



## Product Description

The iX Series of Human Machine Interfaces (HMIs) makes the ideal solution for industrial applications that use visualizations and operator terminals. The iX series provides intuitive and innovative resources, mixing advanced graphical tool and a selection of highly functional features. It is a truly open platform, allowing the user to import objects and components developed with .NET, besides enabling that the user uses the same application in different hardware of iX Series. The product differentiates by the engineering and design, with a high performance hardware, superior graphical and advanced solution through the iX Developer software. All iX Series' products have a strong structure, reliable and high performance.

The Series have the models T4A, T7A, T10A, T5F-2, T7F-2 and T10F-2. The HMIs were developed to all kinds of applications that need a reliable process control and excellent graphical resources, even in compact formats. Its' frontal part is completely flat, which guarantees a free dust surface. The screen is equipped with a long duration backlight, which is maintenance free and also includes TFT technology that allows to adjust the brightness and high contrast. The small models provide a widescreen display, which results 30% more of useful area, when compared with earlier versions. This feature expands the possibilities for applications with more complex screens, even in terminal with reduced size.

Its main features are:

- Open platform that allows to improve the look and application functionality
- High performance hardware
- Ethernet 10/100 BASE-T communication interface
- Serial RS-232, RS-422 and RS-485 communication interfaces
- Long term backlight
- TFT technology to adjust the brightness and high contrast
- Widescreen display with useful area 30% bigger
- Strong functionalities that develop and ensure the user reliability
- Time optimization with intuitive and versatile edition tools
- Several models (templates) to create complex and customized applications fast and agile
- Online and off-line simulation, with or without terminal, allows reliable tests before go to the field

The iX Series was developed with a differentiated design, combining high quality, ruggedness, sophistication and lightness. These results were achieved with an innovative mechanical project, using cast aluminum for the TxA models and PC + ABS for TxF-2 models, displays the state of the art and superior workmanship.

## Ordering Information

### ***iX-T4A Included Items***

The product package contains the following items:

- One operator terminal T4A
- Instalation guide
- Panel fixing elements
- Power supply conector block

### ***iX-T7A Included Items***

The product package contains the following items:

- One operator terminal T7A
- Instalation guide
- Panel fixing elements
- Power supply conector block

### ***iX-T10A Included Items***

The product package contains the following items:

- One operator terminal T10A
- Instalation guide
- Panel fixing elements
- Power supply conector block

### ***iX-T5F-2 Included Items***

The product package contains the following items:

- One operator terminal T5F-2
- Instalation guide
- Panel fixing elements
- Power supply conector block

### ***iX-T7F-2 Included Items***

The product package contains the following items:

- One operator terminal T7F-2
- Instalation guide
- Panel fixing elements
- Power supply conector block

### ***iX-T10F-2 Included Items***

The product package contains the following items:

- One operator terminal T10F-2
- Instalation guide
- Panel fixing elements
- Power supply conector block

## Product Code

The following codes should be used to purchase the product:

Code	Description
<b>iX-T4A</b>	Colorful operator terminal T4A, graphical, touchscreen, display 4,3" LCD-TFT
<b>iX-T7A</b>	Colorful operator terminal T7A, graphical, touchscreen, display 7" LCD-TFT
<b>iX-T10A</b>	Colorful operator terminal T10A, graphical, touchscreen, display 10,4" LCD-TFT
<b>iX-T5F-2</b>	Colorful operator terminal T5F-2, graphical, touchscreen, display 5" LCD-TFT
<b>iX-T7F-2</b>	Colorful operator terminal T7F-2, graphical, touchscreen, display 7" LCD-TFT
<b>iX-T10F-2</b>	Colorful operator terminal T10F-2, graphical, touchscreen, display 10" LCD-TFT

## Related Products

The following products must be purchased separately when necessary:

Code	Description
<b>NX9202</b>	Cross over Ethernet cable RJ45-RJ45 (2 m)
<b>NX9205</b>	Cross over Ethernet cable RJ45-RJ45 (5 m)
<b>NX9210</b>	Cross over Ethernet cable RJ45-RJ45 (10 m)
<b>AL-2319</b>	Cross over Ethernet cable RJ45-RJ45 (2 m)
<b>AL-1740</b>	Communication cable RS-232 CMDB9-RJ45 (3 m)
<b>AL-1741</b>	Communication cable RS-485 CMDB9-RJ45 (3 m)
<b>AL-1752</b>	Communication cable RS-232 CMDB9-CMDB9 (3 m)
<b>FBS-232P0-9M-400</b>	Programming cable RS-232 MiniDin -CMDB9 (4 m)
<b>PO8525</b>	Network derivator/terminator RS-485

### Notes:

**NX92xx:** Ethernet cables CAT5 with one RJ45 male connector in each end. Projected for several applications ensuring quality in the communication between the equipments that use it, because it has shielding and supporting high temperatures. Available in 2 m, 5 m and 10 m.

**AL-2319:** Cable with two RJ45 connectors for iX Series operator terminals programming and for point-to-point Ethernet communication with other devices with Ethernet interface.

**AL-1740:** RS-232 standard cable with one DB9 male connector and one RJ45 connector for communication between the operator terminals of iX Series and the CPUs of Ponto Series.

**AL-1741:** RS-485 standard cable with one DB9 male connector and one RJ45 connector for communication between operator terminals of iX Series and the network derivator/terminator PO8025.

**AL-1752:** RS-232C standard cable with two DB9 male connectors for communication between operator terminal of iX Series, CPUs of the Nexto Series and FBs Series.

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

**PO8525:** This module is used for derivation and termination of a RS-485 network. For each network node must exist one PO8525. In the RJ45 connector of PO8525 must be connected the RS-485 communication interface of iX Series operator terminals (via AL-1741 cable). The PO8525 modules that are in the network ends must be configured as termination, the others as derivation.

## Product Features

### General Features

	T4A	T7A	T10A	T5F-2	T7F-2	T10F-2
Display size	4,3" 95,0x53,9 mm	7" 152,4x91,4 mm	10,4" 211,2x158,4mm	5" 108x64.8mm	7" 154,1x85,9 mm	10" 222x132,48 mm
Display resolution	480x272 pixels (16:9)	800x480 pixels (16:9)	640x480 pixels (4:3)	800x480 pixels (16:9)	800x480 pixels (16:9)	800x480 pixels (16:9)
Display	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT	LCD-TFT
Display color	64K	64K	64K	64K	64K	64K
Backlight type	LED	LED	LED	LED	LED	LED
Backlight life time	50.000 h	20.000 h	50.000 h	20.000 h	20.000 h	20.000 h
LEDs indicator	1 (bicolor)	1 (bicolor)	1 (bicolor)	1 (bicolor)	1 (bicolor)	1 (bicolor)
Touchscreen	Resistive	Resistive	Resistive	Resistive	Resistive	Resistive
Touchscreen life time	1 milion touches	1 milion touches	1 milion touches	1 milion touches	1 milion touches	1 milion touches
Application memory	80 MB	80 MB	80 MB	200MB	200MB	200MB
RAM memory	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB
Memory card support	Yes	Yes	Yes	No	No	No
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-422/485	RS-422/485	RS-422/485	RS-422/485	RS-422/485	RS-422/485
COM3	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232
COM4	RS-422 (RTS)/ RS-485	RS-422 (RTS)/ RS-485	RS-422 (RTS)/ RS-485	RS-485	RS-485	RS-485
USB 2.0 port	1 (200 mA)	1 (200 mA)	1 (200 mA)	1 (400mA)	1 (400 mA)	1 (400 mA)
Ethernet 10/100 Base-T port	1	1	1	1	1	1
Front panel (WxHxD)	145x103x7 mm	204x143x7 mm	280x228x7 mm	170x107x8 mm	196x146x7,5 mm	284x187x7,5 mm
Cut out dimensions (WxH)	128x87 mm	187x126 mm	262x209 mm	161x93 mm	185,8x135,8 mm	274,3x176,6 mm
Mounting depth	43 mm (143 mm)	43 mm (143 mm)	46 mm (146 mm)	41.7mm (142 mm)	44,7 mm (145 mm)	44,7 mm (145 mm)
Power supply	24 Vdc (18 a 32 Vdc)	24 Vdc (18 a 32 Vdc)	24 Vdc (18 a 32 Vdc)	24 Vdc (18 a 32 Vdc)	24 Vdc (18 a 32 Vdc)	24 Vdc (18 a 32 Vdc)
Power dissipation	3,6 W	6 W	9,6 W	6 W	9,6 W	10,8 W
Internal fuse	2 A	2 A	2 A	2 A	2 A	2 A
IP65 frontal protection	Yes	Yes	Yes	Yes	Yes	Yes
IP20 rear protection	Yes	Yes	Yes	Yes	Yes	Yes
Operating temperature	-10 a 60 °C	-10 a 60 °C	-10 a 60 °C	-10 a 50 °C	-10 a 50 °C	-10 a 50 °C
Storage temperature	-20 a 70 °C	-20 a 70 °C	-20 a 70 °C	-20 a 60 °C	-20 a 60 °C	-20 a 60 °C
Relative humidity	<85 %	<85 %	<85 %	<85 %	<85 %	<85 %
Mechanical parts material	Aluminum	Aluminum	Aluminum	PC+ABS	PC+ABS	PC+ABS
Weight	0,5 kg	0,8 kg	1,5 kg	0,5 kg	0,7 kg	1,3 kg
Standards	UL508 DNV (A-13497) -	UL508 DNV (A-13497) -	UL508 DNV (A-13497) -	UL508 FCC	UL508 FCC	UL508 FCC

#### Notes:

**Mounting depth:** Besides the normal operation depth, it is necessary an additional space of 100 mm for product thermal dissipation.

## Software Features

	T4A, T7A, T10A, T5F-2, T7F-2 e T10F-2
<b>Network functions</b>	Send e-mails (SMTP client) Web server Internet remote operation Remote system access File transfer via FTP
<b>Dual driver with data exchange</b>	Yes
<b>Multi-language application</b>	Yes
<b>Special Characters</b>	Yes, allows accentuation and UNICODE characters
<b>Character type and size</b>	Support for any font of Windows operating system.
<b>Password</b>	Up to 31 security groups
<b>Alarms</b>	Have functions for alarm recording and monitoring
<b>Data logger</b>	Yes
<b>Gráficos de tendência</b>	Yes
<b>Funções de temporização</b>	Yes
<b>Script</b>	Yes
<b>SQLite database</b>	Yes
<b>Expressions on tags</b>	Yes

## Specific iX-TxF-2 Features

<b>Software specifications</b>	iX T5F-2, iX T7F-2, iX T10F-2,
<b>Number of communication controllers</b>	4
<b>Number of Tags</b>	800
<b>Number of screens</b>	100
<b>Alarm management</b>	Up to 400 alarms can be defined in different conditions and groups

## Communication Drivers

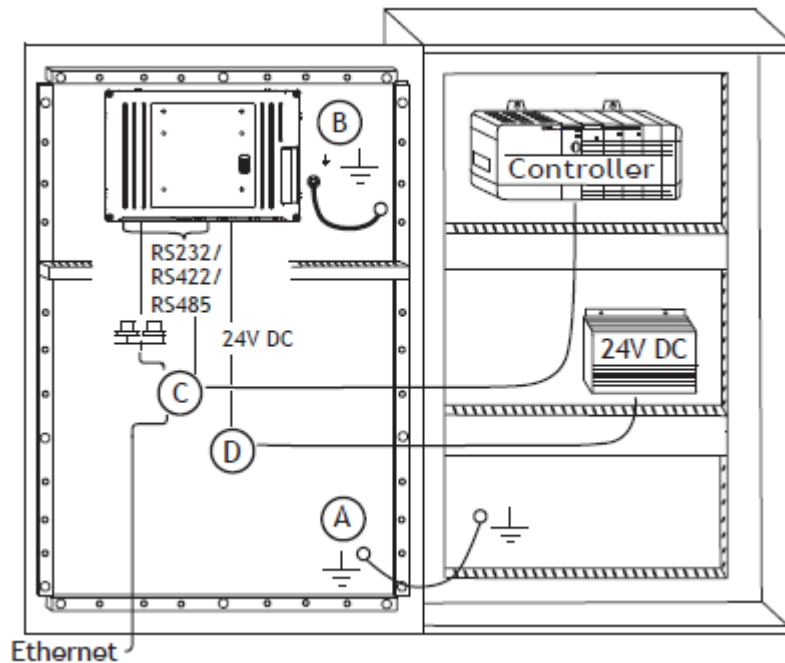
Several communication drivers are available, including standard and proprietary protocols. The list of drivers is updated continuously.

Communication Drivers	
<b>ABB</b>	COMLI Master
	COMLI Slave
<b>Allen Bradley</b>	DF1
	DH485
	MicroLogix Ethernet
	SLC5/PLC5 Ethernet
	Ethernet ControlLogix
<b>Altus</b>	Alnet I
<b>Animatics</b>	SmartMotor
<b>Beckhoff</b>	ADS
<b>Bernecker + Rainer</b>	Mininet
<b>Boch Rexroth</b>	IndraDrive C
<b>CoDeSys</b>	CoDeSys Artl
<b>Control Techniques</b>	Unidrive
<b>CTC</b>	CTC Serial Binary
<b>Delta</b>	Delta PLC Modbus ASCII
<b>DEMO</b>	Demo
<b>Emerson</b>	Modbus Master RTU/ASC II
<b>Fatek</b>	Facon
<b>G &amp; L Motion</b>	Motion Control

Control	
<b>GE</b>	GE TCP/IP via SRTIP
	GE Fanuc SNPX
<b>Hitachi</b>	H-COMM
<b>IAI</b>	X-SEL
<b>IDEC</b>	Computer Link
<b>J1939</b>	J1939
<b>Johnson Controls</b>	JCONTROL
<b>KEB</b>	COMBIVERT
<b>KEYENCE</b>	KV-Series
<b>Koyo</b>	DirectNET
	K-Sequence
<b>Lenze</b>	LECON A/B
<b>LS</b>	LS Gofla
	LS master K
<b>MATSUSHITA</b>	MEWTOCOL-COM
<b>MELSEC</b>	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
<b>MELSERVO</b>	MR-J2/MR-J3-T
<b>MODCON</b>	Modbus Master RTU/ASC II
	Modbus Slave RTU/TCP
<b>NMEA 0183</b>	NMEA 0183
<b>OMRON</b>	OMRON FINS
	Host Link
<b>PROFIBUS</b>	Profibus DP
<b>SAIA</b>	Sbus Serial/Ethernet
<b>Schneider Electric</b>	Uni-Telway
<b>SIMATIC</b>	S7 MPI Direct
	S7 ISO TCP
	S5 PB/AS511
	S7 200 PPI
	S7 MPI (EM)
	S7 MPI (HMI Adapter)
	TI500
<b>VIGOR</b>	Vigor M/VB-Series
<b>WAGO</b>	Modbus TCP
<b>YAMAHA</b>	YAMAHA VIP
<b>Yaskawa</b>	Memobus Master
<b>Yokogawa</b>	FA-M3 Serial/Ethernet

## Electrical Installation

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



- A** – Ensure that the operation terminal and the controller have the same electrical ground.
- B** – Use a M5 screw and at least a 2.5 mm<sup>2</sup> wire for the terminal grounding. The terminal metal enclosure has a screw for that.
- C** – Use only shielded cables. Separate the communication and power cables from high voltage cables.
- D** – Before powering the operation terminal, check if there is no humidity condensation on it.

**ATTENTION:**  
Different or missing ground connections may cause communication errors.

**ATTENTION:**  
Install the communication cable away from the power drivers wiring to avoid interference on the communication.

**ATTENTION:**  
Check the voltage and the polarity of the power supply. Voltages out of the specified range can cause irreversible damage which are not covered by the product warranty.

## Communication Ports Pinout

**ATTENTION:**  
For the connection with Altus products, there are cables available described on section Related Items.

**CAUTION:**  
Wrong connections can cause damage that is not covered by the product warranty.

### Communication Ports Models iX-T4A, iX-T7A and iX-T10A

Pins	Serial Port 9 pin female		Serial Port 9 pin female	
	COM1	COM2	COM3	COM4
1		RS422 TX+ / RS485 TX+ / RX+		RS422 TX+ / RS485 TX+ / RX+
2	RS232 RX		RS232 RX	
3	RS232 TX		RS232 TX	
4		RS422 RX+		RS422 RX+
5	GND	GND	GND	GND
6		RS422 TX- / RS485 TX- / RX-		RS422 TX- / RS485 TX- / RX-
7	RS232 RTS			RS422 RTS+
8	RS232 CTS			RS422 RTS-
9		RS422 RX-		RS422 RX-

### Communication Ports Models iX-T5F-2, iX-T7F-2 and iX-T10F-2

Pins	Serial Port 9 pin female		Serial Port 9 pin female	
	COM1	COM2	COM3	COM4
1		RS422 TX+ / RS485 TX+ / RX+		RS485 TX+ / RX+
2	RS232 RX		RS232 RX	
3	RS232 TX		RS232 TX	
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-		

### Mechanical Installation

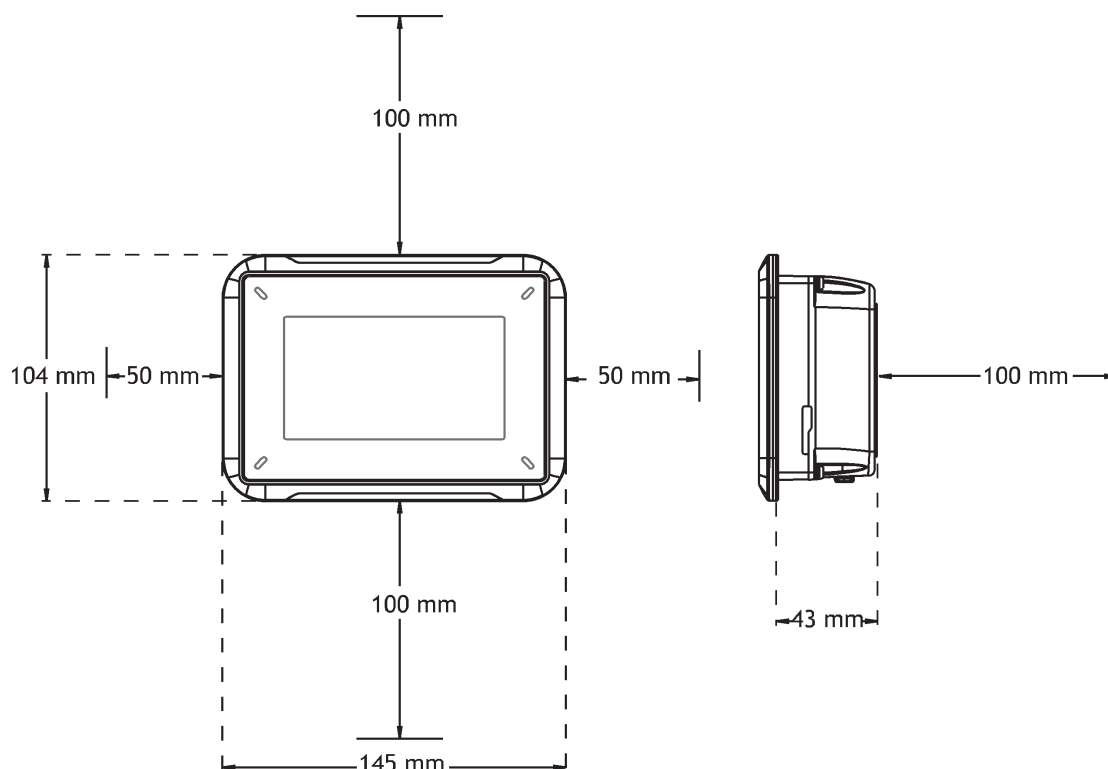
For mechanical installation of iX Series operation terminals, the installation panel must have appropriate thickness for the selected operation terminal model.

The free space on the operation terminal surroundings must be respected.

### Space Requirements iX-T4A

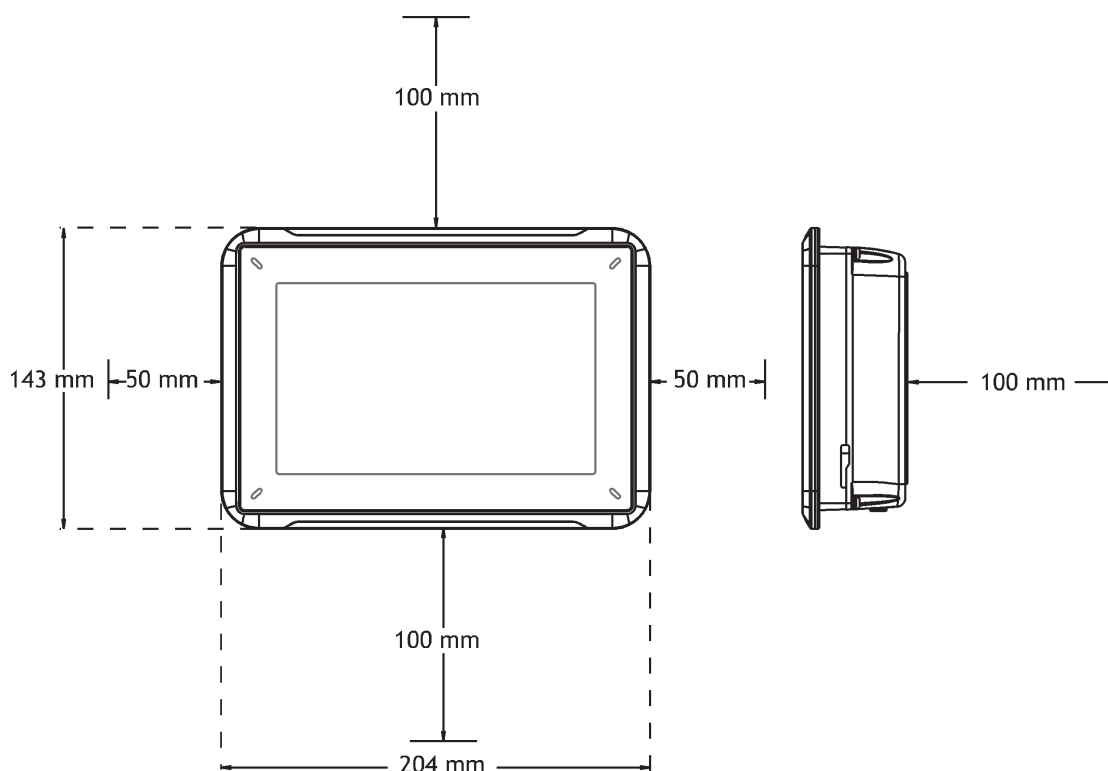
Maximum instalation panel thickness: 11 mm.





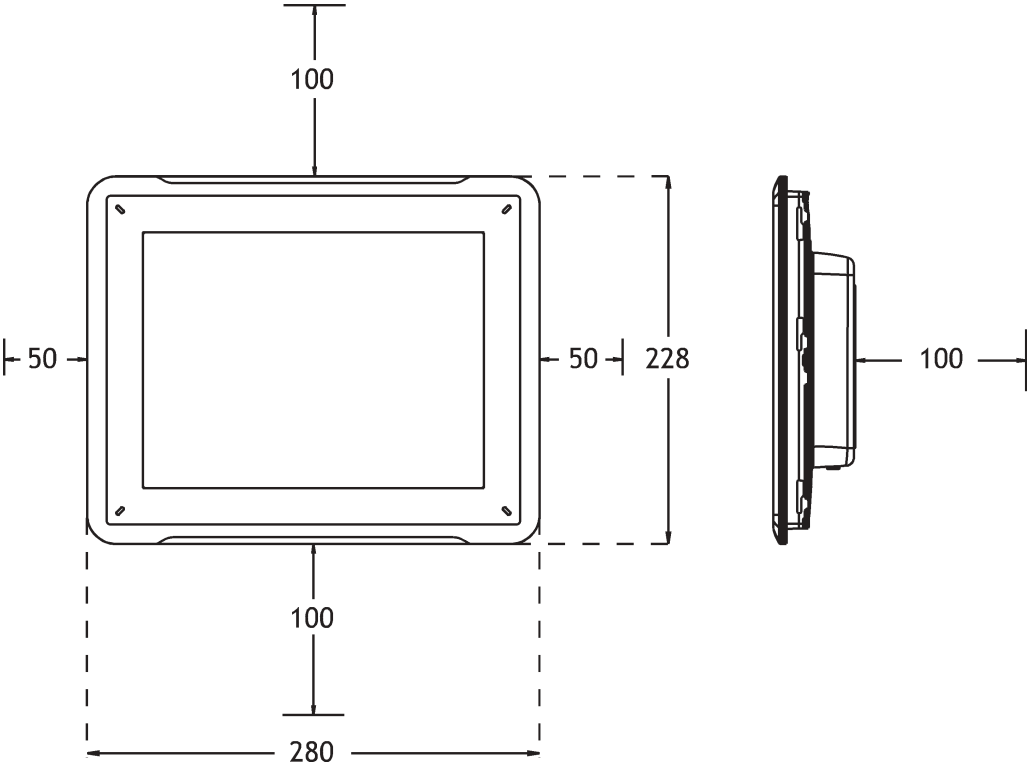
## Space Requirements iX-T7A

Maximum installation panel thickness: 11 mm.



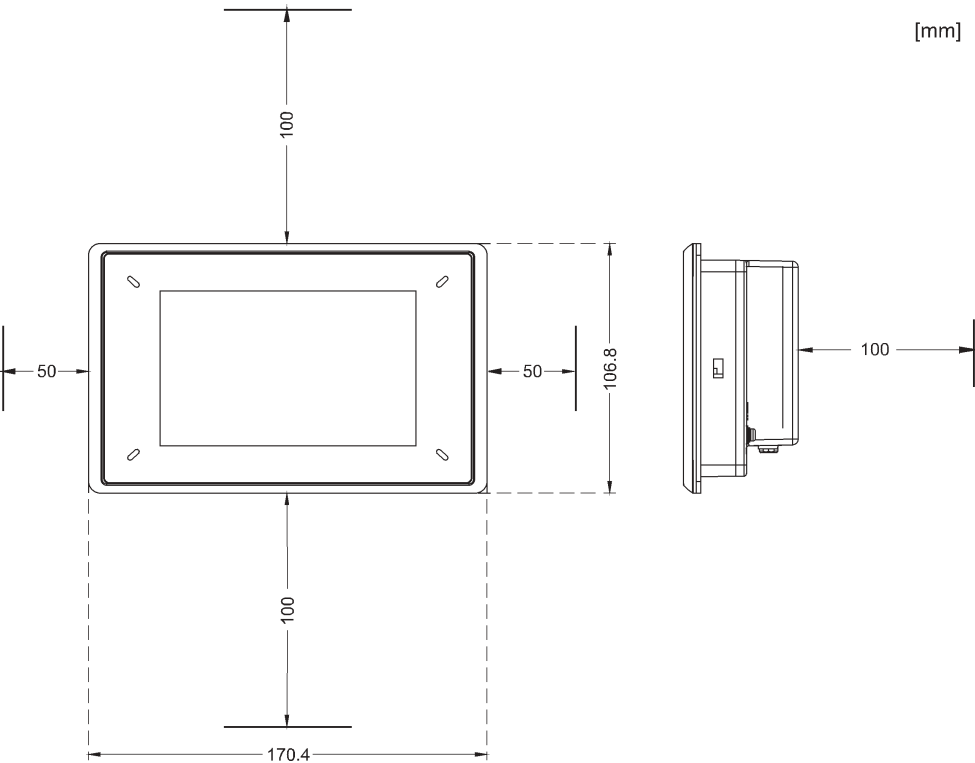
## Space Requirements iX-T10A

Maximum installation panel thickness: 8 mm.



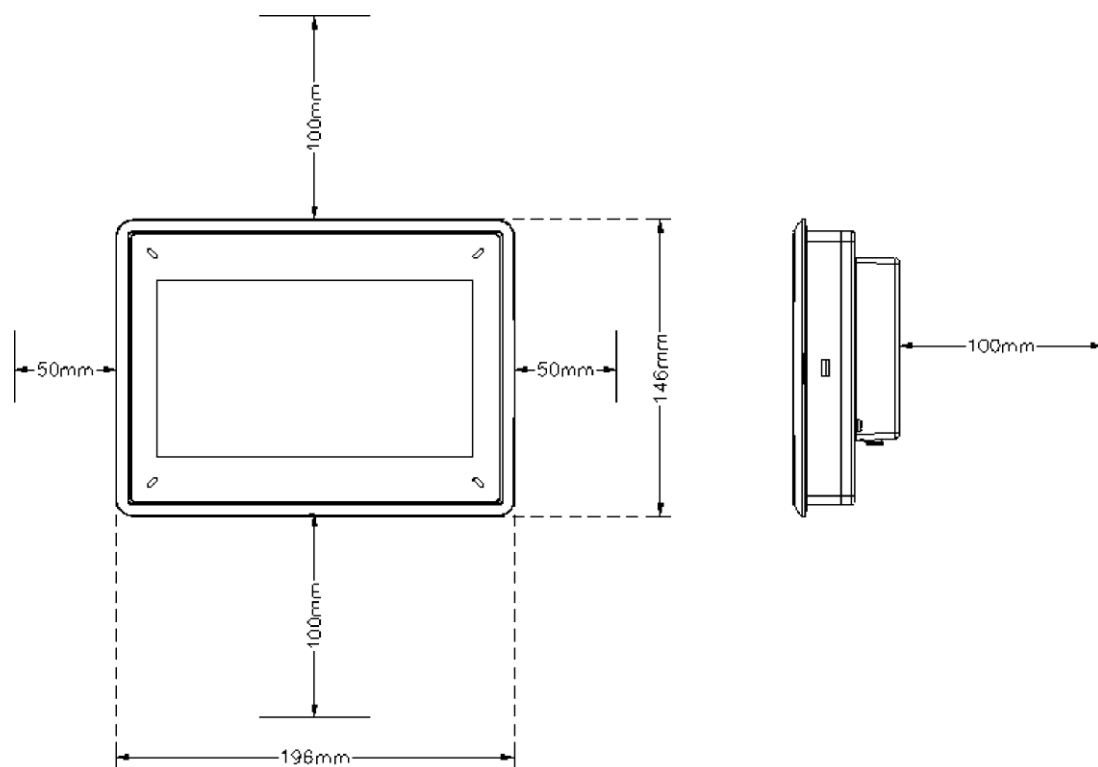
**Space Requirements iX-T5F-2**

Maximum instalation panel thickness: 5.5 mm.



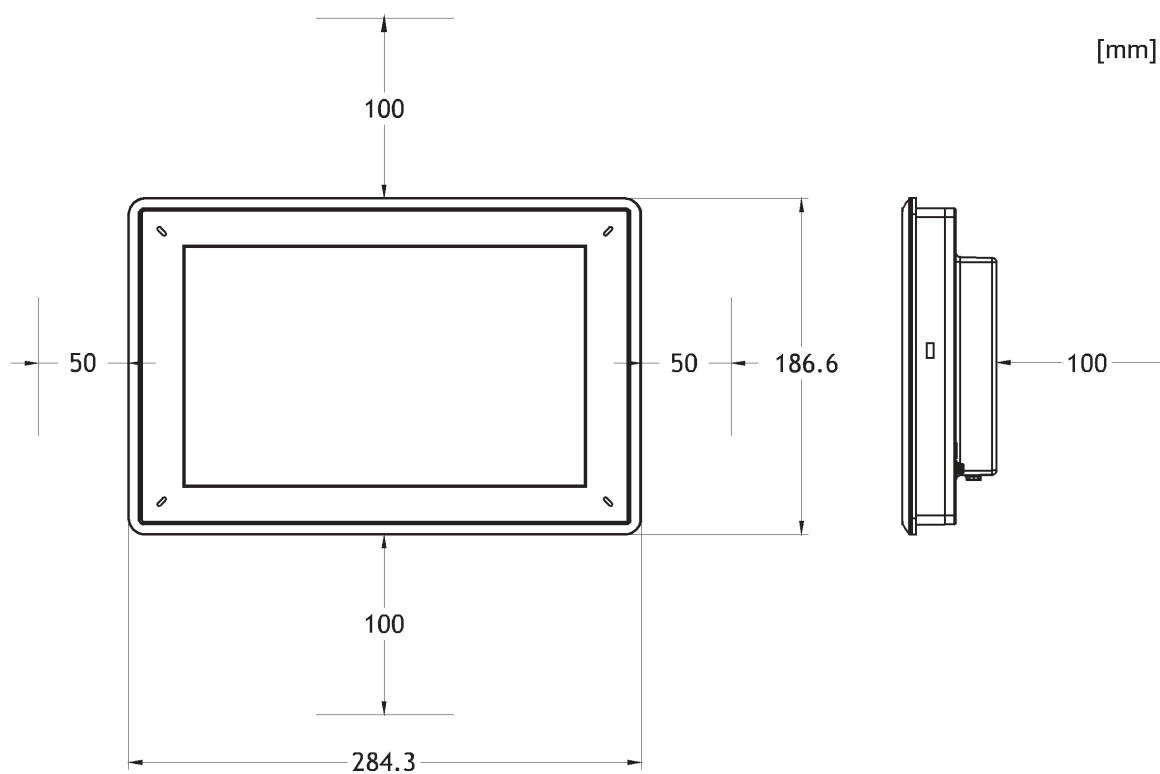
**Space Requirements iX-T7F-2**

Maximum instalation panel thickness: 6 mm.



## Space Requirements iX-T10F-2

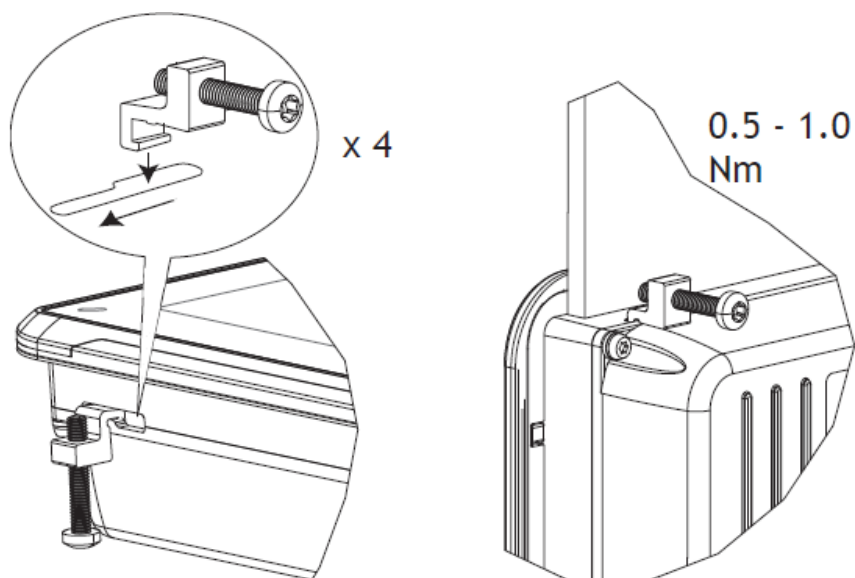
Maximum instalation panel thickness: 6 mm.



**ATTENTION:**  
The openings on the operation terminal are used for ventilation and must not be blocked.

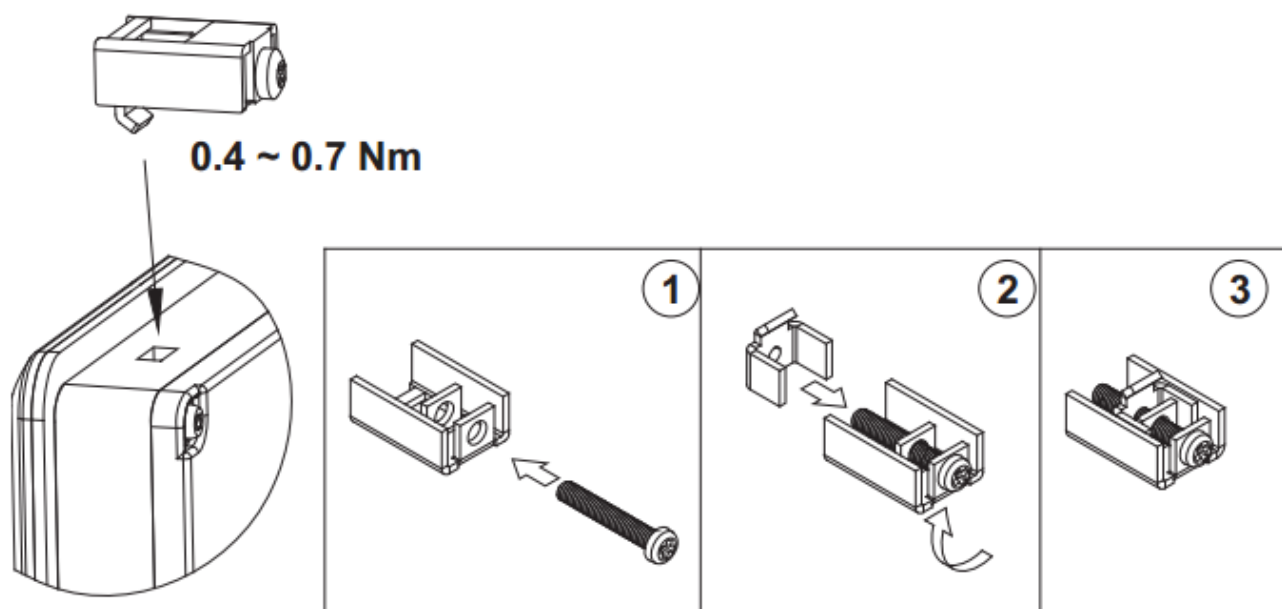
## Installation Process Models T4A, T7A and T10A

Remove the product from the package and check the content. The installation accessories come together with the product, use all the provided elements for a safe installation. Connect the elements according to the picture below. After fixing it, connect the cables according to the Electrical Installation section.



## Installation Process Models T5F-2, T7F-2 and T10F-2

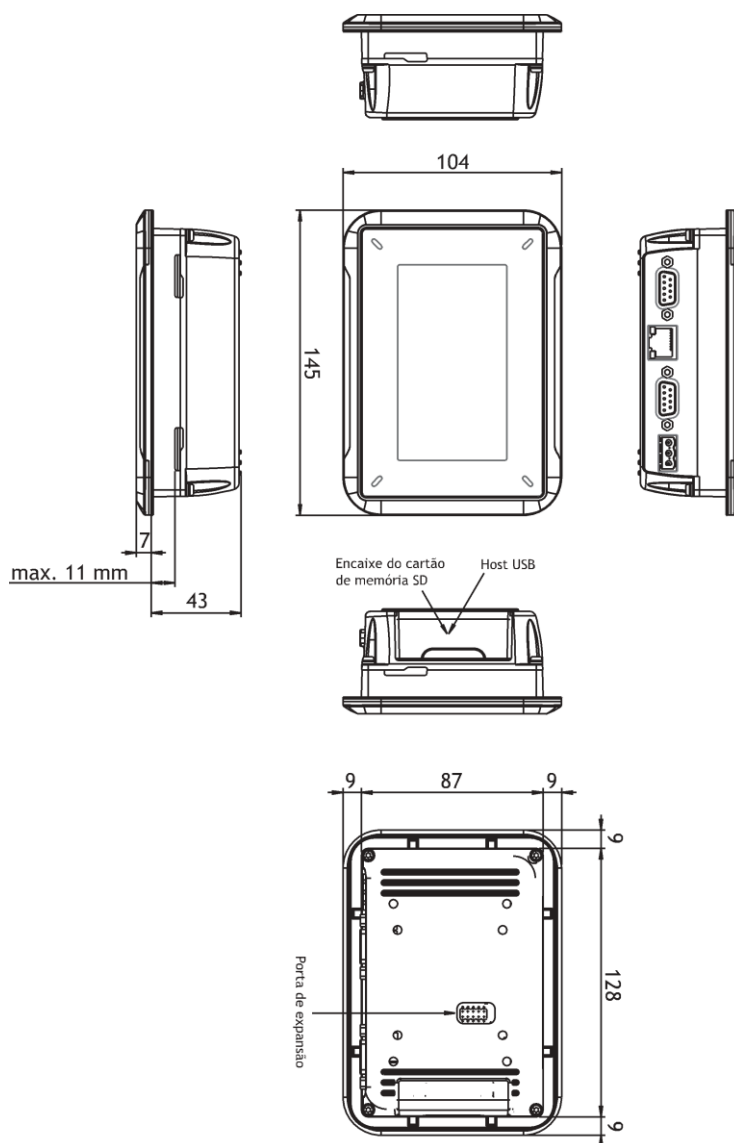
Remove the product from the package and check the content. The installation accessories come together with the product, use all the provided elements for a safe installation. Connect the elements according to the picture below. After fixing it, connect the cables according to the Electrical Installation section.



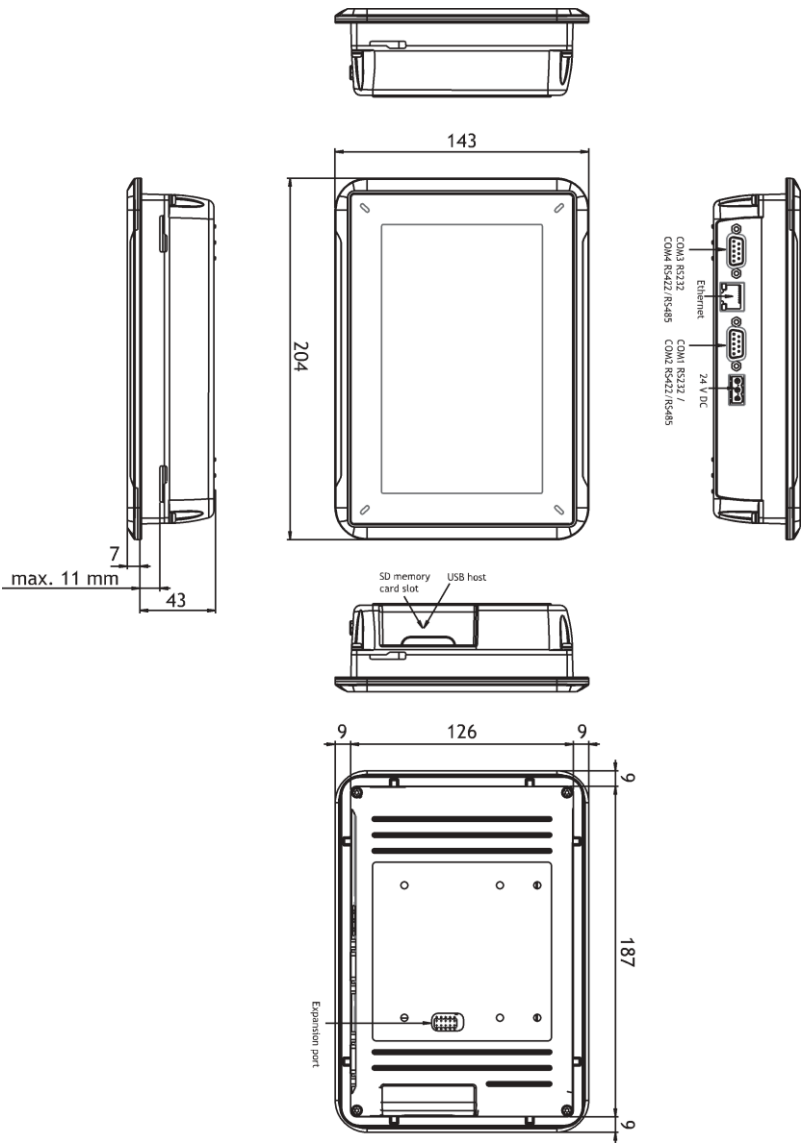
## Physical Dimensions

The operator terminal dimensions are shown in mm.

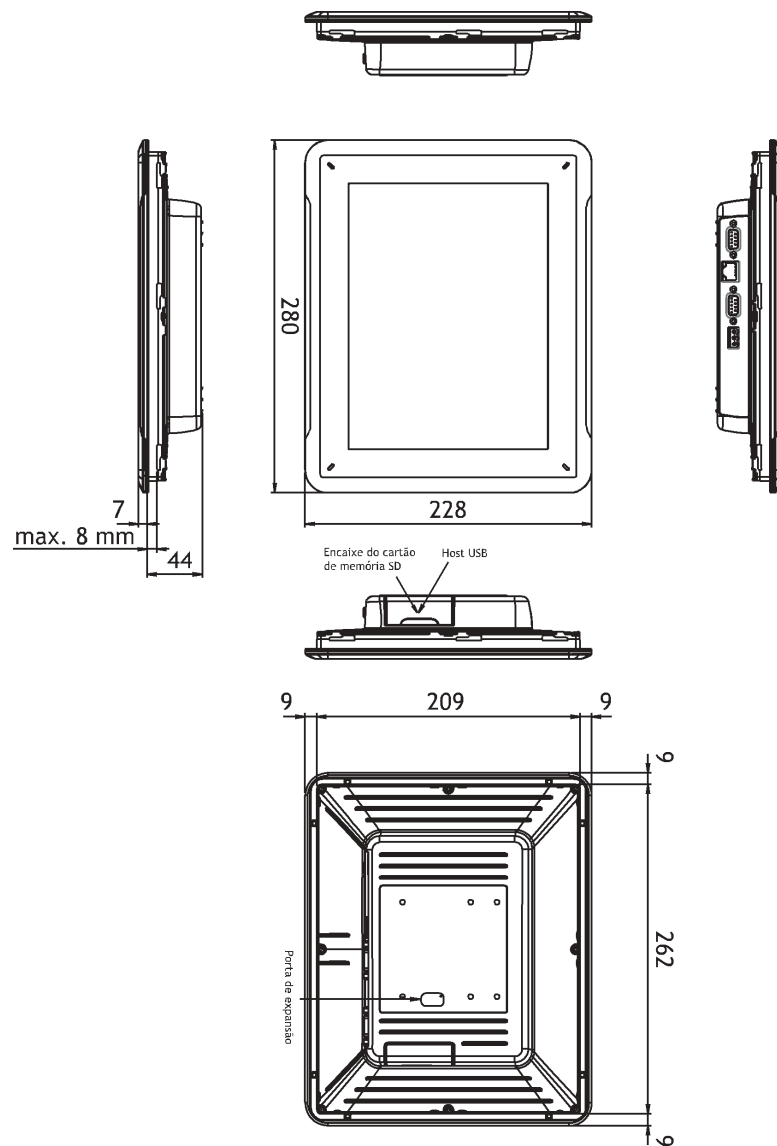
### Operator Terminal T4A



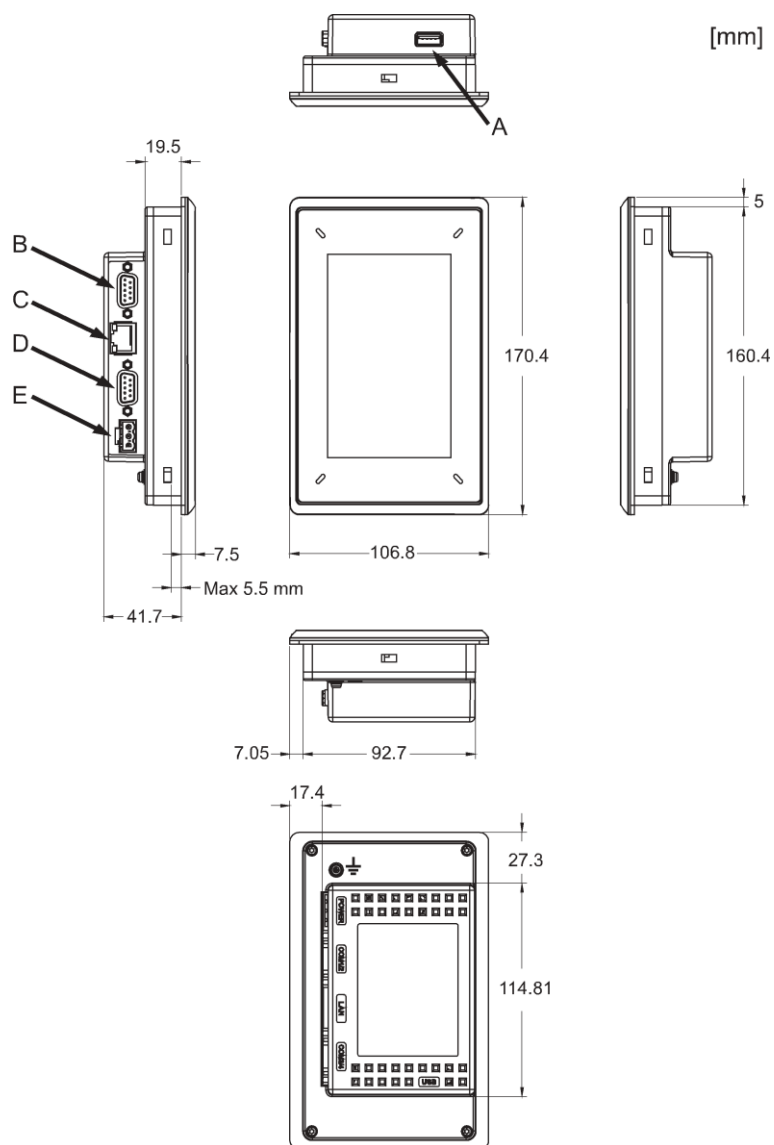
Operator Terminal T7A



## Operator Terminal T10A



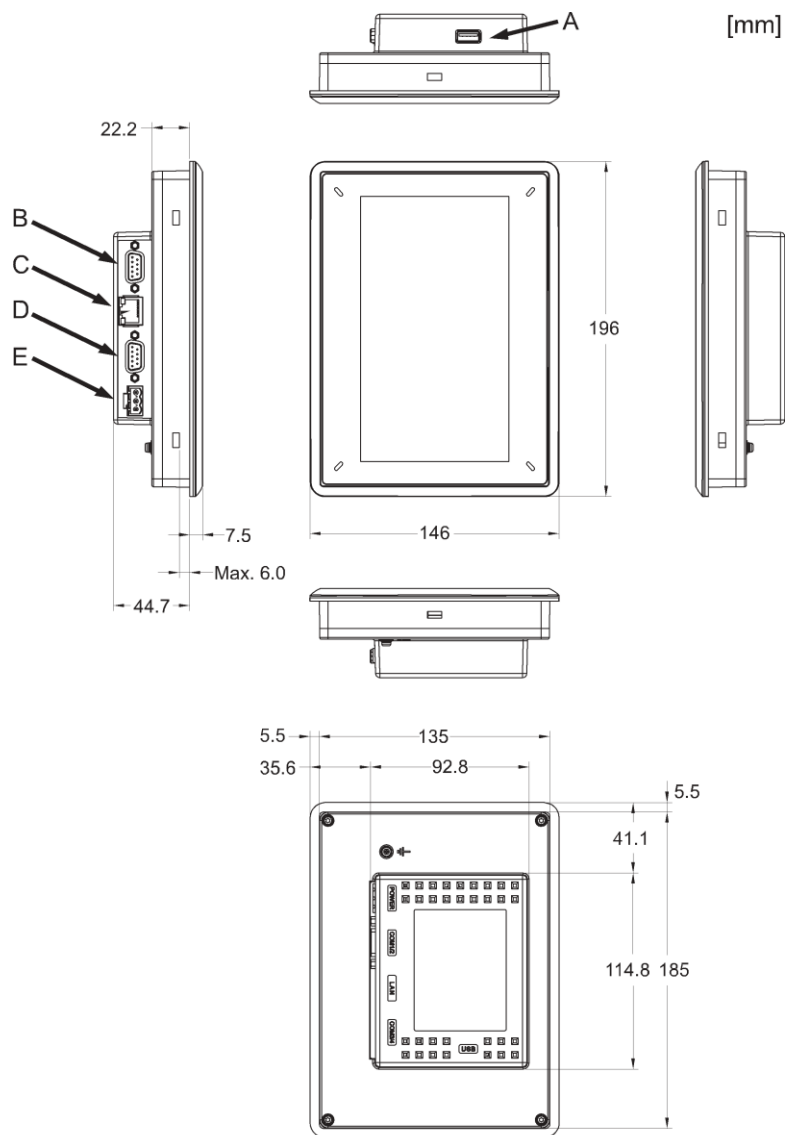
## Operator Terminal T5F-2



- A – USB
- B – COM3/COM4
- C – Ethernet
- D – COM1/COM2
- E – 24 Vdc

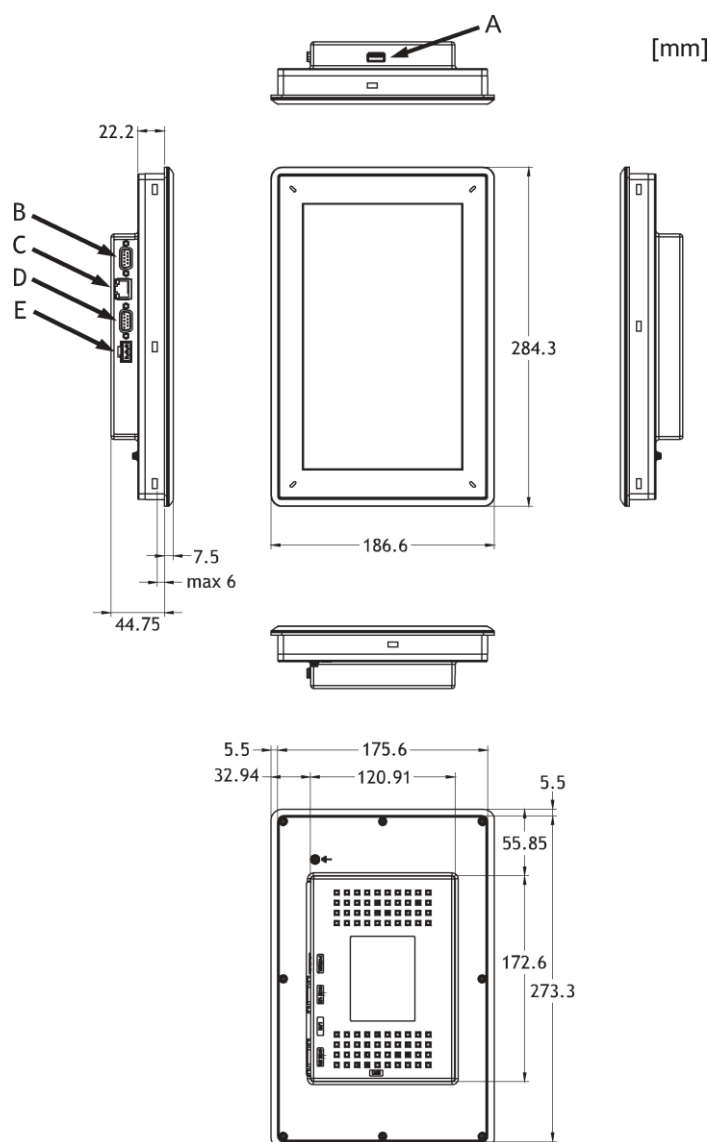


### Operator Terminal T7F-2



- A – USB
- B – COM3/COM4
- C – Ethernet
- D – COM1/COM2
- E – 24 Vdc

## Operator Terminal T10F-2



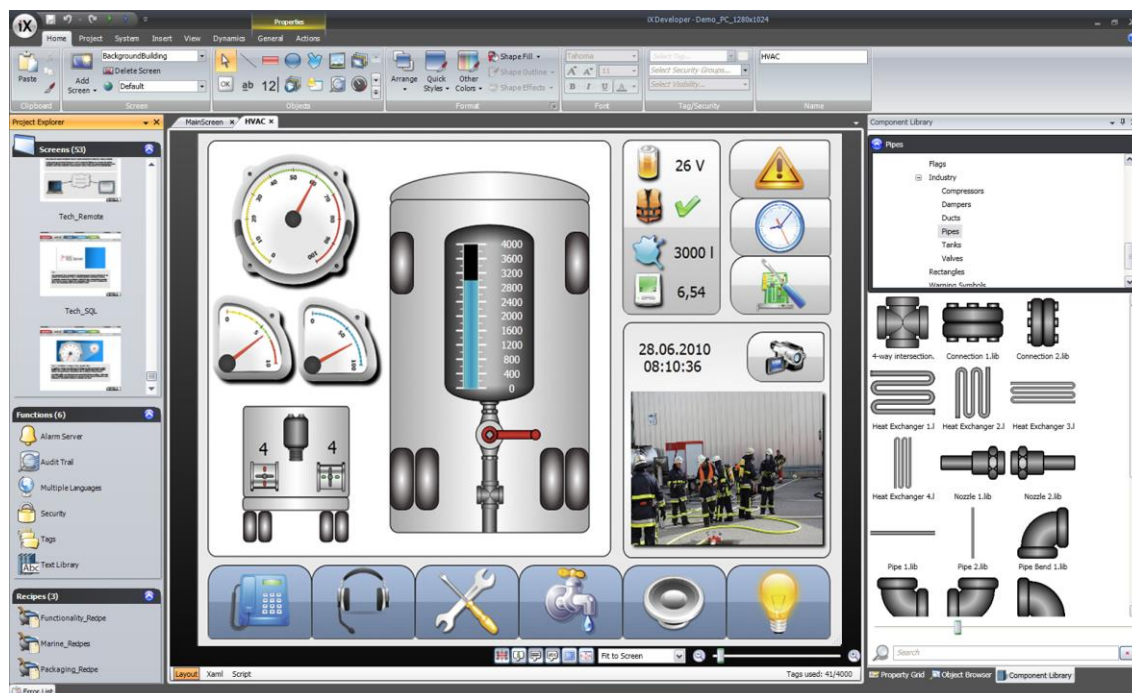
- A – USB
- B – COM3/COM4
- C – Ethernet
- D – COM1/COM2
- E – 24 Vdc

## Programming

### Programming Software

The iX Series operation terminals are programmed by the iX Developer software. The tool introduces new features, provides a complete library of objects and functions, with simulator, and allows the end-user to develop the application without requiring to be connected to the terminal during the programming.

This software is not provided with the operation terminal, and must be ordered separately.



## State of the Art Graphics

### Vectorial Graphics

- Rotation and redimensioning does not affects the image quality



### Graphical Effects

- Shadows, reflexes, relief, etc



### Windows Media Objects

- Utilização de arquivos através do Internet Explorer, Windows Media Player e PDF Viewer



## Dynamic Objects

- Object highlight by changing the color, size and visibility based on controller information.



## Component Library

- Symbols and components library used on most industrial applications



## Navigation Control

- Navigation between the screens by miniatures



## Pop-up Window

- Several screens opened at same time increasing the possibilities of application



## Styles

- Object modification and standarization by the Style feature, similar to MS Office



## iX Developer

Parameter	Recommended
RAM	2 GB
Processador	2 GHz or higher
Operating System	Microsoft Windows Vista
	Microsoft Windows 7
	Microsoft Windows 8.1
	Microsoft Windows 10
Placa de vídeo	Pixel shader 3 or higher ensures complete graphical acceleration.

## Programming Connection

The programming can be performed by the frontal Ethernet port or by a pendrive. However, the Ethernet port is the recommended method due to its speed.

The Ethernet port has a standard pinout, same used on personal computers. The cable must be the NX92xx.

For further information, check the iX Developer Utilization Manual – MU226000.

## Maintenance

Altus recommends that all operator terminal connections must be checked and the dust and any other kind of dirt located on the terminal housing must be removed at least every 6 months.

## Manuals

For additional technical details, configuration and programming of iX Series, check the table below. This table is just a guide of some relevant documents that can be useful for utilization, maintenance and programming of iX Series operator terminals.

Document code	Description	Language
MU226000	Manual de Utilização iX Developer	Portuguese
MU226600	User Manual iX Developer	English