

FlexiPanels® Basic HMI

FP2-V2 Series



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Introduction

FP2-V2 HMI series is suitable for simple applications. Available screen sizes are 4.3" WQVGA 7" WVGA and 10.1" WSVGA Color TFT. These HMIs are powered by FlexiSoft® programming software. These products also support the IEC61131-3 logic programming environment which gives a unique edge to these products.

All the products are compliant to EMC directive 2014/30/EU and LVD directive 2014/35/EU and suitable for installation in hazardous locations because they are listed for UL Class I Div. 2.

This user manual gives detailed information regarding the hardware specifications, operating conditions, installation, mounting, and wiring. All the information published in this manual is produced and governed by RENU Electronics Pvt. Ltd. and is protected by Indian Copyright Act.

Before you start

- Flexipanel® FP2-V2 series products are general-purpose human machine interface devices, suitable for a variety of simple applications across various industries. However, RENU Electronics is not responsible or liable for any indirect or consequential damage resulting from the use of this product.
- The user should check and confirm the suitability of the product before using it in any specific application.
- The diagrams and examples in this manual are included for illustration purposes only. RENU Electronics assumes no responsibility or liability regarding actual use based on these diagrams or examples.
- Reproduction of the contents of this manual, in any form (in part or whole), is strictly prohibited.
- Following table shows various symbols that may be used in this manual to provide information regarding safety, precautions, and usage of the product:

	WARNING: Indicates circumstances that may cause an explosion in a hazardous environment, which may lead to injury or death, damage or economic loss
	CAUTION: Indicates specific precautions to be taken by the user during installation, operation and maintenance of the product
ATTENTION	ATTENTION: Indicates important information regarding the application and functions of the product

Safety Precautions

This section of the manual provides information that is critical regarding safety and therefore the user is advised to go through the information in detail before installing the product. Users may contact RENU Electronics technical support team at support@renuelectronics.com for any specific question(s) related to safety.



WARNING: EXPLOSION HAZARD

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
 - The substitution of any component may impair suitability for Class I, Division 2.
 - Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or any other means provided with this product.
 - If this product contains batteries, it must only be changed in an area known to be nonhazardous.
-



CAUTION: GENERAL PRECAUTIONS

- Do not use this product for an emergency stop. A separate physical switch, outside the product, must be used for any emergency stop operations.
 - Do not use the external power supply source that does not comply with the specified power requirements of the product, it may cause malfunction or permanent damage to the product.
 - Do not attempt to open, dismantle, or modify the product, doing so will void the warranty.
 - This product is supplied as open-type equipment and it must be mounted within an enclosure, suitably designed for specific environmental conditions.
 - When used in Class I, Division 2 hazardous location, the product must be mounted in a suitable enclosure with a proper wiring method that complies with the governing electrical codes.
 - The USB port is intended for temporary local programming purposes only and not intended for permanent connection. If you connect or disconnect the USB cable with power applied to this product or any other device on the USB network, an electrical arc can occur, which could cause an explosion in hazardous location installations.
 - Make sure that connectors are securely tightened to properly seal the connections against leaks.
 - Do not place the product in direct sunlight. Prolonged exposure to sunlight may degrade the LCD and housing.
-

Product Overview

This section of the manual provides an overview of FP2-V2 series products, its front and back view, installation details, dimensional details, mounting method, and details.

Installing FP2-V2 products

FP2-V2 series products are designed for front panel mounting. Before installing the products, the user should review the panel guidelines, panel cutout dimensions, product dimensions, and minimum clearances.

Panel Guidelines

The panel must be at least 2mm (12gauges) so that it can provide the required support and proper sealing against water and dust. The panel surface must be flat, without any imperfection, to maintain the adequate seal and IP rating.

The maximum panel thickness allowed is 6mm ($\pm 0.2\text{mm}$).

Panel Cutout Dimensions

The panel must be at least 2mm (12gauges) so that it can provide the required support and proper sealing against.

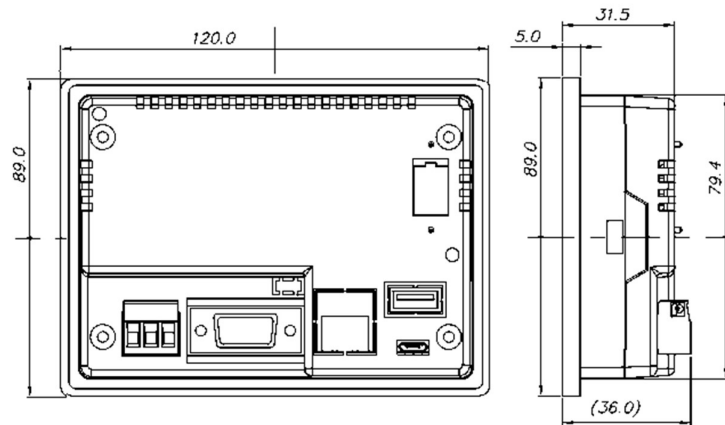
Model	Height (mm)	Width (mm)
FP2043T-V2	80	111
FP2043TN-V2	80	111
FP2070T-V2	127	175
FP2070TN-V2	127	175
FP20101T-V2	178	256
FP2010TN-V2	178	256

ATTENTION**ATTENTION: Panel cutout**

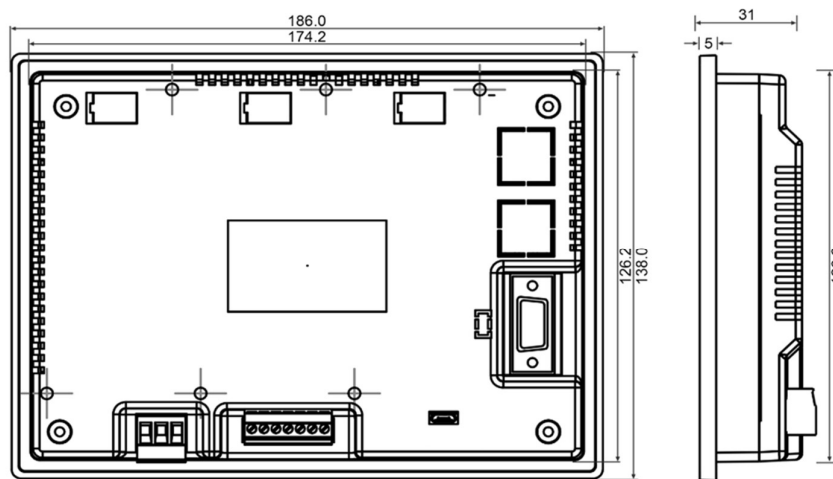
- Before making a panel cutout, disconnect all electrical power from the panel.
 - Make sure that area surrounding the panel cutout is clear.
 - Make sure that metal cutting does not enter any component already installed in the panel.
-

Product Dimensions

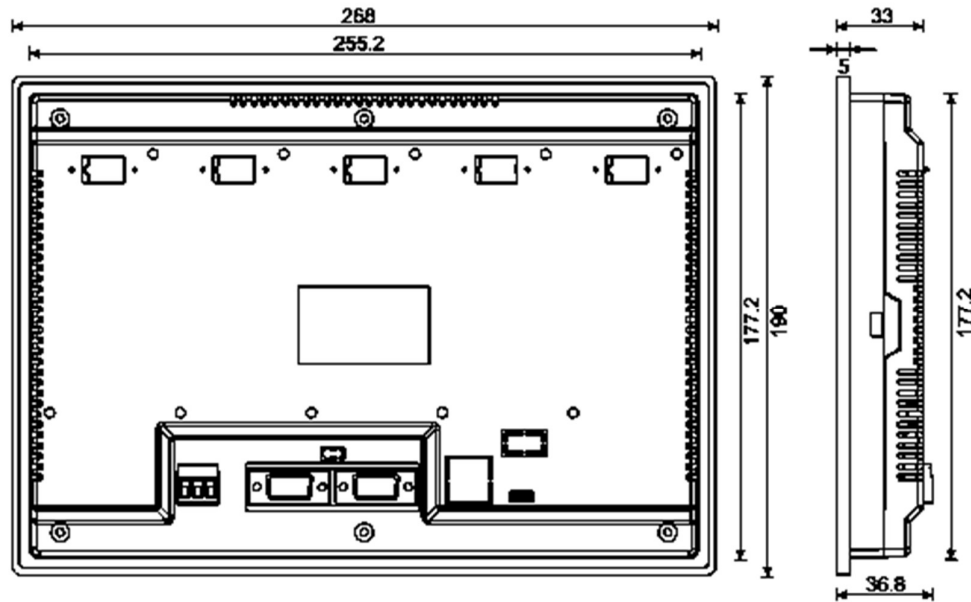
This section of the manual provides dimensional details of FP2-V2 series products. All the dimensions shown below are measured in mm.



FP2043-V2



FP2070-V2



FP2101-V2

Minimum Clearances

Maintain clearance from enclosure walls, wires, and other adjacent devices. Keep 2" space on all sides for adequate ventilation. Plan for adequate space around the product and inside the enclosure for ventilation and cabling. Take into consideration the heat produced by other devices in the enclosure. The ambient temperature around this product must be 0° to 50°C.

Mounting FP2-V2 Products

FP2-V2 series products must be installed on the front panel, using the clamp accessories shipped with the product. Before mounting, make sure that the sealing gasket is properly positioned. This gasket forms a compression type seal. Do not use sealing compounds. Then, place the unit in the panel cutout and tighten the mounting screws evenly (torque 0.4Nm) to maintain water and dust resistance.

ATTENTION **ATTENTION: Mounting FP2-V2 on Panel**

- Do not push the LCD display when pushing the unit into the panel as it may damage the display.
-

Connecting Power

FP2-V2 series requires a 24VDC isolated power supply. Follow the steps mentioned below to connect the power:

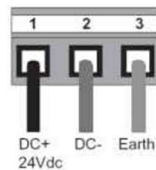
- Make sure that terminal is not connected to a power source
- Secure the 24VDC power wires
- Secure the functional earth ground wire to the functional earth ground terminal screw on the terminal block
- Apply 24VDC power to the terminal

Power Rating

Unit	Voltage	Current	Wattage
FP2043T-V2	24VDC	130mA	3.12W
FP2043TN-V2	24VDC	150mA	3.6W
FP2070T-V2	24VDC	200mA	4.8W
FP2070TN-V2	24VDC	230mA	5.52W
FP2101T-V2	24VDC	250mA	6W
FP2101TN-V2	24VDC	260mA	6.24W

Grounding

The optimum method for grounding electronic equipment is to ground it separately from other high-power systems and to ground more than one unit of electronic equipment with a single-point ground. Following marked terminal is provided with the unit for grounding:

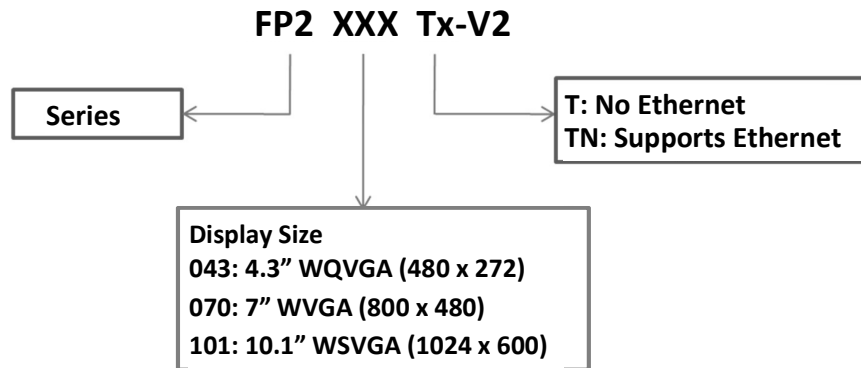


Product Specifications

This section of the manual provides detailed specifications of FP2-V2 series products, ordering part numbers, operating conditions, environment, and approvals.

Product Nomenclature / Ordering Part Number

FP2-V2 series has 2 models, depending on display size and each model has two variants, based on Ethernet. Detail part number or ordering information is as follows:



Model	Description
FP2043T-V2	2 Serial ports# (1 RS232, 1 RS485), 1 USB Device, 1 USB Host
FP2043TN-V2	2 Serial ports# (1 RS232, 1 RS485), 1 USB Device, 1 USB Host, 1 Ethernet
FP2070T-V2	2 Serial ports (RS232 / RS485), 1 USB Device, 1 USB Host
FP2070TN-V2	2 Serial ports (RS232 / RS485), 1 USB Device, 1 USB Host, 1 Ethernet
FP2101T-V2	2 Serial ports (RS232 / RS485), 1 USB Device, 1 USB Host
FP2101TN-V2	2 Serial ports (RS232 / RS485), 1 USB Device, 1 USB Host, 1 Ethernet

[# **Note:** FP2043-V2 support one DB9 port that supports RS232 and RS485 levels on different pins. "Y" type cable can be used for separate RS232 and RS485 levels simultaneously.]

Display Specifications

FP2-V2 series products support high-quality color TFT display range.

	Size: 4.3" WQVGA Color TFT with 4-wire analog resistive touch screen Resolution: 480 x 272pixels Brightness: 400cd/m ² Backlight life: 30,000Hrs.
	Size: 7" WVGA Color TFT with 4-wire analog resistive touch screen Resolution: 800 x 480pixels Brightness: 350cd/m ² Backlight life: 30,000Hrs.
	Size: 10.1" WSVGA color TFT with 4-wire analog resistive touch screen Resolution: 1024x 600pixels Brightness: 350cd/m ² Backlight life: 50,000Hrs..

CPU, Memory and Power Supply

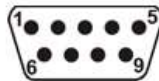
	CPU: 32-bit RISC Processor
	RAM: 16MB
User Application	8MB
Flash	16MB
Ladder Memory	2MB
Alarm Memory	1350 Alarms
Retentive Memory	8000Words
Keep Memory	1000Words
Data Log	4MB
	Power supply: 24VDC(±15%)
	RTC: Built-in, Date & Time function

Communication Interfaces

This section of the manual gives detailed information regarding various communication interfaces supported by FP2-V2 series products, including communication interfaces between FP2-V2 and other RENU or any third-party device, interfaces for programming and monitoring.

RS232 / RS485 Port

FP2043-V2 has one DB9 female port that supports RS232(COM1) and RS485(COM2) signal levels on different pins.



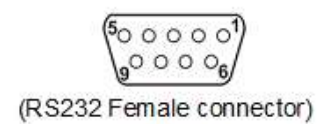
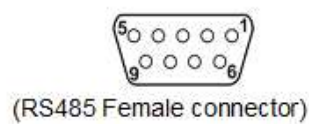
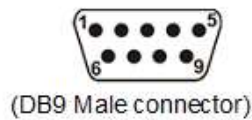
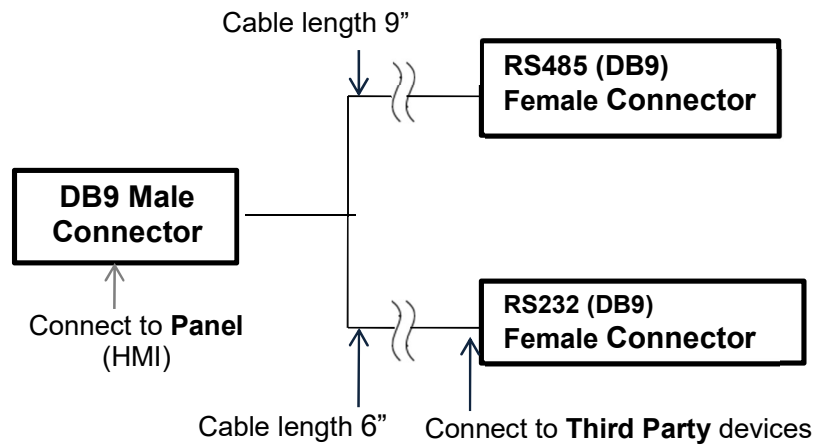
DB9 pin connector

Pin number	Signal
1	TX+(RS485)
2	TXD(RS232)
3	RXD(RS232)
4	RX+(RS485)
5	GN
6	NC
7	NC
8	TX-(RS485)
9	RX-(RS485)

[Note: Special “Y” cable can be provided, if both the ports are to be used simultaneously.]
 [REPL Part# EC-Y-FP]

Y Type Cable

Special “Y” cable for the FP unit (two communication levels on one port).

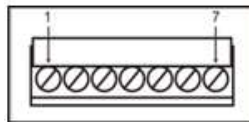


Pin number	Signal	Pin number(RS485)	Pin number(RS232)
1	TX+	1	1
2	TXD	2	2
3	RXD	3	3
4	RX+	4	4
5	SG	5	5
6	NC	6	6
7	NC	7	7
8	TX-	8	8
9	RX-	9	9

ATTENTION ATTENTION: DB9 port

- The 4.3" models have only one DB9 port that supports RS232 and RS485 signal levels on different pins.
- If the user wants to connect different devices, on RS232 and RS485 levels, simultaneously with 4.3" HMI, then he must use 'Y' type cable.

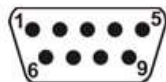
FP2070-V2 has one terminal block port (COM1) and one DB9 female port (COM2). Both com ports support RS232 / RS485 signal levels.



Terminal Port
(COM1)

Pin number	Signal
1	RX-
2	TX-
3	RX+
4	TX+
5	GND
6	RXD
7	TXD

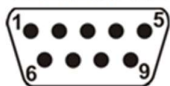
FP2101-V2 has two DB9 female ports (COM1 and COM2). Both COM ports support RS232 / RS485 signal levels.



DB9 pin connector
(COM2)

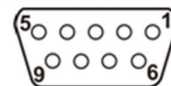
Pin number	Signal
1	TX+(RS485)
2	TXD(RS232)
3	RXD(RS232)
4	RX+(RS485)
5	GN
6	NC
7	NC
8	TX-(RS485)
9	RX-(RS485)

RS232 MALE



RS232 pinout

RS232 FEMALE



Pin number	Signal		Pin number	Signal
2	TXD	=====	2	RXD
3	RXD	=====	3	TXD
5	GND	=====	5	GND

2-wire RS485 pinout

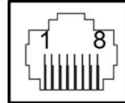
Signal	Pin number	Signal
A (TX+ / RX+)	1	TX+
B (TX- / RX-)	4	RX+
GND	5	GND and Shield
	8	TX-
	9	RX-

4-wire RS485 pinout

Pin number	Signal	Pin number	Signal
YELLOW	RX+	1	TX+
GREEN	TX+	4	RX+
BLACK	GND	5	GND and Shield
WHITE	RX-	8	TX-
BLUE	TX-	9	RX-

Ethernet Port

FP2-V2 series support Ethernet port as an ordering option. It's having standard shielded RJ45 female jack with built-in speed and indication LED'S.



Pin number	Signal
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC

USB Device Port

FP2-V2 products support one Type C USB port for programming and monitoring.



USB Host Port

FP2-V2 products support one USB Host compliant with USB 2.0 specification port. USB Host can handle only USB memory stick devices and can source current up to 150mA only.

The connector used: Standard USB Type a Female connector.

Pin number	Signal
1	VCC
2	D-
3	D+
4	GND

Currently USB Host can be used for Upload and Download of Application/ Firmware only. Upload and Download of Data Logging or Recipe over USB is not supported.

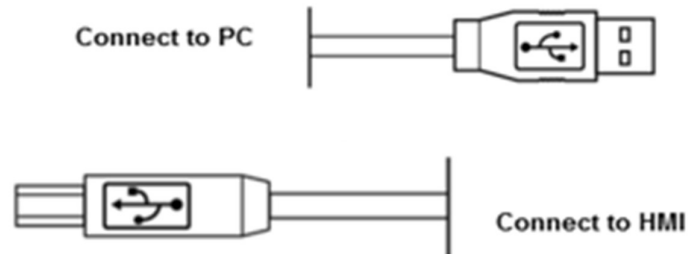
Supported Protocols

Model	
Allen Bradley DF1	Modbus RTU (Unit as Slave)
Panasonic FP Series	Modbus /TCP Master (Client)
Baldor	Modbus / TCP Server (Slave)
Danfoss Drive	Omron Host Link
Delta PLCs	Omron Inverter Memobus
Fatek PLCs	Siemens Micromaster Driver (USS)
FlexiLogics Slave Driver	Siemens Step-7 Micro
FlexiLogics Master Driver	Siemens Profinet PLCs
G9SP Safety Controller	Toshiba (Link Port) Series PLCs
GE SNP	Toshiba Inverters PLCs
GE SNP-X	Toshiba T series
Idec PLCs	Toshiba PLC Ethernet Driver
Keyence KV Series	Twido PLCs
LG Master K Series PLC	Unitlelway PLCs
LG Master-K 300S	Universal Serial Driver (ASCII)
Mitsubishi FX	Tri PLC
Mitsubishi Q Series PLCs (Serial)	AB PLC EPIC PCCC
Modbus ASCII (Unit as Master)	Logix 5000 PLCs
AB PLCs	Universal Ethernet Driver(ASCII)
Modbus RTU (Unit as Master)	

Accessories

Programming Cable (Download) Type C USB

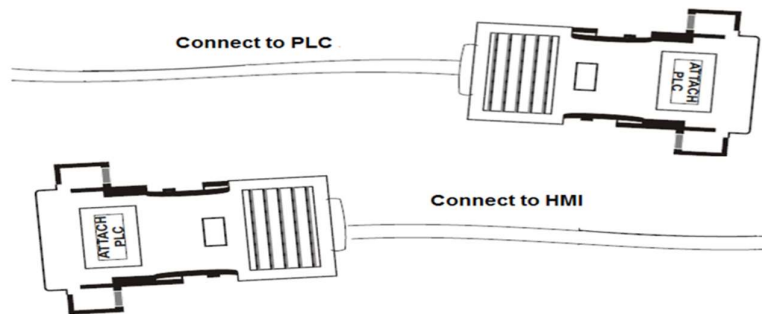
Part number: PC-USBAC-00



Communication Cable RS-232

Part number: IBM0909-1-00

[Note: IBM0909-1-00: 2M cable, IBM0909-1-05: 5M cable, IBM0909-1-10: 10M cable]



Default Product Setting

Network Setting	Static
Default IP	192.168.0.254
Brightness	Full Scale
Beeper	On
Default Language	English
RTC Settings	Current Date/Month/Year Current Time

Environmental Specifications and Approvals

Feature	Specifications
Operating Temperature	0°C~50°C
Storage Temperature	-20°C~85°C
Relative Humidity	10 to 90% non-condensing
Shock	IEC 60068-2-27 25g, 11ms, 6 shocks per axis, total 18 shocks (X, Y, Z)
Vibration	5 to 150Hz, 3G, peak (X, Y, Z)
Protection	IP66 for front panel mounting
CE	Yes
UL	Yes (Class I Division 2)
RoHS	Yes

Revision History

Revision	Description	Date	Prepared by	Approved by
1.0	Initial Release	01/09/2020	PM	KK
1.1	Updated Power Supply	08/09/2020	PM	KK
1.2	Added FP2101-V2 Model	28/11/2020	PM	KK
1.3	Added USB C type and made some other changes	08/03/2022	KG	KK

RENU Electronics Pvt. Ltd® reserves the right to change or discontinue specifications and features without prior notice.

NOTES

