X2-BASE

X2-PRO

Product Description

The X2 Series of Human-Machine Interfaces (HMIs) is the ideal solution for industrial applications that use operating and visualization terminals. The X2 Series offers innovative and intuitive features, combining advanced graphics tools and a selection of highly functional characteristics. It is a truly open platform, allowing users to import objects and components developed in .NET language, as well as enabling users to use the same application on different Series hardware. The product stands out for its engineering and design, with high-performance hardware and a superior, advanced graphics solution through iX Developer software. All products in the Series are robust, reliable, and high-performance.

The series includes the PRO-4, 7, 10, 12, 15, and 21 models, as well as the new generation of the already established X2-BASE, BASE-5-V2, BASE-7-V2, and BASE-10-V2 models. The HMIs were developed for all types of applications that require reliable process control and excellent graphics capabilities, even in compact formats. Their front is completely flat, ensuring a dust-free surface. The display is equipped with a long-lasting backlight, which requires no maintenance and also features TFT technology, allowing for brightness adjustment and high contrast. The smaller models offer a widescreen display, which results in 30% more usable area compared to previous versions. This feature expands the possibilities for applications with more complex screens, even on smaller terminals.

Its main features are:

- Open platform that allows you to improve the look and functionality of applications
- High-performance hardware
- 10/100 BASE-T Ethernet communication interface
- RS-232, RS-422/485, and USB serial communication interfaces
- Long-lasting backlight
- TFT technology for brightness adjustment and high contrast
- Widescreen display with 30% more usable area
- Solid features that develop and ensure user confidence
- Time optimization with intuitive and versatile editing tools
- Various templates for creating complex and customized applications quickly and easily
- Online and offline simulation, with or without the terminal, allows for reliable testing before going into the field
- Remote access support (VNC)

The X2 Series was developed with a distinctive design, combining high quality, robustness, sophistication, and lightness. These results were achieved with an innovative mechanical design, using cast aluminum for the PRO models and PC + ABS for the BASE models, state-of-the-art displays, and superior finish.

Data for Purchase

X2-PRO-4 Component Items

The product packaging contains the following items:

- One PRO-4 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-PRO-7 Component Items

The product packaging contains the following items:

- One PRO-7 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-PRO-10 Component Items

The product packaging contains the following items:

- One PRO-10 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-PRO-12 Component Items

The product packaging contains the following items:

- One PRO-12 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-PRO-15 Component Items

The product packaging contains the following items:

- One PRO-15 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-PRO-21 Component Items

The product packaging contains the following items:

- One PRO-21 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-BASE-5-V2 Component Items

The product packaging contains the following items:

- One BASE-5-V2 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-BASE-7-V2 Component Items

The product packaging contains the following items:

- One BASE-7-V2 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

X2-BASE-10-V2 Component Items

The product packaging contains the following items:

- One BASE-10-V2 operating terminal
- Installation guide
- Panel mounting hardware
- Power connector

Product Code

The following codes should be used to purchase the product:

Code	Description
X2-PRO-4	X2 PRO 4 color operating terminal, graphic, touchscreen, 4.3" LCD-TFT display
X2-PRO-7	X2 PRO 7 color operating terminal, graphic, touchscreen, 7" LCD-TFT display
X2-PRO-10	X2 PRO 10 color operating terminal, graphic, touchscreen, 10.1" LCD-TFT display
X2-PRO-12	X2 PRO 12 color operating terminal, graphic, touchscreen, 12.1" LCD-TFT display
X2-PRO-15	X2 PRO 15 color operating terminal, graphic, touchscreen, 15.4" LCD-TFT display
X2-PRO-21	X2 PRO 21 color operating terminal, graphic, touchscreen, 21.5" LCD-TFT display
X2-BASE-5-V2	X2 BASE 5 V2 color operating terminal, graphic, touchscreen, 5" LCD-TFT display
X2-BASE-7-V2	X2 BASE 7 V2 color operating terminal, graphic, touchscreen, 7" LCD-TFT display
X2-BASE-10-V2	X2 BASE 10 V2 color operating terminal, graphic, touchscreen, 10" LCD-TFT display

Related Products

The following products must be purchased separately, when needed:

Code	Description
AMJG0808	RJ45-RJ45 cable (2 m)
NX9202	RJ45-RJ45 crossover Ethernet cable (2 m)
NX9205	RJ45-RJ45 crossover Ethernet cable (5 m)
NX9210	RJ45-RJ45 crossover Ethernet cable (10 m)
AL-1740	CMDB9-RJ45 RS-232 communication cable (3 m)
AL-1741	RS-485 CMDB9-RJ45 communication cable (3 m)
AL-1752	RS-232 CMDB9-CMDB9 communication cable (3 m)
AL-1763	RS-485 CMDB9-terminal block communication cable (3 m)
FBS-232P0-9M-400	RS-232 MiniDin-CMDB9 communication cable (4 m)
PO8525	Derivator and termination for RS-485 network

Notes:

AMJG0808: CAT5 Ethernet network cable with an RJ45 male connector on each end and a length of 2 meters.

NX92xx: CAT5 Ethernet network cables with an RJ45 male connector on each end. Designed for various applications, ensuring quality communication between the equipment that uses them, as they are shielded and withstand high temperatures. Available in 2m, 5m, and 10m lengths.

AL-1740: Standard RS-232 cable with a male DB9 connector and an RJ45 connector for communication between the X2 Series operation terminals and the Ponto Series UCPs.

AL-1741: Standard RS-485 cable with a male DB9 connector and an RJ45 connector for communication between the X2-BASE Series operation terminals and the PO8025 network splitter/terminator.

AL-1752: Standard RS-232 cable with two male DB9 connectors for communication between X2 Series operation terminals, Nexto Series UCPs, and FBs Series.

AL-1763: Cable for combined RS-232 and RS485 (COM1 and COM3) or RS485 only (COM3) use with the X2-PRO and X2-BASE-V2 series.

FBS-232P0-9M-400: RS-232 communication cable between the X2 Series and the FBs Series.

PO8525: This module is used for branching and terminating an RS-485 network. There must be one PO8525 for each node in the network. The RS-485 communication interface of the X2-BASE Series operating terminals must be connected to the RJ45 connector of the PO8525 (via AL-1741 cable). The PO8525 modules at the ends of the network must be configured as termination, the rest as branching. For the COM3 port of the X2-PRO, the AL-1763 cable must be used in conjunction with the PO8525**.**

Product Features

General Features

	PRO-4	PRO-7	PRO-10	PRO-12	PRO-15	PRO-21
Screen size	4,3"	7"	10,1"	12,1"	15,4"	21,5"
Screen resolution	480x282 pixels (16:9)	800x480 pixels (16:9)	1024x600 pixels (16:9)	1280x800 pixels (16:10)	1280x800 pixels (16:10)	1920x1080 pixels (16:9 HD)
Display	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT
Screen colors	64K	64K	262K	262K	262K	262K
Backlight type	LED	LED	LED	LED	LED	LED
Backlight lifetime	50.000 h	20.000 h	50.000 h	50.000 h	50.000 h	50.000 h
Indicator LEDs	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)
Touchscreen	Resistive	Resistive	Resistive	Resistive	Resistive	Resistive
Touchscreen lifetime	1 million touches	1 million touches	1 million touches	1 million touches	1 million touches	1 million touches
Application memory	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application
RAM memory	512 MB	512 MB	1 GB	1 GB	1 GB	2 GB
Memory card support	Yes (SD and SDHC)	Yes (SD and SDHC)	Yes (SD and SDHC)	Yes (SD and SDHC)	Yes (SD and SDHC)	Yes (SD and SDHC)
Real-time clock	Yes	Yes	Yes	Yes	Yes	Yes
Communication port						
COM1	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)
COM2	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485
COM3	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)
COM4	-	-	-	-	-	-
USB 2.0 port	1 (500 mA)	1 (500 mA)	2 (500 mA)	2 (500 mA)	2 (500 mA)	2 (500 mA)
10/100 Base-T Ethernet port	1	1	2	2	2	2
Front panel (WxHxD)	145x104x 7 mm	204x143x 7 mm	292x194x 7 mm	340x242x 8 mm	410x286x 8 mm	556x347x 8 mm
Panel cutout dimensions (WxH)	130x89 mm	189x128 mm	275x177 mm	324x226 mm	394x270 mm	539x331 mm
Mounting depth (clearance area)	43 mm	43 mm	45 mm	49 mm	53 mm	57 mm
	(143 mm)	(143 mm)	(145 mm)	(149 mm)	(153 mm)	(157 mm)
Supply voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc
	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)

	PRO-4	PRO-7	PRO-10	PRO-12	PRO-15	PRO-21
Maximum power dissipation	12 W	14,4 W	21,6 W	28,8 W	31,2 W	45,6 W
Internal fuse	3,14 A	3,14 A	4 A	4 A	4 A	4 A
Front protection	IP66	IP65	IP65	IP65	IP65	IP66
Rear protection IP20	Yes	Yes	Yes	Yes	Yes	Yes
Operating temperature	-10 to 60 °C	-10 to 60 °C	-10 to 60 °C	-10 to 60 °C	-10 to 60 °C	-10 to 60 °C
Storage temperature	-20 to 70 °C	-20 to 70 °C	-20 to 70 °C	-20 to 70 °C	-20 to 70 °C	-20 to 70 °C
Humidity without condensation	5 to 85%	5 to 85%	5 to 85%	5 to 85%	5 to 85%	5 to 85%
Mechanical parts material	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Weight	0,5 kg	0,8 kg	1,65 kg	2,6 kg	3,85 kg	3,85 kg
Certifications	CE, FCC, KCC, UL, DNV, KR, GL, LR, ABS, CCS					

		BASE-5	BASE-7	BASE-10	BASE-5-V2	BASE-7-V2	BASE-10-V2
Screen size		5"	7"	10,1”	5"	7"	10.1”
Screen resolution		800x480 pixels	800x480 pixels	800x480 pixels	800X480 pixels	800x480 pixels	1024x600 pixels
Display		LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT
Screen colors		64K	64K	64K	16,7M	16M	16,7M
Backlight type		LED	LED	LED	LED	LED	LED
Backlight lifetime		20.000 h	20.000 h	20.000 h	20.000 h	20.000 h	30.000 h
Indicator LEDs		1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)	1 (Two-colored)
Touchscreen		Resistive	Resistive	Resistive	Resistive	Resistive	Resistive
Touchscreen lifetime		1 million touches	1 million touches	1 million touches	1 million touches	1 million touches	1 million touches
Application memory		256 MB, 200 MB free for application	256 MB, 200 MB free for application	256 MB, 200 MB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application	2 GB SSD, 1.5 GB free for application
RAM memory		128 MB	128 MB	128 MB	512 MB	512 MB	512 MB
Memory card support		No	No	No	No	No	No
Real-time clock		Yes	Yes	Yes	Yes	Yes	Yes
Communication port							
COM A	**COM1**	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)	RS-232 (RTS/CTS)
	COM2	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485	RS-422 /RS-485
	COM3	RS-232	RS-232	RS-232	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)	RS-485 (only if COM2 is 485)
COM4		RS-485	RS-485	RS-485	-	-	-
COM5		-	-	-	-	-	-
COM C (COM6)		-	-	-	RS-485	RS-485	RS-485

	BASE-5	BASE-7	BASE-10	BASE-5-V2	BASE-7-V2	BASE-10-V2
USB 2.0 port	1 (500mA)	1 (500mA)	1 (500mA)	1 (500 mA)	1 (500 mA)	1 (500 mA)
10/100 Base-T Ethernet port	1	1	1	1	1	1
Front panel (WxHxD)	170x106,8x8 mm	196x146x 7,5 mm	284,3x186,6x 7,5 mm	172x109x37 mm	202x152x37 mm	290x193x40 mm
Panel cutout dimensions (WxH)	161×93 mm	186x136 mm	275x177 mm	161x93 mm	186x136 mm	275x177 mm
Mounting depth (clearance area)	41,7 mm	44,7 mm	44,7 mm	32 mm	32 mm	35 mm
	(142 mm)	(145 mm)	(145 mm)	(132 mm)	(132 mm)	(135 mm)
Supply voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc
	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)	(18 to 32 Vdc)
Maximum power dissipation	6 W	9,6 W	10,8 W	4,8W	5,6 W	6,9 W
Internal fuse	2 A	2 A	2 A	3 A	3 A	3 A
Front protection	IP65	IP65	IP65	IP65	IP65	IP65
Rear protection IP20	Yes	Yes	Yes	Yes	Yes	Yes
Operating temperature	-10 to 50 °C	-10 to 50 °C	-10 to 50 °C	-10°C to 50°C	-10 to 50 °C	-10 to 50 °C
Storage temperature	-20 to 60 °C	-20 to 60 °C	-20 to 60 °C	-20 to 60 °C	-20 to 60 °C	-20 o 60 °C
Humidity without condensation	5 to 85%	5 to 85%	5 to 85%	5 to 90%	5 to 90%	5 to 90%
Mechanical parts material	PC+ABS	PC+ABS	PC+ABS	PC+ABS	PC+ABS	PC+ABS
Weight	0,5 kg	0,7 kg	1,3 kg	0,32 kg	0,56 kg	0,84 kg
Certifications	CE, FCC, KCC e UL					

Note:

Mounting depth: In addition to the normal depth of the operating terminal, 100 mm is required for heat dissipation of the product, as indicated in the “Mounting depth (free area)” section of the table above**.**

Software Features

	PRO-4, PRO-7, PRO-10, PRO-12, PRO-15, PRO-21, BASE-5, BASE-7, BASE-10, BASE-5-V2, BASE-7-V2 and BASE-10-V2
Network functions	Email sending (SMTP client)
	Web server
	Remote operation via the Internet
	Remote system access (VNC)
	FTP file transfer
Dual driver with data exchange	Yes
Multi-language applications	Yes
Special characters	Yes, allows accents and UNICODE characters
Character types and sizes	Supports any Windows operating system font.
Passwords	Up to 31 security groups
Alarms	Has functions for monitoring and recording alarms
Data logger	Yes
Trend graphs	Yes
Timing functions	Yes
Script	Yes
SQLite database	Yes
Expressions on tags	Yes
PDF viewer	Yes (from the PRO model onwards)

Specific Features

To optimize performance, it is recommended to limit the number of items in the project. The recommended limits depend on the type of HMI and are listed in the table below.

	X2-BASE	X2-PRO
Number of Tags	1000	2000
Number of active communication controllers	3	10
Number of Dataloggers	10	25
Number of items in the Database object	50	700
Number of items in Alarm	150	500
Number of lines in the Alarm object view	100	200
Maximum number of lines in the alarm events view in the Database object	500	1000
Screens	100	500
Objects on the screen	150	400
Items in a recipe	256	256

Communication Drivers

Several communication drivers are available, including industry-standard and proprietary protocols. The list of drivers is constantly being updated..

Communication Drivers	
ABB	COMLI Master
	COMLI Slave
Allen Brandley	DF1
	DH485
	MicroLogix Ethernet
	SLC5/PLC5 Ethernet
	Ethernet/IP
Altus	Alnet I
	MODBUS RTU/TCP
	Facon (FBS)

Animatics	SmartMotor
Beckhoff	ADS
	ADS Symboilic
Beijer Electronics	Macro Controller
Bernecker + Rainer	Mininet
Boch Rexroth	IndraDrive C
CACTUS	CACTUS ASCII
CAN*	CAN Open
	Free CAN
CoDeSys	CoDeSys ArtI
	SoftControl Direct Access
Cognex	In-Sight
Control Techniques	Unidrive
CTC	CTC Serial Binary
Delta	Delta PLC Modbus ASCII
Delta Tau	PMAC/UMAC
DEMO	Demo
Emerson	Modbus Master RTU/ASC II
Eurotherm	Easy Serial 631
Fatek	Facon
G & L Motion Control	Motion Control
Galil	Galil DMC
GE	GE TCP/IP via SRTP
	GE Fanuc SNPX
Hitachi	H-COMM
IAI	X-SEL
IDEC	Computer Link
J1939	J1939
Johnson Controls	JCONTROL
KEB	COMBIVERT
KEYENCE	KV-Series
Koyo	DirectNET
	K-Sequence
	ECOM
Lenze	LECON A/B
LS	LS Gofla
	LS master K
MATSUSHITA	MEWTOCOL-COM
MELSEC	A-Series (C24)
	A-Series (E71)
	Alpha2
	A-Series (CPU)
	Freqrol FR-A PLC
	FX Series ADP/BD
	FX ENET
	FX Series Serial
	FX3U Ethernet
	MC Protocol
	QnA/Qnn Serial
	QnA/Qnn Profibus DP
	QnA/Qnn Series (C24)
	Q-Series (E71) Ethernet
MELSERVO	MR-J2/MR-J3-T

MODCON	Modbus Master RTU/ASC II
	Modbus Slave RTU/TCP
NMEA 0183	NMEA 0183
OMRON	OMRON FINS
	Host Link
	Ethernet IP
PROFIBUS*	Profibus DP
Regin	ExOline
SAIA	S-bus Serial/Ethernet
Schneider Electric	Uni-Telway
	Modbus
SIMATIC	S7 MPI Direct
	S7 ISO TCP
	S5 PG/AS511
	S7 200 PPI
	S7 MPI (EM)
	S7 MPI (HMI Adapter)
	TI500
VIGOR	Vigor M/VB-Series
	Vigor VS Series
WAGO	Modbus TCP
YAMAHA	YAMAHA VIP
Yaskawa	Memobus Master
Yokogawa	FA-M3 Serial/Ethernet

Note:

* An expansion card and bracket are required for the X2-PRO Series only.

* The MQTT protocol (Publisher and Subscriber) can be used via script. A tutorial on how to use this feature is available in Beijer's Smart Store.

Compliance with 21 CFR Part 11

The guidelines of 21 CFR Part 11 were defined in 1977 by the FDA (a federal agency of the U.S. Department of Health and Human Services). These guidelines mainly address electronic records and electronic signatures. This was a major step forward in defining the equivalence of these records to legacy paper-based records and handwritten signatures.

This regulation defines how digital recording systems comply with good manufacturing practices under which they are considered equivalent to conventional paper records and handwritten signatures.

The X2 Series allows the user's system to be built in accordance with the requirements of the Standard:

- User Management Features:
  - Individual, password-protected user accounts
  - Password complexity
  - Minimum password length of 8 characters
  - Configurable number of failed attempts
  - User lock/unlock functionality
  - Password validity
  - Multiple user levels for user rights

- Audit Trail
  - Non-editable and tamper-proof Audit Trail data format
  - Time stamp of parameter value changes and users making changes
  - The following audit trail records:
    - User creation
    - User login/logout
    - Unsuccessful login attempts

- User blocking/unblocking by the administrator
- Old and new parameter change values
- The time stamp for each event

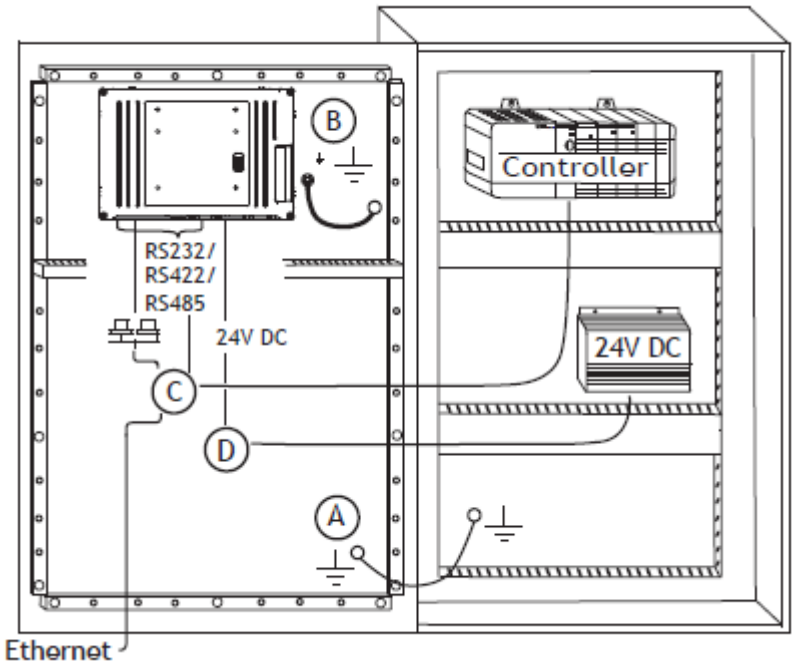
- System Data and Data Backup
  - The HMI offers basic connectivity for data exchange with SCADA/MES/ERP through the following methods:
    - Through OPC UA
    - Through data file transfer
    - Through USB/SD card backup

- Electronic Data Recording and Storage
  - Review of reports on the HMI screen for Production, Alarms, and Audit Trail
  - Storage limit can be interlocked in terms of number of batches produced or percentage of memory consumed

- Report Generation and Printing
  - Batch data is stored in a secure database format, and batch reports can be generated using this data
  - Report printing: report printing is offered in several forms:
    - Online printing of alarms, events, and recorded data via serial printer
    - General report printing via USB and network printing

Electrical Installation

The electrical installation is performed by connecting the 24 Vdc power supply and connecting to the controller.



A - Ensure that the operating terminal and the controller have the same electrical grounding.

B - Use an M5 screw and at least 2.5 mm² wire to ground the terminal. There is a grounding screw in the metal box of the terminal.

C - Use only shielded cables. Separate communication and power cables from high voltage cables.

D - Before powering the operating terminal, check that there is no moisture condensation on it.

CAUTION:
Different or unconnected grounding may cause communication errors.

CAUTION:
Install the communication cable away from power drive wiring to avoid communication interference.

CAUTION:
Check the voltage and polarity of the power supply. Voltages outside the specified limits may cause irreversible damage and are not covered by warranty.

Communication Port Pinout

CAUTION:
For connection to Altus products, cables are available as listed in the Related Items section.

CAUTION:
Incorrect connections may cause damage not covered by the equipment warranty.

Communication Ports Models X2-BASE

Pin	Serial port, 9-pin female connector		Serial port, 9-pin female connector	
	COM1	COM2	COM3	COM4
1	-	RS422 Tx+ RS485 Tx+/Rx+	-	RS485 Tx+/Rx+
2	RS232 RxD	-	RS232 RxD	-
3	RS232 TxD	-	RS232 TxD	-
4	-	RS422 Rx+	-	-
5	GND	GND	GND	GND
6	-	RS422 Tx- RS485 Tx-/Rx-	-	RS485 Tx-/Rx-
7	RS232 RTS	-	-	-
8	RS232 CTS	-	-	-
9	-	RS422 Rx-	-	-

Communication Ports Models X2-PRO

Pin	Serial port, 9-pin female connector		
	COM1	COM2	COM3
1	-	RS422 Tx+ RS485 Tx+/Rx+	-
2	RS232 RxD	-	-
3	RS232 TxD	-	-
4	-	RS422 Rx+	RS485 Tx+/Rx+
5	GND	GND	-
6	-	RS422 Tx- RS485 Tx-/Rx-	-
7	RS232 RTS	-	-
8	RS232 CTS	-	-
9	-	RS422 Rx-	RS485 Tx-/Rx-

Communication Ports Models X2-BASE-V2

Pin	Serial port, 9-pin female connector				
	COM A			* COM B	* COM C
	COM1	COM2	COM3	COM6	COM6
1	-	RS422 Tx+ *RS485 Tx+/Rx+	-	GND	GND
2	RS232 RxD	-	-	RS485 Tx+/Rx+	RS485 Tx+/Rx+
3	RS232 TxD	-	-	RS485 Tx-/Rx-	RS485 Tx-/Rx-
4	-	RS422 Rx+	RS485 Tx+/Rx+	-	-
5	GND	GND	GND	-	-
6	-	RS422 Tx- *RS485 Tx-/Rx-	-	-	-
7	RS232 RTS	-	-	-	-
8	RS232 CTS	-	-	-	-
9	-	RS422 Rx-	RS485 Tx-/Rx-	-	-

Note:

COM B: only present on the X2-BASE-5-V2 model.

COM C: present on the X2-BASE-7-V2 and X2-BASE-10-V2 models.

On X2-BASE-V2 HMIs, pin 5 (GND) is connected internally to the HMI GND (Grounding Screw).

*In the X2-BASE-7-V2 and X2-BASE-10-V2 models, the RS485 option on COM2 is not available.

Mechanical Assembly

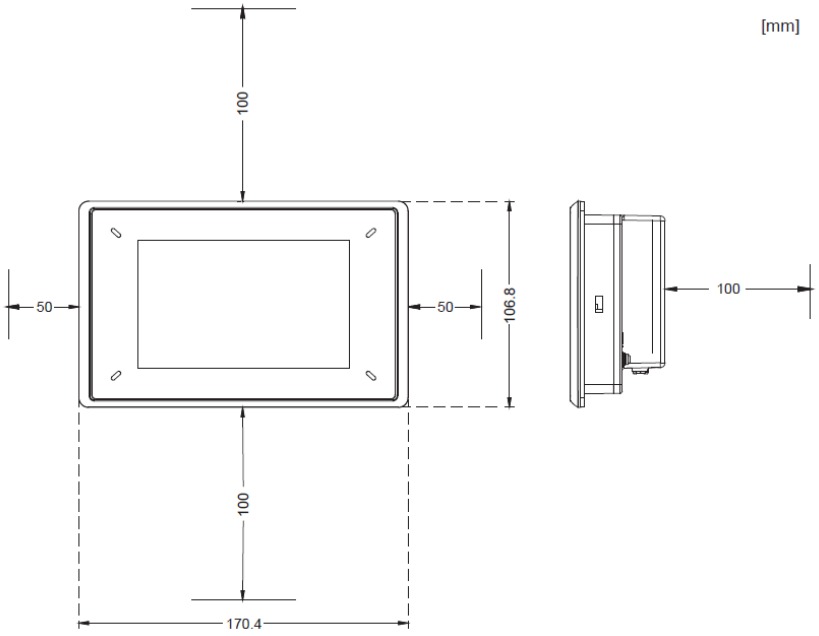
To assemble the X2 Series operating terminals, the electrical cabinet panel must be of sufficient thickness for the chosen operating terminal model.

The spacing around each operating terminal must be respected..

Space Requirements X2-BASE-5 and X2-BASE-5-V2

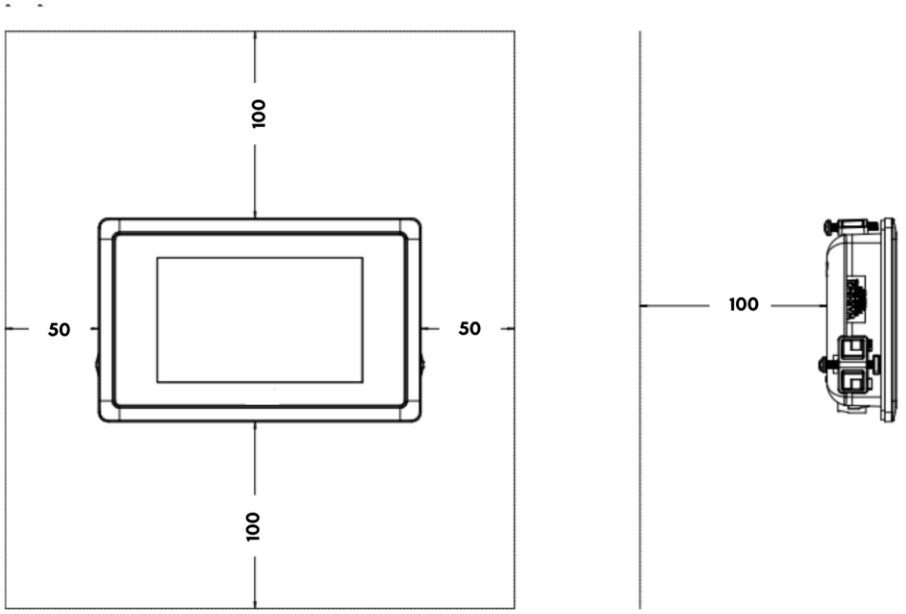
X2-BASE-5

Maximum panel plate thickness for installation: 5.5 mm.



X2-BASE-5-V2

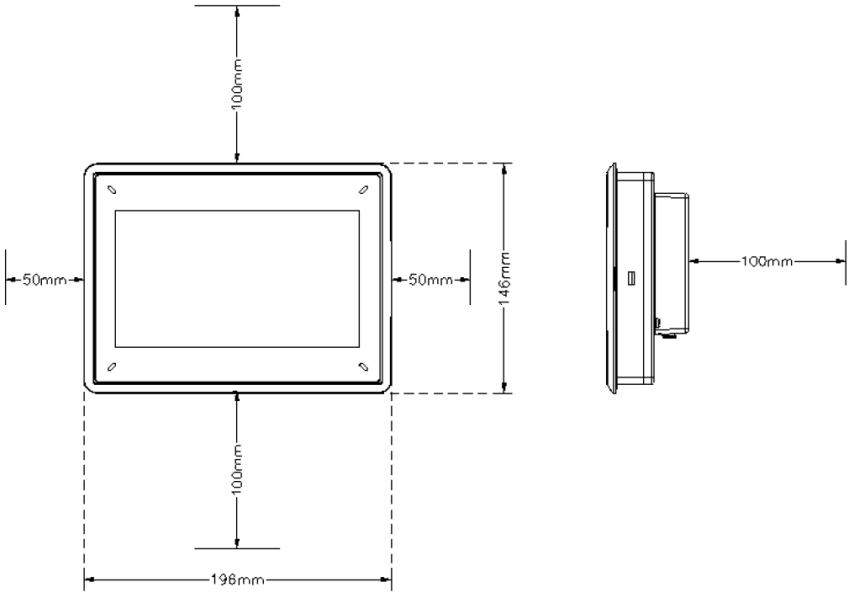
Maximum thickness of the panel sheet for installation: 4 mm..



Space Requirements X2-BASE-7 and X2-BASE-7-V2

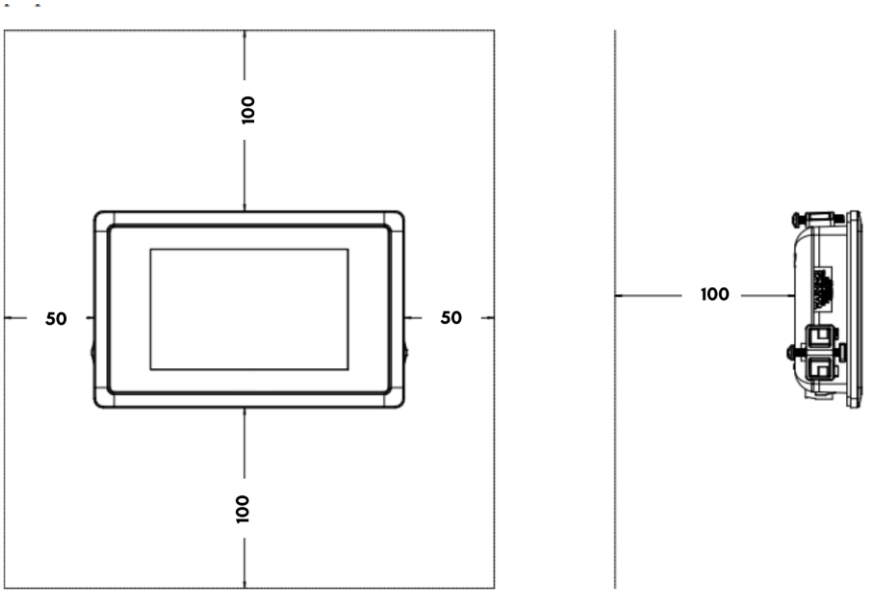
X2-BASE-7

Maximum panel sheet thickness for installation: 6.5 mm.



X2-BASE-7-V2

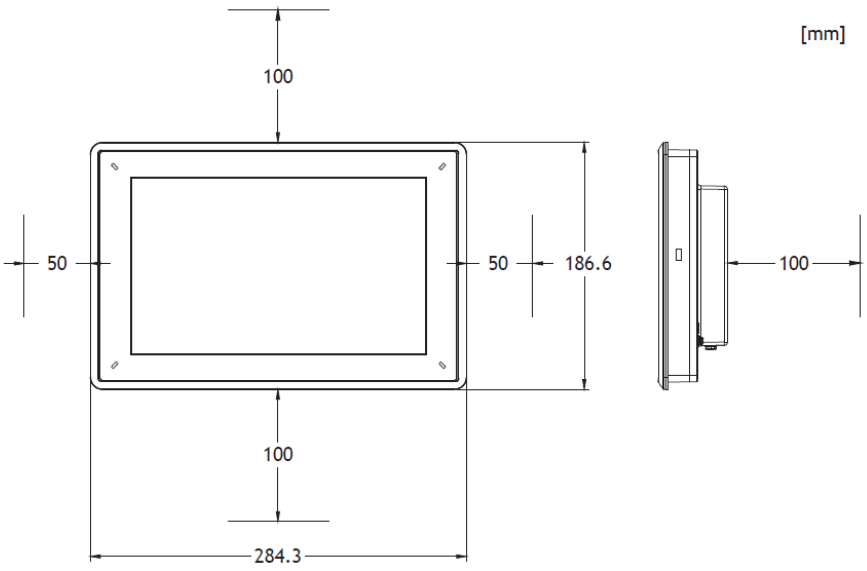
Maximum thickness of the panel sheet for installation: 4 mm.



Space Requirements X2-BASE-10 and X2-BASE-10-V2

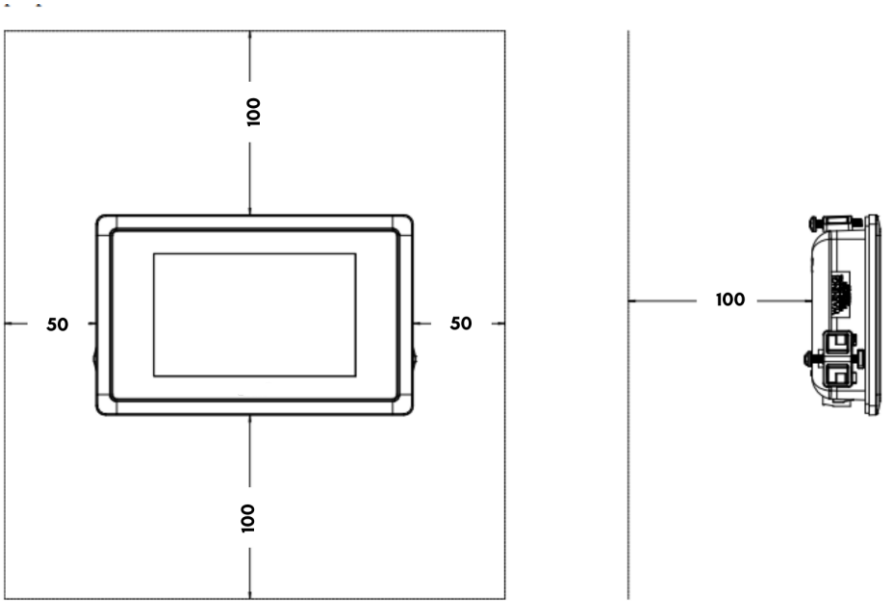
X2-BASE-10

Maximum panel sheet thickness for installation: 6.5 mm.



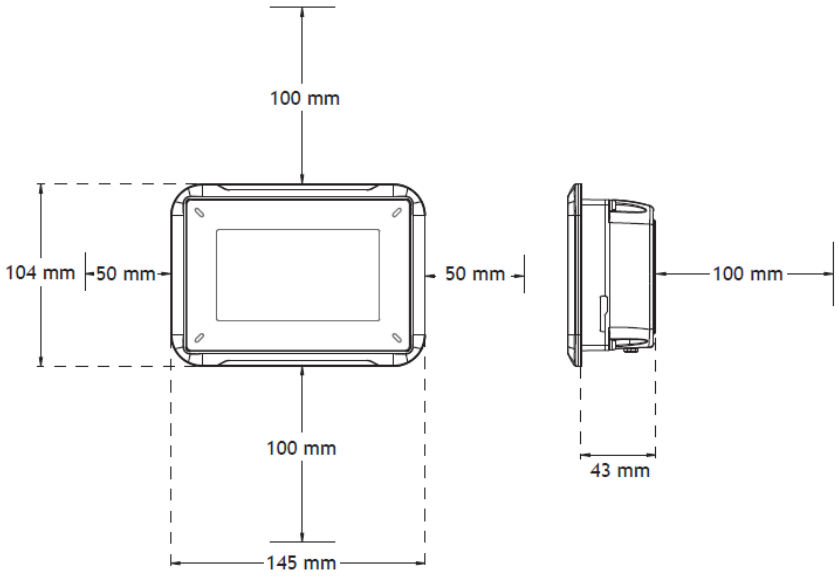
X2-BASE-10-V2

Maximum panel sheet thickness for installation: 5 mm.



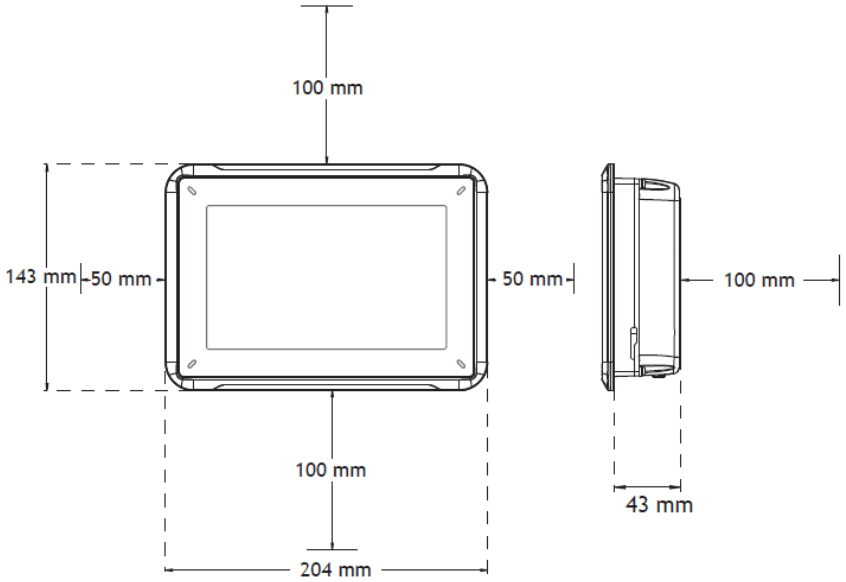
Space Requirements X2-PRO-4

Maximum panel sheet thickness for installation: 11 mm.



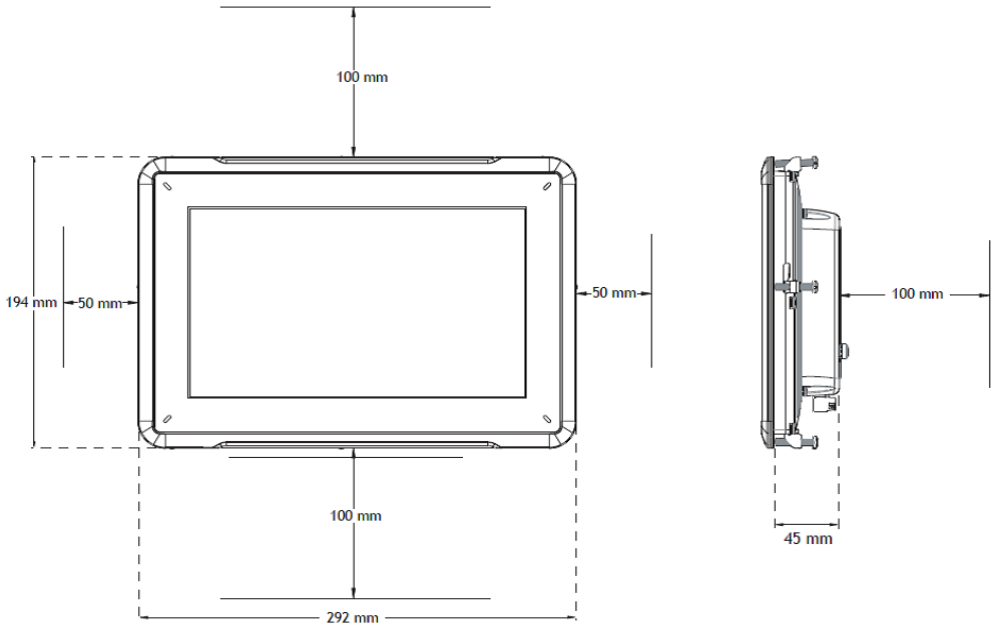
Space Requirements X2-PRO-7

Maximum panel sheet thickness for installation: 11 mm.



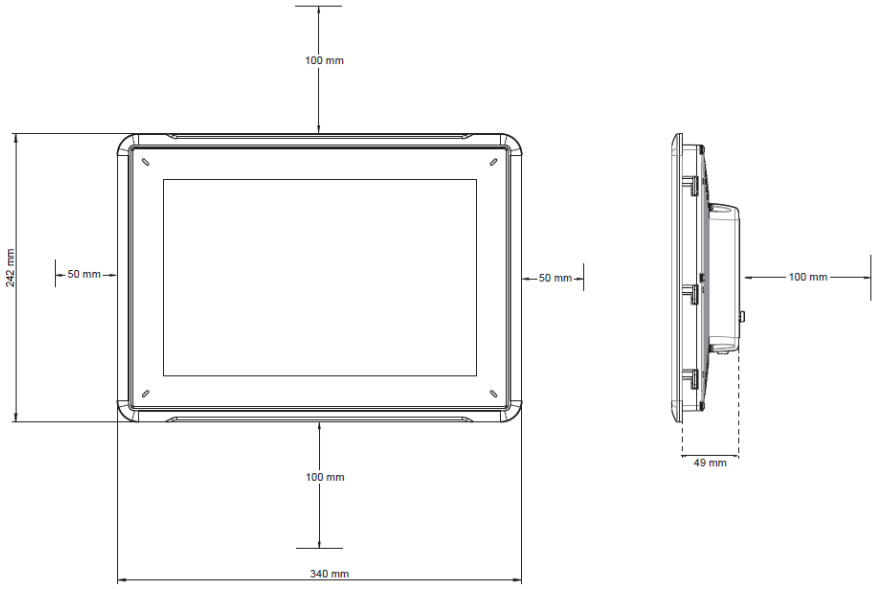
Space Requirements X2-PRO-10

Maximum panel sheet thickness for installation: 7 mm.



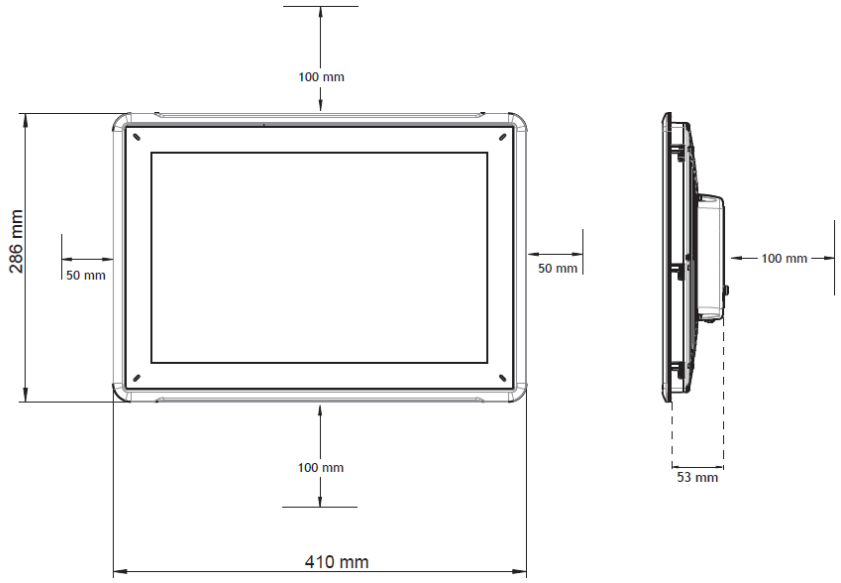
Space Requirements X2-PRO-12

Maximum panel sheet thickness for installation: 8 mm.



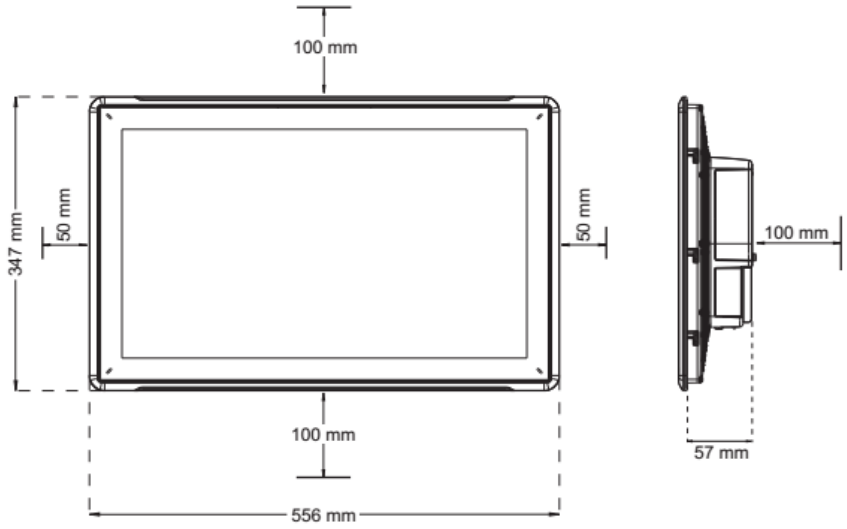
Space Requirements X2-PRO-15

Maximum panel sheet thickness for installation: 8 mm.



Space Requirements X2-PRO-21

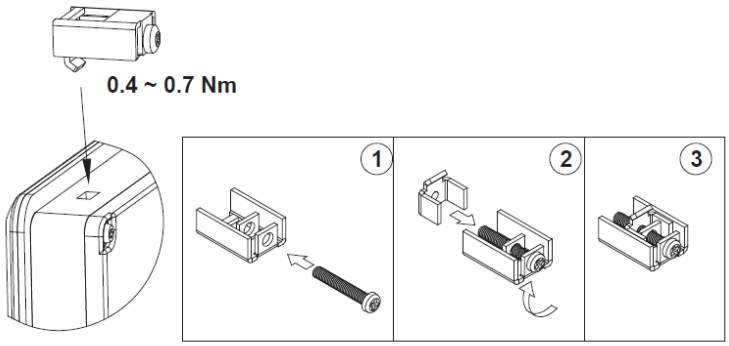
Maximum panel sheet thickness for installation: 8 mm.



ATTENTION
The openings in the operating terminal are for ventilation and must not be covered.

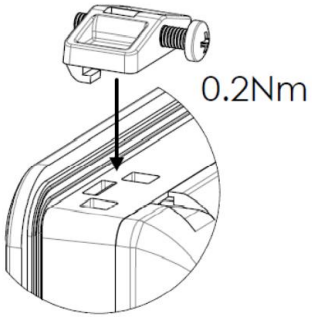
Installation Process X2-BASE Models

Remove the terminal from the packaging and check the contents. Fasteners are included with the terminal; use all fasteners to ensure a secure installation. Fit them as shown in the figure below. After fastening, connect the cables as indicated in the electrical installation.



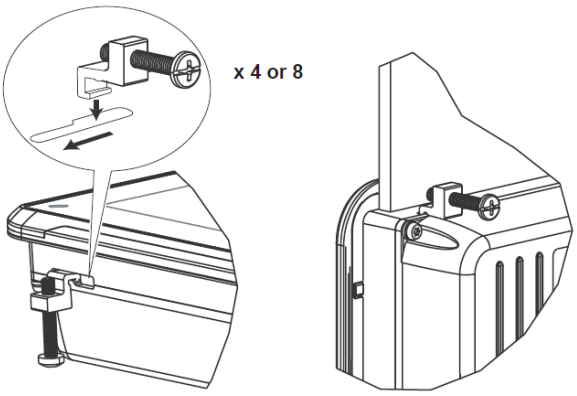
Installation Process Models X2-BASE-V2

Remove the terminal from the packaging and check the contents. The fasteners are included with the terminal. Use all fasteners to ensure a secure installation. Fit them as shown in the figure below. After fastening, connect the cables as indicated in the electrical installation.



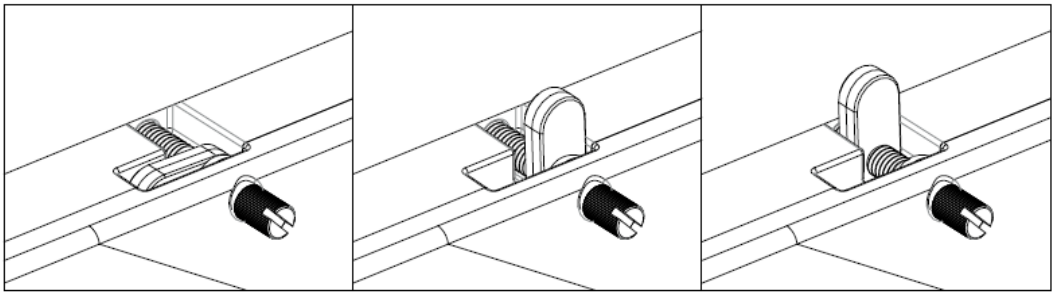
Installation Process Models X2-PRO-4, 7, and 10

Remove the terminal from the packaging and check the contents. Fasteners are included with the terminal. Use all fasteners to ensure a secure installation. Fit them as shown in the figure below. After fastening, connect the cables as indicated in the electrical installation.



Installation Process Models X2-PRO-12, 15, and 21

Remove the terminal from the packaging and check the contents. Fasteners are included with the terminal. Use all fasteners to ensure a secure installation. Perform the mechanical installation as shown in the figure below, then connect the cables as indicated in the electrical installation.

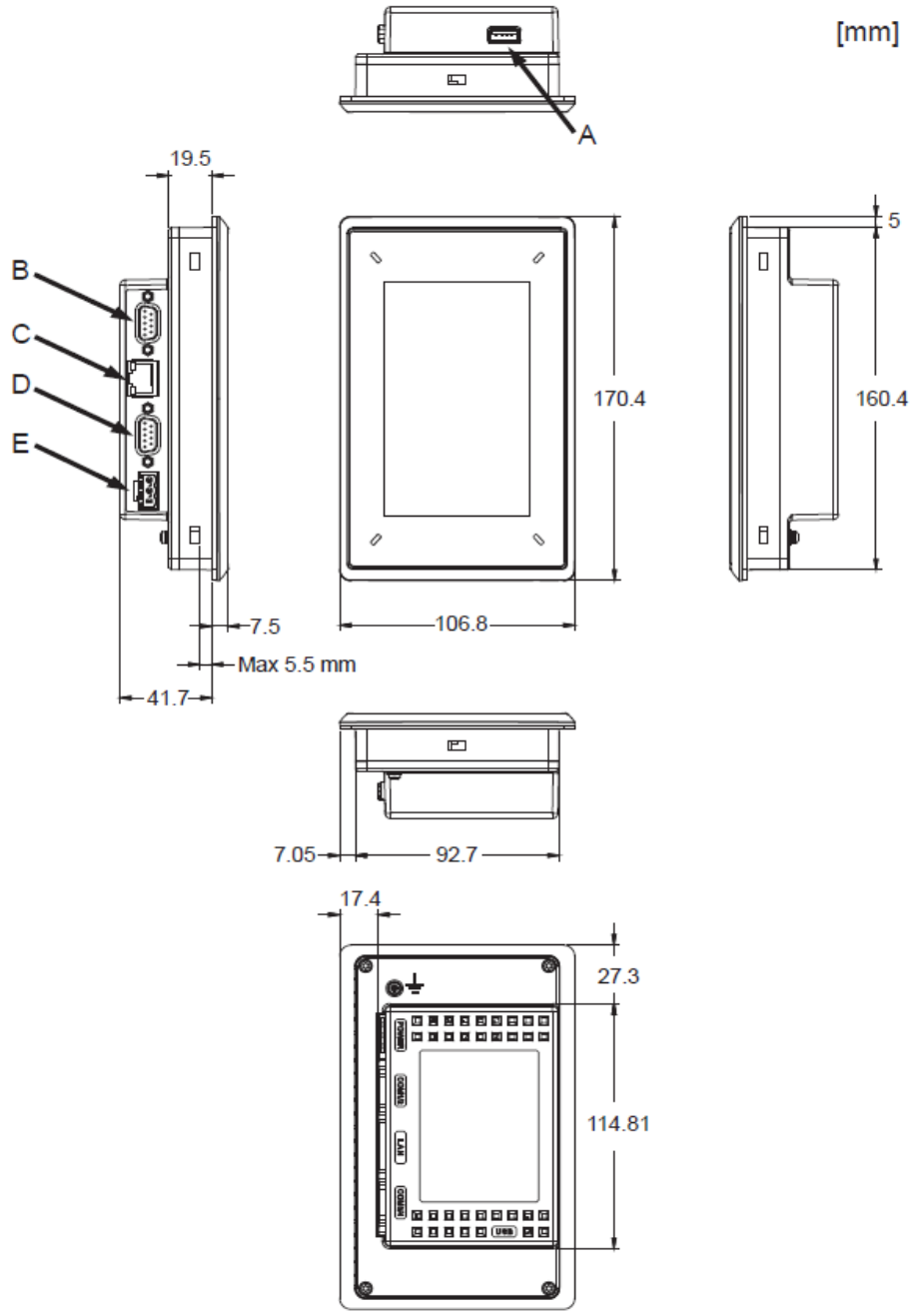


Physical Dimensions

The dimensions of the operating terminals are shown in mm.

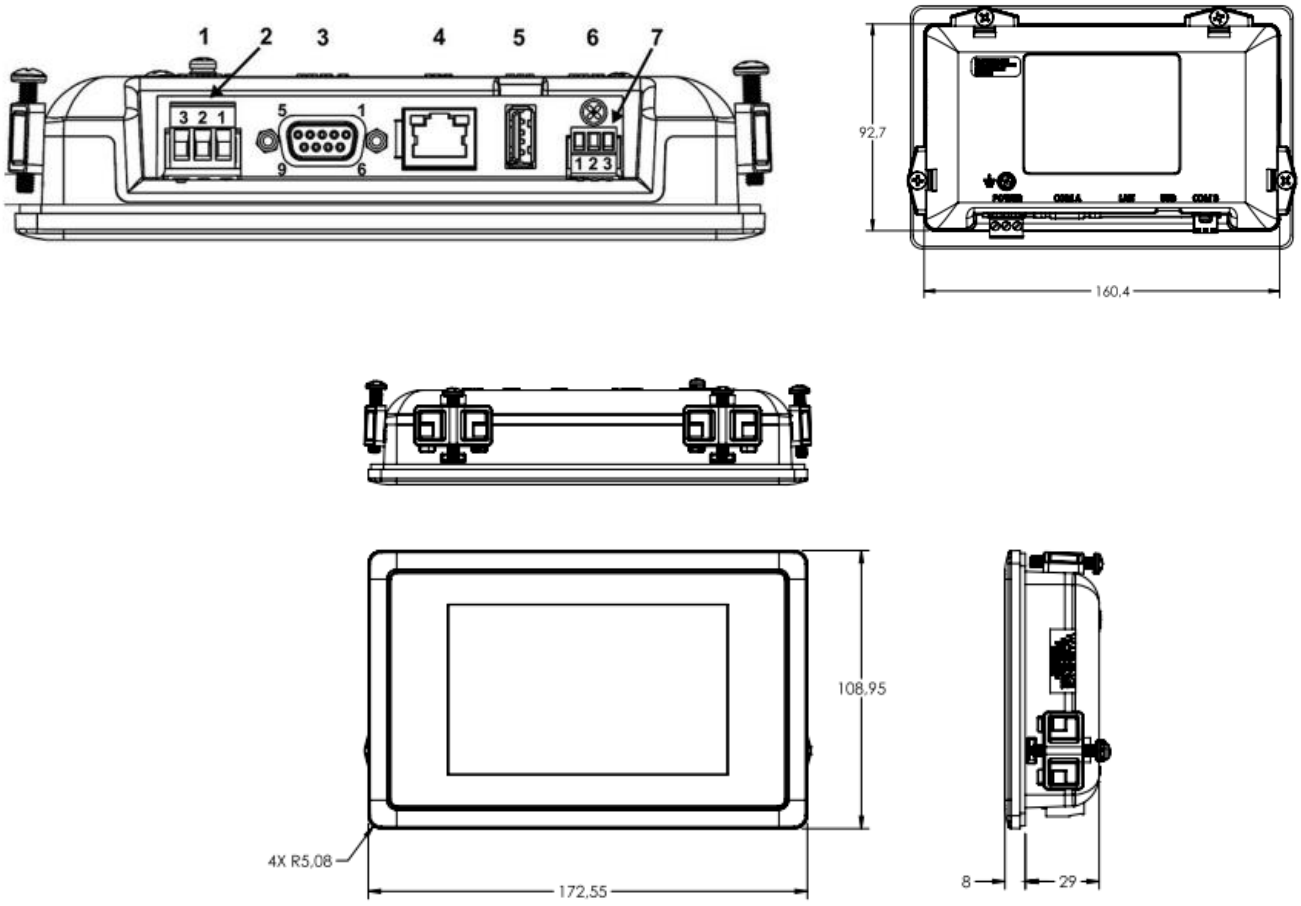
Operating Terminal X2-BASE-5 and X2-BASE-5-V2

X2-BASE-5



Caption: A-USB port, B-COM3/COM4, C-Ethernet port, D-COM1/COM2, E-24Vdc.

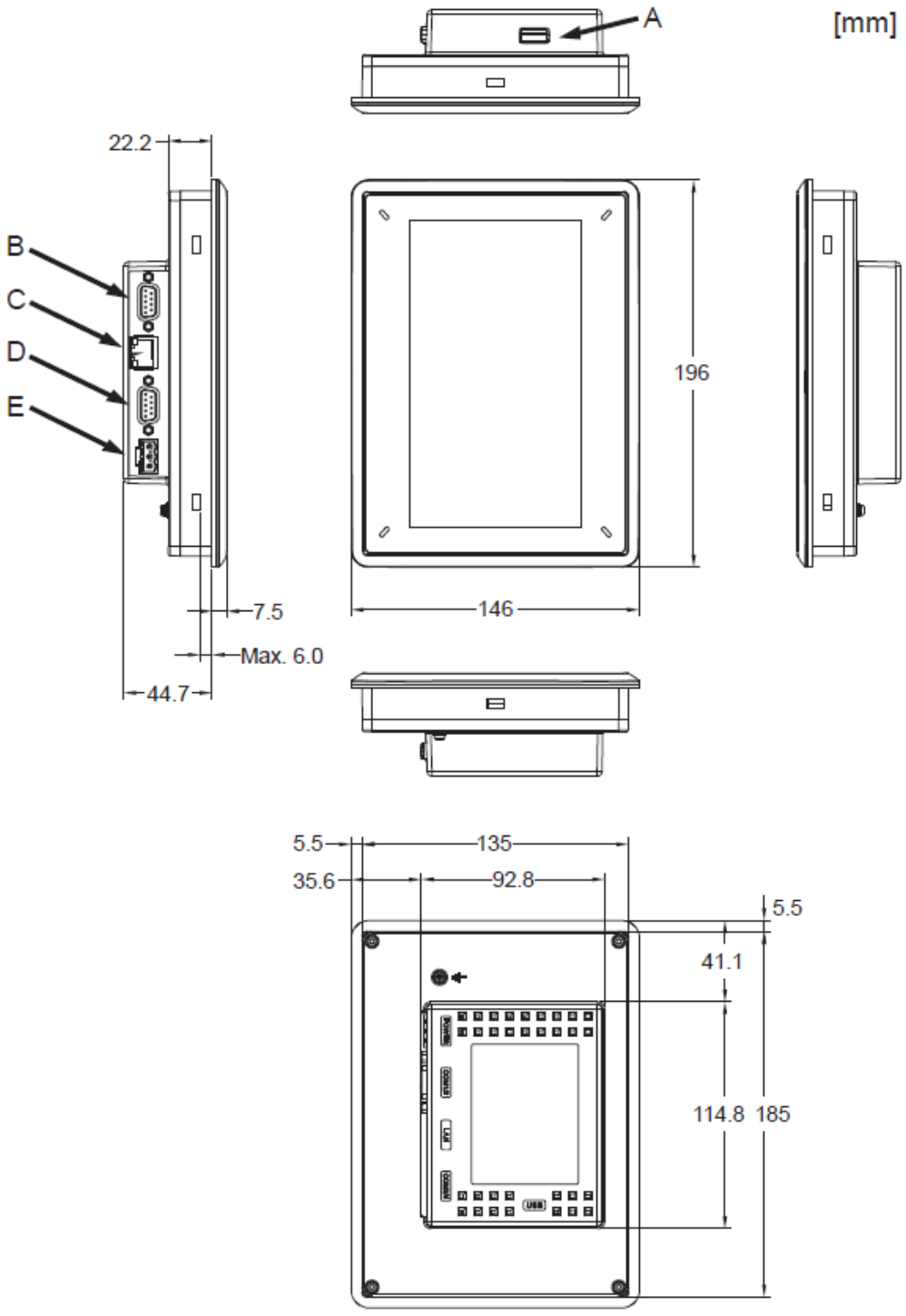
X2-BASE-5-V2



Position	Connector	Description
1	Grounding screw	Grounding screw
2	Screw connector	3-pin power supply, 24 Vdc (18 to 32 Vdc)
3	COM-A	9-pin female serial communication port
4	LAN-A	RJ 45 (shielded), 10/100Mbit
5	USB-A	USB 2.0, maximum output current 500 mA
6	COM-B screw	Screw for connecting the COM-B cable shielding
7	COM-B	Screw for connecting COM-B with 3 pins

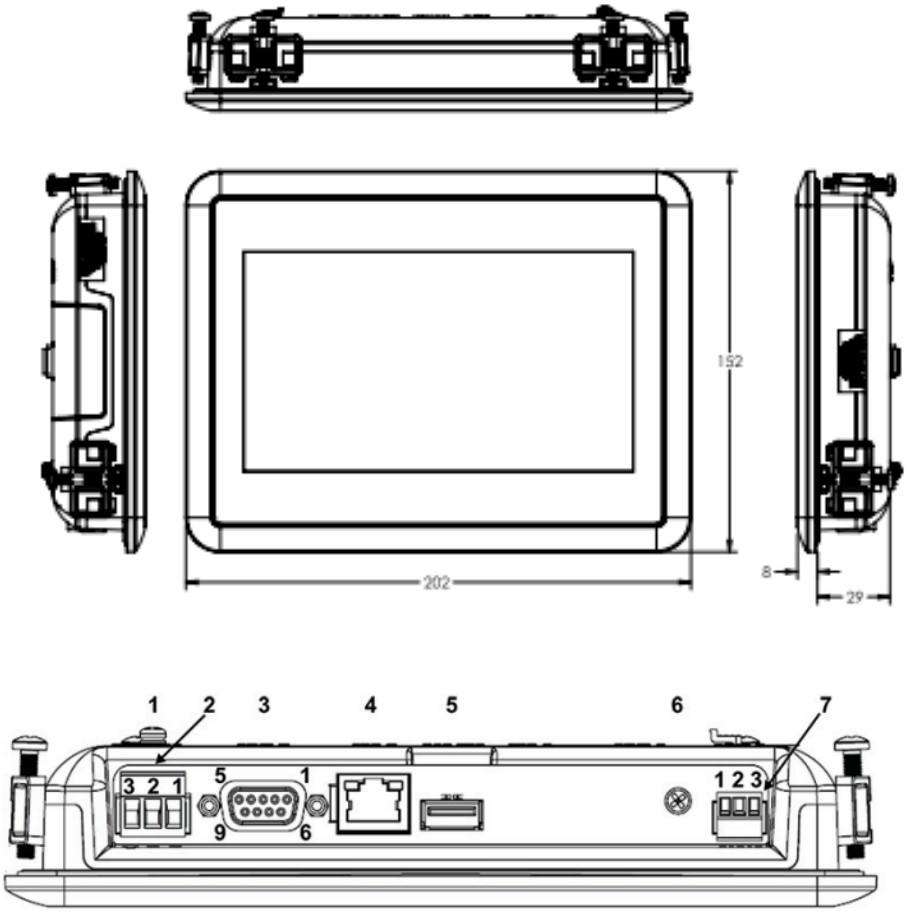
X2-BASE-7 and X2-BASE-7-V2 Operation Terminal

X2-BASE-7



Caption: A-USB port, B-COM3/COM4, C-Ethernet port, D-COM1/COM2, E-24Vdc.

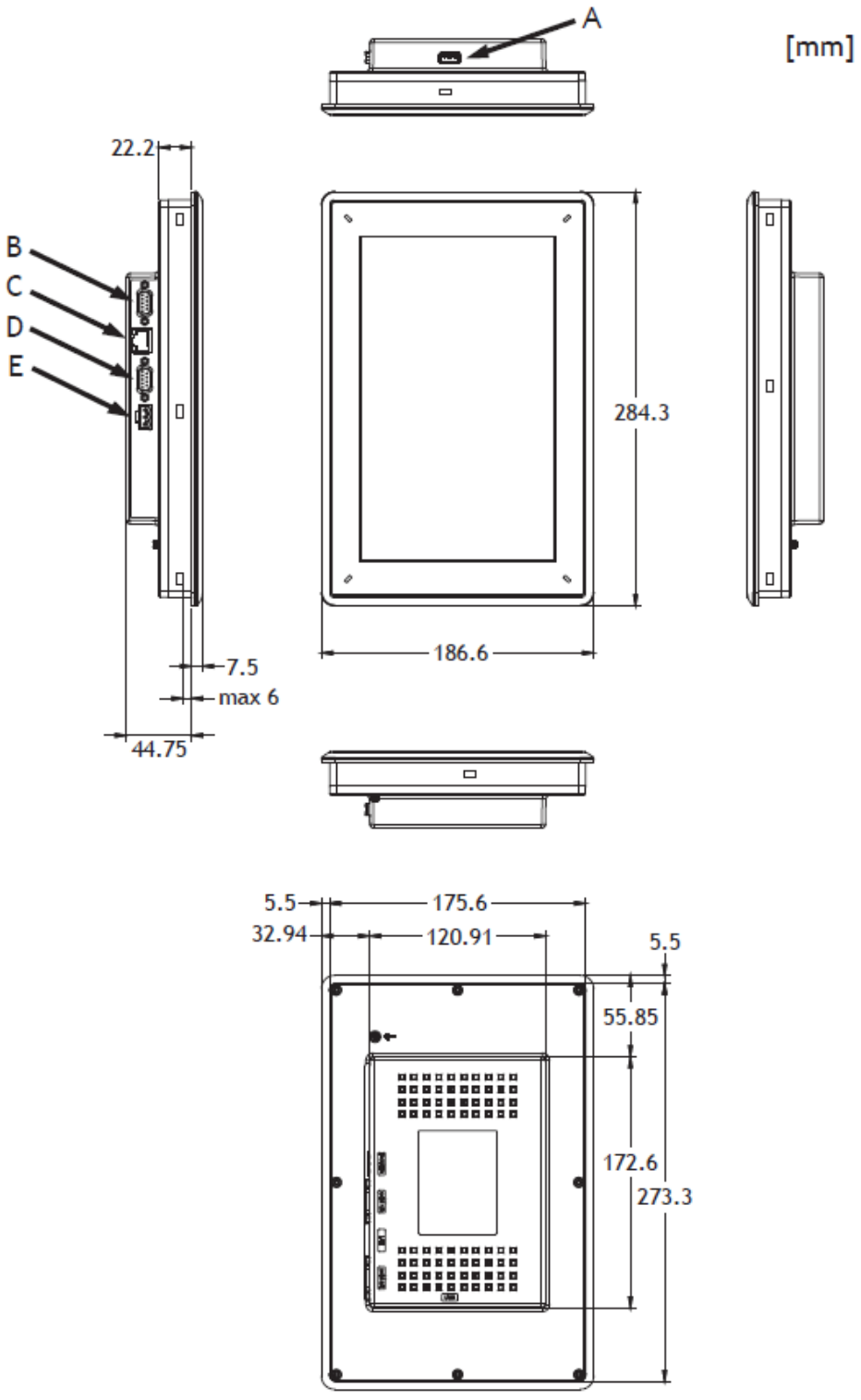
X2-BASE-7-V2



Position	Connector	Description
1	Grounding screw	Grounding screw
2	Screw connector	3-pin power supply, 24 Vdc (18 to 32 Vdc)
3	COM-A	9-pin female serial communication port
4	LAN-A	RJ 45 (shielded), 10/100Mbit
5	USB-A	USB 2.0, maximum output current 500 mA
6	COM-C screw	Screw for connecting the COM-C cable shielding
7	COM-C	Screw for connecting COM-B with 3 pins

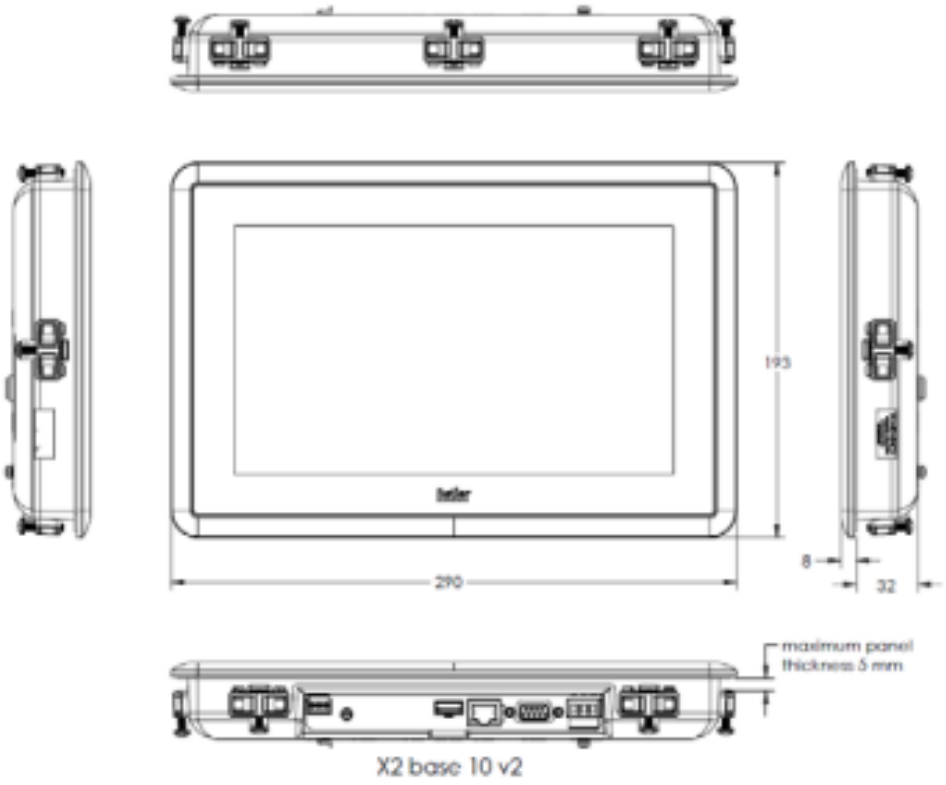
X2-BASE-10 and X2-BASE-10-V2 Operation Terminal

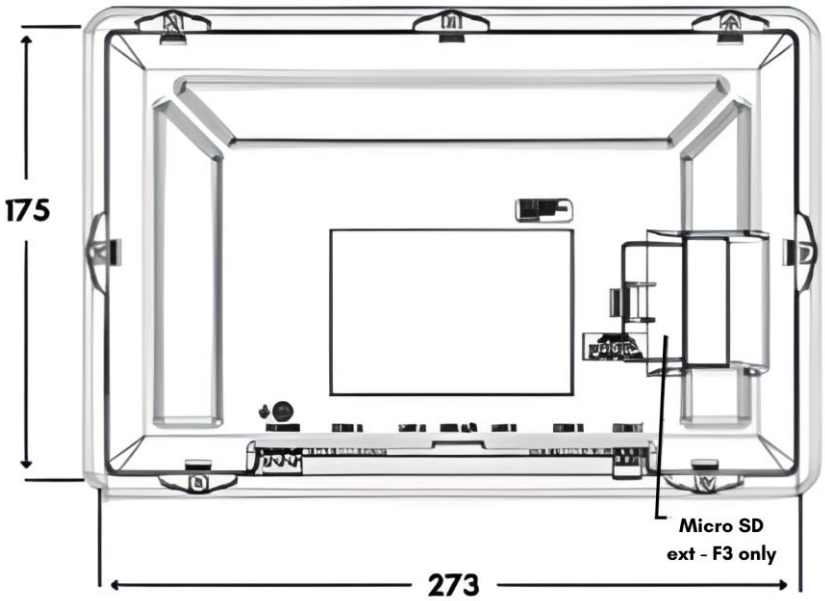
X2-BASE-10

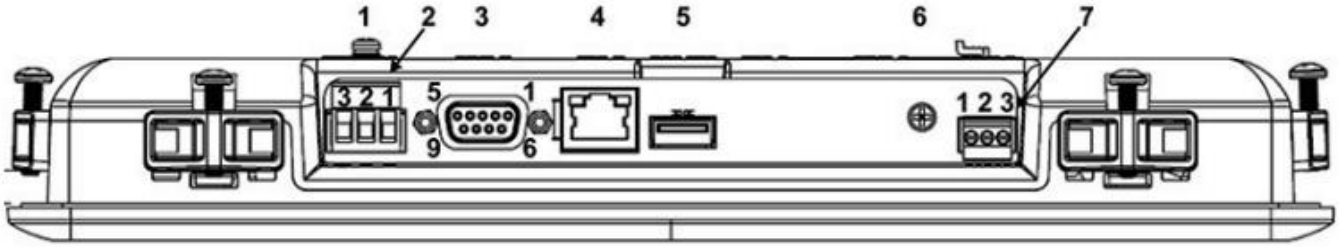


Caption: A-USB port, B-COM3/COM4, C-Ethernet port, D-COM1/COM2, E-24Vdc.

X2-BASE-10-V2

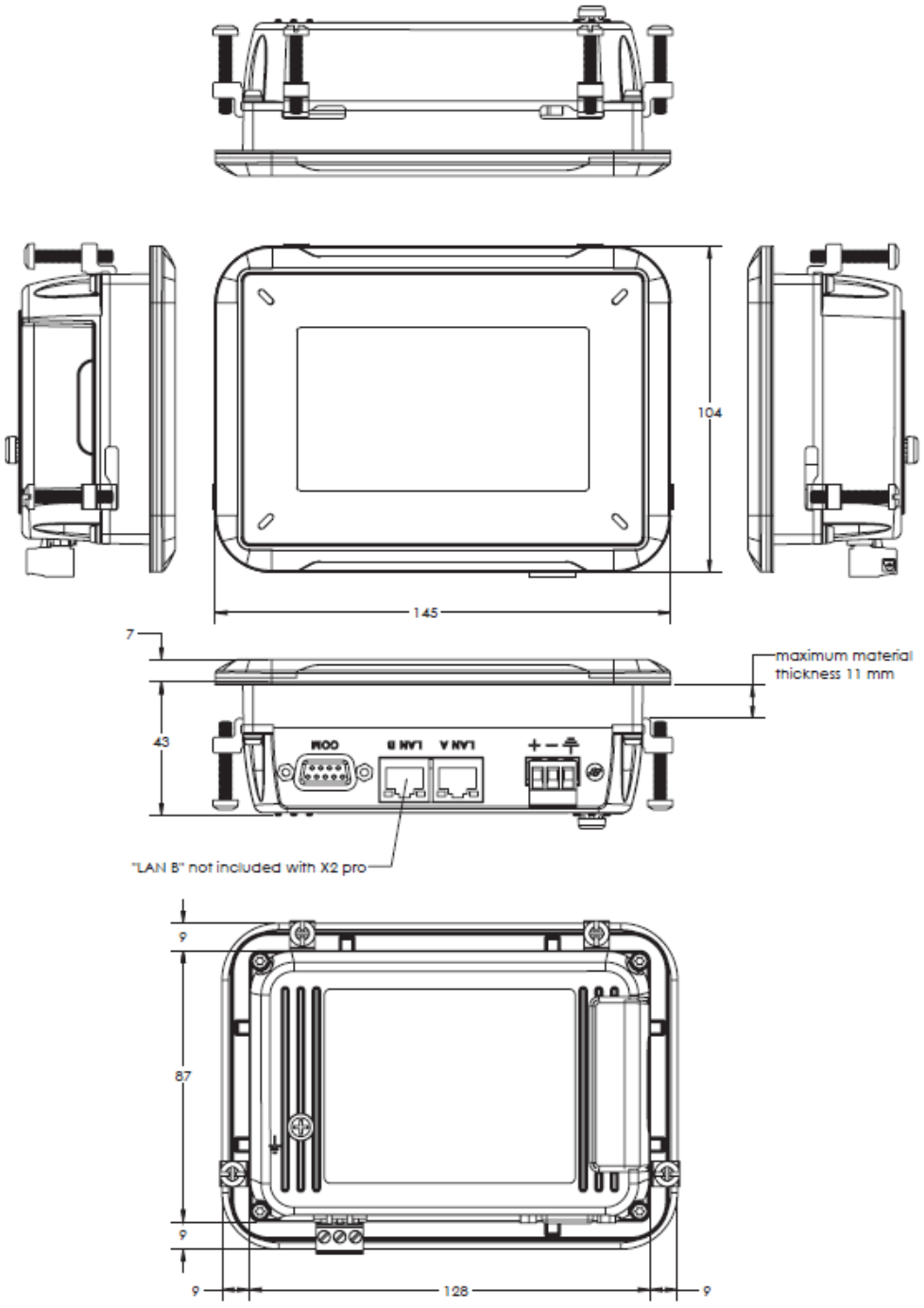

193
290
8
32
maximum panel thickness 5 mm
X2 base 10 v2


175
Micro SD
ext - F3 only
273

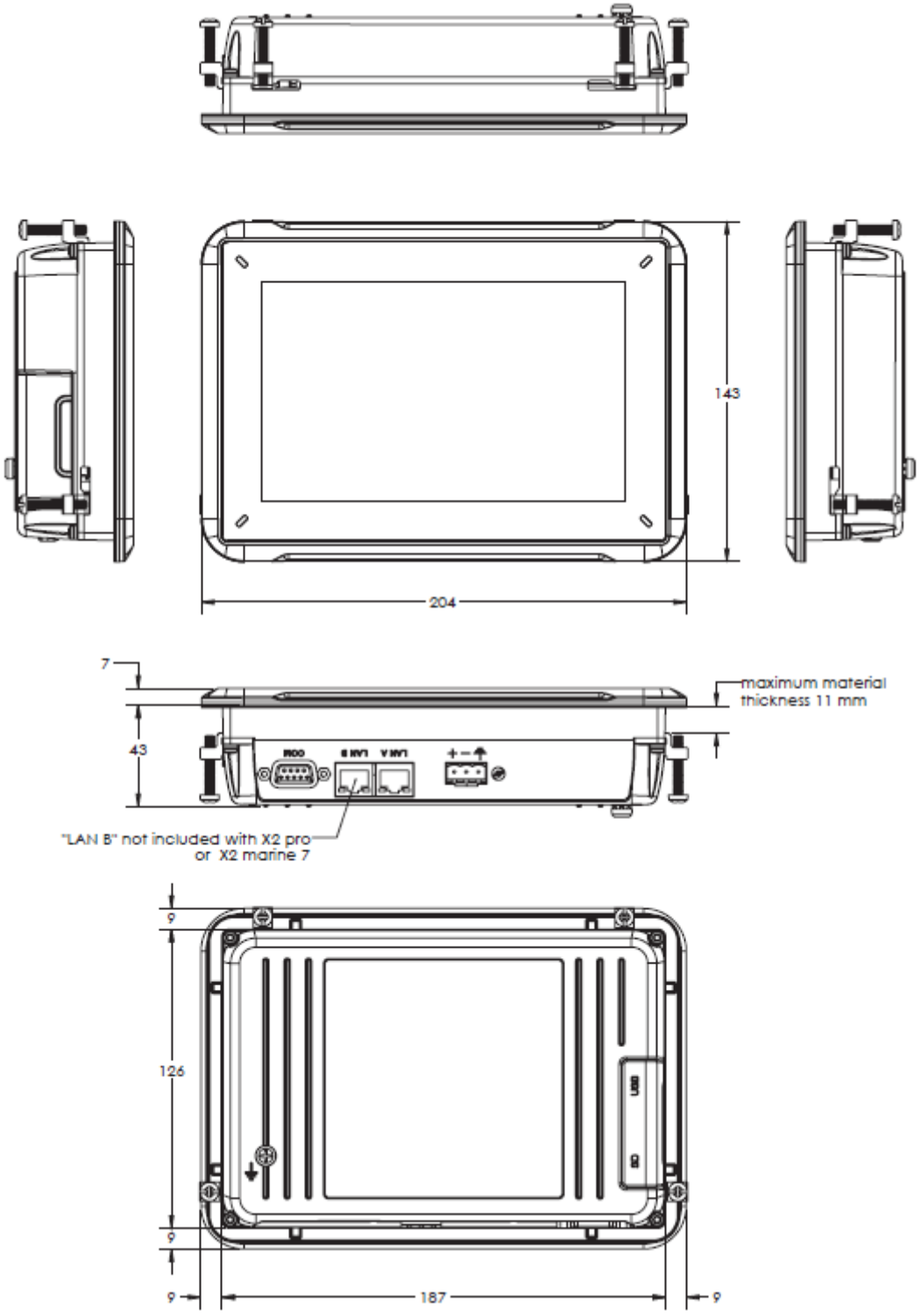


Position	Connector	Description
1	Grounding screw	Grounding screw
2	Screw connector	3-pin power supply, 24 Vdc (18 to 32 Vdc)
3	COM-A	9-pin female serial communication port
4	LAN-A	RJ 45 (shielded), 10/100Mbit
5	USB-A	USB 2.0, maximum output current 500 mA
6	COM-C screw	Screw for connecting the COM-C cable shielding
7	COM-C	Screw for connecting COM-B with 3 pins

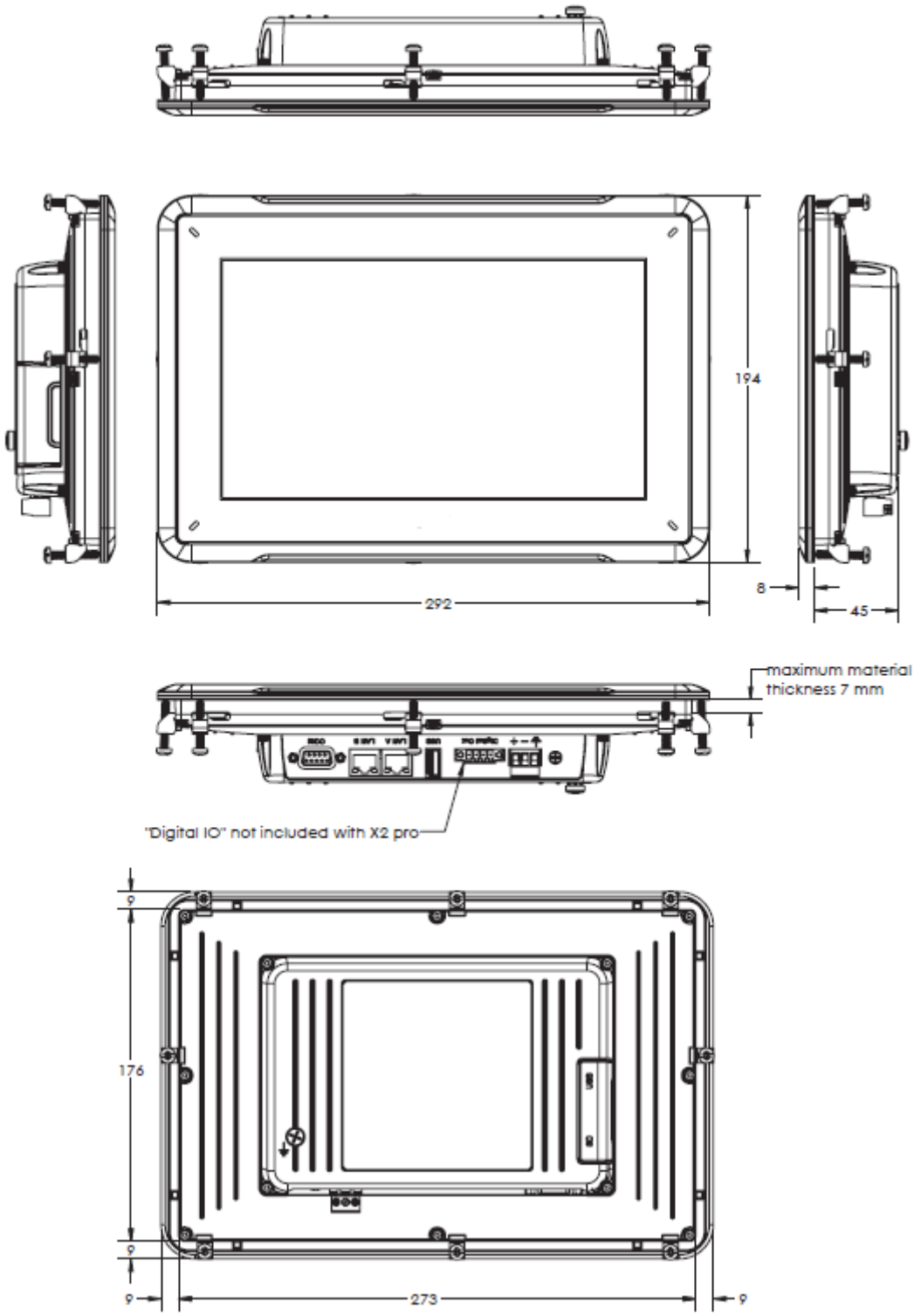
X2-PRO-4 Operation Terminal



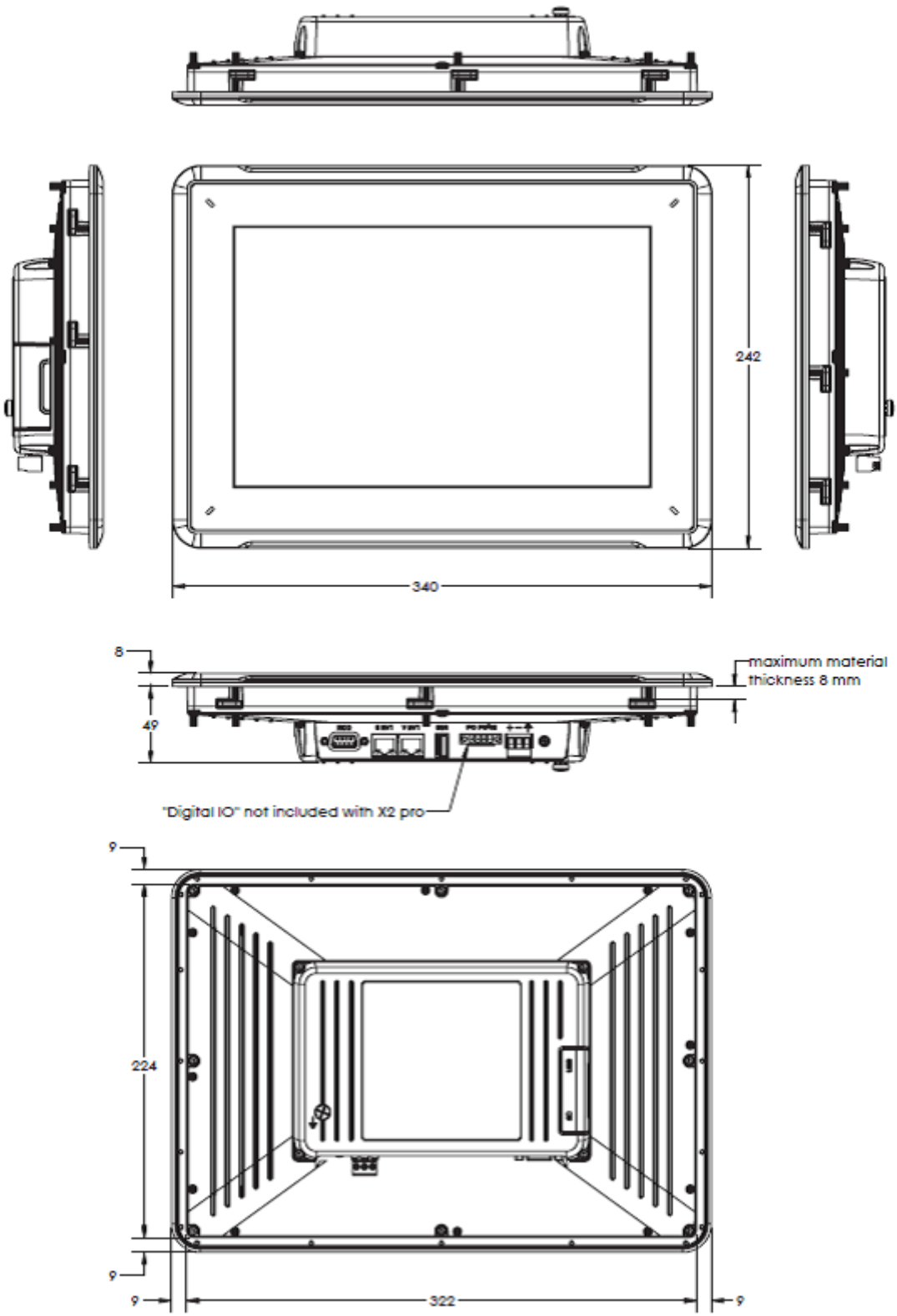
X2-PRO-7 Operation Terminal



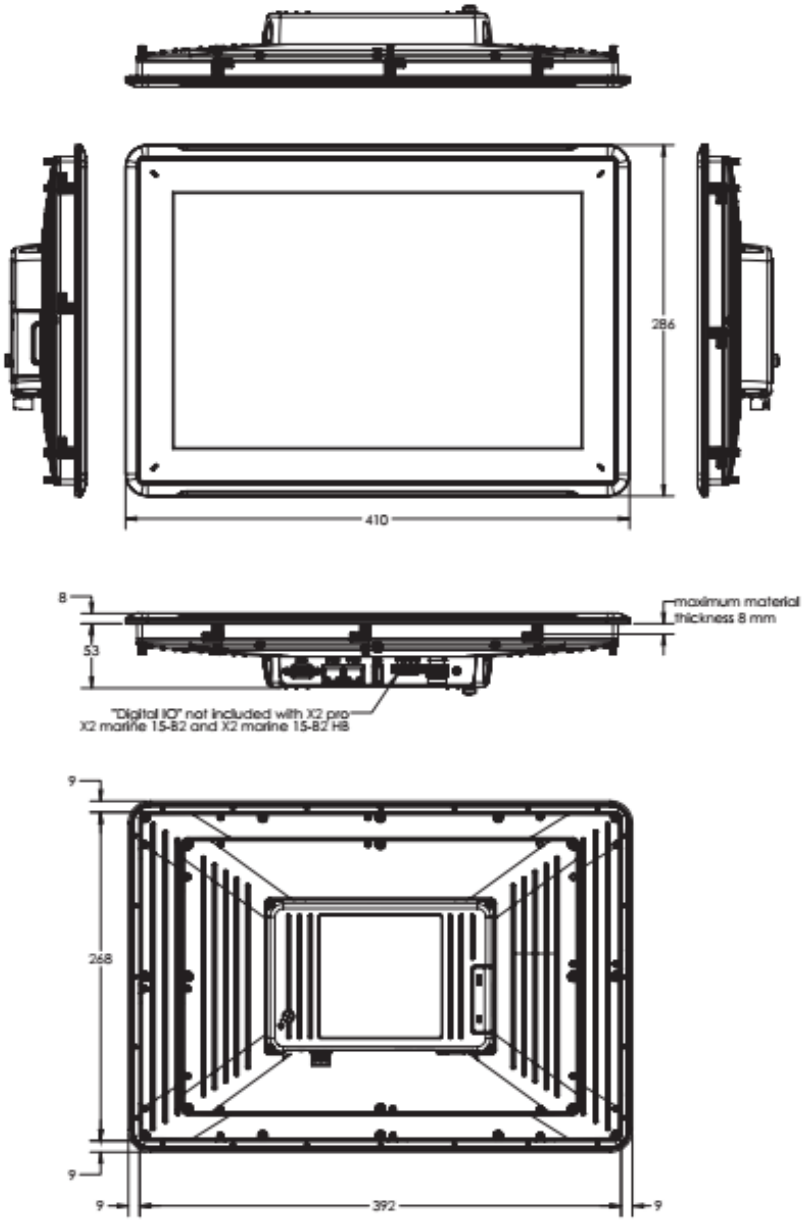
X2-PRO-10 Operation Terminal



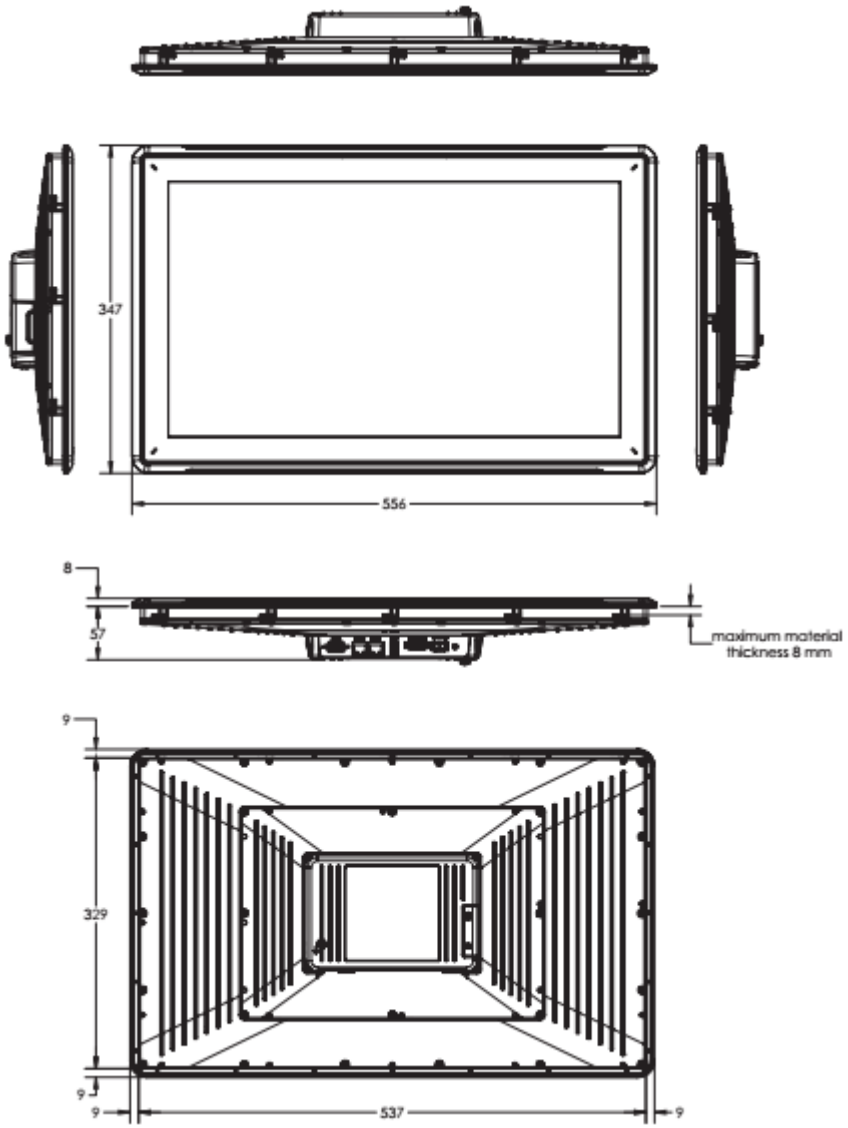
X2-PRO-12 Operation Terminal



X2-PRO-15 Operation Terminal



X2-PRO-21 Operation Terminal

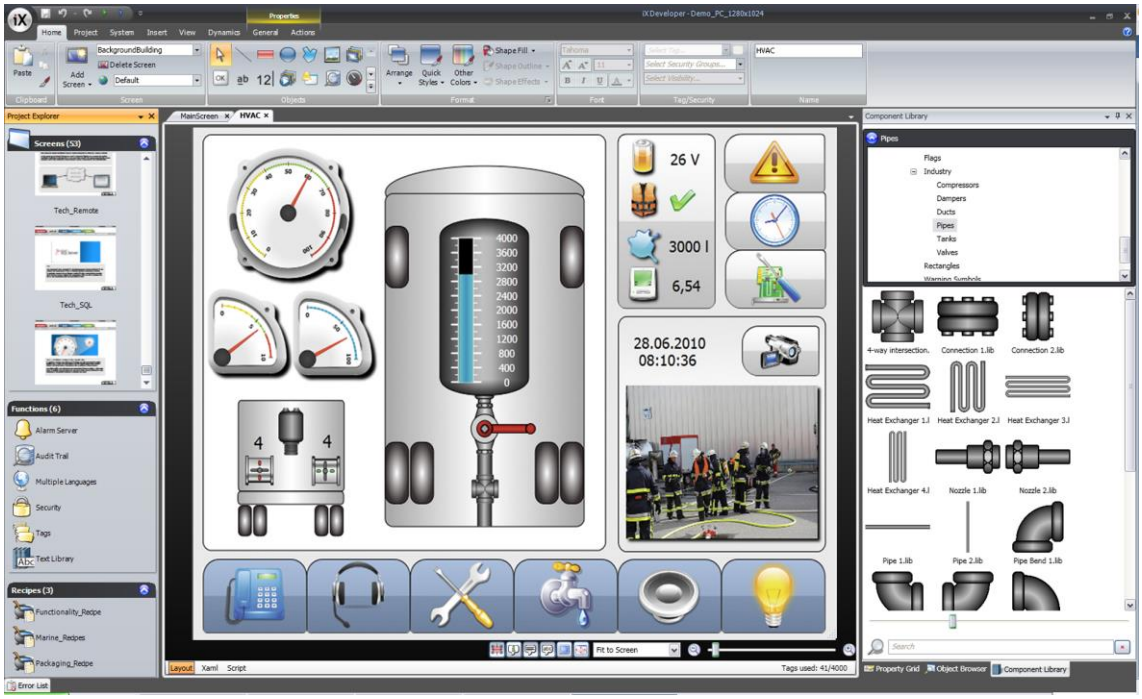


Programming

Programming Software

The X2 Series operator terminals are programmed using the iX Developer software available on the Altus website. The tool has new features, provides a wide range of objects and functions, with a simulator, and allows the user to develop their application without the need to communicate with the terminal during programming.

This software is not included with the operator terminal and is supplied separately.



State-of-the-Art Graphics

Vector Graphics

- Rotation and resizing do not affect image quality

Graphic Effects

- Shadows, reflections, embossing, etc

Windows Media Objects

- Use of files via Internet Explorer, Windows Media Player, and PDF Viewer.

Dynamic Objects

- Draws the operator's attention to the HMI by changing color, size, and visibility based on information from the controller.

Component Library

- Library of symbols and components used in a wide range of industrial applications.

Navigation Control

- Navigation between screens using thumbnails.

Pop-up Window

- Multiple screens open at the same time, increasing the application's possibilities.

Styles

- Change and standardize objects using the Style feature, similar to MS Office.

iX Developer

Parameter	Recommendation
RAM	2 GB
Processor	2 GHz or higher
Operating System	From version 2.40 SP2: Microsoft Windows 10 Microsoft Windows 7 SP1 From version 2.20 to version 2.40 SP1: Microsoft Windows 10 Microsoft Windows 8.1 Microsoft Windows 7 SP1 Up to version 2.10 SP3: Microsoft Windows 7 SP1 Microsoft Windows Vista Microsoft Windows XP
Video Card	Pixel shader 3 or higher ensures full graphics acceleration

Connection for Programming

Programming can be done via the Ethernet port or USB flash drive. However, the Ethernet port is recommended due to its programming speed.

The Ethernet port has standard pinout, the same as personal computers. The NX92xx or AMJG0808 cable should be used.

Refer to the iX Developer User Manual – MU226000 for more information.

Maintenance

Altus recommends that all connections to the operating terminals be checked and that dust and any dirt located in the operating terminal compartment be removed at least every 6 months.

Manuals

For more technical details, configuration, installation, and programming of the iX Series, refer to the table below. This table is only a guide to some relevant documents that may be useful during the use, maintenance, and programming of iX Series operation terminals.

Document code	Description	Language
MU226000	Manual de Utilização iX Developer	Português