

Automation Panel 900

User's Manual

Version: **1.1 Preliminary (April 2005)**
Model No.: -

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Chapter 1: General Information

Chapter 2: Technical data

Chapter 3: Mounting

Chapter 4: Accessories

Chapter 5: Chapter 5



Table index

Index

Model number index

Chapter 1: General Information	11
1. Manual History	11
2. Safety guidelines	12
2.1 Introduction	12
2.2 Intended use	12
2.3 Transport and Storage	12
2.4 Mounting	12
2.5 Operation	13
2.5.1 Protection against touching electrical parts	13
2.6 Safety notices	13
3. Guidelines	14
4. Model numbers	14
4.1 Automation Panel 10.4" VGA	14
4.2 Automation Panel 15" XGA	14
4.3 Automation Panel 17" SXGA	15
4.4 Automation Panel 19" SXGA	15
4.5 Automation Panel 21.3" UXGA	15
4.6 Automation Panel Link insert cards	15
4.7 Cables	16
4.8 Accessories	16
 Chapter 2: Technical Data	 19
1. Introduction	19
2. Automation Panel 10.4" VGA	20
2.1 Automation Panel 5AP920.1043-01	20
2.1.1 Technical data	21
2.1.2 Dimensions	23
2.1.3 Contents of delivery	23
2.1.4 Cutout installation	24
2.1.5 USB connections	25
2.1.6 Fastening the cable	25
2.2 Automation Panel 5AP951.1043-01	26
2.2.1 Technical data	27
2.2.2 Dimensions	29
2.2.3 Contents of delivery	29
2.2.4 Cutout installation	30
2.2.5 USB connections	31
2.2.6 Fastening the cable	31
2.3 Automation Panel 5AP981.1043-01	32
2.3.1 Technical data	33
2.3.2 Dimensions	35
2.3.3 Contents of delivery	35
2.3.4 Cutout installation	36
2.3.5 USB connections	37
2.3.6 Fastening the cable	37
2.4 Automation Panel 5AP952.1043-01	38

Table of contents

2.4.1 Technical data	39
2.4.2 Dimensions	41
2.4.3 Contents of delivery	41
2.4.4 Cutout installation	42
2.4.5 USB connections	43
2.4.6 Fastening the cable	43
2.5 Automation Panel 5AP982.1043-01	44
2.5.1 Technical data	45
2.5.2 Dimensions	47
2.5.3 Contents of delivery	47
2.5.4 Cutout installation	48
2.5.5 USB connections	49
2.5.6 Fastening the cable	49
2.6 Automation Panel 5AP980.1043-01	50
2.6.1 Technical data	51
2.6.2 Dimensions	53
2.6.3 Contents of delivery	53
2.6.4 Cutout installation	54
2.6.5 USB connections	55
2.6.6 Fastening the cable	55
3. Automation Panel 15" XGA	56
3.1 Automation Panel 5AP920.1505-01	56
3.1.1 Technical data	57
3.1.2 Dimensions	59
3.1.3 Contents of delivery	59
3.1.4 Cutout installation	60
3.1.5 USB connections	61
3.1.6 Fastening the cable	61
3.2 Automation Panel 5AP951.1505-01	62
3.2.1 Technical data	63
3.2.2 Dimensions	65
3.2.3 Contents of delivery	65
3.2.4 Cutout installation	66
3.2.5 USB connections	67
3.2.6 Fastening the cable	67
3.3 Automation Panel 5AP981.1505-01	68
3.3.1 Technical data	69
3.3.2 Dimensions	71
3.3.3 Contents of delivery	71
3.3.4 Cutout installation	72
3.3.5 USB connections	73
3.3.6 Fastening the cable	73
3.4 Automation Panel 5AP980.1505-01	74
3.4.1 Technical data	75
3.4.2 Dimensions	77
3.4.3 Contents of delivery	77
3.4.4 Cutout installation	78

3.4.5 USB connections	79
3.4.6 Fastening the cable	79
4. Automation Panel 17" SXGA	80
4.1 Automation Panel 5AP920.1706-01	80
4.1.1 Technical data	81
4.1.2 Dimensions	83
4.1.3 Contents of delivery	83
4.1.4 Cutout installation	84
4.1.5 USB connections	85
4.1.6 Fastening the cable	85
5. Automation Panel 19" SXGA	86
5.1 Automation Panel 5AP920.1906-01	86
5.1.1 Technical data	87
5.1.2 Dimensions	89
5.1.3 Contents of delivery	89
5.1.4 Cutout installation	90
5.1.5 USB connections	91
5.1.6 Fastening the cable	91
6. Automation Panel 21.3" UXGA	92
6.1 Automation Panel 5AP920.2138-01	92
6.1.1 Technical data	93
6.1.2 Dimensions	95
6.1.3 Contents of delivery	95
6.1.4 Cutout installation	96
6.1.5 USB connections	97
6.1.6 Fastening the cable	97
7. Automation Panel Link insert cards	98
7.1 Automation Panel Link DVI Receiver 5DL DVI.1000-01	99
7.1.1 Technical data	99
7.1.2 Interface descriptions	99
7.2 Automation Panel Link SDL Receiver 5DLSDL.1000-00	102
7.2.1 Technical data	102
7.2.2 Interface descriptions	102
7.3 Automation Panel Link SDL Transceiver 5DLSDL.1000-01	103
7.3.1 Technical data	103
7.3.2 Interface descriptions	103
8. Cables	105
8.1 DVI cable	105
8.1.1 Order Data	105
8.1.2 Technical data	105
8.1.3 Cable specifications	106
8.2 SDL cable	107
8.2.1 Order Data	107
8.2.2 Technical data	107
8.2.3 Cable specifications	108
8.3 RS232 cable	109
8.3.1 Order Data	109

Table of contents

8.3.2 Technical data	109
8.3.3 Cable specifications	110
8.4 USB cable	111
8.4.1 Order Data	111
8.4.2 Technical data	111
8.4.3 Cable specifications	112
Chapter 3: Mounting	113
1. Mounting Instructions	113
2. Mounting orientation	115
Chapter 4: Accessories	117
1. Plug/N 24V 5.08 3p screw clamps	117
1.1 Technical data	117
2. TB103 3-pin supply voltage connector	118
2.1 General Information	118
2.2 Order Data	118
2.3 Technical data	118
3. Legend strip templates	119
3.1 Order Data	120
Appendix A:	121
1. Touch screen	121
1.1 Elo Accu touch	121
1.1.1 Cleaning	122
2. Mylar	123
3. Filter glass	124
3.1 Mechanical characteristics	124
3.2 Chemical properties	124

Chapter 1 • General Information

Information:

B&R does its best to keep the printed versions of its user's manuals as current as possible. However, sometimes a newer version of the user's manual can be downloaded in electronic form (pdf) from the B&R homepage www.br-automation.com.

1. Manual History

Version	Date	Comment
1.0	14. December 2004	Changes / New Features - First version
1.1	29. June 2005	Changes / New Features - Model numbers added - Keypad devices - Legend strip templates

Table 1: Manual History

2. Safety guidelines

2.1 Introduction

Programmable logic controllers (PLCs), operating and monitoring devices (industrial PCs, Power Panels, Mobile Panels, etc.) as well as B&R uninterruptible power supplies have been designed, developed, and manufactured for conventional use in industry. They were not designed, developed and manufactured for any use involving serious risks or hazards that could lead to death, injury, serious physical damage, or loss of any kind without the implementation of exceptionally stringent safety precautions. In particular, such risks and hazards include the use of these devices to monitor nuclear reactions in nuclear power plants, as well as flight control systems, flight safety, the control of mass transportation systems, medical life support systems, and the control of weapons systems.

The safety precautions applying to industrial control systems (e.g. the provision of safety devices such as emergency stop circuits, etc.) in accordance with applicable national and international regulations must be observed both when using programmable logic controllers and when using operating and monitoring devices as control systems in conjunction with a Soft PLC (e.g. B&R Automation Runtime or comparable products) or a Slot PLC (e.g. B&R LS251 or comparable products). The same applies for all other devices connected to the system, such as drives.

All tasks such as installation, commissioning, and service may only be carried out by qualified personnel. Qualified personnel are persons who are familiar with the transport, mounting, installation, commissioning, and operation of the product and who have the appropriate qualifications (e.g. IEC 60364). National accident prevention guidelines must be followed.

The safety guidelines, connection descriptions (rating plate and documentation) and limit values listed in the technical data must be read carefully and must be observed before installation and commissioning.

2.2 Intended use

Electronic devices are generally not failsafe. In the event of a failure on the programmable control system, operating or monitoring device, or uninterruptible power supply, the user is responsible for ensuring that other devices that may be connected, e.g. motors, are in a secure state.

2.3 Transport and Storage

During transport and storage, devices must be protected from excessive stress (mechanical load, temperature, humidity, aggressive atmosphere, etc.).

2.4 Mounting

- Installation must take place according to the documentation using suitable equipment and tools.

- Devices may only be installed without voltage applied and by qualified personnel.
- General safety regulations and nationally applicable accident prevention guidelines must be observed.
- Electrical installation must be carried out according to the relevant guidelines (e.g. line cross section, fuse, protective ground connection).

2.5 Operation

2.5.1 Protection against touching electrical parts

To operate programmable logic controllers, operating and monitoring devices, and uninterruptible power supplies, certain components must carry dangerous voltage levels of over 42 VDC. A life-threatening electrical shock could occur if you come into contact with these parts. This could result in death, severe injury, or material damage.

Before turning on the programmable logic controller, the operational and monitoring devices and the uninterruptible power supply, ensure that the housing is properly grounded (PE rail). The ground connection must be established when testing the operating and monitoring devices or the uninterruptible power supply, even when operating them for only a short time.

Before turning the device on, make sure that all voltage-carrying parts are securely covered. During operation, all covers must remain closed.

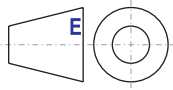
2.6 Safety notices

The safety notices in this manual are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Caution!	Disregarding the safety regulations and guidelines can result in severe injury or major damage to material.
Warning!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information for preventing errors.

Table 2: Safety guidelines

3. Guidelines



All dimension diagrams (e.g. dimension diagrams, etc.) are drawn according to European dimension standards.

4. Model numbers

4.1 Automation Panel 10.4" VGA

Model number	Description	Note
5AP920.1043-01	AP920 TFT C VGA 10.4in T Automation Panel AP920; 10.4" VGA color TFT display with touch screen (resistive); 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	In preparation
5AP951.1043-01	AP951 TFT C VGA 10.4in F Automation Panel AP951; 10.4" VGA color TFT display; 10 softkeys, 28 function keys and 20 system keys; 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	In preparation
5AP952.1043-01	AP952 TFT C VGA 10.4in F Automation Panel AP952; 10.4" VGA color TFT display; 44 function keys and 20 system keys; 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	In preparation
5AP980.1043-01	AP980 TFT C VGA 10.4in F T Automation Panel AP980; 10.4" VGA color TFT display with touch screen (resistive); 10 softkeys and 28 function keys; 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (front). 24 VDC.	In preparation
5AP981.1043-01	AP981 TFT C VGA 10.4in F T Automation Panel AP981; 10.4" VGA color TFT display with touch screen (resistive); 10 softkeys; 28 function keys and 20 system keys; 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (front). 24 VDC.	In preparation
5AP982.1043-01	AP982 TFT C VGA 10.4in F T Automation Panel AP982; 10.4" VGA color TFT display; 44 function keys and 20 system keys; 2 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	In preparation

Table 3: Model numbers for Automation Panel 10.4" VGA

4.2 Automation Panel 15" XGA

Model number	Description	Note
5AP920.1505-01	AP920 TFT C XGA 15in T Automation Panel AP920; 15" XGA color TFT display with touch screen (resistive); 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	
5AP951.1505-01	AP951 TFT C XGA 15in F Automation Panel AP951; 15" XGA color TFT display; 12 function keys; 20 function keys and 92 system keys; 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (front). 24 VDC.	In preparation

Table 4: Model numbers for Automation Panel 15" XGA

Model number	Description	Note
5AP980.1505-01	AP951 TFT C XGA 15in F T Automation Panel AP981, 15" XGA color TFT display with touch screen (resistive); 12 softkeys and 20 function keys; 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (front). 24 VDC.	In preparation
5AP981.1505-01	AP951 TFT C XGA 15in F T Automation Panel AP981, 15" XGA color TFT display with touch screen (resistive); 12 softkeys; 20 function keys and 92 system keys; 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (front). 24 VDC.	In preparation

Table 4: Model numbers for Automation Panel 15" XGA

4.3 Automation Panel 17" SXGA

Model number	Description	Note
5AP920.1706-01	AP920 TFT C SXGA 17in T Automation Panel AP920; 17" SXGA color TFT display with touch screen (resistive); 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	

Table 5: Model numbers for Automation Panel 17" SXGA

4.4 Automation Panel 19" SXGA

Model number	Description	Note
5AP920.1906-01	AP920 TFT C SXGA 19in T Automation Panel AP920; 19" SXGA color TFT display with touch screen (resistive); 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	

Table 6: Model numbers for Automation Panel 19" SXGA

4.5 Automation Panel 21.3" UXGA

Model number	Description	Note
5AP920.2138-01	AP920 TFT C UXGA 21.3in T Automation Panel AP920; 21.3" UXGA color TFT display with touch screen (resistive); 3 USB 2.0 interfaces; insert for Automation Panel Link; IP 65 protection (from front). 24 VDC.	In preparation

Table 7: Model numbers for Automation Panel 21.3" UXGA

4.6 Automation Panel Link insert cards

Model number	Description	Note
5DL DVI.1000-01	AP Link DVI receiver Automation Panel Link DVI receiver; connections for DVI-D, RS232 and USB 2.0 (Type B); 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	

Table 8: Model numbers for Automation Panel insert cards

General Information • Model numbers

Model number	Description	Note
5DLSL.1000-00	AP Link SDL receiver Automation Panel Link, SDL receiver, connection for SDL in; 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	
5DLSL.1000-01	AP Link SDL transceiver Automation Panel Link, SDL transceiver, connections for SDL in and SDL out; 24 VDC. Plug for power supply must be ordered separately (screw clamp: 0TB103.9; cage clamps: 0TB103.91).	

Table 8: Model numbers for Automation Panel insert cards (cont.)

4.7 Cables

Model number	Description	Note
5CADVI.0018-00	DVI-D cable 1.8 m / single Cable single DVI-D/m:DVI-D/m 1.8 m	
5CADVI.0050-00	DVI-D cable 5 m / single Cable single DVI-D/m:DVI-D/m 5 m	
5CADVI.0100-00	DVI-D cable 10 m / single Cable single DVI-D/m:DVI-D/m 10 m	
5CASDL.0018-00	SDL cable 1.8 m Cable SDL DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	SDL cable 5 m Cable SDL DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	SDL cable 10 m Cable SDL DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	SDL cable 15 m Cable SDL DVI-D/m:DVI-D/m 15 m	
5CAUSB.0018-00	Cable USB 2.0 A/m:B/m 1.8 m USB 2.0 connection cable; Type A - Type B; 1.8 m	
5CAUSB.0050-00	Cable USB 2.0 A/m:B/m 5 m USB 2.0 connection cable; Type A - Type B; 5 m	
9A0014.02	Cable RS232 DB9/f:DB9/m 1.8 m RS232 extension cable for remote operation of a display unit with touch screen, length 1.8 m.	
9A0014.05	Cable RS232 DB9/f:DB9/m 5 m RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	Cable RS232 DB9/f:DB9/m 10 m RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 9: Model numbers - cables

4.8 Accessories

Model number	Description	Note
0TB103.8	Plug/N 24V 5.08 3p screw clamps Accessory terminal block, 3-pin, screw clamp, 1.5 mm ² , protection against vibration with the screw flange	

Table 10: Model numbers for accessories

Model number	Description	Note
0TB103.9	Plug 24V 5.08 3p screw clamps 24 VDC 3-pin connector, female. Screw clamp, 1.5 mm ² , protected against vibration by the screw flange.	
0TB103.91	Plug 24V 5.08 3p cage clamps 24 VDC 3-pin connector, female. Cage clamps, 2.5 mm ² , protected against vibration by the screw flange.	
5AC900.104X-03	Legend strip template 10.4" for Automation Panels 5AP951.1043-01 and 5A981.1043-01. For 1 device.	
5AC900.104X-04	Legend strip template 10.4" for Automation Panels 5AP952.1043-01 and 5A982.1043-01. For 1 device.	
5AC900.104X-05	Legend strip template 10.4" for Automation Panel 5AP980.1043-01. For 3 devices.	
5AC900.150X-01	Legend strip template 15" for Automation Panels 5AP951.1505-01, 5AP980.1505-01 and 5A981.1505-01. For 4 devices.	

Table 10: Model numbers for accessories (cont.)

Chapter 2 • Technical Data

1. Introduction

The Automation Panel series represents a new product generation from B&R that features completely new type of modularity for the interfaces to the PC system. This allows picture information to be transferred independently of the display unit. This allows future innovations in the area of transfer technology to be implemented using a new Automation Panel Link.

This display units are composed of two components, an Automation Panel and an Automation Panel Link insert card. Put together, these two components make up the complete display unit.

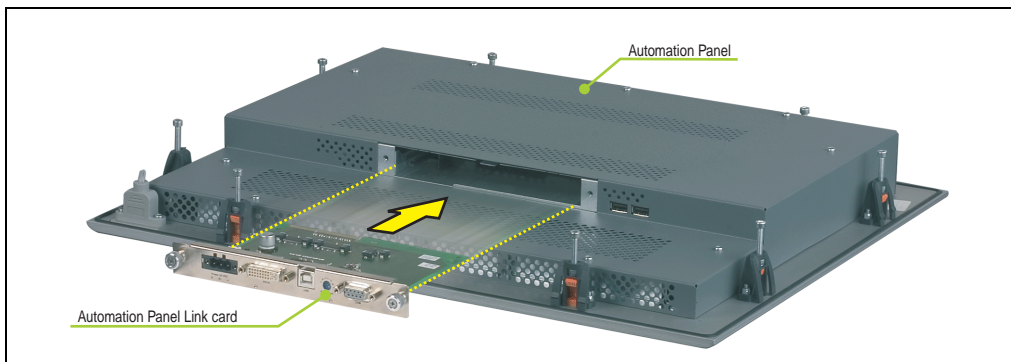


Figure 1: Automation Panel and Automation Panel Link insert card

USB interfaces are present on the front and at least 1 on the back side of all devices so that data can be easily exchanged with the Automation PC (e.g. from a USB stick, etc.).

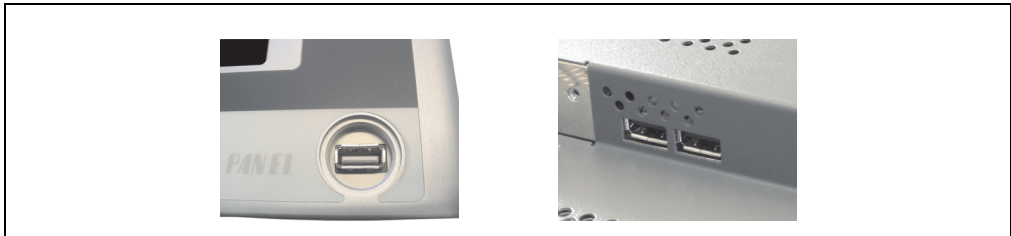


Figure 2: Automation Panel USB connections (front side - back side)

2. Automation Panel 10.4" VGA

2.1 Automation Panel 5AP920.1043-01

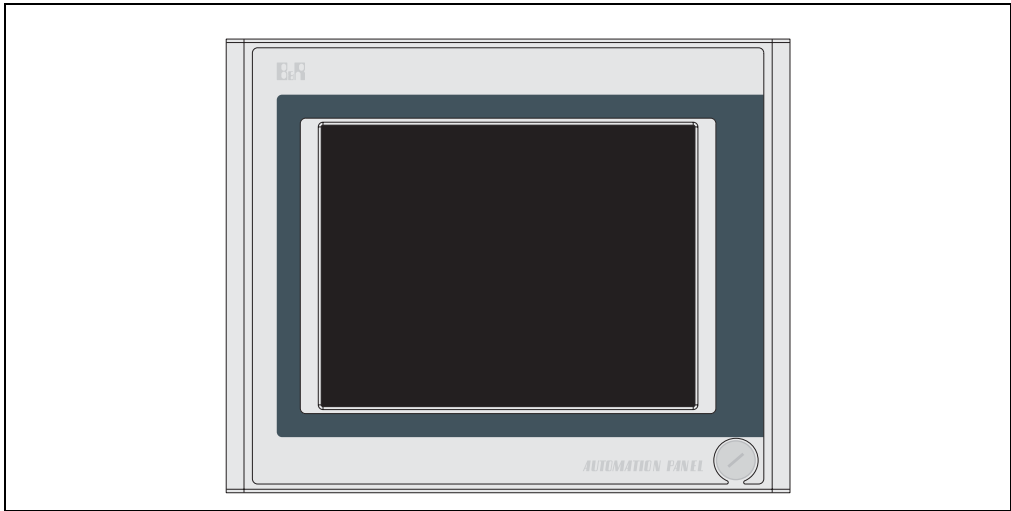


Figure 3: Front view 5AP920.1043-01

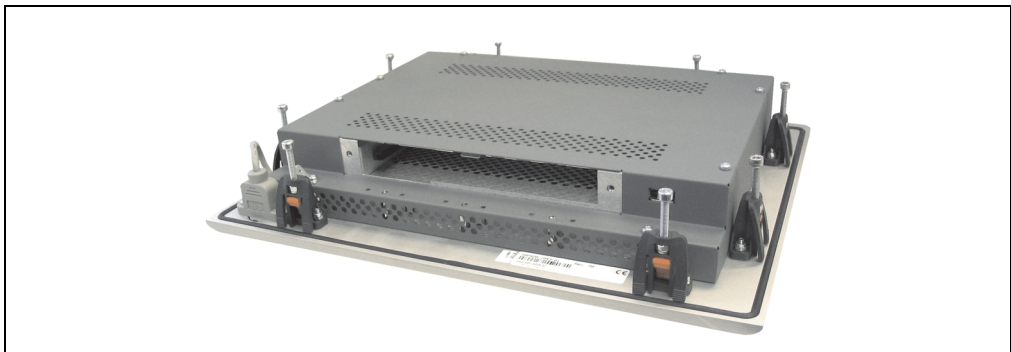


Figure 4: Rear view 5AP920.1043-01

2.1.1 Technical data

Features	5AP920.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	323 mm 260 mm 55 mm

Table 11: Technical data - 5AP920.1043-01

Technical Data • Automation Panel 10.4" VGA

Weight	Approx. 2.9 kg
Environmental characteristics	5AP920.1043-01
Environmental temperature Operation Storage Transport	0 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 11: Technical data - 5AP920.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.1.2 Dimensions

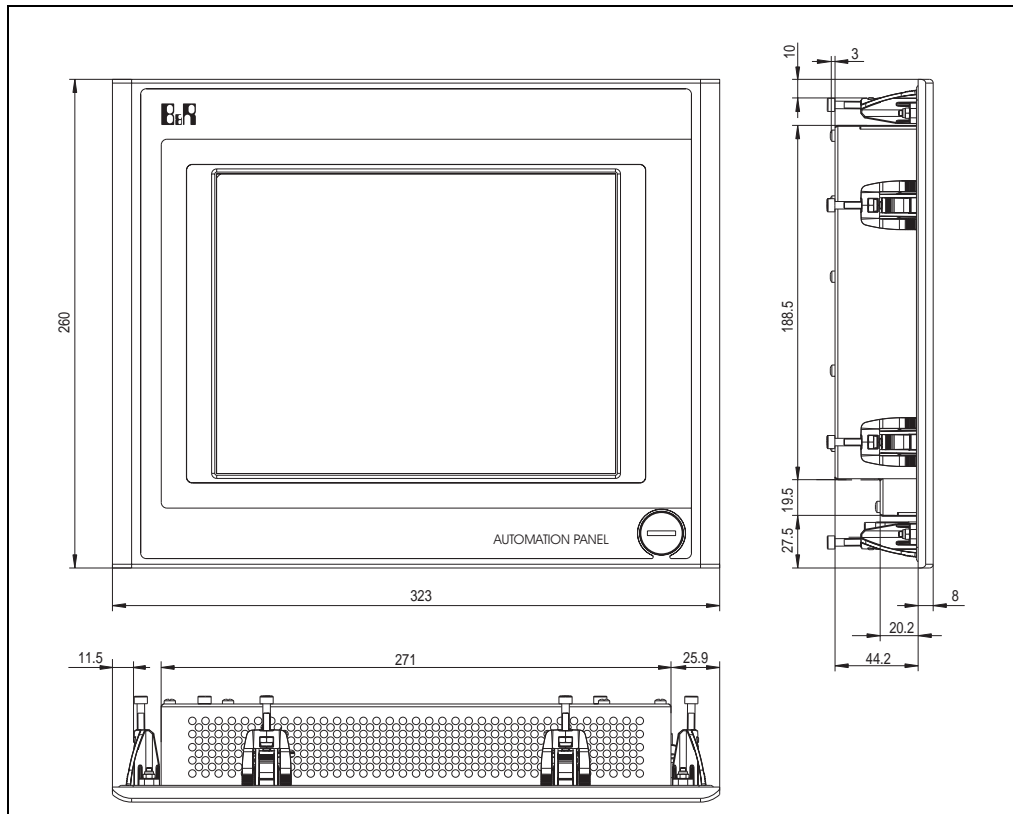


Figure 5: Dimensions 5AP920.1043-01

2.1.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 920 TFT VGA 10.4in with touch screen

Table 12: Delivery contents - 5AP920.1043-01

2.1.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

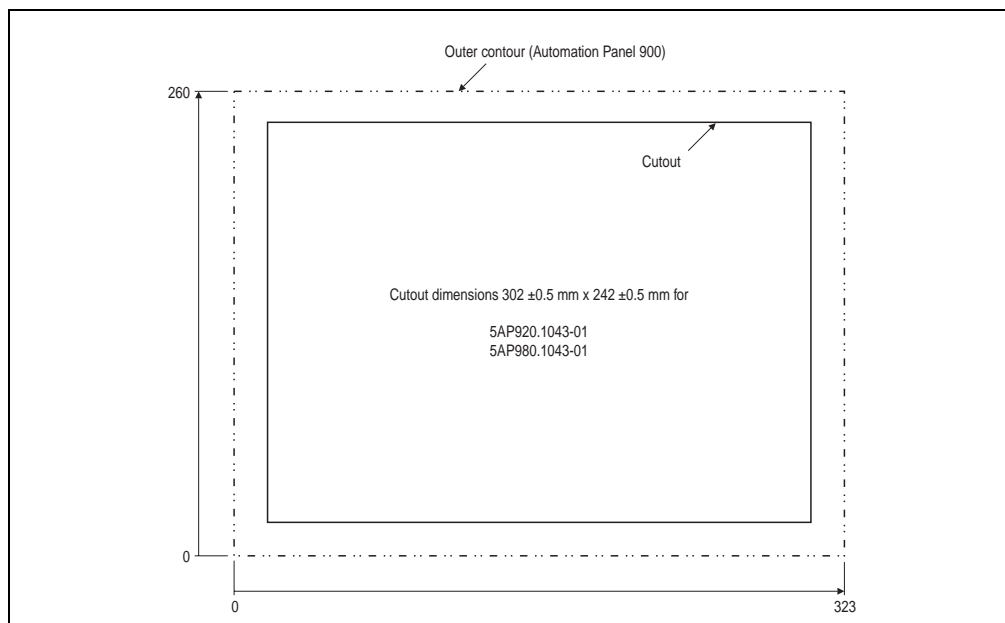


Figure 6: Cutout installation - 5AP920.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.1.5 USB connections

The Automation Panel 5AP920.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

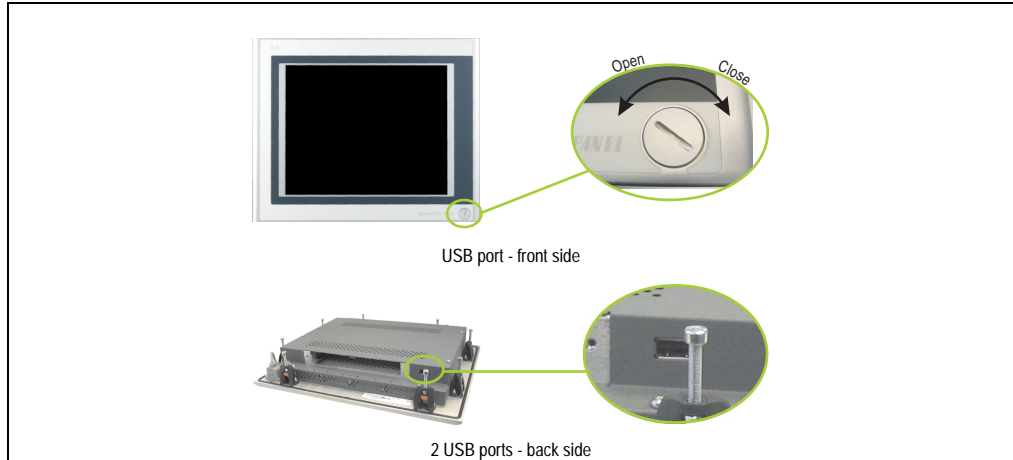


Figure 7: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.1.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

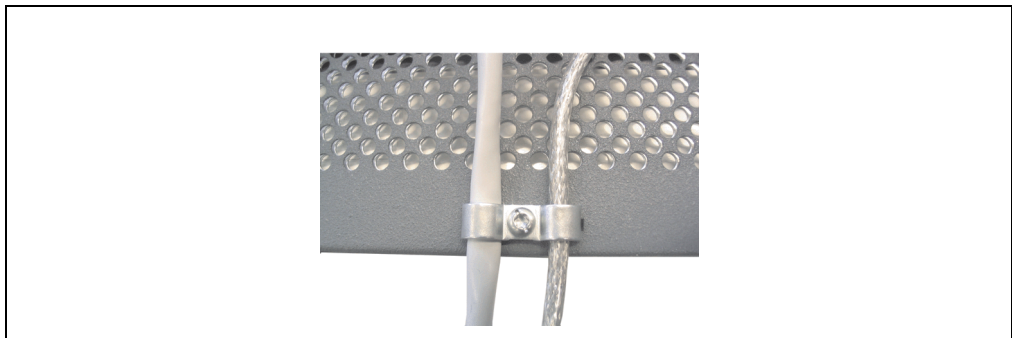


Figure 8: Mounting the cable clamps

2.2 Automation Panel 5AP951.1043-01

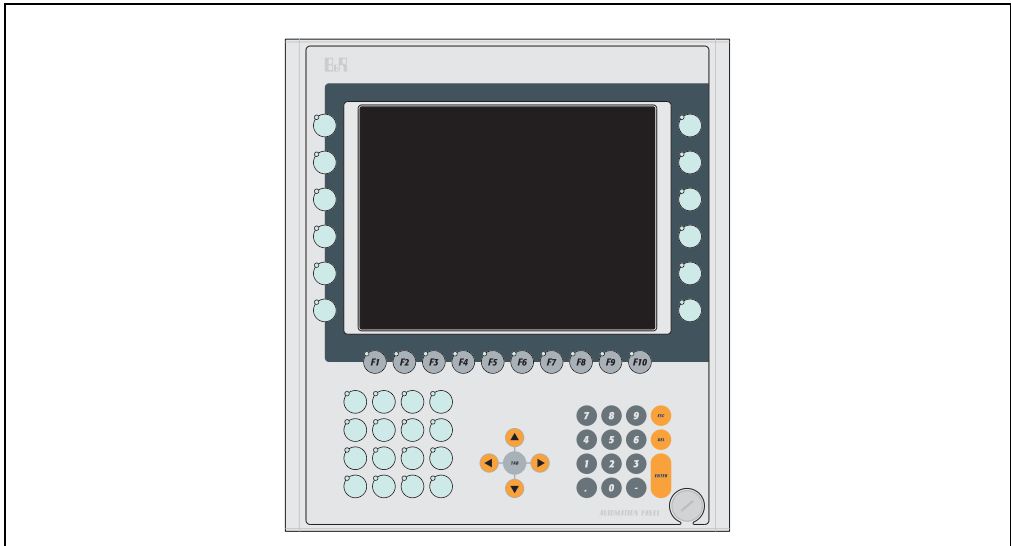


Figure 9: Front view 5AP951.1043-01

TBD

Figure 10: Rear view 5AP951.1043-01

2.2.1 Technical data

Features	5AP951.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	-
Filter glass Transmission degree Coating	95 % On both sides
Keys Function keys Softkeys Cursor pad Number block Other keys	28 with LED 10 with LED - 15 without LED 5 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	323 mm 358 mm 55 mm

Table 13: Technical data - 5AP951.1043-01

Weight	TBD
Environmental characteristics	5AP951.1043-01
Environmental temperature Operation Storage Transport	0 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 13: Technical data - 5AP951.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.2.2 Dimensions

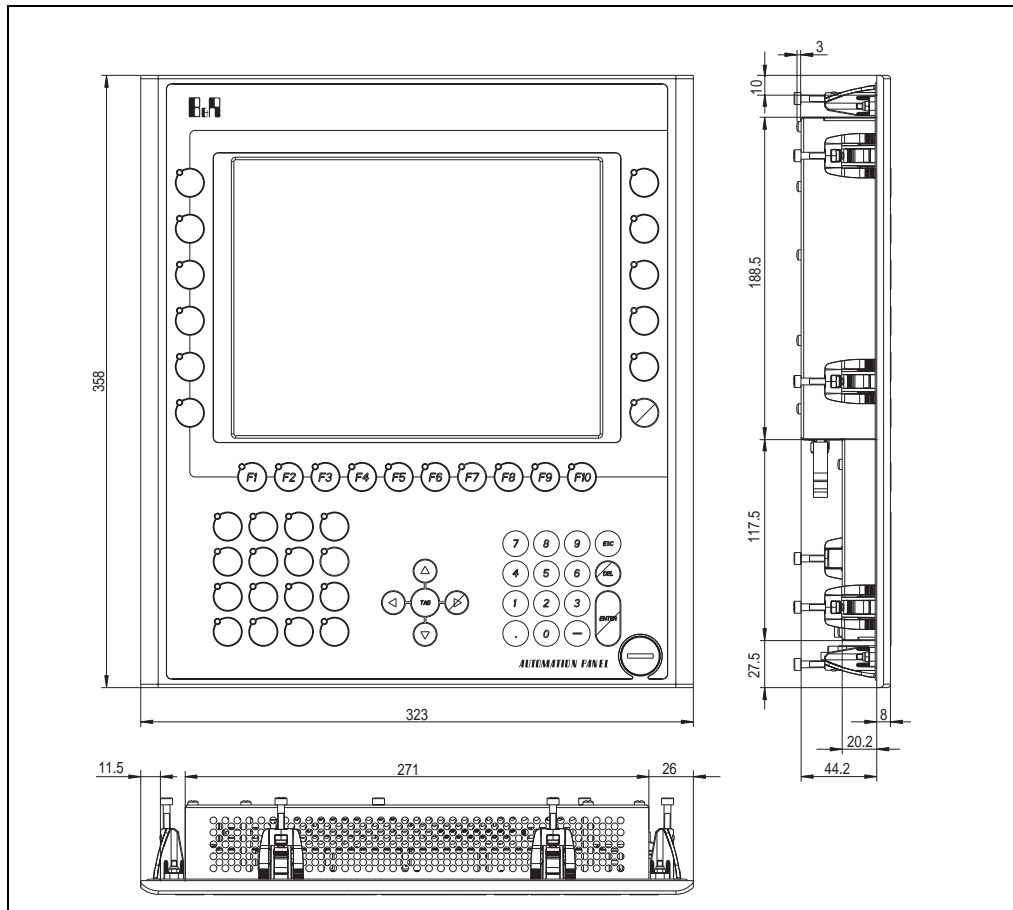


Figure 11: Dimensions 5AP951.1043-01

2.2.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 951 TFT VGA 10.4in with keys
6	Insert strips without labels (inserted in the front)

Table 14: Delivery contents - 5AP951.1043-01

2.2.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

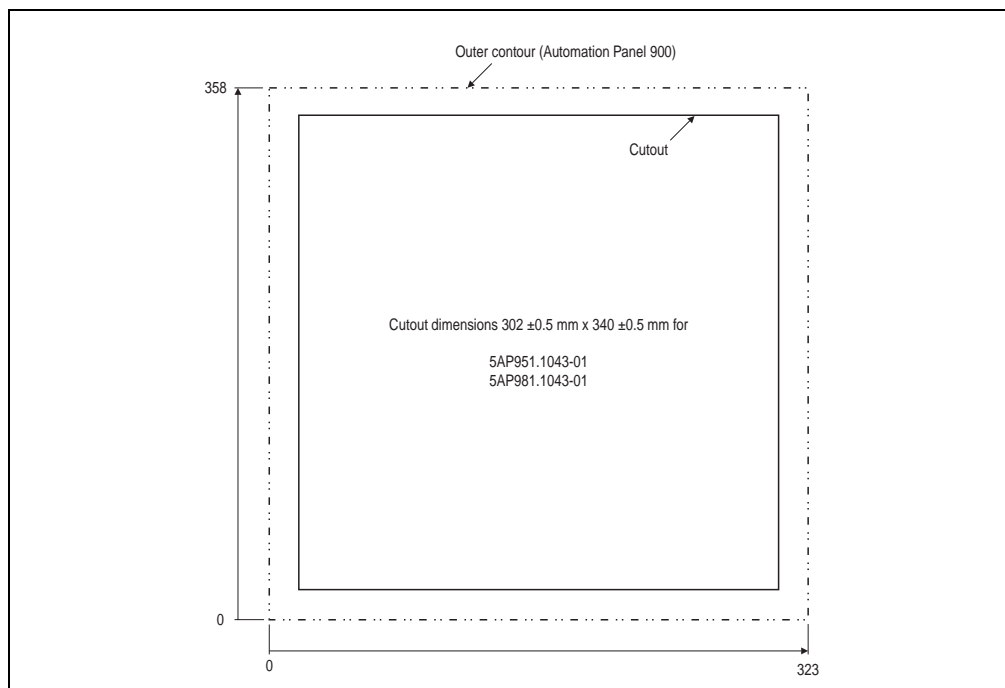


Figure 12: Cutout installation - 5AP951.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.2.5 USB connections

The Automation Panel 5AP951.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

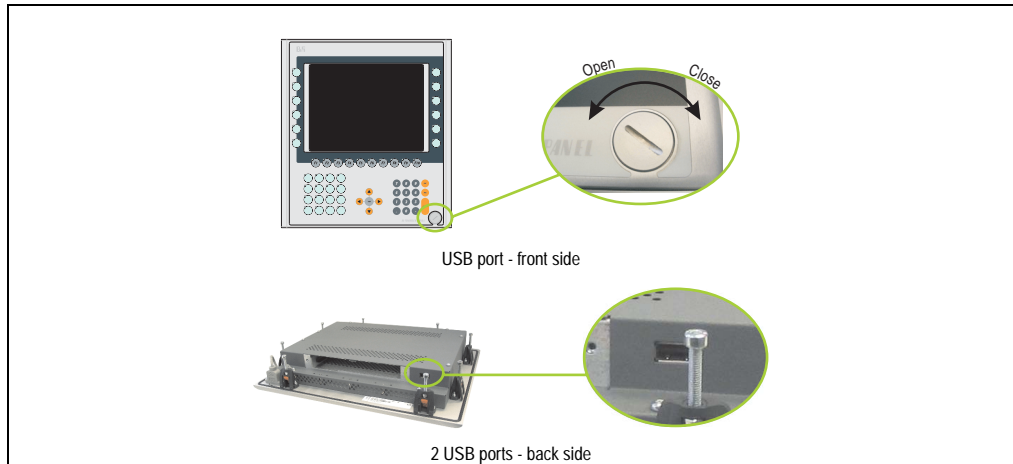


Figure 13: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.2.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

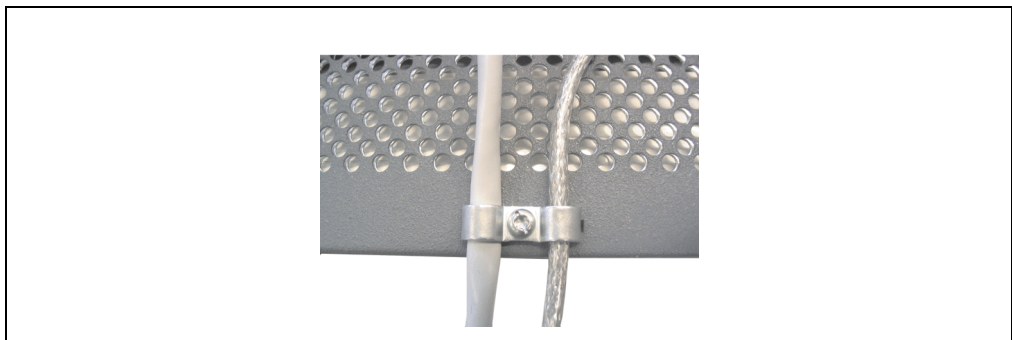


Figure 14: Mounting the cable clamps

2.3 Automation Panel 5AP981.1043-01

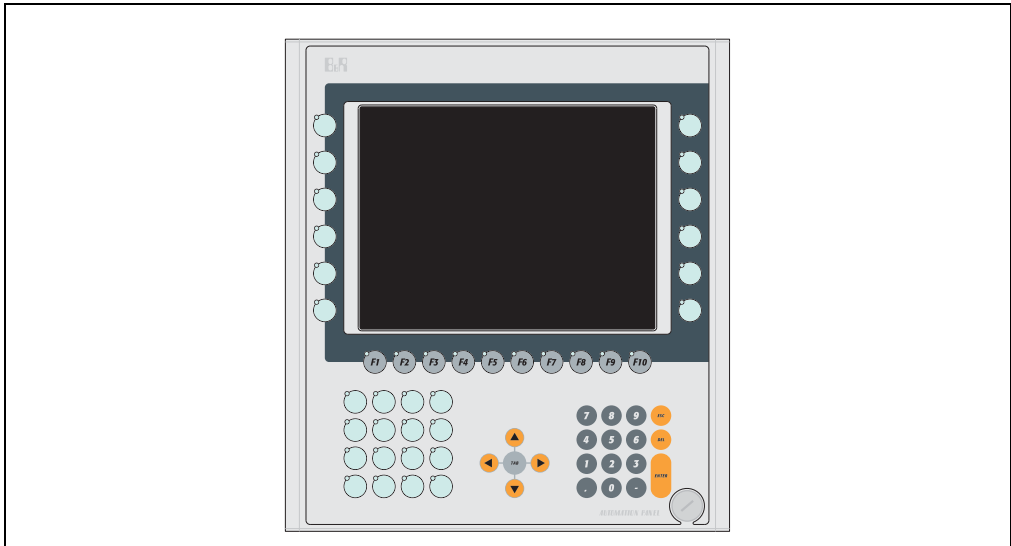


Figure 15: Front view 5AP981.1043-01

TBD

Figure 16: Rear view 5AP981.1043-01

2.3.1 Technical data

Features	5AP981.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	28 with LED 10 with LED - 15 without LED 5 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	323 mm 358 mm 55 mm

Table 15: Technical data - 5AP981.1043-01

Weight	Approx. 3.7 kg
Environmental characteristics	5AP981.1043-01
Environmental temperature Operation Storage Transport	0 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 15: Technical data - 5AP981.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.3.2 Dimensions

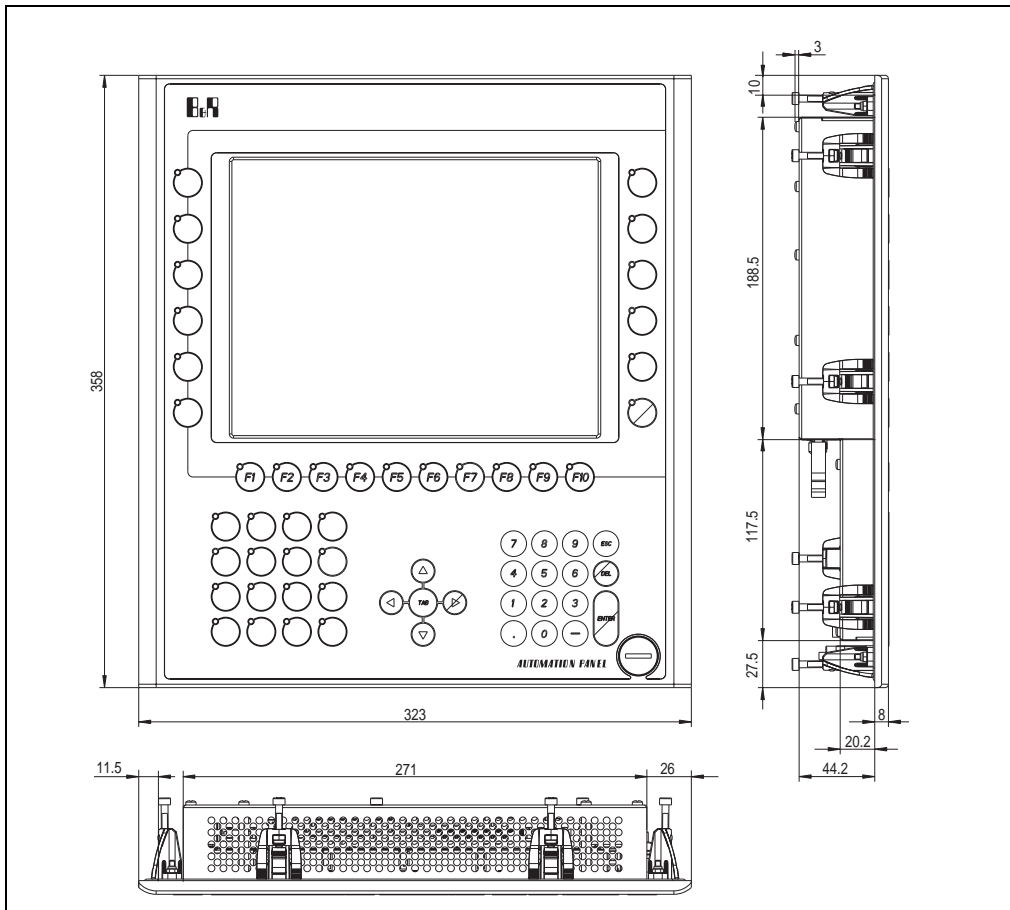


Figure 17: Dimensions 5AP981.1043-01

2.3.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 981 TFT VGA 10.4in with keys and touch screen
6	Insert strips without labels (inserted in the front)

Table 16: Delivery contents - 5AP981.1043-01

2.3.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

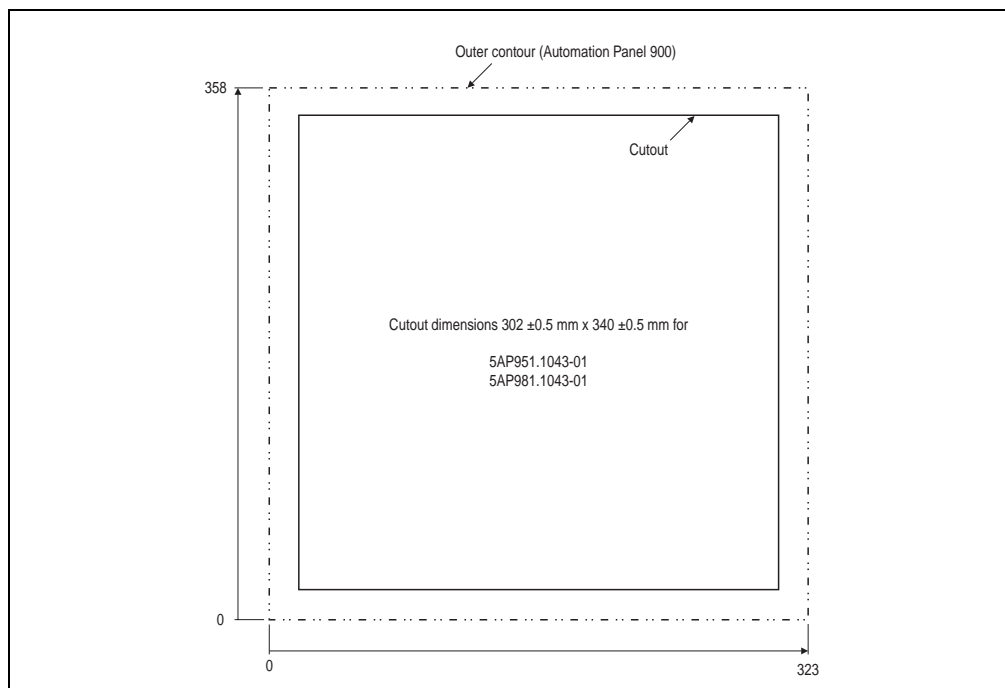


Figure 18: Cutout installation - 5AP981.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.3.5 USB connections

The Automation Panel 5AP981.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

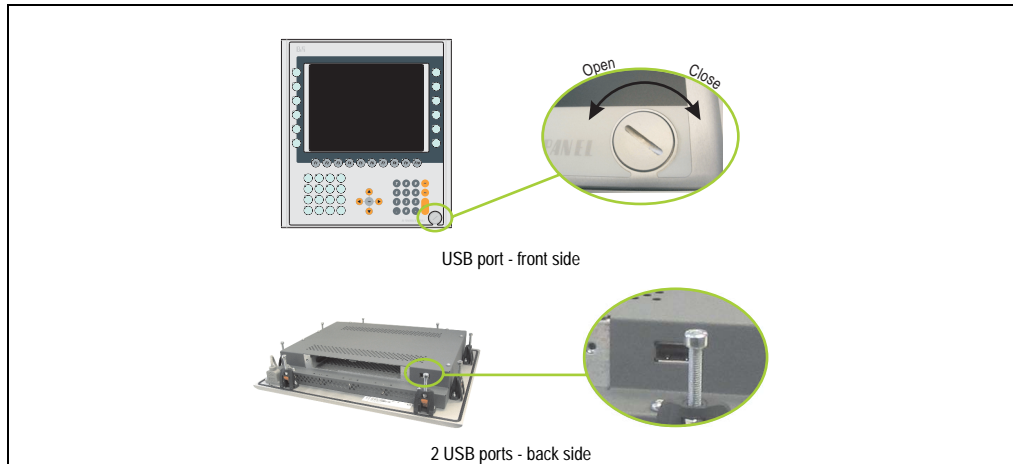


Figure 19: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.3.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

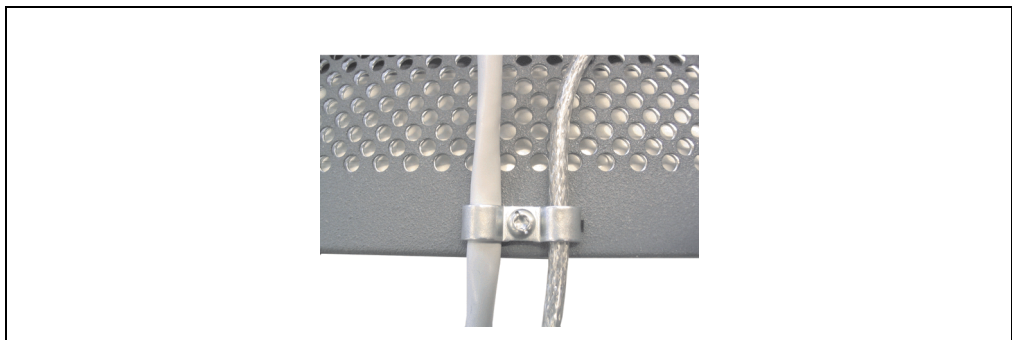


Figure 20: Mounting the cable clamps

2.4 Automation Panel 5AP952.1043-01

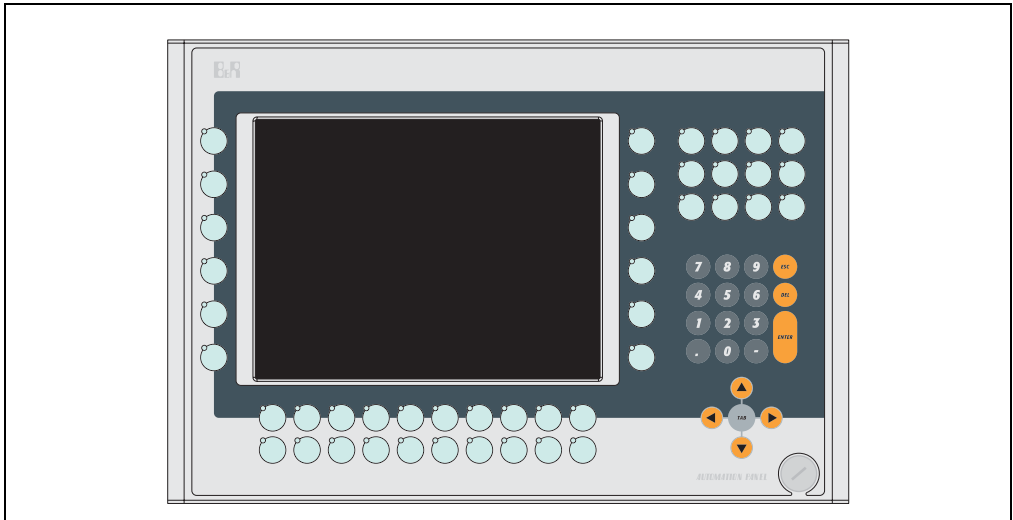


Figure 21: Front view 5AP952.1043-01

TBD

Figure 22: Rear view 5AP952.1043-01

2.4.1 Technical data

Features	5AP952.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	-
Filter glass Transmission degree Coating	95 % On both sides
Keys Function keys Softkeys Cursor pad Number block Other keys	44 with LED - - 15 without LED 5 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	423 mm 288 mm 55 mm

Table 17: Technical data - 5AP952.1043-01

Weight	TBD
Environmental characteristics	5AP952.1043-01
Environmental temperature Operation Storage Transport	0 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 17: Technical data - 5AP952.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.4.2 Dimensions

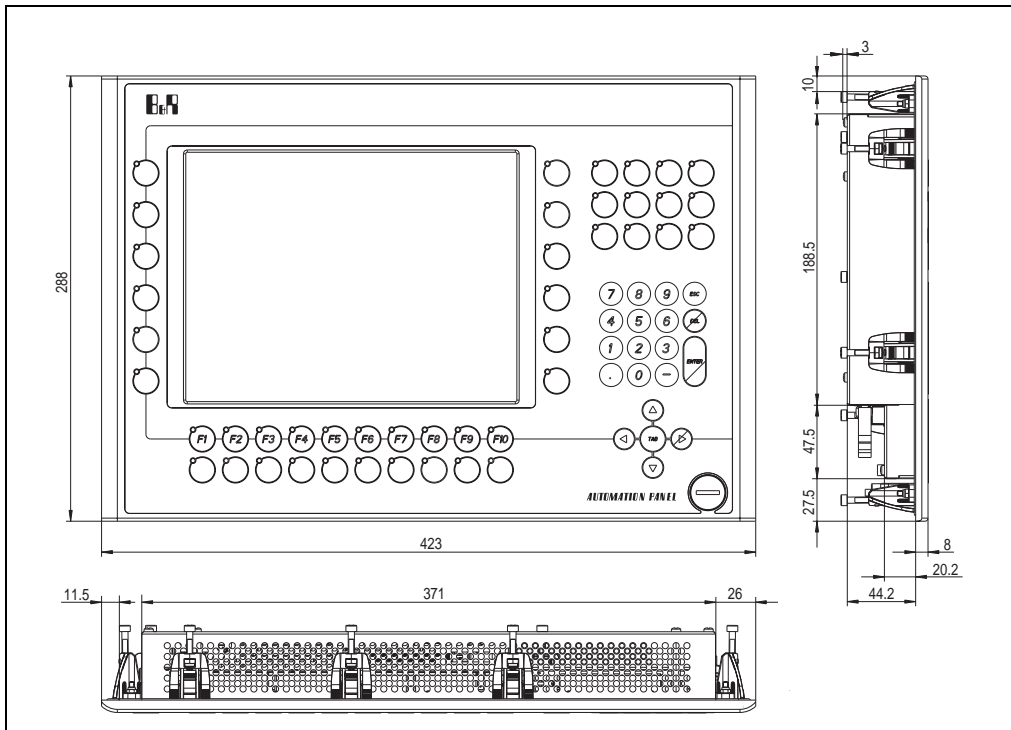


Figure 23: Dimensions 5AP952.1043-01

2.4.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 952 TFT VGA 10.4in with keys
16	6 insert strips without labels - 10 partially labeled "F1-F10" (inserted in the front)

Table 18: Delivery contents - 5AP952.1043-01

2.4.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

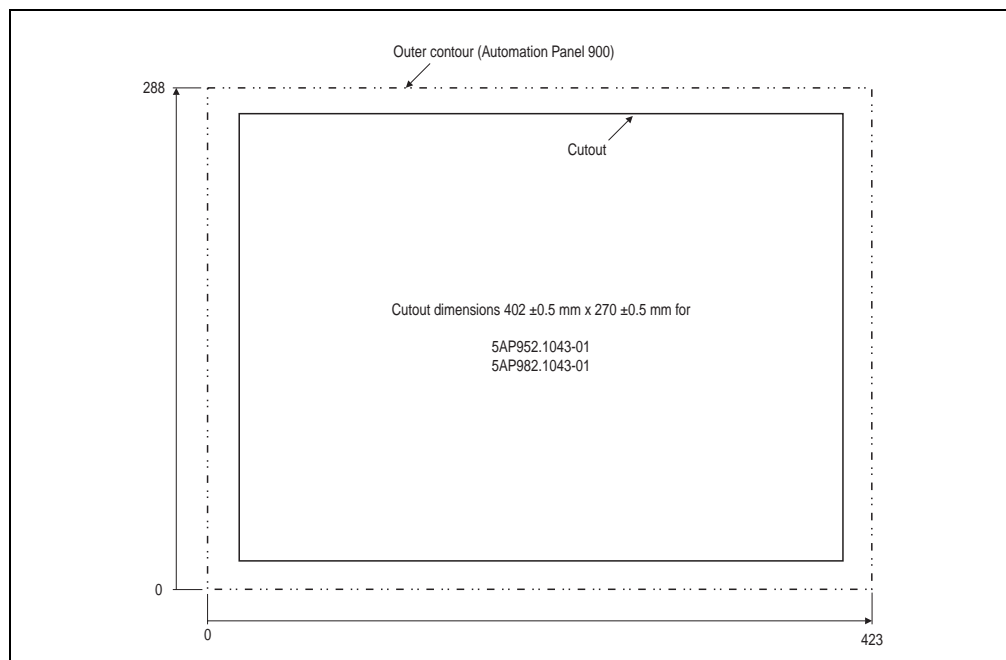


Figure 24: Cutout installation - 5AP952.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.4.5 USB connections

The Automation Panel 5AP952.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

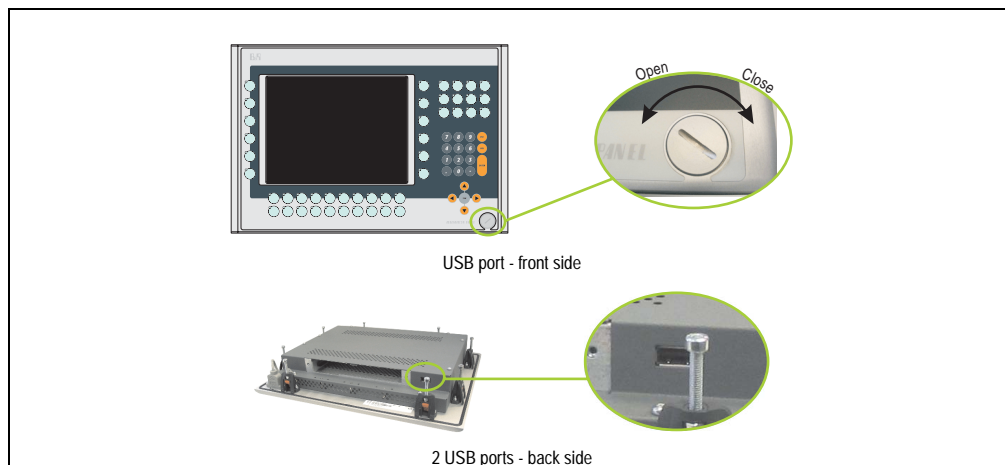


Figure 25: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.4.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

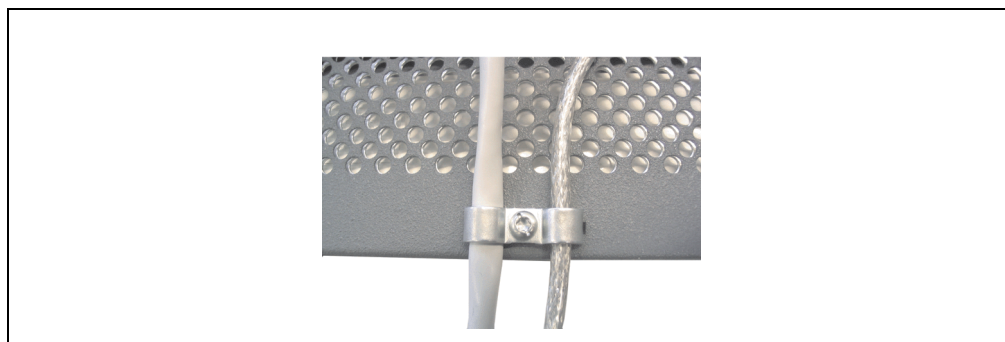


Figure 26: Mounting the cable clamps

2.5 Automation Panel 5AP982.1043-01

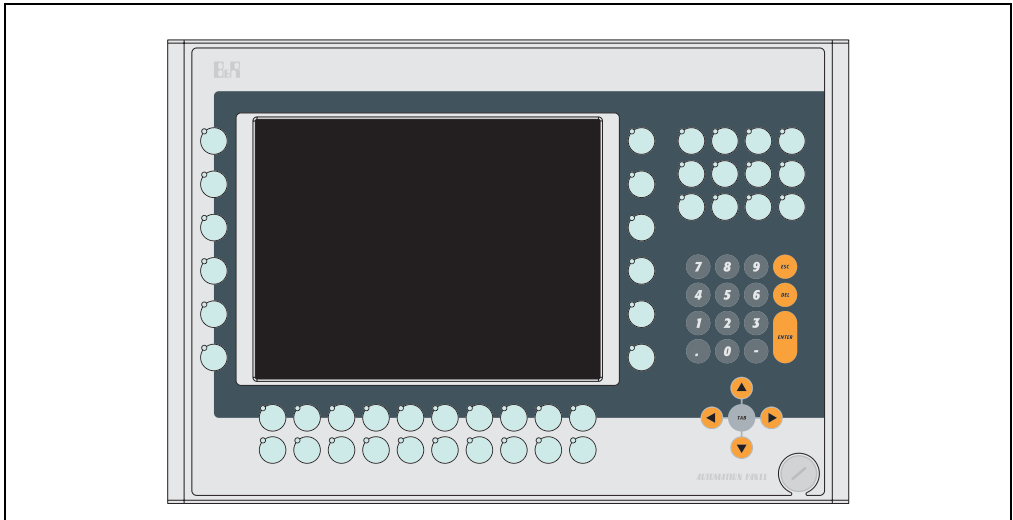


Figure 27: Front view 5AP982.1043-01

TBD

Figure 28: Rear view 5AP982.1043-01

2.5.1 Technical data

Features	5AP982.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	44 with LED - - 15 without LED 5 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	423 mm 288 mm 55 mm

Table 19: Technical data - 5AP982.1043-01

Weight	TBD
Environmental characteristics	5AP982.1043-01
Environmental temperature Operation Storage Transport	-10 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 19: Technical data - 5AP982.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.5.2 Dimensions

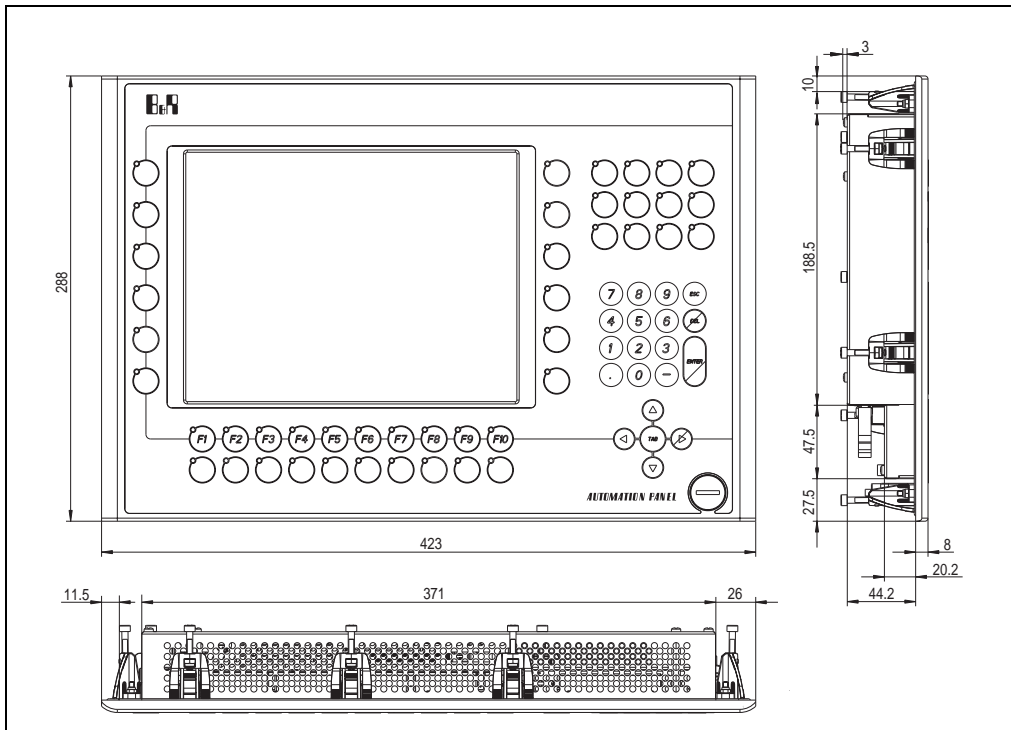


Figure 29: Dimensions 5AP982.1043-01

2.5.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 982 TFT VGA 10.4in with touch screen and keys
16	6 insert strips without labels - 10 partially labeled "F1-F10" (inserted in the front)

Table 20: Delivery contents - 5AP982.1043-01

2.5.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

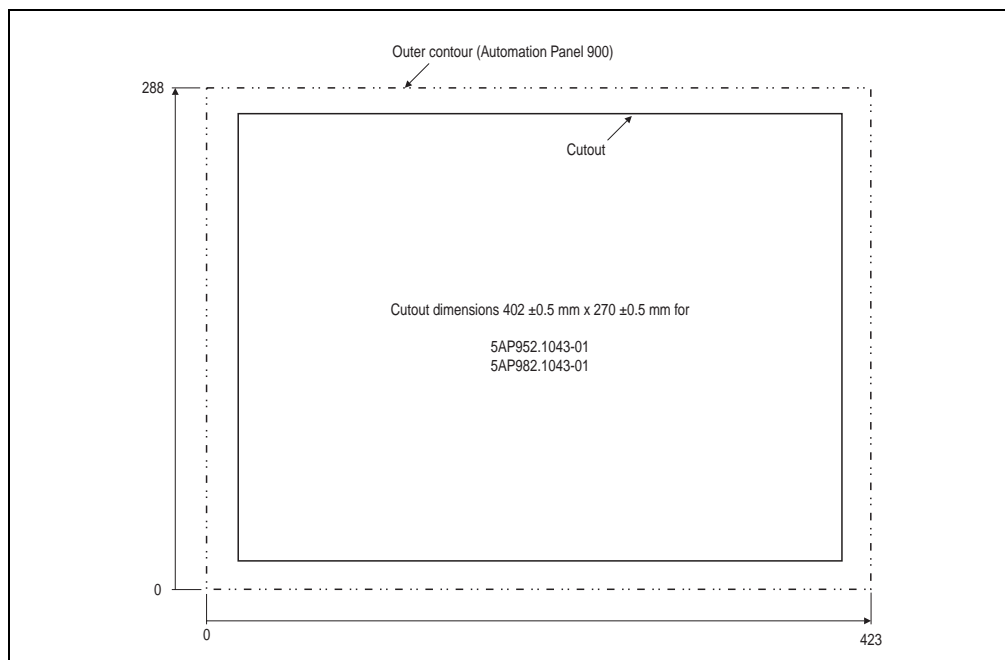


Figure 30: Cutout installation - 5AP982.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.5.5 USB connections

The Automation Panel 5AP982.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

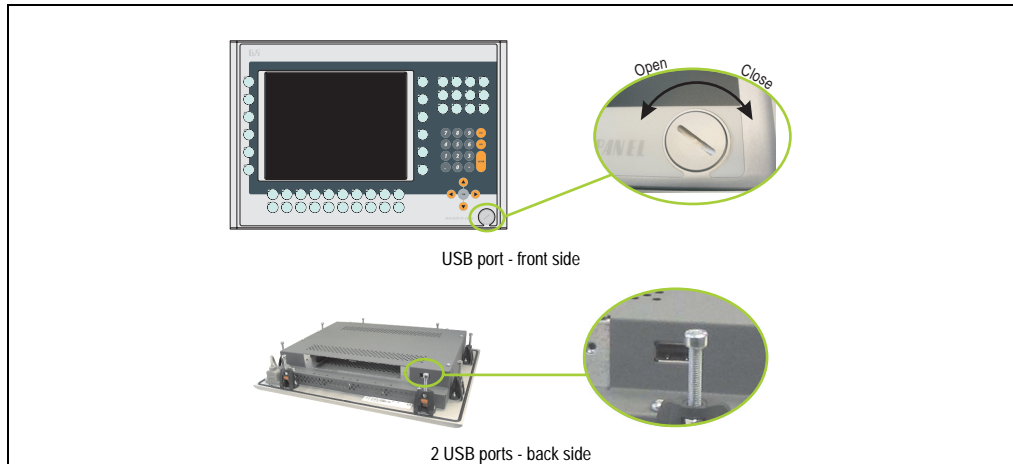


Figure 31: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.5.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

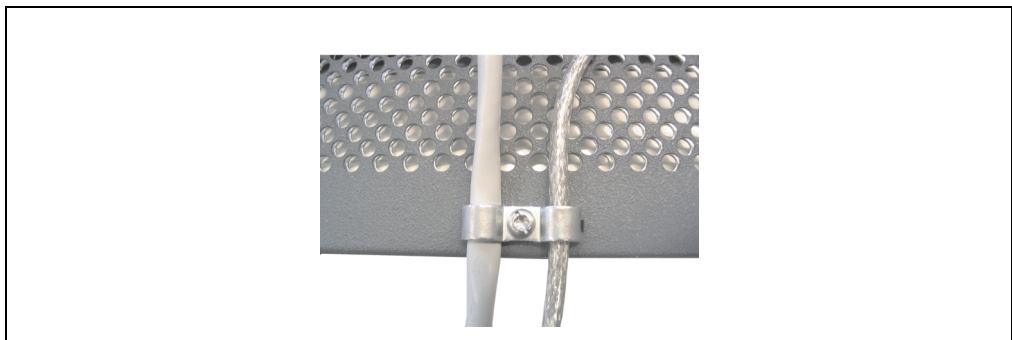


Figure 32: Mounting the cable clamps

2.6 Automation Panel 5AP980.1043-01

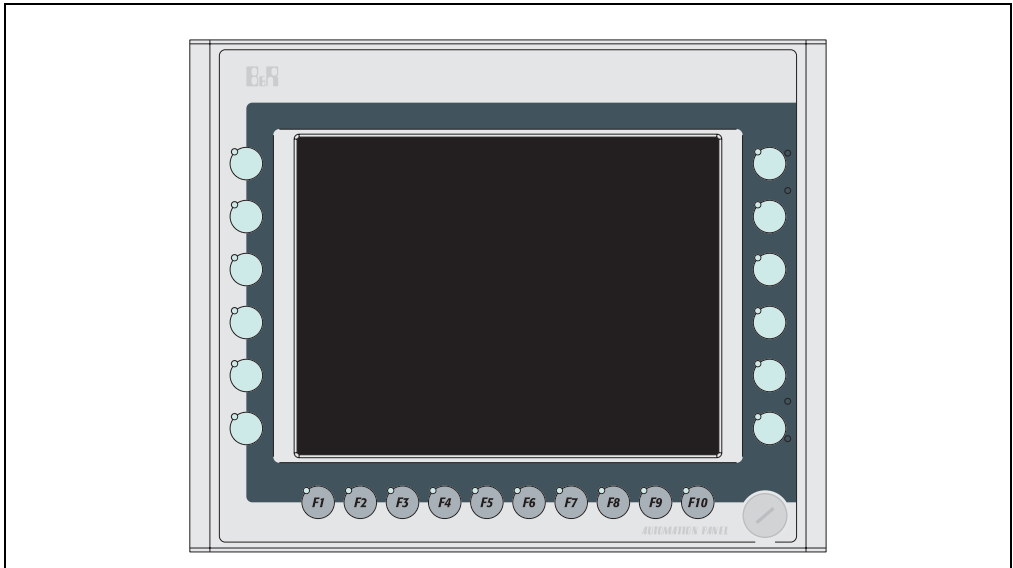


Figure 33: Front view 5AP980.1043-01

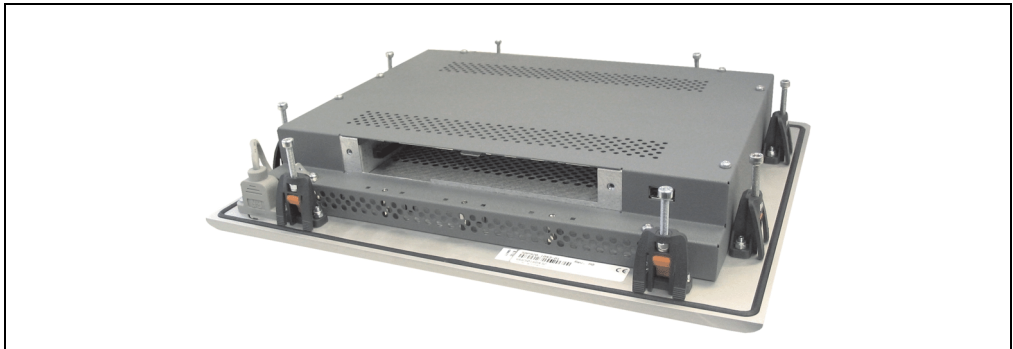


Figure 34: Rear view 5AP980.1043-01

2.6.1 Technical data

Features	5AP980.1043-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 2 (1x front side, 1x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT color 10.4 inch (264 mm) 262144 Colors VGA, 640 x 480 pixels 300:1 70° / 70° 350 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	12 with LED 10 with LED - - -
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	323 mm 260 mm 55 mm

Table 21: Technical data - 5AP980.1043-01

Technical Data • Automation Panel 10.4" VGA

Weight	Approx. 2.9 kg
Environmental characteristics	5AP980.1043-01
Environmental temperature Operation Storage Transport	0 .. 65 °C -30 .. 70 °C -30 .. 70 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 21: Technical data - 5AP980.1043-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

2.6.2 Dimensions

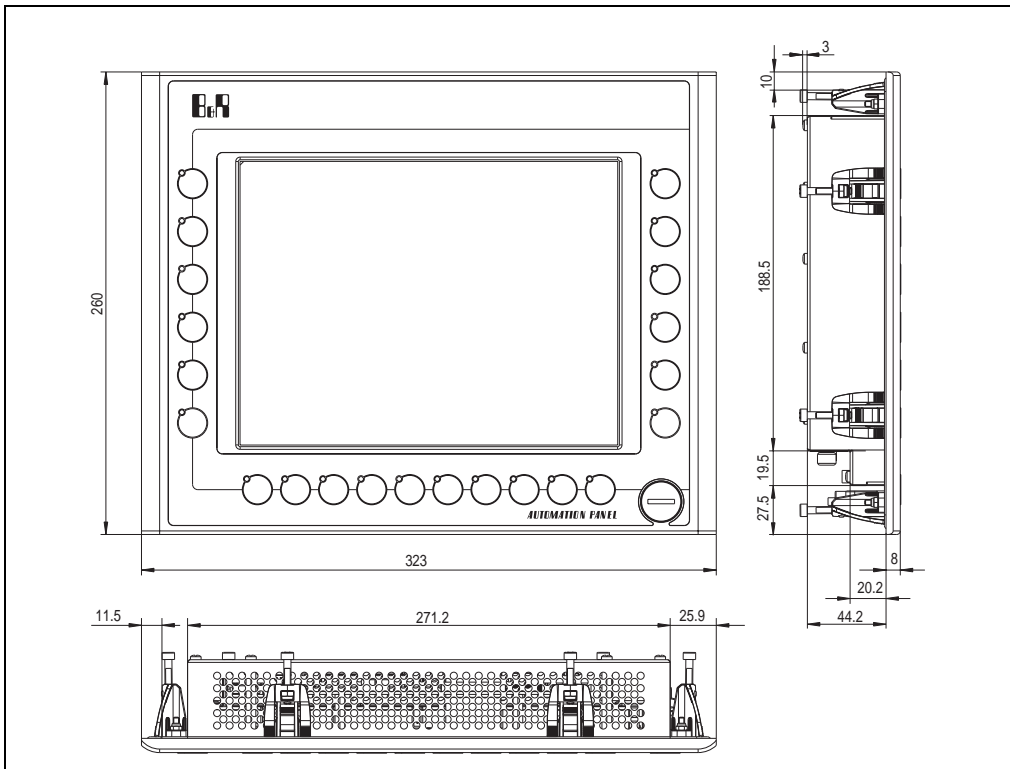


Figure 35: Dimensions 5AP980.1043-01

2.6.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 980 TFT VGA 10.4in with touch screen and keys
2	Insert strips without labels (inserted in the front)

Table 22: Delivery contents - 5AP980.1043-01

2.6.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

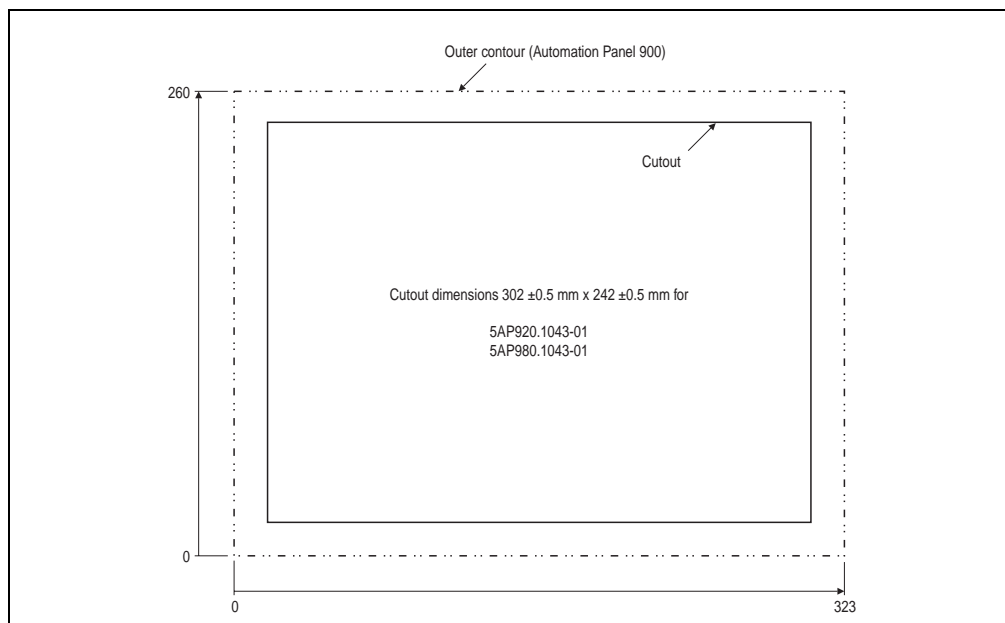


Figure 36: Cutout installation - 5AP980.1043-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

2.6.5 USB connections

The Automation Panel 5AP980.1043-01 has two USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

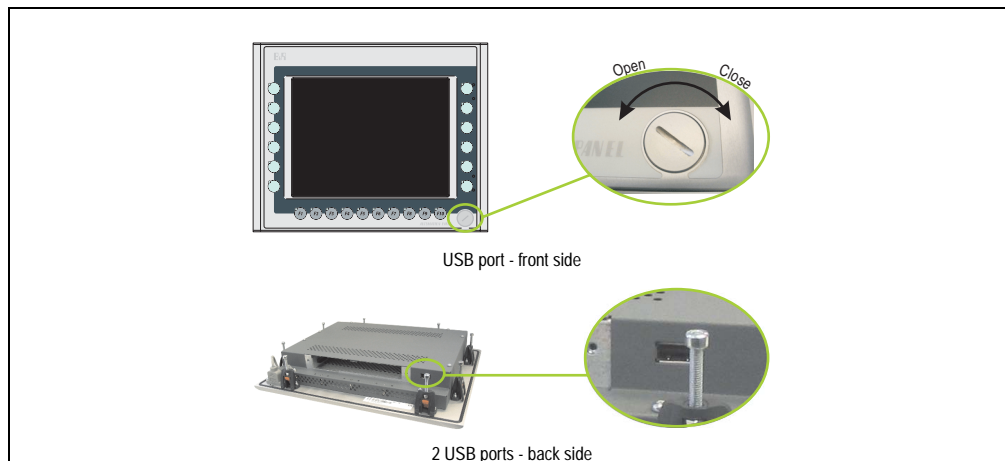


Figure 37: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

2.6.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel housing.

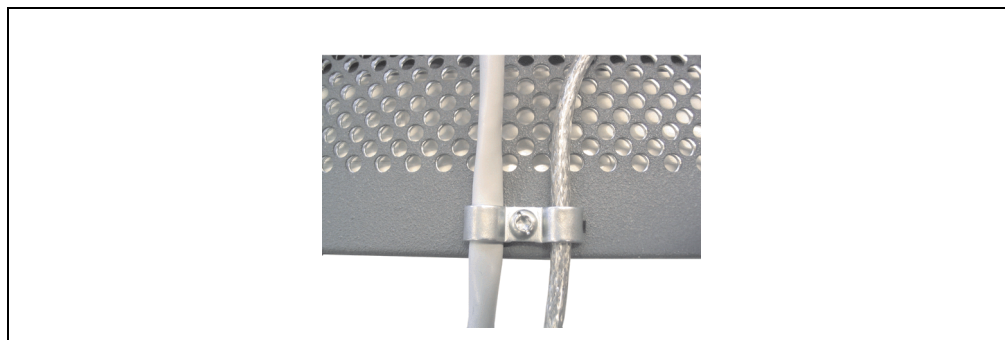


Figure 38: Mounting the cable clamps

3. Automation Panel 15" XGA

3.1 Automation Panel 5AP920.1505-01

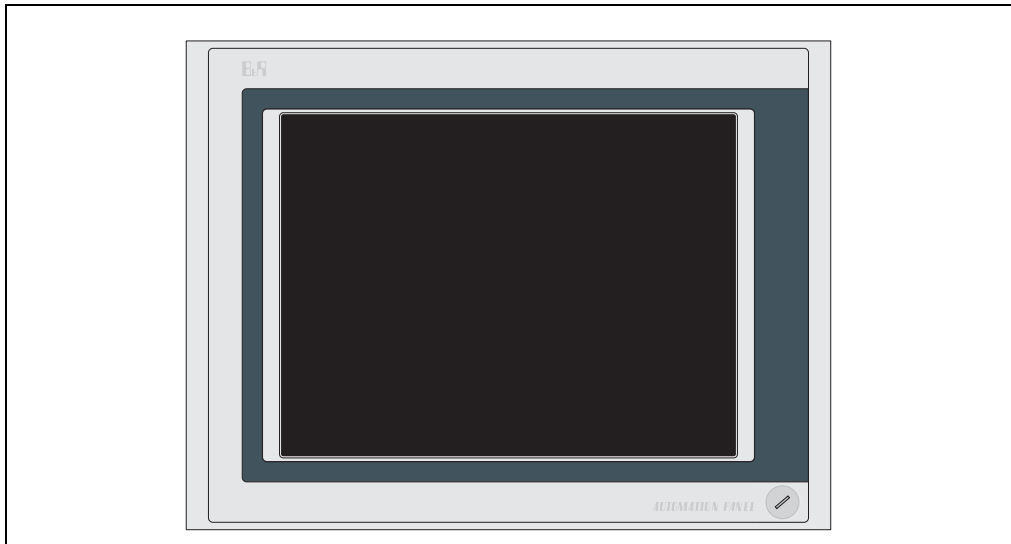


Figure 39: Front view 5AP920.1505-01

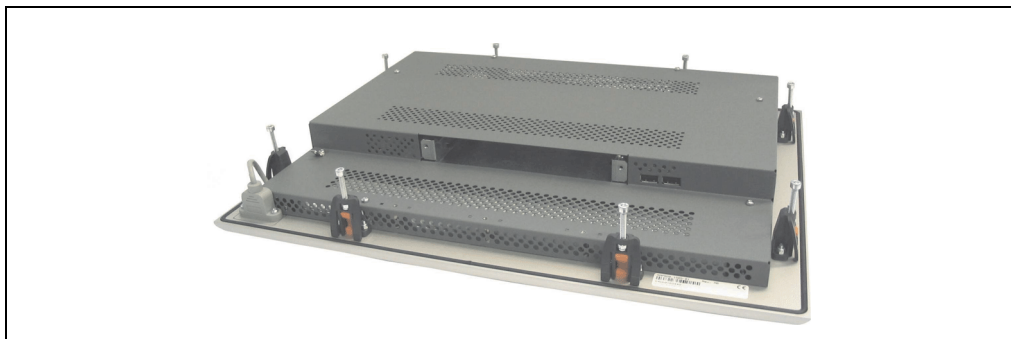


Figure 40: Rear view 5AP920.1505-01

3.1.1 Technical data

Features	5AP920.1505-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle vertical / horizontal Background lighting Brightness Half-brightness time	TFT 15 in 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% Approx. 1.2 A TBD 28 W typical, 35 W max. (45 W with USB) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	435 mm 330 mm 54 mm

Table 23: Technical data - 5AP920.1505-01

Weight	Approx. 5.1 kg
Environmental characteristics	5AP920.1505-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 23: Technical data - 5AP920.1505-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

3.1.2 Dimensions

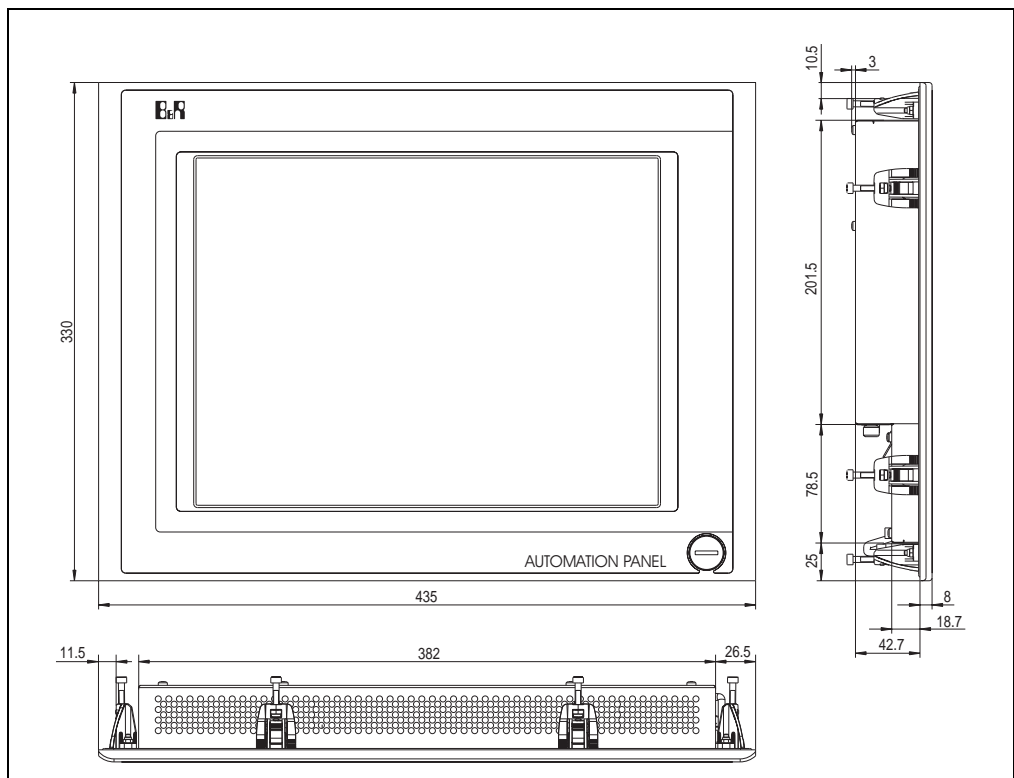


Figure 41: Dimensions 5AP920.1505-01

3.1.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 920 TFT XGA 15in with touch screen

Table 24: Delivery contents - 5AP920.1505-01

3.1.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

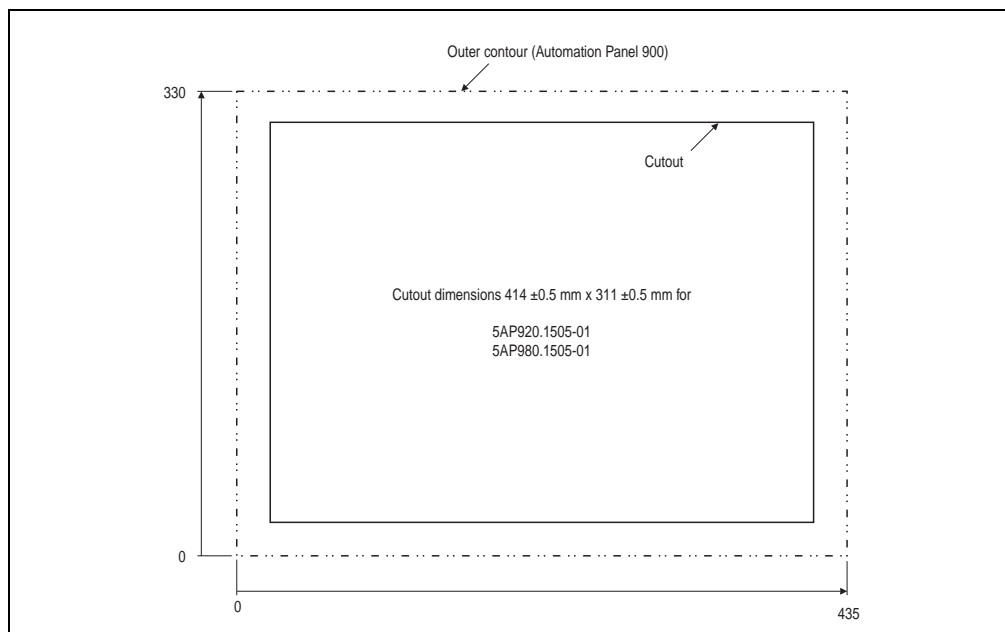


Figure 42: Cutout installation - 5AP920.1505-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

3.1.5 USB connections

The Automation Panel 5AP920.1505-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

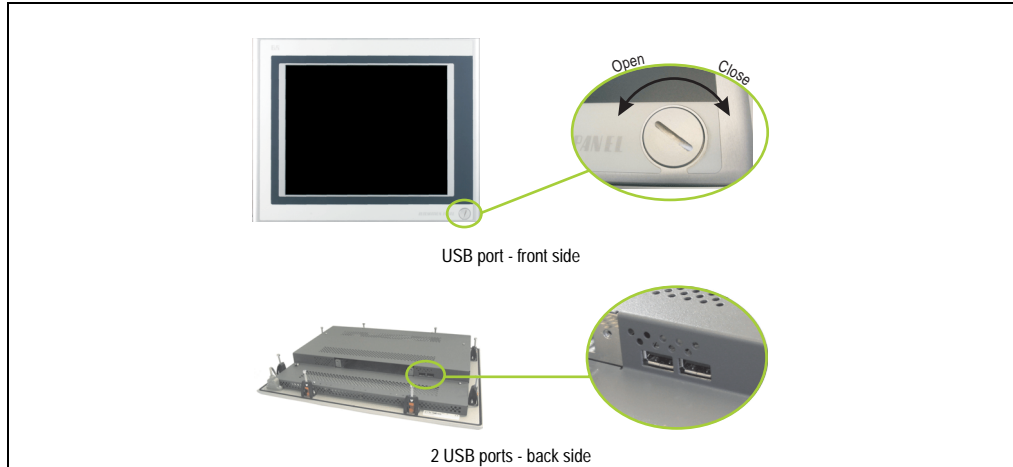


Figure 43: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

3.1.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

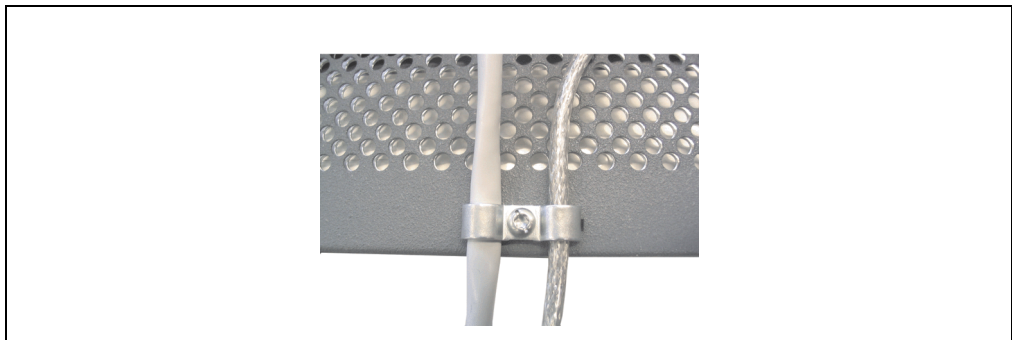


Figure 44: Mounting the cable clamps

3.2 Automation Panel 5AP951.1505-01

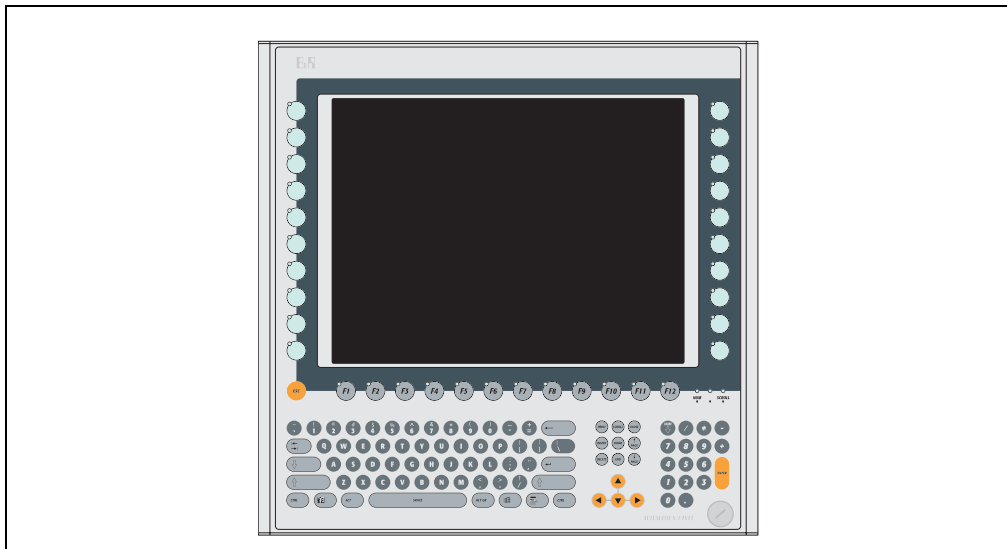


Figure 45: Front view 5AP951.1505-01

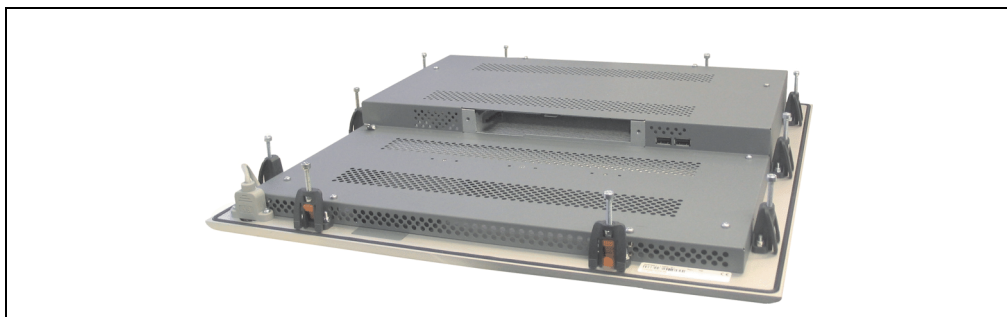


Figure 46: Rear view 5AP951.1505-01

3.2.1 Technical data

Features	5AP951.1505-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle vertical / horizontal Background lighting Brightness Half-brightness time	TFT 15 in 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	-
Filter glass Transmission degree Coating	95 % On both sides
Keys Function keys Softkeys Cursor pad Number block Other keys	20 with LED 12 with LED - 15 without LED 77 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% Approx. 1.2 A TBD 31 W typical, 38 W max. (48 W with USB) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	435 mm 409 mm 54 mm

Table 25: Technical data - 5AP951.1505-01

Weight	Approx. 5.9 kg
Environmental characteristics	5AP951.1505-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 25: Technical data - 5AP951.1505-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

3.2.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

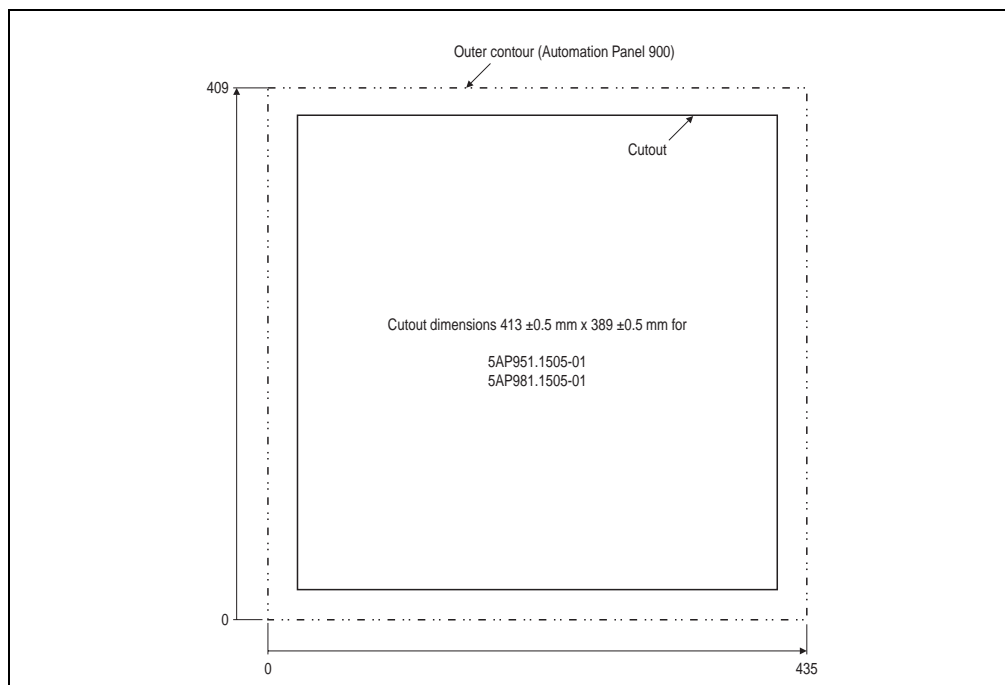


Figure 48: Cutout installation - 5AP951.1505-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

3.2.5 USB connections

The Automation Panel 5AP951.1505-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

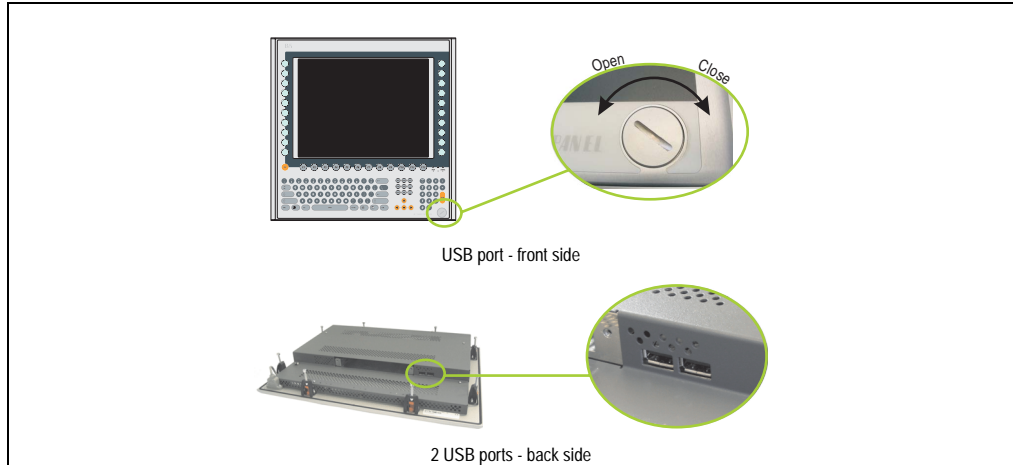


Figure 49: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

3.2.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

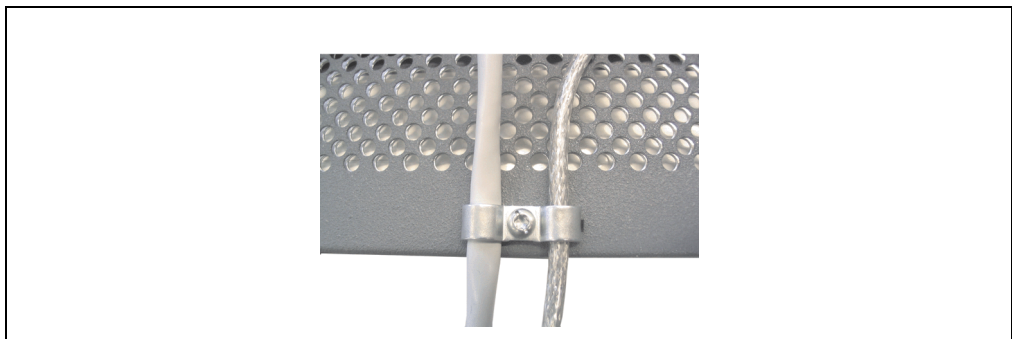


Figure 50: Mounting the cable clamps

3.3 Automation Panel 5AP981.1505-01

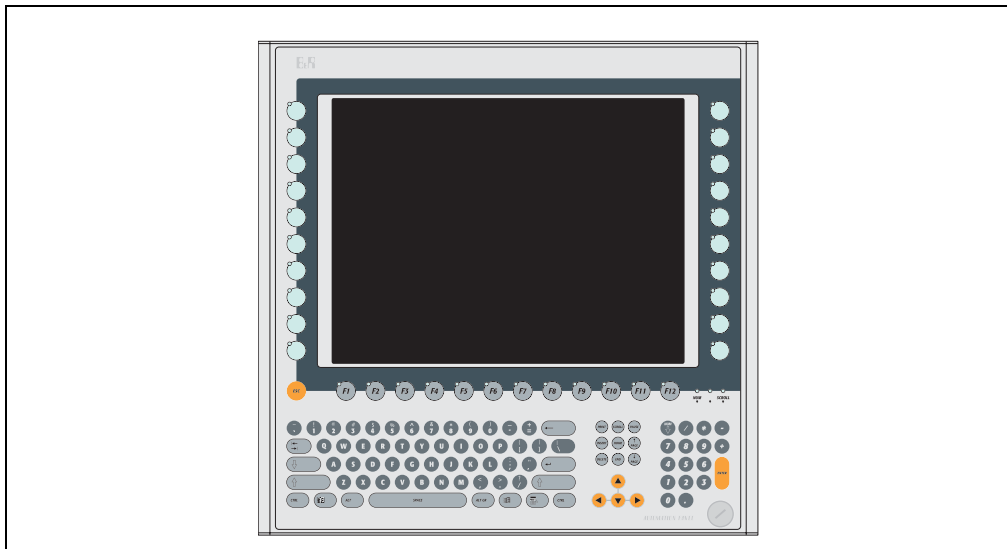


Figure 51: Front view 5AP981.1505-01

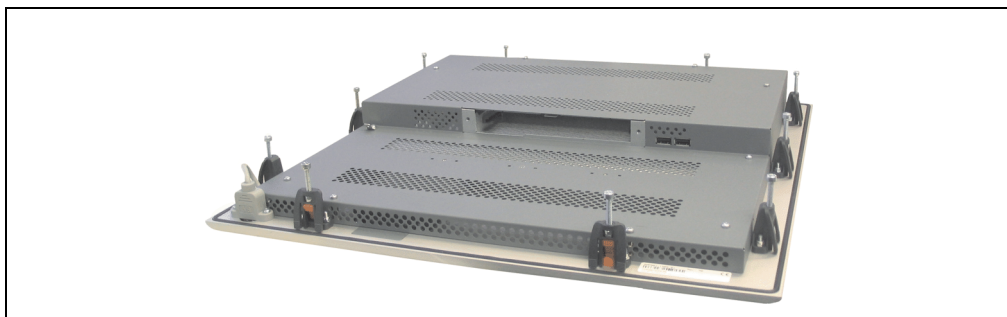


Figure 52: Rear view 5AP981.1505-01

3.3.1 Technical data

Features	5AP981.1505-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle vertical / horizontal Background lighting Brightness Half-brightness time	TFT 15 in 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	20 with LED 12 with LED - 15 without LED 77 without LED
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% Approx. 1.2 A TBD 31 W typical, 38 W max. (48 W with USB) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	435 mm 409 mm 54 mm

Table 27: Technical data - 5AP981.1505-01

Weight	Approx. 6 kg
Environmental characteristics	5AP981.1505-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 27: Technical data - 5AP981.1505-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

3.3.2 Dimensions

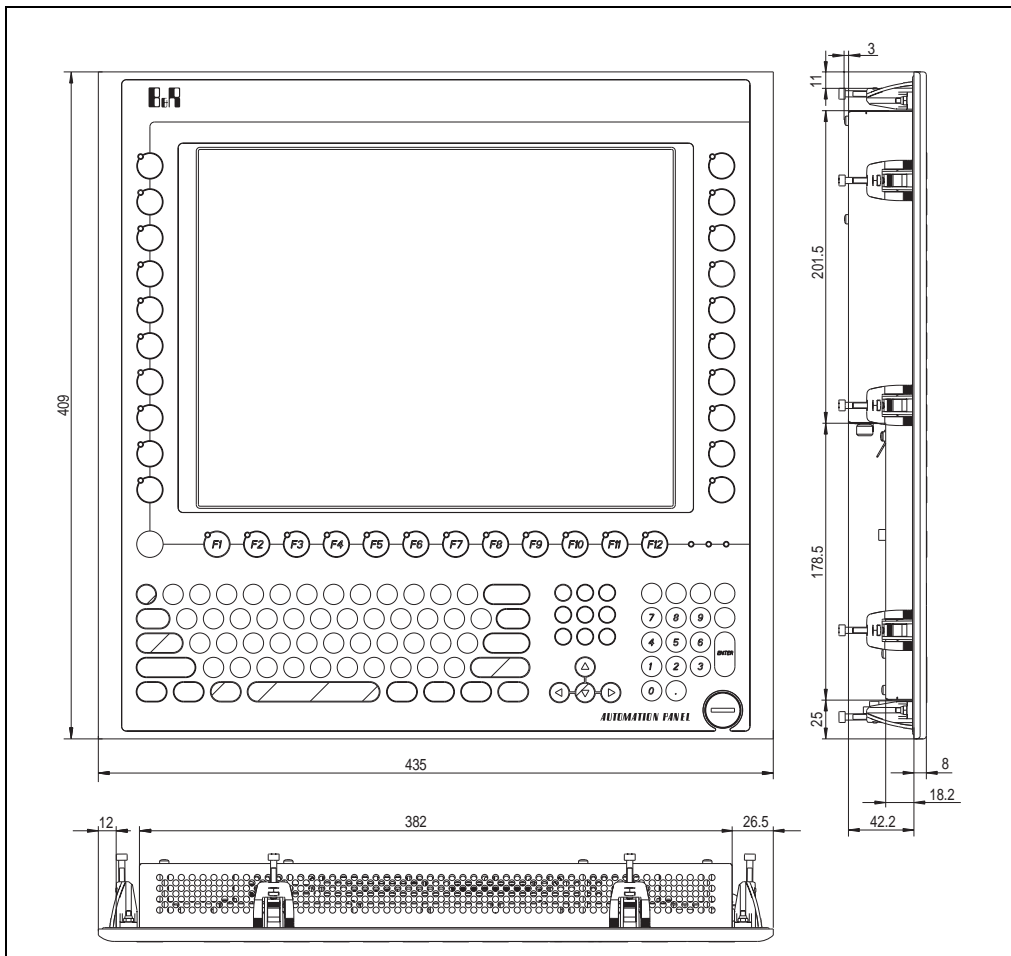


Figure 53: Dimensions 5AP981.1505-01

3.3.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 981 TFT VGA 15in with touch screen and keys
2	2 insert strips without labels (inserted in the front)

Table 28: Delivery contents - 5AP981.1505-01

3.3.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

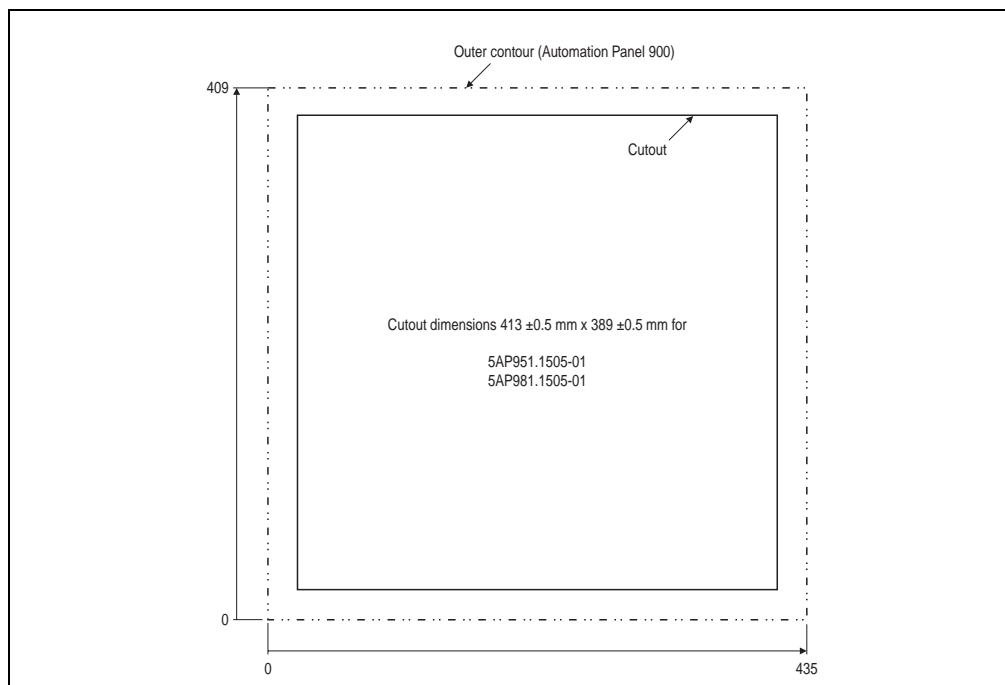


Figure 54: Cutout installation - 5AP981.1505-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

3.3.5 USB connections

The Automation Panel 5AP981.1505-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

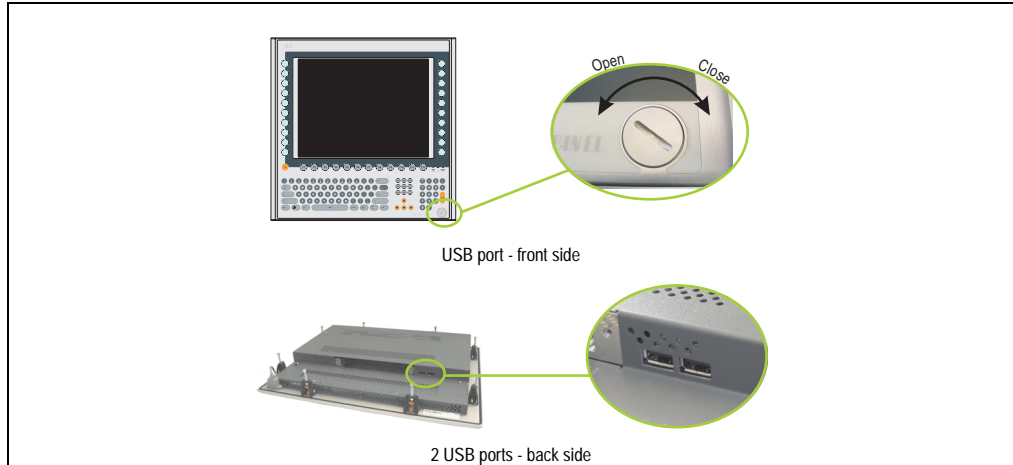


Figure 55: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

3.3.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

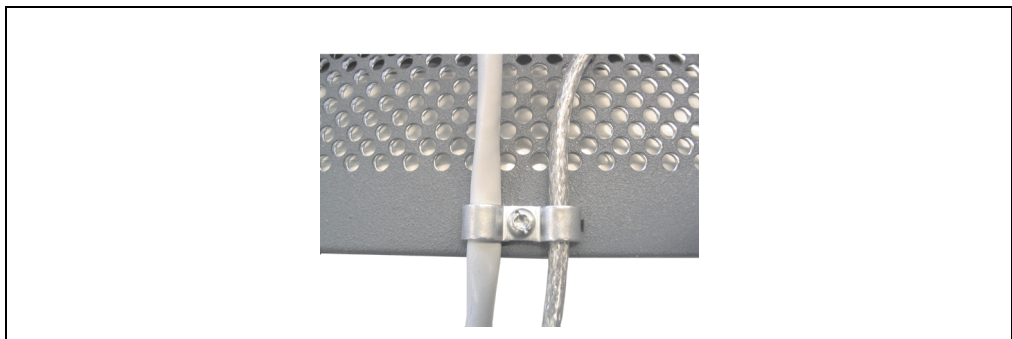


Figure 56: Mounting the cable clamps

3.4 Automation Panel 5AP980.1505-01

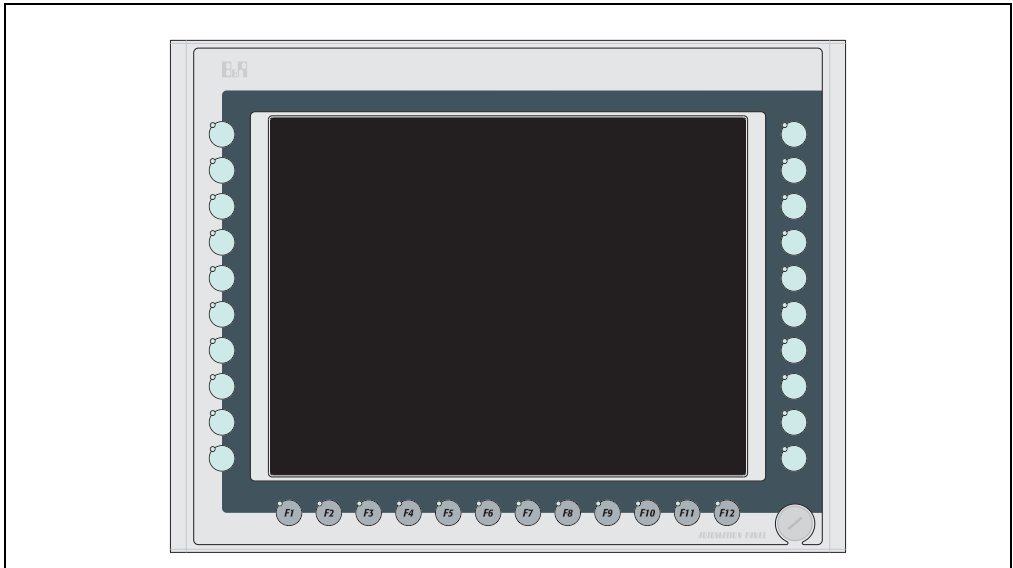


Figure 57: Front view 5AP980.1505-01

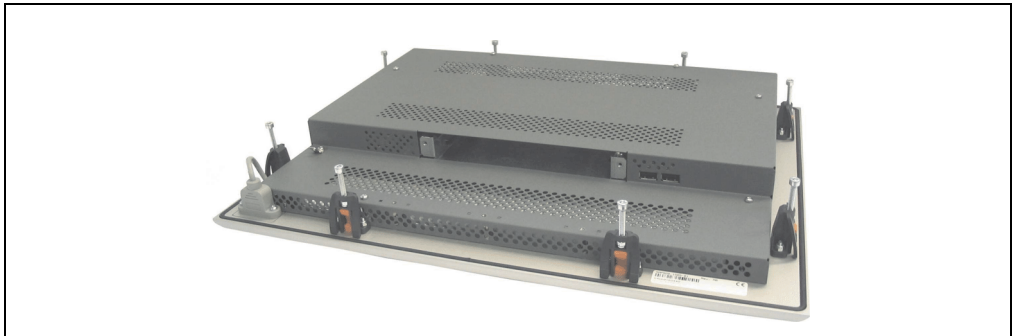


Figure 58: Rear view 5AP980.1505-01

3.4.1 Technical data

Features	5AP980.1505-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle vertical / horizontal Background lighting Brightness Half-brightness time	TFT 15 in 16 million XGA, 1024 x 768 pixels 400:1 85° / 85° 250 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	20 with LED 12 with LED - - -
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% Approx. 1.2 A TBD 31 W typical, 38 W max. (48 W with USB) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	435 mm 330 mm 54 mm

Table 29: Technical data - 5AP980.1505-01

Weight	Approx. 5.1 kg
Environmental characteristics	5AP980.1505-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 29: Technical data - 5AP980.1505-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

3.4.2 Dimensions

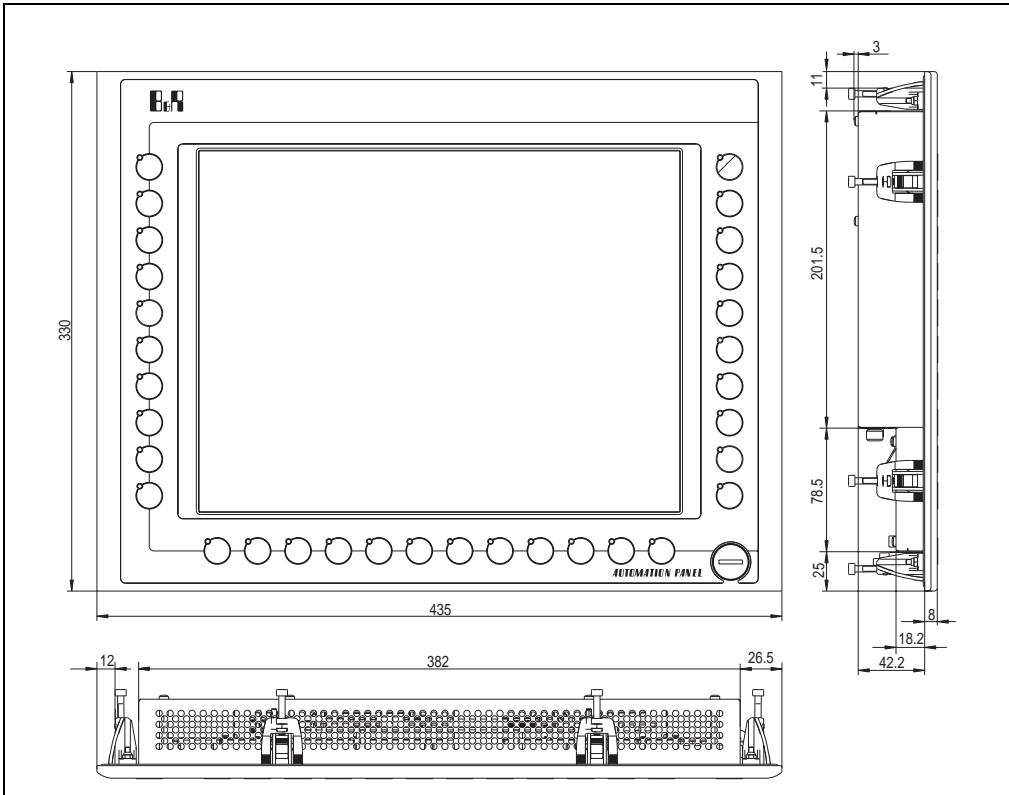


Figure 59: Dimensions 5AP980.1505-01

3.4.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 980 TFT XGA 15in with touch screen
2	Insert strips without labels (inserted in the front)

Table 30: Delivery contents - 5AP980.1505-01

3.4.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

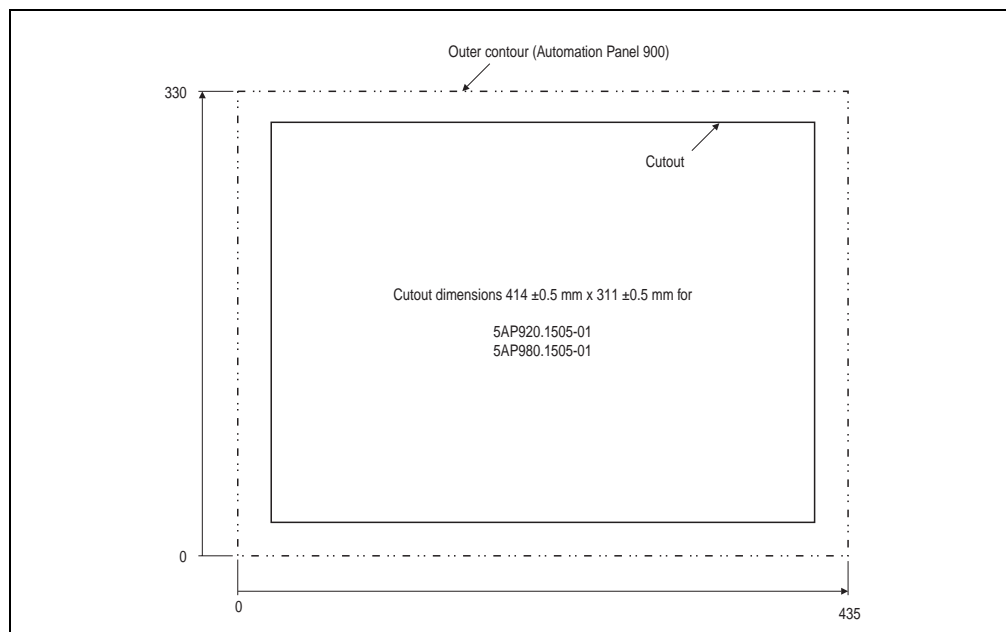


Figure 60: Cutout installation - 5AP980.1505-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

3.4.5 USB connections

The Automation Panel 5AP980.1505-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

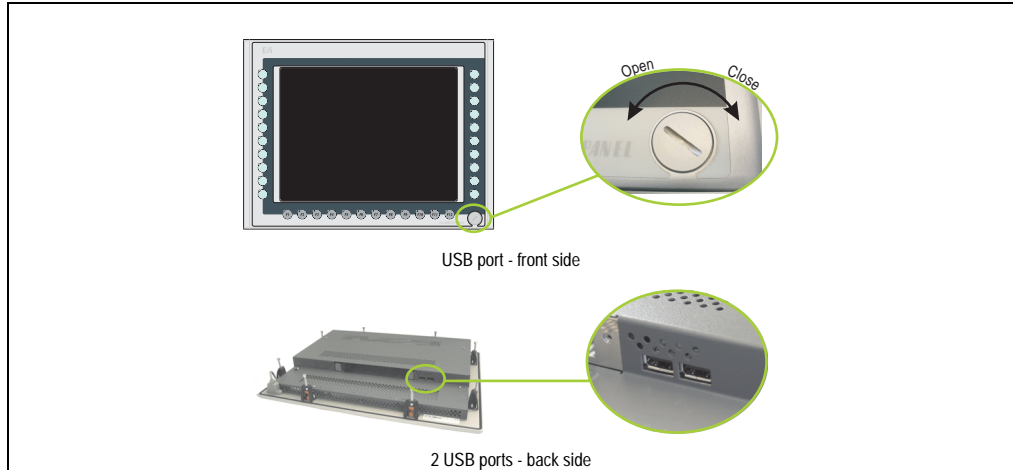


Figure 61: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

3.4.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

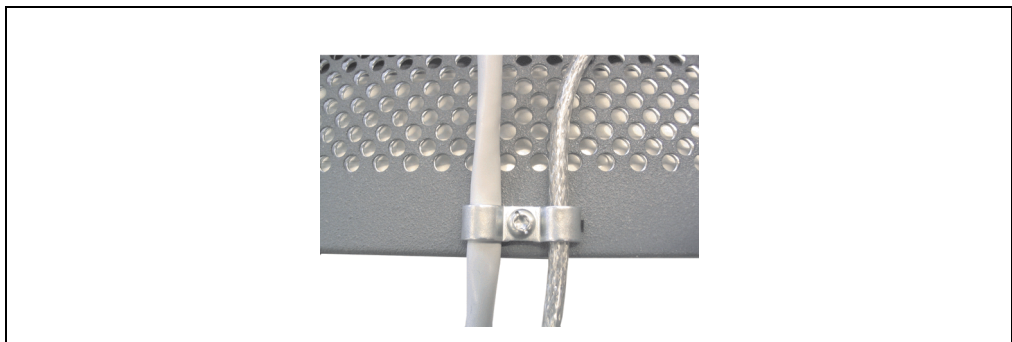


Figure 62: Mounting the cable clamps

4. Automation Panel 17" SXGA

4.1 Automation Panel 5AP920.1706-01

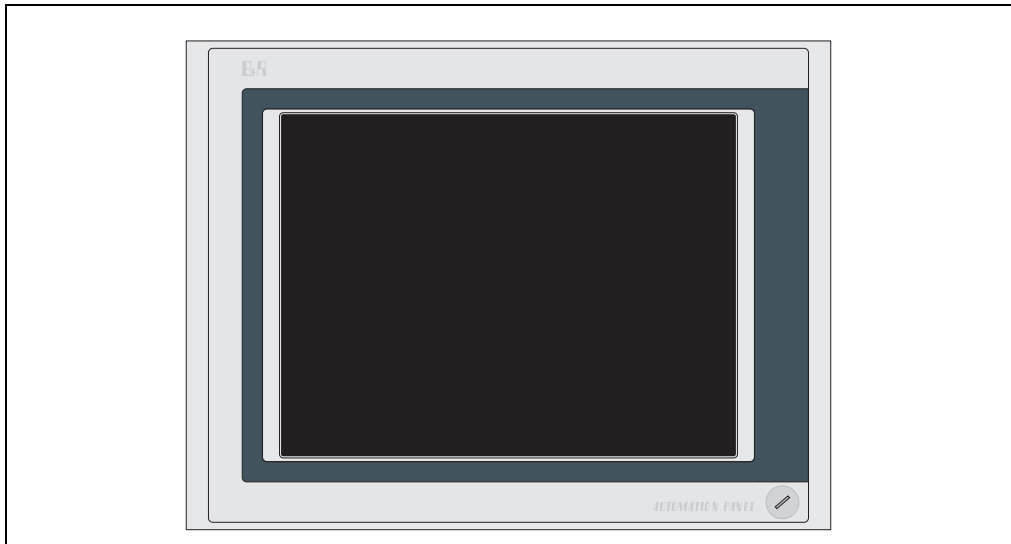


Figure 63: Front view 5AP920.1706-01

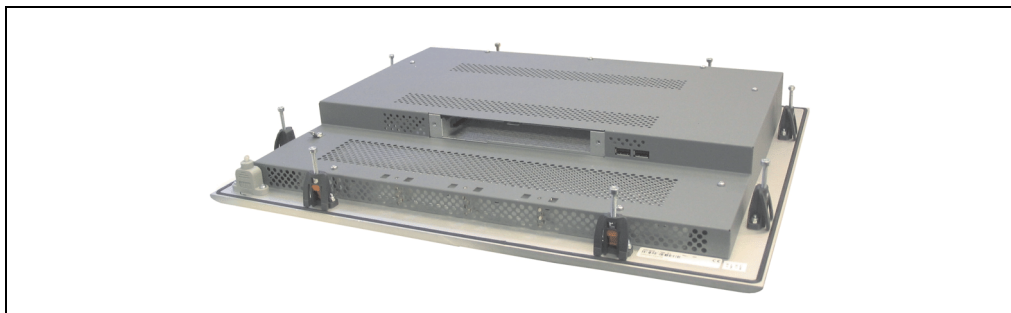


Figure 64: Rear view 5AP920.1706-01

4.1.1 Technical data

Features	5AP920.1706-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT 17 in 16,2 million SXGA, 1280 x 1024 pixels 600:1 89° / 89° 250 cd/m² 30000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% Approx. 1.2 A TBD 33 W typical, 40 W max. (50 W with USB) Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	477 mm 390 mm 59 mm

Table 31: Technical data - 5AP920.1706-01

Weight	Approx. 7 kg
Environmental characteristics	5AP920.1706-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 31: Technical data - 5AP920.1706-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

4.1.2 Dimensions

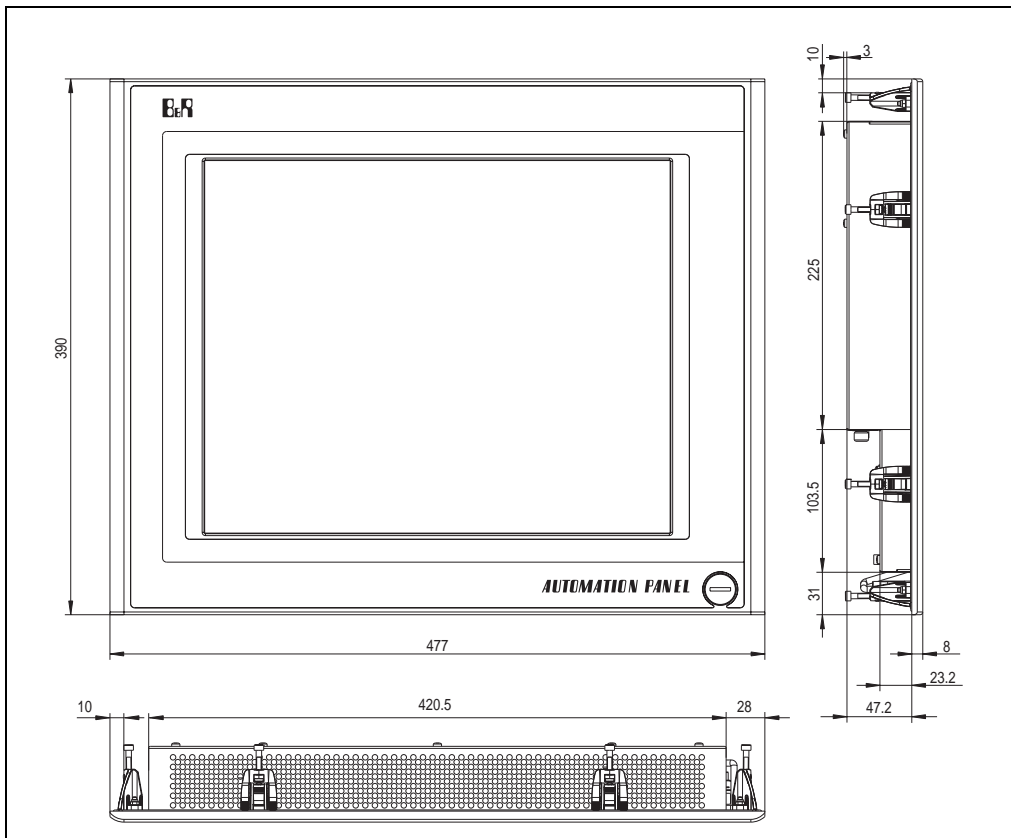


Figure 65: Dimensions 5AP920.1706-01

4.1.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 920 TFT SXGA 17in with touch screen

Table 32: Delivery contents - 5AP920.1706-01

4.1.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

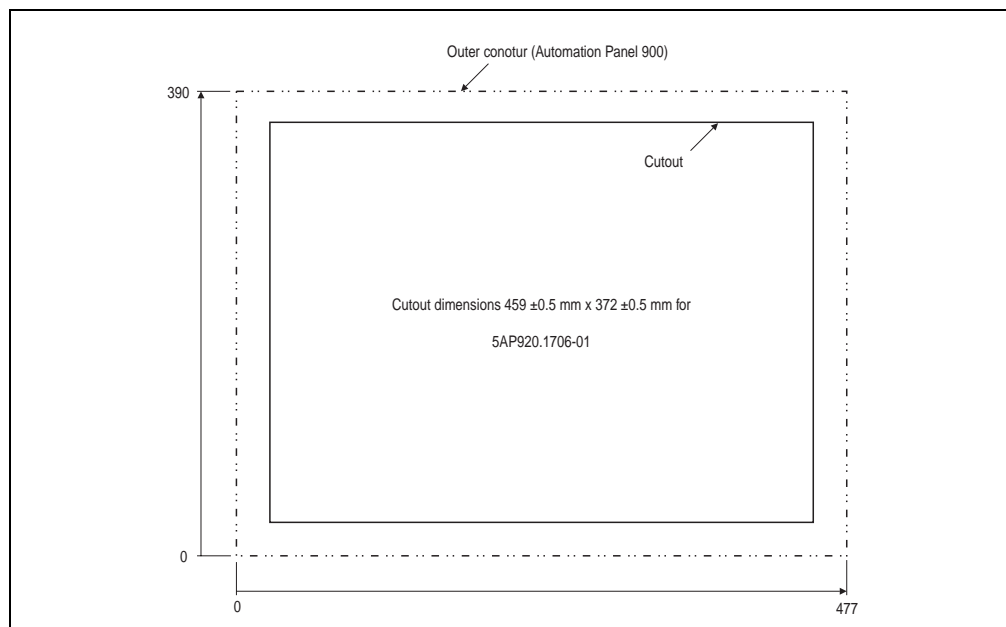


Figure 66: Cutout installation - 5AP920.1706-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

4.1.5 USB connections

The Automation Panel 5AP920.1706-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

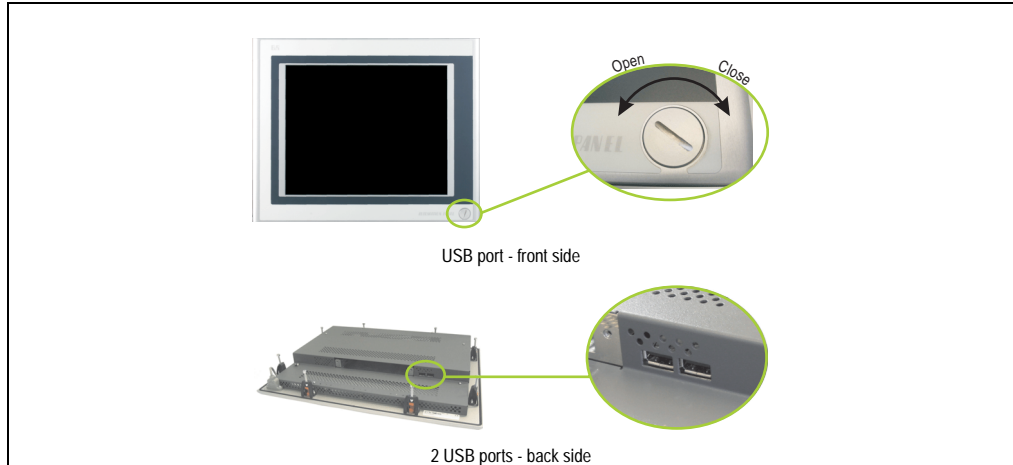


Figure 67: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

4.1.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

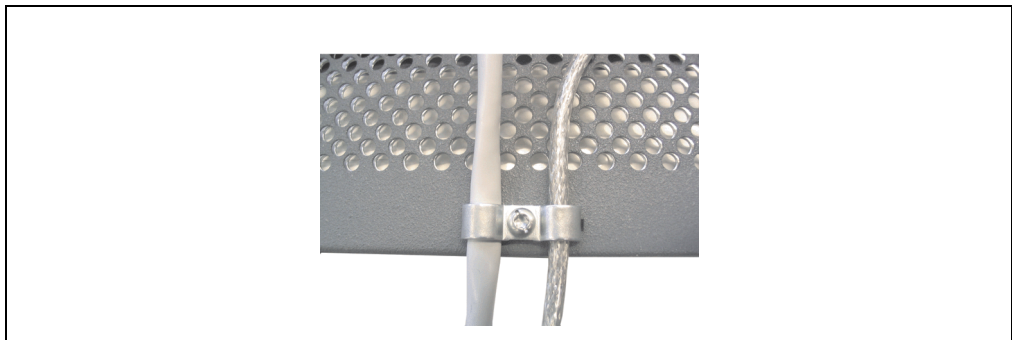


Figure 68: Mounting the cable clamps

5. Automation Panel 19" SXGA

5.1 Automation Panel 5AP920.1906-01

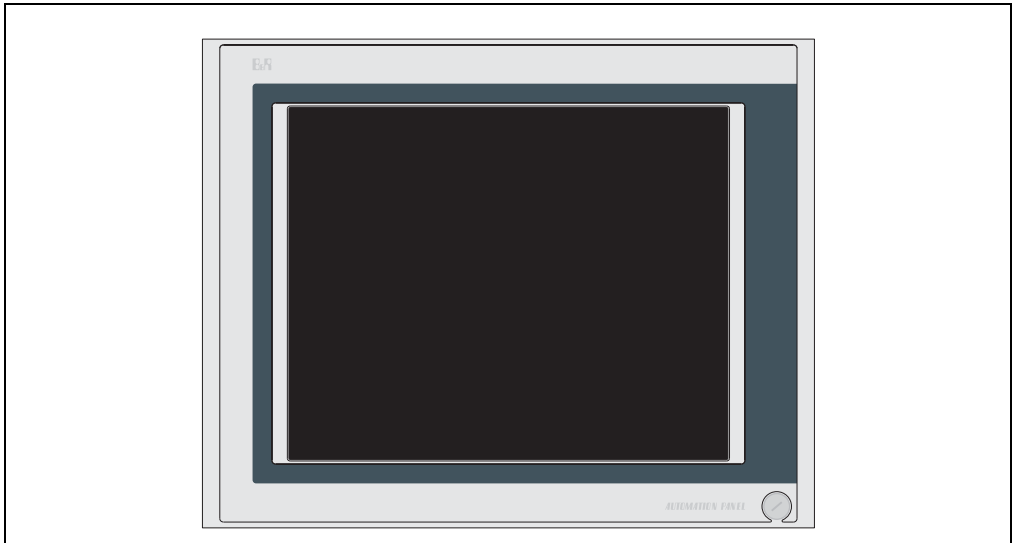


Figure 69: Front view 5AP920.1906-01

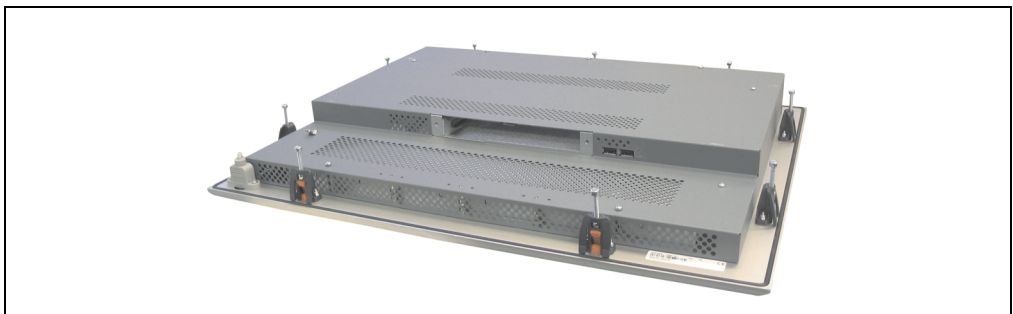


Figure 70: Rear view 5AP920.1906-01

5.1.1 Technical data

Features	5AP920.1906-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT 19 in 16,7 million SXGA, 1280 x 1024 pixels 600:1 85° / 85° 250 cd/m² 35000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	527 mm 421 mm 62 mm

Table 33: Technical data - 5AP920.1906-01

Weight	Approx. 8.1 kg
Environmental characteristics	5AP920.1906-01
Environmental temperature Operation Storage Transport	0 .. 50 °C -20 .. 60 °C -20 .. 60 °C
Humidity Operation Storage Transport	5 % to 85 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing T ≤ 40 °C: 5 % to 90 %, non-condensing T > 40 °C: < 90 %, non-condensing
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 33: Technical data - 5AP920.1906-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

5.1.2 Dimensions

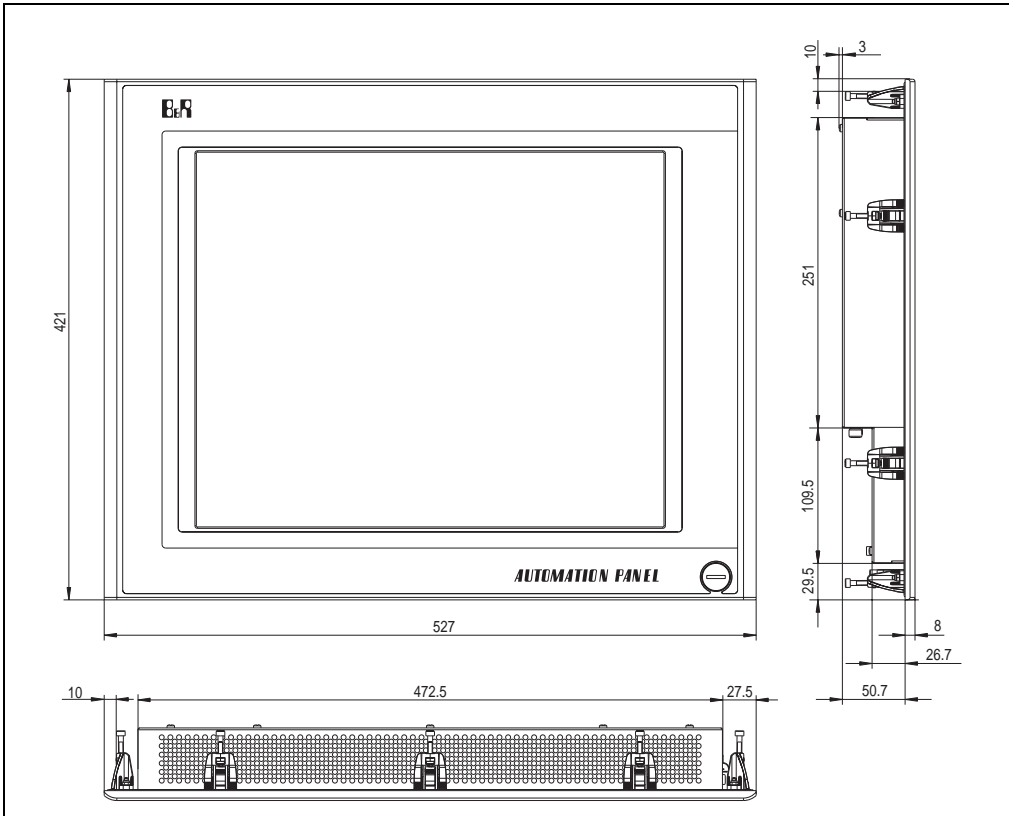


Figure 71: Dimensions 5AP920.1906-01

5.1.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 920 TFT SXGA 19in with touch screen

Table 34: Delivery contents - 5AP920.1906-01

5.1.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

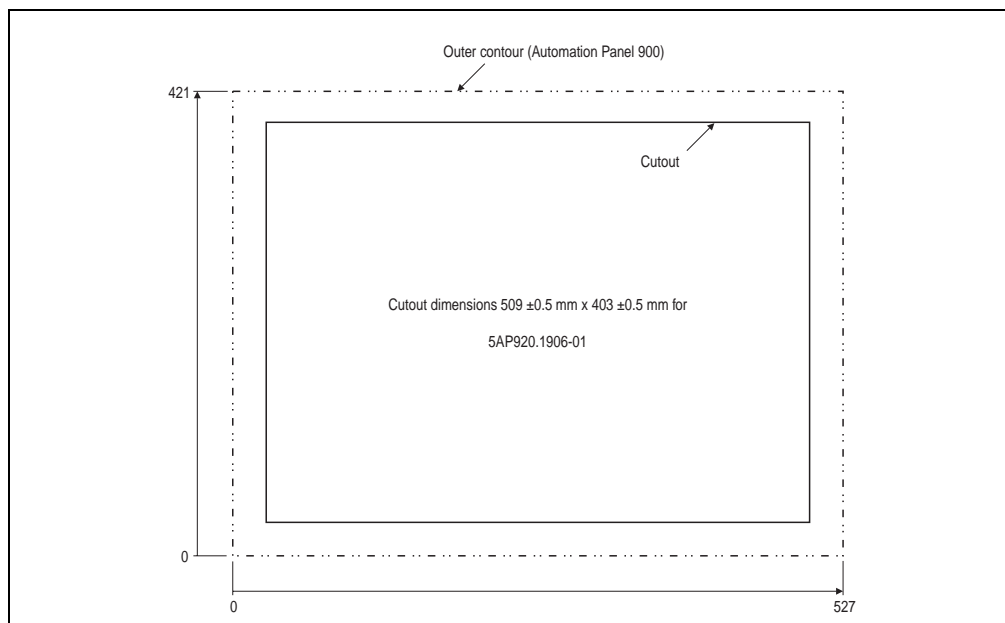


Figure 72: Cutout installation - 5AP920.1906-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

5.1.5 USB connections

The Automation Panel 5AP920.1906-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

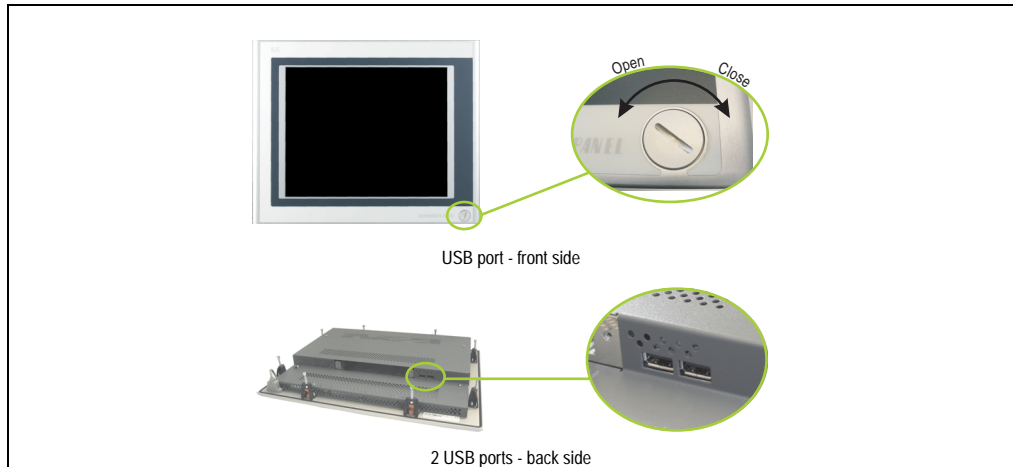


Figure 73: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

5.1.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

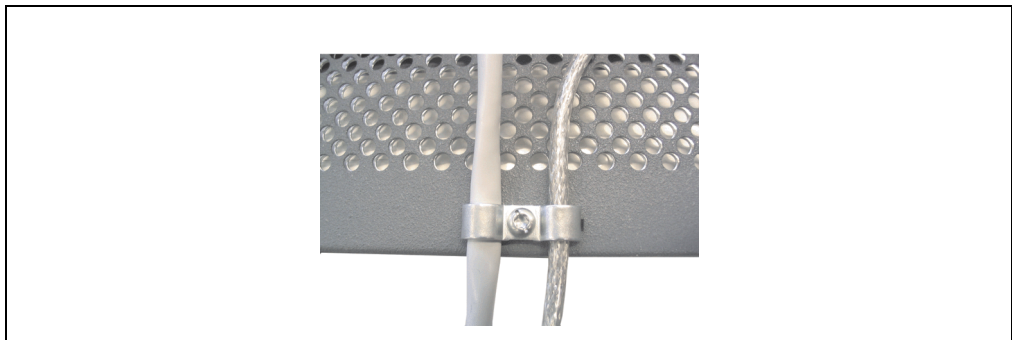


Figure 74: Mounting the cable clamps

6. Automation Panel 21.3" UXGA

6.1 Automation Panel 5AP920.2138-01



Figure 75: Front view 5AP920.2138-01



Figure 76: Rear view 5AP920.2138-01

6.1.1 Technical data

Features	5AP920.2138-01
USB interface ¹⁾ Type Amount Transfer rate Connection Current load	USB 2.0 ²⁾ 3 (1x front side, 2x back side) Low speed (1.5 MBit/s), full speed (12 MBit/s), to high speed (480 Mbit/s) Type A Max. 500 mA per connection
Display Type Diagonal Colors Resolution Contrast Viewing angle horizontal / vertical Background lighting Brightness Half-brightness time	TFT 21,3 in 16,7 million UXGA, 1600 x 1200 pixels 500:1 85° / 85° 250 cd/m² 50000 hours
Touch screen Technology Controller Transmission degree	Analog, resistive Elo, serial, 12-bit Up to 78%
Filter glass Transmission degree Coating	-
Keys Function keys Softkeys Cursor pad Number block Other keys	-
Electrical characteristics	
Power supply Rated voltage Rated current Starting current Power consumption Electrical isolation	Via Automation Panel Link insert card 24 VDC ±25% TBD TBD TBD Yes
Mechanical characteristics	
Front Frame Mylar Design Gasket	Naturally anodized aluminum Polyester Gray Flat gasket around display front
Display design / colors Dark gray border around the display Bright background	Similar Pantone 432CV Similar Pantone 427CV
Housing	Metal
Outer dimensions Width Height Depth	583 mm 464 mm 64 mm

Table 35: Technical data - 5AP920.2138-01

Weight	Approx. 11 kg
Environmental characteristics	5AP920.2138-01
Environmental temperature Operation Storage Transport	0°C ... + 50 °C - 20°C ... + 65 °C TBD °C
Humidity Operation Storage Transport	TBD
Vibration Operation (continuous) Operation (occasional) Storage Transport	TBD
Shock Operation Storage Transport	TBD
Protection	IP65, protection from dust and sprayed water (from front), IP20 (back side)
Altitude	Max. 3000 m

Table 35: Technical data - 5AP920.2138-01 (cont.)

- 1) Using hubs on the USB interface depends on the Automation Panel Link insert card being used.
- 2) Depends on the transfer technology, the transfer distance and the Automation Panel Link insert card used.

6.1.2 Dimensions

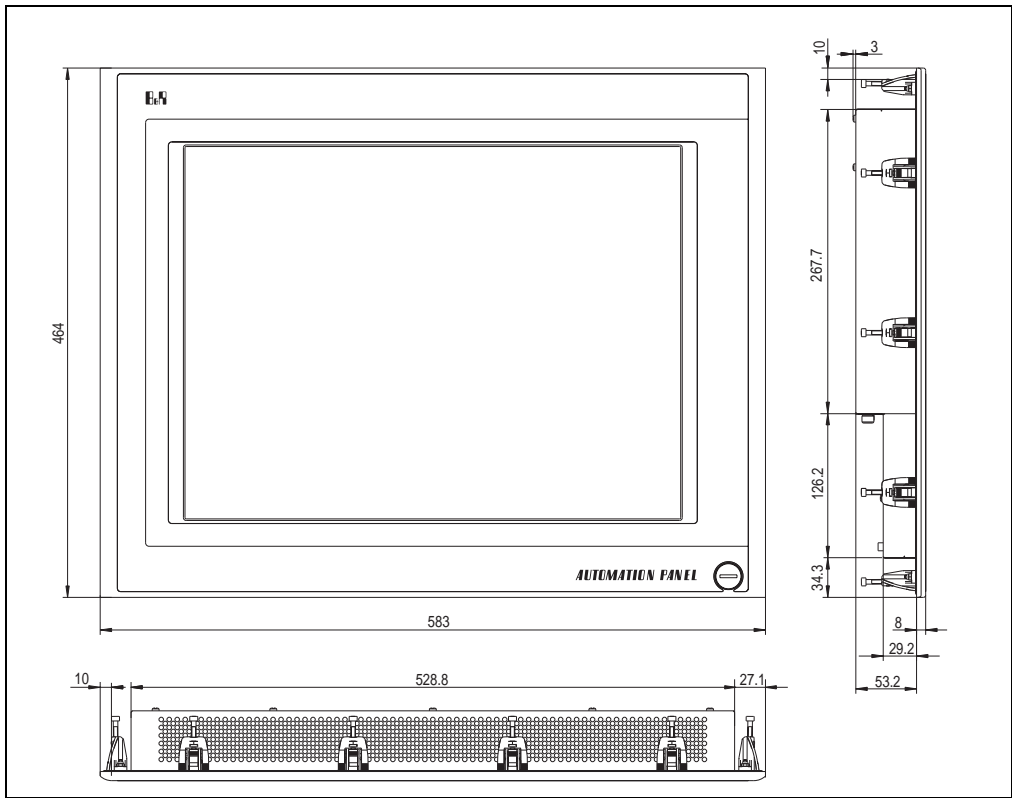


Figure 77: Dimensions 5AP920.2138-01

6.1.3 Contents of delivery

The following components are included in the delivery of the Automation Panel:

Amount	Component
1	Automation Panel 920 TFT SXGA 21.1in with touch screen

Table 36: Delivery contents - 5AP920.2138-01

6.1.4 Cutout installation

The Automation Panel with preassembled mounting clamps is installed e.g. in a housing cutout. A cutout that corresponds to the following drawing must be made.

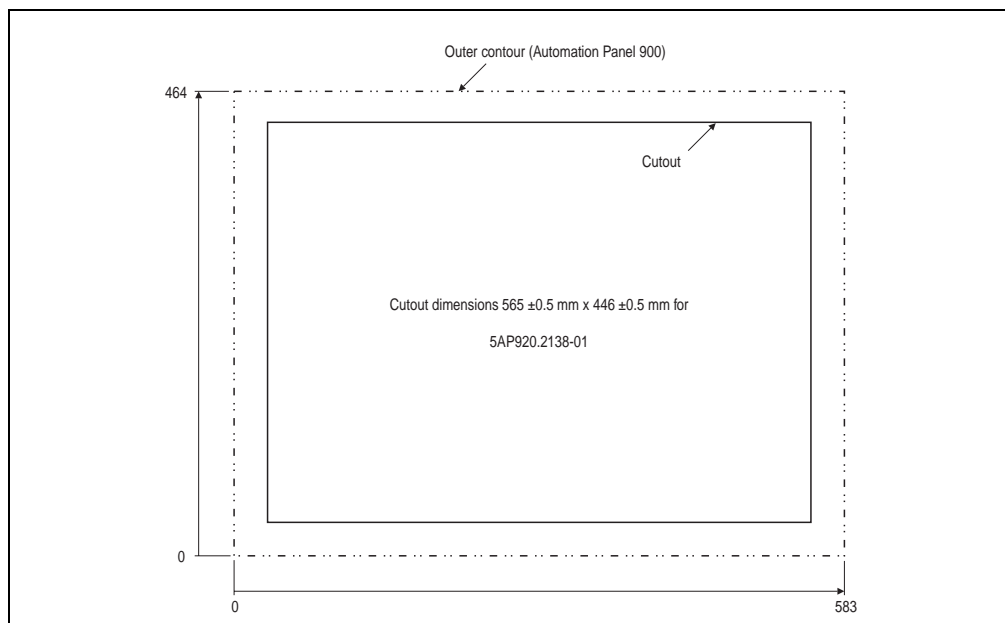


Figure 78: Cutout installation - 5AP920.2138-01

For further information regarding mounting and installation position, see chapter 3 "Mounting" starting on page 113.

6.1.5 USB connections

The Automation Panel 5AP920.2138-01 has three USB connectors (Type A). They can be used if the Automation Panel Link insert card has been correctly connected to a USB port on the slot CPU.

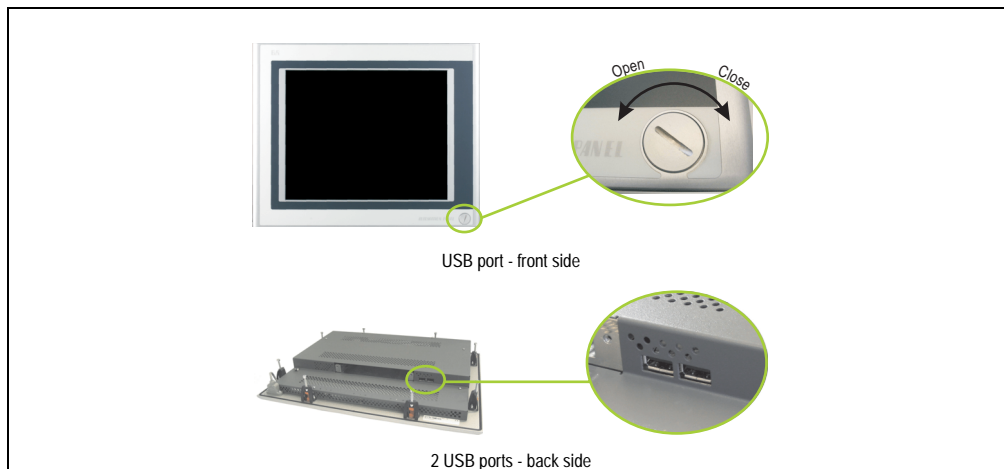


Figure 79: USB connections

Using hubs on the USB interface depends on the Automation Panel Link insert card being used.

6.1.6 Fastening the cable

Cable clamps are provided with the Automation Panel that can be used to fasten the connected cable to the bottom of the back side of the Automation Panel.

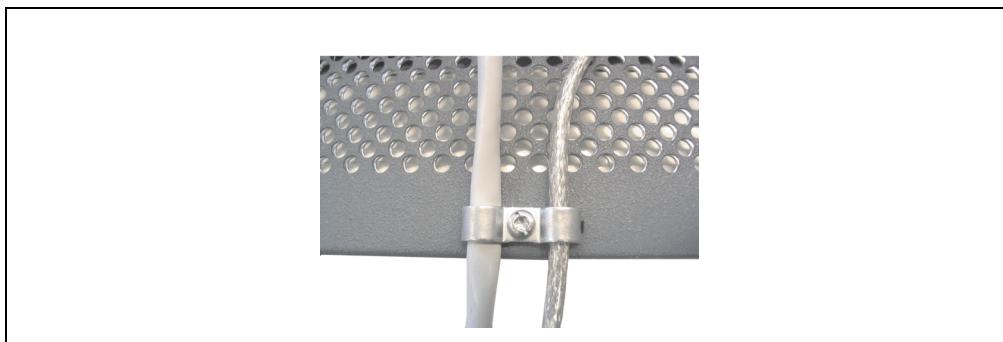


Figure 80: Mounting the cable clamps

7. Automation Panel Link insert cards

Automation Panel Link insert cards form the interface between an Automation PC 620 and an Automation Panel 900. The signals from the Automation PC 620 are received, processed, and forwarded to the Automation Panel 900. In the other direction, the cable is used, for example, to transfer the touch screen, USB and SDL data to the respective Automation PC 620 interface.

This insert card is simply inserted into the Automation Panel slot provided and fastened to the Automation Panel using the two screws.

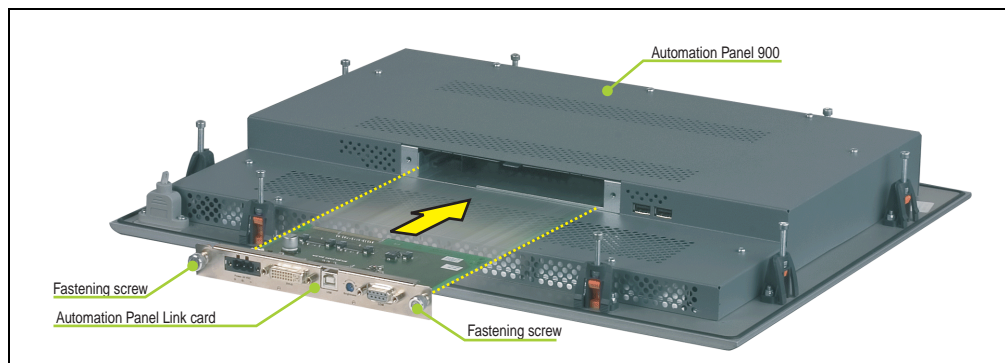


Figure 81: Automation Panel and Automation Panel Link insert card

7.1 Automation Panel Link DVI Receiver 5DLDMI.1000-01

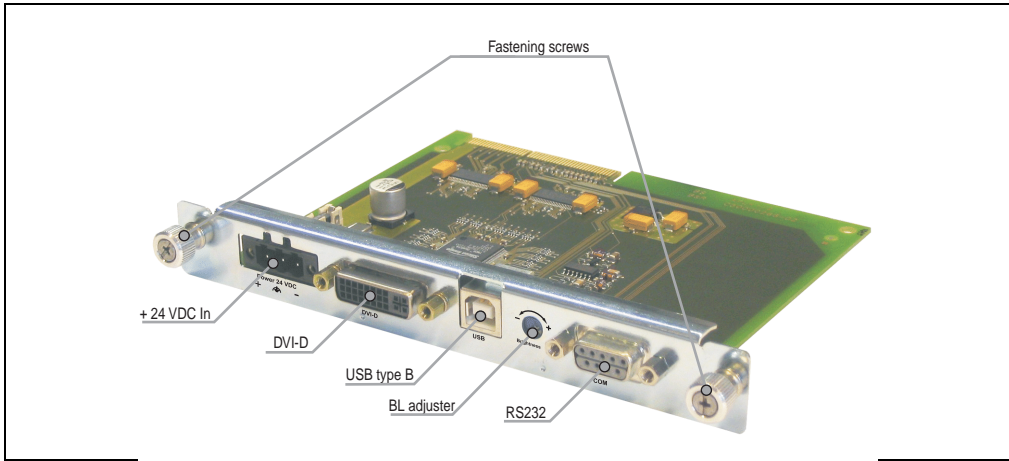


Figure 82: 5DLDMI.1000-01 components

7.1.1 Technical data

Features	5DLDMI.1000-01
Supply range	+ 24 VDC (via APC680 graphics adapter or external power source)
Power consumption	Depends on the Automation Panel being used

Table 37: Technical data – 5DLDMI.1000-01

7.1.2 Interface descriptions

DVI-D

The Display Link insert card has a DVI digital input. Only the digital signals from a graphics adapter are processed and therefore a DVI digital cable must be used.

USB Type B

The USB type B connector makes it possible to use a USB connection cable (type A-B: length < 5 m, with repeaters > 5 m) to connect the Display Link insert card with a USB type A output e.g. a B&R Slot CPU, a B&R Automation PC, a B&R graphics adapter, etc.

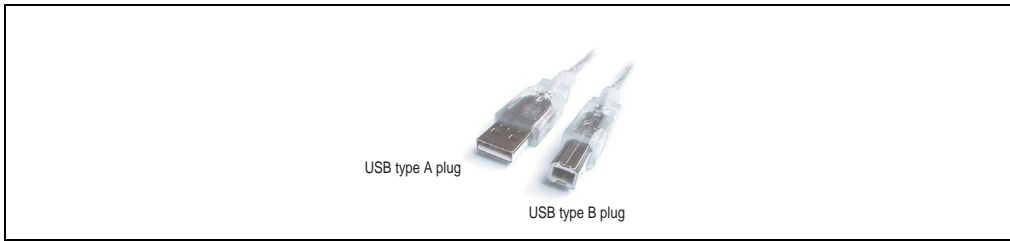


Figure 83: Comparison of USB type A-B connectors

If the Display Link is connected correctly, then the Automation Panel 900 (depending on the type) is equipped with one or more USB ports (front and back).

BL adjuster

This adjuster can be used to control the background lighting on the Automation Panel 900.

RS232

The RS232 interface is used to transfer the Automation Panel 900 touch screen signals.

Serial Interface pin assignments		
RS232 interface Not electrically isolated Up to 115 kBaud		<p>9-pin D-sub socket</p>
Pin	Assignment	
1	n.c.	
2	RXD	
3	TXD	
4	n.c.	
5	GND	
6	DSR	
7	RTS	
8	CTS	
9	n.c.	

Table 38: RS232 pin assignments

Power + 24 VDC

To operate an Automation Panel 900, a +24 VDC power supply needs to be connected. When dimensioning the power supply, the maximum power consumption of the Automation Panel used must be taken into consideration (see Automation Panel 900 technical data).

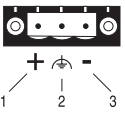
Pin assignments for supply voltage		
Pin	Assignment	
1	+	
2	Ground (safety extra low voltage)	
3	-	

Table 39: Pin assignments for supply voltage

7.2 Automation Panel Link SDL Receiver 5DLSDL.1000-00

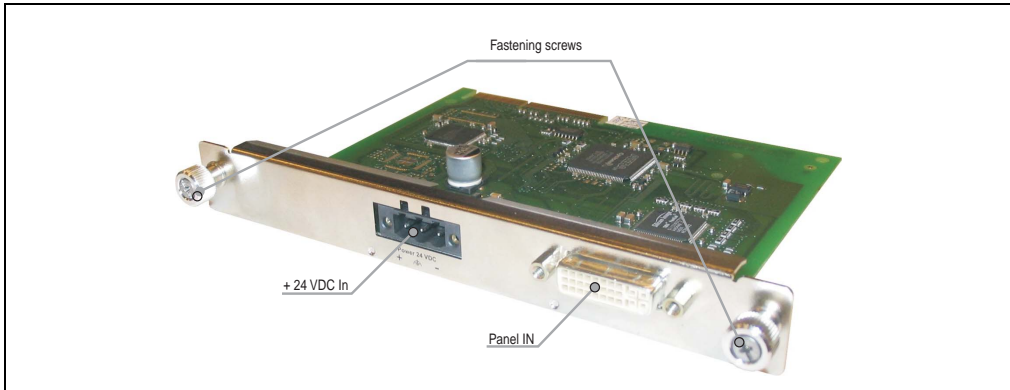


Figure 84: 5DLSDL.1000-00 components

7.2.1 Technical data

Features	5DLSDL.1000-00
Supply range	+24 VDC (external voltage source)
Power consumption	Depends on the Automation Panel 900 being used

Table 40: Technical data – 5DLSDL.1000-00

7.2.2 Interface descriptions

Power + 24 VDC

To operate an Automation Panel, a +24 VDC power supply needs to be connected. When dimensioning the power supply, the maximum power consumption of the Automation Panel used must be taken into consideration (see Automation Panel 900 technical data).

Pin assignments for supply voltage		
Pin	Assignment	
1	+	
2	Ground (safety extra low voltage)	
3	-	

Table 41: Pin assignments for supply voltage

Panel IN

This is where the connection to the Automation PC is established.

7.3 Automation Panel Link SDL Transceiver 5DLSDL.1000-01

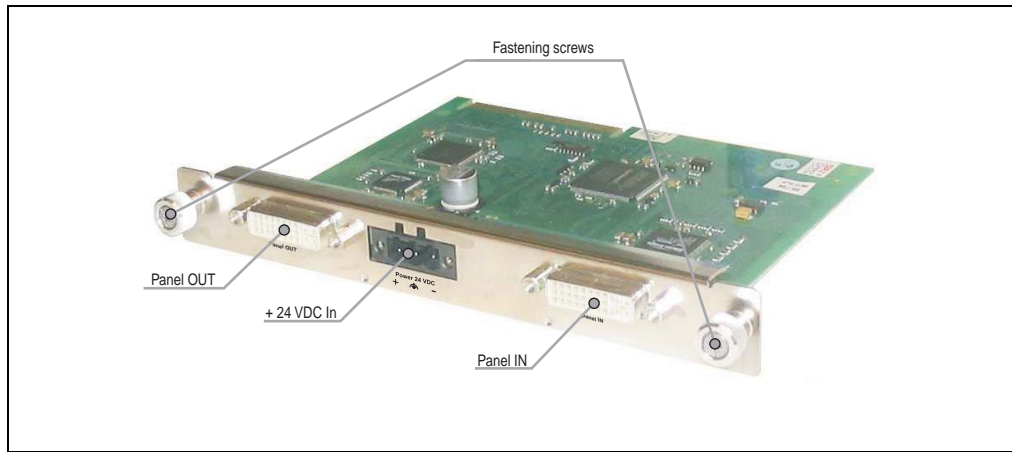


Figure 85: 5DLSDL.1000-01 components

7.3.1 Technical data

Features	5DLSDL.1000-01
Supply range	+24 VDC (external voltage source)
Power consumption	Depends on the Automation Panel being used

Table 42: Technical data – 5DLSDL.1000-01

7.3.2 Interface descriptions

Power + 24 VDC

To operate an Automation Panel, a +24 VDC power supply needs to be connected. When dimensioning the power supply, the maximum power consumption of the Automation Panel used must be taken into consideration (see Automation Panel 900 technical data).

Pin assignments for supply voltage		
Pin	Assignment	
1	+	
2	Ground (safety extra low voltage)	
3	-	

Table 43: Pin assignments for supply voltage

Panel IN

This is where the connection to the Automation PC is established.

Panel OUT

An additional Automation Panel can be connected here.

8. Cables

8.1 DVI cable

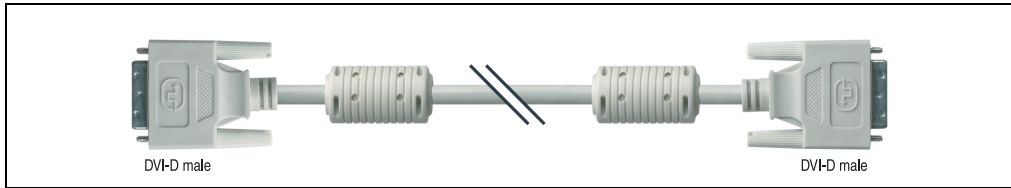


Figure 86: DVI extension cable (similar)

8.1.1 Order Data

Model number	Description	Note
5CADVI.0018-00	DVI-D cable 1.8 m / single Cable single DVI-D/m:DVI-D/m 1.8 m	
5CADVI.0050-00	DVI-D cable 5 m / single Cable single DVI-D/m:DVI-D/m 5 m	
5CADVI.0100-00	DVI-D cable 10 m / single Cable single DVI-D/m:DVI-D/m 10 m	

Table 44: Model numbers for DVI cables

8.1.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed.
We reserve the right to make changes.

Features	5CADVI.0018-00	5CADVI.0050-00	5CADVI.0100-00
Length	1.8 m ± 30 mm	5 m ± 50 mm	10 m ± 100 mm
Outer diameter	Max. 8.5 mm		
Shielding	Individual cable pairs and entire cable		
Connector type	2x DVI-D (18+1), male		
Wire cross section	AWG 28		
Wave impedance	Max. 237 Ω/km		
Insulation resistance	Min. 100 MΩ/km		
Mobility	Flexible		
Flex radius	Min. 146 mm		

Table 45: Technical data for DVI cables

8.2 SDL cable

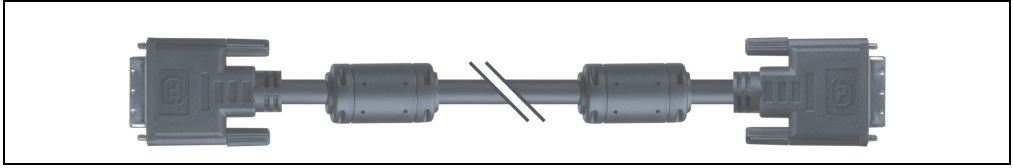


Figure 88: SDL extension cable (similar)

8.2.1 Order Data

Model number	Description	Note
5CASDL.0018-00	SDL cable 1.8 m Cable SDL DVI-D/m:DVI-D/m 1.8 m	
5CASDL.0050-00	SDL cable 5 m Cable SDL DVI-D/m:DVI-D/m 5 m	
5CASDL.0100-00	SDL cable 10 m Cable SDL DVI-D/m:DVI-D/m 10 m	
5CASDL.0150-00	SDL cable 15 m Cable SDL DVI-D/m:DVI-D/m 15 m	

Table 46: Model numbers for SDL cables

8.2.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed.
We reserve the right to make changes.

Features	5CASDL.0018-00	5CASDL.0050-00	5CASDL.0100-00	5CASDL.0150-00
Length	1.8 m ± 50 mm	5 m ± 80 mm	10 m ± 100 mm	15 m ± 120 mm
Outer diameter	Max. 9 mm		Max. 11.5 mm	
Shielding	Individual cable pairs and entire cable			
Connector type	2x DVI-D (24+1), male			
Wire cross section	AWG 24			
Wave impedance	Max. 237 Ω/km			
Insulation resistance	Min. 93 MΩ/km			
Mobility	Flexible			
Flex radius	Min. 129 mm		Min. 165 mm	

Table 47: Technical data for SDL cables

8.2.3 Cable specifications

The following figure shows the cable assignments for the SDL cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The SDL cables provided by B&R are guaranteed to function properly.

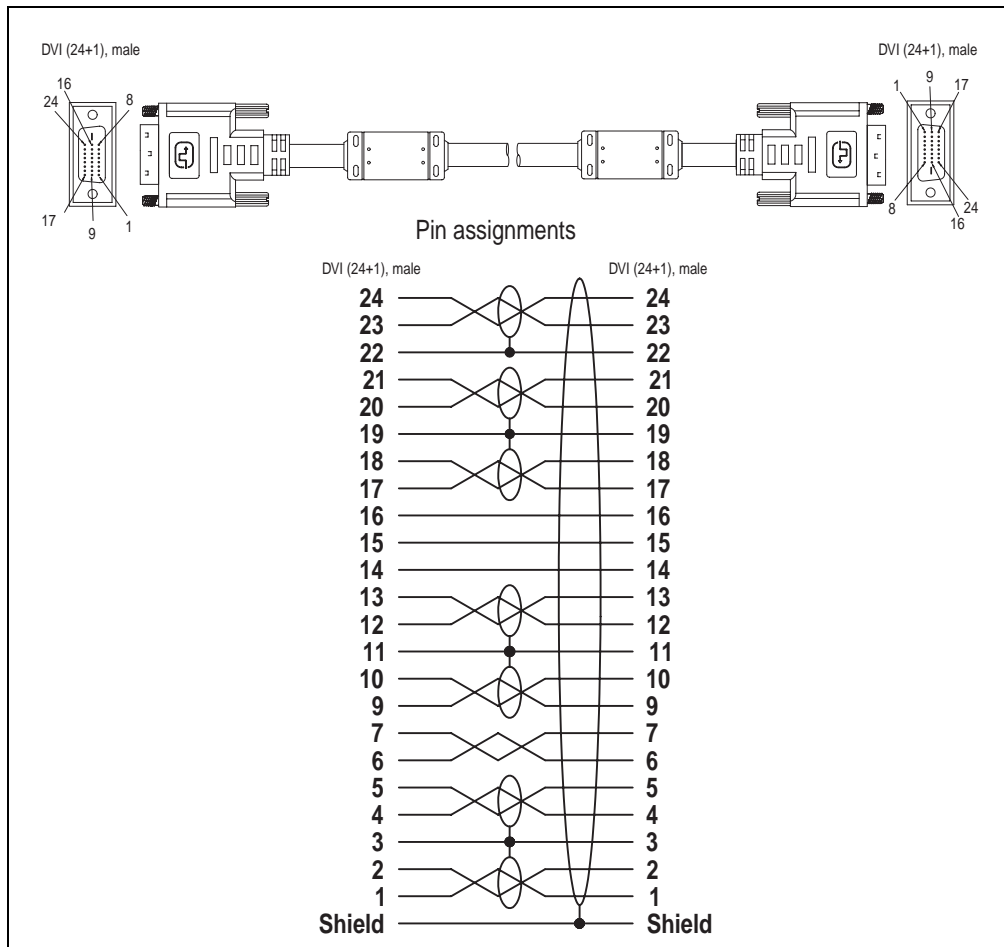


Figure 89: SDL cable assignments

8.3 RS232 cable

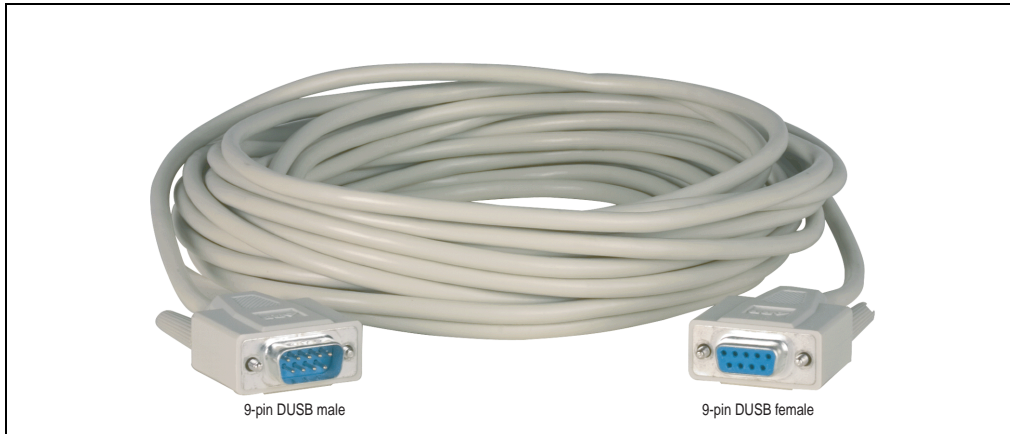


Figure 90: RS232 extension cable (similar)

8.3.1 Order Data

Model number	Description	Note
9A0014.02	Cable RS232 DB9/f:DB9/m 1.8 m RS232 extension cable for remote operation of a display unit with touch screen, length 1.8 m.	
9A0014.05	Cable RS232 DB9/f:DB9/m 5 m RS232 extension cable for remote operation of a display unit with touch screen, length 5 m.	
9A0014.10	Cable RS232 DB9/f:DB9/m 10 m RS232 extension cable for remote operation of a display unit with touch screen, length 10 m.	

Table 48: Model numbers for RS232 cables

8.3.2 Technical data

Information:

**The technical data corresponds to the current status when this manual was printed.
We reserve the right to make changes.**

Features	9A0014.02	9A0014.05	9A0014.10
Length	1.8 m ± 50 mm	5 m ± 80 mm	10 m ± 100 mm
Outer diameter	Max. 5 mm		
Shielding	Entire cable		
Connector type	DSUB (9-pin), male / female		
Wire cross section	AWG 26		

Table 49: Technical data for RS232 cables

Features	9A0014.02	9A0014.05	9A0014.10
Mobility	Flexible		
Flex radius	Min. 70 mm		

Table 49: Technical data for RS232 cables

8.3.3 Cable specifications

The following figure shows the cable assignments for the RS232 cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The RS232 cables provided by B&R are guaranteed to function properly.

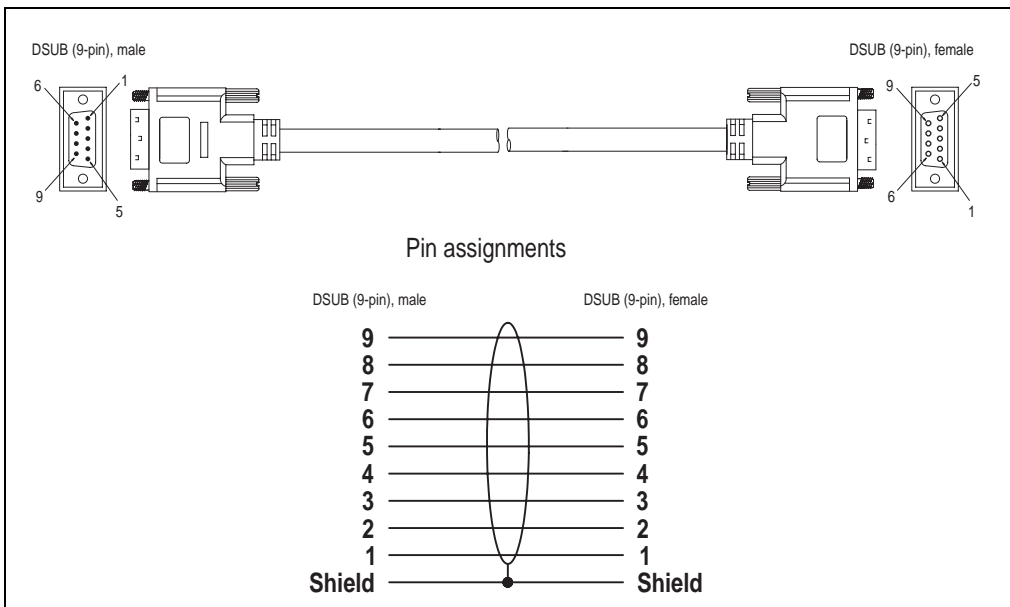


Figure 91: RS232 cable assignments

8.4 USB cable

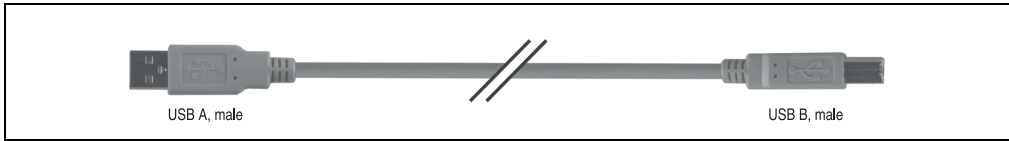


Figure 92: USB extension cable (similar)

8.4.1 Order Data

Model number	Description	Note
5CAUSB.0018-00	Cable USB 2.0 A/m:B/m 1.8 m USB 2.0 connection cable; Type A - Type B; 1.8 m	
5CAUSB.0050-00	Cable USB 2.0 A/m:B/m 5 m USB 2.0 connection cable; Type A - Type B; 5 m	

Table 50: Model numbers for USB cables

8.4.2 Technical data

Information:

The technical data corresponds to the current status when this manual was printed.
We reserve the right to make changes.

Features	5CAUSB.0018-00	5CAUSB.0050-00
Length	1.8 m ± 30 mm	5 m ± 50 mm
Outer diameter	Max. 5 mm	
Shielding	Entire cable	
Connector type	USB type A male and USB type B male	
Wire cross section	AWG 24, 28	
Mobility	Flexible	
Flex radius	Min. 100 mm	

Table 51: Technical data for USB cables

8.4.3 Cable specifications

The following figure shows the cable assignments for the USB cable available at B&R. If you want to build a suitable cable yourself, it should be wired according to these assignments.

Warning!

If a self-built cable is used, B&R cannot guarantee that it will function properly. The USB cables provided by B&R are guaranteed to function properly.

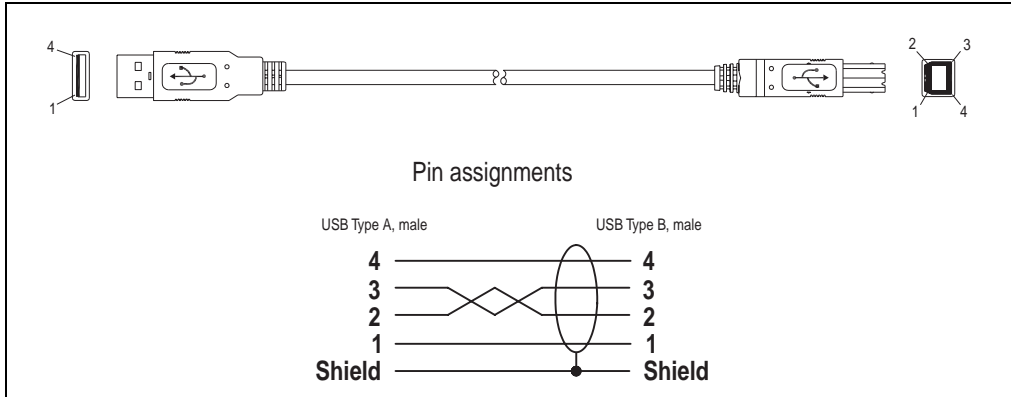


Figure 93: USB cable assignments

Chapter 3 • Mounting

1. Mounting Instructions

Automation Panel 900 devices are best mounted in a housing cutout using the clamps found on the display units. The cutout dimensions for the respective Automation Panel 900 device can be found in the technical data (see chapter 2 "Technical Data" starting on page 19).

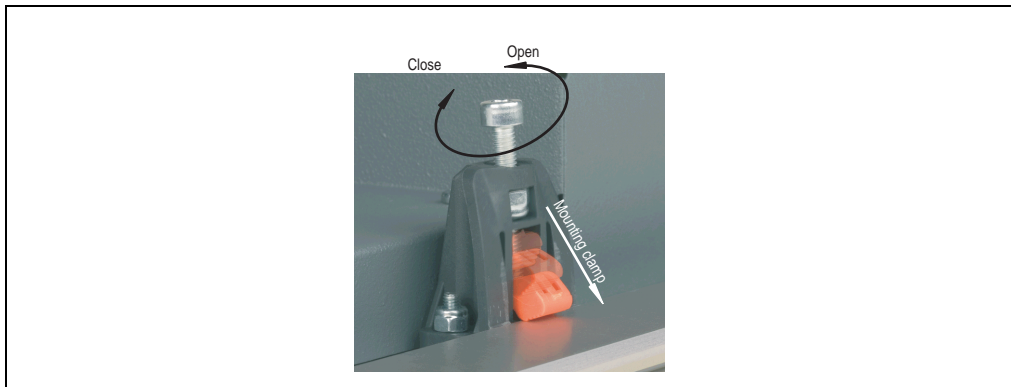


Figure 94: Mounting clamps

The mounting clamps are designed for a max. thickness of 10 mm for the material where the device is being clamped. A hex key (3mm) is needed to tighten and loosen the screws. The maximum torque when tightening the clamp is 0.5 Nm.

In order to guarantee proper air circulation, allow a sufficient amount of space above, below, to the side and behind the Automation Panel. The minimum specified free space can be found in the following diagram.

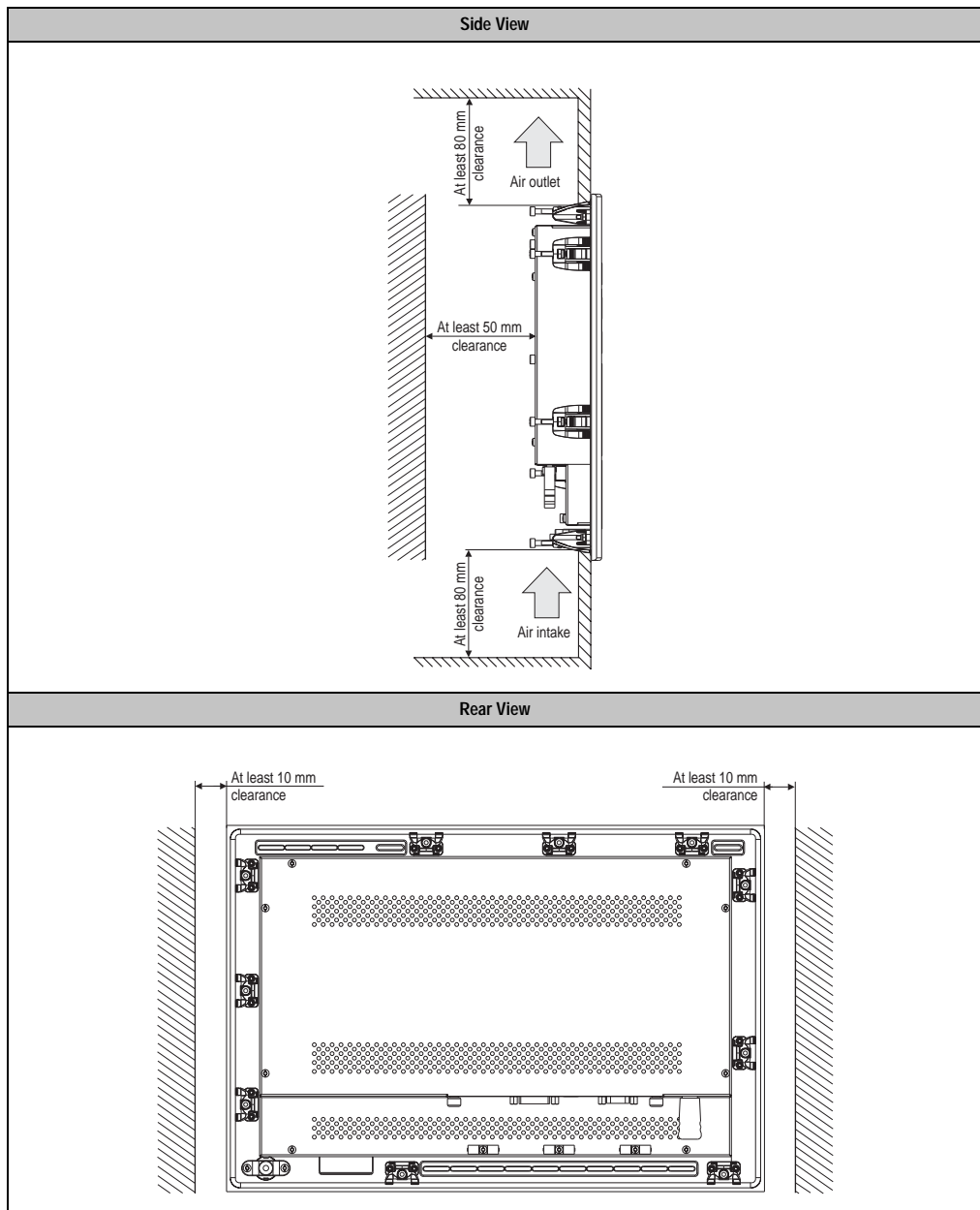


Figure 95: Distance for air circulation

2. Mounting orientation

The following diagram displays the specified mounting orientation for the Automation Panel device.

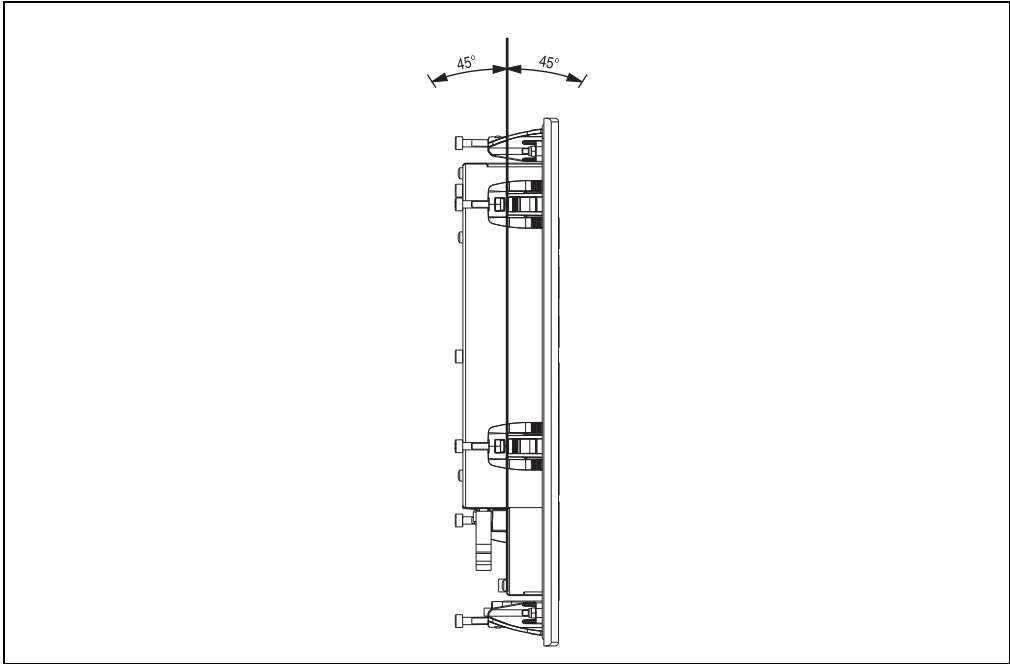


Figure 96: Mounting orientation

Chapter 4 • Accessories

1. Plug/N 24V 5.08 3p screw clamps

The plug 0TB103.8 is needed if the Automation Panel supply should be connected using the +24 VDC output on the graphics adapter (5GA680.1000-01) in an Automation PC 680.


Model number	Description	Image
0TB103.8	Plug for the 24 V supply voltage (screw clamps)	

Table 52: TB103 order data

1.1 Technical data

Model number	0TB103.8
Number of pins	3
Type of terminal	Screw clamps
Distance between contacts	5,08 mm
Resistance between contacts	$\leq 5 \text{ m}\Omega$
Nominal voltage according to VDE / UL,CSA	250 V / 300 V
Current load according to VDE / UL,CSA	14,5 A / 10 A per contact
Connection cross section	0,08 mm ² - 2,5 mm ² (AWG 26 - 12)
Cable type	Only copper wires (no aluminum wires!)

Table 53: Technical data - 0TB103.8

2. TB103 3-pin supply voltage connector

2.1 General Information

This single row 3-pin terminal block is mainly used to connect the supply voltage.

2.2 Order Data



Model number	Description	Image
0TB103.9	Plug for the 24 V supply voltage (screw clamps)	 <p>0TB103.9</p>  <p>0TB103.91</p>
0TB103.91	Plug for the 24 V supply voltage (cage clamps)	

Table 54: TB103 order data

2.3 Technical data

Model number	0TB103.9	0TB103.91
Number of pins	3	
Type of terminal	Screw clamps	Cage clamps
Distance between contacts	5,08 mm	
Resistance between contacts	$\leq 5 \text{ m}\Omega$	
Nominal voltage according to VDE / UL, CSA	250 V / 300 V	
Current load according to VDE / UL, CSA	14.5 A / 10 A per contact	
Connection cross section	0.08 mm ² - 2.5 mm ² (AWG 26 - 12)	
Cable type	Only copper wires (no aluminum wires!)	

Table 55: TB103 technical data

3. Legend strip templates

Automation Panel devices with keys are delivered with partially pre-labeled key legend strips (F1, F2, etc.). The key legend strip slots are accessible on the back of the Automation Panel device (above and below).

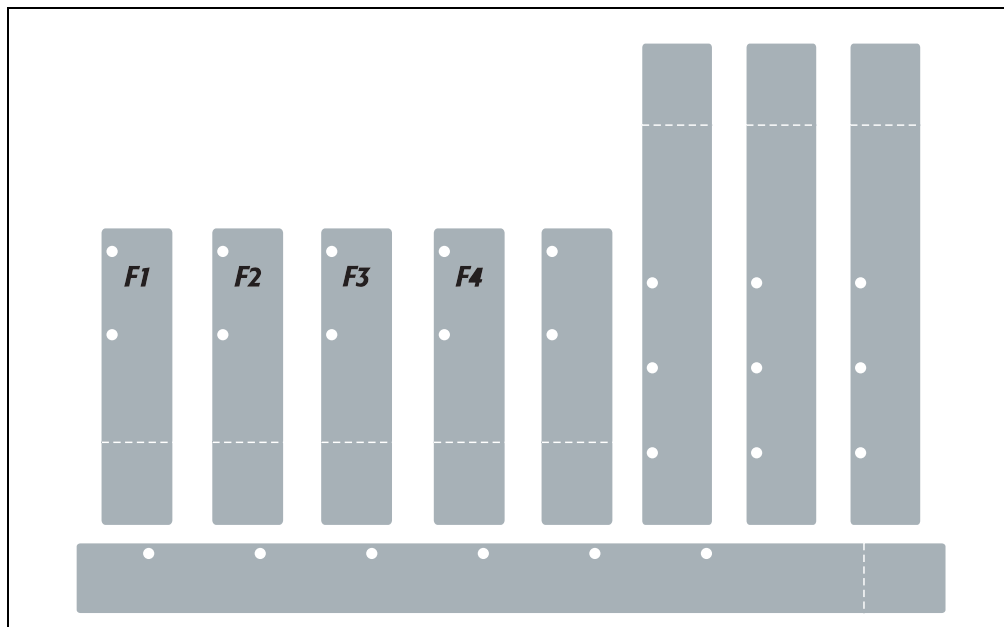


Figure 97: Legend strip samples

Printable legend strips (A4 format) can be ordered from B&R (see table 10 "Model numbers for accessories" on Page 16). This can be printed using a standard laser printer (b/w or color) in a temperature range from -40 °C to +125 °C. A print template (available for Corel Draw version 7, 9 and 10) for the respective legend strip template can be downloaded from the B&R homepage www.br-automation.com.

3.1 Order Data

Model number	Description	Image
5AC900.104X-03	Legend strip template 10.4" Legend strip templates for Automation Panels 5AP951.1043-01 and 5A981.1043-01. For 1 device.	<p>Examples of Legend Strip Templates</p>
5AC900.104X-04	Legend strip template 10.4" Legend strip templates for Automation Panels 5AP952.1043-01 and 5A982.1043-01. For 1 device.	
5AC900.104X-05	Legend strip template 10.4" Legend strip templates for Automation Panel 5AP980.1043-01. For 3 devices.	
5AC900.150X-01	Legend strip template 15" Legend strip templates for Automation Panels 5AP951.1505-01, 5AP980.1505-01 and 5A981.1505-01. For 4 devices.	

Table 56: Legend strip template order data

Appendix A

1. Touch screen

1.1 Elo Accu touch

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Elo Accu Touch Screen	Specifications
Manufacturer	Elo
Precision	± 2.03 mm
Reaction time	< 10 ms
Release pressure	< 100 grams
Resolution	4096 x 4096 touch points
Light permeability	Up to 78 %
Temperature Operation Storage Transport	- 10 °C to + 50 °C - 40 °C to + 71 °C - 40 °C to + 71 °C
Waterproofing	IP65
Lifespan	35 million contacts on the same point
Chemical resistance ¹⁾	Aceton, ammonia-based glass cleaner, normal food and drinks, hexane, methylene chloride, methyl ethyl ketone, mineral spirits, turpentine, isopropyl alcohol
Activation	Finger, pointer, credit card, glove

Table 57: Technical data for Elo Accu touch screen

1) The active area of the touch screen is resistant to these chemicals for a timeframe of one hour at 21°C.

1.1.1 Cleaning

The touch screen should be cleaned with a moist lint-free cloth. When moistening the cloth, use only water with detergent, screen cleaning agent, or alcohol (ethanol). The cleaning agent should be applied to the cloth beforehand and not sprayed directly onto the touch screen itself. Never use aggressive solvents, chemicals, or scouring agents.

2. Mylar

The Mylar conforms to DIN 42115 (section 2). This means it is resistant to exposure to the following chemicals for a 24 hour period with no visible signs of damage:

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Ethanol Cyclohexanol Diacetone alcohol Glycol Isopropanol Glycerin Methanol Triacetin Dowandol DRM/PM	Formaldehyde 37%-42% Acetaldehyde Aliphatic hydrocarbons Toluene Xylene White spirits	1.1.1.Trichloroethane Ethyl acetate Diethyl ether N-Butyl acetate Amyl acetate Butylcellosolve Ether
Acetone Methyl ethyl ketone Dioxan Cyclohexanone MIBK Isophorone	Formic acid <50% Acetic acid <50% Phosphoric acid <30% Hydrochloric acid <36% Nitric acid <10% Trichloroacetic acid <50% Sulphuric acid <10%	Sodium hypochlorite <20% Hydrogen peroxide <25% Potassium carbonate Washing powders Fabric conditioner Ferric chloride Ferrous chloride (FeCl ₂) Ferrous chloride (FeCl ₃) Dibutyl phthalate Diocetyl phthalate Sodium carbonate
Ammonia <40% Caustic soda <40% Potassium hydroxide Alkali carbonate Bichromate Potassium Acetonitrile Sodium bisulphate	Cutting oil Diesel oil Linseed oil Paraffin oil Blown castor oil Silicon oil Turpentine oil substitute Universal brake fluid Aviation fuel Petrol Water Sea water Decon	

Table 58: Chemical resistance of the Mylar

The Mylar conforms to DIN 42115 section 2 for exposure to glacial acetic acid for less than one hour without visible damage.

3. Filter glass

3.1 Mechanical characteristics

Information:

The following characteristics, features and limit values are only valid for these individual components and can deviate from those for the entire device. For the entire device in which these individual components are used, refer to the data given specifically for the entire device.

The technical data corresponds to the current status when this manual was printed. We reserve the right to make changes.

Abrasion-resistant according to DIN 52347

Adhesive strength according to DIN 58 196-K2 (section 6)

3.2 Chemical properties

Durability according to DIN 50021 - CASS.

Table 1:	Manual History	11
Table 2:	Safety guidelines	13
Table 3:	Model numbers for Automation Panel 10.4" VGA	14
Table 4:	Model numbers for Automation Panel 15" XGA	14
Table 5:	Model numbers for Automation Panel 17" SXGA	15
Table 6:	Model numbers for Automation Panel 19" SXGA	15
Table 7:	Model numbers for Automation Panel 21.3" UXGA	15
Table 8:	Model numbers for Automation Panel insert cards	15
Table 9:	Model numbers - cables	16
Table 10:	Model numbers for accessories	16
Table 11:	Technical data - 5AP920.1043-01	21
Table 12:	Delivery contents - 5AP920.1043-01	23
Table 13:	Technical data - 5AP951.1043-01	27
Table 14:	Delivery contents - 5AP951.1043-01	29
Table 15:	Technical data - 5AP981.1043-01	33
Table 16:	Delivery contents - 5AP981.1043-01	35
Table 17:	Technical data - 5AP952.1043-01	39
Table 18:	Delivery contents - 5AP952.1043-01	41
Table 19:	Technical data - 5AP982.1043-01	45
Table 20:	Delivery contents - 5AP982.1043-01	47
Table 21:	Technical data - 5AP980.1043-01	51
Table 22:	Delivery contents - 5AP980.1043-01	53
Table 23:	Technical data - 5AP920.1505-01	57
Table 24:	Delivery contents - 5AP920.1505-01	59
Table 25:	Technical data - 5AP951.1505-01	63
Table 26:	Delivery contents - 5AP951.1505-01	65
Table 27:	Technical data - 5AP981.1505-01	69
Table 28:	Delivery contents - 5AP981.1505-01	71
Table 29:	Technical data - 5AP980.1505-01	75
Table 30:	Delivery contents - 5AP980.1505-01	77
Table 31:	Technical data - 5AP920.1706-01	81
Table 32:	Delivery contents - 5AP920.1706-01	83
Table 33:	Technical data - 5AP920.1906-01	87
Table 34:	Delivery contents - 5AP920.1906-01	89
Table 35:	Technical data - 5AP920.2138-01	93
Table 36:	Delivery contents - 5AP920.2138-01	95
Table 37:	Technical data – 5DLDVI.1000-01	99
Table 38:	RS232 pin assignments	100
Table 39:	Pin assignments for supply voltage	101
Table 40:	Technical data – 5DLSDL.1000-00	102
Table 41:	Pin assignments for supply voltage	102
Table 42:	Technical data – 5DLSDL.1000-01	103
Table 43:	Pin assignments for supply voltage	103
Table 44:	Model numbers for DVI cables	105
Table 45:	Technical data for DVI cables	105
Table 46:	Model numbers for SDL cables	107
Table 47:	Technical data for SDL cables	107

Table index

Table 48:	Model numbers for RS232 cables	109
Table 49:	Technical data for RS232 cables	109
Table 50:	Model numbers for USB cables	111
Table 51:	Technical data for USB cables	111
Table 52:	TB103 order data	117
Table 53:	Technical data - 0TB103.8	117
Table 54:	TB103 order data	118
Table 55:	TB103 technical data	118
Table 56:	Legend strip template order data	120
Table 57:	Technical data for Elo Accu touch screen	121
Table 58:	Chemical resistance of the Mylar	123

Figure 1:	Automation Panel and Automation Panel Link insert card	19
Figure 2:	Automation Panel USB connections (front side - back side)	19
Figure 3:	Front view 5AP920.1043-01	20
Figure 4:	Rear view 5AP920.1043-01	20
Figure 5:	Dimensions 5AP920.1043-01	23
Figure 6:	Cutout installation - 5AP920.1043-01	24
Figure 7:	USB connections	25
Figure 8:	Mounting the cable clamps	25
Figure 9:	Front view 5AP951.1043-01	26
Figure 10:	Rear view 5AP951.1043-01	26
Figure 11:	Dimensions 5AP951.1043-01	29
Figure 12:	Cutout installation - 5AP951.1043-01	30
Figure 13:	USB connections	31
Figure 14:	Mounting the cable clamps	31
Figure 15:	Front view 5AP981.1043-01	32
Figure 16:	Rear view 5AP981.1043-01	32
Figure 17:	Dimensions 5AP981.1043-01	35
Figure 18:	Cutout installation - 5AP981.1043-01	36
Figure 19:	USB connections	37
Figure 20:	Mounting the cable clamps	37
Figure 21:	Front view 5AP952.1043-01	38
Figure 22:	Rear view 5AP952.1043-01	38
Figure 23:	Dimensions 5AP952.1043-01	41
Figure 24:	Cutout installation - 5AP952.1043-01	42
Figure 25:	USB connections	43
Figure 26:	Mounting the cable clamps	43
Figure 27:	Front view 5AP982.1043-01	44
Figure 28:	Rear view 5AP982.1043-01	44
Figure 29:	Dimensions 5AP982.1043-01	47
Figure 30:	Cutout installation - 5AP982.1043-01	48
Figure 31:	USB connections	49
Figure 32:	Mounting the cable clamps	49
Figure 33:	Front view 5AP980.1043-01	50
Figure 34:	Rear view 5AP980.1043-01	50
Figure 35:	Dimensions 5AP980.1043-01	53
Figure 36:	Cutout installation - 5AP980.1043-01	54
Figure 37:	USB connections	55
Figure 38:	Mounting the cable clamps	55
Figure 39:	Front view 5AP920.1505-01	56
Figure 40:	Rear view 5AP920.1505-01	56
Figure 41:	Dimensions 5AP920.1505-01	59
Figure 42:	Cutout installation - 5AP920.1505-01	60
Figure 43:	USB connections	61
Figure 44:	Mounting the cable clamps	61
Figure 45:	Front view 5AP951.1505-01	62
Figure 46:	Rear view 5AP951.1505-01	62
Figure 47:	Dimensions 5AP951.1505-01	65

Figure index

Figure 48:	Cutout installation - 5AP951.1505-01.....	66
Figure 49:	USB connections.....	67
Figure 50:	Mounting the cable clamps.....	67
Figure 51:	Front view 5AP981.1505-01.....	68
Figure 52:	Rear view 5AP981.1505-01	68
Figure 53:	Dimensions 5AP981.1505-01.....	71
Figure 54:	Cutout installation - 5AP981.1505-01.....	72
Figure 55:	USB connections.....	73
Figure 56:	Mounting the cable clamps.....	73
Figure 57:	Front view 5AP980.1505-01.....	74
Figure 58:	Rear view 5AP980.1505-01	74
Figure 59:	Dimensions 5AP980.1505-01.....	77
Figure 60:	Cutout installation - 5AP980.1505-01.....	78
Figure 61:	USB connections.....	79
Figure 62:	Mounting the cable clamps.....	79
Figure 63:	Front view 5AP920.1706-01.....	80
Figure 64:	Rear view 5AP920.1706-01	80
Figure 65:	Dimensions 5AP920.1706-01.....	83
Figure 66:	Cutout installation - 5AP920.1706-01.....	84
Figure 67:	USB connections.....	85
Figure 68:	Mounting the cable clamps.....	85
Figure 69:	Front view 5AP920.1906-01.....	86
Figure 70:	Rear view 5AP920.1906-01	86
Figure 71:	Dimensions 5AP920.1906-01.....	89
Figure 72:	Cutout installation - 5AP920.1906-01.....	90
Figure 73:	USB connections.....	91
Figure 74:	Mounting the cable clamps.....	91
Figure 75:	Front view 5AP920.2138-01.....	92
Figure 76:	Rear view 5AP920.2138-01	92
Figure 77:	Dimensions 5AP920.2138-01.....	95
Figure 78:	Cutout installation - 5AP920.2138-01.....	96
Figure 79:	USB connections.....	97
Figure 80:	Mounting the cable clamps.....	97
Figure 81:	Automation Panel and Automation Panel Link insert card	98
Figure 82:	5DL DVI.1000-01 components.....	99
Figure 83:	Comparison of USB type A-B connectors	100
Figure 84:	5DLSDL.1000-00 components.....	102
Figure 85:	5DLSDL.1000-01 components.....	103
Figure 86:	DVI extension cable (similar).....	105
Figure 87:	DVI cable assignments.....	106
Figure 88:	SDL extension cable (similar).....	107
Figure 89:	SDL cable assignments.....	108
Figure 90:	RS232 extension cable (similar).....	109
Figure 91:	RS232 cable assignments.....	110
Figure 92:	USB extension cable (similar)	111
Figure 93:	USB cable assignments	112
Figure 94:	Mounting clamps	113

Figure 95:	Distance for air circulation	114
Figure 96:	Mounting orientation.....	115
Figure 97:	Legend strip samples	119

A

Air circulation 114

D

DVI cable 105

DVI Receiver 99

G

Guidelines 14

L

Legend strip templates 119

M

Manual History 11

Model numbers 14

Accessories 16

Automation Panel 10.4" VGA 14

Automation Panel 15" XGA 14

Automation Panel 17" SXGA 15

Automation Panel 19" SXGA 15

Automation Panel 21.3" UXGA 15

Automation Panel Link insert cards 15

Cables 16

Mounting Orientation 115

R

RS232 cable 109

S

Safety guidelines 12

Design 13

Intended use 12

Introduction 12

Mounting 12

Operation 13

Transport and storage 12

SDL cable 107

SDL Receiver 102

SDL Transceiver 103

Supply voltage connector 118

U

USB cable 111

USB interface 19

0

0TB103.8	16, 117
0TB103.9	17, 118
0TB103.91	17, 118

5

5AC900.104X-03	17, 120
5AC900.104X-04	17, 120
5AC900.104X-05	17, 120
5AC900.150X-01	17, 120
5AP920.1043-01	14, 20
5AP920.1505-01	14, 56
5AP920.1706-01	15, 80
5AP920.1906-01	15, 86
5AP920.2138-01	15, 92
5AP951.1043-01	14, 26
5AP951.1505-01	14, 62
5AP952.1043-01	14, 38
5AP980.1043-01	14, 50
5AP980.1505-01	15, 74

5AP981.1043-01	14, 32
5AP981.1505-01	15, 68
5AP982.1043-01	14, 44
5CADVI.0018-00	16, 105
5CADVI.0050-00	16, 105
5CADVI.0100-00	16, 105
5CASDL.0018-00	16, 107
5CASDL.0050-00	16, 107
5CASDL.0100-00	16, 107
5CASDL.0150-00	16, 107
5CAUSB.0018-00	16, 111
5CAUSB.0050-00	16, 111
5DLDDVI.1000-01	15, 99
5DLSDL.1000-00	16, 102
5DLSDL.1000-01	16, 103

9

9A0014.02	16, 109
9A0014.05	16, 109
9A0014.10	16, 109

