	Mini-B
Data rate	USB 2.0 (480Mbps)
Isolation	None
Cable	USB 2.0 compliant; < 3 m (9.84 ft)
USB host	
Number of ports	2
Port type	Type A
Data rate	USB 2.0 (480Mbps)
Isolation	None
Cable	USB 2.0 compliant; < 3 m (9.84 ft)
Over current protection	Yes

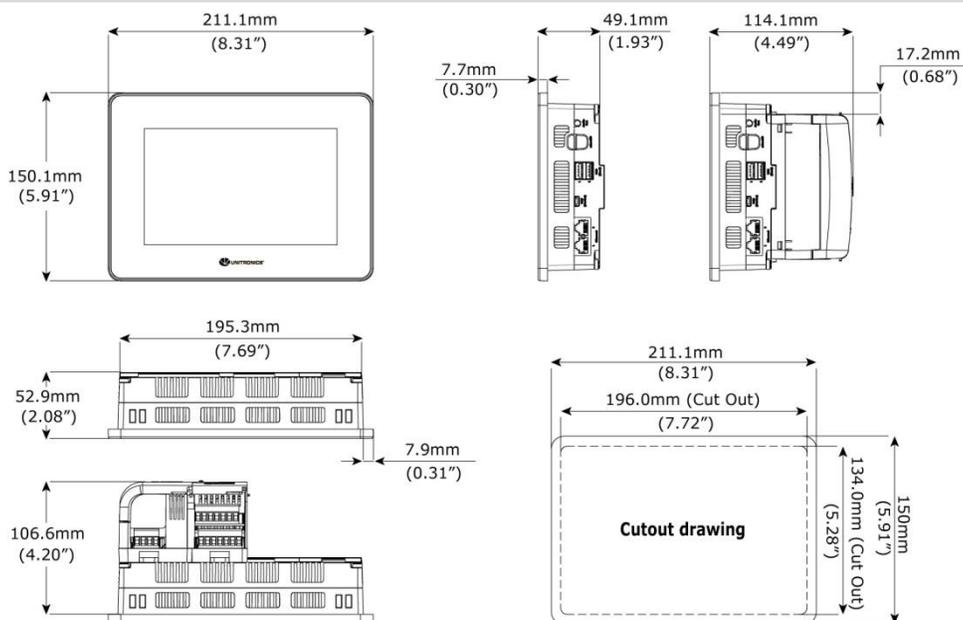
On-board I/O or COM modules ⁽⁴⁾	USP-070-x08, USP-070-x10	USP-104-x10, USP-104-M10 USP-156-x10
Number of modules	Up to 3	Up to 5 (up to 4 of them can be COM modules)

Note that the numbers above relate to Uni-I/O and Uni-COM modules. You can mix Uni-I/O and Uni-COM modules with Uni-I/O Wide modules, considering that 1 Uni-I/O Wide module equals 1½ Uni-I/O module. For example, the USP-104-x10 and USP-104-M10 back panel can host 2 Uni-I/O and 2 Uni-I/O Wide modules in any order.

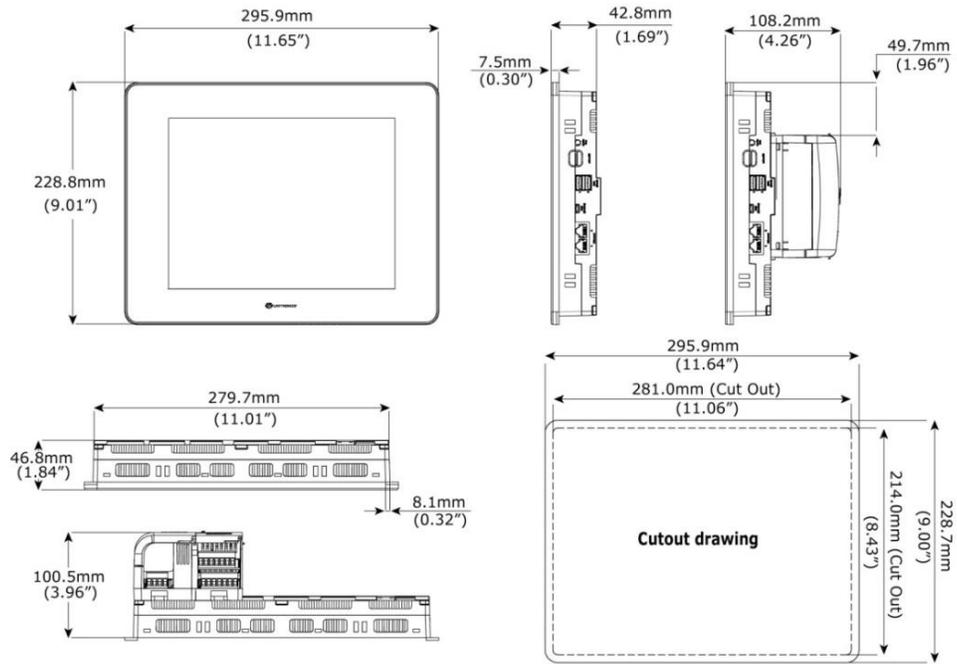
Environmental		
Protection	Front face ⁽²⁾ : IP65/IP66, NEMA 4X Rear side: IP20, NEMA1	
	USP-070-x08, USP-070-x10, USP-104-x10, USP-104-M10	USP-156-x10
Operating temperature	-20°C to 55°C (-4°F to 131°F)	0°C to 50°C (32°F to 122°F)
Storage temperature	-30°C to 70°C (-22°F to 158°F)	-20°C to 60°C (-4°F to 140°F)
Relative Humidity (RH)	5% to 95% (non-condensing)	
Operating Altitude	2,000 m (6,562 ft)	
Shock	IEC 60068-2-27, 15G, 11ms duration	
Vibration	IEC 60068-2-6, 5Hz to 8.4Hz, 3.5mm constant amplitude, 8.4Hz to 150Hz, 1G acceleration	

Dimensions	USP-070-x08	USP-070-x10	USP-104-x10	USP-104-M10	USP-156-x10
Weight	0.7 Kg (1.54 lb)	0.7 Kg (1.54 lb)	1.45 Kg (3.20 lb)	1.45 Kg (3.20 lb)	3 Kg (3.60 lb)
Size	Refer to the images below				

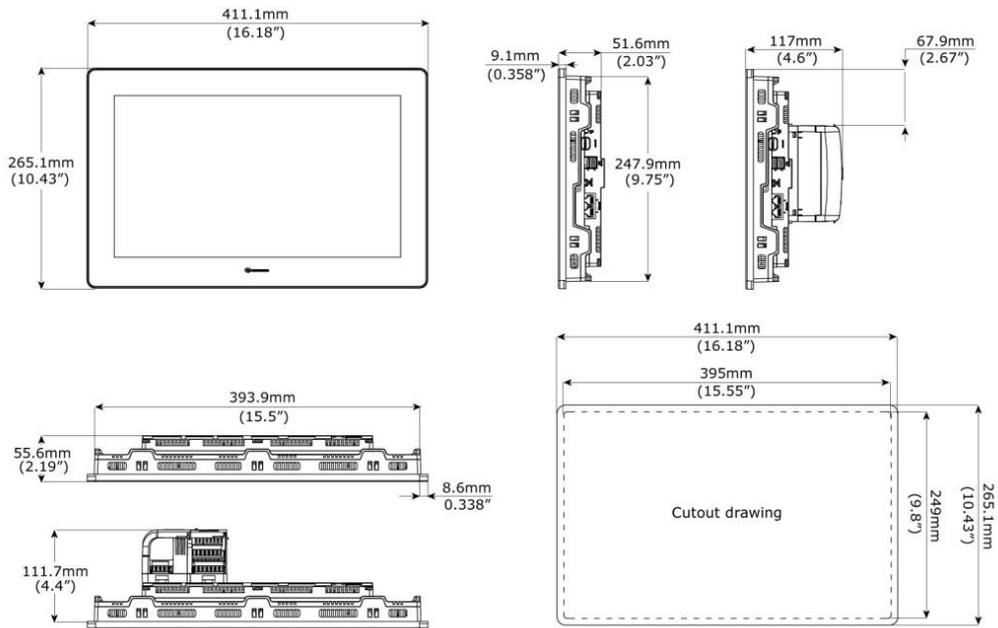
USP-070-x08 , USP-070-x10 7" Panel



USP-104-x10, USP-104-M10 10.4" Panel



USP-156-x10 15.6" Panel



Notes:

1. Panel's longevity is the typical operating time after which the brightness drops to 50% of its original level.
2. The audio outlet seal must be inserted in the outlet in order to comply with IP66 or NEMA 4X.
3. The USB device port is used to connect the device to a PC.
4. The panel back is molded into a DIN rail-like structure which provides the physical support for a UniStream® CPU-for-Panel, Uni-I/O™ modules and Uni-Com™ modules. Details are provided in the UniStream® UG_USP-070-104-156 installation guides.

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