



Installation Manual



MANTA Device platform
ET-xx7 / MT-xx7

SERIES 400 PANEL PCs
SERIES 500 THIN CLIENTs
SERIES 600 KVM SYSTEMS



THE STRONGEST LINK.

Installation Manual version:
Issue:

01.00.03
16.08.2024

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Publisher and copyright holder:

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1 Intended use and location




The ET-/MT-xx7 devices with MANTA platform (SERIES 400 / 500 / 600) have been developed specially for process automation and for GMP and cleanroom applications. Suitable for hazardous areas zone 1, 21, 2 and 22 (depending on device type), these devices are ideal for a great number of applications.

2 Explanation of symbols

2.1 Symbols used in the Installation Manual

Symbol	Meaning
	Useful hint for making work easier, important note
	Reference to another chapter, another section, another documentation or another web page.
	Work step, the number indicates the sequence in which the steps are to be carried out.
	Important work step, note must be complied with
	Indicator arrow (blue)
	Movement arrow (brown) indicating the movement that can be / is done with or to the material.

2.2 Warning notes

	DANGER
	Non-compliance results in severe or fatal injuries.
	WARNING
	Non-compliance can result in severe or fatal injuries.
	CAUTION
	Non-compliance can result in minor injuries.
NOTE	
Non-compliance may result in material damage.	

3 Further documents

- Operating Instructions ET-xx7 (OI_ET_xx7)
- Operating Instructions MT-xx7 (OI_MT_xx7)
- Operating Instructions IT-xx7 (OI_IT_xx7)
- Operating Instructions Keyboard KB2 (OI_Keyboard_KB2)
- Operating Instructions UB03 (OI_UB03)
- Operating Instructions Barcode scanner IDM (OI_Scanner_IDM)



For documents in other languages, see [r-stahl.com](https://www.r-stahl.com).

4 Warning

4.1 Operating the touch display

NOTE

Material damage resulting from touching the touchscreen with pointed or sharp items !

Non-compliance may result in damage to the touch display, reduced life-span or total breakdown.

- Only operate the touchscreen with your finger or a touch pen specifically intended for capacitive touch displays.

NOTE

Damage to the touch screen resulting from electromagnetic interference !

Non-compliance will result in malfunction and functional impairment of the touch display.

- Integrate the device into the facility's functional earth. The functional earth is used to suppress electromagnetic interference.

Incorrect operation of the touch screen may result in accidental functions and errors ! The device will then be unable to execute the functions, may execute them incorrectly or in a way not intended !

- Do not realise safety-relevant functions via the touch display.
- Avoid accidental multiple touches.
- Do not touch the touch display across a large section.
- Only use fingers or a touch pen for capacitive touch screens.
- Before operating the device, thoroughly acquaint yourself with the multi-touch functions of the operating system and the application.
- Switch off the device before maintenance or cleaning.
- Avoid contamination of the touch display with salt water.
- Protect the device from rain, snow and splashes, for example by using a canopy or some other protective roof construction. Also take into consideration possible strong winds, saltwater and rain offshore.

Foil membrane blistering / air-pockets:

Extreme ambient conditions (high humidity, temperature) may, in rare cases, result in blistering or air-pockets underneath the foil touch screen. This does not impede functionality and is a purely optical phenomenon.

4.2 Enclosure damage

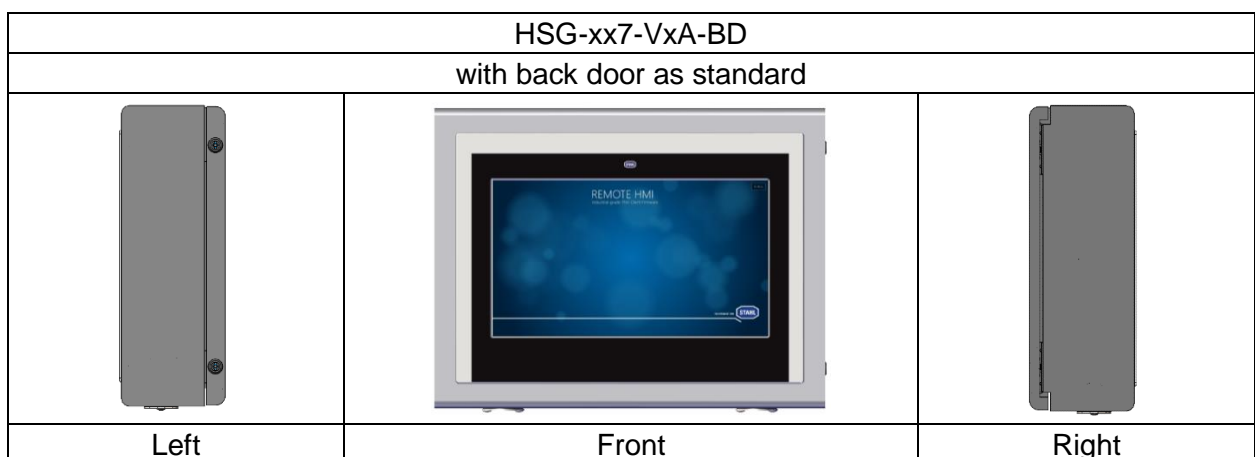
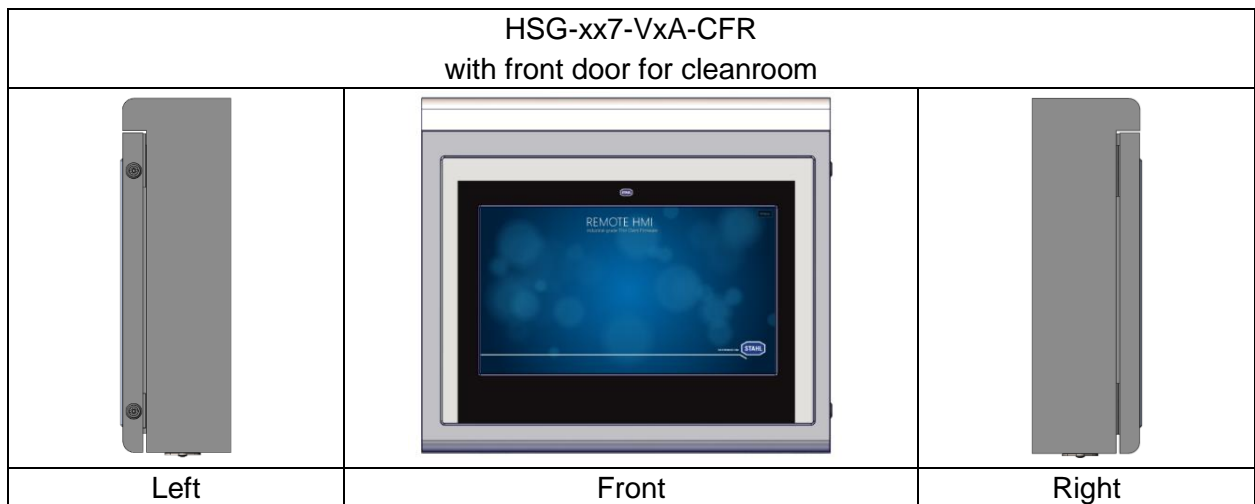
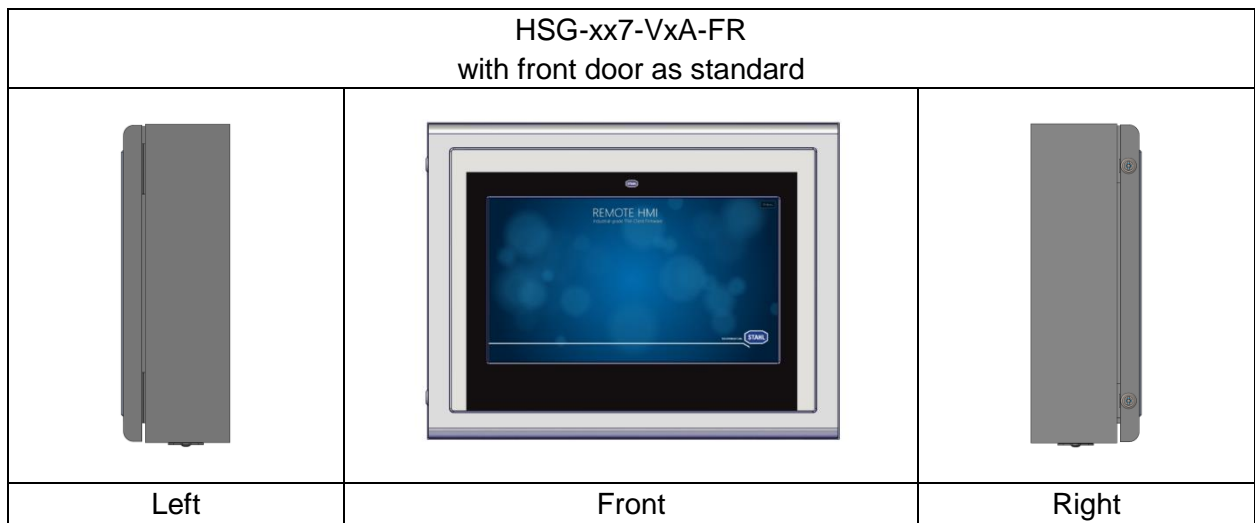
NOTE

Damage to the stand / elbow coupling due to mechanical load !

Non-compliance may result in mechanical damage to the stand / elbow coupling.

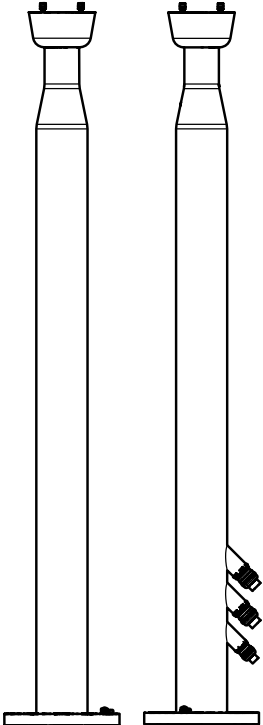
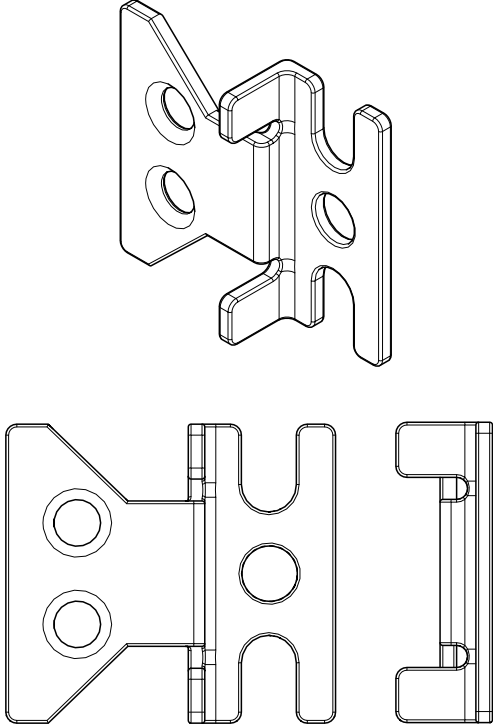
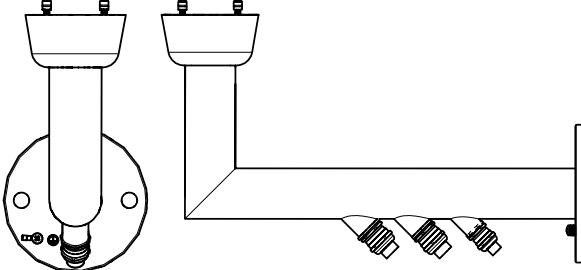
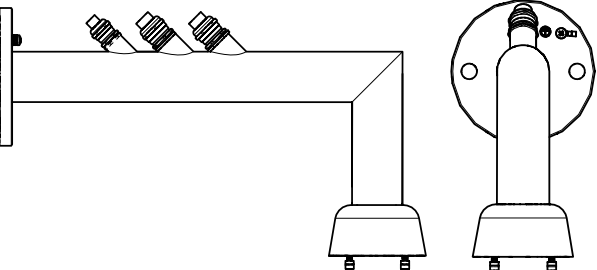
- Only open the enclosure doors for installation purposes !
- Do not leave the enclosure doors open permanently !

5 Enclosure types

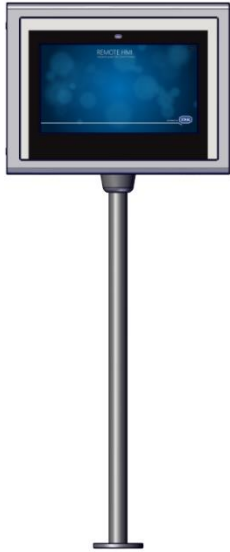
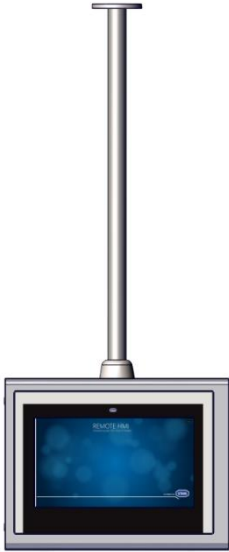





6 Mounting









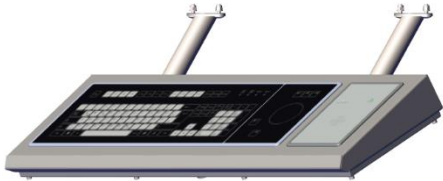


6.1 Mounting types

on MPFL stand	Wall-mounted, with bracket
	
Mounted upright on elbow	Mounted hanging from elbow
	

6.2 Mounting illustration

Mounted on stand	Ceiling mounted with stand pipe
	
Elbow upright mounting	Mounted hanging from elbow
	
Wall mounting	
	






6.3 Mounting accessories






HSG-xx7-VxA-FR with keyboard			
Mounted on stand	Wall mounting	Elbow upright mounting	Mounted hanging from elbow
			
HSG-xx7-VxA-CFR with keyboard			
Mounted on stand	Wall mounting	Elbow upright mounting	Mounted hanging from elbow
			
Keyboard with UB03			
			
Handheld barcode scanner		Bluetooth barcode scanner	
			

6.4 Recommended mounting type

The following recommended mounting types are the result of trying out many different types over the years. Please follow these recommendations to ensure the optimum mounting type for your device.

Before deciding on how to mount the device you need to check the vibration and shock conditions. We do not accept any responsibility if you select an unsuitable mounting type that results in damage or failure of the device.

Conditions present at the point of installation	Mounting / installation type		Recommendation
No vibration and no shocks		Mounting on stand MPFL, with / without external keyboard	No restriction
		Ceiling mount with MPFL stand, with / without external keyboard	No restriction
		Mounted on elbow standing, with / without external keyboard	No restriction
		Mounted on elbow hanging. with / without external keyboard	No restriction
		Wall mounting, with / without external keyboard	No restriction

Conditions present at the point of installation	Mounting / installation type		Recommendation
Vibration (sinusoidal) acc. to IEC 60068-2-6 5 ... 13.2 Hz: ±1 mm 13.2 ... 100 Hz: ±0.7 g Change cycle 1 oct/min X, Y, Z axes Dwell Test: 71.7 to 79.2 Hz: ±0.7 g 120 min. Change cycle 1 oct/min X axis		Mounting on stand, with / without external keyboard	Not recommended
		Ceiling mounting with MPFL stand, with / without external keyboard	Not recommended
30 Hz: ±0.7 g 90 min. Change cycle 1 oct/min Y, Z axes		Mounted on elbow standing, with / without external keyboard	Not recommended
		Mounted on elbow hanging, with / without external keyboard	Not recommended
		Wall mounting, with / without external keyboard	No restriction

6.5 Assembly notes

- The tightening torques for the cable glands depend on the cables and wires used. This means the user has to determine the required torques.
- The stand / elbow must be mounted with at least 4 fastening points. The type of wall fixing used must be suitable for the wall material.

7 Tools




- 1x side cutter
- 1x wire stripping knife
- 1x wire stripper
- 1x spanner AF 10
- 1x spanner AF 13
- 1x spanner AF 14
- 1x spanner AF 24
- 1x Phillips screwdriver size 1
- 1x Phillips screwdriver size 2
- 1x flat-bladed screwdriver 2.5 mm
- 1x Allen key 5 mm



Mounting the stand or wall-mounting will require other tools not specified here.

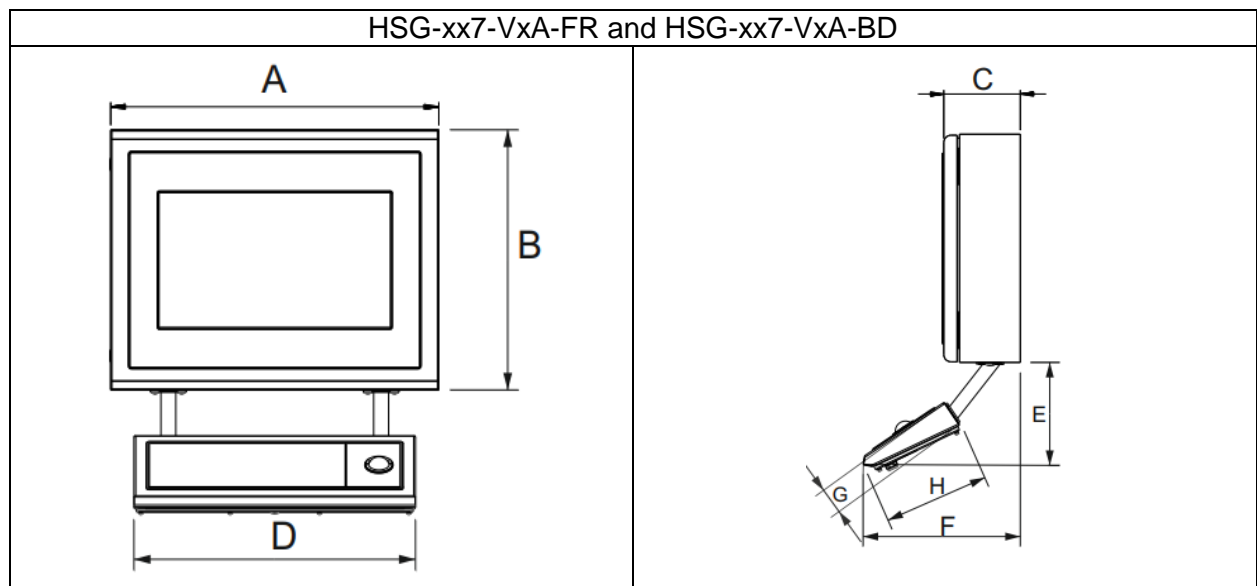
8 Mechanical Installation

	WARNING
	<p>Falling or dropped device ! Non-compliance can result in severe injuries and damage to the device.</p> <ul style="list-style-type: none"> • Always have two people mount the devices.

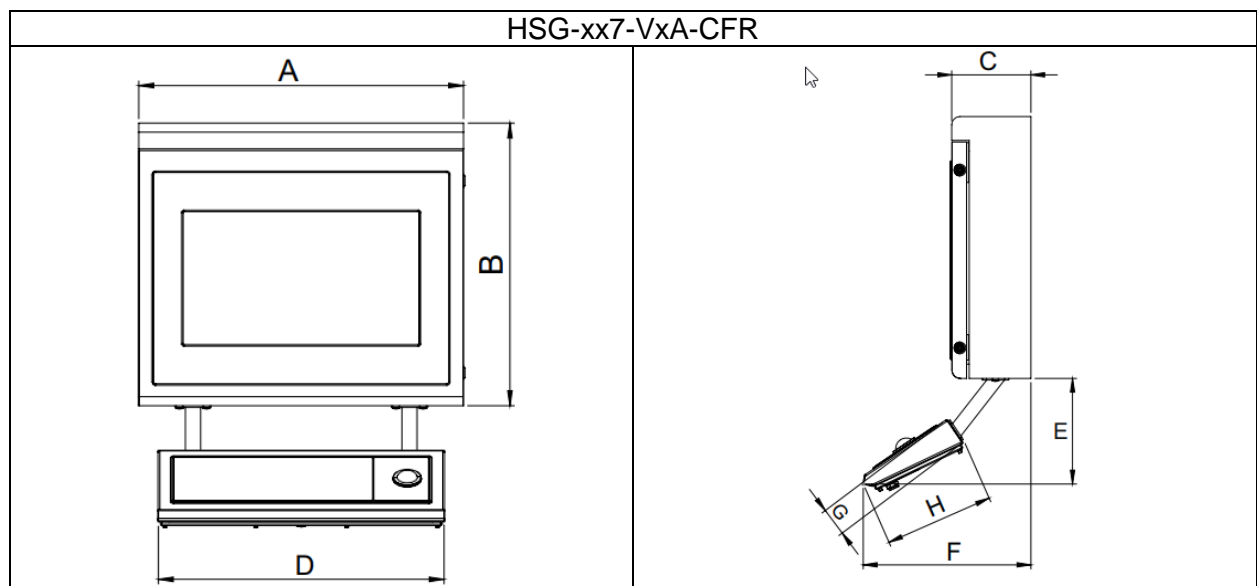
8.1 Dimensions

8.1.1 Enclosure versions

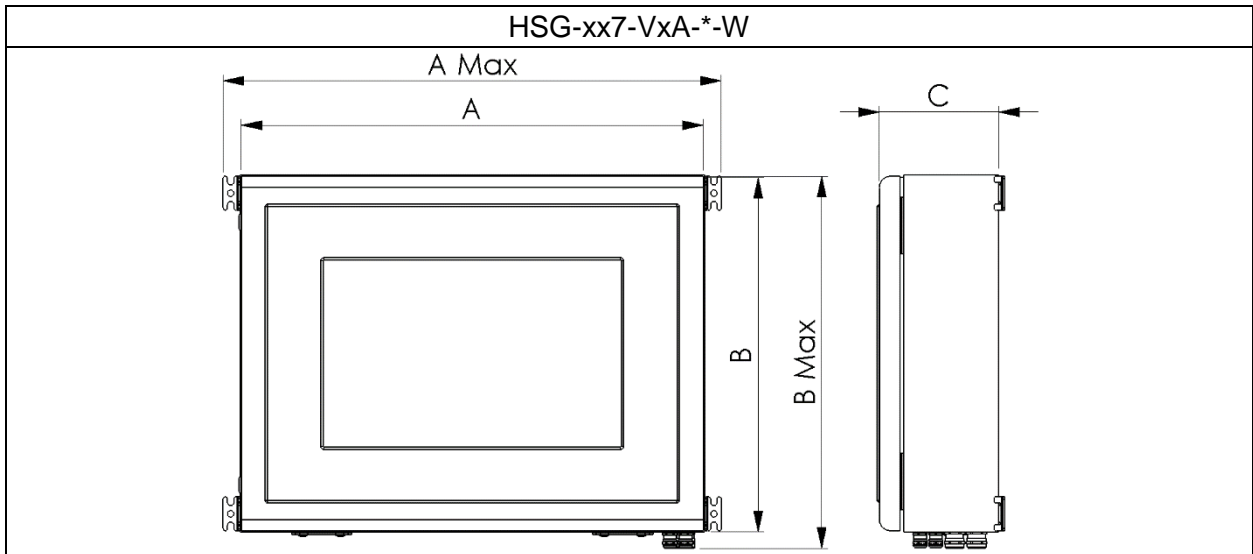
Dimensions in mm.



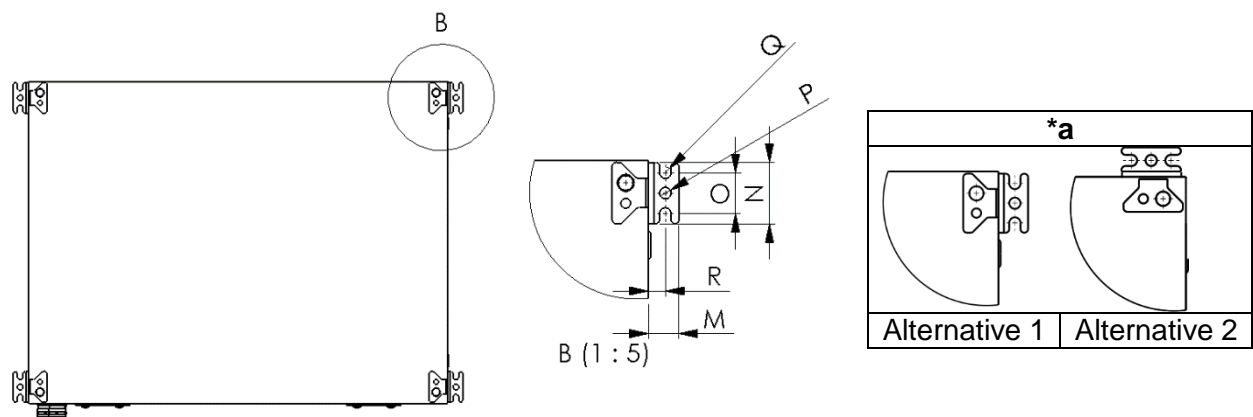
A	B	C	D	E	F	G	H
740	568	190	635	255	402	68	260



A	B	C	D	E	F	G	H
720	627	190	635	255	402	68	260



A	B	C	A Max	B Max
740	564	190	794	592




B	Mounting tongue for wall mounting
*a	Alternative mounting position of the mounting tongues

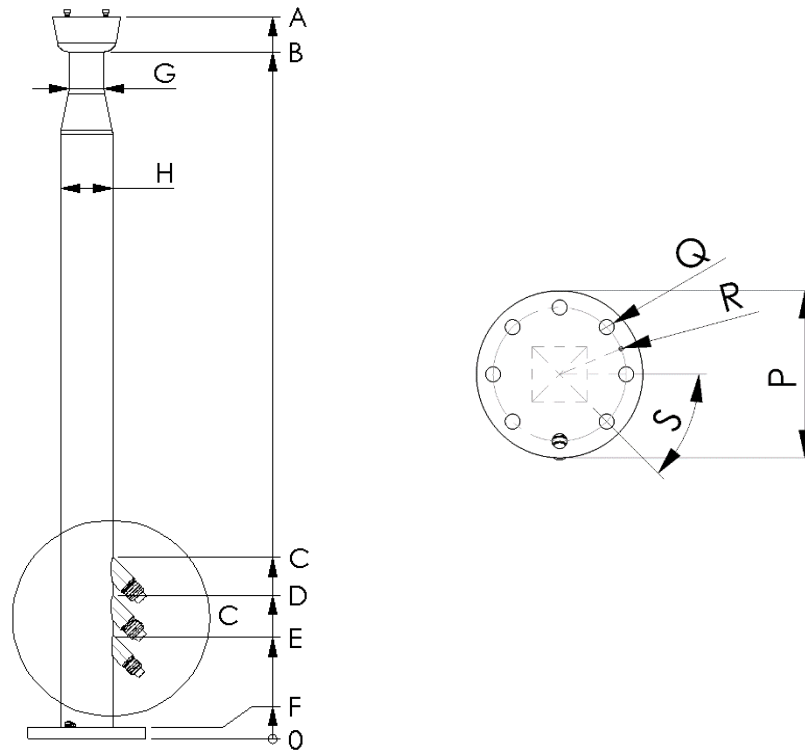
! Enclosure versions FR and CFR are used for wall mounting. For the dimensions of these enclosures please refer to the above tables.
 Choose suitable mounting screws, rawplugs and bolts depending on the actual local requirements and possibilities.

Mounting tongue dimensions	M	N	O	P	Q	R
	27	54	36	∅ 10.20	∅10.20	15

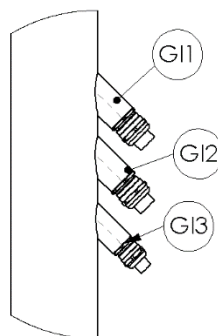
8.1.2 KB2 keyboard

 For comprehensive information on the KB2 keyboard (such as technical data, views, illustrations, dimensions, etc.), please refer to the OI_Keyboard_KB2 Operating Instructions.

8.1.3 MPFL Stand



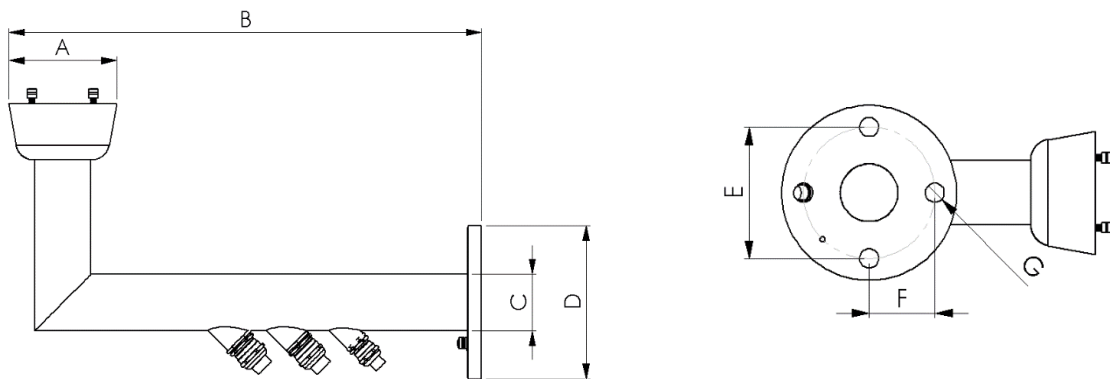
Dimensions [mm]											
A	B	C	D	E	F	G	H	P	Q	R	S
1240	1216	312	250	175	20	Ø 60.3	Ø 88.9	Ø 200	Ø 18	M6	45°



C (1 : 5)

Cable glands		
G11	G12	G13
M25 x 1.5	M25 x 1.5	M20 x 1.5

8.1.4 MPW elbow



Dimensions [mm]						
A	B	C	D	E	F	G
Ø 116	508	Ø 60.30	Ø 165	124	90° (4x)	Ø 18 (4x)



The cable glands on the wall elbow are identical to those on the stand.

8.2 Mounting of keyboard

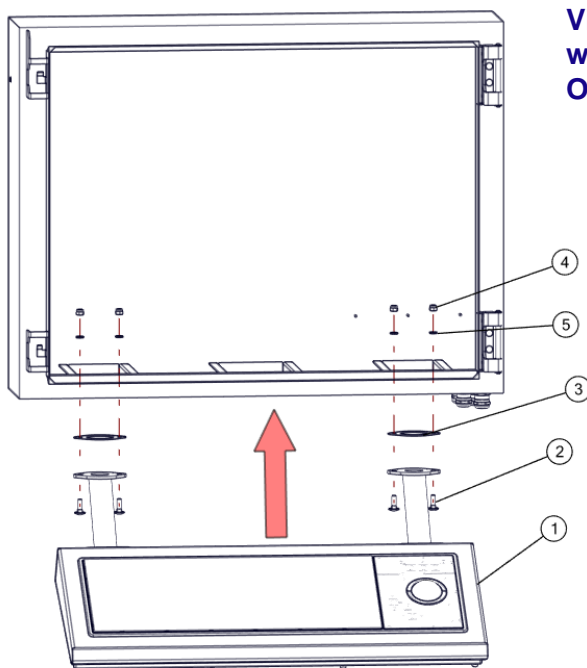


Normally, the KB2 keyboard with pointing device is installed inside the HSG enclosure and attached to the field enclosure of the xx7 Operator interface, fully wired and operational.

In the case of repairs or replacement, use this description of how to mount the keyboard.

The keyboard is mounted in the same way for all enclosure versions.

8.2.1 Step-by-step mounting instructions



View of enclosure body without front door and Operator interface

No.	Designation	Number
1	Keyboard	1
2	M6 x 20 carriage bolt	4
3	Mounting flange seal	2
4	Self-locking M6 nut	4
5	M6 split washer	4

8.3 Mounted on stand

8.3.1 View

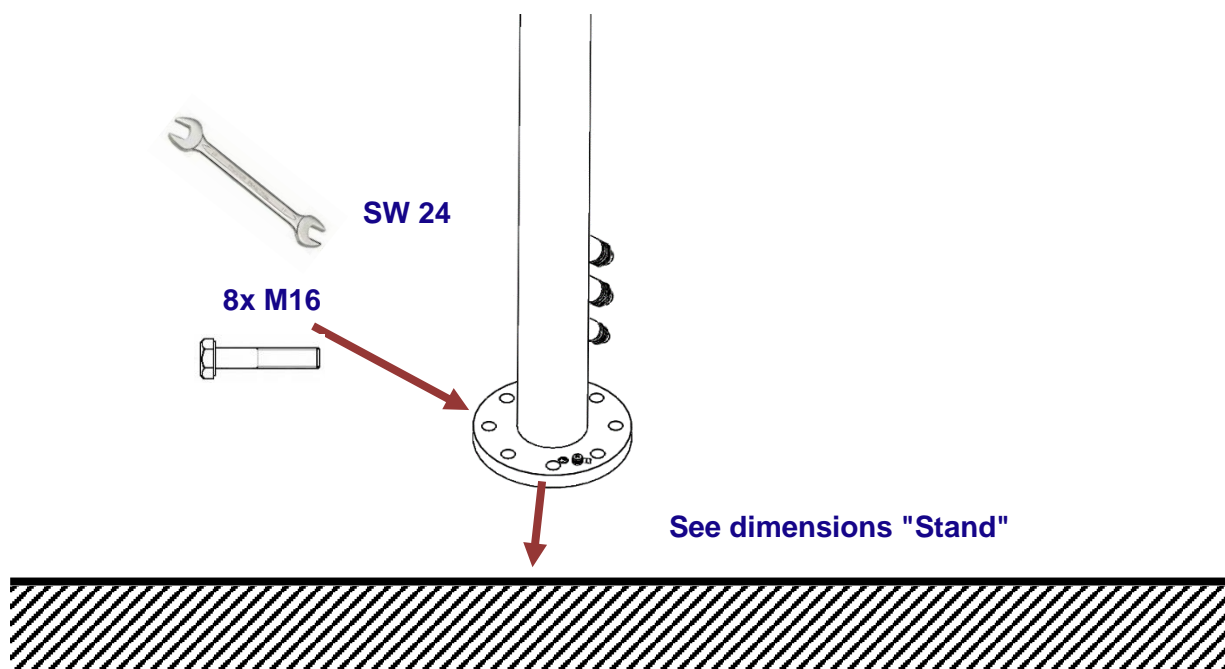


8.3.2 Step-by-step mounting instructions

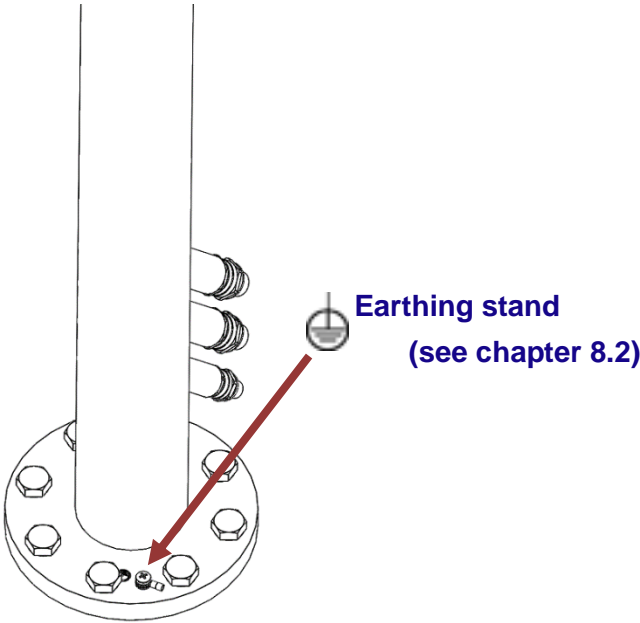
1



Choose suitable mounting screws, rawplugs and bolts depending on the actual local requirements and possibilities !

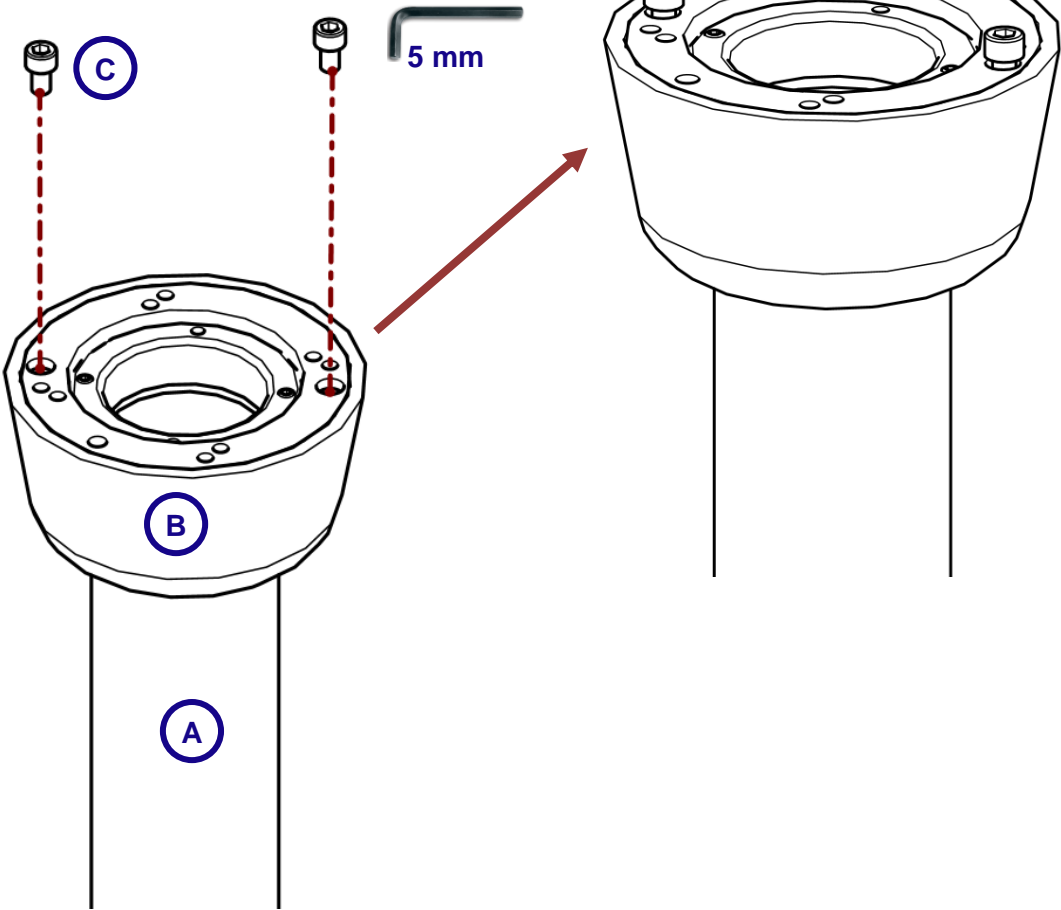


2



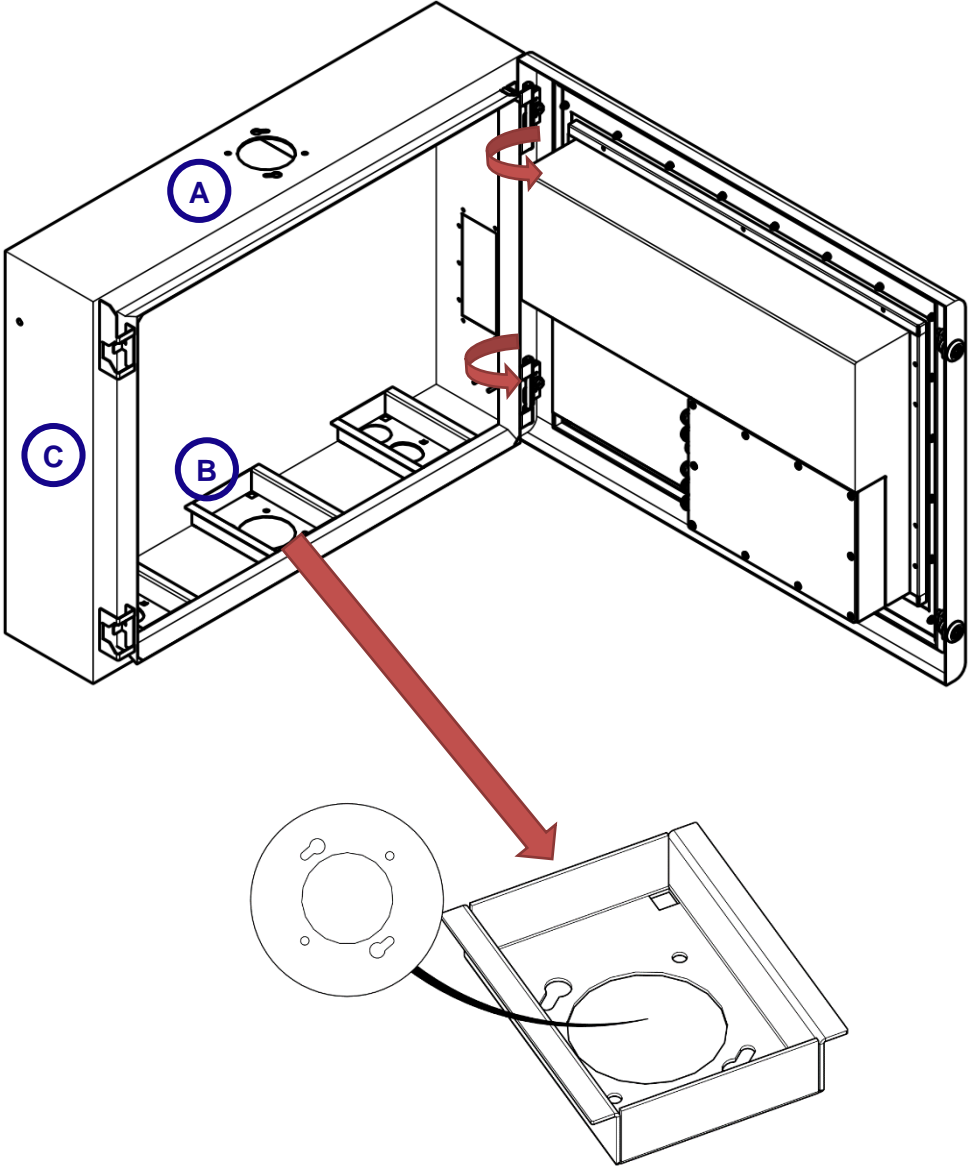
3

- A Stand / elbow
- B Mounting coupling
- C M6 Allen screw

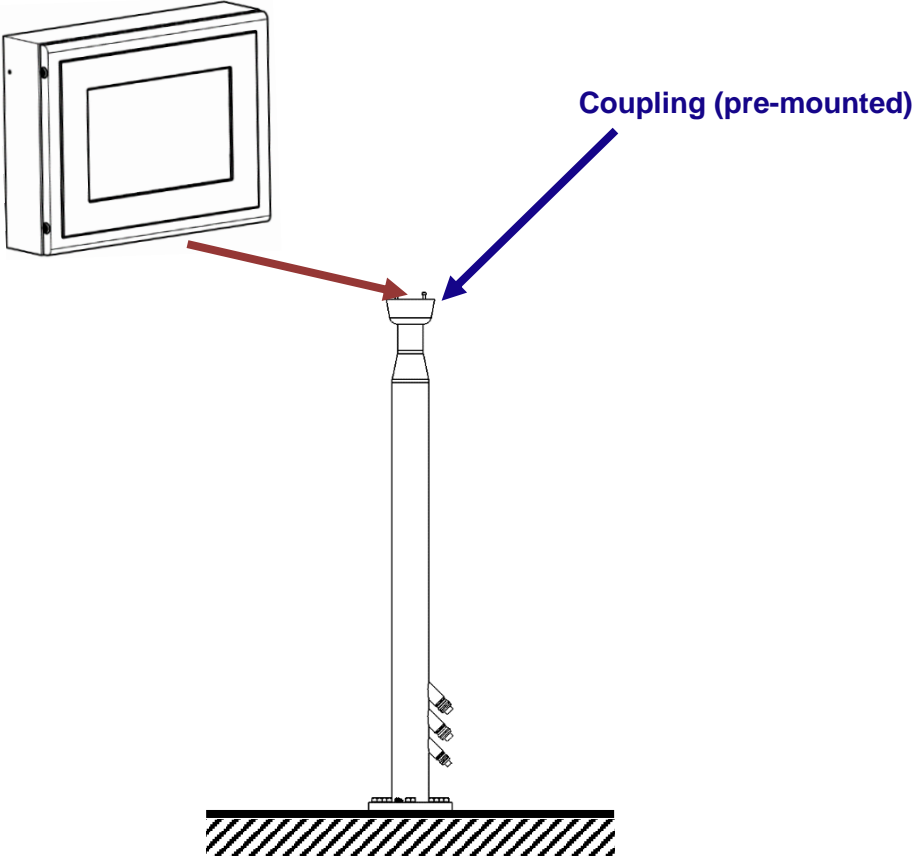


4

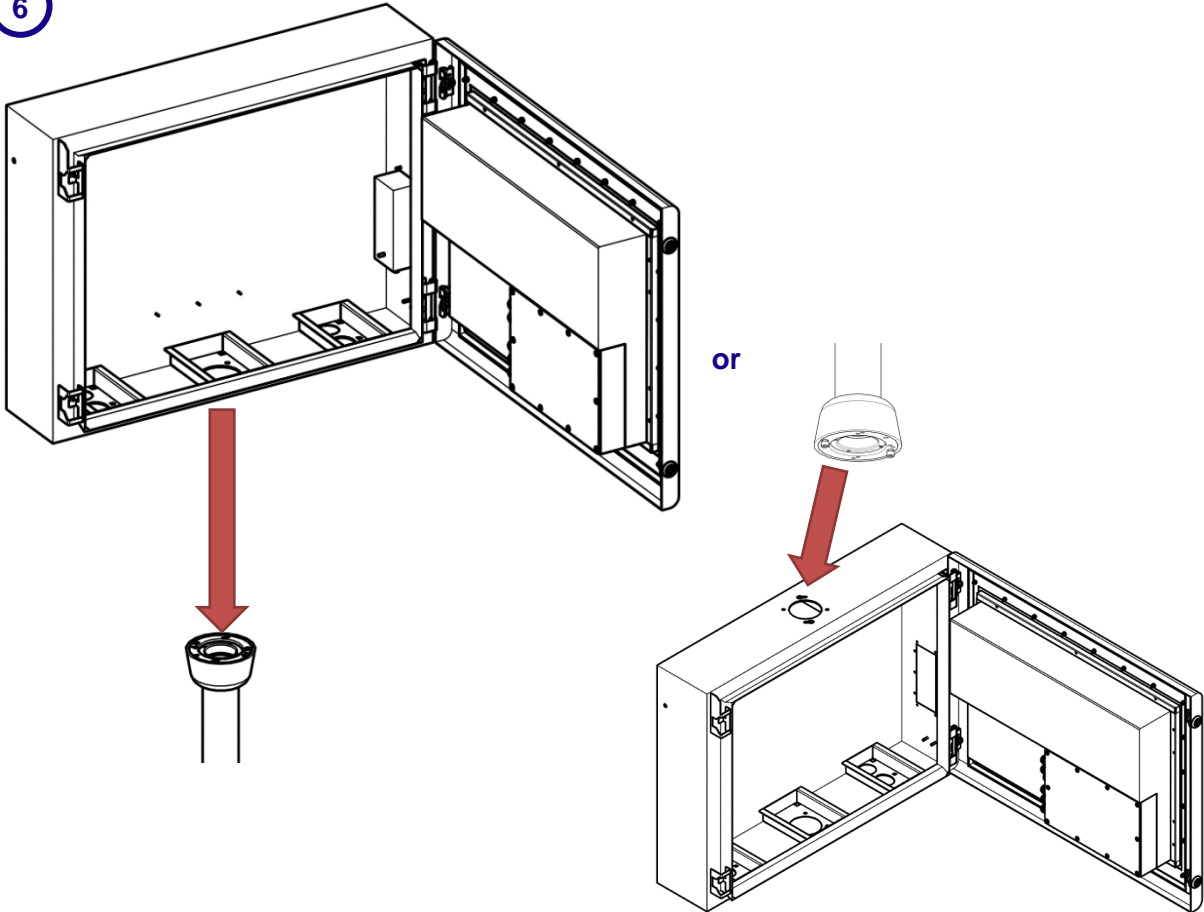
- A Mounting holes, for hanging mount
- B Mounting holes, for upright mount
- C Enclosure operating device



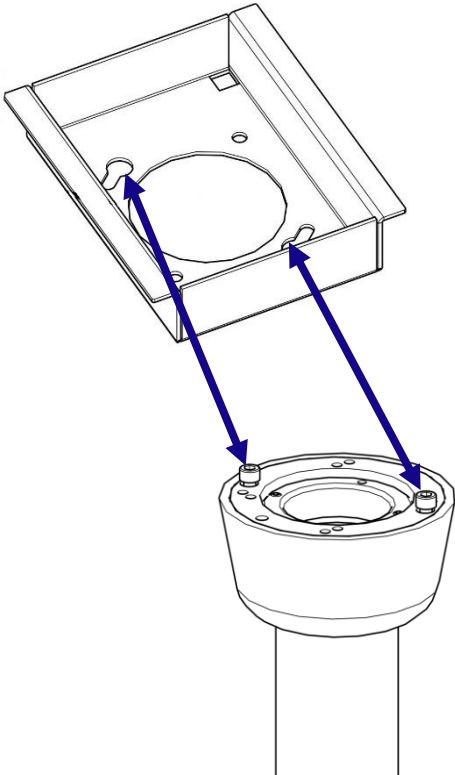
5



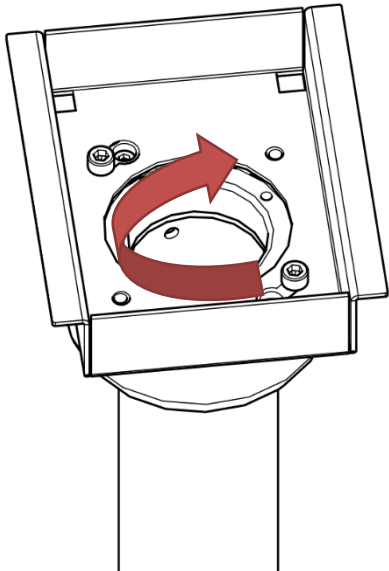
6



7

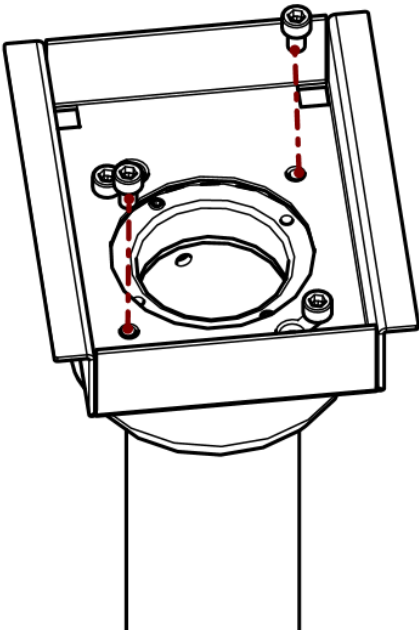


8



Turn entire enclosure !

9

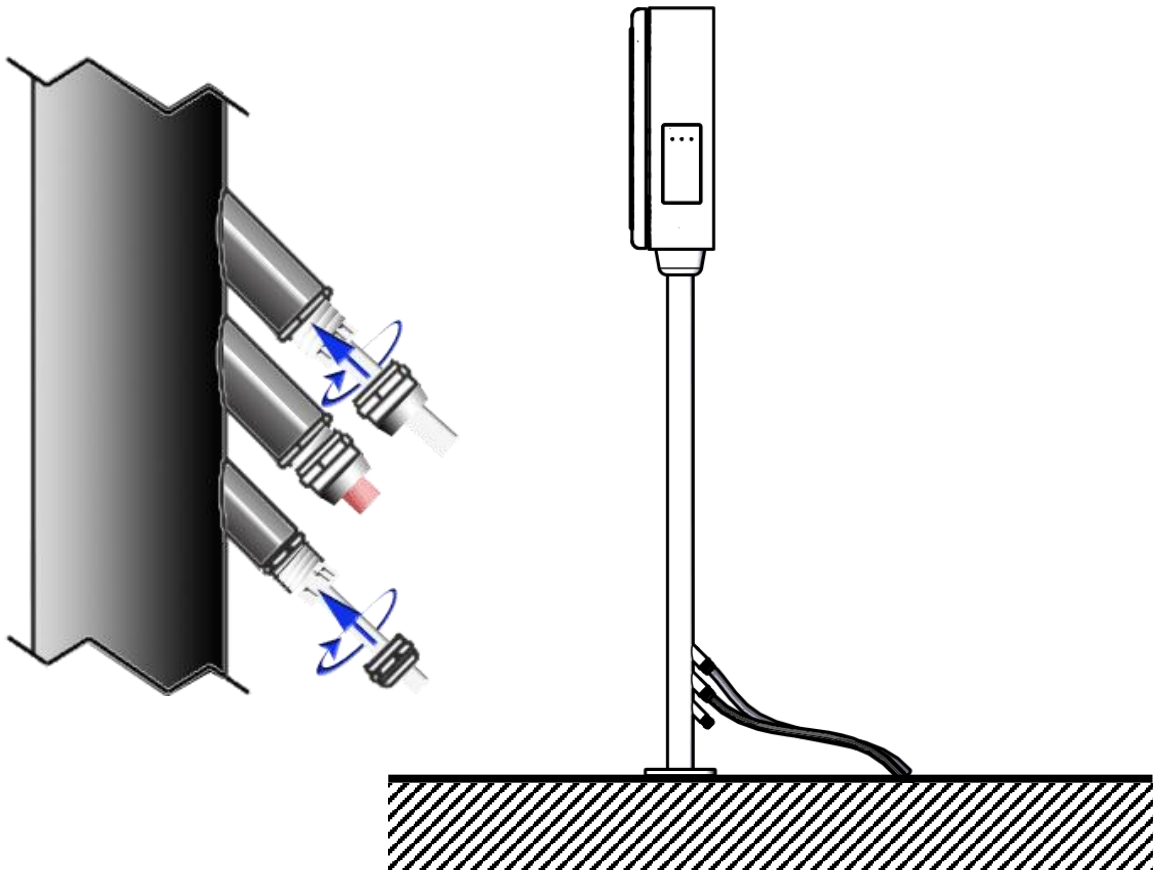


Tighten all 4 screws with a torque of 10 Nm !

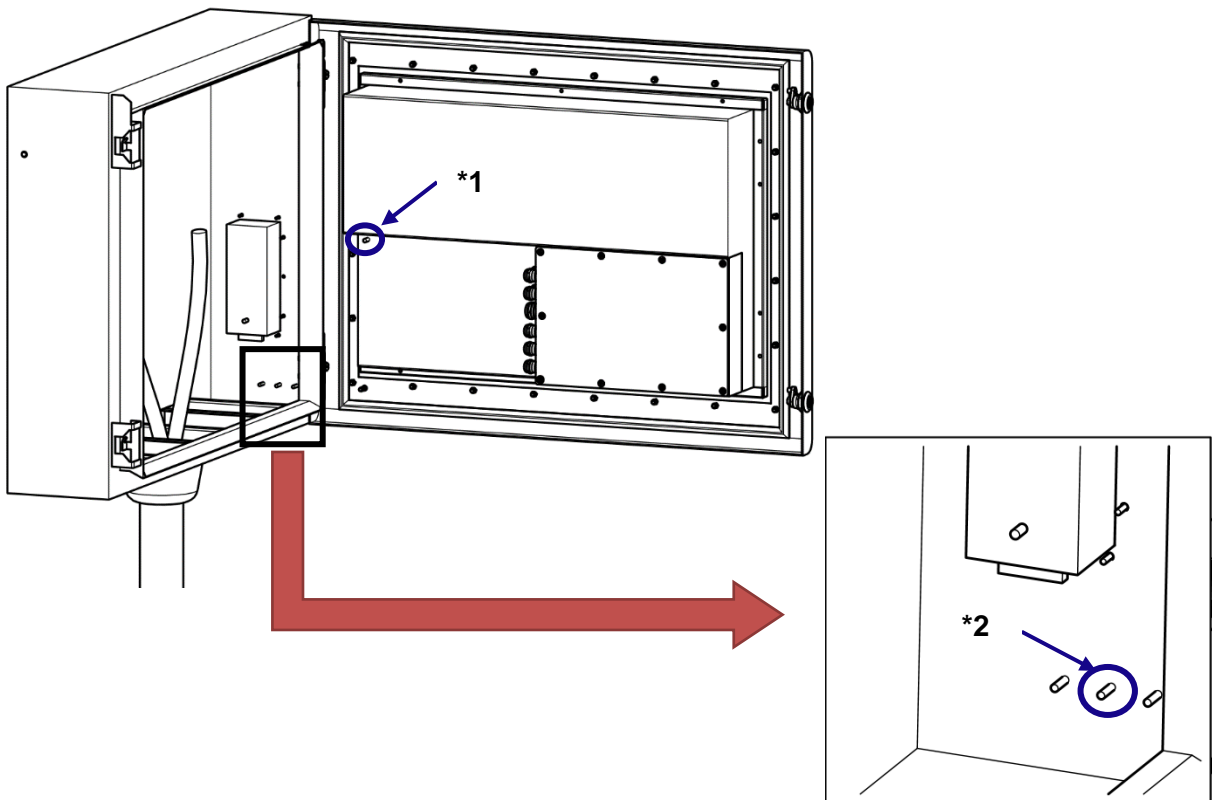


5 mm

10

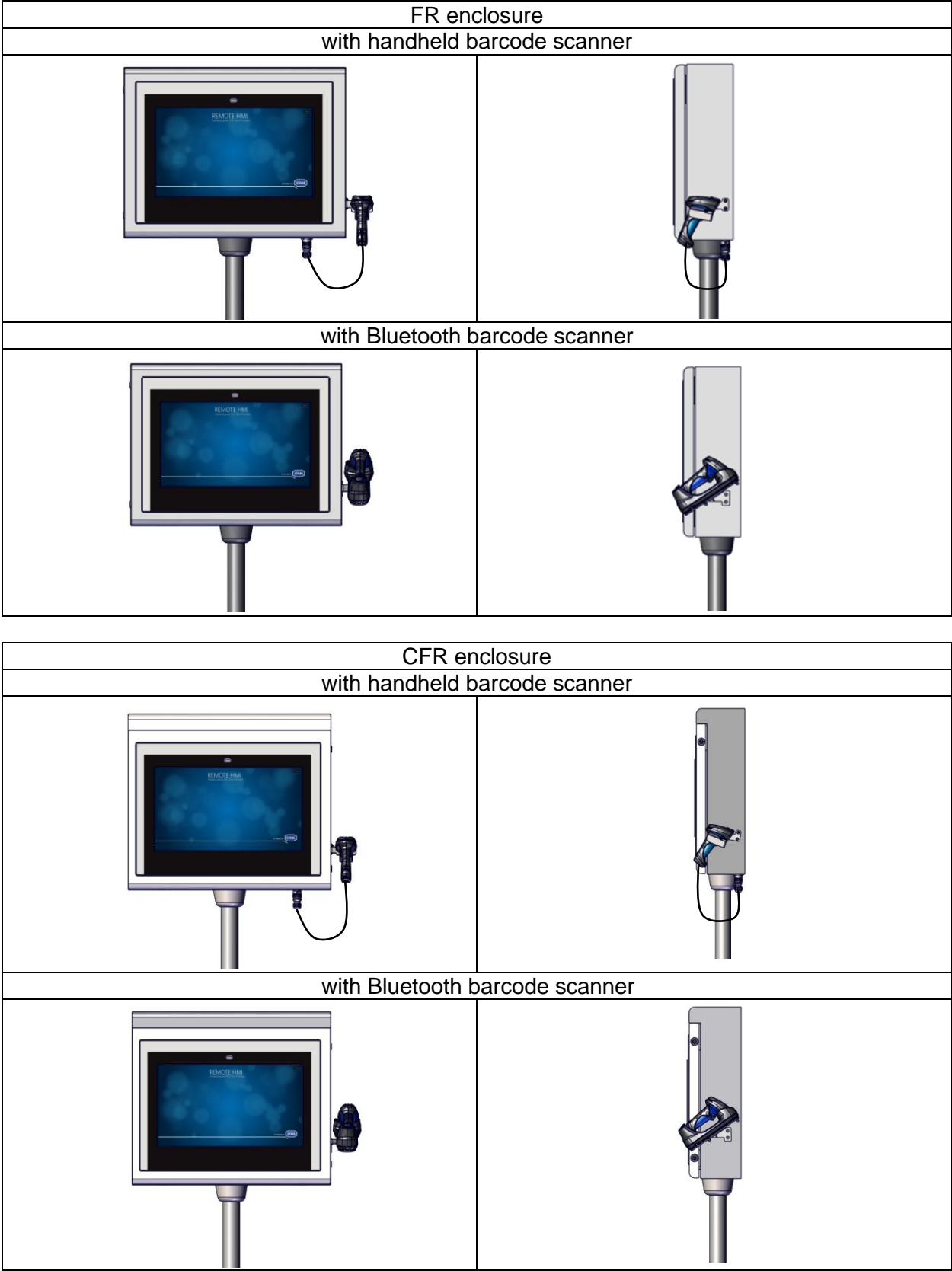


***1** Connection bolt for equipotential bonding for Operator Stations (OS) are already pre-wired to the multiple connection (*2).



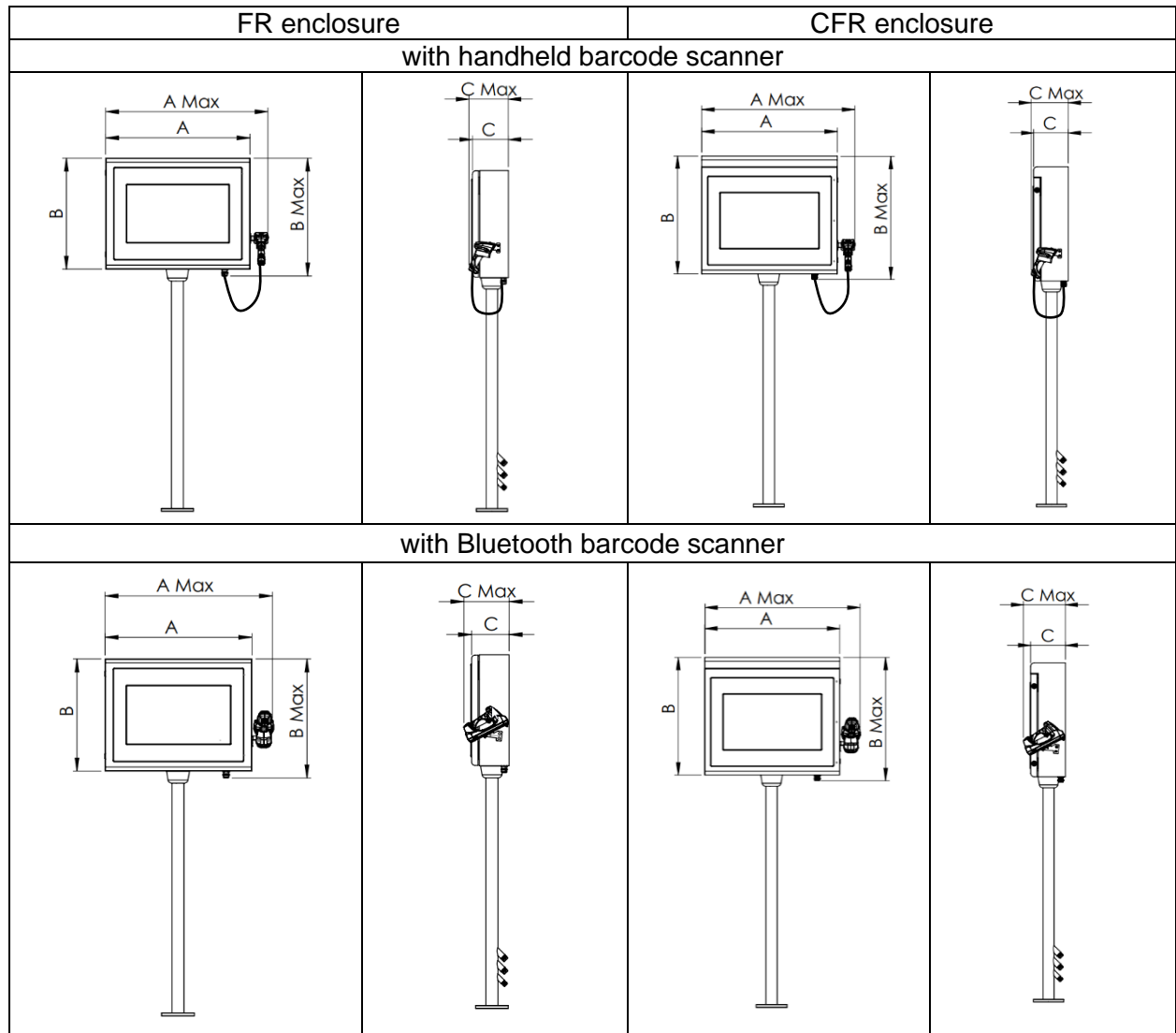
8.4 Mounting on stand with barcode scanner

8.4.1 View



8.4.2 Dimensions

Dimensions in mm.

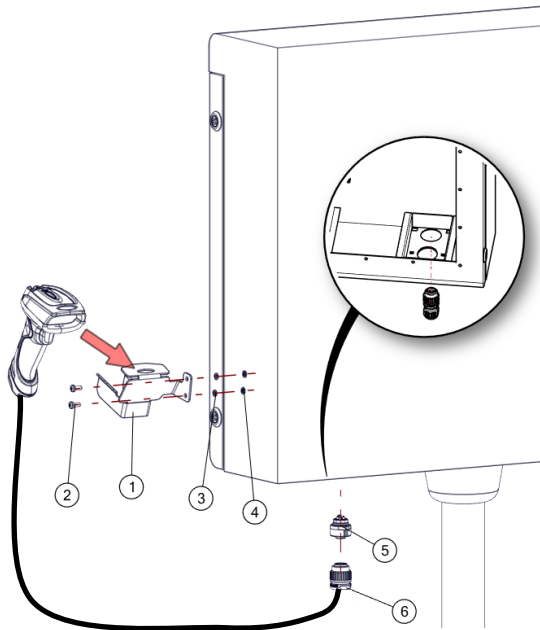


Dimensions for mounting on stand with handheld barcode scanner						
Enclosure	A	A Max	B	B Max	C	C Max
FR	740	832	568	603	190	203
CFR	720	814	627	657	190	203
Dimensions for mounting on stand with Bluetooth barcode scanner						
Enclosure	A	A Max	B	B Max	C	C Max
FR	740	838	568	603	190	229
CFR	720	828	627	657	190	229


8.4.3 Step-by-step mounting instructions

1  Mount stand as described in chapter 7.3.2.

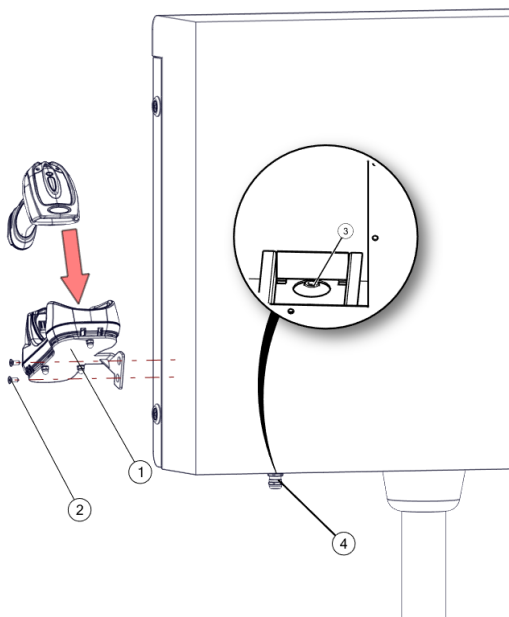
2 Hand-held barcode scanner




No.	Designation	Number
1	Holder for hand-held barcode scanner	1
2	M5 x 12 screw	2
3	M5 washer	2
4	M5 split washer	2
5	Binder fixed socket	1
6	Binder plug	1

 The Binder fixed socket is usually already installed in the HSG enclosure and internally wired.

2 Bluetooth barcode scanner

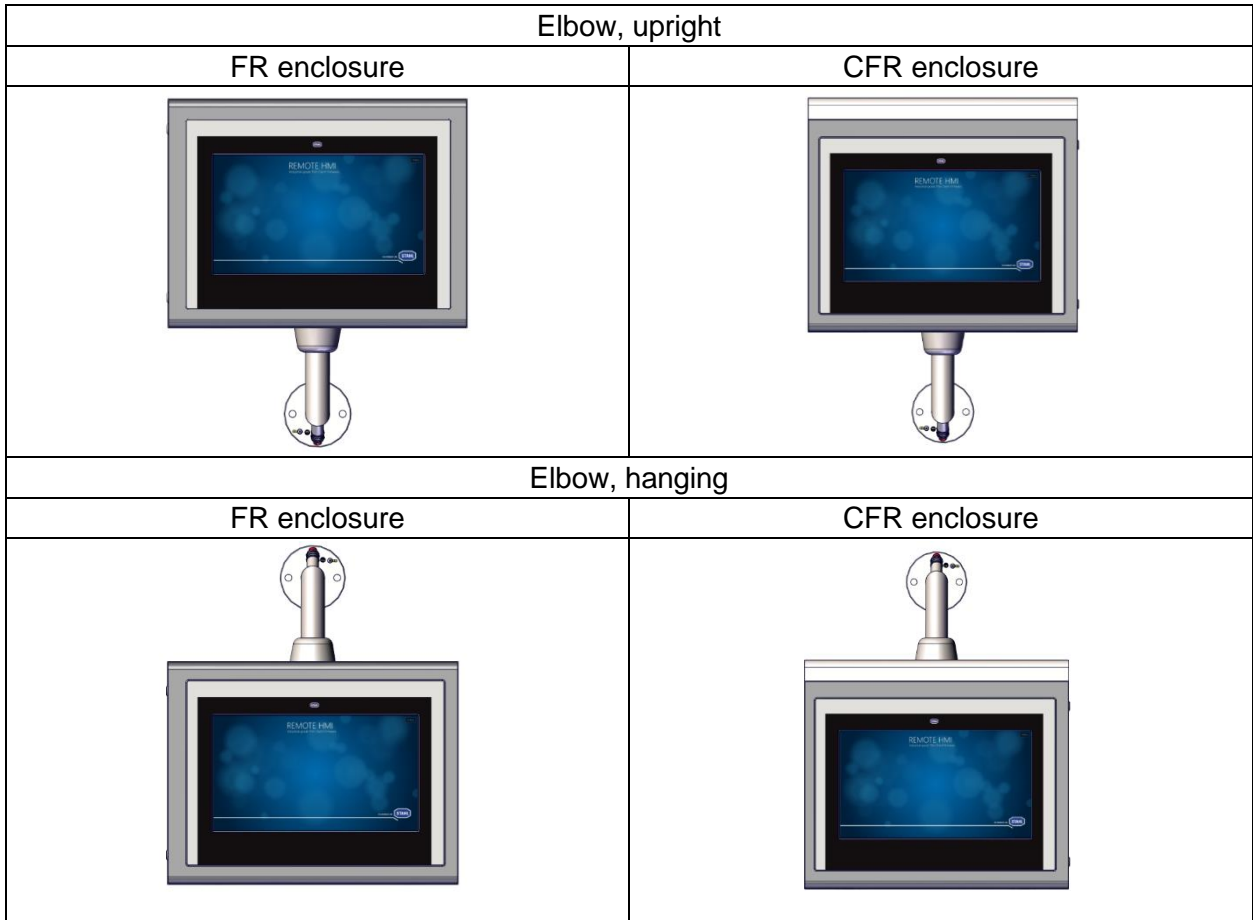


No.	Designation	Number
1	Holder for Bluetooth barcode scanner	1
2	M5 x 12 screw	2
3	M25 nut	1
4	M25 cable gland	1

 The M25 cable gland is usually already installed in the HSG enclosure.

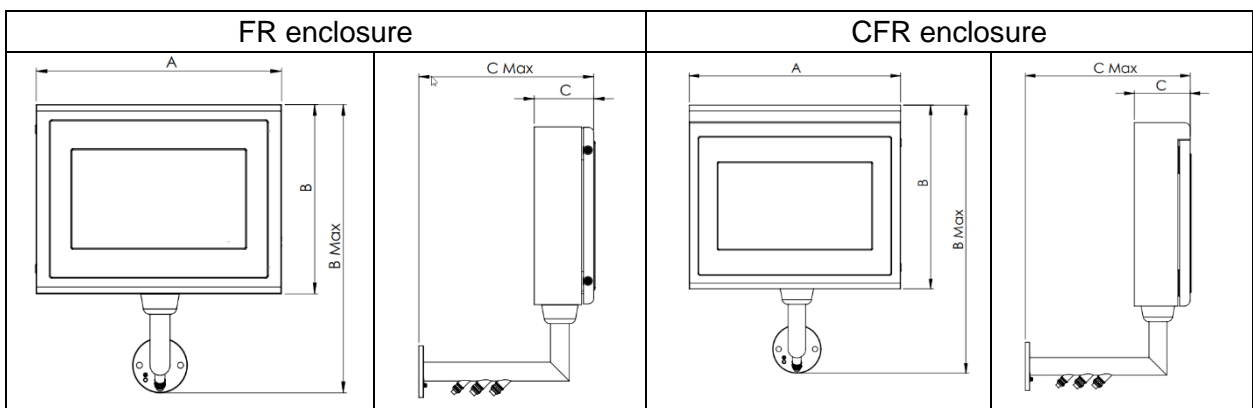
8.5 Mounted on elbow

8.5.1 View



8.5.2 Dimensions

Dimensions in mm.



Enclosure	Dimensions				
	A	B	B Max	C	C Max
FR	740	568	864	190	558
CFR	720	627	915	190	558



The dimensions of the upright or hanging mounting are identical for both of the enclosure versions.

8.5.3 Step-by-step mounting instructions

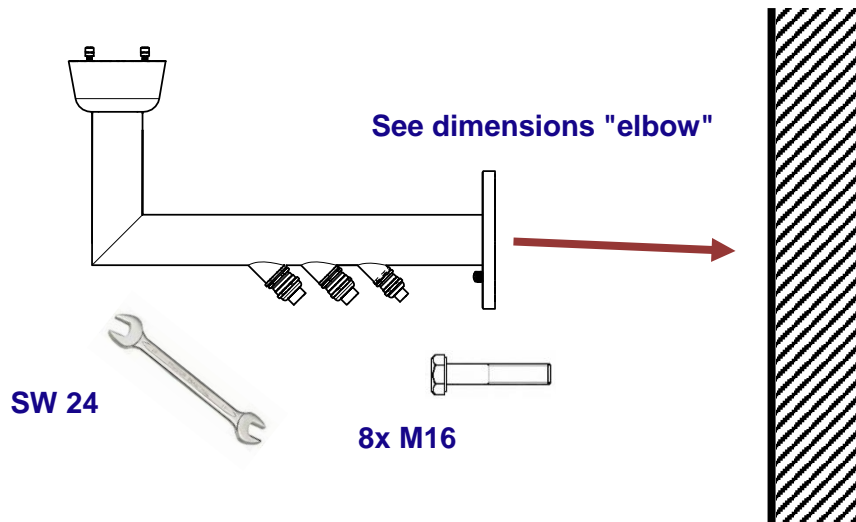


All mounting steps are the same for both upright and hanging mounting.

1

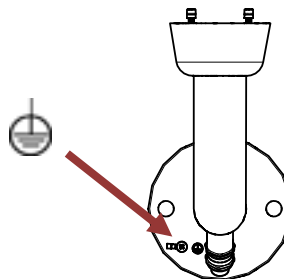


Choose suitable mounting screws, rawplugs and bolts depending on the actual local requirements and possibilities !



2

Elbow earthing
(see chapter 8.2)



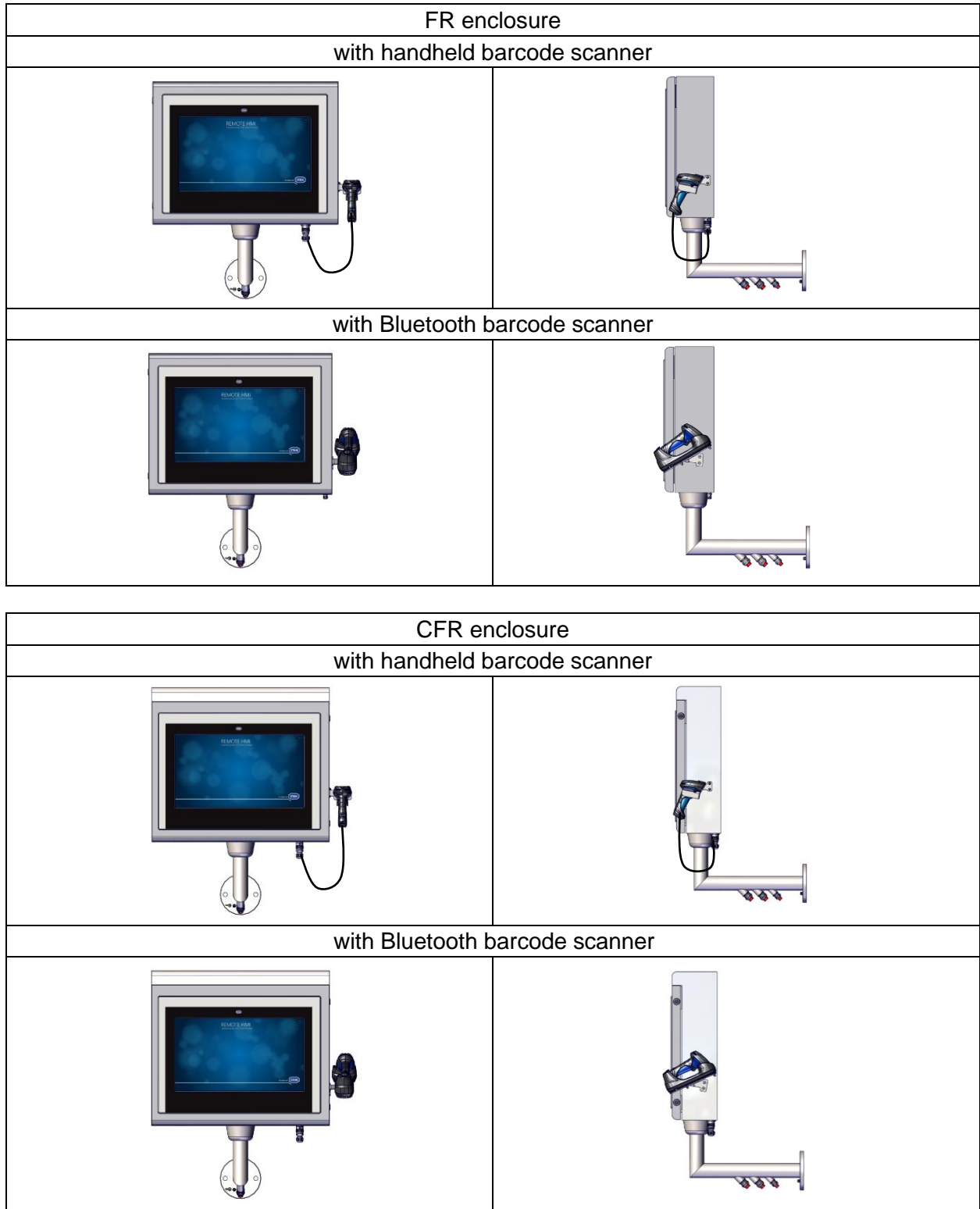
3



For all other mounting steps, proceed as described for the stand mounting from step 3 onwards.

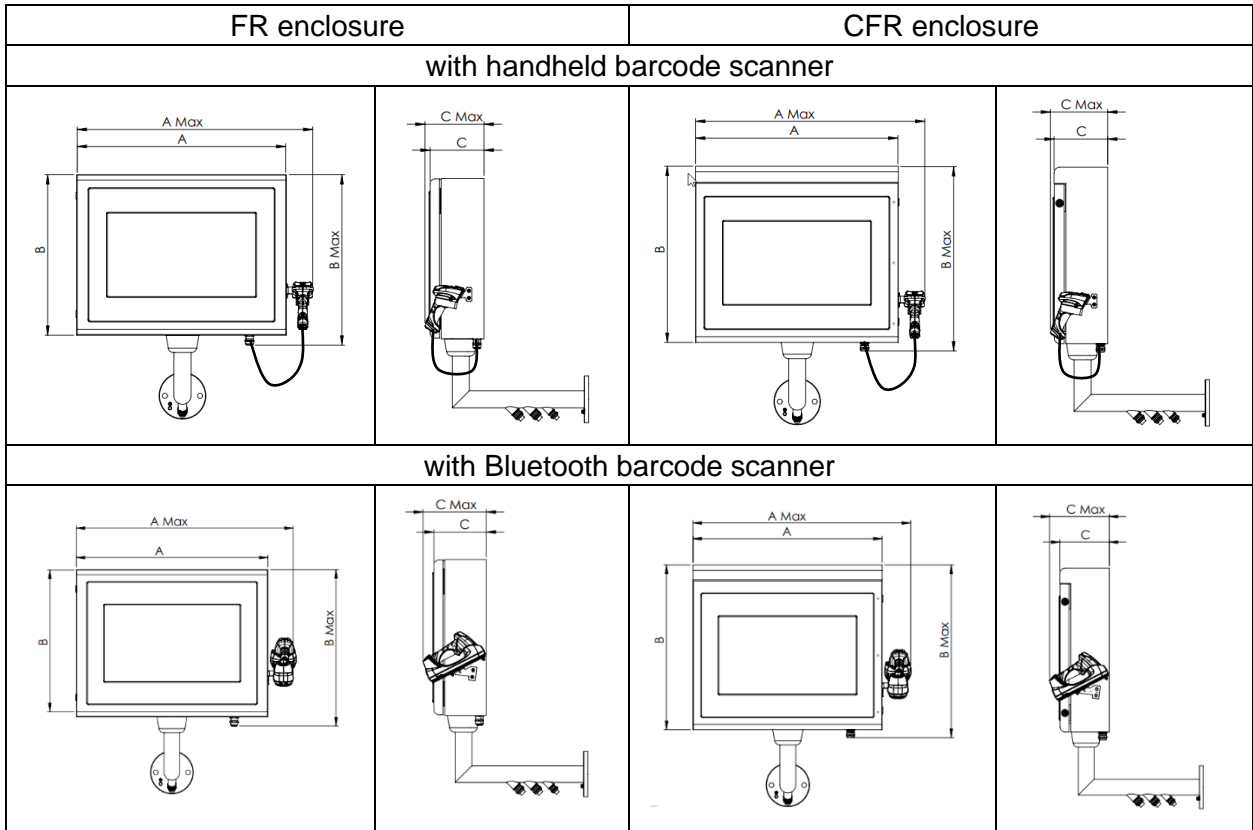
8.6 Elbow mounting with barcode scanner

8.6.1 View



8.6.2 Dimensions

Dimensions in mm.



Dimensions for mounting on elbow with handheld barcode scanner						
Enclosure	A	A Max	B	B Max	C	C Max
FR	740	832	568	603	190	203
CFR	720	814	627	657	190	203
Dimensions for mounting on elbow with Bluetooth barcode scanner						
Enclosure	A	A Max	B	B Max	C	C Max
FR	740	838	568	603	190	229
CFR	720	828	627	657	190	229

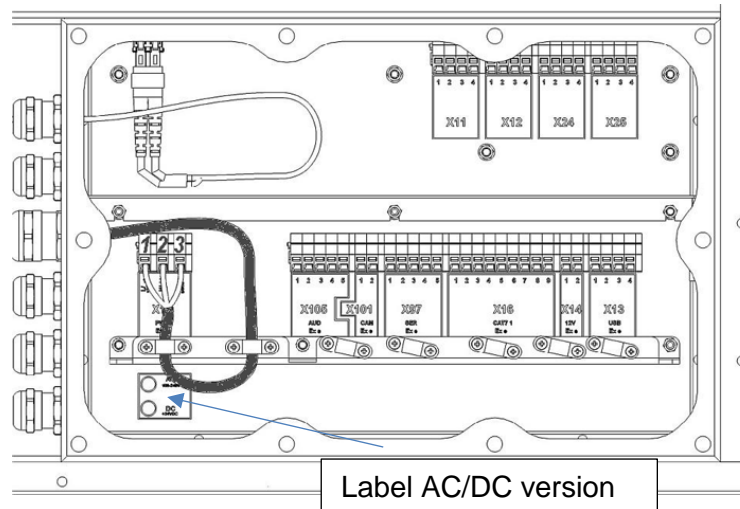
8.6.3 Step-by-step mounting instructions



Please refer to the chapters above for all mounting steps.
 For wall mounting, see [chapter 8.5.3](#)
 For scanner mounting, see [chapter 8.4.3](#)

9 Electrical installation

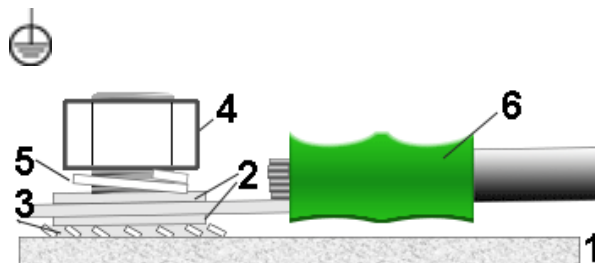
9.1 Connection of X10 power supply



Variant	Pin	Signal
DC	1	Power supply +24 VDC
	2	Power supply +0 VDC
	3	Equipotential bonding / enclosure
AC	1	Phase conductor (L) 100-240 VAC
	2	Neutral conductor (N) 100 - 240 VAC
	3	Protective conductor / enclosure

	WARNING
	<p>Risk of explosion and / or destruction of the device ! Non-compliance can result in severe injury to persons and / or destruction of the device !</p> <ul style="list-style-type: none"> • Only connect AC devices (see device label) to 100 - 240 VAC mains.

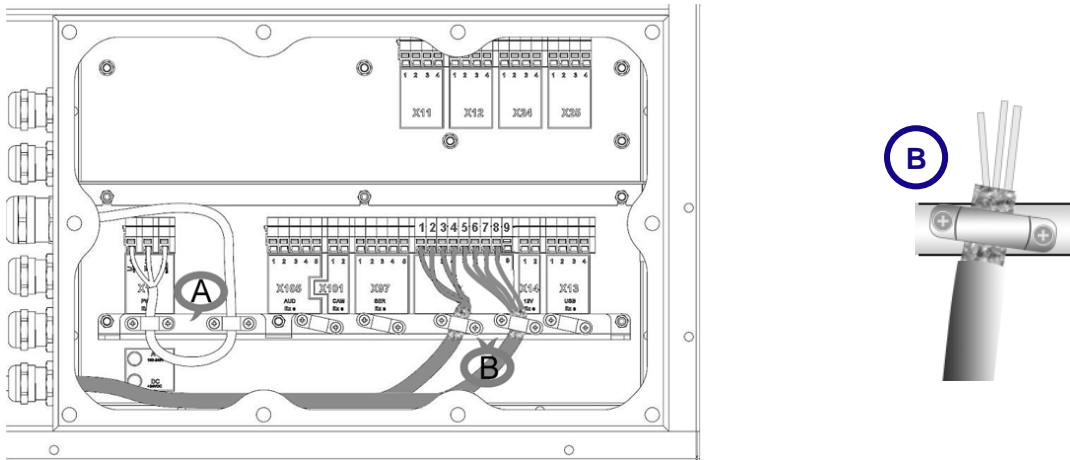
9.2 Stand / elbow earthing







- 1 = Stand mounting plate
- 2 = Washer 2x
- 3 = Toothed washer
- 4 = Hexagon screw M6 x 16
- 5 = Split washer
- 6 = Cable lug with eyelet

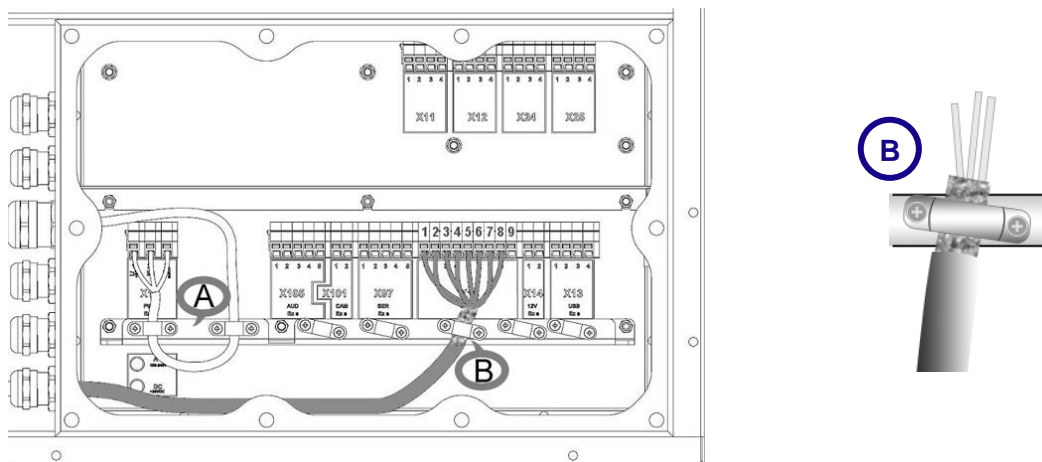
9.3 Ethernet interface X16





9.3.1 TX or 2TX with SERIES 400 / 500



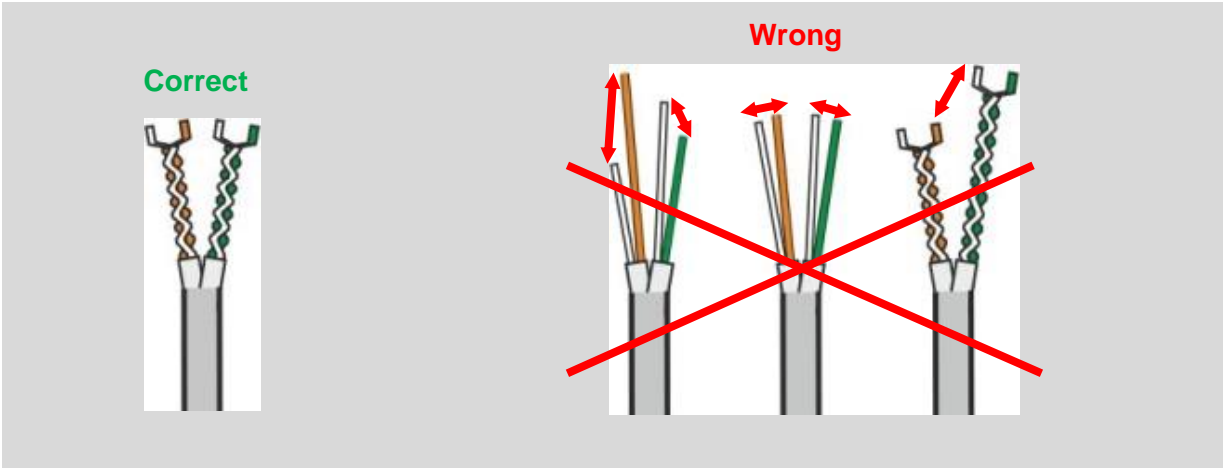
Pin	Signal	Colour	Notice	Connection
1	TRD0+	Orange / white	twist 	100Base-TX interface
2	TRD0-	Orange		
3	TRD1+	Green / white		
4	TRD1-	Green		
5	TRD2+	Orange / white		2nd 100Base-TX interface (only at option 2TX)
6	TRD2-	Orange		
7	TRD3+	Green / white		
8	TDR3-	Green		
9	SHLD	Screen	Connect shield separately on shielding bar (see diagram B)	

9.3.2 TX with SERIES 600

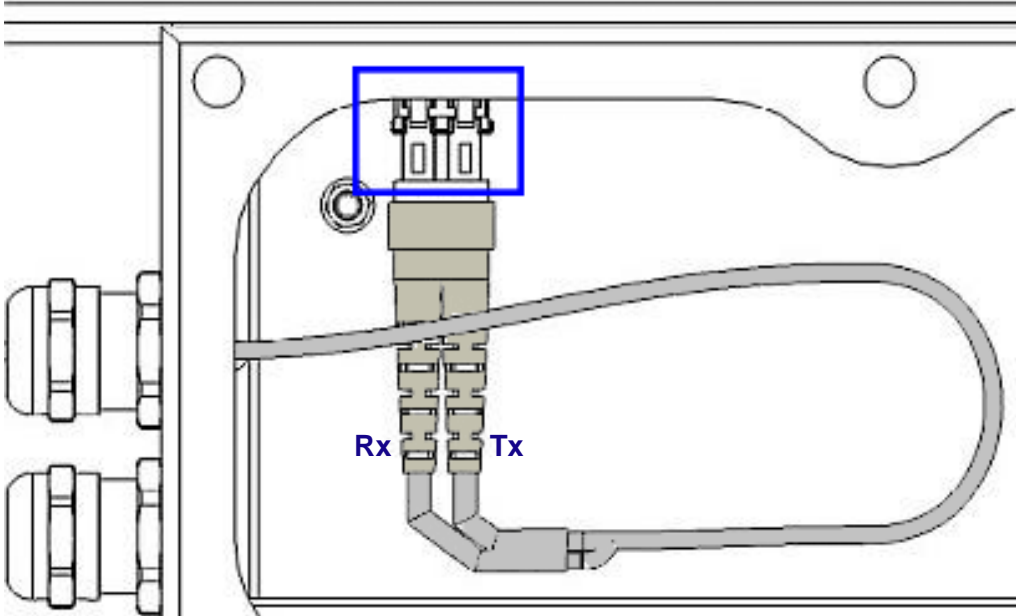
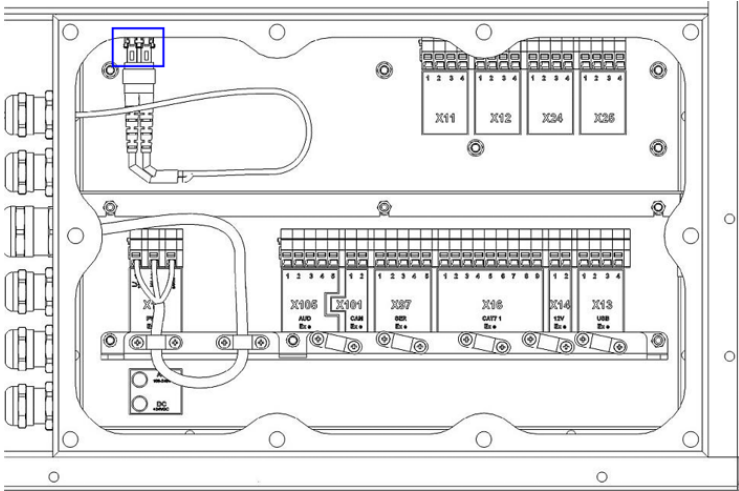


Pin	Signal	Colour	Notice	Connection
1	TRD0+	Orange / white	twist 	Ethernet interface
2	TRD0-	Orange		
3	TRD1+	Green / white		
4	TRD1-	Green		
5	TRD2+	White / blue		
6	TRD2-	Blue		
7	TRD3+	White / brown		
8	TDR3-	Brown		
9	SHLD	Screen	Connect shield to shielding bar (see diagram B)	

9.3.2.1 Data lines



9.4 Ethernet optical fiber interface



10 Release notes

The chapter entitled "Release Notes" contains the changes made in the latest version of the installation manual.

Version 01.00.00

- First edition

Version 01.00.01

- Correction version number in section Release notes
- Change of HW-Rev. for xT-4x7-*-BT and xT-5x7-*-BT on cover
- Change of image on cover page
- Correction of data and content for wall-mounted enclosure.
- Text, layout and formal corrections

Version 01.00.02

- Change of HW-Rev. for xT-4x7-*-BT and xT-5x7-*-BT on cover
- Addition of HW-Rev. for xT-5x7-*-P2 device on cover
- Correction of single wire colour for pin assignments 4 - 8) for "TX of SERIES 600"
- Layout changes

Version 01.00.03

- Change of all illustrations to reflect current design
- Change of keyboards, now KB2
- Addition of "Wall mounting types" and "Barcode scanner"
- Addition of chapter "Further documents"
- Addition of chapter "Enclosure damage"
- Layout changes

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