



Web Panels with TFT Display

User manual
UM EN WEB PANELS

User manual

Web Panels with TFT Display

2014-07-01

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Revision: 02

Order No.: —

This user manual is valid for:

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WP 06T	2913645
WP 07T/WS	2700307
WP 09T/WS	2700309
WP 10T	2700934
WP 15T	2700935

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WP 04T, WP 06T, WP 07T/WS, WP 09T/WS, WP 10T, WP 15T

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6.7 WP 15T58

1 Important Notes

1.1 Symbols

The symbols in this manual are used to draw your attention on notes and dangers.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

There are three different categories of personal injury that are indicated with a signal word.



DANGER

This indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

This indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE

This symbol together with the signal word NOTE and the accompanying text alert the reader to a situation which may cause damage or malfunction to the device, hardware/software, or surrounding property.



This symbol and the accompanying text provide the reader with additional information or refer to detailed sources of information.

1.2 Safety Notes

- Read this manual carefully before using the operating device. Keep this manual in a place where it is always accessible to all users.
- Proper transportation, handling and storage, placement and installation of this product are prerequisites for its subsequent flawless and safe operation.
- This user manual contains the most important information for the safe operation of the device.
- The user manual, in particular the safety notes, must be observed by all personnel working with the device.
- Observe the accident prevention rules and regulations that apply to the operating site.
- Installation and operation must only be carried out by qualified and trained personnel.

1.3 Intended Use

- The device is designed for use in the industry.
- The device is state-of-the art and has been built to the latest standard safety requirements. However, dangerous situations or damage to the machine itself or other property can arise from the use of this device.
- The device fulfills the requirements of the EMC directives and harmonized European standards. Any modifications to the system can influence the EMC behavior.

**NOTICE: Radio Interference**

This is a class A device. This device may cause radio interference in residential areas. In this case, the user may be required to introduce appropriate countermeasures, and to bear the cost of same.

1.4 Target Group

The use of products described in this manual is oriented exclusively to:

- Qualified electricians or persons instructed by them, who are familiar with applicable standards and other regulations regarding electrical engineering and, in particular, the relevant safety concepts.
- Qualified application programmers and software engineers, who are familiar with the safety concepts of automation technology and applicable standards.

2 Installation and Commissioning

2.1 Unpacking the Device

Unpack all parts carefully and check the contents for any visible damage in transit. Also check whether the shipment matches the specifications on your delivery note.

If you notice damages in transit or discrepancies, please contact Phoenix Contact immediately.

2.2 Mounting the Device



NOTICE: Damage

When installing the device, leave a gap of at least 30 mm (1.181") around the device to ensure sufficient air circulation.



NOTICE: Damage

When the operating device is installed horizontally, please note that additional sources of heat beneath the operating device may result in heat accumulation.

Make sure to allow sufficient heat dissipation!

Please observe the permissible temperature range specified in the technical data of the user manual when operating the device.



NOTICE: Damage

In order to ensure the degree of protection specified in the technical data, always make sure that the seal lies flat against the mounting surface and the threaded pins of the mounting brackets are tightened uniformly to a maximum torque of 1 Nm.

The device can be easily and quickly mounted from the rear of the device. A panel thickness of 1 mm to 6 mm (0.039" to 0.236") is permitted for proper mounting.

1. Insert the device in the mounting cutout from the front.

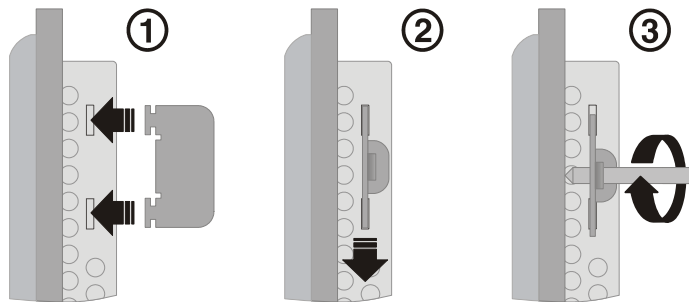


Figure 2-1 Mounting the device using a mounting bracket

2. Insert the mounting brackets into the appropriate openings (figure 1) and pull the brackets downwards until they lock in place (2).
3. Fasten the device into position using the threaded pins (3).

2.2.1 Front Panel Dimensions

2.2.1.1 WP 04T

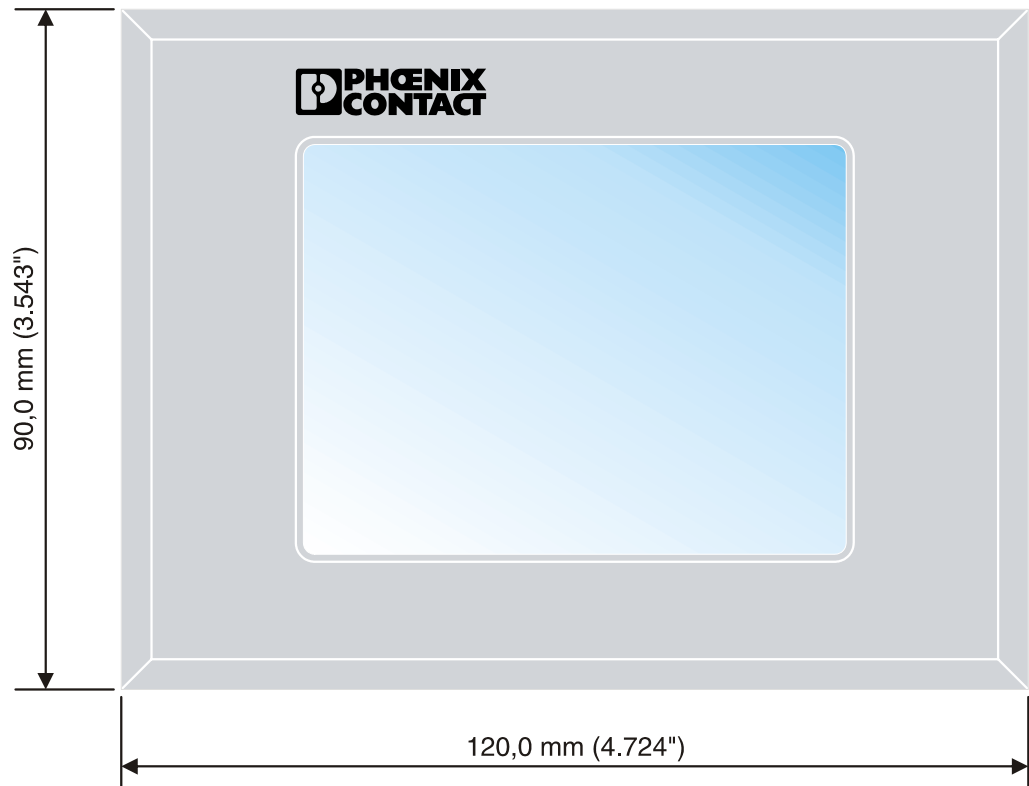


Figure 2-2 WP 04T

2.2.1.2 WP 06T

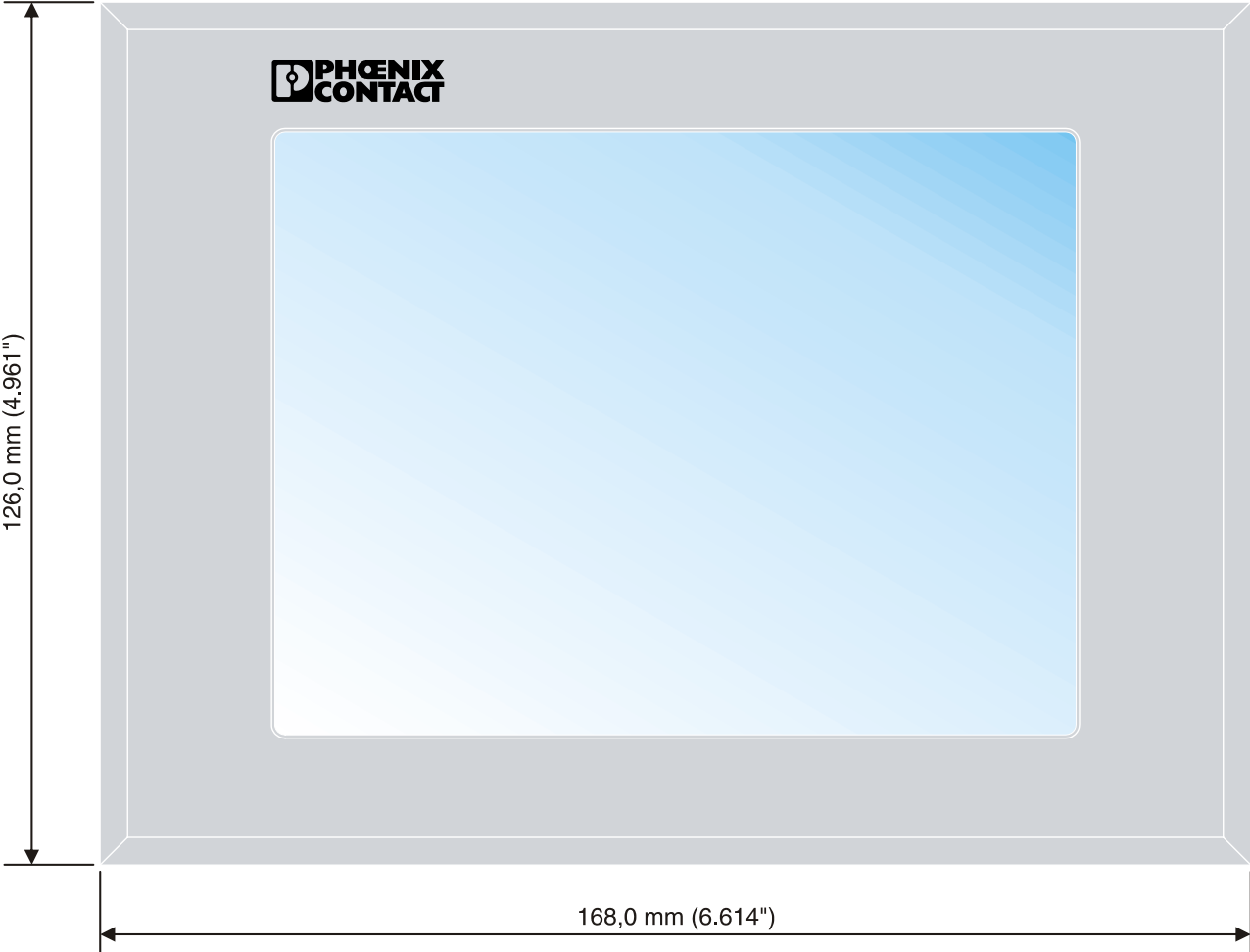


Figure 2-3 WP 06T

2.2.1.3 WP 07T/WS

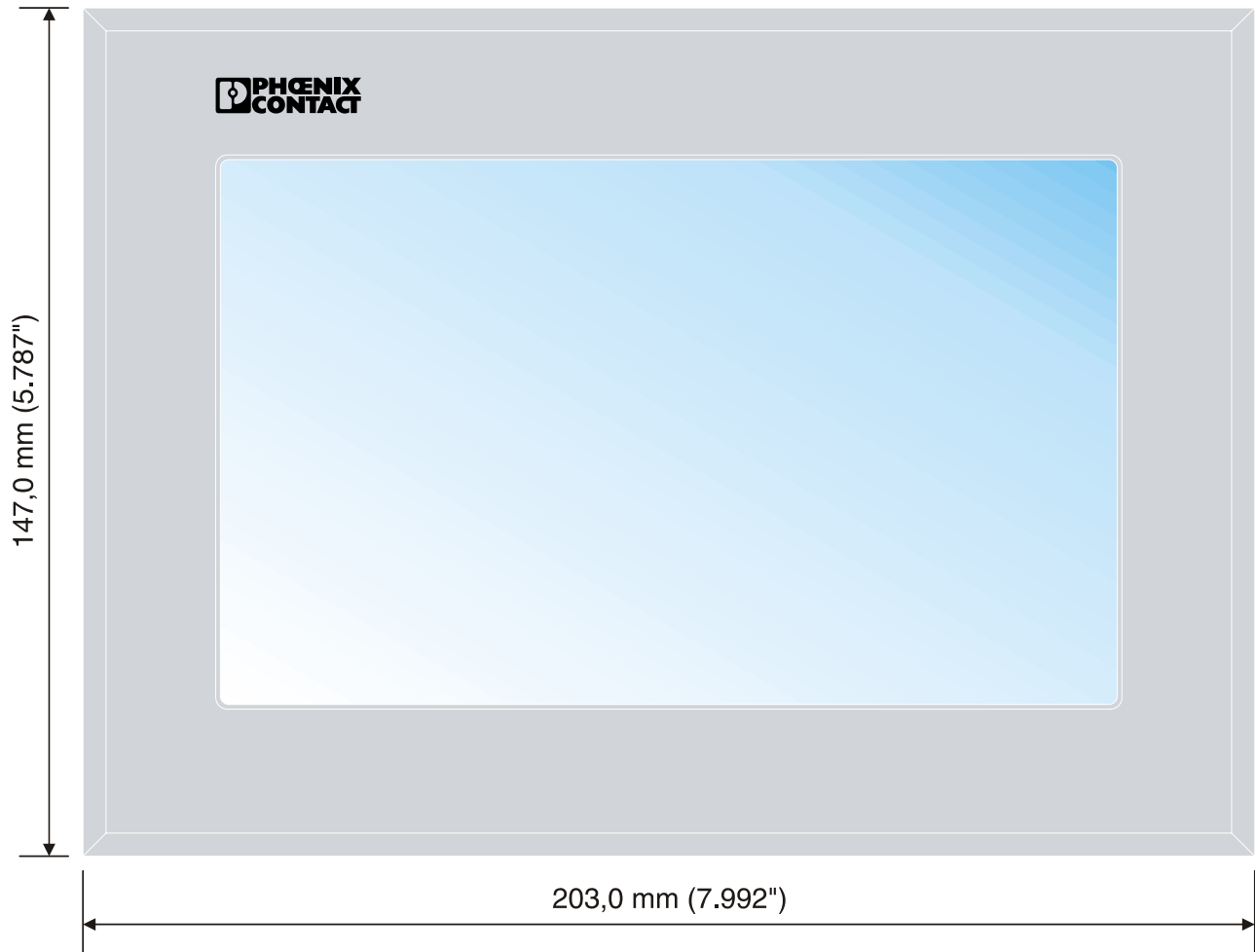


Figure 2-4 WP 07T/WS

2.2.1.4 WP 09T/WS



Figure 2-5 WP 09T/WS

2.2.1.5 WP 10T

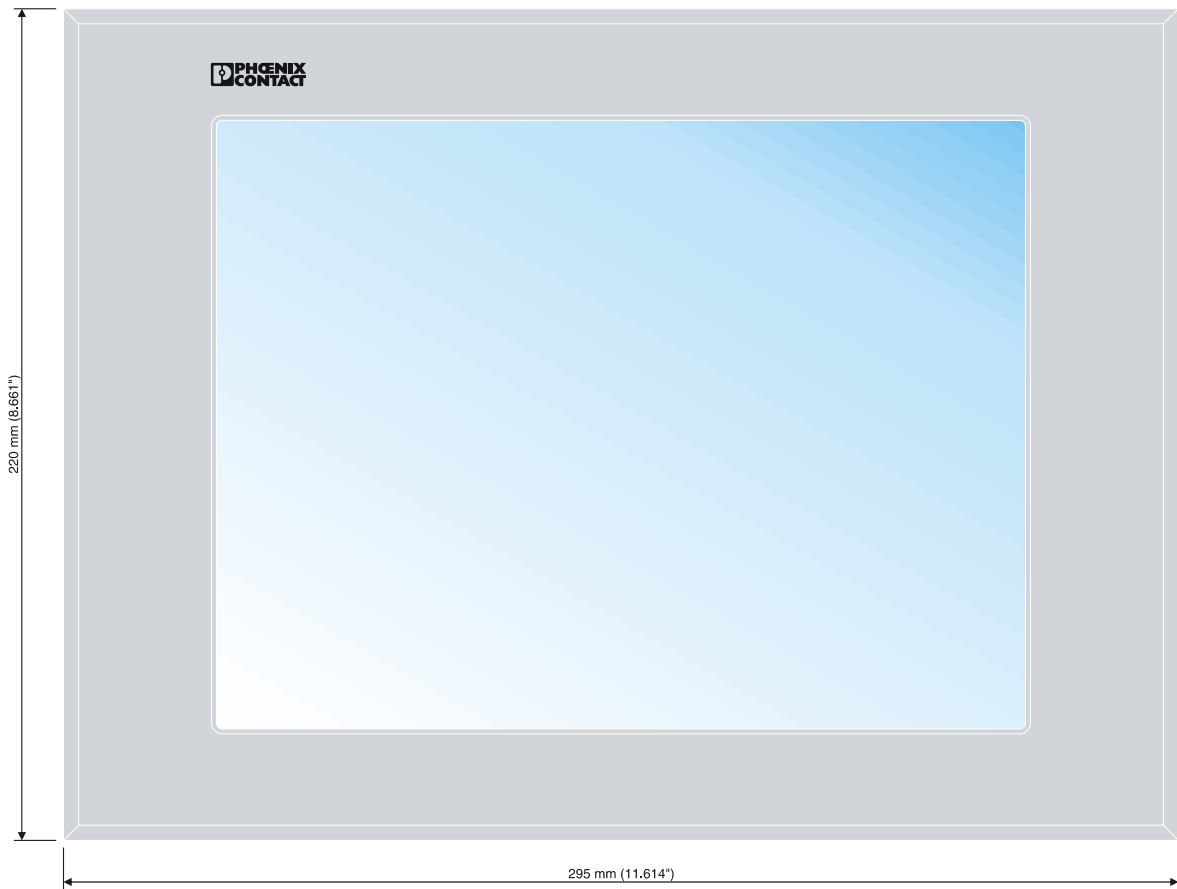


Figure 2-6 WP 10T

2.2.1.6 WP 15T

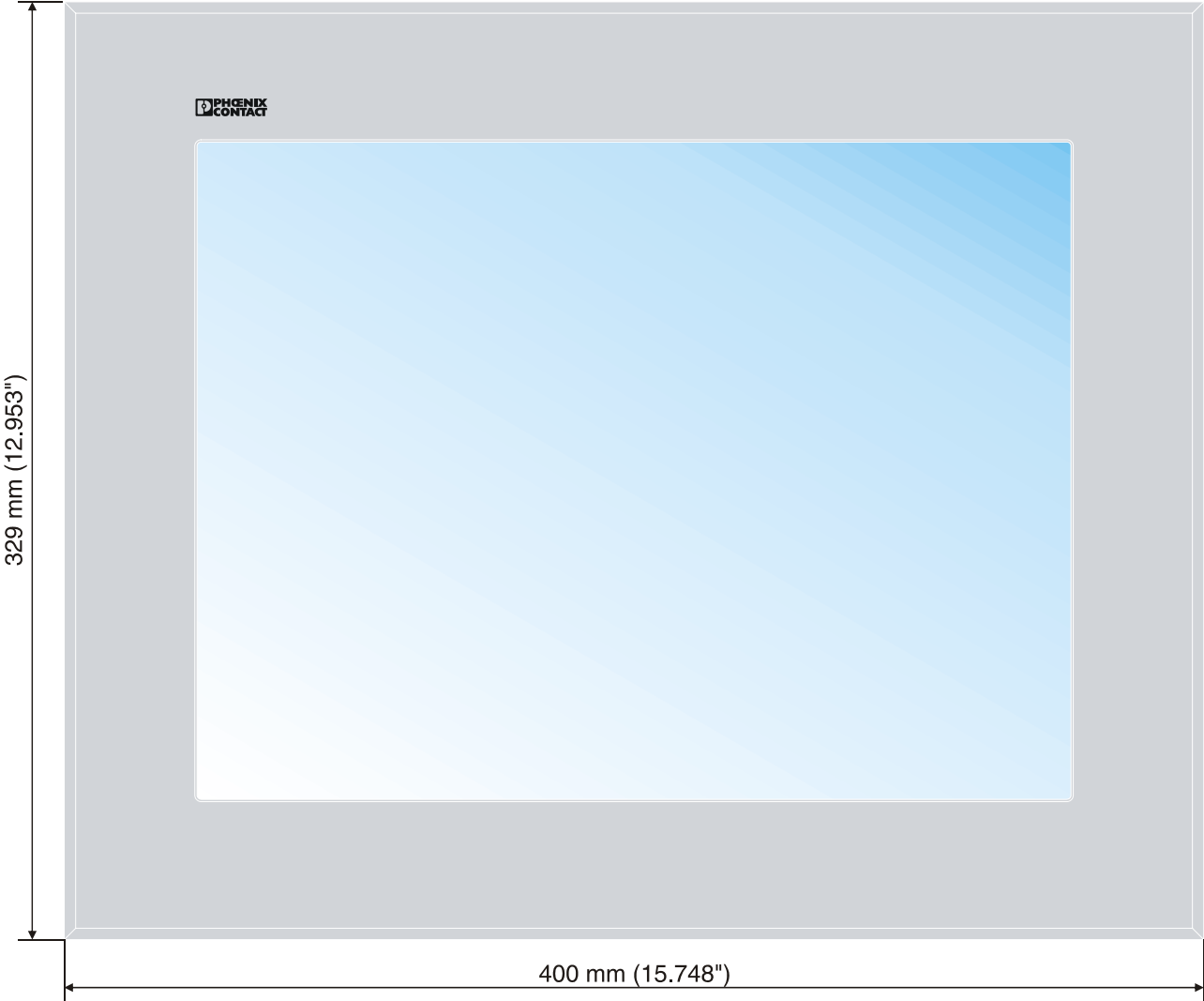


Figure 2-7 WP 15T

2.2.2 Mounting Cutout

2.2.2.1 WP 04T

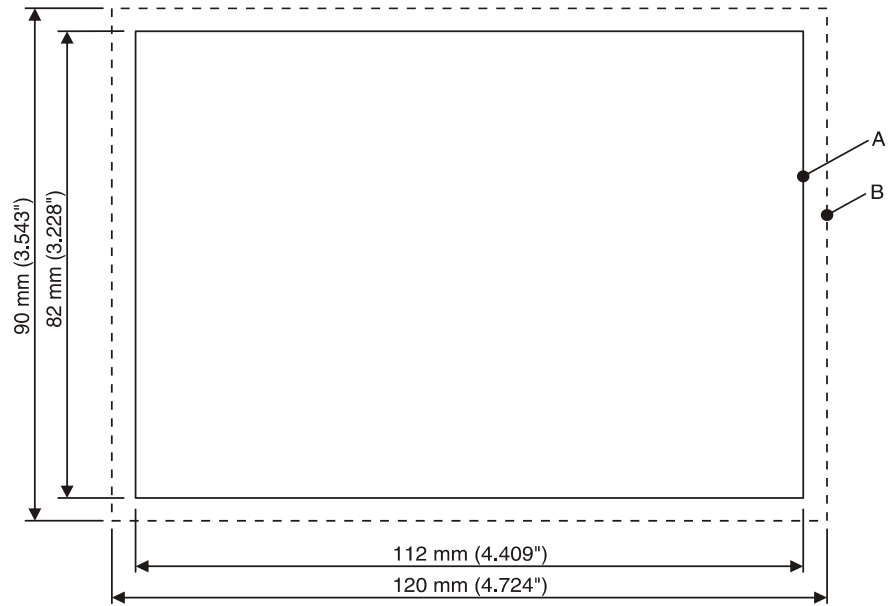


Figure 2-8 WP 04T

- A Mounting Cutout
- B Front Panel

2.2.2.2 WP 06T



Figure 2-9 WP 06T

- A Mounting Cutout
- B Front Panel

2.2.2.3 WP 07T/WS

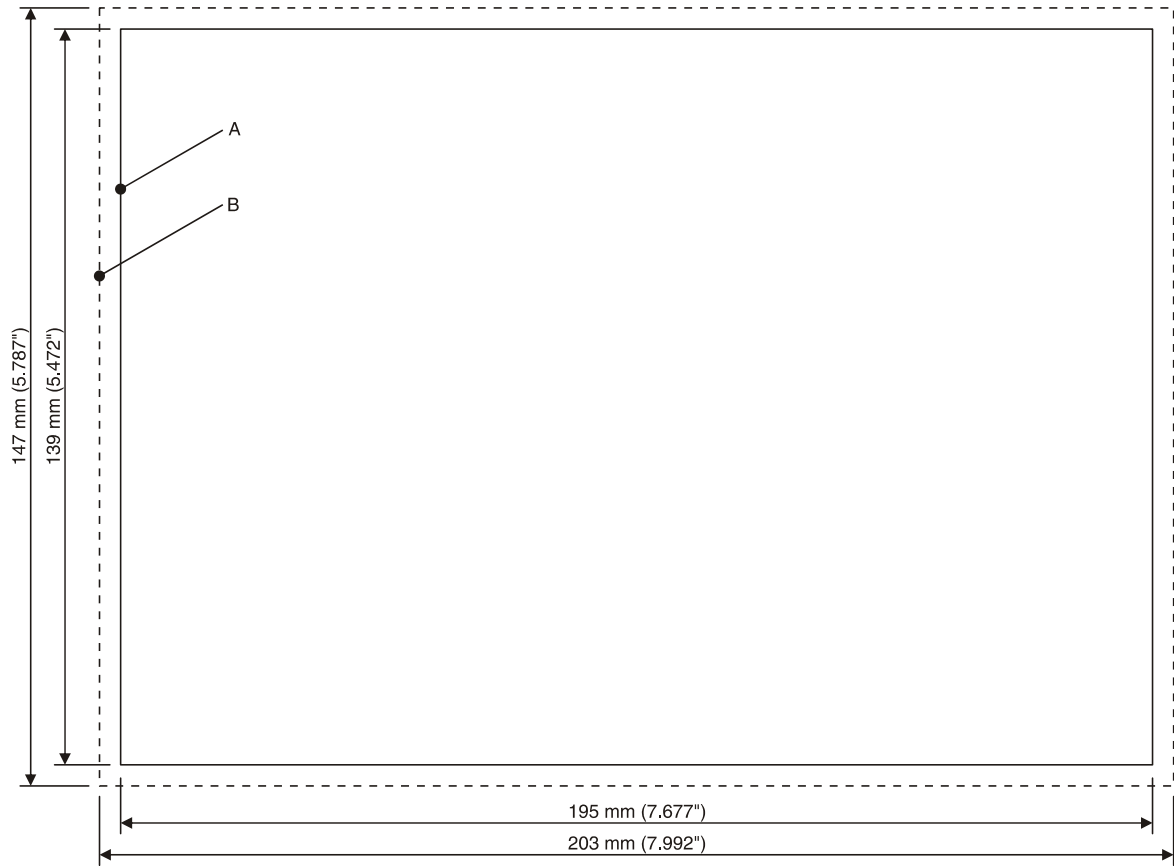


Figure 2-10 WP 07T/WS

- A Mounting Cutout
- B Front Panel

2.2.2.4 WP 09T/WS



Figure 2-11 WP 09T/WS

- A** Mounting Cutout
- B** Front Panel

2.2.2.5 WP 10T



Figure 2-12 WP 10T

- A** Mounting Cutout
- B** Front Panel

2.2.2.6 WP 15T

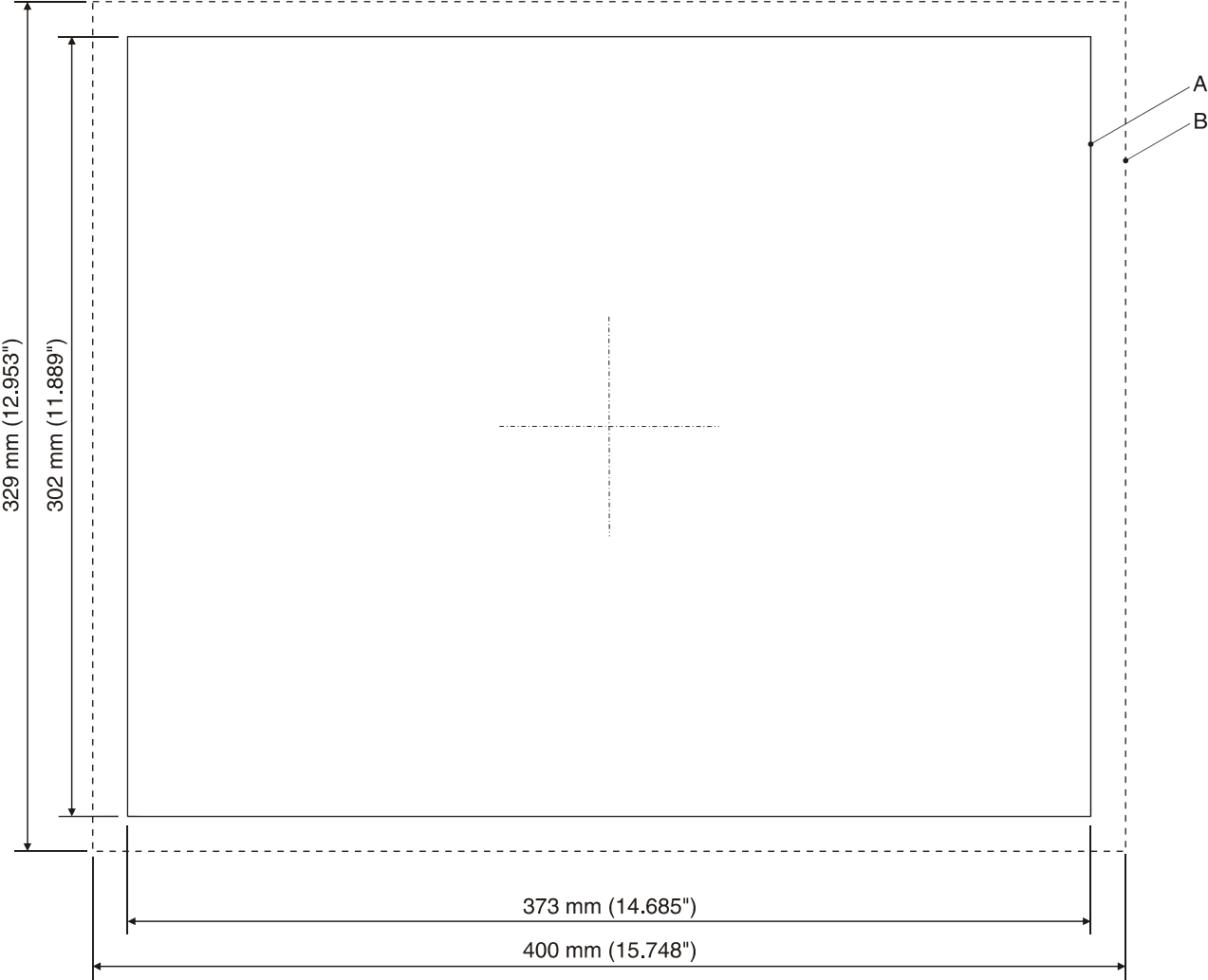


Figure 2-13 WP 15T

- A Mounting Cutout
- B Front Panel

2.2.3 Side View, Mounting Depth

2.2.3.1 WP 04T

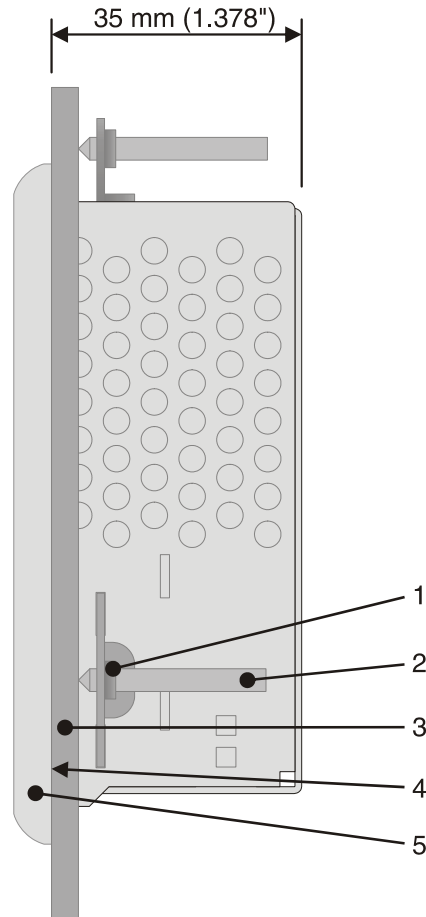


Figure 2-14 WP 04T

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.2.3.2 WP 06T

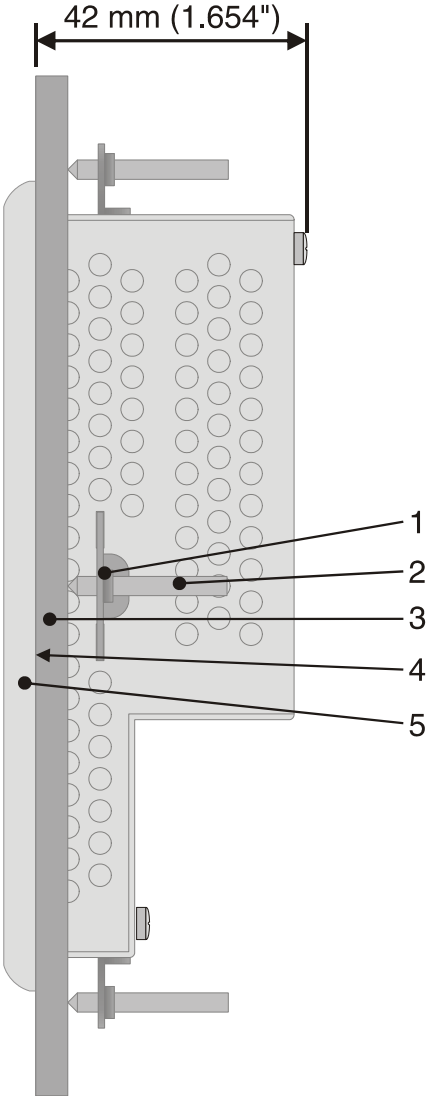


Figure 2-15 WP 06T

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.2.3.3 WP 07T/WS

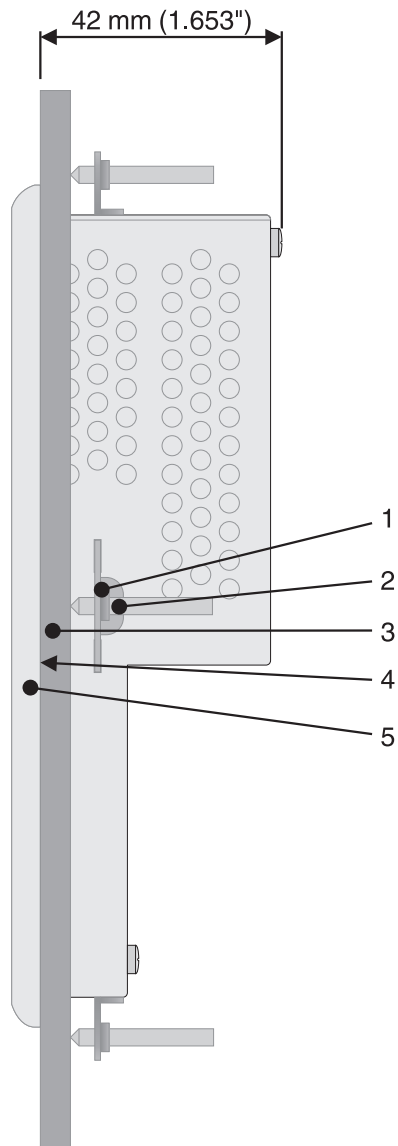


Figure 2-16 WP 07T/WS

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.2.3.4 WP 09T/WS

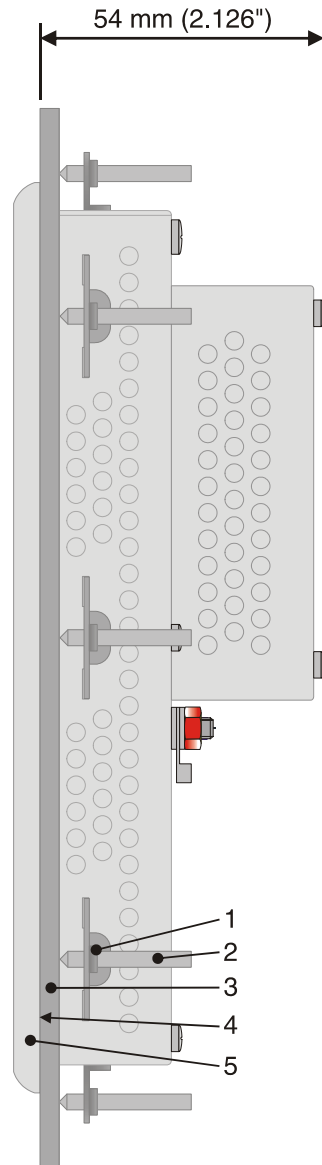


Figure 2-17 WP 09T/WS

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.2.3.5 WP 10T

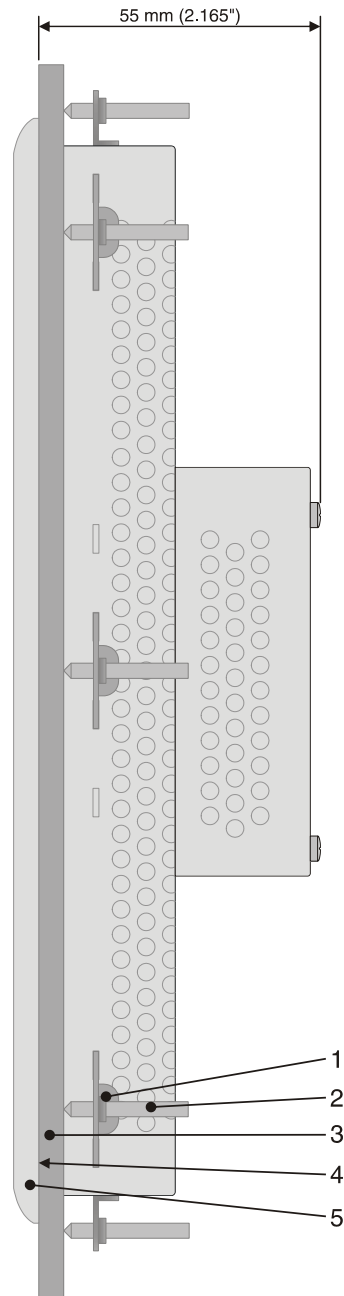


Figure 2-18 WP 10T

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.2.3.6 WP 15T

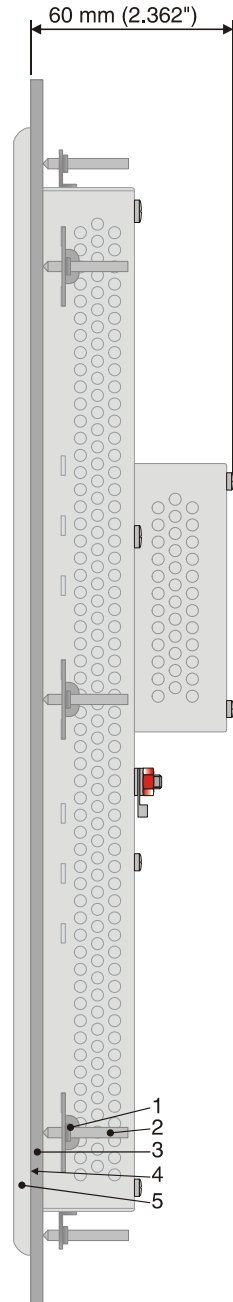


Figure 2-19 WP 15T

- 1 Mounting Bracket
- 2 Threaded Pin
- 3 Mounting Surface Thickness 1 mm to 6 mm
- 4 Circumferential Seal
- 5 Front Panel

2.3 Connecting the Device

2.3.1 Supply Voltage

The supply voltage is supplied via pin strip X1. A suitable socket strip is supplied. Refer to the technical data for the permissible supply voltage of the operating device.



The device has reverse polarity protection. In case of wrong polarity, the device will not operate.



This is a protection class I device. For safe operation, safety extra-low voltage (SELV) in accordance with DIN EN 61131 must be used for the supply voltage.

Connector in the operating device: 3 pin pin strip

Table 2-1 Pin assignment supply voltage

Pin	Designation	Function
1		Noiseless ground / functional earth ground (FE)
2	0 V	Supply voltage 0 V (GND)
3	=== 24 V	Supply voltage === 24 V



DANGER: Hazardous voltages

Hazardous voltages can exist inside electrical installations that can pose a danger to humans. Coming in contact with live parts may result in electric shock!



NOTICE: Damage

Cables with finely stranded copper conductors with a minimum cross-section of 0.75 mm² (18 AWG) and a maximum cross-section of 2.5 mm² (14 AWG) must be used for the supply voltage.

You must adhere to the following torques at the connector:

Screw connection of terminal blocks: 0.22 Nm (minimal) to 0.25 Nm (maximum)

Screw flange: 0.3 Nm (maximum)

Use the following procedure to connect the device to the supply voltage:

- Strip approx. 30 mm (1.181") off the outer cable sheath and approx. 5 mm (0.197") off the wires.

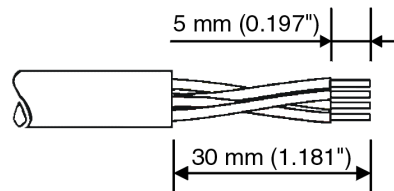


Figure 2-20 Preparing the cable

- Fit the wires with wire end ferrules and connect the wires to the socket strip.
- Plug the socket strip onto pin strip X1.
- Secure the socket strip in place with a screw-type locking to prevent it from slipping out.

2.3.2 Grounding

The grounding is performed - depending on the type of device - with a slip-on sleeve (noiseless ground / functional earth ground) or a ring cable lug (protective ground).

**NOTICE: Damage**

A separate copper conductor must always be provided for the grounding. The conductor must have a minimum cross-section of 1.5 mm² (16 AWG) and must be kept as short as possible.

You must adhere to a maximum torque of 1 Nm at a protective grounding on the threaded bolt.

1. Strip approx. 5 mm (0.197") off the wires.
2. Fit the stripped wires - depending on the type of device - with a slip-on sleeve or a ring cable lug.
3. Plug the slip-on sleeve on the flat tab or mount the ring cable lug with the nut to the threaded bolt.

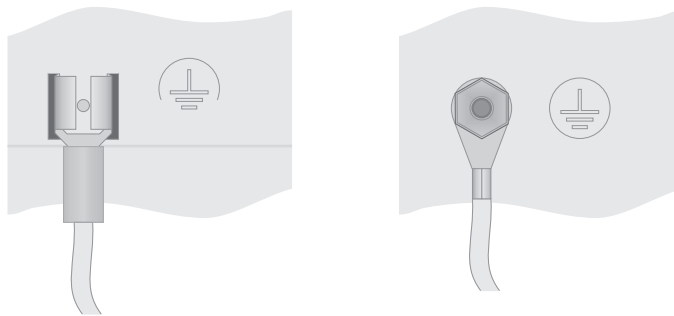


Figure 2-21 Noiseless ground / protective ground

2.4 Switching On

The operator panel is equipped with the Windows CE operating system, on which the Microbrowser runs.

2.4.1 Loading Procedure on Windows CE Operating System

The operating device allows you to make changes to the configuration at start procedure with the buttons.

The operating panel has three operating modes:

- Normal (no button pressed)
- Settings (button **Settings...** was pressed)
- Setup Main (button **Settings...** followed by **OS Settings...** was pressed)

2.4.1.1 Normal Mode

The defined start URL is opened.

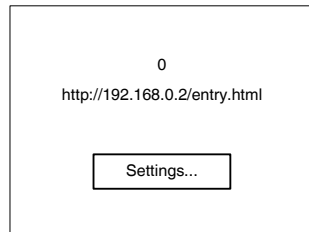


Figure 2-22 Display after startup



The operating device is compatible to Phoenix Contact controllers of type ILC 1xx, ILC 3xx and RFC 47x only.



Please, note that the device is accessible over the Ethernet only after assignment of an IP address to the Ethernet.

2.4.1.2 Settings Mode

If you press the **Settings...** button during startup phase, the settings screen starts.

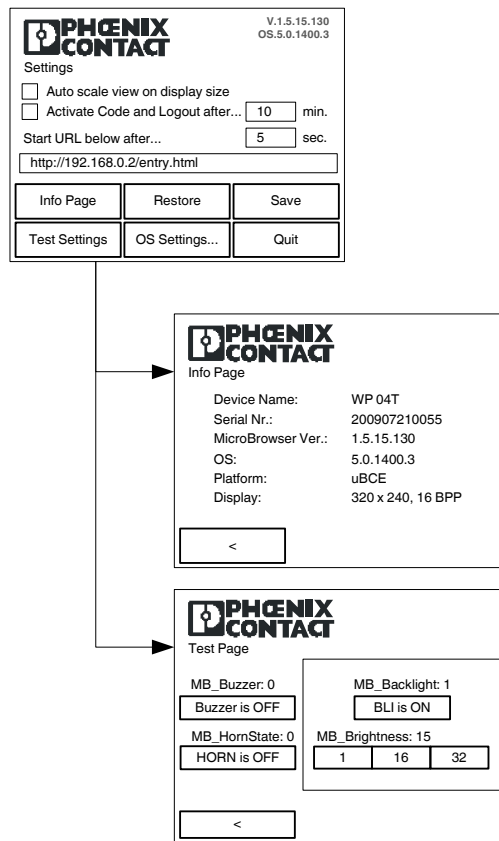


Figure 2-23 Settings

Settings, Auto scale on display size:

All Microbrowser pages are adapted to the size of the display automatically.

Settings, Activate Code and Logout after:

The settings of this screen are protected with a password. The password must be entered again if no user interaction was detected after the defined time in minutes.

Settings, Start URL below after:

The indicated start URL is called at the startup phase of the operating device after the defined time in seconds.



Depending on the control configuration you must use the URL prefix "http://" or "https://".

Settings, Info Page:

The following informations are displayed:

Device designation, serial number, Microbrowser version, operating system version, platform and resolution of the display with color depth.

Settings, Restore:

The last change is undone.

Settings, Save:

The settings are stored.

Settings, Test Settings:

The following tests are possible:

Buzzer on/off, backlight on/off, brightness 1/15/32.

Settings, OS Settings...:

The operating mode setup main is started.

Settings, Quit:

The screen for the settings is cancelled and the start URL is called up.

2.4.1.3 Setup Main Mode

If you press the button **Settings...** followed by **OS Settings...** during the startup phase, the "Setup Main" mode starts.

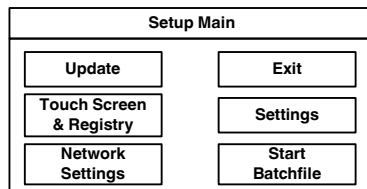


Figure 2-24 Setup Main



Some settings are password-protected. The default password is "+-+."

Update:

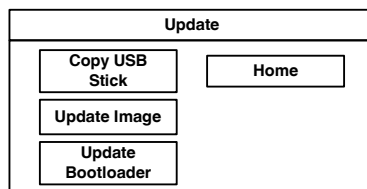


Figure 2-25 Update

Update, Copy USB Stick:

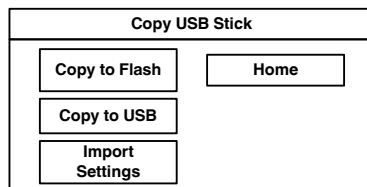


Figure 2-26 Copy USB Stick

Update, Copy USB Stick, Copy to Flash:

Copies the content of the „backup“ directory of the USB stick to the flash file system. The system settings may be restored via the "Import Settings" item.

Update, Copy USB Stick, Copy to Flash:

Copies the content of the „backup“ directory of the USB stick to the flash file system. The system settings may be restored via the "Import Settings" item.

Update, Copy USB Stick, Copy to USB:

Copies the content of the flash file system to the „backup“ directory of the USB stick. This excludes protected system files. A log file is also transferred, which can be used to restore system settings via the „Import Settings“ item.

Update, Copy USB Stick, Import Settings:

An automatically generated log file can be used to restore the system settings. If the „backup“ directory of the USB stick contains a corresponding log file, these settings can be restored.

This is possible only when using identical device types.

Update, Update Image:

If the „image“ subdirectory on the USB stick contains a „*.nb0“ file, this file is used to perform the image update. There must be only one „*.nb0“ file located in this directory, otherwise the update does not start.



In this case, the flash registry is always deactivated so that the image is processed with a new default registry.

Update, Update Bootloader:

If the „bootloader“ subdirectory on the USB stick contains a „*.nb0“ file, this file is used to perform the bootloader update. There must be only one „*.nb0“ file located in this directory, otherwise the update does not start.

Touch Screen & Registry:

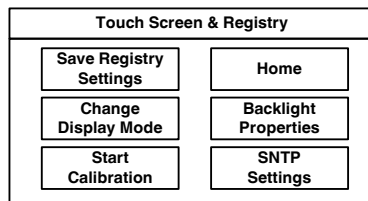


Figure 2-27 Touch Screen & Registry

Touch Screen & Registry, Save Registry Settings:

The entire registry is saved.

Touch Screen & Registry, Change Display Mode:

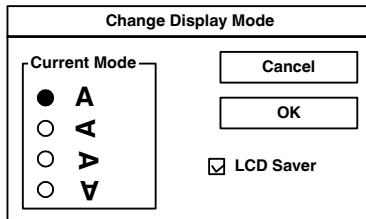


Figure 2-28 Change Display Mode

Set-up of display adjustment.

LCD Saver switches the brightness to the lowest value, if no user operation occurs for at least one hour.

This entry is able to be password-protected.

Touch Screen & Registry, Start Calibration:

The touch calibration is started. After the calibration the values are stored automatically in the registry.

Touch Screen & Registry, Backlight Properties:

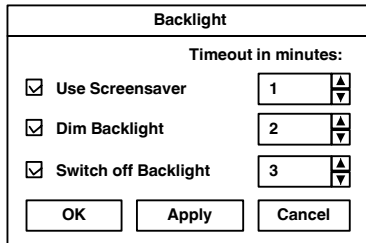


Figure 2-29 Backlight Properties

A screen saver can be activated after the defined time (minutes). It is possible to adjust the screen saver graphic by replacing the file "Screensaver.bmp" in the internal memory. The graphic is replaced at the start up of the operating device automatically when a USB stick - containing the file (Screensaver.bmp) in the "Screensaver" directory - is present.

The brightness of the backlight (dim backlight) can be reduced after the defined time (minutes) and turned off (backlight switch off) in addition.

This entry is able to be password-protected.

Touch Screen & Registry, SNTP Settings:

Figure 2-30 SNTP Settings

If you activate the "SNTP-Client" option, you can enter the address of a time server located in the intranet or Internet. The synchronization interval is specified in minutes. With the option "No SNTP" the operating device receives the time information from the controller.

The operating device may be used as a time server for other devices if the "SNTP-Server" option is active. This option cannot be activated at operating devices without battery.

This entry is able to be password-protected.

Network Settings:

Figure 2-31 Network Settings



All addresses of the **Network Settings** have to be entered in the format "xxx.xxx.xxx.xxx". Numbers smaller than 100 have to be filled up with leading zeros. (e.g.: 192.168.42.1 -> 192.168.042.001)

Network Settings, TCP/IP Info:

Figure 2-32 TCP/IP Info

The following informations are displayed:

- MAC address
- IP address
- Subnet mask address

- Device name
- DHCP status
- Gateway address
- 1. DNS address
- 2. DNS address
- 1. WINS address
- 2. WINS address

Network Settings, Fix Settings, IP Address:

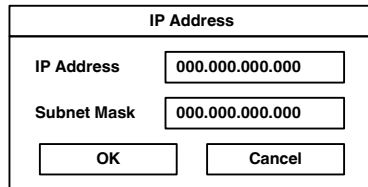


Figure 2-33 IP Address

The system automatically deselects DHCP and optionally enters the settings from the „IPSetting.ini“ file of the USB stick. This file must exist in the root directory of the USB stick. If no USB stick is connected the information is read from the registry.

This entry is able to be password-protected.

Contents of the „IPSetting.ini“ file:

```
[IPCONFIG]
IPAddress=172.016.042.150
SubnetMask=255.255.255.000
```

Network Settings, Fix Settings, Gateway:

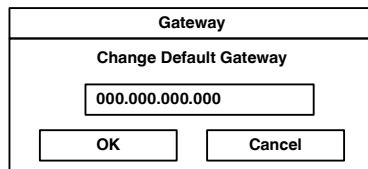


Figure 2-34 Gateway

The system automatically deselects DHCP and optionally enters the settings from the „IPSetting.ini“ file of the USB stick. This file must exist in the root directory of the USB stick. If no USB stick is connected the information is read from the registry.

This entry is able to be password-protected.

Contents of the „IPSetting.ini“ file:

```
[IPCONFIG]
Gateway=172.016.042.150
```

Network Settings, Fix Settings, DNS:

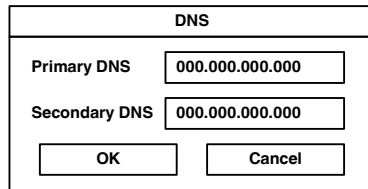


Figure 2-35 DNS

The system deselects DHCP and enters the settings from the „IPSetting.ini“ file of the USB stick. This file must exist in the root directory of the USB stick. If no USB stick is connected the information is read from the registry.

This entry is able to be password-protected.

Contents of the „IPSetting.ini“ file:

```
[IPCONFIG]
PrimaryDNS=172.016.042.150
SecondaryDNS=172.016.042.151
```

Network Settings, Fix Settings, WINS:

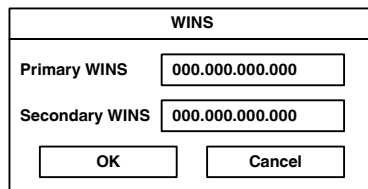


Figure 2-36 WINS

The system automatically deselects DHCP and optionally enters the settings from the „IPSetting.ini“ file of the USB stick. This file must exist in the root directory of the USB stick. If no USB stick is connected the information is read from the registry.

This entry is able to be password-protected.

Contents of the „IPSetting.ini“ file:

```
[IPCONFIG]
PrimaryWINS=172.016.042.150
SecondaryWINS=172.016.042.151
```

Network Settings, DHCP:

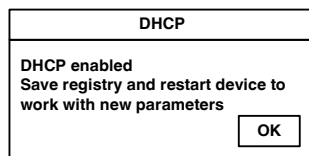


Figure 2-37 DHCP

You may enable DHCP service. You must save this setting when exiting of by using „Save Registry Settings“.

This entry is able to be password-protected.

Network Settings, FTP Settings, Add new user:

Add new user	
Enter User	<input type="text" value="MyName"/>
Enter Password	<input type="password" value="****"/>
Confirm Password	<input type="password" value="****"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Figure 2-38 Add new user

You may enter a new user name. You have to assign a password to the user name and to confirm it.

If at least one user name is added you cannot login to the FTP server as anonymous anymore.

Network Settings, FTP Settings, List all users:

All users are listed within a DOS box.

Network Settings, FTP Settings, Delete a user:

Delete a user	
Enter User	<input type="text" value="MyName"/>
Enter Password	<input type="password" value="****"/>
Confirm Password	<input type="password" value="****"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Figure 2-39 Delete a user

You may enter the user name you like to delete.

This entry is able to be password-protected.

Network Settings, Device Name:

Device name	
Enter Device Name	
<input type="text" value="MyDeviceName"/>	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Figure 2-40 Device Name

You can define a device name with up to 14 characters. Via a FTP connection you can access the device with the device name instead of the IP address.

This entry is able to be password-protected.

Settings:

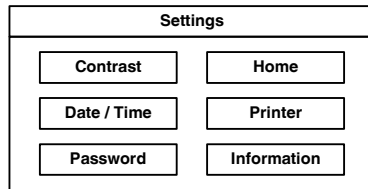


Figure 2-41 Settings

Settings, Contrast:

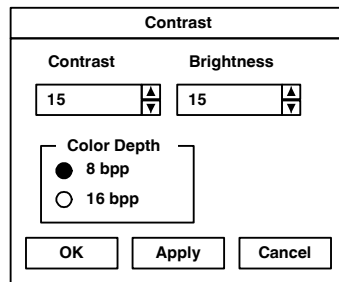


Figure 2-42 Contrast

The operating mode setup main is displayed with default values for contrast and brightness to ensure reading also at faulty values. If you change a value, you have to confirm this in a dialog. If you press **Cancel** or 5 seconds pass without any action the value is not accepted. Depending on the display type different values can be influenced:

Display Type	Contrast	Brightness
STN (mono)	X	-
STN (color)	X	X
TFT	-	X

Selection of color depth for TFT displays.

This entry is able to be password-protected.

Settings, Date / Time:

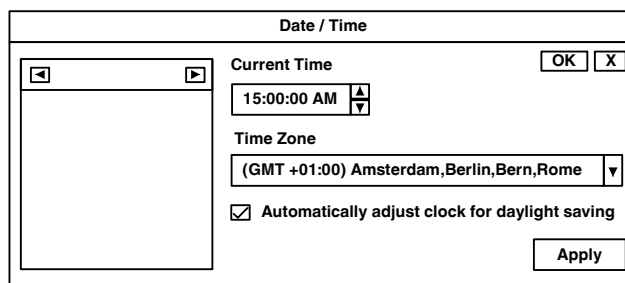


Figure 2-43 Date / Time

Set the date, time and time zone.

Settings, Password:

Figure 2-44 Password

The password can be activated, deactivated or redefined. When the password is activated, all password-protected dialog boxes can only be accessed if the password has been entered successfully.

This entry is able to be password-protected.

Settings, Printer:

Figure 2-45 Printer

The print function depends on the application program on the operating device. Connection of a printer is possible via the network and the USB interface. The operating system supports PCL3-compatible printers.

Table 2-2 Already used printer models

Model
HP OfficeJet 6000
HP OfficeJet Pro 8000
HP DeskJet 6940
HP DeskJet 5150
HP Laserjet 1505N

This entry is able to be password-protected.

Settings, Printer, Page Settings:

Figure 2-46 Page Settings

Select the paper format, "Letter" or "A4", "Letter" is default.

This entry is automatically stored in the registry.

Settings, Printer, Network Print:

Figure 2-47 Network Print

Enter the network printer path.

This entry is automatically stored in the registry.

Settings, Printer, Network Print, Network Server Login:

Figure 2-48 Network Server Login

You can save login data for network printing. This enables auto-login when printing without manual input at the operating device.

Enter a user name, password and domain.

This entry is automatically stored in the registry.

Settings, Information:

Information
SNR: 1023456789 Image_Grafikpanel_EP9307_CE5.00_V1.18 Built: Aug 27 2007 14:00:00 Flash Size: 16 MB SRAM Size: 512 kB PLC / VISU RAM: 0 / 460 kB Busclock: 49 MHz Click OK to go back to main

Figure 2-49 Information

The following informations are displayed:

- Serial number
- Product ID
- Image version
- Built version
- Built date
- Size of flash
- Size of SRAM
- Size of PLC / Visu RAM
- Bus clock speed

Start Batchfile:

The „project.bat“ file in the „FlashDrv“ directory starts, if available.

3 Control and Display Elements

3.1 Touchscreen

The device is equipped with a resistive 4 wire touch screen. You operate the device using this touch screen.

**NOTICE: Damage**

Pointed or sharp objects, such as pens or fingernails, can lead to irreparable damages of the touch screen. Exclusively therefore use the fingertips or the aids indicated in the technical data for the operation.

3.2 Display

**DANGER: Toxic**

If the display is damaged, avoid touching, swallowing or breathing in the liquids or gases which may leak out!

**DANGER: Corrosive**

If the display is damaged, avoid touching, swallowing or breathing in the liquids or gases which may leak out!



Pixel failures, which can occur with TFT displays, are due to production and no complaint reason!

The operating device is equipped with different displays depending on variant.

4 Interfaces of the Device

4.1 Standard Interfaces

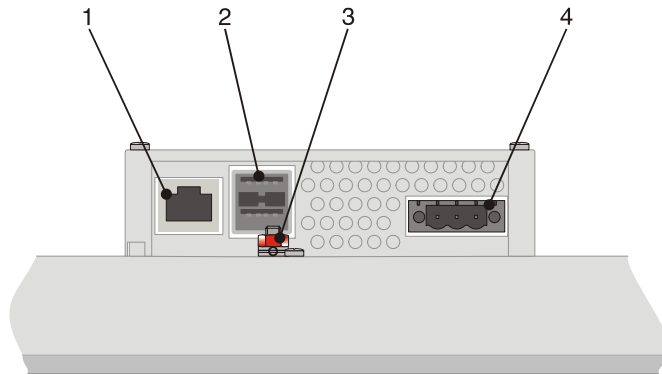


Figure 4-1 Rear view Ethernet

- 1 Female Connector X5 (Ethernet)
- 2 Female Connector X9, X10 (USB Host - Type A)
- 3 Threaded Bolt for Protective Grounding
- 4 Connector X1 (Supply Voltage)

4.1.1 Ethernet (X5)

A 10/100Base-T Ethernet interface is located at the operating device.

4.1.1.1 Pin Assignment

Connector in the operating device: RJ45 female connector.

Table 4-1 Assignment of the Ethernet interface

Pin	Designation	Function
1	Tx+	Transmitted Data, Positive Polarity
2	Tx-	Transmitted Data, Negative Polarity
3	Rx+	Received Data, Positive Polarity
4	n.c.	Not Connected
5	n.c.	Not Connected
6	Rx-	Received Data, Negative Polarity
7	n.c.	Not Connected
8	n.c.	Not Connected

4.1.1.2 Cable



NOTICE

Use a twisted pair cable of category 5 (CAT 5). The maximum cable length is 100 m (328.084 feet).



See the IEEE 802.3 standard for further information.

4.1.1.3 Diagnostics

Ethernet diagnostics LEDs are located at the operating device.

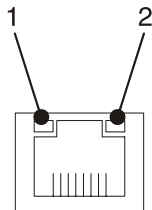


Figure 4-2 Position of the ethernet diagnostics LEDs

Table 4-2 Function of the ethernet diagnostics LEDs

No.	Color	State	Designation	Function
1	Green	ON	XMT	Sending ethernet data telegram
2	Yellow	ON	RCV	Receiving ethernet data telegram

4.1.2 USB (X9, X10)

Two host interfaces are available on the operating device.



NOTICE

Using input devices not suitable for industrial use (e.g. keyboard, mouse) may decrease safety of operation. This includes input devices intended for home and office use.

4.1.2.1 Cable



For the specification of a suitable cable, please refer to the „Universal Serial Bus Specification Rev. 2.0“.



NOTICE

Use industrial-suited USB cables with a length of maximally 2.5 m (8.202 feet).

5 Maintenance and Servicing

5.1 Front Panel

Use a damp cloth to remove any dirt from the front panel. You also can use Isopropanol for stronger pollutions.

5.2 Fuse

**NOTICE: Damage**

The semiconductor fuse cannot be replaced!

A semiconductor fuse is used to protect the device. Once the fuse has been tripped, the device must be disconnected from the supply voltage to allow the semiconductor fuse to regenerate. At an ambient temperature of 20 °C (68 °F), the regeneration takes approximately 20 seconds. The higher the ambient temperature, the longer the regeneration takes.

6 Technical Data

6.1 General

Touch Screen	
Type	Analog resistive, 4 wire technology
Activation force	15 g (Standard) With R8 HS60 silicon rubber
Durability	No damages or malfunctions after 3 million keystrokes as the following: Keystroke element: R8, HS40 silicon rubber Keystroke load: 150 g Keystroke frequency: 3 Hz
Ethernet	
X5 Ethernet	10/100Base-T
USB	
Corresponds to the „Universal serial bus specification Rev. 2.0“	
X9, X10 Host	Min.: 1.5 Mbit/s Max.: 12 Mbit/s Max. output current 100 mA per output
Central Processing Unit	
Central processing unit	RISC ARM9
Clock frequency	200 MHz
Memory	
Flash	32 MByte
SDRAM	64 MByte
Connection Method	
RJ45 female connector	
USB female connector A	
MINI COMBICON male connector MC 1,5/3-STF-3,5 (Art.-No. 1847068)	
COMBICON male connector MSTB 2,5/ 3-STF BD (Art.-No. 1896381)	
Environmental Conditions	
Temperature during operation	0 °C to 50 °C (32 °F to 122 °F)
Temperature during storage, transport	- 25 °C to + 70 °C (-13°F to + 158°F)
Relative air humidity for operation and storage	20 % to 85 %, no condensation
Application area	Degree of pollution 2, overvoltage category III No direct solar radiation

Standards and Guidelines

Interference immunity	DIN EN 61000-4-2 DIN EN 61000-4-3 DIN EN 61000-4-4 DIN EN 61000-4-5 DIN EN 61000-4-6 DIN EN 61000-6-2
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Emitted interference	DIN EN 55011 limit value class A DIN EN 55022 limit value class A DIN EN 61000-6-4
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Equipment requirements	DIN EN 61131-2
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Storage and transportation	DIN EN 61131-2
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Power supply	DIN EN 61131-2
--------------	----------------

Electromagnetic compatibility	2004/108/EG
-------------------------------	-------------

Degrees of protection	DIN EN 60529
-----------------------	--------------

Impact load, shocks	DIN EN 60068-2-27
---------------------	-------------------

Sinusoidal vibrations	DIN EN 60068-2-6
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NOTICE: Radio Interference

This is a class A device. This device may cause radio interference in residential areas. In this case, the user may be required to introduce appropriate countermeasures, and to bear the cost of same.

Approvals

CE, UL, cUL

6.2 WP 04T

Display

Size (diagonal) in cm (inch)	8.89 (3.5)
Type	TFT (color)
Resolution (pixels)	320 x 240
Colors	65536
Reading angle (vertical / horizontal)	150° / 130°
Backlight	LED
Half-life backlighting	40,000 h
Brightness in cd/m ²	350
Display area (H x W) in mm (Inch)	52.5 x 70 (2.066 x 2.755)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	0.3 A
Power consumption (maximum)	0.4 A
Connected load	7.2 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	90 x 120 x 5 (3.543 x 4.724 x 0.197)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	82 x 112 (3.228 x 4.409)
Mounting depth in mm (Inch)	About 35 (1.377) Standard / Field Bus Interface: About 47 (1.85)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 430 g

6.3 WP 06T

Display

Size (diagonal) in cm (inch)	14.48 (5.7)
Type	TFT (color)
Resolution (pixels)	320 x 240
Colors	65536
Reading angle (vertical / horizontal)	135° / 150°
Backlight	LED
Half-life backlighting	40,000 h
Brightness in cd/m ²	400
Display area (H x W) in mm (Inch)	86.4 x 115.2 (3.402 x 4.535)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	0.4 A
Power consumption (maximum)	0.6 A
Connected load	9.6 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	126 x 168 x 5 (4.961 x 6.614 x 0.197)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	118 x 160 (4.646 x 6.299)
Mounting depth in mm (Inch)	About 42 (1.654) Standard / Field Bus Interface: About 54 (2.126)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 690 g

6.4 WP 07T/WS

Display

Size (diagonal) in cm (inch)	17.78 (7)
Type	TFT (color)
Resolution (pixels)	800 x 480
Colors	65536
Reading angle (vertical / horizontal)	130° / 140°
Backlight	LED
Half-life backlighting	40,000 h
Brightness in cd/m ²	350
Display area (H x W) in mm (Inch)	91.4 x 152.4 (3.598 x 6.0)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	0.5 A
Power consumption (maximum)	0.7 A
Connected load	12 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	147 x 203 x 5 (5.787 x 7.992 x 0.197)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	139 x 195 (5.472 x 7.677)
Mounting depth in mm (Inch)	About 42 (1.654) Standard / Field Bus Interface: About 54 (2.126)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 1000 g

6.5 WP 09T/WS

Display

Size (diagonal) in cm (inch)	22.86 (9)
Type	TFT (color)
Resolution (pixels)	800 x 480
Colors	65536
Reading angle (vertical / horizontal)	170° / 170°
Backlight	LED
Half-life backlighting	70.000 h
Brightness in cd/m ²	400
Display area (H x W) in mm (Inch)	118 x 197 (4.645 x 7.755)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	0.6 A
Power consumption (maximum)	0.8 A
Connected load	14.4 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	172 x 260 x 5 (6.772 x 10.236 x 0.197)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	164 x 252 (6.456 x 9.921)
Mounting depth in mm (Inch)	About 54 (2.126) Standard / Field Bus Interface: About 66 (2.598)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 1300 g

6.6 WP 10T

Display

Size (diagonal) in cm (inch)	26.42 (10.4)
Type	TFT (color)
Resolution (pixels)	800 x 600
Colors	65536
Reading angle (vertical / horizontal)	110° / 140°
Backlight	LED
Half-life backlighting	50,000 h
Brightness in cd/m ²	340
Display area (H x W) in mm (Inch)	158 x 211 (6.22 x 8.307)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	0.6 A
Power consumption (maximum)	0.8 A
Connected load	14.4 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	220 x 295 x 5 (8.661 x 11.614 x 0.196)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	212 x 287 (8.346 x 11.299)
Mounting depth in mm (Inch)	About 55 (2.165) Standard / Field Bus Interface: About 67 (2.638)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 1800 g

6.7 WP 15T

Display

Size (diagonal) in cm (inch)	38.1 (15)
Type	TFT (color)
Resolution (pixels)	1024 x 768
Colors	65536
Reading angle (vertical / horizontal)	135° / 160°
Backlight	LED
Half-life backlighting	50,000 h
Brightness in cd/m ²	480
Display area (H x W) in mm (Inch)	228 x 304 (8.976 x 11.969)

Electrical Data

Supply voltage	24 V DC (SELV / PELV in accordance with DIN EN 61131)
Residual ripple	10 % maximum
Minimum voltage	18 V
Maximum voltage	30 V
Power consumption (typical at 24 V)	1.0 A
Power consumption (maximum)	1.2 A
Connected load	24 W
Fuse	Semiconductor fuse, self-resetting
Protection against polarity reversal	Integrated

Front Panel and Enclosure

Enclosure	Steel sheet, galvanized
Front panel material	Aluminium, brushed, anodized natural finish
Front panel (H x W x D) in mm (Inch)	329 x 400 x 5 (12.953 x 15.748 x 0.197)
Seal	Circumferential rubber seal on the rear
Mounting cutout (H x W) in mm (Inch)	303 x 374 (11.929 x 14.724)
Mounting depth in mm (Inch)	About 60 (2.362) Standard / Field Bus Interface: About 72 (2.835)
Degree of protection	Front: IP65 Rear: IP20
Total weight	About 2300 g

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