# Power Panel FT50 User's manual

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Translation of the original documentation

#### **Publishing information**

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# 1 Introduction

# Information:

B&R makes every effort to keep documents as current as possible. The most current versions are available for download on the B&R website (<a href="https://www.br-automation.com">www.br-automation.com</a>).

# 1.1 Manual history

Version	Date	Comment <sup>1)</sup>
1.30	December 2022	"Technical data" on page 17: Updated information about the USB interface.
		Updated technical data of the PoE injectors (see "Technical data" on page 150).
		Updated documentation for PPT system 1.6.0.
		New note about default hostname if it is not defined (see "Hostname" on page 59).
		New options on service page Web:
		⇒ "Ignore server certificate errors" on page 72
		<ul> <li>⇒ "Enable Screen Capture" on page 74</li> <li>⇒ "Suppress Screen Capture security warning" on page 74</li> </ul>
		New option on service page Remote access: "Back end WebSocket port" on page 86.
		New OPC UA parameters:
		⇒ Parameters for remote access: RemoteAccessModeWebGL, RemoteAccessPortWebGL, RemoteAccessPortWebGL, RemoteAccessModeVNC, RemoteAccessPortVNC
		⇒ Parameters for boot animation: BootAnimationDelay, BootAnimationLeftPos, BootAnimationTopPos
		⇒ Parameters for VNC: VNCConnectionMonitor
		⇒ Parameters for web: IgnoreServerCertificateErrors, EnableScreenCapture,
		SuppressScrnCaptSecWarn
		Updated chapter "International and national certifications" with UKCA certification.
1.21	December 2021	Added connection monitor (see "Service page VNC" on page 68).
1.20	July 2021	Updated section "System requirements" on page 15.
		<ul> <li>Updated information about vibration and shock (see "Technical data" on page 17).</li> </ul>
		<ul> <li>Added note regarding voltage loss in chapters "Ethernet connection" on page 52 and "Power supply (terminal block)" on page 152.</li> </ul>
		Added Flange adapter in "Accessories".
		Added note to chapter Service page Remote Access.
		Updated software description to version 1.5.0.
1.19	April 2020	Updated software description to version 1.4.0.
		Updated chapter "Overview" on page 139.
		Corrected watchdog description (see " ParameterSet" on page 99).
1.18	March 2020	Added PFT cable (5 m) (see "Overview" on page 139).
		Corrected description text for 6PFT50.215C-10B.
		Updated OPC UA description.
		Moved information about accessories to the corresponding chapter (previously included under "Technical date")
1.17	November 2019	ta"). Updated the following sections:
1	11010111001 2010	Flange feed-through (6ACCFL01.0300-000)
		Order data for cables
		Viewing angles
1.16	October 2019	Updated the following sections:
1.10	000000. 2010	Service page Web
		Technical data
		Gooseneck bracket (6ACCMA11.0400-000)
	<u> </u>	COOSCILCTA DISTANCE (UNCONTRICT I 1.0400-000)

Version	Date	Comment <sup>1)</sup>
1.15	September 2019	Updated the following sections:
		VESA bracket (6ACCMA11.0100-000)
		Table stand (6ACCMA11.0300-000)
		Gooseneck bracket (6ACCMA11.0400-000)
		Panel gasket (6ACCGS01.xxxx-000)
		Calibration
		Updated the following sections:
		"Overview"
		General information
		Accessories
		General conditions
		Installing accessories
		Configuration
		"Service page Web"
1.10	July 2019	Updated the following sections:
		System requirements
		Operating the Power Panel
		Service pages
		PPT image
1.01	June 2019	Updated technical data.
1.00	June 2019	First version

<sup>1)</sup> Column "Comment" contains only the most important changes in this user's manual. Several updates, corrections and format variations are not included.

#### 1.2 Information about this document

This document is not intended for end customers! The safety guidelines required for end customers must be incorporated into the operating instructions for end customers in the respective national language by the machine manufacturer or system provider.

#### 1.2.1 Organization of notices

#### Safety notices

Contain **only** information that warns of dangerous functions or situations.

Signal word	Description
Danger!	Failure to observe these safety guidelines and notices will result in death, severe injury or substantial damage to property.
Warning!	Failure to observe these safety guidelines and notices can result in death, severe injury or substantial damage to property.
Caution!	Failure to observe these safety guidelines and notices can result in minor injury or damage to property.
Notice!	Failure to observe these safety guidelines and notices can result in damage to property.

#### **General notices**

Contain **useful** information for users and instructions for avoiding malfunctions.

Signal word	Description
Information:	Useful information, application tips and instructions for avoiding malfunctions.

#### 1.2.2 Guidelines



European dimension standards apply to all dimension diagrams.

#### All dimensions, specifications in dimension diagrams and associated tables are in millimeters [mm].

Unless otherwise specified, the following general tolerances apply:

Nominal dimension range	General tolerance per DIN ISO 2768 medium
Up to 6 mm	±0.1 mm
Over 6 to 30 mm	±0.2 mm
Over 30 to 120 mm	±0.3 mm
Over 120 to 400 mm	±0.5 mm
Over 400 to 1000 mm	±0.8 mm

#### 1.2.3 Software-specific information

#### Information:

Graphics and paths to menu commands and help topics contained in this document refer to a specific Automation Studio version. There may be differences in display and path specifications when using a different version.

# 2 General safety guidelines

#### Notice!

If the device is not used in accordance with the manufacturer's instructions, the protection provided by the device may be impaired.



The adjacent warning sign is affixed to the device and indicates that the information, notes and descriptions in this manual must be observed. The manual must be read carefully. Failure to observe this warning may result in injury or damage to property.

#### 2.1 Intended use

In all cases, applicable national and international standards, regulations and safety measures must be taken into account and observed!

The B&R products described in this manual are intended for use in industry and industrial applications. The intended use includes control, operation, monitoring, drive and HMI tasks as part of automation processes in machines and systems.

B&R products are only permitted to be used in their original condition. Modifications and extensions are only permitted if they are described in this manual.

B&R excludes liability for damage of any kind resulting from the use of B&R products in any intended way.

B&R products have not been designed, developed and manufactured for use that involves fatal risks or hazards that could result in death, injury, serious physical harm or other loss without the assurance of exceptionally stringent safety precautions.

B&R products are explicitly not intended for use in the following applications:

- · Monitoring and control of thermonuclear processes
- · Weapon systems control
- Flight and traffic control systems for passenger and freight transport
- Health monitoring and life support systems

#### 2.2 Protection against electrostatic discharge

Electrical assemblies that can be damaged by electrostatic discharge (ESD) must be handled accordingly.

#### 2.2.1 Packaging

- Electrical assemblies with housing do not require special ESD packaging but must be handled properly (see "Electrical assemblies with housing" on page 9).
- Electrical assemblies without housing are protected by ESD-suitable packaging.

#### 2.2.2 Regulations for proper ESD handling

#### Electrical assemblies with housing

- · Do not touch the connector contacts on the device (bus data contacts).
- Do not touch the connector contacts of connected cables.
- · Do not touch the contact tips on circuit boards.

#### Electrical assemblies without housing

The following applies in addition to "Electrical assemblies with housing":

- All persons handling electrical assemblies and devices in which electrical assemblies are installed must be grounded.
- Assemblies are only permitted to be touched on the narrow sides or front plate.
- · Always place assemblies on suitable surfaces (ESD packaging, conductive foam, etc.).

#### Information: Metallic surfaces are not suitable surfaces!

- Assemblies must not be subjected to electrostatic discharges (e.g. due to charged plastics).
- A minimum distance of 10 cm from monitors or television sets must be maintained.
- · Measuring instruments and devices must be grounded.
- Test probes of floating potential measuring instruments must be discharged briefly on suitable grounded surfaces before measurement.

#### Individual components

- ESD protective measures for individual components are implemented throughout B&R (conductive floors, shoes, wrist straps, etc.).
- The increased ESD protective measures for individual components are not required for handling B&R products at customer locations.

#### 2.3 Regulations and measures

Electronic devices are generally not failsafe. If the programmable logic controller, operating or monitoring device or uninterruptible power supply fails, the user is responsible for ensuring that connected devices, such as motors, are brought to a safe state.

When using programmable logic controllers as well as when using operating and monitoring devices as control systems in conjunction with a Soft PLC (e.g. Automation Runtime or similar product) or Slot PLC (e.g. B&R LS251 or similar product), the safety measures that apply to industrial controllers (protection by protective equipment such as emergency stops) must be observed in accordance with applicable national and international regulations. This also applies to all other connected devices, such as drives.

All work such as installation, commissioning and servicing are only permitted to be carried out by qualified personnel. Qualified personnel are persons who are familiar with the transport, installation, assembly, commissioning and operation of the product and have the appropriate qualifications for their job (e.g. IEC 60364). National accident prevention regulations must be observed.

The safety guidelines, information about connection conditions (nameplate and documentation) and limit values specified in the technical data must be read carefully before installation and commissioning and must be strictly observed.

#### 2.4 Transport and storage

During transport and storage, devices must be protected against undue stress (mechanical stress, temperature, humidity, aggressive atmosphere).

#### 2.5 Installation

- The devices are not ready for use and must be installed and wired according to the requirements of this documentation in order to comply with EMC limit values.
- Installation must be carried out according to the documentation using suitable equipment and tools.
- Devices are only permitted to be installed in a voltage-free state and by qualified personnel.
- General safety regulations and national accident prevention regulations must be observed.
- The electrical installation must be carried out in accordance with relevant regulations (e.g. wire cross section, fuse protection, protective ground connection).
- Take the necessary protective measures against electrostatic discharge (see "Protection against electrostatic discharge" on page 9).

## 2.6 Operation

#### 2.6.1 Protection against contact with electrical parts

In order to operate programmable logic controllers, operating and monitoring devices and the uninterruptible power supply, it is necessary for certain components to carry dangerous voltages over 42 VDC. Touching one of these components can result in a life-threatening electric shock. There is a risk of death, serious injury or damage to property.

Before switching on the programmable logic controllers, operating and monitoring devices and uninterruptible power supply, it must be ensured that the housing is properly connected to ground potential (PE rail). The ground connection must also be made if the operating and monitoring device and uninterruptible power supply are only connected for testing purposes or only operated for a short time!

Before switching on, live parts must be securely covered. All covers must be kept closed during operation.

#### 2.6.2 Ambient conditions - Dust, moisture, aggressive gases

The use of operating and monitoring devices (e.g. industrial PCs, Power Panels, Mobile Panels) and uninterruptible power supplies in dusty environments must be avoided. This can result in dust deposits that affect the functionality of the device. Sufficient cooling may then no longer be ensured, especially in systems with an active cooling unit (fan).

The presence of aggressive gases in the environment can also result in malfunctions. In combination with high temperature and relative humidity, aggressive gases – for example with sulfur, nitrogen and chlorine components – trigger chemical processes that can very quickly impair or damage electronic components. Blackened copper surfaces and cable ends in existing installations are indicators of aggressive gases.

When operated in rooms with dust and condensation that can endanger functionality, operating and monitoring devices such as Automation Panels or Power Panels are protected on the front against the ingress of dust and moisture when installed correctly (e.g. cutout installation). The back of all devices must be protected against the ingress of dust and moisture, however, or the dust deposits must be removed at suitable intervals.

#### 2.6.3 Programs, viruses and malicious programs

Any data exchange or installation of software using data storage media (e.g. floppy disk, CD-ROM, USB flash drive) or via networks or the Internet poses a potential threat to the system. It is the direct responsibility of the user to avert these dangers and to take appropriate measures such as virus protection programs and firewalls to protect against them and to use only software from trustworthy sources.

#### 2.7 Cybersecurity disclaimer for products

B&R products communicate via a network interface and were developed for secure connection with internal and, if necessary, other networks such as the Internet.

#### Information:

In the following, B&R products are referred to as "product" and all types of networks (e.g. internal networks and the Internet) are referred to as "network".

It is the sole responsibility of the customer to establish and continuously ensure a secure connection between the product and the network. In addition, appropriate security measures must be implemented and maintained to protect the product and entire network from any security breaches, unauthorized access, interference, digital intrusion, data leakage and/or theft of data or information.

B&R Industrial Automation GmbH and its subsidiaries are not liable for damages and/or losses in connection with security breaches, unauthorized access, interference, digital intrusion, data leakage and/or theft of data or information.

The aforementioned appropriate security measures include, for example:

- Segmentation of the network (e.g. separation of the IT network from the control network¹))
- Use of firewalls
- · Use of authentication mechanisms
- · Encryption of data
- · Use of anti-malware software

Before B&R releases products or updates, they are subjected to appropriate functional testing. Independently of this, we recommend that our customers develop their own test processes in order to be able to check the effects of changes in advance. Such changes include, for example:

- Installation of product updates
- · Significant system modifications such as configuration changes
- Deployment of updates or patches for third-party software (non-B&R software)
- · Hardware replacement

These tests should ensure that implemented security measures remain effective and that systems in the customer's environment behave as expected.

<sup>1)</sup> The term "control network" refers to computer networks used to connect control systems. The control network can be divided into zones, and there can be several separate control networks within a company or site. The term "control systems" refers to all types of B&R products such as controllers (e.g. X20), HMI systems (e.g. Power Panel T30), process control systems (e.g. APROL) and supporting systems such as engineering workstations with Automation Studio.

# 3 System overview

#### 3.1 System overview

The FT50 is ideal for field installation in critical areas. The panels are designed with IP67 and type 1, 12 or 4X protection on all sides, making the devices suitable for use in harsh environments as well. They are equipped with an integrated browser and can also be used as a Visual Components client.



FT50 panels with glass front and multi-touch technology are compact HMI devices, easy to configure and ideal for high-quality machine design.

The high sensitivity and accuracy of the projected capacitive touch screen improves usability. Multi-touch technology also makes it possible to integrate common gestures such as zooming and swiping.

#### **Highlights**

- · Power over Ethernet (PoE)
- · High-quality slim design
- Multi-touch support
- Widescreen variants up to 21.5" Full HD
- Simple configuration
- Web-based or VNC-based HMI

#### 3.1.1 Compact solution

These Power Panels are characterized by their compact design and low installation depth. Power over Ethernet (PoE) with shielded Cat 5 cables permits particularly space-saving and simple installation. The Power Panels also have no hard disks, fans or batteries, which makes them maintenance-free.

#### 3.1.2 Flexibility

are available in 5 different display sizes (ranging from 5.0" to 21.5"). For additional information, see "Type overview" on page 15).

Flexibility at the machine is provided by installation in landscape and portrait format.

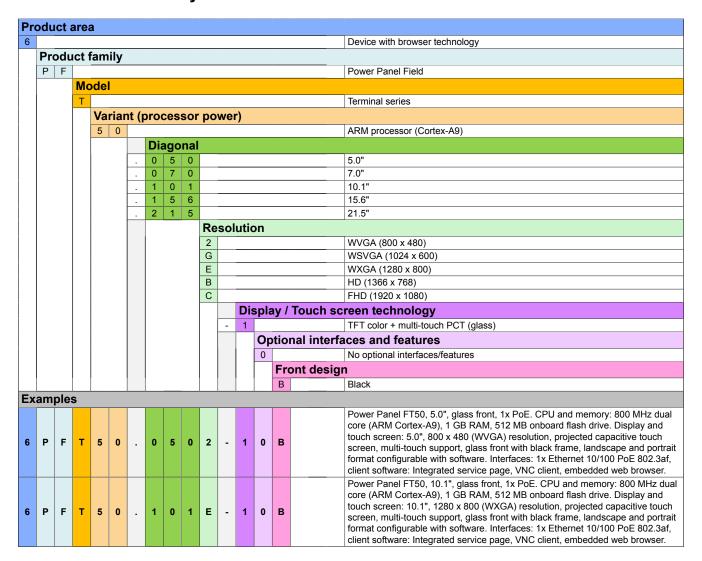
Very small installation depths and minimized frame widths characterize all devices in all diagonals. Nevertheless, no compromises have been made with regard to stability and sealing levels. In addition, devices can be operated with both 12 V and 24 V.

#### 3.1.3 Simple HMI

The FT50 is a dedicated HMI device and can be operated in two different terminal modes:

- Terminal as VNC client for VNC-based HMI applications. These are HMI applications that were created with Visual Components in Automation Studio.
- · Terminal with web browser technology (full screen mode).

# 3.2 Model number key



# 3.3 System characteristics

#### 3.3.1 Type overview

Panel size	5.0"	7.0"	10.1"	15.6"	21.5"
Model number	6PFT50. <mark>050</mark> 2-10B	6PFT50. <mark>070</mark> G-10B	6PFT50.101E-10B	6PFT50.156B-10B	6PFT50.215C-10B
Format/Resolution		La	andscape/Portrait form	at	
Resolution	WVGA	WSVGA	WXGA	HD	FHD
Resolution	800 x 480	1024 x 600	1280 x 800	1366 x 768	1920 x 1080
Model number	050 <b>2</b>	070 <b>G</b>	101 <b>E</b>	156 <b>B</b>	215 <b>C</b>
woder number	6PFT50.xxxx-xxx			•	
Technology					
		TFT c	olor + multi-touch PCT (	glass)	
Model number			6PFT50.xxxx-1xx		
Front	Black				
	Glass				
Model number	6PFT50.xxxx-xxB				
Interfaces/Features					
	1 Ethernet interface				
Model number			6PFT50.xxxx-x0x		

#### 3.3.2 System requirements

General system requirements for Power Panel FT50:

Function	Starting with AS version	Starting with AR version	Starting with hardware upgrade
General support for Power Panel FT50	4.3.31)	4.33	-
Full range of Power Panel FT50 functions	4.7.1	4.71	-

AS ... Automation Studio, AR ... Automation Runtime

- Configuration of LEDs via OPC UA
- Creating a USB flash drive for a software update
- Assigning a visualization object
- "Project installation" process
- Load configuration from PLC

#### 3.3.3 Projected capacitive touch (PCT)

	PCT touch screen
Operation	
Number of fingers	5
Glove operation	Yes, with limitations
Passive stylus pens	Yes
Active stylus pens	No
Error detection	
Ball of hand	No
Water	No
Front	
Hardened front glass	Yes

## Operation with gloves



Projected capacitive touch screens (PCT) are suitable for operation with or without gloves.

A large number of gloves (rubber gloves, light/heavy leather gloves, disposable latex gloves, etc.) are supported.

Due to the variety of commercially available gloves, however, B&R cannot guarantee all types.

<sup>1)</sup> Note that the following functions are only supported starting with AS version 4.7.1 or AR version 4.71:

#### Support for stylus pens

Passive stylus pens:

In principle, the Power Panel supports passive stylus pens. Due to the large number of passive stylus pens available on the market, there may be functional differences. For this reason, B&R cannot comprehensively guarantee their functionality.

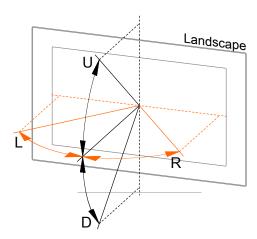
Active stylus pens are not supported!

#### Touch actions during cleaning

Touch actions can be triggered during cleaning of the PCT touch screen. If this is not desired, this behavior must be taken into account in the application.

#### 3.3.4 Viewing angles

For the viewing angles values (U, D, R, L) of the display types, see the technical data of the respective device.



Legend	Display viewing angle
U	From top
D	From bottom
L	From left
R	From right

The viewing angles are specified for the horizontal (L, R) and vertical (U, D) axes in reference to the vertical axis of the display. The specified viewing angles above always refer to the standard mounting orientation of the respective Power Panel.

Standard mounting orientation: Sensor openings are on the top.

#### 3.3.5 Surface resistance

Chemical resistance of the front glass when exposed for 24 hours without visible changes:

- Betadine (10% Povidone solution)
- Hydrogen chloride (0.5% solution, PH=1)
- · Coca-Cola
- Dextrose (5% glucose solution)
- Electrode gel/paste
- Ethyl alcohol (70% 90%)
- Isopropanol
- Coffee
- Sodium chloride (0.9% solution)
- · Sodium hypochlorite
- Quaternary ammonium compound
- Hydrogen peroxide (3% solution)

# 4 Technical data

# 4.1 Power Panel FT50 5.0"

#### 4.1.1 Order data

Order number	Short description
	Power Panel FT50
6PFT50.0502-10B	Power Panel FT50, 5.0", glass front, 1x PoE. CPU and memory: 800 MHz dual core (ARM Cortex-A9), 1 GB RAM, 512 MB onboard flash drive. Display and touch screen: 5.0", 800 x 480 (WVGA) resolution, projected capacitive touch screen, multi-touch support, glass front with black frame, landscape and portrait format configurable with software. Interfaces: 1x Ethernet 10/100 IEEE 802.3af (PoE) Client software: Integrated service page, VNC client, embedded web browser.
	Required accessories
	Injectors
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)
	Optional accessories
	Brackets
6ACCMA11.0100-000	FT50 VESA bracket
	Flange
6ACCFL01.0300-000	Flange for swing arm systems with a pipe diameter of 48 mm - suitable for FT50 panels from 5.0" - 10.1"
6ACCMA10.0000-000	Flange for direct wall mounting - suitable for FT50 panels from 5.0" - 10.1"
	Installation tool
5ACCRHMI.0016-000	FT50 cable installation tool
5ACCRHMI.0017-000	HMI FT50 installation kit
	M22 cables
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45
6CAPFT.0050-02	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-03	FT50 PoE cable - 5 m - M22/M22
	Other
6ACCMA11.0300-000	FT50 table stand
6ACCMA11.0400-000	FT50 gooseneck
	SDL3/SDL4/PoE cables
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Eth-
5CASD3.0030-00	ernet SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Eth-
5CASD3.0050-00	ernet  SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet
	USB accessories
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R
5MMUSB.4096-01	USB 2.0 flash drive 4096 MB B&R

#### 4.1.2 Technical data

# Information:

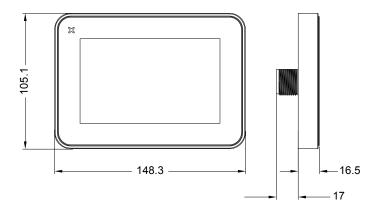
The following specified characteristic data, features and limit values are only valid for these individual components and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this individual component is used, for example.

Order number	6PFT50.0502-10B
General information	
LEDs	Front: 1x RGB
	Ethernet: Link, Activity
B&R ID code	0xF74C
Power button	No
Reset button	No
Certifications	110
CE	Voo
	Yes
UKCA	Yes
UL	cULus E115267
Controller	Industrial control equipment
Controller	DDTF0 I
Operating system	PPT50 system
Processor	
Туре	ARM Cortex-A9, dual core
Clock frequency	800 MHz
Flash	512 MB
Backup battery	Yes 1)
DRAM	1 GB
Display	
Type	TFT color
Diagonal	5.0"
Colors	16 million
Resolution	800 x 480
Viewing angles	000 X 400
9 9	Direction 1 /
Horizontal	Direction L /
Vadical	Direction R = 70°
Vertical	Direction U = 50° / Direction D = 70°
Dealticht	Direction D = 70
Backlight	
Туре	LED
Brightness	300 cd/m <sup>2</sup>
Brightness (dimmable)	Yes (up to 0%)
Half-brightness time	40,000 h
Touch screen	
Type	Multi-touch
Technology	PCT (projected capacitive touch)
Surface	Glass
Screen rotation	Yes
Interfaces	190
Interface	
	Power over Ethernet
Type	
Variant	IEEE 802.3af (PoE)
Max. transfer rate	10/100 Mbit/s
Transfer	
Physical layer	10BASE-T / 100BASE-TX
Half-duplex	Yes
Full-duplex	Yes
Autonegotiation	Yes
Auto-MDI/MDIX	Yes
Interface IF3	
Type	USB 2.0 <sup>2)</sup>
Variant	Type A
Current-carrying capacity	0.5 A
	U.3 A
Operating conditions	Tomas A. (AVI) also considered to
Degree of protection per UL 50	Type 1, 4X indoor and type 12
Degree of protection	IP67
	(requires suitable accessories)
Ambient conditions	
Temperature	
Operation	-20 to 55°C
Storage	-30 to 80°C
Relative humidity	5 to 85%
N #1 # #2	
Vibration	
Operation (occasional)	5 to 9 Hz: 7 mm

Order number	6PFT50.0502-10B
Shock	
Operation	±50 g, 11 ms, 3 pulses per axis
Mechanical properties	
Front	
Design	Black
Dimensions	
Width	148.3 mm
Height	105.1 mm
Depth	16.5 mm
Weight	0.5 kg

- Rechargeable lithium rechargeable battery that cannot be replaced by the user. Accessories required (6CAPFT.0030-02 FT50 PoE-USB cable)
- 2)

#### 4.1.3 Dimensions



# 4.2 Power Panel FT50 7.0"

#### 4.2.1 Order data

Order number	Short description	Figure
	Power Panel FT50	3***
6PFT50.070G-10B	Power Panel FT50, 7.0", glass front, 1x PoE. CPU and memory: 800 MHz dual core (ARM Cortex-A9), 1 GB RAM, 512 MB onboard flash drive. Display and touch screen: 7.0", 1024 x 600 (WSVGA) resolution, projected capacitive touch screen, multi-touch support, glass front with black frame, landscape and portrait format configurable with software. Interfaces: 1x Ethernet 10/100 IEEE 802.3af (PoE) Client software: Integrated service page, VNC client, embedded web browser.  Required accessories	
	Injectors	
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)	
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)	
	Optional accessories	
0.000.00.00.00.00.00.00.00.00.00.00.00.	Brackets	
6ACCMA11.0100-000	FT50 VESA bracket	
04.0051.04.0000.000	Flange	
6ACCFL01.0300-000	Flange for swing arm systems with a pipe diameter of 48 mm - suitable for FT50 panels from 5.0" - 10.1"	
6ACCMA10.0000-000	Flange for direct wall mounting - suitable for FT50 panels from 5.0" - 10.1"	
	Installation tool	
5ACCRHMI.0016-000	FT50 cable installation tool	
5ACCRHMI.0017-000	HMI FT50 installation kit	
	M22 cables	
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45	
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45	
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB	
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45	
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45	
6CAPFT.0050-02 6CAPFT.0050-03	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB FT50 PoE cable - 5 m - M22/M22	
0CAPF 1.0030-03	Other	
6ACCMA11.0300-000	FT50 table stand	
6ACCMA11.0400-000	FT50 gooseneck	
0ACCIVIA 11.0400-000	SDL3/SDL4/PoE cables	
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Ethernet	
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet	
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet	
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet	
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet	
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet	
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet	
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet	
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet	
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet	
	USB accessories	
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R	
5MMUSB.4096-01	USB 2.0 flash drive 4096 MB B&R	

#### 4.2.2 Technical data

#### Information:

The following specified characteristic data, features and limit values are only valid for these individual components and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this individual component is used, for example.

Order number	6PFT50.070G-10B
General information	0111000100 100
LEDs	Front: 1x RGB
	Ethernet: Link, Activity
B&R ID code	0xF74D
Power button	No
Reset button	No
Certifications	
CE	Yes
UKCA	Yes
UL	cULus E115267 Industrial control equipment
Controller	maddial control equipment
Operating system	PPT50 system
Processor	,
Туре	ARM Cortex-A9, dual core
Clock frequency	800 MHz
Flash	512 MB
Backup battery	Yes 1)
DRAM	1 GB
Display	
Туре	TFT color
Diagonal	7.0"
Colors	16 million
Resolution	1024 x 600
Viewing angles	
Horizontal	Direction L /
	Direction R = 75°
Vertical	Direction U /
D 18.14	Direction D = 75°
Backlight	LED.
Type	LED
Brightness	400 cd/m <sup>2</sup>
Brightness (dimmable)	Yes (up to 0%)
Half-brightness time	40,000 h
Touch screen	Marilla Annuali
Type	Multi-touch
Technology Surface	PCT (projected capacitive touch) Glass
Screen rotation	Yes
Interfaces	165
Interface	
Type	Power over Ethernet
Variant	IEEE 802.3af (PoE)
Max. transfer rate	10/100 Mbit/s
Transfer	1 11 11
Physical layer	
	10BASE-T / 100BASE-TX
Half-duplex	10BASE-T / 100BASE-TX Yes
Half-duplex	Yes
Half-duplex Full-duplex	Yes Yes
Half-duplex Full-duplex Autonegotiation	Yes Yes Yes
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX	Yes Yes Yes
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3	Yes Yes Yes Yes
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type	Yes Yes Yes Yes Yes USB 2.0 <sup>2)</sup>
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant	Yes Yes Yes Yes Yes USB 2.0 <sup>2)</sup> Type A
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity	Yes Yes Yes Yes Yes USB 2.0 <sup>2)</sup> Type A
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity Operating conditions	Yes Yes Yes Yes Yes  USB 2.0 2) Type A 0.5 A  Type 1, 4X indoor and type 12  IP67
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions  Degree of protection per UL 50  Degree of protection	Yes Yes Yes Yes Yes  USB 2.0 2)  Type A 0.5 A  Type 1, 4X indoor and type 12
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions	Yes Yes Yes Yes Yes  USB 2.0 2) Type A 0.5 A  Type 1, 4X indoor and type 12  IP67
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions Temperature	Yes Yes Yes Yes Yes  USB 2.0 2)  Type A 0.5 A  Type 1, 4X indoor and type 12  IP67 (requires suitable accessories)
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation	Yes Yes Yes Yes Yes  USB 2.0 2) Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation Storage	Yes Yes Yes Yes Yes  USB 2.0 2)  Type A 0.5 A  Type 1, 4X indoor and type 12  IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation Storage Relative humidity	Yes Yes Yes Yes Yes  USB 2.0 2) Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions Temperature Operation Storage Relative humidity Vibration	Yes Yes Yes Yes  USB 2.0 <sup>2)</sup> Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation Storage Relative humidity	Yes Yes Yes Yes  USB 2.0 2)  Type A 0.5 A  Type 1, 4X indoor and type 12  IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation Storage Relative humidity Vibration Operation (occasional)	Yes Yes Yes Yes  USB 2.0 <sup>2)</sup> Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions  Temperature Operation Storage Relative humidity Vibration Operation (occasional) Shock	Yes Yes Yes Yes  USB 2.0 <sup>2)</sup> Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%  5 to 9 Hz: 7 mm 9 to 150 Hz: 1 g
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions Temperature Operation Storage Relative humidity Vibration Operation (occasional) Shock Operation	Yes Yes Yes Yes  USB 2.0 2)  Type A 0.5 A  Type 1, 4X indoor and type 12  IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions Temperature Operation Storage Relative humidity Vibration Operation (occasional)  Shock Operation Mechanical properties	Yes Yes Yes Yes  USB 2.0 <sup>2)</sup> Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%  5 to 9 Hz: 7 mm 9 to 150 Hz: 1 g
Half-duplex Full-duplex Autonegotiation Auto-MDI/MDIX Interface IF3 Type Variant Current-carrying capacity  Operating conditions Degree of protection per UL 50 Degree of protection  Ambient conditions Temperature Operation Storage Relative humidity Vibration Operation (occasional) Shock Operation	Yes Yes Yes Yes  USB 2.0 <sup>2)</sup> Type A 0.5 A  Type 1, 4X indoor and type 12 IP67 (requires suitable accessories)  -20 to 55°C -30 to 80°C 5 to 85%  5 to 9 Hz: 7 mm 9 to 150 Hz: 1 g

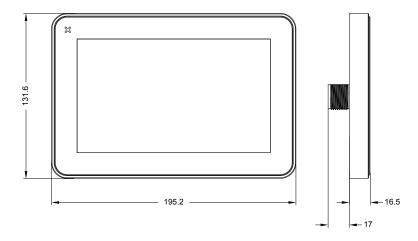
#### Technical data

Order number	6PFT50.070G-10B
Dimensions	
Width	195.2 mm
Height	131.6 mm
Depth	16.5 mm
Weight	0.7 kg

- 1) 2) Rechargeable lithium rechargeable battery that cannot be replaced by the user.

  Accessories required (FT50 PoE cable with USB connection: 6CAPFT.0030-02 or 6CAPFT.0050-02)

#### 4.2.3 Dimensions



#### 4.3 Power Panel FT50 10.1"

#### 4.3.1 Order data

Order number	Short description
Crasi namber	Power Panel FT50
6PFT50.101E-10B	Power Panel FT50, 10.1", glass front, 1x PoE. CPU and memory: 800 MHz dual core (ARM Cortex-A9), 1 GB RAM, 512 MB onboard flash drive. Display and touch screen: 10.1", 1280 x 800 (WXGA) resolution, projected capacitive touch screen, multi-touch support, glass front with black frame, landscape and portrait format configurable with software. Interfaces: 1x Ethernet 10/100 IEEE 802.3af (PoE) Client software: Integrated service page, VNC client, embedded web browser.
	Required accessories
	Injectors
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)
	Optional accessories
	Brackets
6ACCMA11.0100-000	FT50 VESA bracket
6ACCFL01.0300-000	Flange Flange for swing arm systems with a pipe diameter of 48 mm - suitable for FT50 panels from 5.0" - 10.1"
6ACCMA10.0000-000	Flange for direct wall mounting - suitable for FT50 panels from 5.0" - 10.1"
	Installation tool
5ACCRHMI.0016-000	FT50 cable installation tool
5ACCRHMI.0017-000	HMI FT50 installation kit
	M22 cables
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45
6CAPFT.0050-02	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-03	FT50 PoE cable - 5 m - M22/M22
	Other
6ACCMA11.0300-000	FT50 table stand
6ACCMA11.0400-000	FT50 gooseneck
	SDL3/SDL4/PoE cables
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Ethernet
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet
	USB accessories
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R
5MMUSB.4096-01	USB 2.0 flash drive 4096 MB B&R

#### 4.3.2 Technical data

#### Information:

The following specified characteristic data, features and limit values are only valid for these individual components and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this individual component is used, for example.

#### Technical data

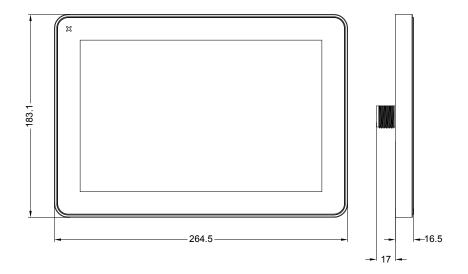
Order number	6PFT50.101E-10B
General information	OPF150.101E-10B
LEDs	Front: 1x RGB
223	Ethernet: Link, Activity
B&R ID code	0xF74E
Power button	No
Reset button	No
Certifications	
CE	Yes
UKCA	Yes
UL	cULus E115267
	Industrial control equipment
Controller	
Operating system	PPT50 system
Processor	
Туре	ARM Cortex-A9, dual core
Clock frequency	800 MHz
Flash	512 MB
Backup battery	Yes 1)
DRAM	1 GB
Display	
Туре	TFT color
Diagonal	10.1"
Colors	16 million
Resolution	1280 x 800
Viewing angles	
Horizontal	Direction L /
	Direction R = 85°
Vertical	Direction U /
	Direction D = 85°
Backlight	
Туре	LED
Brightness	400 cd/m <sup>2</sup>
Brightness (dimmable)	Yes (up to 0%)
Half-brightness time	40,000 h
Touch screen	
Type	Multi-touch
Technology	PCT (projected capacitive touch)
Surface	Glass
Screen rotation Interfaces	Yes
Interface	
Туре	Power over Ethernet
Variant	IEEE 802.3af (PoE)
Max. transfer rate	10/100 Mbit/s
Transfer	TO/TOO INIDIUS
Physical layer	10BASE-T / 100BASE-TX
Half-duplex	Yes
Full-duplex	Yes
Autonegotiation	Yes
Auto-MDI/MDIX	Yes
Interface IF3	160
Туре	USB 2.0 <sup>2)</sup>
Variant	Type A
Current-carrying capacity	0.5 A
Operating conditions	
Degree of protection per UL 50	Type 1, 4X indoor and type 12
Degree of protection	IP67
-3 F	(requires suitable accessories)
Ambient conditions	
Temperature	
Operation	-20 to 55°C
Storage	-30 to 80°C
Relative humidity	5 to 85%
Vibration	
Operation (occasional)	5 to 9 Hz: 7 mm
	9 to 150 Hz: 1 g
Shock	
Operation	±50 g, 11 ms, 3 pulses per axis
Mechanical properties	
Front	
Design	Black

Order number	6PFT50.101E-10B
Dimensions	
Width	264.5 mm
Height	183.1 mm
Depth	16.5 mm
Weight	1.2 kg

- 1) 2) Rechargeable lithium rechargeable battery that cannot be replaced by the user.

  Accessories required (FT50 PoE cable with USB connection: 6CAPFT.0030-02 or 6CAPFT.0050-02)

#### 4.3.3 Dimensions



#### 4.4 Power Panel FT50 15.6"

#### 4.4.1 Order data

Order number	Short description	Figure
C. GOI HUIIIDEI	Power Panel FT50	1 iguie
6PFT50.156B-10B	Power Panel FT50, 15.6", glass front, 1x PoE. CPU and memory: 800 MHz quad core (ARM Cortex-A9), 2 GB RAM, 512 MB onboard flash drive. Display and touch screen: 15.6", 1366 x 768 (HD) resolution, projected capacitive touch screen, multi-touch support, glass front with black frame, landscape and portrait format configurable with software. Interfaces: 1x Ethernet 10/100 IEEE 802.3at (PoE+) Client software: Integrated service page, VNC client, embedded web browser.	
	Required accessories	
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)	
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)	
	Optional accessories	
	Brackets	
6ACCMA11.0100-000	FT50 VESA bracket	
	Flange	
6ACCFL01.0301-000	Flange for swing arm systems with a shaft diameter of 48 mm - suitable for FT50 panels from 15.6" - 21.5" or for wall mounting of all FT50 panels	
6ACCMA10.0001-000	Flange for direct wall mounting - suitable for FT50 panels from 15.6" - 21.5"	
	Installation tool	
5ACCRHMI.0016-000	FT50 cable installation tool	
5ACCRHMI.0017-000	HMI FT50 installation kit	
	M22 cables	
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45	
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45	
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB	
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45	
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45	
6CAPFT.0050-02	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB	
6CAPFT.0050-03	FT50 PoE cable - 5 m - M22/M22	
	Other	
6ACCMA11.0300-000	FT50 table stand	
	SDL3/SDL4/PoE cables	
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Ethernet	
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet	
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet	
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet	
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet	
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet	
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet	
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet	
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet	
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet	
EMMUOD CO 40 C 4	USB accessories	
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R	
5MMUSB.4096-01	USB 2.0 flash drive 4096 MB B&R	

#### 4.4.2 Technical data

#### Information:

The following specified characteristic data, features and limit values are only valid for these individual components and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this individual component is used, for example.

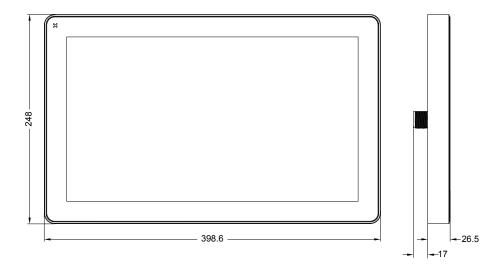
Order number	CDETEC AECD ACD
Order number  Conoral information	6PFT50.156B-10B
General information LEDs	Front: 1x RGB
LEDS	Ethernet: Link, Activity
B&R ID code	0xF74F
Power button	No
Reset button	No
	NU
Certifications	V.
CE	Yes
UKCA	Yes
UL	cULus E115267
Controller	Industrial control equipment
Controller	DDTs
Operating system	PPT50 system
Processor	1840 + 40
Туре	ARM Cortex-A9, quad core
Clock frequency	800 MHz
Flash	512 MB
Backup battery	Yes <sup>1)</sup>
DRAM	2 GB
Display	
Туре	TFT color
Diagonal	15.6"
Colors	16 million
Resolution	1366 x 768
Viewing angles	
Horizontal	Direction L /
	Direction R = 80°
Vertical	Direction U /
	Direction D = 80°
Backlight	
Туре	LED
Brightness	400 cd/m <sup>2</sup>
Brightness (dimmable)	Yes (up to 0%)
Half-brightness time	40,000 h
Touch screen	
Туре	Multi-touch
Technology	PCT (projected capacitive touch)
Surface	Glass
Screen rotation	Yes
Interfaces	163
Interface	
	Power over Ethernet
Type	
Variant	IEEE 802.3at (PoE+)
Max. transfer rate	10/100 Mbit/s
Transfer	(ADAGE T.) (ADDAGE T.)
Physical layer	10BASE-T / 100BASE-TX
Half-duplex	Yes
Full-duplex	Yes
Autonegotiation	Yes
Auto-MDI/MDIX	Yes
Interface IF3	
Туре	USB 2.0 <sup>2)</sup>
Variant	Type A
Current-carrying capacity	0.5 A
Operating conditions	
Degree of protection per UL 50	Type 1, 4X indoor and type 12
Degree of protection	IP67
	(requires suitable accessories)
Ambient conditions	
Temperature	
Operation	-20 to 55°C
Storage	-20 to 70°C
Relative humidity	5 to 85%
Vibration	0 10 00 /0
Operation (occasional)	±50 g, 11 ms, 3 pulses per axis
	100 g, 11 IIIs, 3 puises pei axis
Mechanical properties	
Front Design	Div.1
	Black

#### Technical data

Order number	6PFT50.156B-10B
Dimensions	
Width	398.6 mm
Height	248 mm
Depth	26.5 mm
Weight	4.0 kg

- 1) 2) Rechargeable lithium rechargeable battery that cannot be replaced by the user. Accessories required (FT50 PoE cable with USB connection: 6CAPFT.0030-02 or 6CAPFT.0050-02)

# 4.4.3 Dimensions



#### 4.5 Power Panel FT50 21.5"

#### 4.5.1 Order data

Order number	Short description
Order Humber	Power Panel FT50
6PFT50.215C-10B	Power Panel FT50, 21.5", glass front, 1x PoE. CPU and memory: 800 MHz quad core (ARM Cortex-A9), 2 GB RAM, 512 MB onboard flash drive. Display and touch screen: 21.5", 1920 x 1080 (FHD) resolution, projected capacitive touch screen, multi-touch support, glass front with black frame, landscape and portrait format configurable with software. Interfaces: 1x Ethernet 10/100 IEEE 802.3bt (4PPoE) Client software: Integrated service page, VNC client, embedded web browser.
	Required accessories
	Injectors
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)
	Optional accessories
	Brackets
6ACCMA11.0100-000	FT50 VESA bracket
6ACCFL01.0301-000	Flange Flange for swing arm systems with a shaft diameter of 48 mm - suitable for FT50 panels from 15.6" - 21.5" or for wall mounting of all FT50 panels
6ACCMA10.0001-000	Flange for direct wall mounting - suitable for FT50 panels from 15.6" - 21.5"
	Installation tool
5ACCRHMI.0016-000	FT50 cable installation tool
5ACCRHMI.0017-000	HMI FT50 installation kit
	M22 cables
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45
6CAPFT.0050-02	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB
6CAPFT.0050-03	FT50 PoE cable - 5 m - M22/M22
	Other
6ACCMA11.0300-000	FT50 table stand
	SDL3/SDL4/PoE cables
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Ethernet
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet
	USB accessories
5MMUSB.2048-01	USB 2.0 flash drive 2048 MB B&R
5MMUSB.4096-01	USB 2.0 flash drive 4096 MB B&R

## 4.5.2 Technical data

# Information:

The following specified characteristic data, features and limit values are only valid for these individual components and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this individual component is used, for example.

#### Technical data

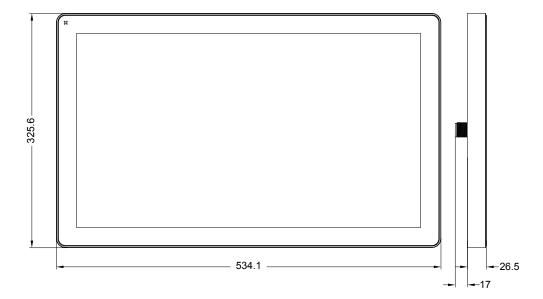
Order number	6PFT50.215C-10B
General information	
LEDs	Front: 1x RGB
	Ethernet: Link, Activity
B&R ID code	0xF750
Power button	No
Reset button	No
Certifications	W.
CE UKCA	Yes Yes
UL	cULus E115267
OL .	Industrial control equipment
Controller	
Operating system	PPT50 system
Processor	
Туре	ARM Cortex-A9, quad core
Clock frequency	800 MHz
Flash	512 MB
Backup battery	Yes 1)
DRAM	2 GB
Display	TET color
Type Diagonal	TFT color 21.5"
Colors	21.5 16 million
Resolution	1920 x 1080
Viewing angles	1020 X 1000
Horizontal	Direction L /
	Direction R = 89°
Vertical	Direction U /
	Direction D = 89°
Backlight	
Туре	LED 100 - 110 2
Brightness (dimmehle)	400 cd/m²
Brightness (dimmable) Half-brightness time	Yes (up to 0%) 40,000 h
Touch screen	40,000 11
Туре	Multi-touch
Technology	PCT (projected capacitive touch)
Surface	Glass
Screen rotation	Yes
Interfaces	
Interface	
Туре	Power over Ethernet
Variant	IEEE 802.3bt (4PPoE)
Max. transfer rate	10/100 Mbit/s
Transfer	AODACE T / AOODACE TV
Physical layer	10BASE-T / 100BASE-TX
Half-duplex Full-duplex	Yes Yes
Autonegotiation	Yes
Auto-MDI/MDIX	Yes
Interface IF3	
Туре	USB 2.0 <sup>2)</sup>
Variant	Type A
Current-carrying capacity	0.5 A
Operating conditions	
Degree of protection per UL 50	Type 1, 4X indoor and type 12
Degree of protection	IP67
Ambient conditions	(requires suitable accessories)
Ambient conditions Temperature	
Operation	-20 to 55°C
Storage	-20 to 33 C
Relative humidity	5 to 85%
Vibration	
Operation (occasional)	5 to 9 Hz, 7 mm
· , , , , , , , , , , , , , , , , , , ,	9 to 150 Hz: 1 g
Shock	
Operation	±50 g, 11 ms, 3 pulses per axis
Mechanical properties	
Front	
Design	Black

Order number	6PFT50.215C-10B
Dimensions	
Width	534.1 mm
Height	325.6 mm
Depth	26.5 mm
Weight	6.0 kg

- 1) 2) Rechargeable lithium rechargeable battery that cannot be replaced by the user.

  Accessories required (FT50 PoE cable with USB connection: 6CAPFT.0030-02 or 6CAPFT.0050-02)

#### 4.5.3 Dimensions



# 5 Installation

#### Notice!

Possible damage to the device!

- Commissioning and maintenance work is only permitted to be carried out when the device is in a voltage-free state. To do this, disconnect the power cable from the power supply and from the device.
- . Do not use excessive force! Handle all modules and components carefully.
- All covers and components, accessories, hardware and cables must be installed or secured before the device is connected to the power supply and switched on.
- Observe ESD instructions (see "Protection against electrostatic discharge" on page 9).

#### Notice!

Possible errors and damage to the touch screen functionality!

Do not cover the front panel or touch screen.
 Full or partial coverage of the front panel can have an impact on immunity to interference in relation to electrostatic discharge and conducted disturbances. In this case, compliance with the required limit values can no longer be guaranteed.

#### Important information about installation

- · Observe climatic ambient conditions.
- Install the device on a flat, clean and burr-free surface.
- Observe the bend radius when connecting cables.
- When installing the device in a closed housing, observe the minimum distances for air circulation.
- Install the device so that it can be viewed optimally by the user (see viewing angle data in the technical data).

#### 5.1 General information

#### 5.1.1 General conditions

#### Caution!

In order to ensure IP67 or type 1, 12 or 4X protection, the installation instructions must be strictly followed. For addition information about the degree of protection, see the installation instructions for the individual components on the following pages.

The tolerance for the torque values specified in this manual is ±4%!

#### Notice!

The sealing rings of pipe feed-throughs and brackets must be greased with a lubricant before installation. This extends the reliability and service life of the sealing rings.

#### Information:

B&R offers a separate tool as well as a tool set for easier and more secure installation of M22 cables on the terminal. For more information about the contents, see "Overview" on page 139.

To avoid overheating, the device is not permitted to be exposed to direct sunlight. In addition, contact with corrosive chemical compounds must be avoided (see "Surface resistance" on page 16). Check the resistance of the front panel to a specific compound before installation.

Do not use tools of any kind (screwdrivers, etc.) to operate the touch screen of the panel.

The following tightening torques must be observed:

- The M22 nut must be secured with a hex key (28 mm) with a maximum tightening torque of 10 Nm.
- The screws for securing brackets and the like to the panel must be secured with a PH2 screwdriver and maximum tightening torque of 1.3 Nm.
- The hex socket screws for securing pipes in the pipe feed-through must be secured with a 2.5 hex key and maximum tightening torque of 1.3 Nm.

# 5.2 Mounting the injector

#### Caution!

In order to ensure the following degrees of protection, the installation instructions and corresponding notes must be strictly followed:

- IP67 protection (M22 connection)
- IP20 protection (housing)

#### 5.2.1 Panel mount variant (6COPFT.0000-00)

- 1. Attach the round gasket to the injector (see "General information" on page 38).
- 2. Guide the injector through the M22 hole.
- 3. Tighten the M22 nut (Torque: 10 Nm).
- 4. Secure the injector using the two screws (Torque: 1.3 Nm).
- 5. Connect the Ethernet connector:





6. Tighten the cable gland (Torque: 3.0 Nm).

#### Information:

For more information, see chapter "Ethernet connection" on page 52.

#### 5.2.2 Top-hat rail installation (6COPOE.0000-00)

- 1. Guide the injector to the rail.
- 2. First allow the lower part for securing to the rail to snap into place.
- 3. Now press the injector against the rail.





# 5.3 Installing different cable types

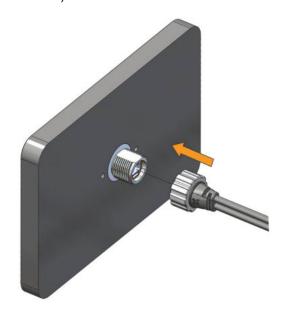
# Caution!

To ensure IP67 protection, the cable gland must be secured with a torque of 3 Nm. Exceeding the specified tightening torque can damage the device.

#### 5.3.1 FT50 PoE cable - M22/RJ45

#### 6CAPFT.xxxx-00

- 1. Connect the Ethernet connector to the panel.
- 2. Tighten the cable gland (Torque: 3.0 Nm).



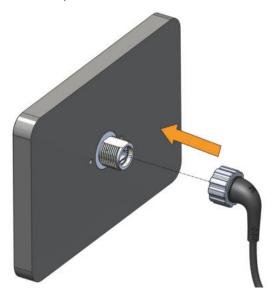
#### 5.3.2 FT50 PoE cable - 90° M22/RJ45

#### 6CAPFT.xxxx-01

#### Caution!

In order to ensure IP67 protection, the installation instructions and corresponding notes must be strictly followed:

- 1. Connect the Ethernet connector to the panel.
- 2. Tighten the cable gland (Torque: 3.0 Nm).



#### 5.3.3 FT50 PoE cable - M22/RJ45, USB

#### 6CAPFT.xxxx-02

#### Notice!

In order to ensure sufficient contact between the pins on the connection, the cable must be secured to the panel with a torque of at least 1.5 Nm.

It is important to note that this torque ensures the functionality of the USB connection and does not ensure IP67 protection (for more information, see Installing different cable types).

- 1. Connect the Ethernet connector to the panel.
- Tighten the cable gland (Torque: 3.0 Nm).
   (See the figure in section "FT50 PoE cable M22/RJ45" on page 35.)

# 5.3.4 FT50 PoE cable - M22/M22

# 6CAPFT.xxxx-03

1. First connect one end of the cable to the injector.

# Information:

For the procedure for installing an injector, see section "Mounting the injector" on page 34.

- 2. Connect the other end of the cable to the panel (see steps 1 to 2 in section FT50 PoE cable M22/RJ45).
- 3. Tighten the cable gland (Torque: 3.0 Nm).



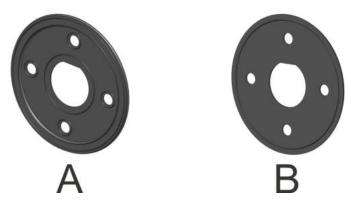


# 5.4 Installing accessories

#### 5.4.1 General information

#### **Gaskets**

In the following installation instructions, it is important to ensure that the gaskets are installed correctly. The graphics shown in this section are intended to illustrate this.



View A: Shows the side of the gasket that should face the bracket.

View B: Shows the side of the gasket that should face the panel/device.



This gasket must be placed between the bracket and a surface. The side of the gasket shown in the image must face the bracket.

#### **Screws**

### Information:

The supplied screws of the brackets and flanges are not designed to secure the terminals to walls or control cabinets. These only serve to secure the accessories to the terminal itself.

To secure the terminals to a wall or control cabinet, they must meet the following specifications:

- · The terminal must be installed on a flat surface.
- The wall or control cabinet must be able to support the weight of the terminal including accessories.
- Screws: M5 screw thread, standard stainless steel
- The screws on the bracket must reach a depth of 4 to 5.5 mm on the bracket.
- · Tightening torque for the screws on the bracket: 1.3 Nm

### 5.4.2 Installing a bracket for pipe fixtures

# Caution!

In order to ensure IP67 or type 1, 12 or 4X protection, the installation instructions and corresponding notes must be strictly followed.

### Notice!

It is important to note that when using 5CASD3.xxx0-00 SDL3/SDL4/PoE cables, the connectors protrude beyond the pipe fixture.

#### 5.4.2.1 Flange feed-through (6ACCFL01.0300-000)

# Information:

This accessory is compatible with the following FT50 sizes:

- 5" panel
- 7" panel
- 10.1" panel

Installation of bracket for pipe fixtures as well as securing a panel is performed as follows:

1. Insert the sealing rings into the flange feed-through:

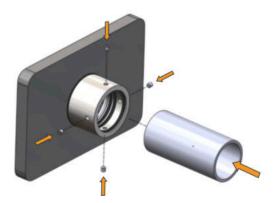


- 2. Attach the round panel gasket to the panel (see "General information" on page 38).
- 3. Mount the flange feed-through including the sealing rings.
- 4. Tighten the M22 nut (Torque: 10 Nm).
- 5. Secure the flange feed-through using the two screws (Torque: 1.3 Nm).



- 6. To increase the service life and functionality of the sealing rings of the flange feed-through, grease the sealing rings with appropriate oil.
- 7. Insert the pipe fixture into the flange feed-through.

8. Tighten the four screws on the flange feed-through (Torque: 1.3 Nm).





### 5.4.2.2 Feed-through / Wall flange (6ACCFL01.0301-000)

# Information:

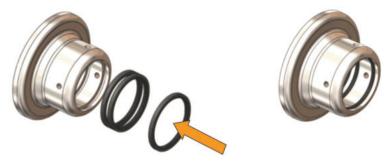
This accessory is compatible with the following FT50 sizes:

- 15.6" panel
- 21.5" panel

The flange can be used to secure the panel to pipe fixtures as well as a wall bracket. Both variants are described below.

### Pipe fixture mount

1. Insert the sealing rings into the flange.

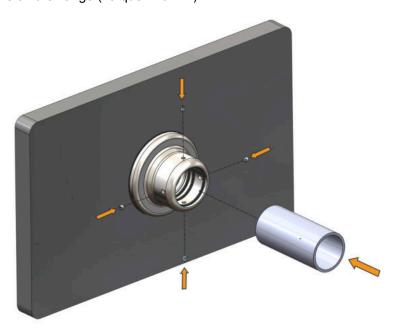


- 2. Attach the round panel gasket to the panel (see "General information" on page 38).
- 3. Mount the flange feed-through including the sealing rings.
- 4. Tighten the M22 nut (Torque: 10 Nm).
- 5. Secure the flange using the four screws (Torque: 1.3 Nm).



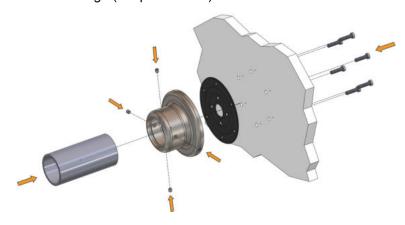
- 6. To increase the service life and functionality of the sealing rings of the flange feed-through, grease the sealing rings with appropriate oil.
- 7. Insert the pipe fixture into the flange.

8. Tighten the four screws on the flange (Torque: 1.3 Nm).



#### Wall mount

- 1. Insert the sealing rings into the flange.
- 2. Attach the round panel gasket first (see "General information" on page 38).
- 3. Mount the flange feed-through including the sealing rings.
- 4. Secure the flange using the six rear screws.
- 5. To increase the service life and functionality of the sealing rings of the flange feed-through, grease the sealing rings with appropriate oil.
- 6. Insert the pipe fixture into the flange.
- 7. Tighten the four screws on the flange (Torque: 1.3 Nm).



### 5.4.3 Installing an adapter bracket

# Caution!

In order to ensure IP67 or type 1, 12 or 4X protection, the installation instructions and corresponding notes must be strictly followed.

### Notice!

It is important to note that when using 5CASD3.xxx0-00 SDL3/SDL4/PoE cables, the connectors protrude beyond the pipe fixture.

#### 5.4.3.1 Flange adapter (6ACCMA10.0000-000)

# Information:

This accessory is compatible with the following FT50 sizes:

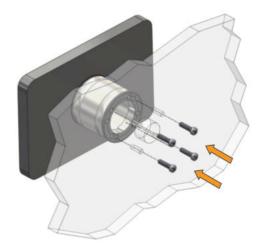
- 5" panel
- 7" panel
- 10.1" panel
- 1. Attach the round panel gasket to the panel (see "General information" on page 38).
- 2. Mount the adapter bracket.
- 3. Attach the second, narrower sealing ring to the adapter bracket (see "General information" on page 38).
- 4. Tighten the M22 nut (Torque: 10 Nm).
- 5. Secure the flange using the two screws (Torque: 1.3 Nm).



6. Connect the cable to the panel and secure it before the panel (including the preinstalled flange adapter) is screwed in place.

# Installation

7. Secure the adapter bracket now screwed to the panel with the corresponding four screws to a control cabinet, for example (Torque: 1.3 Nm).





### 5.4.3.2 Flange adapter (6ACCMA10.0001-000)

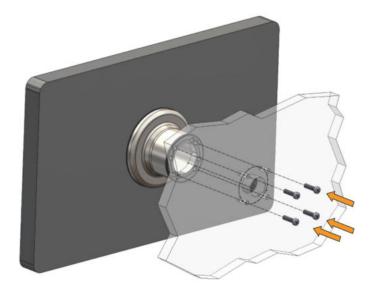
# Information:

This accessory is compatible with the following FT50 sizes:

- 15.6" panel
- 21.5" panel
- 1. Attach the round panel gasket to the panel (see "General information" on page 38).
- 2. Mount the adapter bracket.
- 3. Attach the second, narrower sealing ring to the adapter bracket (see "General information" on page 38).
- 4. Tighten the M22 nut (Torque: 10 Nm).
- 5. Secure the flange using the two screws (Torque: 1.3 Nm).

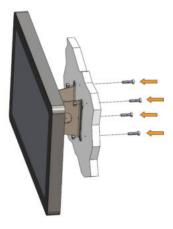


- 6. Connect the cable to the panel and secure it before the panel (including the preinstalled flange adapter) is screwed in place.
- 7. Secure the adapter bracket now screwed to the panel with the corresponding four screws.



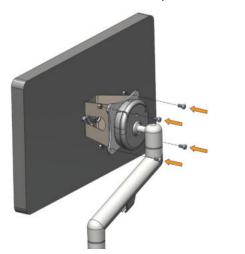
# 5.4.4 VESA bracket (6ACCMA11.0100-000)

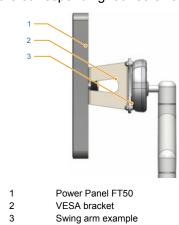
- 1. Mount the VESA bracket.
- 2. Tighten the M22 nut (Torque: 10 Nm).
- 3. Secure the bracket using the four screws (Torque: 1.3 Nm).
- 4. Secure the bracket now screwed to the panel with the corresponding four screws.



# Swing arm installation

- 1. Perform steps 1 to 3 of the instructions above.
- 2. Secure the bracket screwed to the panel to the swing arm with the corresponding four screws.





# 5.4.5 Table stand (6ACCMA11.0300-000)

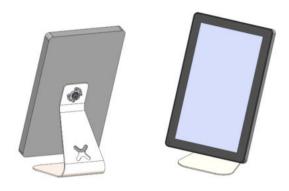
- 1. Mount the panel onto the table stand.
- 2. Tighten the M22 nut (Torque: 10 Nm).
- 3. Secure the bracket using the four screws (Torque: 1.3 Nm).



4. The panel can be rotated 90° by loosening the screws.

# Notice!

Portrait mode in combination with the table stand is not compatible with the 21.5" display.



# 5.4.6 Gooseneck bracket (6ACCMA11.0400-000)

# Information:

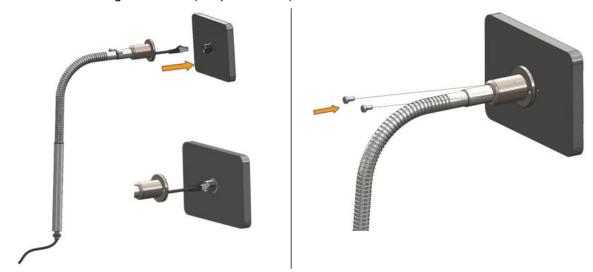
This accessory is compatible with the following FT50 sizes:

- 5" panel
- 7" panel
- 10.1" panel

In order to ensure IP20 and type 1 protection, the installation instructions and corresponding notes must be strictly followed.

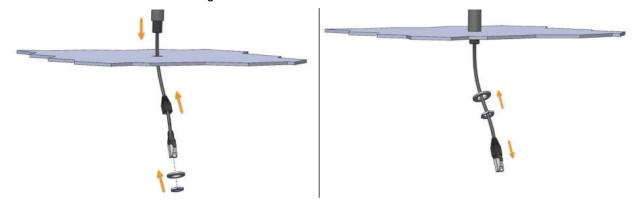
Securing the panel to the gooseneck bracket

- 1. Move the gooseneck bracket up to the panel.
- 2. Connect the PoE cable.
- 3. Screw on the gooseneck bracket.
- 4. Secure the bracket using the screws (Torque: 1.3 Nm).



#### Securing the gooseneck bracket

- 1. First remove the protective cover from the PoE connection.
- 2. Move the gooseneck bracket up to the hole.
- 3. Feed the PoE cable through the hole.
- 4. Feed the end of the gooseneck bracket through the wall.
- 5. Feed the cable and the detached protective cover through the flat washer included in delivery.
- 6. Repeat step 5 with the nut.
- 7. Secure the Gooseneck holder using the nut.

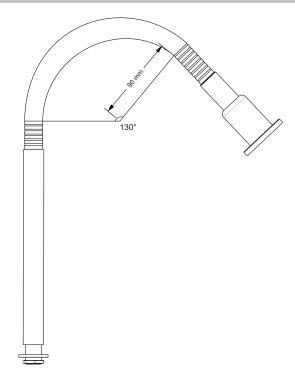


Different viewing angles can be set using the gooseneck bracket.

# Notice!

The following limit values must be observed:

- Maximum number of flex cycles: 50,000
- Maximum bend radius of the supplied PoE cable (for fixed installation): 8x cable diameter (6.3 mm)
- Maximum bending angle with a bend radius of 90 mm: 130°



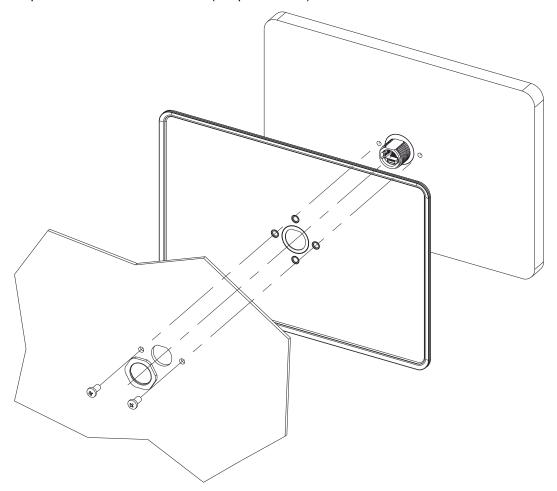
# 5.4.7 Panel gasket (6ACCGS01.xxxx-000)

# Caution!

In order to ensure IP67 or type 1, 12 or 4X protection, the installation instructions and corresponding notes must be strictly followed.

It is important to note that IP67 protection is only ensured if the terminal is installed on a flat surface of an IP67 housing. Type 1, 12 or 4X protection is also only ensured if the terminal is installed on a flat surface of a housing with a corresponding degree of protection.

- 1. Apply the gasket with the flat side to the panel.
- 2. Guide the panel through the M22 hole.
- 3. Tighten the M22 nut (Torque: 10 Nm).
- 4. Secure the panel with at least two screws (Torque: 1.3 Nm).



# **6 Commissioning**

# 6.1 Calibration

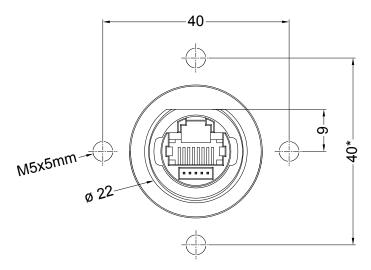
# Notice!

The PFT50 calibrates the touch screen each time it is started.

To guarantee an optimal display calibration there must not be any element or surface touching the front side of the panel when it is being powered on. Other influences (e.g. lying down the device) must also be avoided.

# 6.2 Rear view

#### **Dimensions**



\*) 15.6" and 21.5" FT50 devices only

### 6.3 Ethernet connection

#### General

	Description	Figure
a <sup>1)</sup>	Red OFF: A valid link has NOT been detected. ON: A valid link has been detected.	a b
b <sup>1)</sup>	Green ON: No activity BLINKING: Activity	8 1 c
С	Reserved	
18	Pinout (see "Cable pinout" on page 157)	
	<u>-</u>	

The Ethernet connection has two status indicators.

#### **Power supply**

• 5" panel: IEEE 802.3af PoE max. 6 W

• 7" panel: IEEE 802.3af PoE max. 9 W

10" panel: IEEE 802.3af PoE max. 12 W

15" panel: IEEE 802.3at PoE+ max. 19 W

21" panel: IEEE 802.3bt 4PPoE max. 32 W

#### Usage note

# Notice!

To avoid error behavior when restarting, the Power Panel must remain in a voltage-free state for at least 1 second (switch-off time) after voltage loss (power off).

### Information:

Ensure that the power supply has sufficient capacity to operate the device.

A shielded Cat 5 cable or higher must always be used.

The Power Panel must always be grounded with a shielded Cat 5 cable. Grounding of the device limits the effects of noise due to electromagnetic interference on the control system. The ground connection can also be made using the screws located near the connector. A label helps identify the ground connection. All electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

# 6.4 Operating the Power Panel

# Information:

It is important to note that a special accessory cable is necessary to be able to connect USB accessories to the FT50 (see "FT50 PoE cable - M22/RJ45, USB" on page 36).

In principle, it is possible to connect a USB hub. Operation of multiple USB devices is only possible to a limited extent, however. It is important to ensure that only one USB flash drive is connected. Mouse and keyboard can be operated simultaneously.

The following input methods can be used individually or together to operate the Power Panel:

- · Touch screen
- USB keyboard
- · USB mouse

#### 6.4.1 Mouse

The mouse cursor automatically appears if a USB mouse is connected to the Power Panel.

If the left and right mouse buttons are pressed simultaneously for more than 2 seconds, the Power Panel navigates to the service pages.

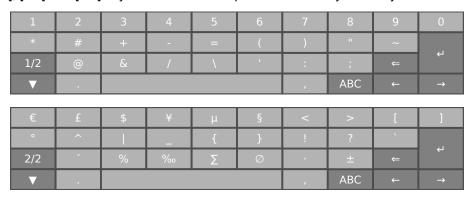
### 6.4.2 Keyboard

Text can be entered using a USB keyboard or virtual keyboard.

The virtual keyboard is displayed as soon as a text input field (blinking text input cursor "|") has the focus.



The [?123], [ABC], [1/2] and [2/2] keys can be used to open additional keyboard layouts:



# 7 Configuration

The Power Panel can be configured in the following ways:

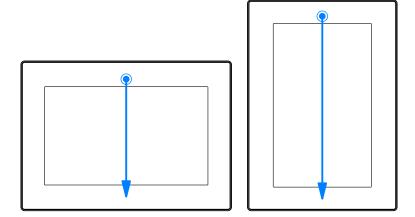
- Via the service page of the Power Panel (see "Service pages" on page 54)
- Via OPC UA (OPC UA server must be enabled beforehand)
- · Via update:
  - ⇒ Updating with Automation Studio and USB flash drive
  - ⇒ Updating with a downloaded from the website and USB flash drive
  - ⇒ Duplicating an existing setup using a USB flash drive

# 7.1 Service pages

T-Series Power Panels can be configured via the integrated service page. This service page can be opened in various ways:

#### Opening the service page with a gesture

The service page can be opened with a Gesture if this is configured accordingly (see "Configuring the gesture" on page 67):



**Gesture for opening the service page:** Use a finger to swipe from the middle of the top edge of the touch screen down over the entire touch screen area.

The setting for *Screen rotation* on service page *Screen* is decisive for the swiping direction.

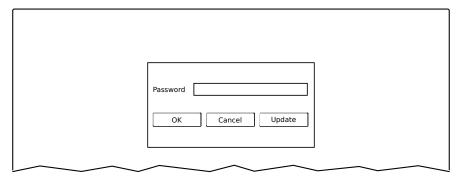
### Other ways to open the service page

The following options are also available to open the service page:

- By pressing the left and right buttons of a connected USB mouse simultaneously for at least 2 seconds.
- Opened automatically after restarting the Power Panel if the corresponding Start mode is configured on service page Startup (see service page "Startup" on page 58)

### Entering the service password

If a service password has been configured in the settings (see "Service page Security" on page 82), then this password must be entered each time the service pages are opened before the service page is displayed.

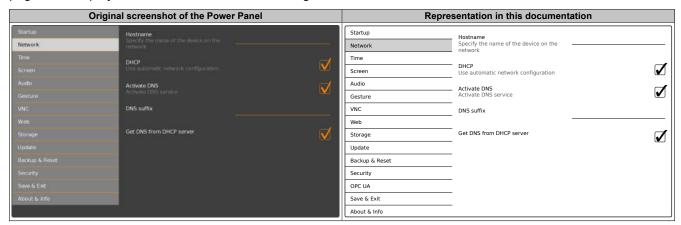


The service password must be entered in the corresponding text input field.

Button	Description
[OK]	Confirms password entry
[Cancel]	Cancels password entry
[Update]	When button "Update" is pressed, the Power Panel attempts to perform an update. This executes function <i>Update settings / boot logo / system</i> , which can also be opened on service page <i>Update</i> (see "Service page Update" on page 76). If an update is found (on a USB flash drive or on the network), it will be loaded and installed. In the next step, the Power Panel will be started in the configured mode (see "Service page Startup" on page 58) regardless of whether an update is found.

#### Representation of service pages in this documentation

In this documentation, service pages are not represented as original screenshots. For better readability, the service pages are displayed as black text on a white background:



### Language of the service pages

As can be seen in the previous service page example, all of the content on the service pages for the Power Panel is **generally in English**.

### Configuration

### Saving the settings

Any settings changed on the service pages are not saved permanently while settings are still being edited. Saving only takes place permanently when one of the following commands is launched from service page Save & Exit:

- · Save changes & exit
- Save changes

See "Service page Save & Exit" on page 86.

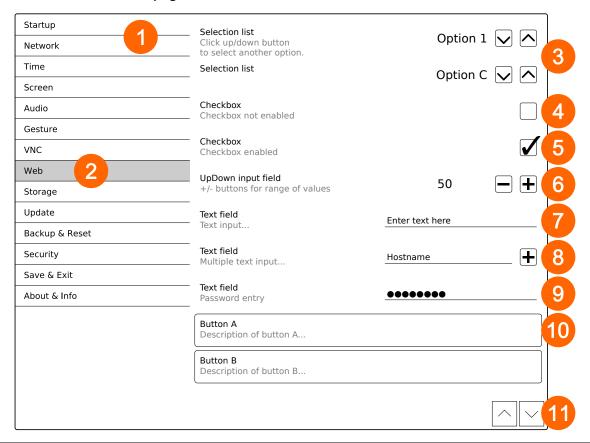
# Information:

Changes only become active after saving and exiting the service pages (command Save changes & exit).

### Information:

All settings on the service pages are saved on the Power Panel in XML file PFT50Config.xml . When backing up or restoring the panel settings, a file with this name is created or expected to be on the storage medium (see "Service page Backup & Reset" on page 81 and "Service page Update" on page 76).

#### Input elements on the service pages



Menu for selecting individual service pages "Startup", "Network", "About & Info", etc. 2 The active or selected service page is marked in the menu using a different background color. 3 The selection list indicates the selected option. Pressing the up/down arrows moves between the available options. Checkbox not activated. 4 5 Checkbox activated. UpDown input field for entering values within a certain range. The value can be increased/decreased using the "-" or "+" symbols. The value can also be changed directly using the keyboard. 7 Text field where text can be entered with the keyboard. Text field where text can be entered with the keyboard. The "+" symbol can be used to add the entered 8 text to a text list. Text field for entering a password. The password will be displayed as plain text or wildcard characters 9 (●●●●●) depending on the setting. Button that can be used to trigger a specific function. Under the short title, a more detailed description of 10 the function is displayed as gray text. If the service page contains more elements than fit on the display, it is possible to scroll through the content using the up/down buttons.

To simplify operation, some text fields are enlarged during input (increased readability). The descriptive text to the left of the text field is hidden during this (covered up by the text field).

#### 7.1.1 Overview

The following service pages are available:

Menu for the service pages	Menu option (English)	Description
Startup	Startup	Settings that take effect when the Power Panel is restarted
Network	Network	Settings for the Ethernet network
Time	Time	Time settings (time server, daylight savings time)
Screen	Screen	Screen settings (screensaver, rotation, etc.)
Audio	Audio	Buzzer settings
	Gesture	Enables/Disables a gesture for opening the service page
Gesture	VNC	Settings for the VNC client on Power Panel
VNC	Web	Settings for the web browser
Web	Storage	Settings for accessing memory (USB flash drives, user memory)
Storage	Update	Updates the Power Panel (manual)
Update	Backup & Reset	Backs up Power Panel settings or resets the Power Panel to factory settings
Backup & Reset	Security	Security settings (password query when opening the service page)
Security	OPC UA	Settings for the OPC UA server of the Power Panel
OPC UA	Remote access	Enables/Disables and configures remote access
Remote Access	Save & Exit	Saves the Power Panel settings and closes/exits the service page
Save & Exit	About & Info	Information about the Power Panel (PPT system version, licenses for the
About & Info		software being used)

#### 7.1.1.1 Service page Startup



The start mode is configured on service page *Startup* and determines how the Power Panel behaves after being switched on. The Power Panel is started in one of the following modes (*Start mode*) in accordance with this setting:

- Service page (default setting)
- VNC
- Web

### Start mode Service page (default setting)

This setting is typically used during the development phase of an application because the service page is opened immediately after every Power Panel restart.

### Start mode VNC

In this start mode, the Power Panel is started as a VNC client in order to display an HMI application made available on a VNC server.

In start mode *VNC*, option *Show boot logo* additionally configures whether the boot logo and boot animation of the system should be displayed while establishing the connection to the VNC server:



#### Start mode Web

In start mode Web, a web browser that displays web server content is started immediately after restarting the Power Panel

In start mode Web, option Show boot logo additionally configures whether the boot logo and boot animation of the system should be displayed while establishing the connection to the web server:



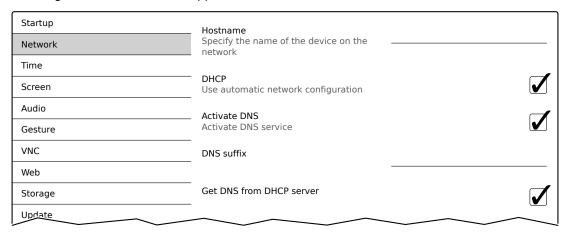
#### Boot logo or boot animation

For requirements and information about the boot logo and boot animation, see the following sections:

- "Boot logo" on page 94
- "Boot animation" on page 94

#### 7.1.1.2 Service page Network

The default settings for service Network appear as follows:



#### Information:

Network configuration changes do not require the Power Panel to be rebooted and are applied by the system and processed immediately after saving the settings and exiting the service pages (see "Service page Save & Exit" on page 86).

### Hostname

Default setting: EMPTY (no hostname defined)

The Power Panel is identified in the network using its IP address or hostname. If a hostname is entered here, the Power Panel can be identified in the network using this name, which allows it to be accessed (e.g. by Automation Studio).

Important information:

- The hostname must be **unique** in the network.
- The name can have a maximum length of 64 characters.

#### Information:

If no hostname is defined (input field is empty), 6PFT50 is automatically used as the hostname.

#### Configuration

#### DHCP

Default setting: Enabled

When the Dynamic Host Configuration Protocol (DHCP) is enabled, the network configuration is automatically obtained from the DHCP server and assigned to the Power Panel; otherwise, it must be entered manually (e.g. IP address of the device, IP address of the gateway, etc.).

For information about manual network configuration, see "Network configuration without DHCP" on page 62.

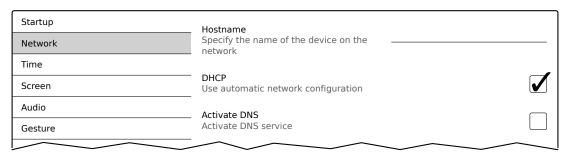
#### Activate DNS<sup>2)</sup>

Default setting: Enabled

DNS usage of the device (DNS client) can be enabled or disabled with this option.

If a hostname is entered in VNC or web mode, this option must be enabled so the hostname of the VNC or web server can be resolved and the associated IP address can be obtained from the DNS server.

If this option is disabled, the device can only be accessed using an IP address assigned by the DHCP. Options *DNS suffix* and *Get DNS from DHCP server* are not available in this case and will be hidden:



#### DNS suffix

Default setting: EMPTY

A DNS suffix is usually entered when a hostname is defined. The DNS suffix is specific to the network in which the device is being operated. Information about this must be obtained from the network administrator.

The hostname and the DNS suffix make up the full domain name (FQDN: fully qualified domain name) for the device:

hostname.dns-suffix

The full domain name could look like this, for example:

Hostname: ppt-visualization-machine-01		
DNS suffix:	network-domain.com	
Fully qualified hostname (FQDN): ppt-visualization-machine-01.network-domain.com		

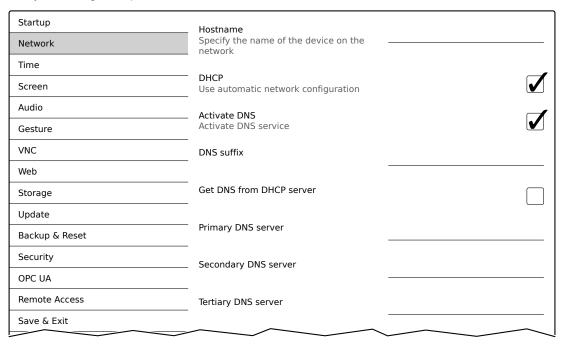
<sup>2)</sup> In order to use DNS functionality, appropriate infrastructure must be available within the network.
For more information, please contact your network administrator.

#### Get DNS from DHCP server

Default setting: Enabled

By default, the IP addresses for the DNS server are automatically obtained from the DHCP server.

If it is necessary to manually enter the IP addresses for the DNS server (without generally disabling DHCP), this can be done by disabling the option *Get DNS from DHCP server*.



# Primary DNS server / Secondary DNS server / Tertiary DNS server

Default setting: EMPTY

The IP addresses for the DNS server.

This input option for the DNS server is only displayed if option Activate DNS is enabled.

### 7.1.1.2.1 Network configuration without DHCP

The entire network configuration can be completed manually by disabling option DHCP:

Startup	Hostname	
Network	Specify the name of the device on the network	
Time		
Screen	DHCP Use automatic network configuration	
Audio	Activate DNS	
Gesture	Activate DNS service	•
VNC	DNS suffix	
Web		
Storage	IP address	
Update		
Backup & Reset	Subnet mask	
Security	Default gateway	
OPC UA	3. 1. <b>3</b> . 1. <b>3</b> .	
Remote Access	Primary DNS server	
Save & Exit		
About & Info	Secondary DNS server	
	Tertiary DNS server	

### Information:

The data required for manual network configuration can be obtained from the network or system administrator.

# Information:

IP addresses are checked for validity when they are entered. Only characters that build a valid IP address can be entered.

If the IP address entered is incomplete or the network configuration is incorrect, error messages will be output when starting up the device.

#### Hostname | DHCP | Activate DNS | DNS suffix

For a description of these options, see service page "Network" on page 59.

#### IP address

Default setting: EMPTY

The IP address of the Power Panel within the network must be entered here.

# Subnet mask / Default gateway

Default setting: EMPTY

Subnet mask and IP address of the default gateway.

### Primary DNS server | Secondary DNS server | Tertiary DNS server

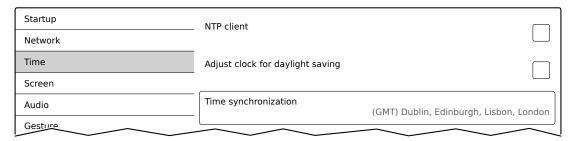
Default setting: EMPTY

The IP addresses for the DNS server.

This input option for the DNS server is only displayed if option Activate DNS is enabled.

#### 7.1.1.3 Service page Time

Various settings for the time server and daylight saving time can be configured on this service page.



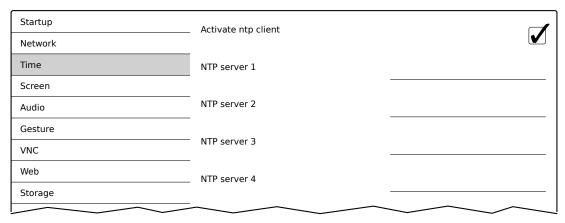
Information: The date and time can be set by the user using OPC UA method SetTime.

#### NTP client

Default setting: Disabled

With this option, an NTP client can be enabled on the Power Panel that synchronizes the time on the Power Panel with a time server (NTP server).

After enabling the option, one to four NTP servers can be entered:



Synchronization takes place cyclically. The interval between synchronizations is increased as soon as a certain accuracy of the system time has been achieved.

### Adjust clock for daylight saving

Default setting: Disabled

If this option is enabled, time changes related to daylight savings time take place automatically.

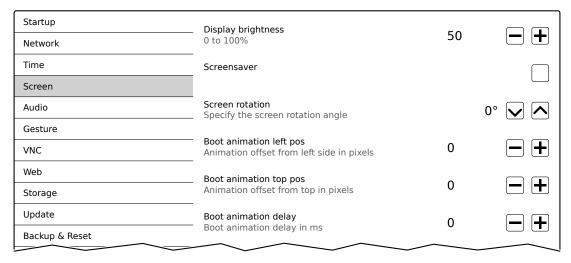
#### Time synchronization

Default setting: (GMT) Dublin, Edinburgh, Lisbon, London

When making a selection (via touch or mouse click), a list of all time zones is displayed and the appropriate one can be selected.

#### 7.1.1.4 Service page Screen

On this service page, some settings for the display can be changed. The following graphic shows the default settings:



#### Display brightness

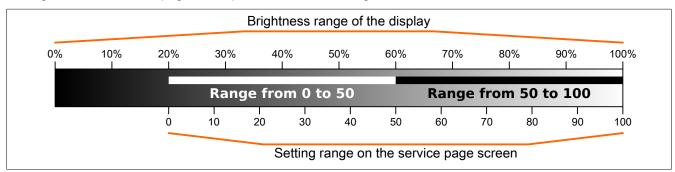
Default setting: 50 Input range: 0 to 100

Unit: %

Here, the current brightness of the display and the basic setting for the display are set after restarting the device:

- Each change to a value on the service page directly and immediately affects the brightness of the display.
- The currently set value is only stored as the default setting for the device when saved (see "Service page Save & Exit" on page 86).

Setting 0% on the service page corresponds to a residual brightness of 20%:



The brightness can also be controlled by the application (see "Adjusting display brightness" on page 95).

#### Screensaver

Default setting: Disabled

Options for the enabled screensaver are described in section "Screensaver settings" on page 65.

#### Screen rotation

Default setting: 0°

Input range: 0°, 90°, 180°, 270° (in 90° steps)

The angle of rotation of the display is set here. This setting affects how screen content is output. After selection, the display content is rotated clockwise according to the specified angle.

### Settings for the boot animation

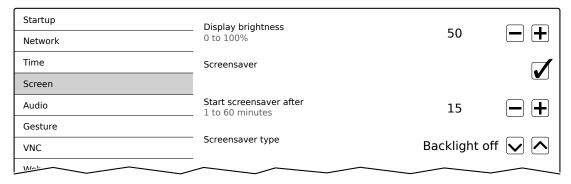
These settings are used to configure the position and time delay for the boot animation:

Boot animation left pos	S			
Default setting	0			
Input range	0 to 2048 <sup>1)</sup>	0 to 2048 <sup>1)</sup>		
Unit	Pixels			
Function	Defines the distance	e from an existing boot animation to the left edge of the display.		
Boot animation top po-	S			
Default setting	0			
Input range	0 to 2048 <sup>1)</sup>			
Unit	Pixels			
Function	Defines the distance	e from an existing boot animation to the top edge of the display.		
Boot animation delay				
Default setting	0			
Input range	0 to 1000			
Unit	ms (milliseconds)			
Function	Delay in milliseconds between individual images in the GIF animation. The individual values have			
	the following effect:			
	Value [ms]	Description		
	0	In this case, the delay defined in the GIF file will be used.  If no delay is defined in the GIF file, 100 ms is used.		
	>0	Applies the set delay time.		
	It may not be possible to achieve small values due to the power limits of the device. In this case, the animation is displayed slower than the value specified.			
Boot animation require	ements/information			
See: "Boot animation" or	n page 94			

<sup>1)</sup> Reasonable values range from 0 to the width/height of the screen. The screen width/height depends on the used device and the configured Screen rotation.

#### 7.1.1.4.1 Screensaver settings

If option Screensaver is enabled, additional options are displayed:



#### Start screensaver after

Default setting: 15 Input range: 1 to 60

**Unit: Minutes** 

If there is no touch screen activity for the specified duration, the screensaver is started. Touching the screen exits the screensaver and the last active screen contents are shown.

### Screensaver type

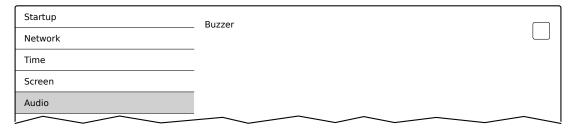
Default setting: Backlight off

If the screensaver is started after a period of inactivity, the display goes into the selected mode:

Black	The display is dark. The backlight remains on.	
Backlight off	The display is dark. The backlight is switched off (result: lower power consumption).	

#### 7.1.1.5 Service page Audio

On this service page, an audio signal can be configured to be output when a touch operation occurs or controlled by an application.

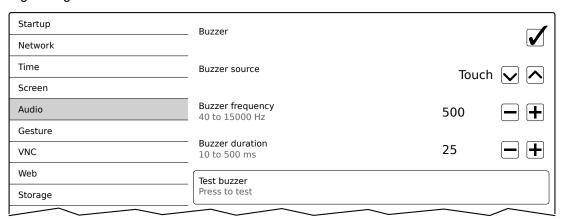


#### Buzzer

Default setting: Enabled

If this option is disabled, an audio signal is not output when a touch operation occurs on the Power Panel.

The following settings can be made when Buzzer is enabled:



#### **Buzzer source**

Default setting: Touch

The following options are available for triggering a buzzer:

Touch	In VNC and web mode, an audio signal is output for each touch operation. This takes place independently of the application controlled by the Power Panel operating system.
Арр	The RFB extension and corresponding library can be used to allow the application to trigger the audio
	signal.
	See: "Outputting an audio signal" on page 96

#### **Buzzer frequency**

Default setting: 500

Input range: 40 to 15000

Unit: Hz

This setting is used to configure the frequency of the generated audio signal.

#### **Buzzer duration**

Default setting: 25

Input range: 10 to 500 Unit: ms (milliseconds)

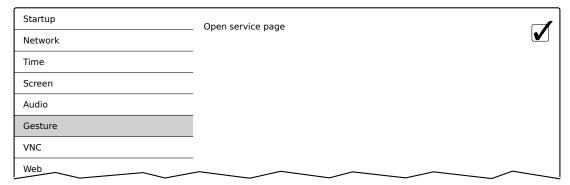
This setting is used to configure the duration of the generated audio signal.

### Test buzzer (button)

Function: Triggers the buzzer for testing purposes (sound is generated).

#### 7.1.1.6 Service page Gesture

The settings on this service page configure the gesture for opening the service page:



# Information:

If this function is disabled, the service page can only be opened with a USB mouse or via an OPC UA method and restarting the panel!

It is important to note that a special accessory cable is necessary to be able to connect a USB mouse to the FT50 (see FT50 PoE cable - M22/RJ45, USB).

Opens the service page with a gesture if option *Open service page* is enabled:

• See "Opening the service page with a gesture" on page 54

### Open service page

Default setting: Enabled

Enabled	In VNC/web mode, the service page can be opened using this gesture.	
Disabled	In VNC/web mode, the service page <b>cannot</b> be opened using this gesture.	
	Information:	
	A mouse must be connected in order to open the service page in VNC/web mode (see "Mouse" on page 53).	

#### 7.1.1.7 Service page VNC

In order to use the Power Panel as a VNC client, some settings are necessary:

Startup	Server	.,	
Network	IP address or hostname	vncserverX	. (+)
Time	Password Max. 100 characters	•••••	
Screen	Max. 100 characters		
Audio	Show password		
Gesture			
VNC	Encrypt password Save VNC password in encrypted form		
Web	Use RFB extension		
Storage			
Update	Enable connection monitor		
Backup & Reset	Monitor connection to VNC server		
Security	Enable local window scaling		
OPC UA			
Remote Access	Background color Set background color of VNC viewer		
Save & Exit			
About & Info	vncserver1		
	vncserver2		

#### Server

Default setting: EMPTY (no server entered or selected)

In order to use the Power Panel as a VNC client, a hostname or IP address for the VNC server must be specified.

It is possible here to enter multiple servers in a list. Entering the hostname or IP address and then clicking on the [+] icon adds the specified server in the list at the end of this services page (see "vncserver1" and "vncserver2" in the previous image).

To use a specific VNC server from this list, it must be selected in the server list (via touch screen or mouse click). The currently selected VNC server is displayed in input field *Server*.

By default, port 5900 is used to establish a connection.

If the VNC-based HMI application is available on a different port, the port number must be specified explicitly together with the IP address or hostname:

Syntax	Example	Description
IP address:Port	10.23.19.48:5907	A VNC connection to IP address 10.23.19.48 is established on port 5907.
Hostname:Port	vncserver1:5908	A VNC connection to host vncserver1 is established on port 5908.

### Information:

If the entered IP address is incomplete or no VNC server exists for the IP address or entered hostname, a corresponding message will be output if a connection attempt fails in VNC mode.

The error message is only output if display of the boot logo is disabled in start mode VNC.

#### **Password**

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

Note: Only one password can be entered, which is only used for the currently selected VNC server.

If a password has been entered, then the VNC client (Power Panel) is connected to the VNC server without an additional password query.

If no password has been entered, then the password will be queried on the Power Panel each time a connection to the VNC server is established.

The password is stored on the device in configuration file PFT50Config.xml .

#### Show password

Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (●●●●●).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

#### **Encrypt password**

Default setting: Disabled

Enabled	The password is stored on the device in encrypted form.
Disabled	The password is stored on the device as plain text.

#### Use RFB extension

Default setting: Disabled

With the RFB extension enabled, a B&R VNC server (VNC-based HMI application) can query data from the VNC client and execute a variety of functions.

See: "RFB extension" on page 95

#### Enable connection monitor

Default setting: Disabled

Limitation: Enabling this option disables option Use RFB extension.

Enabled	Enables monitoring of the connection to the VNC server.
Disabled	Disables monitoring of connection to the VNC server.

See section "VNC connection monitoring" on page 70.

#### Enable local window scaling

Default setting: Disabled

Enabled	Scales the VNC application to the display size of the Power Panel.
Disabled	Displays the VNC application in its original size on the Power Panel display.

# Information:

Enabling this option results in a reduction in the performance of the Power Panel due to increased computing power.

### **Background color**

Default setting: EMPTY

This setting can be used to set the background color of the VNC client on this Power Panel. If the VNC-based HMI application is smaller than the size of the Power Panel display, the background of the display (border around the HMI application) is shown with the defined background color.

Value	Background color
RGB color value <sup>1)</sup>	The RGB color value is noted as a three-digit (#rgb) or six-digit (#rrggbb) hexadecimal number, with the value preceded by the # character. The color value is composed of the red, green and blue values.
HTML/CSS color name <sup>1)</sup>	The color name corresponds to a specific RGB color value.
EMPTY	Light gray.
Invalid values	Black.

For the syntax of the RGB color value and valid HTML/CSS color names, see the HTML/CSS standard.

#### Examples of color values and color names:

#rrggbb	#rgb	HTML/CSS color name	Color display
#ffffff	#fff	white	
#ff0000	#f00	red	
#00ff00	#0f0	lime	
#008000	-	green	
#ffff00	#ff0	yellow	
#ff8800	#f80	-	
#0000ff	#00f	blue	
#00000	#000	black	

#### 7.1.1.7.1 VNC connection monitoring

If the Power Panel is configured as a VNC client, the connection to the VNC server can be monitored. If the connection to the VNC server is lost, a loading screen is displayed with a message that the Power Panel is trying to reconnect.

#### **Enabling VNC connection monitoring of a VNC client**

VNC connection monitoring of a VNC client is enabled with one of the following two options:

Option	Description
Use RFB extension	Enabling the RFB extension developed by B&R for the VNC client also enables connection monitoring. The RFB extension
	can only be used together with a B&R VNC server.
	For additional information about installation, see section "RFB extension" on page 95.
Enable connection monitor	Without the RFB extension, this option can be enabled to enable VNC monitoring for the VNC client. This option also
	works with third-party VNC servers.

If several VNC clients are operated on one B&R VNC server, option *Use RFB extension* is only permitted to be enabled on one VNC client.

### 7.1.1.8 Service page Web

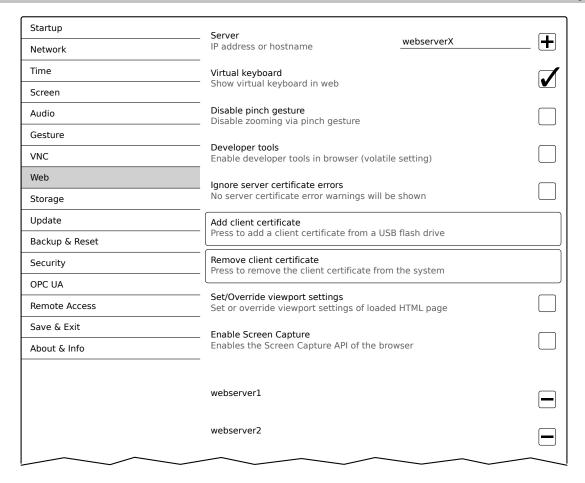
The Power Panel can be configured as a web client on this service page. In this case, a web browser is operated in full screen mode and an HMI application or other application running on a web server (e.g. mapp View) is displayed in the browser.

The following features are not supported:

- Java
- Flash

The web browser provides full JavaScript support!

The following figure shows service page Web with the default settings:



#### Server

Default setting: EMPTY (no server entered or selected)

In order to use the Power Panel as a web client, a hostname or IP address for the web server must be specified.

It is possible here to enter multiple servers in a list. Entering the hostname or IP address and then clicking on the [+] icon) adds the specified server in the list at the end of this services page (see "webserver1" and "webserver2" in the previous image).

To use a specific web server from this list, it must be selected in the server list (via touch screen or mouse click). The currently selected web server is displayed in input field *Server*.

If a port number is not specified together with the server, port 80 is used by default.

If the web server is available on a different port, the port must be specified explicitly together with the IP address or hostname:

Syntax	Example	Description
IP address:Port	10.23.20.17:8080	A connection to IP address 10.23.20.17 is established on port 8080.
Hostname:Port	webserver1:8081	A connection to host webserver1 is established on port 8081.

### Information:

If the entered IP address is incomplete or no web server exists for the IP address or entered hostname, then only the boot logo (if enabled) or standard animation of the web browser will be displayed when connecting to the web server.

# Virtual keyboard

Default setting: Enabled

Enabled	The virtual keyboard is automatically displayed on the screen if a text input field in the web browser	
	has the focus (see "Keyboard" on page 53).	
Disabled	The virtual keyboard for the web page is automatically displayed if a text input field in the web browser	
	has the focus. This functionality must be made available by the web server.	

Input can also be made at any time using a connected USB keyboard.

# Information:

The virtual keyboard is generated by the Power Panel system. If the web application (e.g. mapp View) contains its own on-screen keyboard, the virtual keyboard of the Power Panel should be disabled.

#### Disable pinch gesture

Default setting: Disabled

Enabled	The two-finger gesture for zooming the browser content is disabled. Zooming the entire HMI application is prevented. However, zoom is supported in some mapp View widgets (e.g. LineChart).
Disabled	The browser recognizes the well-known two-finger gesture (pinch-to-zoom) and allows zooming of the browser content.

#### Developer tools

Default setting: Disabled

Enabled	The next time the web browser is started (see setting Start mode on service page Startup), the
	developer tools are enabled.
	See "Using the developer tools" on page 74.
	Note: This setting is not permanently saved in the system settings and only valid until the next restart
	of the web browser.
Disabled	Developer tools are disabled.

### Information:

#### Safety notice!

This option is for development purposes only while creating an HTML-based HMI application.

When using this option, it should be noted that the functions enabled in this way can be misused; it is therefore recommended to handle the developer tools with appropriate care.

It is possible to change the port used after enabling option *Developer tools*:



#### Developer tools port

Default setting: 9222

This setting defines the port used for the developer tools (see "Using the developer tools").

### Ignore server certificate errors

Default setting: Disabled

If the web browser detects an error in the server certificate when establishing the connection to the web server, then the web browser displays a corresponding warning message that the user must acknowledge. If this option is enabled, such warning messages will be suppressed.

Use case:

If a self-signed server certificate is used during testing or development, it may be helpful to enable this option.

#### Add client certificate (button)

This function allows a client certificate to be stored on the device to authenticate the web browser on the server.

Saving the client certificate on the device:

- 1. Create a client certificate and copy it to a USB storage medium.
- 2. Connect the USB storage medium to the device.
- 3. Press button Add client certificate.
- 4. Select the corresponding USB drive in the following dialog box.
- 5. A list of all client certificates in the PKCS #12 standard (file extension ".p12") is displayed.
- After the desired client certificate is selected, the password must be entered.If the client certificate was created without a password, the input field must remain empty.
- ✓ If all data is entered correctly, the certificate on the device is stored in the certificate store of the web browser.

## Information:

If a client certificate already exists on the device, it is replaced by the new one.

#### Remove client certificate (button)

This function can be used to delete a client certificate stored on the device.

Deleting a client certificate from the device:

- 1. Press button Remove client certificate.
- A confirmation prompt appears querying whether the client certificate should be completely deleted from the device.
- ✓ After the confirmation prompt is confirmed, the client certificate is deleted from the device.

#### Set/Override viewport settings

Default setting: Disabled

This option is used to enable setting or overwriting the viewport settings. If this option is enabled, additional input field *Viewport settings* appears.

#### Information:

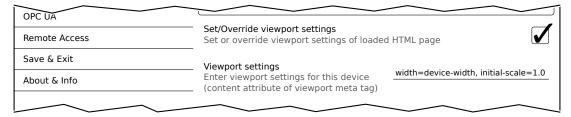
This setting is not needed for the majority of use cases. When using mapp View HMI applications, viewport settings are already set correctly and using this option is not necessary.

For HMI applications from third-party providers over which the user has no influence, it may be useful to enable this option and make the appropriate settings.

If option Set/Override viewport settings is active, a viewport meta tag provided with the HTML page is overwritten.

#### Viewport settings

Default setting: width=device-width, initial-scale=1.0



The value of attribute content in the viewport meta tag is entered in the input field.

Example of a viewport meta tag as it may be contained in an HTML page:

<meta name="viewport" content="width=device-width, initial-scale=1.0">

#### Configuration

This viewport meta tag is set if the following is entered in input field *Viewport settings*:

```
width=device-width, initial-scale=1.0
```

**Note:** The user must ensure that the syntax is correct. For detailed information about viewport settings and valid syntax, see relevant HTML documentation regarding responsive design.

#### **Enable Screen Capture**

Default setting: Disabled

This option enables the screen capture API of the built-in browser.

If this option is enabled, the HTML application can use the browser's screen capture API to create screen captures of the HMI application. Both individual and video recordings are possible.

If this option is enabled, option Suppress Screen Capture security warning is displayed:



#### Suppress Screen Capture security warning

Default setting: Disabled

By default, the browser displays a security warning when the HTML application starts a screen capture using the screen capture API. The user is prompted to permit or deny the screen capture.

This option can be used to disable this security warning.

#### 7.1.1.8.1 Using the developer tools

The developer tools make it possible to access the browser from any remote computer over the network. Developer tools can help to edit pages on the fly and quickly diagnose problems.

#### Information:

To be able to use the developer tools, either <u>Google Chrome</u> or the <u>Chromium</u> is required.

Information about the functionality and use of the developer tools: Chrome DevTools

#### **Enabling remote developer tools**

- 1. On service page Startup, select start mode Web.
- 2. Enable option *Developer tools* on service page *Web*.
- 3. Set a valid free port (Developer tools port).
- 4. On service page Save & Exit, save the settings and leave the service page with Save changes & exit.
- ✓ The web browser is started with the corresponding settings and enabled developer tools.

To use the remote developer tools, the following conditions must also be met:

- The Power Panel is accessible via the Ethernet network.
- Communication is permitted for the network and the computer being used.
- A browser that supports the developer tools is required on the remote computer.

#### Launching the developer tools

If the developer tools are enabled and the web browser is started, the remote computer can launch the developer tools for the Power Panel browser with the following URL:

⇒ With the IP address of the Power Panel: http://IP address:Port

IP address	The IP address of the Power Panel is listed on service page About & Info.
Port	The port was defined on service page Web when enabling option Developer tools (default setting: 9222).

#### **Additional functions**

If the web browser on the Power Panel is running with developer tools enabled, the following additional features are enabled:

- ⇒ When using a USB mouse, a shortcut menu is opened with the right mouse button.
- ⇒ When using a USB keyboard, the following keys are also enabled:

[F5]	Refresh: Reloads the current browser window.
[Alt]+[Left]	One page back: Opens the previous page in the browser history.
[Alt]+[Right]	One page forward: Opens the next page in the browser history.

#### 7.1.1.9 Service page Storage

On this service page, Power Panel memory can be shared to allow access from the network. The following memory areas can be shared for network access:

- Connected USB storage media
- Internal user memory

Sharing takes place using the **C**ommon Internet **F**ile **S**ystem (CIFS) protocol. In this case, the Power Panel functions as a server and makes resources (a memory area) available to a client in the network using an access mechanism. CIFS uses a user, password and memory for authentication.

The client will require the following information to access the memory area shared on the Power Panel:

CIFS user	The CIFS user cannot be configured. "pft50-user" must always be used as the CIFS user.		
	Note: The username is device-specific. This is important to note if a device is replaced by a Power Panel from another family(e.g. T50 ▶ T80).		
CIFS password	The password configured on this service page is used.		
CIFS memory location	The following names can be used to specify the memory location:		
	Name	Description	
	usbshare	USB storage medium connected to USB interface IF3.	
	usershare	Internal user memory (flash) on the Power Panel.	

# The USB storage medium must be formatted using the FAT32 file system.

The following figure shows the default settings for service page Storage:

Startup	Allow access to USB memory via network	
Network	,	
Time	Allow access to user memory via network	
Screen		
Audio	Password for network access Max. 100 characters	•••
Gesture		
VNC	Show password	
Web	Encrypt password	
Storage	Save storage password in encrypted form	
Update		
Backun & Reset		~

### Allow access to USB memory via network

Default setting: Disabled

If this option is enabled, access to the connected USB storage medium will be shared on the network.

# Allow access to user memory via network

Default setting: Disabled

If this option is enabled, access to the internal user memory will be shared on the network.

#### Password for network access

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

The CIFS password for network sharing is configured here. This password applies both for sharing the USB storage medium as well as internal user memory.

The password is stored on the device in configuration file PFT50Config.xml .

#### Show password

Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (••••••).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

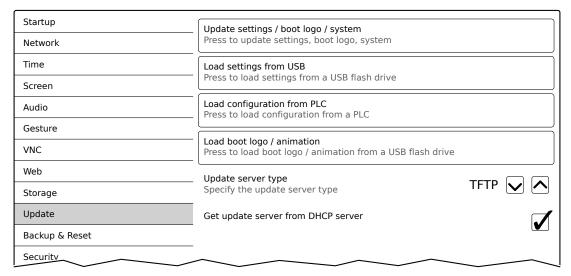
# Encrypt password

Default setting: Disabled

Enabled	The password is stored on the device in encrypted form.
Disabled	The password is stored on the device as plain text.

## 7.1.1.10 Service page Update

Various parts of the system can be updated from a range of different sources on this service page.



### Update settings / boot logo / system (button)

The Power Panel system is restarted with an update system. During the restart, the update files are searched for at the following sources in the specified order:

- 1) The USB storage medium connected to the Power Panel For the update process, only 1 USB flash drive is permitted to be connected to the Power Panel.
- 2) On the configured update server (see "Configuring the update server" on page 78)

The following update files are searched for:

File type	Filename
PPT image	PFT50Image.img.gz, PFT50Image.info, PFT50Image.img.gz.sig (see "PPT image" on page 93)
System settings	PFT50Config.xml (see "System settings" on page 93)
Boot logo	PPTLogo.bmp.gz (see "Boot logo" on page 94)

If valid update files are found during this search, they are loaded on the Power Panel and the system is restarted.

With this function, it is also possible to carry out a partial update if only a portion of the above-mentioned update files are on the USB flash drive.

# Information:

If the current settings of the Power Panel should be retained, XML file PFT50Config.xml is not permitted to exist on the source medium.

## Information:

It is generally only possible to install signed images on the Power Panel. If it is necessary to install an unsigned image, this must be explicitly allowed beforehand on service page Security.

#### Load settings from USB (button)

If no USB storage medium is connected, an appropriate message is displayed.

If a USB storage medium is connected, then a dialog box with USB interface IF3 and the name of the USB storage medium is displayed. After selection, the settings are loaded from XML file PFT50Config.xml .

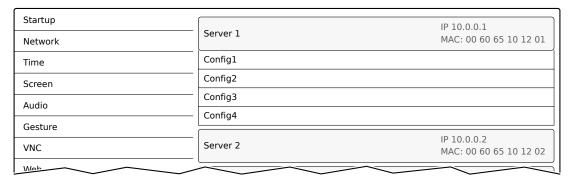
They can be checked and modified on the service pages if necessary after loading and before saving the settings. Data is stored using functions on service page Save & Exit (see "Service page Save & Exit" on page 86).

#### Load configuration from PLC (button)

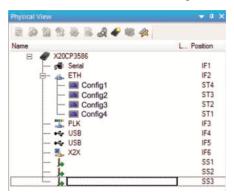
This function searches for controllers in the network that have a valid configuration for a Power Panel. After the search is complete (a few seconds), the discovered controllers are listed:

Startup Network	Server 1	IP 10.0.0.1 MAC: 00 60 65 10 12 01
Time	Server 2	IP 10.0.0.2
Screen		MAC: 00 60 65 10 12 02
Audio	Server 3	IP 10.0.0.3 MAC: 00 60 65 10 12 03
Gesture		
VNC	Server 4	IP 10.0.0.4 MAC: 00 60 65 10 12 04
Web		IP 10.0.0.5
Storage	Server 5	MAC: 00 60 65 10 12 05
Update		
	~ ~ ~ /	~

When selecting an entry, a list with the configurations of all Power Panels for the selected controller is displayed:



The names of the listed configurations match the names of the configurations in Automation Studio:



If a configuration entry is selected, a dialog box appears prompting to confirm the loading of the selected configuration. After the data is loaded, the application switches to service page Save & Exit. The loaded configuration can now be saved with a corresponding command (see section "Service page Save & Exit" on page 86). Alternatively, the user can check the loaded settings on all service pages before saving and change them if necessary.

#### Information:

In order for Power Panel configurations to be found on and loaded from controllers, the following requirements apply to these controllers:

- SNMP is enabled (Ethernet interface configuration on the controller).
- TFTP is enabled (controller configuration).

### Load boot logo / animation (button)

If no USB storage medium is connected, an appropriate message is displayed.

If a USB storage medium is connected, then a dialog box with USB interface IF3 and the name of the USB memory device is displayed. After selection, the boot logo and/or boot animation are loaded and stored on the Power Panel.

The following syntax must be used for filenames:

File type	Filename
Boot logo	PPTLogo.bmp.gz (see "Boot logo" on page 94)
Boot animation	PPTLogoA.gif (see "Boot animation" on page 94)

If a boot logo and/or boot animation are already on the Power Panel, they will be overwritten.

# 7.1.1.10.1 Configuring the update server

The following figure shows the default settings for the configuration of the update server on service page *Update*:

#### Update server type

Default setting: TFTP

The following settings are possible:

TFTP	TFTP (Trivial File Transfer Protocol) is a very simple data transfer protocol.
FTP	FTP (File Transfer Protocol) offers more possibilities than TFTP.

## Get update server from DHCP server

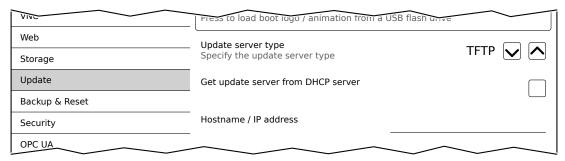
Default setting: Enabled

All information required by the update server for the configured type is requested from the DHCP server. This corresponds to the information that must be entered manually when the option is disabled (see the following two sections "Configuration of an update server of the type TFTP and FTP").

If this option is disabled, one or more additional input fields are displayed depending on the selected update server type. They are described in the following two sections:

#### 7.1.1.10.1.1 Configuring an update server of type TFTP

If option *Get update server from DHCP server* is disabled and update server type *TFTP* is selected, input field *Hostname / IP address* is displayed:



#### Hostname / IP address

Default setting: EMPTY (no update server entered)

To update a Power Panel from a TFTP server, a hostname or IP address for the TFTP server must be specified.

By default, port 69 is used for the connection to the TFTP server.

If the TFTP server makes its services available on a different port, the port must be specified explicitly together with the IP address or hostname:

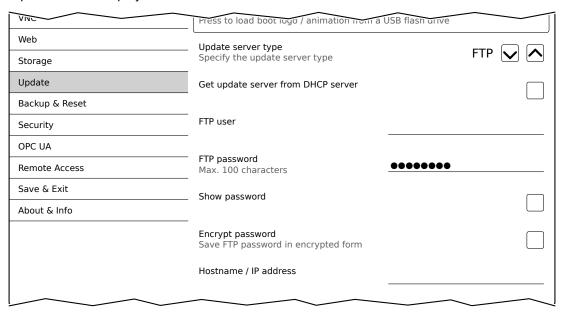
Syntax	Example	Description
IP address:Port	10.23.20.38:1069	A connection to IP address 10.23.20.38 is established on port 1069.
Hostname:Port	tftp-server:1169	A connection to the host tftp-server is established on port 1169.

# Information:

If the entered IP address is incomplete or no TFTP server exists for the IP address or entered hostname, a message will be output that no network connection could be established if a connection attempt fails during the update process.

## 7.1.1.10.1.2 Configuring an update server of type FTP

If option *Get update server from DHCP server* is disabled and update server type *FTP* is selected, the following additional input fields are displayed:



#### FTP user

Default setting: EMPTY (no username entered)

To access an update server of type FTP, an FTP username must be entered here.

## FTP password

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

To access an update server of type FTP, an FTP password must be entered here.

The FTP password is stored on the device in configuration file PFT50Config.xml .

# Show password

Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (●●●●●).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

#### **Encrypt password**

Default setting: Disabled

Enabled	The password is stored on the device in encrypted form.
Disabled	The password is stored on the device as plain text.

#### Hostname / IP address

Default setting: EMPTY (no update server entered)

To update a Power Panel from an FTP server, a hostname or IP address for the FTP server must be specified.

The FTP connection is generally established via standard port 21 on the FTP server.

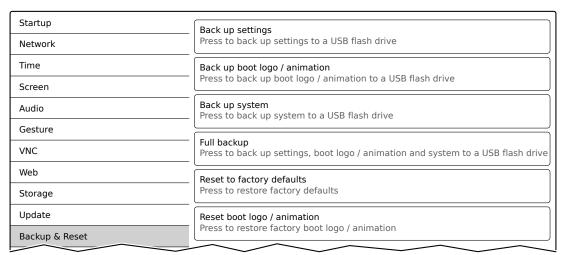
It is not possible to enter other ports!

## Information:

If the entered IP address is incomplete or no FTP server exists for the IP address or entered hostname, a message will be output that no network connection could be established if a connection attempt fails during the update process.

#### 7.1.1.11 Service page Backup & Reset

On this service page, individual parts or the entire system can be backed up or restored. A factory reset is also possible:



#### Information:

Only settings that have already been saved with a function of service page Save & Exit are taken into account and backed up when a backup is created. Unsaved service page settings are not backed up.

#### Back up settings (button)

Accessing this function creates a backup of the settings and stores it on the USB storage medium.

## Back up boot logo / animation (button)

Accessing this function creates a backup of the boot logo and stores it on the USB storage medium.

# Back up system (button)

When this function is executed, a backup of the PPT system is created and stored on the USB storage device as a PPT image (without signature) .

### Information:

Creating a backup can take several minutes.

## Full backup (button)

Accessing this function creates a full backup of the system, its settings and boot logo and stores it on the USB storage medium.

#### Information:

Creating a backup can take several minutes.

#### Reset to factory defaults (button)

Accessing this function loads the factory default settings. The device is thus reset to a defined state:

- User settings (server names and hostnames, passwords, etc.) are deleted.
- · Boot logos are deleted.
- · The client certificate of the web browser is deleted.

# Information:

The current settings made on the service pages are not saved and will be lost.

### Reset boot logo / animation (button)

Accessing this function resets the boot logo and the boot animation to the factory default settings (summary screen).

# 7.1.1.12 Service page Security

Startup	Service password	•••••
Network	Password for setup changes Max. 100 characters	
Time		
Screen	Show password	
Audio	Encrypt password	
Gesture	Save security password in encrypted form	
VNC	Allow untrusted images	
Web	Enable installation of unsigned images (vo	platile setting)!
Storage		
Update		
Backup & Reset		
Security		
OPC UA		
Remote Access		

#### Service password

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

The service password is used to secure access to the service pages (see "Entering the service password" on page 55).

The password is stored on the device in configuration file PFT50Config.xml .

#### Show password

Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (●●●●●).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

## **Encrypt password**

Default setting: Disabled

Enabled	The password is stored on the device in encrypted form.
Disabled	The password is stored on the device as plain text.

#### Allow untrusted images

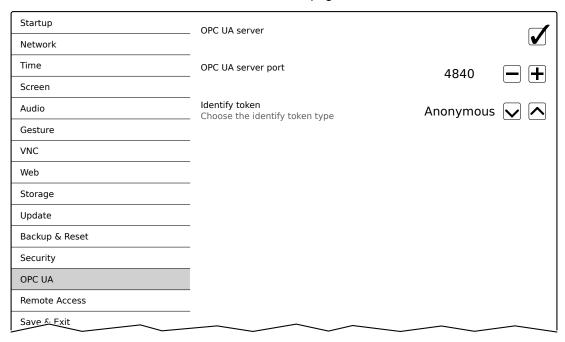
Default setting: Disabled

Disabled	Only signed images can be installed on the device.
Enabled	If this option is enabled, an unsigned image can be installed (see service page "Update" on page
	76).
	This option is not saved in the system settings and immediately disabled after exiting the service
	pages.

This function is necessary to install a system backup created earlier on the device, for example (backups are generally saved without a signature).

### 7.1.1.13 Service page OPC UA

The OPC UA server can be enabled/disabled on this service page:



## OPC UA server

Default setting: Disabled

If this setting is enabled, options *Port* and *Identify token* are available.

Either the hostname specified on service page *Network* or the IP address entered there must be used as the address for the OPC UA server.

#### Notice!

The OPC UA server is stopped while the Power Panel service page is active.

#### **Port**

Default setting: 4840

The port number used to reach the OPC UA server of the Power Panel is specified here.

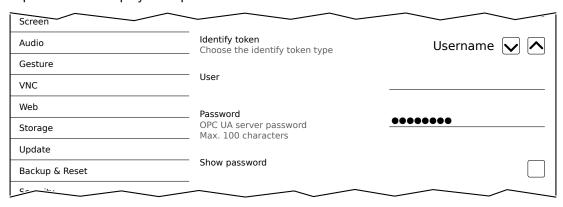
## Identify token

Default setting: Anonymous

The following selections are available for option *Identify token*:

Anonymous	The OPC UA server can be reached within the network without authentication.
Username	The OPC UA server can only be accessed within the network by specifying a username and pass-
	word.

Additional input fields are displayed if option *Username* is selected:



#### User

Default setting: EMPTY (no username entered)

For access with authentication, a username must be entered here.

#### **Password**

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

For access with authentication, a password must be entered here.

The password is stored on the device in configuration file PFT50Config.xml .

#### Show password

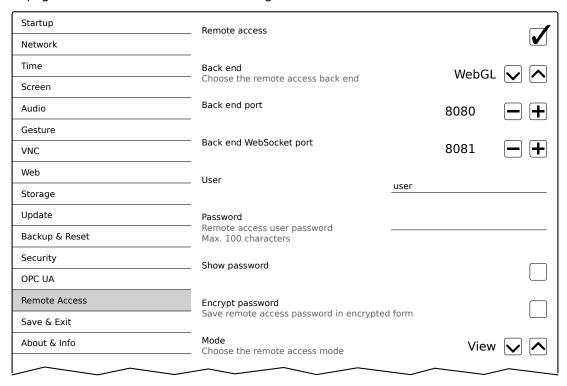
Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (●●●●●).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

#### 7.1.1.14 Service page Remote Access

This service page is used to enable/disable and configure remote access for the Power Panel:



The following options are available when remote access is enabled:

- Displaying the display content of the Power Panel on a remote client.
- · Operating the Power Panel from a remote client with mouse and keyboard.

## Information:

Remote access within the network where the Power Panel is located takes place using an unencrypted and non-secure protocol.

The network must be secured accordingly, and corresponding security measures (e.g. VPN access to the network) are strongly recommended for external access.

The remote access function consumes additional CPU power due to the system; this may affect the operability of the Power Panel. It is therefore recommended not to enable this function permanently, but to switch it on only when necessary.

### Remote access

Default setting: Disabled

Enabled	Remote access to the Power Panel is enabled.
Disabled	Remote access to the Power Panel is disabled.

The following remote access settings can be changed regardless of whether this option is enabled or disabled.

#### Back end

Default setting: WebGL

The following choices are available for option Back end:

WebGL	Enables remote access via web browser. The Web Graphics Library (WebGL) interface is used for this.
VNC	Allow remote access via VNC client.

## Back end port

Default setting: See the following table.

This defines the port number used by the remote client to access the Power Panel.

Port number	Back end = WebGL	Back end = VNC
1024 - 65,535	Default port: 8080	Default port: 5900
	Valid range for entering the port number.	
	Inputs outside this range are not possible.	

#### Back end WebSocket port (if Back end = WebGL)

Default setting: See the following table.

This defines the port number used by the remote client to establish WebSocket communication between the web browser and Power Panel.

Port number	Back end = WebGL
1024 - 65,535	Default port: 8081
	Valid range for entering the port number.
	Inputs outside this range are not possible.

#### User

Default setting: user

A username must be entered at this point for access with authentication.

#### **Password**

Default setting: EMPTY (no password entered)

Input range: Max. 100 characters

A password must be entered at this point for access with authentication.

The password is stored on the device in configuration file PFT50Config.xml .

### Show password

Default setting: Disabled

Enabled	The password is displayed in the input field as plain text.
Disabled	The password is hidden in the input field by placeholder characters (●●●●●).

**Note:** This option only switches the display of the password between plain text and wildcard characters. This option is not saved. This option is always disabled after restart.

### **Encrypt password**

Default setting: Disabled

Enabled	The password is stored on the device in encrypted form.
Disabled	The password is stored on the device as plain text.

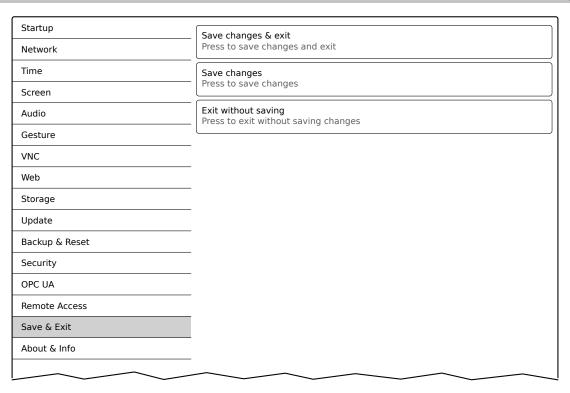
#### Mode

Selects the remote access operating mode:

	Display of content	Operation with mouse and keyboard
View	Yes	No
Control	Yes	Yes

# 7.1.1.15 Service page Save & Exit

On this page, the settings currently made or modified on service pages can be saved using *Save*. *Exit* leaves the service pages, and the Power Panel starts in the configured start mode (see "Service page Startup" on page 58).



## Save changes & exit (button)

All changes that have been made are saved and the Power Panel is started with the specified settings (see "Service page Startup" on page 58)

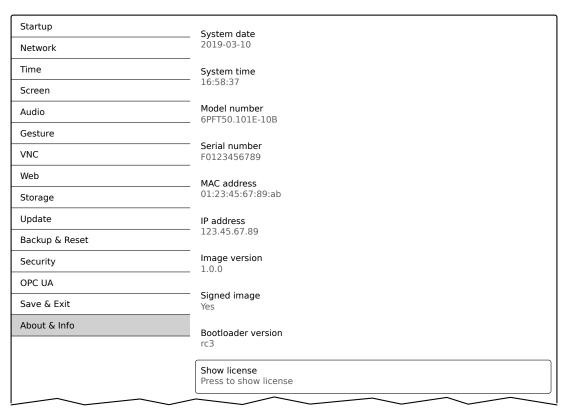
## Save changes (button)

All changes made are saved. The service pages are not exited, and other settings can be made.

## Exit without saving (button)

Changes made are not saved and will be lost. The Power Panel starts as configured with the last settings that were saved (see "Service page Startup" on page 58).

# 7.1.1.16 Service page About & Info



The following information about the Power Panel is displayed on this service page:

System date	Current date		
System time	Current time	Current time	
Model number	Device number / mo	del number / order number	
Serial number	Serial number of the	Serial number of the device	
MAC address	MAC address of the	MAC address of the network interface	
IP address	IP address currently	IP address currently being used in the network	
Image version	Version number of the	Version number of the PPT system (PPT image)	
Signed image	Information about wh	Information about whether a signed or unsigned image is installed on the Power Panel:	
	Yes	A signed image is installed.	
	No	An unsigned image is installed.	
	Not supported	The Power Panel does not support signed images. This means that the signature is not checked.	
Bootloader version	Version number of the bootloader		

# Show license (button)

Accessing this function displays the licenses of the software components used on the Power Panel.

# 7.2 Update

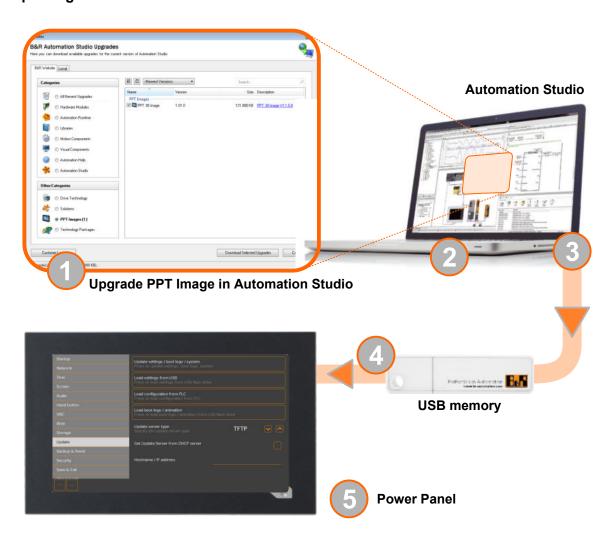
# Information:

It is important to note that a special accessory cable is necessary to be able to connect USB accessories to the FT50 (see "FT50 PoE cable - M22/RJ45, USB" on page 36).

In principle, it is possible to connect a USB hub. Operation of multiple USB devices is only possible to a limited extent, however. It is important to ensure that only one USB flash drive is connected. Mouse and keyboard can be operated simultaneously.

When updating the Power Panel with a USB flash drive, it is important to note that the drive must have a capacity of at least 256 MB. In addition, an industrial-grade USB flash drive must be used (see "Storage media" on page 163).

## 7.2.1 Updating with Automation Studio and USB flash drive



- 1. Update the PPT image for the Power Panel in Automation Studio (upgrade).
- 2. Configure the Power Panel in Automation Studio according to requirements.
- 3. Connect a USB flash drive to the computer and select the following menu command in Automation Studio:
  - Project / Project installation / Generate project installation package

The corresponding device (Power Panel) must be selected in the following selection dialog box. After confirming the selection, the target medium (connected USB flash drive) is selected and the process is started using button [Download to application memory].

The USB flash drive is reformatted and the following data is copied to the root directory:

PPT system	Configuration	Boot logo/animation	
<ul> <li>PFT50Image.img.gz</li> </ul>	<ul> <li>PFT50Config.xml</li> </ul>	<ul> <li>PPTLogo.bmp.gz</li> </ul>	
<ul> <li>PFT50Image.info</li> </ul>		<ul> <li>PPTLogoA.gif</li> </ul>	

Depending on the configuration, files PPTLogo.bmp.gz and PPTLogoA.gif may not be included.

4. Connect the USB flash drive to the Power Panel.

· PFT50Image.img.gz.sig

- 5. Select one of the following functions on service page *Update* depending on what should be updated (see section "Service page Update" on page 76):
  - Update settings / boot logo / system
  - Load settings from USB
  - ° Load boot logo / animation

### 7.2.2 Updating with a downloaded from the website and USB flash drive

Updated versions of the PPT system are made available on the B&R website in the form of an upgrade package that includes a PPT image. To update the PPT system using an upgrade package from the B&R website, the following steps must be carried out.

- 1. Download the Power Panel T-Series upgrade package from the B&R website (<u>www.br-automation.com</u>). This upgrade package is available in various places on the website:
  - ° Directly on the product page (it is possible to search for the model number) in section "PPT upgrades" under tab "Downloads".
  - ° On the download page under Software > Automation Studio > Automation Studio 4.3 (or higher) in category "Linux images".

Download the upgrade package in **ZIP format** (not EXE format)!

- 2. Unzip the ZIP file with the corresponding contents directly into the root directory of a USB flash drive:
  - ° PFT50Image.img.gz
  - ° PFT50Image.info
  - ° PFT50Image.img.gz.sig
  - ° Readme.txt
- 3. Connect the USB flash drive to the Power Panel.
- 4. Select function *Update settings / boot logo / system* on service page *Update* (see section "Service page Update" on page 76).

### 7.2.3 Duplicating an existing setup using a USB flash drive

It is possible to save the system, system settings, boot logo and boot animation from one Power Panel to a USB flash drive and apply all or part of the setup to another Power Panel.

Perform the following steps to do so:

- 1. Connect a USB flash drive to the Power Panel whose configuration should be copied.
- On service page Backup & Reset, the functions can be used to back up the entire system or just portions
  of it (configuration, boot logo, boot animation) on a USB flash drive (see "Service page Backup & Reset"
  on page 81).
- 3. Then connect the USB flash drive to another Power Panel.
- 4. On service page *Update*, use a corresponding function to update the Power Panel with the backed up system (or portions of it) (see section "Service page Update" on page 76).

Note the following when updating a Power Panel with a backup created on another device:

Restore from:	Note
PPT system	The backup of a PPT system (PPT image) can be used to update any Power Panel in the same family
	(T30, T50, etc.).
Configuration	The backup of a configuration (system settings) can be used to update any Power Panel in the same family (T30, T50, etc.).
	Note that certain settings may have to be adapted to the specific device, however (e.g. position of the boot animation).
Boot logo, boot animation	A boot logo and/or boot animation can only be used on devices with the same display size.

# 8 Software

This chapter provides software-specific information (RFB extension, image formats) that has been referenced multiple times in other chapters.

- · License information about the PPT System
- · Web browser information
- File formats
- RFB extension
- OPC UA server

# 8.1 License information about the PPT System

#### Display licenses on the service page About & Info

The licenses of the software components used on the Power Panel can be displayed directly on the service page *About & Info* (see "Show license (button)" on page 88).

#### License information in ZIP archive license.zip

ZIP archive *license.zip* contains file *license.manifest*, which contains an overview of software components being used with name, version and license information. In addition, the ZIP archive also contains detailed version information for each individual software component.

Information: When unpacking the ZIP archive, note that for technical reasons files with the same name may be included.

ZIP archive *license.zip* is included in the following image packages:

Type of PPT image <sup>1)</sup>	Description	
Automation Studio upgrade	Executable file for installation in Automation Studio <sup>2)</sup>	
	Location of license.zip after installation:	
	<ul> <li>Typically in the local installation directory for Automation Studio:</li> <li>C:\BrAutomation\AS\[Panel\Series]\[Panel\Variant]\V[Image\Version]</li> </ul>	
	• [PanelSeries]: e.g. PPC, PPT, PMT or PFT	
	• [PanelVariant]: e.g. 30, 50 or 80	
	• [ImageVersion]: Linux image version <sup>3)</sup>	
ZIP archive	ZIP archive that, in addition to the Linux image, also contains file license.zip.	

<sup>1)</sup> The PPT image is a Linux image. This image is an image of the Power Panel operating system (see "PPT image" on page 93) that is required to installation or update it.

#### 3) The Linux image version is not identical to the version from the Power Panel hardware upgrade.

# Information:

The license information in license.zip always refers to a specific image version.

Install/Update Linux image on Power Panel: see "Update" on page 89

 $<sup>\</sup>hbox{See Automation Help for information about the download and installation in Automation Studio.} \\$ 

## 8.2 Web browser information

The implemented web browser of the terminal offers full JavaScript support!

The following features are not supported, however:

- Java
- Flash

### 8.2.1 Installing certificates in the browser

If user-defined certificates are required for the browser running on the Power Panel, they can be provided as follows:

- Set up network sharing for internal user memory "usershare". See also: "Service page Storage" on page 75
- Create a directory called "cert" in the internal user memory.
- Copy user-defined certificates into directory cert.
   Permissible file extensions for certificates: ".cer" or ".crt"

Each time the browser is started, all certificates are imported from directory cert.

### 8.2.2 Supported fonts

#### System fonts

Fonts are installed in the PPT system that are used by the browser to display HTML-based HMI applications (mapp View):

	Installed starting with PPT system	
Font	1.2.2	
Arial	<b>✓</b>	
Arial Unicode	<b>✓</b>	
DejaVu Sans	•	
DejaVu Sans DejaVu Sans Mono	<b>✓</b>	
Verdana	<b>✓</b>	

#### Substitute fonts (font mapping)

If the HTML-based HMI application (mapp View) contains fonts that do not exist on the PPT system, the following system fonts are used as replacements instead:

	Substitute font starting with PPT system	
Font	1.2.2	
serif	Arial, Regular	
sans-serif	DejaVu Sans, Book	
monospace	DejaVu Sans Mono, Book	
Arial	Arial, Regular	
Helvetica	Arial, Regular	
Verdana	Verdana, Regular	
Times New Roman	Arial, Regular	
Courier New	DejaVu Sans Mono, Book	

<sup>\*) &</sup>quot;serif", "sans-serif" and "monospace" are "generic" fonts.

16 px is set as the default font size.

# 8.2.3 Supported video formats

Videos can be displayed in web mode (see "Configuring web mode" on page 70). The following container formats are supported when embedding videos into a web-based HMI application:

- WebM
- MP4 (H.264)

## 8.2.4 User agent

For identification purposes, each web browser transmits various information (e.g. browser name, version, operating system) to the web server providing the HTML page.

As part of the HTTP header, a web browser identifies itself as a user agent. With PPT image version 1.3.0 and later, the web browser on the Power Panel transmits additional information.

Example:	User-Agent: Mozilla/5.0 BRPanel/1.0 (PPT50;landscape;1280x800;6PPT50.101E-16B;)
----------	---

Description of the Power Panel information:

Identification := BRP	anel/ <version> (<type>;<or< th=""><th>rientation&gt;;<resolution>;<orderid>)</orderid></resolution></th></or<></type></version>	rientation>; <resolution>;<orderid>)</orderid></resolution>	
BRPanel	Identification as B&R panel.		
<version></version>	Version number of the commen theses correctly.  Format of <version>: <number of="" version="">: <number of="" th="" version<=""><th>t (expression in parentheses), which is primarily used to evaluate the information within the paren-</th></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></number></version>	t (expression in parentheses), which is primarily used to evaluate the information within the paren-	
<type></type>	Name of device family: PPT50,		
<orientation></orientation>	, ,	splay contains one of the following two values:	
	landscape	Landscape	
	portrait	Portrait	
<resolution></resolution>	Resolution of the device in the	format "WIDTHxHEIGHT".	
	Format of <resolution>: WIDTHXHEIGHT</resolution>		
	WIDTH	Width of the display in pixels.	
	HEIGHT	Height of the display in pixels.	
	The width and height of the dis	play are output according to the orientation:	
	Example for landscape format: 1280x800		
	Example for portrait for	mat: 800x1280	
<orderid></orderid>	Model number of the Power Pa	nel.	

## 8.3 File formats

# 8.3.1 PPT image

The PPT image is a compressed image of the PPT system (Power Panel T-Series operating system). The PPT image is a package and consists of the following files:

File	Description
PFT50Image.img.gz	Compressed image of the PPT system.
PFT50Image.img.gz.sig	Signature of the image.
PFT50Image.info	Information about the image (MD5 checksum, image version, etc.).

# Information:

This Power Panel supports signed images. During an update, the Power Panel uses the supplied signature to determine whether the image comes from a trusted source.

During an update, the MD5 checksum determines if the image is free of errors.

## 8.3.2 System settings

Filename: PFT50Config.xml

The system settings that can be defined by the user on the service pages are saved on the Power Panel in XML file PFT50Config.xml .

When backing up and restoring (see the two service pages Backup & Reset and Update) the system settings, the data for the settings is exchanged via an XML file with this name.

# 8.3.3 Boot logo

Filename: PPTLogo.bmp.gz

The boot logo is displayed during the startup phase of the Power Panel.

If configured on service page Startup, the boot logo is also displayed in web/VNC mode while establishing the connection.

The boot logo must meet the following requirements:

File format	Only file format BMP (Windows bitmap) is permitted for the boot logo.
Size	The size of the graphic must correspond to the size of the display in full screen mode.  To determine the size of the display on the Power Panel being used, see section "Technical data".
Name	The boot logo must be compressed in GZ format (GNU ZIP file). If the boot logo (any name possible) is added in Automation Studio and then the data for the USB flash drive is generated, then Automation Studio will compress the boot logo into the GZ format and name the file accordingly.  The user only has to make sure that the boot logo is compressed into the GZ format and the file is named accordingly if Automation Studio is not being used.
Color depth	The color depth is limited to 24-bit.

#### 8.3.4 Boot animation

Filename: PPTLogoA.gif

If configured on service page Startup, the boot animation is displayed in web or VNC mode while establishing the connection.

The boot animation must meet the following requirements:

File format	Only file format GIF (Graphics Interchange Format) is permitted for the boot animation.
Size	The size of the boot animation is not permitted to exceed the size of the used display in full screen mode.
Name	PPTLogoA.gif  If the boot animation (any name possible) is added in Automation Studio and then the data for the USB flash drive is generated, then Automation Studio will name the file accordingly.  The user only has to make sure that the boot animation is named accordingly if Automation Studio is not being used. It is important to ensure that capitalization matches the name specified above!
Position	When specifying the position of the boot animation (see service page "Screen" on page 64) it is important to ensure that the <b>entire</b> boot animation can still be shown on the display.
Application	The boot animation is superimposed over an existing static boot logo.  The boot animation is only displayed when starting web or VNC mode. It is not displayed while the device is booting.

#### 8.4 RFB extension

In addition to transferring screen content, the RFB protocol (remote frame buffer protocol) is also used to transfer data between a VNC client and the VNC server. This makes it possible to control VNC-based HMI applications. These extensions can be configured in Automation Studio using library AsRfbExt.

Library AsRfbExt provides additional options for controlling VNC-based HMI applications and evaluating any input devices connected to the client (B&R device). B&R's VNC Viewer must be used on the client with the RFB extension enabled.

RFB extensions offer the following basic functions:

- · Evaluating additional control devices on the Power Panel.
- · Querying the temperature of the VNC client.
- · Starting a process on the VNC client to carry out certain functions.
- · Determining and limiting the number of connected VNC clients.
- Disconnecting VNC clients from the VNC server (Power Panel is not turned off, configurations remain).
- Reading the controller's operating hours.

### Information:

For more information about RFB extensions and programming with library *AsRfbExt*, see the documentation in Automation Help.

## Information:

Only one Power Panel with enabled RFB extension can be operated per B&R VNC server.

The following functions are described in this section:

- Temperature monitoring
- · Adjusting display brightness
- · Outputting an audio signal

## 8.4.1 Temperature monitoring

#### Use case

Under certain circumstances (e.g. if the device is operated near the maximum permissible ambient temperature), it makes sense for the application to monitor the temperature of the CPU component housing. The application can take appropriate measures if a certain temperature is exceeded.

#### Notice!

The temperature of the CPU housing is not permitted to exceed 105°C. The service life of the processor may be reduced at continuously high temperatures.

### 8.4.2 Adjusting display brightness

Necessary function of library AsRfbExt: RfbExtStartProcess()

Function *RfbExtStartProcess()* is used to adjust the display brightness process *dim*. Here, parameter *pcmdLine* is used to call the command line process as follows:

Call syntax	im brightness			
Parameter	brightness Brightness of the display in percent [%]:			
	Valid range: 0 - 100			
Example	pcmdLine: dim 75			
	The display brightness is set to 75%.			
Implementation	In the VNC-based HMI application, a button is assigned a corresponding function that calls RfbExtStartProcess() with the correspond			
	g parameters. The application can take the display brightness from an input field that has also been defined in the HMI application.			

The display brightness set with *dim* changes the current display setting but does not change the default setting used after restarting the device.

The default display brightness setting is configured on service page *Screen* or in Automation Studio (see section "Configuration" on page 54).

In contrast to the setting option on service page *Screen*, *dim* can be used to set the entire brightness range of the display from 0 to 100% (see "Service page Screen" on page 64).

# 8.4.3 Outputting an audio signal

Necessary function of library AsRfbExt: RfbExtStartProcess()

Function *RfbExtStartProcess()* is used to start the *beep* process and output an audio signal on the Power Panel. Here, parameter *pcmdLine* is used to call the command line process as follows:

Call syntax	beep [frequency] [duration]		
Parameter	frequency Frequency of the audio signal in hertz [Hz].  Valid range: 10 - 15000		
	duration Duration of the audio signal in milliseconds [ms].  Valid range: 10 - 500		
	a value is not specified, the default setting is used.		
Example	pcmdLine: beep 880 400		
	An audio signal with 880 Hz and duration of 400 ms is output.		
Implementation	The VNC-based HMI application can output an audio signal using function RfbExtStartProcess() in order to clearly illustrate certain states or actions.		

Calling beep with specific parameters does not change the default setting for the device.

The default audio signal setting is configured on service page *Audio* or in Automation Studio (see section "Configuration" on page 54).

# Information:

Emitting an audible tone with *beep* is always done independently of the setting on service page *Audio* (see "Service page Audio" on page 66).

### 8.5 OPC UA server

The Power Panel can be configured as an OPC UA server (see "Service page OPC UA" on page 83). The OPC UA server on the Power Panel provides the following functionalities:

- Configuration of the Power Panel as is also possible via the "service pages" on page 54.
- Reading status information (temperature, version information, etc.).
- · Querying touch screen keys.
- · Calling functions/methods (setting brightness, triggering signal tone, etc.)

# Notice!

The OPC UA server is stopped while the Power Panel service page is active.

### General information about OPC UA

Corresponding knowledge of "OPC Unified Architecture" (OPC UA) is required to communicate with the OPC UA server on the Power Panel. Corresponding information is available e.g. on the OPC Foundation website (opcfoundation.org).

#### Communication via library AsOpcUac

Library AsOpcUac can be used to create an OPC UA client on B&R systems that communicates with the OPC UA server of the Power Panel.

Working groups of the OPC Foundation and PLCopen collaborated to develop the function blocks for OPC UA client functionality contained in the library.

# Information:

Additional information about OPC UA and programming with library AsOpcUac is available in Automation Help.

#### **Graphical OPC UA clients**

During development, it is helpful to use a graphical OPC UA client to determine attributes and node IDs of nodes and methods.

OPC UA client *UaExpert* from Unified Automation GmbH (www.unified-automation.com) is very common.

#### 8.5.1 Information model

#### **General information**

In addition to the base model of the OPC UA specification and OPC UA companion specification for device integration (DI = device integration), the OPC UA information model of the Power Panel provides both properties as well as methods for operating the Power Panel in its own address space (namespace).

#### 8.5.1.1 Namespaces

Namespaces are used by OPC UA to generate unique identifiers. Attributes *Nodeld* and *BrowseName* are identifiers that identify a node within the entire information model. A node in the OPC UA address space is uniquely identified with attribute *Nodeld*. Attribute *BrowseName* alone cannot be used to unambiguously and uniquely identify a node. Different nodes can use the same *BrowseName*. BrowseNames can be combined into a path (Browse path), which makes it possible to locate a certain node in the OPC UA address space and to determine attribute *Nodeld*.

Node identifiers are either specified in the OPC UA specification or by B&R itself. A namespace therefore specifies which institution defined the node (naming authority) and is specified in the form of a namespace URI.

The following namespaces are used in the OPC UA server of the Power Panel:

ns	Namespace URI	Description			
0	http://opcfoundation.org/UA/	Address space for types	Address space for types and objects defined in the OPC UA specification.		
		Namespace index	0		
1	urn:[hostname]/BR/UA/EmbeddedServer	This namespace URI is	the address space of device on which the OPC UA server is running.		
			Hostname of the OPC UA server. Corresponds to the hostname that was specified in the network settings of the device. If no hostname was specified in the network settings, name "6PFT50" is used automatically.		
		Namespace index	1		
2	http://opcfoundation.org/UA/DI/	Address space for types and objects defined in the OPC UA companion specification for devi- integration (DI).			
3	http://br-automation.com/OpcUa/BrTypes/	Address space for gene	ddress space for general types and objects defined by B&R.		
4	http://br-automation.com/OpcUa/HMI/Terminal/	Address space for types	s and objects of the device defined by B&R.		

ns Namespace index

# Information:

Namespace URIs are case-sensitive; this must be taken into account.

Only namespace indexes 0 and 1 are defined according to the OPC UA specification. The other namespace indexes in this documentation may differ from the indices generated on the device.

The recommended procedure here is to dynamically determine the namespace indexes and use a namespace cache.

### Notice!

Attribute Nodeld of each node can change with a new version of the PPT image.

The explicit (fixed) use of *Nodelds* results in problems in this case. *Nodelds* should therefore always be determined dynamically and managed in a node cache during communication with the OPC UA server.

#### Syntax for namespaces and nodes

This documentation describes a node in the information model using the namespace and *BrowseName*. The following syntax is used for this:

Path:	ath:		
ns:BrowseName	:BrowseName		
ns	Namespace index of the node.		
BrowseName	BrowseName of the node.		

A complete path to a node would look like this:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup/4:StartMode

#### 8.5.1.2 Symbols for object types

Depending on the object type of the nodes of the information model, the following symbols are used in some places:

Symbol	Object type Note	
	Folder	Contains additional objects/nodes.
8	BaseObject	Contains additional objects/nodes.
<b>♣</b>	FunctionalGroup Contains additional objects/nodes.	
1	Method These nodes provide methods for executing functions on the device.	
	Variable  These nodes provide variables/parameters for configuring the device or for reading information from the	
	Variable These nodes provide variables/parameters for reading information from the device.	
<i>\bar{V}_\circ}</i>	Property Specific properties for identifying the device are read out via these nodes.	



# 8.5.1.3 ParameterSet

All readable and writable parameter nodes of the Power Panel are accessible under the following path:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet

ns	Path to ParameterSet	Description
0	Root	Root directory.
0	Objects	Object directory.
2	DeviceSet	Device directory.
4	PowerPanelFT50	Node for the Power Panel.
2	ParameterSet	Node containing all available parameters of the device.

## Information:

Any changes made to the system settings using the parameters listed are only saved after method SaveConfiguration is called.

All parameter nodes are available under ParameterSet as well as under an alternative path. The parameters are structured in the following tables according to these alternative paths (function groups).

## Legend for tables

This legend applies to all of the following tables in this section:

- Namespace index (see "Namespaces" on page 97)
- The cross-references in column "BrowseName of the parameter" refer to the description of the nodes.
- S Column "Service page" contains cross-references to the service page where the parameter can also be changed.
- R Value attribute of the node can be read.
- Value attribute of the node can be changed.



# <page-header>

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio

ns	BrowseName of the parameter	Description	Service page	R	W	ı
4	EnableBuzzer	Enables/Disables the buzzer.		+	+	l
	BuzzerSource	Selects the trigger for the buzzer.	Audio	+	+	l
	BuzzerFrequency	Frequency of the buzzer.	Audio	+	+	l
	BuzzerDuration	Duration of the buzzer.		+	+	



# Configuration/Gesture

### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Gesture

ns	BrowseName of the parameter	Description	Service page	R	W
4	OpenServicePage	Configures opening the service page with a gesture.	Gesture	+	+



# 卷 Configuration/Network

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network

ns	BrowseName of the parameter	Description	Service page	R	W		
4	Hostname	Hostname of the Power Panel.				+	+
	NetworkMode	Network mode: DHCPClient or StaticIP. Setting corresponds to option DHCP on service page Network.		+	+		
	ActivateDNS	Enables DNS usage.		+	+		
	DNSSuffix	DNS suffix for the fully qualified domain name (FQDN).	Network	+	+		
	GetDNSFromDHCP	Enables/Disables obtaining IP addresses of the DNS servers from DHCP.		+	+		
	PrimaryDNS	Address of the first DNS server.		+	+		
	SecondaryDNS	Address of the second DNS server.		+	+		
	TertiaryDNS	Address of the third DNS server.		+	+		
	IpAddress	Static IP address of the Power Panel.	1	+	+		
	SubnetMask	Subnet mask.	1	+	+		
	DefaultGateway	IP address of the default gateway.	1	+	+		



# ♣ Configuration/RemoteAccess

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess

ns	BrowseName of the parameter	Description	Service page	R	W
4	EnableRemoteAccess	Enables/Disables remote access.		+	+
	RemoteAccessBackEnd	Selects which technology is used for remote access.		+	+
	RemoteAccessModeWebGL	Selects the WebGL remote access operating mode.	Damata	+	+
	RemoteAccessPortWebGL	Network port for WebGL remote access.	Remote access	+	+
	RemoteAccessWSPortWebGL	Network port for WebSocket communication with WebGL remote access.	access	+	+
	RemoteAccessModeVNC	Selects the VNC remote access operating mode.		+	+
	RemoteAccessPortVNC	Network port for VNC remote access.		+	+



# & Configuration/Screen

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen

ns	BrowseName of the parameter	Description	Service page	R	W
4	DisplayBrightness	Screen brightness.		+	+
	ScreenRotation	Angle of rotation of the display.		+	+
	EnableScreensaver	Enables/Disables the screensaver.		+	+
	ScreensaverIdleTime	Time without touch activity after which the screensaver is displayed.	Screen	+	+
	ScreensaverType	Screensaver mode.	Screen	+	+
	BootAnimationDelay	Delay in milliseconds between frames of the GIF animation.		+	+
İ	BootAnimationLeftPos	Defines the distance of an existing boot animation to the left edge of the display.		+	+
	BootAnimationTopPos	Defines the distance of an existing boot animation to the right edge of the display.		+	+



# Configuration/Startup

# Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup

ns	BrowseName of the parameter	Description	Service page	R	W
4	StartMode	Power Panel start mode: ServicePage, VNC or Web.		+	+
	ShowBootLogoVNC	Enables/Disables the boot logo or boot animation of the system while connecting to the VNC		+	+
		server.	Startup		
	ShowBootLogoWeb	Enables/Disables the boot logo or boot animation of the system while connecting to the web		+	+
		server.			



# & Configuration/Storage

## Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Storage

1	าร	BrowseName of the parameter	Description	Service page	R	W
	4	USBMemoryShare	Enables/Disables network sharing to the connected USB storage medium.	Storage	+	+
	ſ	UserMemoryShare	Enables/Disables network sharing to internal user memory.	Sidiage	+	+



# Configuration/Time

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Time

n	BrowseName of the parameter	Description	Service page	R	W
4	EnableNTPClient	Enables/Disables the NTP client for time synchronization.	Time	+	+
	NTPServer1	Address of an NTP server.	Time	+	+



# **&** Configuration/Vnc

# Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc

ns	BrowseName of the parameter	Description	Service page	R	W
4	VNCServer	Address of the VNC server.		+	+
	UseRfbExtension	Enables/Disables the RFB extension in VNC mode.		+	+
	VNCConnectionMonitor	Enables/Disables monitoring of the connection to the VNC server.	VNC	+	+
	VNCLocalWindowScaling	Enables/Disables automatic scaling of the HMI application in VNC mode.		+	+
	VNCBackgroundColor	Changes the background color of the VNC client.		+	+





# 🍪 Configuration/Web

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web

ns	BrowseName of the parameter	Description	Service page	R	W
4	WebServer	Address of the web server.		+	+
	VirtualKeyboardWeb	Enables/Disables the on-screen keyboard in web mode.		+	+
	DisablePinchGesture	The two-finger gesture (pinch-to-zoom) for zooming the browser content is disabled. Zooming the entire HMI application is prevented.		+	+
	SetOverrideViewport	Enables/Disables viewport settings.	Web	+	+
	ViewportSettings	Viewport settings.		+	+
	IgnoreServerCertificateErrors	Enables/Disables warnings regarding server certificates.		+	+
	EnableScreenCapture	Enables/Disables the screen capture API.		+	+
	SuppressScrnCaptSecWarn	Enables/Disables the security warning when the screen capture is started.		+	+



# Control/ConnectionWatchdog

## Alternative path (function group):

/0: Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:ConnectionWatchdog

n	BrowseName of the method	Description	R	W
4	ConnectionWatchdogTimeout	This parameter defines the period for the watchdog timeout or disables the watchdog function.	+	+
	ConnectionWatchdogTrigger	This parameter is used firstly to enable the watchdog and secondly to trigger it.	+	+



# Diagnostics

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics

ns	BrowseName of the information	Description	R	W
4	CPUCore0Usage	CPU utilization of core 0 (percent).	+	
4	CPUCore1Usage	CPU utilization of core 1 (percent).	+	
4	CPUCore2Usage	CPU utilization of core 2 (percent).	+	
		This value is only available on Power Panel FT50 with display sizes ≥15.6".		
4	CPUCore3Usage	CPU utilization of core 3 (percent).	+	
		This value is only available on Power Panel FT50 with display sizes ≥15.6".		
4	CPUUsage	CPU utilization of all cores (percent).	+	
4	MemoryAvailable	Available RAM in MB.	+	
4	MemoryTotal	Entire RAM of system in MB.	+	



# **Status**

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Status

n	BrowseName of the parameter	Description	Service page	R	W
4	Temperature0	Temperature of the CPU housing: See Temperature monitoring.	About & Info	+	
	USBFlashDrive0	Indicates whether a USB flash drive is connected.		+	



# **Solution**

# Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:UserInterface

ı	าร	BrowseName of the parameter	Description	R	W	1
	4	RGBLed00	Parameter for setting the color of the front LED.	+	+	1

# 8.5.1.4 A MethodSet

All methods of the Power Panel are accessible under the following path:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet

ns	Path/Node	Description
0	Root	Root directory
0	Objects	Object directory
2	DeviceSet	Device directory
4	PowerPanelFT50	Node for the "Power Panel " device
2	MethodSet	Node containing all methods of the device

ns	BrowseName of the method	Description
4	AwakePanel	"Wakes up" the Power Panel if the screensaver is running.
	BuzzerDefault	Plays the signal tone with the system settings.
	BuzzerWithPara	Plays the buzzer with the specified parameters.
	LoadConfiguration	The Power Panel loads the last saved settings and restarts. Any changes made to the parameters are not saved and will be lost.
	SaveConfiguration	Saves changes made to the parameters. Method <i>LoadConfiguration</i> must be used in order for these saved settings to be enabled on the Power Panel.
	SetBrightness	Changes screen brightness in the range from 20% to 100%.
	SetBrightnessUnlimited	Changes screen brightness in the range from 0% to 100%.
	SetTime	Sets the date and/or time of the device.
	StartUpdate	Reboots the Power Panel and starts the update process.
	StartRemoteAccess	Enables remote access with immediate effect.
	StopRemoteAccess	Disables remote access with immediate effect.

## 8.5.1.5 Device properties

Device properties (product-specific information) of the Power Panel are located under the following path:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50

ns	Path/Node	Description
0	Root	Root directory
0	Objects	Object directory
2	DeviceSet	Device directory
4	PowerPanelFT50	Nodes for the Power Panel

ns	BrowseName of the information	Description
3	CompatibilityId	ID to indicate compatibility.
2	DeviceManual	Link to the website: The user's manual is available in the Downloads section.
2	DeviceRevision	Hardware revision of the device (e.g. C3).
2	HardwareRevision	Value: Empty string (string with length 0)
		The hardware revision of the device (e.g. C3) is printed on the device.
2	Manufacturer	Manufacturer of the device: B&R Industrial Automation GmbH
2	Model	Order number of the device, e.g. 6PFT50.101E-10B.
3	ProductCode	B&R ID code (see technical data of the device).
2	RevisionCounter	Value: -1 (reserved, not in use)
2	SerialNumber	Serial number of the device (see label on the back of the device).
2	SoftwareRevision	Software version of the PPT system: e.g. 1.2.0
3	VendorId	Vendor code, for customized models.

## 8.5.1.6 Alternative paths of nodes

The nodes listed in previous section "Information model" are also available via other paths. This alternative structure organizes the nodes in sections "ParameterSet", "MethodSet" and "Device properties" into logical function groups. The detailed description of the nodes in this section is organized according to this logical structure.

## 8.5.2 Description of the nodes of the information model

## 8.5.2.1 Alternative paths of nodes

The nodes listed in previous section "Information model" are also available via other paths. This alternative structure organizes the nodes in sections "ParameterSet", "MethodSet" and "Device properties" into logical function groups. The detailed description of the nodes in this section is organized according to this logical structure.

# 8.5.2.2 🍪 Diagnostics

## Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics	

ns	BrowseName of the information	Description	R	W
4	CPUCore0Usage	CPU utilization of core 0 (percent).	+	
4	CPUCore1Usage	CPU utilization of core 1 (percent).	+	
4	CPUCore2Usage	CPU utilization of core 2 (percent).	+	
		This value is only available on Power Panel FT50 with display sizes ≥15.6".		
4	CPUCore3Usage	CPU utilization of core 3 (percent).	+	
		This value is only available on Power Panel FT50 with display sizes ≥15.6".		
4	CPUUsage	CPU utilization of all cores (percent).	+	
4	MemoryAvailable	Available RAM in MB.	+	
4	MemoryTotal	Entire RAM of system in MB.	+	

## **8.5.2.2.1 CPUCore0Usage**

CPU utilization of core 0 (percent).

#### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:CPUCore0Usage
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:CPUCoreOUsage

#### **Node attributes**

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.2.2 CPUCore1Usage

CPU utilization of core 1 (percent).

# Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:CPUCore1Usage
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:CPUCore1Usage

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.2.3 CPUCore2Usage

CPU utilization of core 2 (percent).

This value is only available on Power Panel FT50 with display sizes ≥15.6".

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:CPUCore2Usage	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:CPUCore2Usage	

#### **Node attributes**

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

## 8.5.2.2.4 CPUCore3Usage

CPU utilization of core 3 (percent).

This value is only available on Power Panel FT50 with display sizes ≥15.6".

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:CPUCore3Usage	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:CPUCore3Usage	

#### **Node attributes**

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.2.5 CPUUsage

CPU utilization of all cores (percent).

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:CPUUsage	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:CPUUsage	

#### **Node attributes**

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.2.6 MemoryAvailable

Available RAM in MB.

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:MemoryAvailable	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:MemoryAvailable	

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.2.7 MemoryTotal

Entire RAM of system in MB.

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:MemoryTotal	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Diagnostics/4:MemoryTotal	

#### **Node attributes**

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.3 🍪 Configuration

All parameters for configuring the device are located under node Configuration.

Path to the object dictionary:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration

# 8.5.2.3.1 🍪 Audio

# Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio	

1	าร	BrowseName of the parameter	Description	Service page	R	W	1
	4	EnableBuzzer	Enables/Disables the buzzer.		+	+	7
		BuzzerSource	Selects the trigger for the buzzer.	Audio	+	+	7
		BuzzerFrequency	Frequency of the buzzer.	Audio	+	+	
Ì	Ì	BuzzerDuration	Duration of the buzzer.		+	+	1

# 

Function identical to: Service page Audio → "Buzzer" on page 66

# Path to the node (BrowsePath)

Tall to the house (Element att)	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:EnableBuzzer	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio/4:EnableBuzzer	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.1.2 BuzzerSource

Function identical to: Service page Audio → "Buzzer source" on page 66

# Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BuzzerSource		
Mernative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio/4:BuzzerSource		

#### Node attributes

NodeClass	Variable
DataType	BrBuzzerSource (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# Data type BrBuzzerSource (enumeration)

Value	String
0	App
1	Touch

# 8.5.2.3.1.3 BuzzerFrequency

Function identical to: Service page Audio → "Buzzer frequency" on page 66

## Path to the node (BrowsePath)

Path:			
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BuzzerFrequency			
Alternative path (function group):			
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio/4:BuzzerFrequency			

#### **Node attributes**

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## **8.5.2.3.1.4 BuzzerDuration**

Function identical to: Service page Audio → "Buzzer duration" on page 66

#### Path to the node (BrowsePath)

am to me near (210 near am)	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BuzzerDuration	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Audio/4:BuzzerDuration	

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# 8.5.2.3.2 🍪 Gesture

# Path to the object dictionary:

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Gesture		

ı	ns Br	owseName of the parameter	Description	Service page	R	W	1
	4 Op	penServicePage	Configures opening the service page with a gesture.	Gesture	+	+	. ]

# 8.5.2.3.2.1 OpenServicePage

# Description

Function identical to: Service page Gesture → "Open service page" on page 67

# Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:OpenServicePage		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Gesture/4:OpenServicePage		

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# 8.5.2.3.3 **Network**

# Path to the object dictionary:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network

ns	BrowseName of the parameter	Description	Service page	R	W
4	Hostname	Hostname of the Power Panel.		+	+
	NetworkMode	Network mode: DHCPClient or StaticIP.	]	+	+
		Setting corresponds to option <i>DHCP</i> on service page <i>Network</i> .			
	ActivateDNS	Enables DNS usage.	]	+	+
	DNSSuffix	DNS suffix for the fully qualified domain name (FQDN).	]	+	+
	GetDNSFromDHCP	Enables/Disables obtaining IP addresses of the DNS servers from DHCP.	Matriagli	+	+
	PrimaryDNS	Address of the first DNS server.	Network	+	+
	SecondaryDNS	Address of the second DNS server.		+	+
	TertiaryDNS	Address of the third DNS server.	]	+	+
	IpAddress	Static IP address of the Power Panel.	]	+	+
	SubnetMask	Subnet mask.	]	+	+
	DefaultGateway	IP address of the default gateway.		+	+

# 8.5.2.3.3.1 Hostname

Function identical to: Service page Network → "Hostname" on page 59

# Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:Hostname		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:Hostname		

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# 8.5.2.3.3.2 NetworkMode

Function identical to: Service page Network  $\rightarrow$  "DHCP" on page 60

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:NetworkMode	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:NetworkMode	

## **Node attributes**

NodeClass	Variable
DataType	BrNetMode (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# Data type BrNetMode (enumeration)

Value	String
0	DHCPClient
1	StaticIP

#### 8.5.2.3.3.3 **ActivateDNS**

Function identical to: Service page Network → Activate DNS

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ActivateDNS	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:ActivateDNS	

#### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### 8.5.2.3.3.4 **DNSSuffix**

Function identical to: Service page Network → "DNS suffix" on page 60

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:DNSSuffix	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:DNSSuffix	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### 8.5.2.3.3.5 GetDNSFromDHCP

Function identical to: Service page Network → "Get DNS from DHCP server" on page 61

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:GetDNSFromDHCP	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:GetDNSFromDHCP	

#### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### 8.5.2.3.3.6 Tertiary DNS / Secondary DNS / Tertiary DNS

#### Function identical to:

Service page Network → "Primary DNS server / Secondary DNS server / Tertiary DNS server" on page 61

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:PrimaryDNS	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:SecondaryDNS	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:TertiaryDNS	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:PrimaryDNS	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:SecondaryDNS	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:TertiaryDNS	

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 

Function identical to: Service page Network → "IP address" on page 62

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:IpAddress	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:IpAddress	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.3.8 SubnetMask

Function identical to: Service page Network → "Subnet mask / Default gateway" on page 62

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:SubnetMask	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:SubnetMask	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.3.9 **DefaultGateway**

Function identical to: Service page Network → "Subnet mask / Default gateway" on page 62

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:DefaultGateway	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Network/4:DefaultGateway	

NodeClass	Variable	
DataType	String	
AccessLevel	currentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	



## 8.5.2.3.4 RemoteAccess

### Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess	

ns	BrowseName of the parameter	Description	Service page	R	W	ı
4	EnableRemoteAccess	Enables/Disables remote access.		+	+	1
	RemoteAccessBackEnd	Selects which technology is used for remote access.		+	+	1
	RemoteAccessModeWebGL	Selects the WebGL remote access operating mode.	D t.	+	+	1
İ	RemoteAccessPortWebGL	Network port for WebGL remote access.	Remote access	+	+	1
	RemoteAccessWSPortWebGL	Network port for WebSocket communication with WebGL remote access.	access	+	+	1
	RemoteAccessModeVNC	Selects the VNC remote access operating mode.		+	+	1
	RemoteAccessPortVNC	Network port for VNC remote access.		+	+	

#### Changed parameter names starting with PPT system version 1.6.0

The mode and port settings for VNC and WebGL can be set separately starting with this PPT system version:

	PPT system version	
Parameter name	<1.6.0	≥1.6.0
RemoteAccessMode	х	
RemoteAccessModeWebGL		x
RemoteAccessModeVNC		x
RemoteAccessPort	Х	
RemoteAccessPortWebGL		X
RemoteAccessWSPortWebGL		х
RemoteAccessPortVNC		х

#### 8.5.2.3.4.1 EnableRemoteAccess

Function identical to: Service page Remote Access → "Remote access" on page 85

Setting EnableRemoteAccess only has an effect after the configuration is loaded with LoadConfiguration. In contrast, StartRemoteAccess and StopRemoteAccess can be used to enable or disable remote access immediately.

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:EnableRemoteAccess	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:EnableRemoteAccess	

#### **Node attributes**

NodeClass	Variable	
DataType	Boolean	
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	

#### 8.5.2.3.4.2 RemoteAccessBackEnd

Function identical to: Service page Remote Access → "Back end" on page 85

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessBackEnd	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessBackEnd	

#### **Node attributes**

NodeClass	Variable
DataType	BrRemoteAccessBackEnd (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

#### Data type BrRemoteAccessBackEnd (enumeration)

• •	· · · · · · · · · · · · · · · · · · ·
Value	String
0	WebGL
1	VNC

### 8.5.2.3.4.3 RemoteAccessModeWebGL

Function identical to: Service page Remote Access → "Mode" on page 86

### Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessModeWebGL		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessModeWebGL		

#### **Node attributes**

NodeClass	Variable
DataType	BrRemoteAccessMode (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### Data type BrRemoteAccessMode (enumeration)

Value	String
0	View
1	Control

### 8.5.2.3.4.4 RemoteAccessPortWebGL

Function identical to: Service page Remote Access → "Back end port" on page 86

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessPortWebGL	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessPortWebGL	

#### **Node attributes**

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

#### 8.5.2.3.4.5 RemoteAccessWSPortWebGL

Function identical to: Service page Remote Access → "Back end WebSocket port" on page 86

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessWSPortWebGL	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessWSPortWebGL	

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.4.6 RemoteAccessModeVNC

Function identical to: Service page Remote Access  $\rightarrow$  "Mode" on page 86

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessModeVNC	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessModeVNC	

#### **Node attributes**

NodeClass	Variable	
DataType BrRemoteAccessMode (Enumeration)		
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	

### Data type BrRemoteAccessMode (enumeration)

Value	String
0	View
1	Control

## 8.5.2.3.4.7 RemoteAccessPortVNC

Function identical to: Service page Remote Access → "Back end port" on page 86

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RemoteAccessPortVNC	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:RemoteAccess/4:RemoteAccessPortVNC	

NodeClass	ariable	
DataType	UInt16	
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	

## 8.5.2.3.5 Screen

## Path to the object dictionary:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen

ns	BrowseName of the parameter	Description	Service page	R	W
4	DisplayBrightness	Screen brightness.		+	+
	ScreenRotation	Angle of rotation of the display.		+	+
	EnableScreensaver	Enables/Disables the screensaver.		+	+
	ScreensaverIdleTime	Time without touch activity after which the screensaver is displayed.	Screen	+	+
	ScreensaverType	Screensaver mode.	Screen	+	+
	BootAnimationDelay	Delay in milliseconds between frames of the GIF animation.		+	+
	BootAnimationLeftPos	Defines the distance of an existing boot animation to the left edge of the display.		+	+
	BootAnimationTopPos	Defines the distance of an existing boot animation to the right edge of the display.	1 Γ	+	+

## 8.5.2.3.5.1 DisplayBrightness

Function identical to: Service page Screen → "Display brightness" on page 64

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:DisplayBrightness	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:DisplayBrightness	

#### **Node attributes**

NodeClass	Variable
DataType	Byte
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.5.2 ScreenRotation

Function identical to: Service page Screen → "Screen rotation" on page 64

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ScreenRotation	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:SceenRotation	

#### **Node attributes**

NodeClass	Variable
DataType	BrRotation (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### Data type BrRotation (enumeration)

Value	String
0	0
1	90
2	180
3	270

### 8.5.2.3.5.3 EnableScreensaver

Function identical to: Service page Screen → "Screensaver" on page 64

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:EnableScreensaver	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:EnableScreensaver	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### 8.5.2.3.5.4 ScreensaverIdleTime

Function identical to: Service page Screen → "Start screensaver after" on page 65

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ScreensaverIdleTime	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:ScreensaverIdleTime	

#### **Node attributes**

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.5.5 ScreensaverType

Function identical to: Service page Screen → "Screensaver type" on page 65

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ScreensaverType	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:ScreensaverType	

#### **Node attributes**

NodeClass	Variable
DataType	BrScreensaver (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

#### Data type BrScreensaver (enumeration)

Value	String
0	Black
1	BacklightOff

### 8.5.2.3.5.6 BootAnimationTopPos

Function identical to: Service page Screen → "Settings for the boot animation" on page 65

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BootAnimationTopPos	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:BootAnimationTopPos	

#### **Node attributes**

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.5.7 BootAnimationLeftPos

Function identical to: Service page Screen → "Settings for the boot animation" on page 65

#### Path to the node (BrowsePath)

· · · · · · · · · · · · · · · · · · ·	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BootAnimationLeftPos	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:BootAnimationLeftPos	

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## Software • OPC UA server • Description of the nodes of the information model

## 8.5.2.3.5.8 BootAnimationDelay

Function identical to: Service page Screen → "Settings for the boot animation" on page 65

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:BootAnimationDelay	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Screen/4:BootAnimationDelay	

NodeClass	Variable
DataType	UInt16
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite



## 8.5.2.3.6 🚱 Startup

## Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup	

1	าร	BrowseName of the parameter	Description	Service page	R	W
	4	StartMode	Power Panel start mode: ServicePage, VNC or Web.		+	+
		ShowBootLogoVNC	Enables/Disables the boot logo or boot animation of the system while connecting to the VNC server.	Startup	+	+
ì		ShowBootLogoWeb	Enables/Disables the boot logo or boot animation of the system while connecting to the web server.		+	+

### 8.5.2.3.6.1 StartMode

Function identical to: Service page Startup → "Start mode" on page 58

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:StartMode	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup/4:StartMode	

#### **Node attributes**

NodeClass	Variable
DataType	BrStartMode (Enumeration)
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

### Data type BrStartMode (enumeration)

Value	String
0	ServicePage
1	VNC
2	Web

## 8.5.2.3.6.2 ShowBootLogoVNC / ShowBootLogoWeb

Function identical to: Service page Startup → "Boot logo or boot animation" on page 59

## Path to the node (BrowsePath)

·	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ShowBootLogoVNC	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ShowBootLogoWeb	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup/4:ShowBootLogoVNC	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Startup/4:ShowBootLogoWeb	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

# 8.5.2.3.7 🍪 Storage

## Path to the object dictionary:

Path:	
	/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Storage

	ns	BrowseName of the parameter	Description	Service page	R	W	ı
ſ	4	USBMemoryShare	Enables/Disables network sharing to the connected USB storage medium.	Storago	+	+	1
		UserMemoryShare	Enables/Disables network sharing to internal user memory.	Sidiage	+	+	7

## 8.5.2.3.7.1 USBMemoryShare / UserMemoryShare

Function identical to: Options on "Service page Storage" on page 75

- USBMemoryShare → Option Allow access to USB memory via network
- UserMemoryShare → Option Allow access to user memory via network

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:USBMemoryShare	
0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:UserMemoryShare	
Alternative path (function group):	
0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Storage/4:USBMemoryShare	
0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Storage/4:UserMemoryShare	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.8 🍣 Time

## Path to the object dictionary:

Path:	
	/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Time

ns	BrowseName of the parameter	Description	Service page	R	W
4	EnableNTPClient	Enables/Disables the NTP client for time synchronization.	Time	+	+
	NTPServer1	Address of an NTP server.	Time	+	+

#### 8.5.2.3.8.1 EnableNTPClient

Function identical to: Service page Time → "NTP client" on page 63

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:EnableNTPClient	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Time/4:EnableNTPClient	

### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.8.2 NTPServer1

Function identical to: Service page Time → NTPServer1

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:NTPServer1	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Time/4:NTPServer1	

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.9 🚱 Vnc

### Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc	

1	าร	BrowseName of the parameter	Description	Service page	R	W
	4	VNCServer	Address of the VNC server.		+	+
		UseRfbExtension	Enables/Disables the RFB extension in VNC mode.		+	+
		VNCConnectionMonitor	Enables/Disables monitoring of the connection to the VNC server.	VNC	+	+
		VNCLocalWindowScaling	Enables/Disables automatic scaling of the HMI application in VNC mode.		+	+
		VNCBackgroundColor	Changes the background color of the VNC client.		+	+

### 8.5.2.3.9.1 **VNCServer**

Function identical to: Service page VNC → "Server" on page 68

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:VNCServer	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc/4:VNCServer	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

#### 8.5.2.3.9.2 UseRfbExtension

Function identical to: Service page VNC → "Use RFB extension" on page 69

**Note:** The system will not accept options UseRfbExtension and VNCConnectionMonitor both simultaneously set to *true*. After the changes are saved with method SaveConfiguration, option VNCConnectionMonitor will be automatically set to *false* in such a case.

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:UseRfbExtension	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc/4:UseRfbExtension	

### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

#### 8.5.2.3.9.3 VNCConnectionMonitor

Function identical to: Service page VNC → "Enable connection monitor" on page 69

**Note:** The system will not accept options UseRfbExtension and VNCConnectionMonitor both simultaneously set to *true*. After the changes are saved with method SaveConfiguration, option VNCConnectionMonitor will be automatically set to *false* in such a case.

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:VNCConnectionMonitor	
Alternative path (function group):	
0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc/4:VNCConnectionMonitor	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.9.4 VNCLocalWindowScaling

Function identical to: Service page VNC  $\rightarrow$  "Enable local window scaling" on page 69

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:VNCLocalWindowScaling	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:VNc/4:VNCLocalWindowScaling	

#### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.9.5 **VNCBackgroundColor**

Function identical to: Service page VNC → "Background color" on page 70

### Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:VNCBackgroundColor		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Vnc/4:VNCBackgroundColor		

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10 🍪 Web

## Path to the object dictionary:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web

ns	BrowseName of the parameter	Description	Service page	R	W
4	WebServer	Address of the web server.		+	+
	VirtualKeyboardWeb	Enables/Disables the on-screen keyboard in web mode.		+	+
	DisablePinchGesture	The two-finger gesture (pinch-to-zoom) for zooming the browser content is disabled.		+	+
		Zooming the entire HMI application is prevented.			
	SetOverrideViewport	Enables/Disables viewport settings.	Web	+	+
	ViewportSettings	Viewport settings.		+	+
	IgnoreServerCertificateErrors	Enables/Disables warnings regarding server certificates.		+	+
	EnableScreenCapture	Enables/Disables the screen capture API.		+	+
	SuppressScrnCaptSecWarn	Enables/Disables the security warning when the screen capture is started.		+	+

#### 8.5.2.3.10.1 WebServer

Function identical to: Service page Web → "Server" on page 71

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:WebServer	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:WebServer	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10.2 VirtualKeyboardWeb

Function identical to: Service page Web → "Virtual keyboard" on page 72

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:VirtualKeyboardWeb	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:VirtualKeyboardWeb	

#### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10.3 DisablePinchGesture

Function identical to: Service page Web → "Disable pinch gesture" on page 72

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:DisablePinchGesture	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:DisablePinchGesture	

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10.4 SetOverrideViewport

Function identical to: Service page Web → "Set/Override viewport settings" on page 73

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:SetOverrideViewport	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:SetOverrideViewport	

#### **Node attributes**

NodeClass	Variable
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10.5 ViewportSettings

Function identical to: Service page Web → "Viewport settings" on page 73

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ViewportSettings	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:ViewportSettings	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite

## 8.5.2.3.10.6 IgnoreServerCertificateErrors

Function identical to: Service page Web → "Ignore server certificate errors" on page 72

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:IgnoreServerCertificateErrors	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:IgnoreServerCertificateErrors	

#### **Node attributes**

NodeClass Variable	
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel CurrentRead, CurrentWrite	

### 8.5.2.3.10.7 The EnableScreenCapture

Function identical to: Service page Web → "Enable Screen Capture" on page 74

## Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:EnableScreenCapture
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:EnableScreenCapture

NodeClass	Variable	
DataType	Boolean	
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel CurrentWrite		

## 8.5.2.3.10.8 SuppressScrnCaptSecWarn

Function identical to: Service page Web  $\rightarrow$  "Suppress Screen Capture security warning" on page 74

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:SuppressScrnCaptSecWarn	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Configuration/4:Web/4:SuppressScrnCaptSecWarn	

NodeClass Variable	
DataType	Boolean
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite



## 8.5.2.4 🍪 Control

## Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control	

ns	BrowseName of the method	Description		
4	AwakePanel	"Wakes up" the Power Panel if the screensaver is running.		
	BuzzerDefault	Plays the signal tone with the system settings.		
	BuzzerWithPara	Plays the buzzer with the specified parameters.		
	LoadConfiguration	The Power Panel loads the last saved settings and restarts. Any changes made to the parameters are not saved and will be lost.		
	SaveConfiguration	Saves changes made to the parameters. Method <i>LoadConfiguration</i> must be used in order for these saved settings to be enabled on the Power Panel.		
	SetBrightness	Changes screen brightness in the range from 20% to 100%.		
	SetBrightnessUnlimited	Changes screen brightness in the range from 0% to 100%.		
	SetTime	Sets the date and/or time of the device.		
	StartUpdate	Reboots the Power Panel and starts the update process.		
	StartRemoteAccess	Enables remote access with immediate effect.		
	StopRemoteAccess	Disables remote access with immediate effect.		

# 8.5.2.4.1 **AwakePanel**

"Wakes up" the Power Panel if the screensaver is running.

#### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:AwakePanel
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:AwakePanel

### Arguments for a method call

Arguments -

## 8.5.2.4.2 SuzzerDefault

Plays the signal tone with the system settings.

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:BuzzerDefault	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:BuzzerDefault	

## Arguments for a method call

Arguments -

# 8.5.2.4.3 SuzzerWithPara

Plays the buzzer with the specified parameters.

See arguments for the method call.

## Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:BuzzerWithPara
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:BuzzerWithPara

## Arguments for a method call

Argu	ıment	Data type	Name	Description
	0	UInt32	Frequency	Frequency of the buzzer in hertz [Hz].
	1	UInt32	Duration	Duration of the buzzer in milliseconds [ms].

# 8.5.2.4.4 NoadConfiguration

The Power Panel loads the last saved settings and restarts. Any changes made to the parameters are not saved and will be lost.

Function identical to: Service page Save & Exit → Exit without saving (button)

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:LoadConfiguration	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:LoadConfiguration	

#### Arguments for a method call

Arguments -

# 8.5.2.4.5 SaveConfiguration

Saves changes made to the parameters. Method *LoadConfiguration* must be used in order for these saved settings to be enabled on the Power Panel.

Function identical to: Service page Save & Exit → Save changes (button)

#### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:SaveConfiguration
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:SaveConfiguration

#### Arguments for a method call

Arguments -

# 8.5.2.4.6 SetBrightness

Changes screen brightness in the range from 20% to 100%.

See arguments for the method call.

#### Path to the node (BrowsePath)

,	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:SetBrightness	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:SetBrightness	

#### Arguments for a method call

Argument	Data type	Name	Description	
0	UInt32	Brightness	Brightness in percent [9	%].
			Range of values:	0 - 100
			Scaling	$0 \rightarrow 20\%$ to $100 \rightarrow 100\%$

# 8.5.2.4.7 SetBrightnessUnlimited

Changes screen brightness in the range from 0% to 100%.

See arguments for the method call.

#### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:SetBrightnessUnlimited
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:SetBrightnessUnlimited

## Arguments for a method call

Argument	Data type	Name	Description	
0	UInt32	BrightnessUnlimited	Brightness in percent [6	%]. Values >100 are limited to 100.
			Range of values	0 - 100
			Scaling	No scaling: $0 \rightarrow 0\%$ to $100 \rightarrow 100\%$



## 8.5.2.4.8 <sup>₹</sup> SetTime

Sets the date and/or time of the device.

See arguments for the method call.

## Information:

This method only works if automatic NTP time synchronization is disabled (see "Service page Time" on page 63).

### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:SetTime
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:SetTime

## Arguments for a method call

Argument	Data type	Name	Description		
0	String	Time		Date and/or time for setting the internal clock. The following string formats are allowed:	
			Valid formats	Description	
			2018-10-19 15:45	Sets the date and time. Seconds are set to 0.	
			2018-10-19	Sets the date. The time remains unchanged.	
			15:45	Sets the time. Seconds are set to 0. The date remains unchanged.	

# 8.5.2.4.9 StartUpdate

Reboots the Power Panel and starts the update process.

Function identical to: Service page Update → Update settings / boot logo / system (button)

### Path to the node (BrowsePath)

, , , , , , , , , , , , , , , , , , , ,	
Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:StartUpdate	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:StartUpdate	

## Arguments for a method call

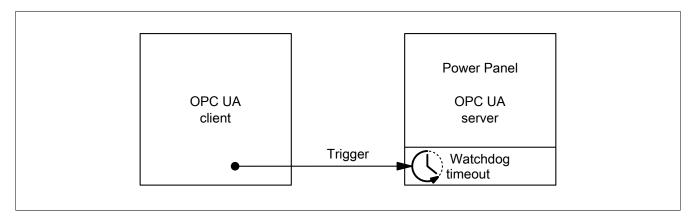
Arguments -

## 8.5.2.4.10 🍣 Control/ConnectionWatchdog

Path to the object dictionary:

. u	1 dui.				
/0	/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:ConnectionWatchdog				
ns	ns BrowseName of the method Description R W				
4	ConnectionWatchdogTimeout	This parameter defines the period for the watchdog timeout or disables the watchdog function.	+	+	
	ConnectionWatchdogTrigger	This parameter is used firstly to enable the watchdog and secondly to trigger it.	+	+	

#### 8.5.2.4.10.1 ConnectionWatchdog - Function description



### Software • OPC UA server • Description of the nodes of the information model

When ConnectionWatchdog is active, the OPC UA client must send a trigger signal to the Power Panel within the timeout period. If the Power Panel does not receive a trigger signal within the defined timeout period, all LEDs on the Power Panel are disabled.

## 8.5.2.4.10.2 ConnectionWatchdogTimeout

This parameter defines the period for the watchdog timeout or disables the watchdog function.

The following values are valid for ConnectionWatchdogTimeout:

Value [ms]	Description
0	This value immediately disables the watchdog.
500 to 10000	Timeout period in milliseconds.
	The client must set parameter ConnectionWatchdogTrigger to value "true" within the time defined here if the watchdog is active.

### Path to the node (BrowsePath)

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ConnectionWatchdogTimeout
Alternative path (function group):
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:ConnectionWatchdog/4:ConnectionWatchdogTimeout

#### **Node attributes**

NodeClass	Variable	
DataType	UInt16	
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	

## 8.5.2.4.10.3 ConnectionWatchdogTrigger

This parameter is used firstly to enable the watchdog and secondly to trigger it.

The following values are valid for ConnectionWatchdogTrigger:

Value	Description	
true	If the watchdog is not active, the watchdog is started with the value from ConnectionWatchdogTimeout.	
	If the watchdog is active, the watchdog is restarted with the value from ConnectionWatchdogTimeout.	
false	No function.	

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:ConnectionWatchdogTrigger	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:ConnectionWatchdog/4:ConnectionWatchdogTrigger	

#### **Node attributes**

NodeClass	Variable	
DataType	Boolean	
AccessLevel	CurrentRead, CurrentWrite	
UserAccessLevel	CurrentRead, CurrentWrite	

# 8.5.2.4.11 StartRemoteAccess

Enables remote access with immediate effect.

This method is independent of setting EnableRemoteAccess.

Additional information about remote access: Service page Remote Access → Remote access

## Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:StartRemoteAccess		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:StartRemoteAccess		

#### Arguments for a method call



# 8.5.2.4.12 StopRemoteAccess

Disables remote access with immediate effect.

This method is independent of setting EnableRemoteAccess.

Additional information about remote access: Service page Remote Access → Remote access

### Path to the node (BrowsePath)

D	_	١h	
_	aı	ш	81

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:MethodSet/4:StopRemoteAccess

#### Alternative path (function group):

/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Control/4:StopRemoteAccess

### Arguments for a method call

Arguments -

## 8.5.2.5 🍪 Status

## Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Status	

ns	BrowseName of the parameter	Description	Service page	R	W
4	Temperature0	Temperature of the CPU housing: See Temperature monitoring.	About & Info	+	
	USBFlashDrive0	Indicates whether a USB flash drive is connected.		+	

## 8.5.2.5.1 **Temperature0**

Temperature of the CPU housing: See Temperature monitoring.

## Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:Temperature0		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Status/4:Temperature0		

#### **Node attributes**

NodeClass	Variable
DataType	Float
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

### 8.5.2.5.2 USBFlashDrive0

Indicates whether a USB flash drive is connected.

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:USBFlashDrive0	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:Status/4:USBFlashDrive0	

#### **Node attributes**

NodeClass	Variable	
DataType	BrUSBFlashDriveState (Enumeration)	
AccessLevel	CurrentRead	
UserAccessLevel	CurrentRead	

### Data type BrUSBFlashDriveState (enumeration)

<b>7</b> 1	· · · · · · · · · · · · · · · · · · ·
Value	String
0	UNPLUGGED
1	PLUGGED

## 

## Path to the object dictionary:

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:UserInterface	

n	BrowseName of the parameter	Description	R	W
4	RGBLed00	Parameter for setting the color of the front LED.	+	+

## 8.5.2.6.1 RGBLed00

This parameter sets the color of the LED on the front of the terminal.

Colors	Description
Blue	0 to 255
Green	0 to 255
Red	0 to 255

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:ParameterSet/4:RGBLed00	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:UserInterface/4:RGBLed00	

NodeClass	Variable	
DataType	BrRGBLed (Structure)	
	Field	DataType
	Red	Byte
	Green	Byte
	Blue	Byte
AccessLevel CurrentRead, CurrentWrite UserAccessLevel CurrentRead, CurrentWrite		

## 8.5.2.7 🍪 Identification

## Path to the object dictionary:

Path:
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification

ns	BrowseName of the information	Description
3	CompatibilityId	ID to indicate compatibility.
2	DeviceRevision	Hardware revision of the device (e.g. C3).
2	HardwareRevision	Value: Empty string (string with length 0)
		The hardware revision of the device (e.g. C3) is printed on the device.
2	Manufacturer	Manufacturer of the device: B&R Industrial Automation GmbH
2	Model	Order number of the device, e.g. 6PFT50.101E-10B.
3	ProductCode	B&R ID code (see technical data of the device).
2	RevisionCounter	Value: -1 (reserved, not in use)
2	SerialNumber	Serial number of the device (see label on the back of the device).
2	SoftwareRevision	Software version of the PPT system: e.g. 1.2.0
3	VendorId	Vendor code, for customized models.

# 8.5.2.7.1 CompatibilityId

ID to indicate compatibility.

A future version of the device could be equipped with different technology. Although the module name and functionality of the device are identical to the previous version, the firmware may not be compatible, for example. In this case, the device reports a new *CompatibilityId*.

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:CompatibilityId	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/3:CompatibilityId	

#### **Node attributes**

NodeClass	Variable
DataType	UInt32
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.2 DeviceRevision

Hardware revision of the device (e.g. C3).

Value: Empty string (string with length 0)

The hardware revision of the device (e.g. C3) is printed on the device.

The value of DeviceRevision is identical to the value of HardwareRevision .

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:DeviceRevision	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:DeviceRevision	

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.3 HardwareRevision

Hardware revision of the device (e.g. C3).

Value: Empty string (string with length 0)

The hardware revision of the device (e.g. C3) is printed on the device.

The value of HardwareRevision is identical to the value of DeviceRevision.

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:HardwareRevision	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:HardwareRevision	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.4 Manufacturer

Manufacturer of the device: B&R Industrial Automation GmbH

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Manufacturer	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:Manufacturer	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.5 Model

Order number of the device, e.g. 6PFT50.101E-10B.

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Model	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:Model	

NodeClass	Variable
DataType	LocalizedText
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

## 8.5.2.7.6 ProductCode

B&R ID code (see technical data of the device).

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:ProductCode	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/3:ProductCode	

#### **Node attributes**

NodeClass	Variable
DataType	UInt32
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.7 RevisionCounter

Value: -1 (reserved, not in use)

### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:RevisionCounter	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:RevisionCounter	

#### **Node attributes**

NodeClass	Variable
DataType	Int32
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.8 SerialNumber

Serial number of the device (see label on the back of the device).

#### Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:SerialNumber	
Alternative path (function group):	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:SerialNumber	

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.7.9 Software Revision

Software version of the PPT system: e.g. 1.2.0

## Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:SoftwareRevision		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:SoftwareRevision		

NodeClass	Variable	
DataType	String	
AccessLevel	CurrentRead	
UserAccessLevel	CurrentRead	



# 8.5.2.7.10 **V**endorld

Vendor code, for customized models.

Vendorld	Description
0	B&R
1	B&R
≥2	Customer ID

## Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/3:VendorId		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/3:VendorId		

NodeClass	Variable
DataType	UInt32
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

## 8.5.2.8 Other device properties

The following device properties are not available within group *Identification*.

Path to the object dictionary:

Pa	Path:		
/0	/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50		
ns	ns BrowseName of the information Description		
	DeviceManual	Link to the website: The user's manual is located in the Downloads section.	

# 8.5.2.8.1 Manufacturer

Manufacturer of the device: B&R Industrial Automation GmbH

## Path to the node (BrowsePath)

Path:		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Manufacturer		
Alternative path (function group):		
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:Identification/2:Manufacturer		

#### **Node attributes**

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

# 8.5.2.8.2 DeviceManual

Link to the website: The user's manual is available in the Downloads section.

## Path to the node (BrowsePath)

Path:	
/0:Root/0:Objects/2:DeviceSet/4:PowerPanelFT50/2:DeviceManual	

Device property DeviceManual is only available as a property of node PowerPanelFT50.

NodeClass	Variable
DataType	String
AccessLevel	CurrentRead
UserAccessLevel	CurrentRead

## 9 Maintenance

The following chapter describes the maintenance work that can be carried out by a qualified and trained end user.

#### Information:

Only components approved by B&R are permitted to be used for maintenance work.

## 9.1 Cleaning

## Danger!

Power Panel devices are only permitted to be cleaned while switched off in order to prevent unintended functions from being triggered when handling the touch screen or pressing keys.

Power Panel devices should be cleaned with a moist cloth. Use only water with detergent, screen cleaner or alcohol (ethanol) to moisten the cloth. Apply the cleaning agent to the cloth first; do not spray it directly onto the Power Panel! Never use aggressive solvents, chemicals, abrasive cleaners, compressed air or steam cleaners.

#### Notice!

Cleaning the label on the back of the unit is only permitted with a dry cloth. This ensures readability of the thermal print during the service life of the device.

## Information:

The display with the touch screen should be cleaned at regular intervals.

#### 9.2 Pixel errors

### Information:

Displays can contain faulty pixels (pixel errors) due to the manufacturing process. They are not grounds for initiating a complaint or warranty claim.

#### 9.3 Screen burn-in on LCD/TFT monitors

Screen burn-in (afterimages, display memory effect, image retention or image persistence) occurs on LCD/TFT monitors if static image content is displayed for a prolonged period of time. This static screen content causes the build-up of parasitic capacitances within the LCD components that prevent liquid crystal molecules from returning to their original state. This condition is unpredictable and can depend on the following factors:

- · Type of image displayed
- · Color composition of the image
- · Length of time that the image is displayed
- · Ambient temperature

#### Preventing screen burn-in

Even if there is no possibility to avoid screen burn-in 100%, measures can be taken to reduce it significantly.

- Avoid static images or screen content.
- · Use screensavers (moving) when the display is not in use
- · Frequent picture change
- · Turn off the display when not in use.

Turning off the backlight does not help prevent screen burn-in.

## 9.4 User tips for increasing the service life of the display

### 9.4.1 Backlight

The service life of the backlight is specified by its "half-brightness time". An operating time of 50,000 hours would mean that the display brightness would still be 50% after this time.

#### 9.4.1.1 Measures to maintain backlight service life

- The display brightness can be set to the lowest level that is comfortable for the user's eyes.
- · Bright images should be avoided as far as possible.
- A 50% reduction in brightness can increase the half-brightness time by about 50%.

#### 9.4.2 Image persistence

Image persistence refers to the "burning in" of a static image on a display after being displayed for a long time. It does not only occur with static images, however. Image persistence is also referred to in the technical literature as screen burn-in, image retention, memory effect, memory sticking or ghost image.

There are 2 different types:

- Area type: This type can be seen in a dark gray image. The effect disappears if the display is switched
  off for a long time.
- Line type: This can result in permanent damage.

#### 9.4.2.1 What causes image persistence?

- · Static images
- · No screensaver
- Sharp transitions in contrast (e.g. black/white)
- · High ambient temperatures
- · Operation outside of specifications

#### 9.4.2.2 How can image persistence be reduced?

- Switch continuously between static and dynamic images.
- Prevent excessive differences in brightness between foreground and background elements.
- Use colors with similar brightness.
- Use complementary colors for subsequent images.
- Use screensavers.

## 10 Accessories

The following accessories have undergone functional testing by B&R in connection with the device used and can be operated with this device. Possible limitations regarding operation with individual components other than the complete system must be taken into account, however. All individual specifications of the components must be observed when operating the complete system.

All components listed in this manual have undergone intensive system and compatibility testing and been approved accordingly. B&R cannot assume any functional warranty for accessories that have not been approved.

### 10.1 Overview

Model number	Product ID		
For Power Panel FT50 5"/			
6ACCFL01.0300-000	5"-10" flange feed-through		
6ACCMA10.0000-000	5"-10" flange adapter		
6ACCMA11.0100-000	T50 Field VESA bracket		
6ACCMA11.0300-000	T50 Field table stand		
6ACCMA11.0400-000	T50 Field swan neck		
For Power Panel FT50 15.			
6ACCFL01.0301-000	15"/21" feed-through/wall flange		
6ACCMA10.0001-000	15"/21" flange adapter		
6ACCMA11.0100-000	T50 Field VESA bracket		
6ACCMA11.0300-000	T50 Field table stand		
Cables	130 Field table starid		
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45		
6CAPFT.0030-00	FT50 PoE cable - 3 m - 90° M22/RJ45		
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB		
6CAPFT.0050-02	FT50 PoE cable - 5 m - M22/RJ45		
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45		
6CAPFT.0050-01	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB		
6CAPFT.0050-02	FT50 PoE cable - 5 m - M22/M22		
5CASD3.0010-00	SDL3/SDL4/PoE cable - 1 m		
5CASD3.0010-00 5CASD3.0030-00	SDL3/SDL4/POE cable - 1 III  SDL3/SDL4/PoE cable - 3 m		
5CASD3.0050-00	SDL3/SDL4/PoE cable - 5 m		
5CASD3.0070-00	SDL3/SDL4/PoE cable - 7 m		
5CASD3.0100-00	SDL3/SDL4/PoE cable - 10 m		
5CASD3.0150-00	SDL3/SDL4/PoE cable - 15 m		
5CASD3.0200-00	SDL3/SDL4/PoE cable - 20 m		
5CASD3.0300-00	SDL3/SDL4/PoE cable - 30 m		
5CASD3.0500-00	SDL3/SDL4/PoE cable - 50 m		
5CASD3.1000-00	SDL3/SDL4/PoE cable - 100 m		
Injectors	ETTO D. E. L. A.		
6COPOE.0000-00	FT50 PoE injector for top-hat rail installation		
6COPFT.0000-00	FT50 PoE injector for panel installation		
USB accessories	[		
5MMUSB.2048-01	USB 2.0 flash drive, 2048 MB, B&R		
5MMUSB.4096-01	USB 2.0 flash drive, 4096 MB, B&R		
Panel gaskets			
6ACCGS01.0502-000	Power Panel FT50 gasket 5"		
6ACCGS01.070G-000	Power Panel FT50 gasket 7"		
6ACCGS01.101E-000	Power Panel FT50 gasket 10.1"		
6ACCGS01.156B-000	Power Panel FT50 gasket 15.6"		
6ACCGS01.215C-000	Power Panel FT50 gasket 21.5"		
Installation tool			
5ACCRHMI.0016-000	Installation tool for FT50 cables (1/4")		
5ACCRHMI.0017-000	FT50 installation kit:	A	
	1x torque wrench (0.4 to 2.0 Nm)		
	1x torque wrench (0.4 to 2.0 Nm)     1x torque wrench (2.0 to 10.0 Nm)		
	1x quick-change chuck for torque wrench (1/4")  1x quick-change chuck for torque wrench (1/4")		
	1x socket wrench SW 28 mm L (1/2" driver)		
	1x socket wrench adapter (1/2" to 1/4")		

# 10.2 Flange adapter

## 10.2.1 6ACCMA10.000x-000

## 10.2.1.1 Order data

Order number	Short description	Figure
	Flange	
6ACCMA10.0000-000	Flange for direct wall mounting - suitable for FT50 panels from 5.0" - 10.1"	
6ACCMA10.0001-000	Flange for direct wall mounting - suitable for FT50 panels from 15.6" - 21.5"	300

### 10.2.1.2 Technical data

Order number	6ACCMA10.0000-000	6ACCMA10.0001-000
General information		
Certifications		
CE	Yes	
UKCA	Yes	
UL	cULus E115267 Industrial control equipment	
Operating conditions		
Degree of protection per UL 50	Type 1, 4X indoor and type 12	
Ambient conditions		
Temperature		
Operation	-20 to 55°C	
Storage	-30 to 80°C	
Mechanical properties		
Material	Stainless steel: AISI 304 Silicone: NJ-352H-40	
Dimensions		
Height	50 mm	
Diameter	60 mm	100 mm
Weight	600 g	1.30 kg

## 10.2.1.3 Dimensions

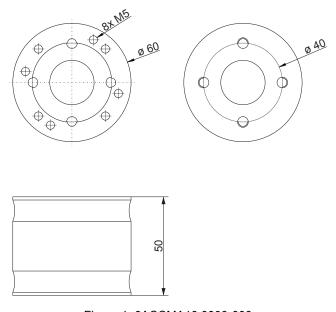


Figure 1: 6ACCMA10.0000-000

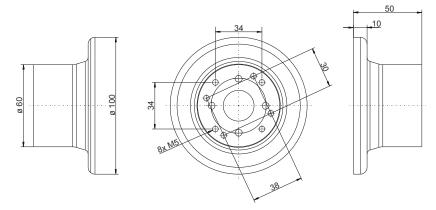


Figure 2: 6ACCMA10.0001-000

# 10.3 Flange feed-through

## 10.3.1 6ACCFL01.030x-000

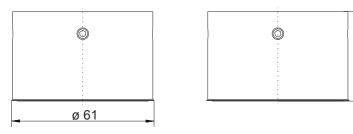
## 10.3.1.1 Order data

Order number	Short description	Figure
	Flange	
6ACCFL01.0300-000	Flange for swing arm systems with a pipe diameter of 48 mm - suitable for FT50 panels from 5.0" - 10.1"	
6ACCFL01.0301-000	Flange for swing arm systems with a shaft diameter of 48 mm - suitable for FT50 panels from 15.6" - 21.5" or for wall mounting of all FT50 panels	

#### 10.3.1.2 Technical data

Order number	6ACCFL01.0300-000	6ACCFL01.0301-000
General information		
Certifications		
CE	Yes	
UKCA	Yes	
UL	cULus E115267 Industrial control equipment	
Operating conditions	maddial odi	and oquipment
Degree of protection per UL 50	Type 1, 4X indoor and type 12	
Ambient conditions		
Temperature		
Operation	-20 to 55°C	
Storage	-30 to 80°C	
Mechanical properties		
Material	Stainless steel: AISI 304 Silicone: NJ-352H-40	
Dimensions		
Height	38.4 mm	51.4 mm
Diameter	61 mm	101 mm
Weight	730 g	1.40 kg

## 10.3.1.3 Dimensions



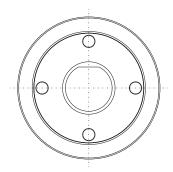
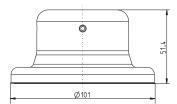
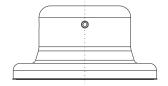


Figure 3: 6ACCMA11.0300-000

38.4





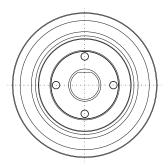


Figure 4: 6ACCMA11.0301-000

## 10.4 Gooseneck

## 10.4.1 6ACCMA11.0400-000

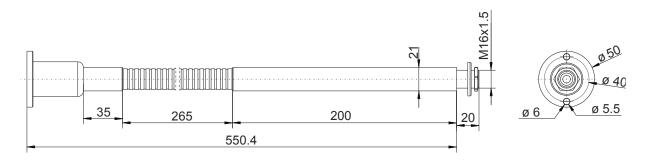
## 10.4.1.1 Order data

Order number	Short description	Figure
	Other	
6ACCMA11.0400-000	FT50 gooseneck	

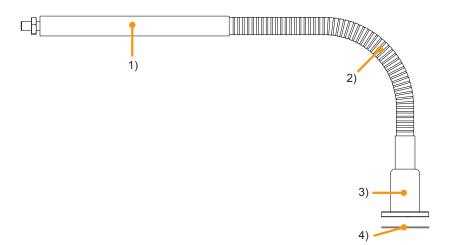
### 10.4.1.2 Technical data

Order number	6ACCMA11.0400-000	
General information		
Certifications		
CE	Yes	
UKCA	Yes	
UL	cULus E115267 Industrial control equipment	
Ambient conditions		
Temperature		
Operation	-20 to 55°C	
Storage	-20 to 70°C	
Mechanical properties		
Material	See section "Material".	
Dimensions		
Length	570 mm	
Diameter	50 mm	
Weight	900 g	

## 10.4.1.3 Dimensions



#### 10.4.1.4 Material



Legend				
1	Fixed part of the gooseneck	Brass		
2	Flexible part of the gooseneck	Steel		
-	Sheathing of 1) and 2)	Polyolefin		
3	Screw connection	Aluminum alloy		
4	Gasket	Polyurethane		

# 10.5 Table stand

# 10.5.1 6ACCMA11.0300-000

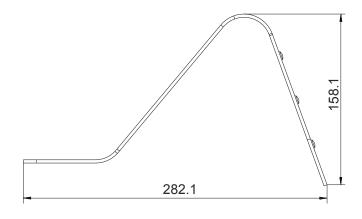
# 10.5.1.1 Order data

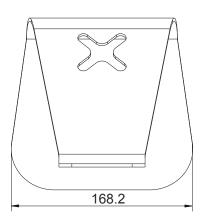
Order number	Short description	Figure
	Other	
6ACCMA11.0300-000	FT50 table stand	9
		×

# 10.5.1.2 Technical data

Order number	6ACCMA11.0300-000	
General information		
Certifications		
CE	Yes	
UKCA	Yes	
Ambient conditions		
Temperature		
Operation	-20 to 55°C	
Storage	-30 to 80°C	
Mechanical properties		
Material	Stainless steel: AISI 304	
Dimensions		
Width	168.2 mm	
Length	158.1 mm	
Height	282.1 mm	
Weight	1.40 kg	

# 10.5.1.3 Dimensions





# 10.6 VESA bracket

# 10.6.1 6ACCMA11.0100-000

# 10.6.1.1 Order data

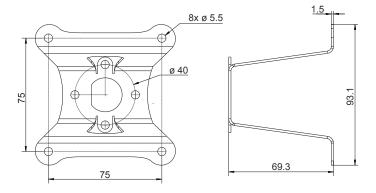
Order number	Short description	Figure
	Brackets	
6ACCMA11.0100-000	FT50 VESA bracket	

# 10.6.1.2 Technical data

Order number	6ACCMA11.0100-000	
General information		
Note	VESA 75 x 75	
Certifications		
CE	Yes	
UKCA	Yes	
Ambient conditions		
Temperature		
Operation	-20 to 55°C	
Storage	-30 to 80°C	
Mechanical properties		
Material	Stainless steel: AISI 304	
Dimensions		
Width	93.1 mm	
Length	92.8 mm	
Height	69.3 mm	
Weight	600 g	

#### 10.6.1.3 Dimensions





# 10.7 Panel gaskets

# 10.7.1 6ACCGS01.xxxx-000

# 10.7.1.1 Order data

Undefined	
Power Panel FT50 gasket 5"	
Power Panel FT50 gasket 7"	THE RESERVE OF THE PARTY OF THE
Power Panel FT50 gasket 10.1"	
Power Panel FT50 gasket 15.6"	
Power Panel FT50 gasket 21.5"	
	Power Panel FT50 gasket 5" Power Panel FT50 gasket 7" Power Panel FT50 gasket 10.1" Power Panel FT50 gasket 15.6"

# 10.7.1.2 Technical data

Order number	6ACCGS01.0502-000	6ACCGS01.070G-000	6ACCGS01.101E-000	6ACCGS01.156B-000	6ACCGS01.215C-000
General information					
Certifications					
CE			Yes		
UKCA			Yes		
UL	cULus E115267				
		Ir	ndustrial control equipme	nt	
Mechanical properties					
Material	Silicone: NJ-352H-40				
Dimensions					
Width	147.3 mm	194.2 mm		263.5 mm	
Length	104 mm 130.5 mm 182 mm				
Height	1.5 mm				
Weight	70 g	110 g		120 g	

# 10.8 Injectors

# 10.8.1 6COPxx.0000-00

# 10.8.1.1 Order data

Order number	Short description	Figure
	Injectors	
6COPOE.0000-00	Power over Ethernet (PoE) injector for top-hat rail installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (RJ45)	Power ON Status Fault Fa

Table 23: 6COPOE.0000-00 - Order data

Order number	Short description	Figure
	Injectors	
6COPFT.0000-00	Power over Ethernet (PoE) injector for control cabinet installation Inputs - 1x network connection (RJ45) - 1x 24 VDC (terminal block) Outputs - 1x PoE (M22)	Power ON Strains  Frank  Color of the Color

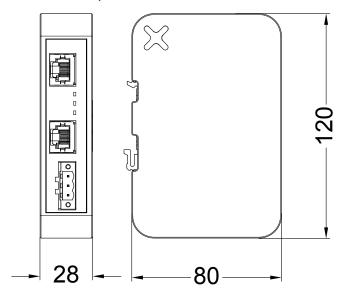
Table 24: 6COPFT.0000-00 - Order data

# 10.8.1.2 Technical data

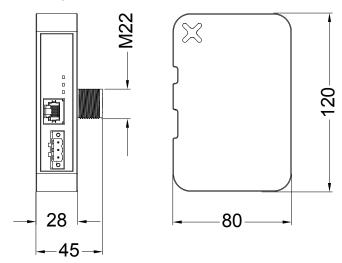
Order number	6COPOE.0000-00	6COPFT.0000-00	
General information			
Note	Active PoE injector		
LEDs	Ethernet IN port 10/100		
	Ethernet OUT port 10/100 PoE		
	3x LEDs for di		
B&R ID code	0xF75	В	
Certifications			
CE	Yes		
UKCA	Yes		
UL	cULus E11		
	Industrial contro	I equipment	
Electrical properties			
Nominal voltage	+24 VDC (18 to	*	
Max. current at nominal voltage	2.0 A		
Max. power consumption	36 W	1	
Fuse	Yes (short-circuit fuse)		
Reverse polarity protection	Yes		
Electrical isolation	1,500 VAC RMS		
Operating conditions			
Degree of protection	IP20	IP20	
		IP67 (M22 connection side)	
Ambient conditions			
Temperature			
Operation	-20°C to +		
Storage	-30°C to +	·80°C	
Relative humidity			
Operation	5 to 85% RH, nor		
Storage	5 to 85% RH, nor	n-condensing	
Mechanical properties			
Dimensions			
Width	28 mm	28 mm 45 mm (including M22 connection)	
Length	80 mm		
Height	120 mm		
Weight	350 g		

#### 10.8.1.3 Dimensions

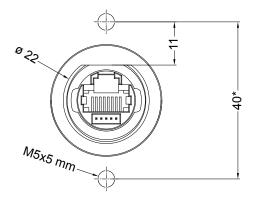
# 6COPOE.0000-00 (top-hat rail installation)



# 6COPFT.0000-00 (panel installation)



# Connection for 6COPFT.0000-00

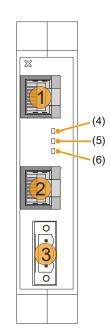


#### 10.8.1.4 Device interfaces

For the technical data of the injectors, see section "Technical data" on page 150.

The following graphic shows the connections of the injector:

		Connections - Legend
1	Ethernet OUT port	10/100 PoE
2	Ethernet IN port 10	)/100
3	+24 VDC SELV po	wer supply (18 to 32 VDC)
		LEDs - Legend
4	Red	Error (thermal shutdown or overvoltage/undervoltage detection on the input)
	Off	No load detected
	Green	PoE in operation
5	Red (blinking slowly)	Overload or short circuit detected
	Red (blinking quickly)	Output voltage out of range or overtemperature on PoE controller
6	Off	Power OFF
U	Green	Power ON



#### Notice!

#### +24 VDC power supply

The injector is only permitted to be used in conjunction with devices that are supplied with a safe extra-low voltage device (SELV) per IEC 61010-2-201.

#### 10.8.1.5 Power supply (terminal block)

### Caution!

It is important to note that the pinout of the power supply differs from other B&R devices. This different pinout is described in the following table.

In addition, there is an adhesive label with a corresponding note on the injector that must be removed before connecting the device.

After voltage loss (power off), it is important to wait at least 1 second until the Power Panel is switched on again; otherwise, problems may occur.

#### Information:

The tightening torque for securing the terminal block to the injector is 0.15 to 0.20 Nm.

Pin Description		Figure		
1	L+		$\overline{}$	
2	M			
3	Functional ground	L+	1	¬(O)  L+
DC voltage terminal		м —	2	
24 AWG wire gauge				
R/C terminal block (XCFR2), female			y y	
<ul> <li>Pitch 5.08 mm</li> </ul>			P	

#### **Electrical properties**

Description	Value
Overvoltage category per EN 61131-2	II
Galvanic isolation	Yes
Uninterruptible power supply	No

# 10.8.1.6 Grounding

The device must always be grounded with a Cat 5 (shielded) cable. Grounding helps to limit the interference effects on the control system through electromagnetic interference. Another way to perform grounding is to use the screws near the connector. A label helps to identify the connection as grounding. For a more detailed overview of the connections and pinout, see the image in the previous section.

All electronic devices in the system must be adequately grounded. Grounding must be carried out in accordance with applicable regulations.

# 10.9 Cables

# 10.9.1 6CAPFT.00xx-0x

#### 10.9.1.1 Order data

# FT50 PoE cable - M22/RJ45

Order number	Short description	Figure
	M22 cables	
6CAPFT.0030-00	FT50 PoE cable - 3 m - M22/RJ45	
6CAPFT.0050-00	FT50 PoE cable - 5 m - M22/RJ45	

#### FT50 PoE cable - 90° M22/RJ45

Order number	Short description	Figure
	M22 cables	
6CAPFT.0030-01	FT50 PoE cable - 3 m - 90° M22/RJ45	will.
6CAPFT.0050-01	FT50 PoE cable - 5 m - 90° M22/RJ45	

# FT50 PoE cable - M22/RJ45, USB

Order number	Short description	Figure
	M22 cables	
6CAPFT.0030-02	FT50 PoE cable - 3 m (PoE) + 1 m (USB) - M22/RJ45, USB	
6CAPFT.0050-02	FT50 PoE cable - 5 m (PoE) + 1 m (USB) - M22/RJ45, USB	

#### FT50 PoE cable - M22/M22

Order number	Short description	Figure
	M22 cables	
6CAPFT.0050-03	FT50 PoE cable - 5 m - M22/M22	

#### 10.9.1.2 Technical data

# FT50 PoE cable - M22/RJ45

Order number	6CAPFT.0030-00	6CAPFT.0050-00	
General information			
Certifications			
CE	Ye	Yes	
UKCA	Ye	S	
UL	cULus E		
	Industrial contr	rol equipment	
Cable construction			
Wire cross section	24/26		
Туре	Cat	5e	
Wires			
Shield	FT	P	
Connector			
Туре	2x RJ45	(male)	
Mating cycles	1000 cycle	s at 25°C	
Contacts	8		
Mechanical protection	50 μm, go	ld-plated	
Electrical properties			
Conductor resistance	<125 Ω/km at 20°C		
Operating conditions			
Degree of protection	IP67 (panel connection)		
	IP20 (PoE injector)		
Ambient conditions			
Temperature			
Operation	-20°C to 70°C		
Storage	-20°C to	o 70°C	
Mechanical properties			
Material	PVC t	olack	
Dimensions			
Length	3 m 5 m		
Bend radius			
Single bend	5x cable diameter		
Moving	10x cable diameter		
Weight	450 g 500 g		
Torque for mounting screw	3.0 Nm		

#### FT50 PoE cable - 90° M22/RJ45

Order number	6CAPFT.0030-01	6CAPFT.0050-01	
General information			
Certifications			
CE		Yes	
UKCA		Yes	
UL	cULu	s E115267	
	Industrial co	ontrol equipment	
Cable construction			
Wire cross section	24/	26 AWG	
Туре		Cat 5e	
Wires			
Shield		FTP	
Connector			
Туре	2x R.	J45 (male)	
Mating cycles	1000 cy	cles at 25°C	
Contacts		8	
Mechanical protection	50 μm,	gold-plated	
Electrical properties			
Conductor resistance	<125 Ω/km at 20°C		
Operating conditions			
Degree of protection	IP67 (panel connection)		
	IP20 (F	IP20 (PoE injector)	
Ambient conditions			
Temperature			
Operation	-	C to 70°C	
Storage	-20°0	-20°C to 70°C	
Mechanical properties			
Material	PV	C black	
Dimensions			
Length	3 m	5 m	
Bend radius			
Single bend	5x cab	5x cable diameter	
Moving	10x cal	10x cable diameter	
Weight	450 g	450 g 500 g	
Torque for mounting screw	3.0 Nm		

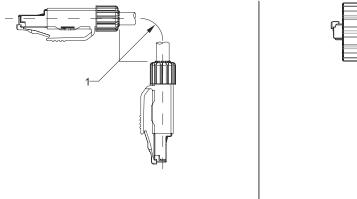
# FT50 PoE cable - M22/RJ45, USB

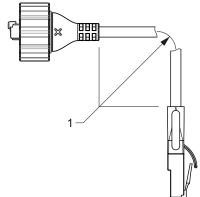
Order number	6CAPFT.0030-02	6CAPFT.0050-02	
General information			
Certifications			
CE	Ye	es	
UKCA	Ye	es	
UL	cULus E	115267	
	Industrial cont	rol equipment	
Cable construction			
Wire cross section	24/26	AWG	
Туре	Cat	5e	
Wires			
Shield	FT	P	
Connector			
Туре	2x RJ45 (male) and	d 1x USB (female)	
Mating cycles	1000 cycles a	t 25°C (RJ45)	
Contacts	8 (RJ45) ar	nd 4 (USB)	
Mechanical protection	50 μm, gold-p	plated (RJ45)	
Electrical properties			
Conductor resistance	<125 Ω/km at 20°C		
Operating conditions			
Degree of protection	IP67 (panel connection)		
	IP20 (PoE injector)		
Ambient conditions			
Temperature			
Operation	-20°C to 70°C		
Storage	-20°C to 70°C		
Mechanical properties			
Material	PVC black		
Dimensions			
Length	3 m 5 m		
	1 m (USB cable)	1 m (USB cable)	
Bend radius			
Single bend	5x cable diameter		
Moving	10x cable diameter		
Weight	550 g 600 g		
Torque for mounting screw	3.0 Nm		

### FT50 PoE cable - M22/M22

Order number	6CAPFT.0050-03	
General information		
Certifications		
CE	Yes	
UKCA	Yes	
UL	cULus E115267	
	Industrial control equipment	
Cable construction		
Wire cross section	24/26 AWG	
Туре	Cat 5e	
Wires		
Shield	FTP	
Connector		
Туре	2x RJ45 (male)	
Mating cycles	1000 cycles at 25°C	
Contacts	8	
Mechanical protection	50 μm, gold-plated	
Electrical properties		
Conductor resistance	<125 Ω/km at 20°C	
Operating conditions		
Degree of protection	IP67	
Ambient conditions		
Temperature		
Operation	-20°C to 70°C	
Storage	-20°C to 70°C	
Mechanical properties		
Material	PVC black	
Dimensions		
Length	5 m	
Bend radius		
Single bend	5x cable diameter	
Moving	10x cable diameter	
Weight	550 g	
Torque for mounting screw	3.0 Nm	

#### 10.9.1.3 Bend radius specification





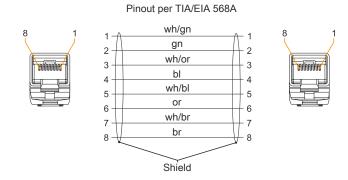
1: Bend radius

### 10.9.1.4 Cable pinout

If you wish to assemble a suitable cable yourself, the cable must be wired according to this pinout.

# Information:

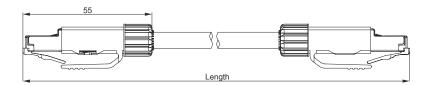
Functionality is only guaranteed for the cables available from B&R.



Pin	Pair number	10BASE-T 100BASE-TX	1000BASE-T Signal ID	Color
1	3	TX+	DA+	White/Green
2	3	TX-	DA-	Green
3	2	RX+	DB+	White/Orange
4	1	N/A	DC+	Blue
5	<b>'</b>	N/A	DC-	White/Blue
6	2	RX-	DB-	or
7	4	N/A	DD+	White/Brown
8	4	N/A	DD-	Brown

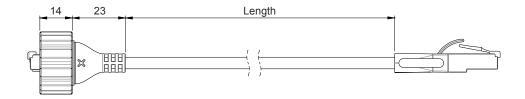
#### 10.9.1.5 Dimensions

#### Standard cables





# M22 cables



#### 10.9.2 SDL3/SDL4 cables

#### 10.9.2.1 5CASD3.xxxx-00

#### 10.9.2.1.1 General information

5CASD3.xxxx-00 SDL3/SDL4 cables are designed to transfer SDL3/SDL4 data and enable easy cable installation. Due to the RJ45 connector, the cable is also suitable for narrow feed-throughs, e.g. in swing arm shafts.

# Caution!

The cable is only permitted to be connected/disconnected in a voltage-free state.

SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over

#### 10.9.2.1.2 Order data

#### Revision ≥D0

Order number	Short description	Figure
	SDL3/SDL4/PoE cables	N
5CASD3.0010-00	SDL3/SDL4/FT50 cable - 1 m - FT50 including Power over Ethernet	MA PARTIES
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet	
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet	
5CASD3.0070-00	SDL3/SDL4/FT50 cable - 7 m - FT50 including Power over Ethernet	
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet	
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet	
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet	
Order number	Short description	Figure
	SDL3/SDL4/PoE cables	N
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet	
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet	

#### Revision ≤C0

5CASD3.1000-00

Order number	Short description	Figure
	SDL3/SDL4/PoE cables	
5CASD3.0030-00	SDL3/SDL4/FT50 cable - 3 m - FT50 including Power over Ethernet	
5CASD3.0050-00	SDL3/SDL4/FT50 cable - 5 m - FT50 including Power over Ethernet	
5CASD3.0100-00	SDL3/SDL4/FT50 cable - 10 m - FT50 including Power over Ethernet	
5CASD3.0150-00	SDL3/SDL4/FT50 cable - 15 m - FT50 including Power over Ethernet	
5CASD3.0200-00	SDL3/SDL4/FT50 cable - 20 m - FT50 including Power over Ethernet	
5CASD3.0300-00	SDL3/SDL4/FT50 cable - 30 m - FT50 including Power over Ethernet	
5CASD3.0500-00	SDL3/SDL4/FT50 cable - 50 m - FT50 including Power over Ethernet	
5CASD3.1000-00	SDL3/SDL4/FT50 cable - 100 m - FT50 including Power over Ethernet	

#### 10.9.2.1.3 Technical data

# Information:

The following specified characteristic data, features and limit values are only valid for this accessory and may differ from those of the complete system. The data specified for the complete system applies to the complete system in which this accessory is installed, for example.

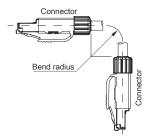
Order number	5CASD3. 0010-00		CASD3.	5CASD3. 0070-00	5CASD3. 0100-00	5CASD3. 0150-00	5CASD3. 0200-00	5CASD3. 0300-00	5CASD3. 0500-00	5CASD3. 1000-00	
General information						'	<u>'</u>			•	
Certifications											
CE					Ye	es					
UKCA	Yes										
UL	cULus E115267										
OL .	Industrial control equipment										
HazLoc	cULus HazLoc E180196 Industrial control equipment										
		for hazardous locations Class I, Division 2, Groups ABCD, T4 1)									
EAC	-										
Cable construction											
Wire cross section		4x 2x 26/7 AWG 4x 2					2x 23/1 AV	VG			
Properties		Flame-retardant, halogen-free, lead-free							_		
Outer jacket		rianne-retaruant, naiogen-nee, teau-nee									
					D.I	(DLID)					
Material		Polyurethane (PUR)									
Color	Gray or yellow <sup>2)</sup>	Rev. D0 and later: Gray or yellow up to Rev. C0: Yellow, RAL 1021  Rev. D0 and later: Gray or yellow up to Rev. C0: Yellow, RAL 1021  Up to Rev. C0: Yellow, RAL 1021									
Labeling	HAF	HARTING INDUSTRIAL CABLE S/FTP CAT 6A PUR 4x2xAWG26/7  HARTING INDUSTRIAL CABLE S/FTP CAT 6A PUR 4x2xAWG26/7  TALLATION CAT 7 PUR 4						TION CABL	E S/FTP		
Wires		5 510 NEW WOLDS						_			
Wire insulation		Polyethylene (PE)									
Wire colors	Green/White-green, orange/white-orange, blue/white-blue, brown/white-brown										
Shield	Aluminum foil and braided wire shield composed of tinned copper wires										
Туре		Bare copper strand, 4x 2x 26/7 AWG  Bare copper strand, 4x 2x 26/7 AWG  Bare copper strand, 4x 2x 23/1 AWG									
Connector										· -	
Туре					2x RJ4	5, male					
Mating cycles		Min. 750							_		
Contacts		8									
Electrical properties 3)											
Operating voltage				≤100 V				1	≤125 V		
							_				
Conductor resistance		≤290 Ω/km ≤75 Ω/km					_				
Wave impedance		100 ±5 Ω (at 100 MHz)									
Transfer properties		Category 6A / Class EA up to 500 MHz per ISO/IEC 11801 (EN 50173-1), ISO/IEC 24702 (EN 50173-3) 11801 (EN 50173-1), ISO/IEC 24702 (EN 50173-3) 11801 (EN 50173-1), ISO/IEC 24702 (EN 50173-3)						SO/IEC 1), ISO/			
Insulation resistance		≥500 MΩ/km ≥5 GΩ/km									
Operating conditions											
Pollution degree per EN 61131-2					Pollution	degree 2					
Flame-retardant	1	IEC 60332-1-2									
Oil and hydrolysis resistance		EN 60811-2-1 (90°C / 7x24 h)									
, ,		EN 00011-2-1 (90 G / / XZ4 II)									
Degree of protection per EN 60529  Cables		IP20									
RJ45 connector		IP20, only when properly connected									
Ambient conditions											
Temperature											
Storage	1	-40 to 80°C -40 to 70°				-40 to 70°C	,				
Fixed installation		-40 to 80°C				-40 to 70 °C					
		-40 to 80 °C									
Flexible installation		-40 t0 00 C					-10 to 50°C				
Mechanical properties											
Dimensions											
Length	1 m	3 m	5 m	7 m	10 m	15 m	20 m	30 m	50 m	100 m	
Diameter				6.7 mm					8.3 mm		
Bend radius				****				1	- *****	_	
Fixed installation		≥5x diameter ≥4x diameter						or .			
Flexible installation	F	≥10x diameter ≥8x diameter					1				
Weight Tension	59 g	162 g   300 g   350 g   500 g   700 g   950 g   2150 g   3500 g   69					6950 g				
In operation		≤70 N ≤110 N									
During installation				≤70 N					≤110 N		
• • • • •	1	NUITS									

Yes, but applies only if all components installed in the complete system have this certification and the complete system bears the corresponding mark. B&R reserves the right to deliver technically equivalent products in a different color design.

At 20°C ambient temperature.

<sup>1)</sup> 2) 3)

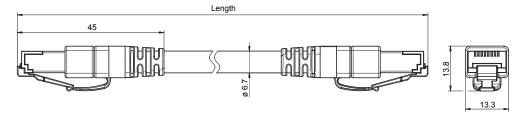
# 10.9.2.1.4 Bend radius specification



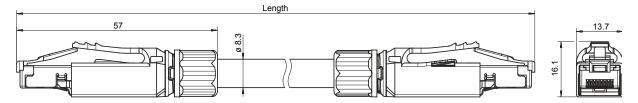
# 10.9.2.1.5 Dimensions

# Rev. ≥D0

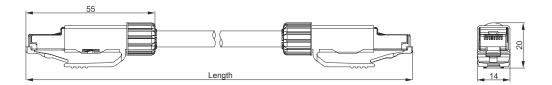
Dimensions for 1 to 20 m cables:



# Dimensions for 30 to 100 m cables:



Rev. ≤C0



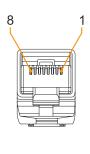
#### 10.9.2.1.6 Cable pinout

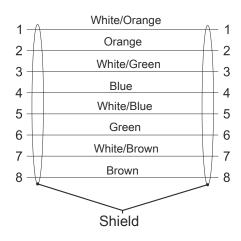
If you wish to assemble a suitable cable yourself, the cable must be wired according to this pinout.

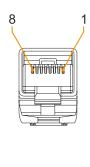
# Information:

Functionality is only guaranteed for the cables available from B&R.









#### 10.9.2.1.7 Wiring

The following information and figure apply if a field-assembled cable is used and connected to an RJ45 network connector (e.g. patch panel) instead of directly to a B&R device.

The wiring must comply with category 6A (Cat 6A) or 7 (Cat 7) requirements. The maximum total length of 100 m is not permitted to be exceeded.



# 10.10 Storage media

For technical data and additional information about storage media, see the corresponding documentation. This can be found under the purchase order number of the storage medium at <a href="https://www.br-automation.com">www.br-automation.com</a> and can be downloaded from there.

# 11 International and national certifications

#### 11.1 Directives and declarations

#### 11.1.1 EU directives and standards (CE)

#### **CE** marking



The respective product complies with all applicable EU directives and relevant harmonized standards.

Certification of these products is performed in cooperation with accredited testing laboratories.

#### EMC Directive 2014/30/EU

All products meet the requirements of the "Electromagnetic Compatibility" directive and are designed for typical industrial use.

#### Applicable standards from this directive:

EN 61131-2 Programmable controllers

- Part 2: Equipment requirements and tests

EN 61000-6-2 Electromagnetic compatibility (EMC)

- Part 6-2: Generic standards - Immunity standard for industrial environments

EN 61000-6-4 Electromagnetic compatibility (EMC)

- Part 6-4: Generic standards - Emissions standard for industrial environments

The editions of the applied standards are located in the declaration of conformity. The declaration of conformity is available for download on the B&R website.

#### **UK Conformity Assessed (UKCA)**



All directives applicable to the respective product and their relevant standards are met.

Products with this marking are permitted to be imported into Great Britain (England, Wales, Scotland).

For information about the editions of applicable standards, see the "UK Declaration of Conformity". The "UK Declaration of Conformity" is available for download on the B&R website.

#### 11.2 Certifications

# Danger!

A complete system can only receive certification if all individual components installed and connected in it have the corresponding certifications. If an individual component is used that does not have the corresponding certification, the complete system will also not be certified.

B&R products and services comply with applicable standards. These are international standards from organizations such as ISO, IEC and CENELEC, as well as national standards from organizations such as UL, CSA, FCC, VDE, ÖVE, etc. We pay special attention to the reliability of our products in the industrial sector.

# Information:

The certifications valid for the respective product are available on the website and in the user's manual under the technical data in section "Certifications" or in the associated certificates.

#### 11.2.1 UL certification



Ind. Cont. Eq. E115267 Products with this mark are tested by Underwriters Laboratories and listed as "industrial control equipment". The mark is valid for the USA and Canada and facilitates the certification of your machines and systems in this economic area.

Underwriters Laboratories (UL) per standards UL 61010-1 and UL 61010-2-201 Canadian (CSA) standard per C22.2 No. 61010-1-12 and CSA C22.2 No. 61010-2-201:14

The UL certificates are available on the B&R website (<u>Downloads > Certificates > UL</u>).

# 12 Environmentally friendly disposal

All programmable logic controllers, operating and monitoring devices and uninterruptible power supplies from B&R are designed to have as little impact on the environment as possible.

# 12.1 Separation of materials

To ensure that devices can be recycled in an environmentally friendly manner, it is necessary to separate out the different materials.

Component	Disposal
Programmable logic controllers Operating and monitoring devices Uninterruptible power supplies Batteries and rechargeable batteries Cables	Electronics recycling
Paper/Cardboard packaging	Paper/Cardboard recycling
Plastic packaging material	Plastic recycling

Disposal must be carried out in accordance with applicable legal regulations.