BARTEC

ATEX / IECEx Zone 1 and Zone 21

User Manual

POLARIS PROFESSIONAL

POLARIS Panel PC Professional 15" to 24" Type 17-71V1-....

BARTEC

User Manual - TRANSLATION

POLARIS PROFESSIONAL

POLARIS Panel PC Professional 15" up to 24"

Type 17-71V1-….

ATEX / IECEx

Zone 1 and Zone 21

Document no. 11-71V1-7D0007

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Reservation: Technical data subject to change without notice. Changes, errors and misprints may not be used as a basis for any claim for damages.

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1. Basic Safety Instructions

1.1 Notes on this manual

Please read carefully before commissioning the devices.

The user manual is a constituent part of the product. It must be kept in the direct vicinity of the device and accessible at all times to installation, operating and maintenance personnel.

It contains important notes, safety instructions and test certificates which are necessary for perfect functioning when the devices are being operated and handled.

The user manual is written for all people who carry out assembly, installation, commissioning and maintenance work on the product, whereby the directives and standards applicable to areas with a gas or dust atmosphere (99/92/EC, EN 60079-17, EN 60079-19, IEC 60079-17, IEC 60079-19) must be observed when doing such work.

Familiarity with and strict adherence to the safety instructions and warnings in this manual are essential for safe installation and commissioning. Careful handling and consistent observation of these instructions can prevent accidents, personal injuries and damage to property.

The illustrations in these operating instructions serve to make the information and descriptions more clear. They are not necessarily true to scale and may deviate slightly from the actual construction of the device.

Safety instructions and warnings are specially highlighted in this manual and marked by symbols.

DANGER

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

WARNING

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

CAUTION

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

ATTENTION

ATTENTION identifies a potentially damaging situation which, if not avoided, could damage the equipment or something in its environment.

Important instructions and information on effective, economical and environmentally compatible handling.

1.1.1 Languages

The original user manual is written in German. All other available languages are translations of the original user manual.

The user manual is available in German, English, French, Russian and Brazilian Portuguese. If you require any other languages, please ask BARTEC or request them when placing the order.

1.1.2 Changes to the document

BARTEC reserves the right to alter the contents of this document without notice. No guarantee is given for the correctness of the information. In case of doubt, the German safety instructions shall apply because it is not possible to rule out errors in translation or in printing. In the event of a legal dispute, the “General Terms and Conditions” of the BARTEC group shall apply in addition.

The respective up-to-date versions of data sheets, manuals, certificates, EC Declaration of Conformity may be downloaded at www.bartec-group.com under products and solutions in the area “Automatic Technology” or ordered directly from BARTEC GmbH.

1.2 Handling the Product

The product described in these operating instructions has been tested and left the factory in perfect condition as regards meeting safety requirements. To maintain this condition and ensure that this product operates perfectly and safely, it may be used only in the manner described by the manufacturer. Appropriate transportation, suitable storage and careful operation are also essential for the perfect and safe operation of this product. The POLARIS must be installed properly and securely if it is to work perfectly and correctly.

The safe and perfect mounting of the POLARIS is a precondition for faultless and correct operation.

1.3 Use in Accordance with the Intended Purpose

1.3.1 Exclusive Purpose

It is used exclusively in combination with operating devices which satisfy the requirements for Overvoltage Category I.

The POLARIS PROFESSIONAL Panel PCs have been designed specially for use in hazardous (potentially explosive) areas in Zone 1 or Zones 21.

It is essential to observe the permissible operational data for the device being used.

1.3.2 Improper Use

Any other use is not in accordance with the intended purpose and can cause damage and accidents. The manufacturer will not be liable for any use beyond that of its exclusive intended purpose.

1.4 Owner's/Managing Operator's Obligations

The owner/managing operator undertakes to restrict permission to work with the POLARIS to people who:

- are familiar with the basic regulations on safety and accident prevention and have been instructed in the use of the POLARIS;
- have read and understood the documentation, the chapter on safety and the warnings.

The owner/managing operator must check that the safety regulations and accident prevention rules valid for the respective application are being observed.

1.5 Safety Instructions

1.5.1 General Safety Instructions

- Take the device out of the hazardous area before wiping it with a dry cloth or cleaning it!
- Do not open devices in a hazardous area.
- The general statutory regulations or directives relating to safety at work, accident prevention and environmental protection legislation must be observed, e.g. the German industrial health and safety ordinance (BetrSichV) or the applicable national ordinances.
- In view of the risk of dangerous electrostatic charging, wear appropriate clothing and footwear.
- Avoid the influence of heat that is higher or lower than the specified temperature range.
- Protect the device from external influences! Do not expose the device to any caustic/aggressive liquids, vapours or mist! In the event of malfunctioning or damage to the enclosure, take the device out of the potentially explosive area immediately and bring it to a safe place.

1.6 Safety Instructions for Operation

1.6.1 Upkeep

For electrical systems the relevant installation and operating regulations must be complied with (e.g. Directive 99/92/EC, Directive 94/9/EC and the national applicable ordinances IEC 60079-14 and the DIN VDE 0100 series)!

The disposal of this equipment must comply with the national regulations on the disposal of waste.

1.6.2 Maintenance

Regular servicing is not necessary if the equipment is operated correctly in accordance with the installation instructions and environmental conditions. In this context, please refer to Chapter "Maintenance, Inspection, Repair".

1.6.3 Inspection

Under IEC 60079-19 and EN 60079-17, the owner/managing operator of electrical installations in hazardous areas is obliged to have these installations checked by a qualified electrician to ensure that they are in a proper condition.

1.6.4 Repairs

Repairs on explosion-protected operating equipment may be done only by authorised persons working in accordance with the latest developments in technology and using original spare parts. The applicable regulations must be observed.

1.6.5 Commissioning

Before commissioning, check that all components and documents are there.

1.7 Ex Protection Type, Certification and Standards

Markings specifying Ex protection and certification are put on the device. For Ex protection markings, see Chapter 3 "Technical Data".

The POLARIS PROFESSIONAL Panel PCs conform to Directive 94/9/EC for devices and protective systems for use to their intended purpose in potentially explosive areas (ATEX Directive). For the standards conformed to, see Chapter 3 "Technical Data".

1.8 Warranty

⚠ WARNING

It is not permissible to make any modifications or implement any conversions unless the manufacturer gives his approval in writing.

If components other than those specified are used, protection against explosion can no longer be assured. It cannot be guaranteed that parts procured from other suppliers have been designed and produced in conformance to safety requirements and with the necessary stress tolerance.

▶ Contact the manufacturer to obtain approval before making any modifications or conversions. Use only original spare parts and original expendable parts.

The manufacturer grants a complete guarantee only and exclusively for the spare parts ordered from him, the manufacturer.

As a fundamental rule, our “General Conditions of Sale and Delivery” apply. These are made available to the owner/managing operator at the latest on formation of a contract. Guarantee and liability claims for personal injury and damage to property are excluded if they are due to one or more of the following reasons:

- use of the POLARIS for a purpose other than that for which it is intended.
- incorrect installation, commissioning, operation and maintenance.
- non-compliance with the instructions in the manual with respect to transport, storage, assembly, commissioning, operation and maintenance.
- structural modifications without our prior authorisation.
- inadequate monitoring of components that are subject to wear
- repairs done incorrectly.
- disasters due to the effects of foreign matter or Act of God (events outside human control).

We guarantee the POLARIS and its accessories for a period of 1 year starting on the date of delivery from the Bad Mergentheim factory. This guarantee covers all parts of the delivery and is restricted to the replacement free of charge or the repair of the defective parts in our Bad Mergentheim factory. As far as possible, the delivery packaging should be kept for this purpose. In the event of such a claim, the product must be returned to us after written arrangement. The customer cannot claim to have the repairs done at the site of installation.

2. Product Description

2.1 Definition

The **POLARIS PROFESSIONAL Panel PC** Series are the all-rounders for machine-oriented operation and observation in hazardous areas. The Panel PCs have a high-resolution display with a touchscreen of up to 24" and offer the optimum interface and brilliant images for every application.

Illustration 1: POLARIS PROFESSIONAL Panel PC series

The POLARIS PROFESSIONAL Panel PC series is open to a great number of software applications. The pre-installed, multi-lingual Windows® XP Professional operating system (optional availability of Windows® 7) allows the use of its standard visualisation or the BMS-Graf-pro 7 visualisation software from BARTEC.

This is facilitated by a faster Intel® Atom™ N270 Processor (1.6 GHz), which allows an excellent execution of extensive applications locally too. Robust hard disks or solid-state drives are available as storage media also.

Illustration 2: Visualization software BMS-Graf-pro Version 7

Ethernet (copper or fibre optic), USB, PROFIBUS-DP, serial interfaces and WLAN offer reliable interfaces to the control system or to the control in safe areas.

High-quality keypads in various languages and a variety of mouse versions enhance the operating comfort.

Illustration 3: Keyboard and Trackball

The use of the BARTEC Ex i memory stick through the intrinsically safe USB interface allows data to be transferred easily, stored, and saved for system restoration by means of the backup function.

Illustration 4: Ex i memory stick

The front-panel mounting design makes installation easy. On request, the devices are also available as a ready-made system solution in a stainless steel enclosure for wall, floor or table mounting.

For particularly harsh areas of use with temperatures as low as down to -40 °C, we equip the POLARIS series with electrical heating. On request, we produce customised solutions with more command and signalling devices.

Illustration 5: Turn-key system solution in stainless steel enclosure "Exclusive"

2.2 Schematic diagram

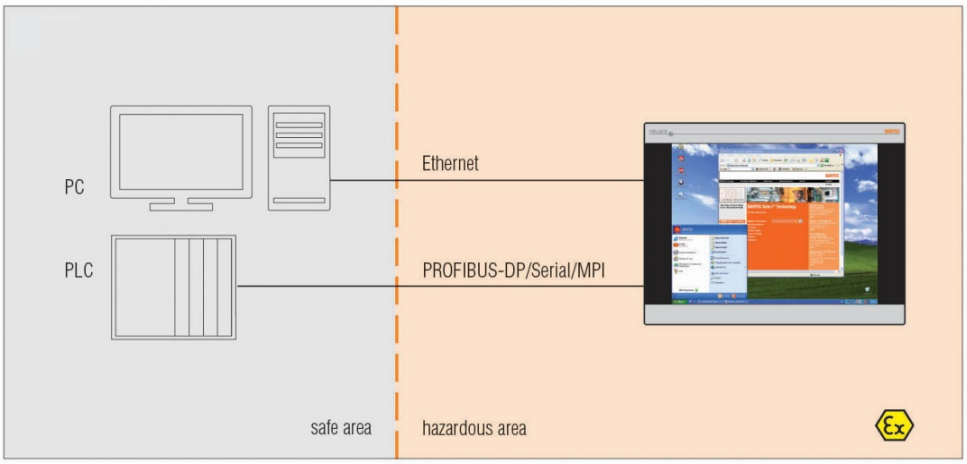


Illustration 6: System configuration

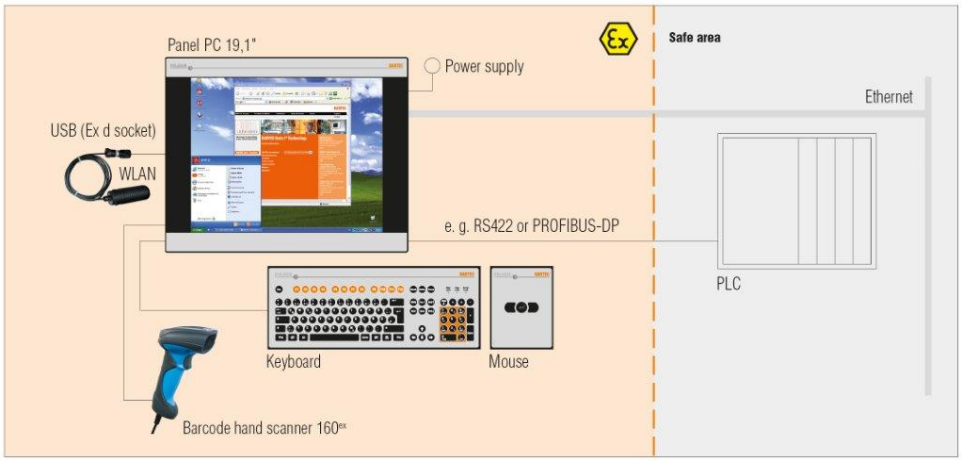


Illustration 7: System configuration with barcode scanner and external keyboard

3. Technical Data

3.1 POLARIS Panel PC Professional

3.1.1 Explosion Protection

Type	17-71V1-....
Ex protection type ATEX	⟨Ex⟩ II 2G Ex eb qb [ib op pr] IIC T4 resp. ⟨Ex⟩ II 2G Ex db eb qb [ib op pr] IIC T4 II 2D Ex tb IIIC T120° -20 °C ≤ Ta ≤ 60 °C
Certification	IBExU 05 ATEX 1117 X
Standards	EN 60079-0:2009 EN 60079-1:2007 EN 60079-5:2007 EN 60079-7:2007 EN 60079-11:2012 EN 60079-28:2007 EN 60079-31:2009
Ex protection type IECEx	Ex db eb qb [ib] IIC T4 Ex tb IIIC T120°C IP6X
Certification	IECEx IBE 11.0007X
Standards	IEC 60079-0:2007 Edition: 5 IEC 60079-1:2003 Edition: 5 IEC 60079-5:2007-03 Edition: 3 IEC 60079-7:2006-07 Edition: 4 IEC 60079-11:2011-06 Edition: 6 IEC 60079-31:2008 Edition: 1
Directives	94/9/EG 2004/108/EG
Product marking	CE 0044
Further test certificates	www.bartec-group.com

3.1.2 General data

Construction	Front panel fitting; Optional turn-key system solutions in a stainless steel enclosure as wall, floor or ceiling mounting versions.
Computer capacity	- Intel® Atom™ N270, 1.6 GHz 1 GB RAM, optional 2 GB RAM Graphics memory 224 MB Standard: 100 GByte (Hard disk industry)
Operating system	- Windows® XP Professional (pre-installed) - Windows® 7 (optional) Open platform for customer-specific visualization software, e. g. ProTool, WIN CC flexible, etc.
Interface (basic version)	1 x Ex e Ethernet 100/10BaseT (optional LWL) 1 x Ex e RS422 1 x Ex i USB for Ex i memory stick 2 x Ex i for PS/2 for intrinsically safe keyboard and mouse
Optional interface modules	1 x Ex i Supply module for hand-held scanner 1 x Ex d USB direct connection (via Ex d socket e. g. connection by means of WLAN)
Display	Antireflection coating glass pane Optional touchscreen
Power supply	AC 90 V to 253 V ± 10 %, 50 Hz to 60 Hz DC 24 V ±10 %
Max. power consumption	P_{max} < 100 W depending on the version
Relative air humidity	5 to 95 % non-condensing
Vibration	0.7 G/1 mm; 5 Hz-500 Hz pulse in all 3 axes
Schock	15 G, 11 ms pulse in all 3 axes
Material Front Rear panel	 Polyester foil on anodised aluminium plate (conditionally UV-resistant) galvanised sheet steel, bichromated
Protection class Front Rear site	 IP65 IP54
Optional approved accessories	- Keyboard - Mouse variants - Ex i USB memory stick - WLAN

3.1.3 Characteristics POLARIS PROFESSIONAL Panel PC 15"

Display	- 15" graphics-capable TFT display - XGA resolution, 1024 x 768 pixels - 262,144 colours - Brightness 350 cd/m^2 - Visible surface approx. 304 x 228 mm - Contrast 400:1
Backlighting	CFL technology, Service life approx. 50,000 hours (at +25 °C)
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +50 °C 0 °C to +50 °C
Dimensions (width x height x depth)	411 mm x 332 mm x approx. 135 mm
Wall cut-out (width x height)	394.5 mm x 315.5 mm + 0.5 mm
Weight	approx. 23 kg
Below +10 °C the unit has to be heated in order to guarantee the lifetime of the backlight illumination.	

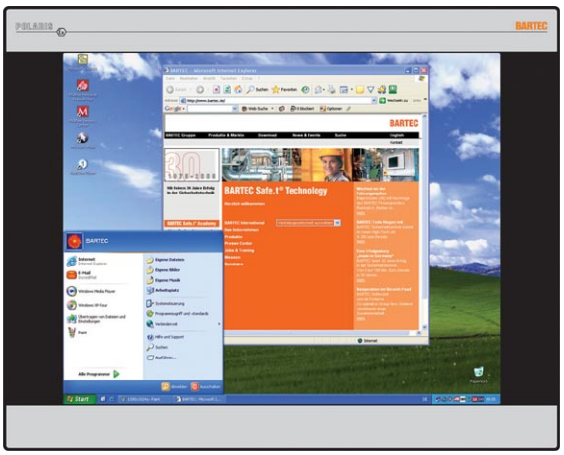
3.1.4 Characteristics POLARIS PROFESSIONAL Panel PC 15" Sunlight

Display	- 15" graphics-capable TFT display - XGA resolution, 1024 x 768 pixels - 16.7 million colours - Brightness 1000 cd/m^2 - Visible surface approx. 304 x 228 mm - Contrast 700:1
Backlighting	LED technology, Service life approx. 50,000 hours (at +25 °C)
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +60 °C -20 °C to +60 °C
Dimensions (width x height x depth)	411 mm x 332 mm x approx. 135 mm
Wall cut-out (width x height)	394.5 mm x 315.5 mm + 0.5 mm
Weight	approx. 23 kg

3.1.5 Characteristics POLARIS PROFESSIONAL Panel PC 17.3"

Display	- 17.3" graphics-capable TFT display - Full HD resolution, 1920 x 1080 pixels - 16.7 million colours - Brightness 400 cd/m² - Visible surface approx. 302 x 215 mm - Contrast 600:1
Backlighting	LED technology, Service life approx. 50,000 hours (at +25 °C)
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +50 °C 0 °C to +50 °C
Dimensions (width x height x depth)	503 mm x 314 mm x ca. 135 mm
Wall cut-out (width x height)	489 mm x 300 mm + 0,5 mm
Weight	approx. 33 kg
Below +10 °C the unit has to be heated in order to guarantee the lifetime of the backlight illumination.	

3.1.6 Characteristics POLARIS PROFESSIONAL Panel PC 19.1"



Display	- 19.1" graphics-capable TFT display - SXGA resolution, 1280 x 1024 pixels - 16.7 million colours - Brightness 300 cd/m^2 - Visible surface approx. 380 x 305 mm - Contrast 1300:1
Backlighting	CFL technology, Service life approx. 40,000 hours (at +25 °C)
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +50 °C 0 °C to +50 °C
Dimensions (width x height x depth)	498 mm x 400.5 mm x approx. 135 mm
Wall cut-out (width x height)	484 mm x 386.5 mm + 0.5 mm
Weight	approx. 33 kg
Below +10 °C the unit has to be heated in order to guarantee the lifetime of the backlight illumination.	

3.1.7 Characteristics POLARIS PROFESSIONAL Panel PC 24"

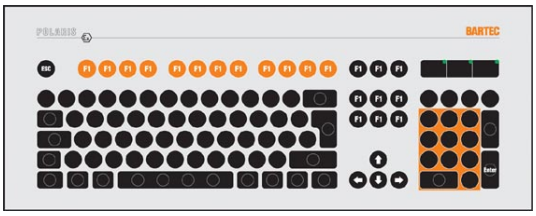
Display	- 24" graphics-capable TFT display - WSXGA resolution, 1920 x 1080 pixels - 16.7 million colours - Brightness 300 cd/m² - Visible surface approx. 521 x 299 mm - Contrast 3000:1
Backlighting	LED technology, Service life approx. 40,000 hours (at +25 °C)
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +50 °C 0 °C to +50 °C
Dimensions (width x height x depth)	644 mm x 406 mm x approx. 135 mm
Wall cut-out (width x height)	630 mm x 392 mm + 0.5 mm
Weight	approx. 38 kg

3.2 Keyboard

3.2.1 Explosion Protection

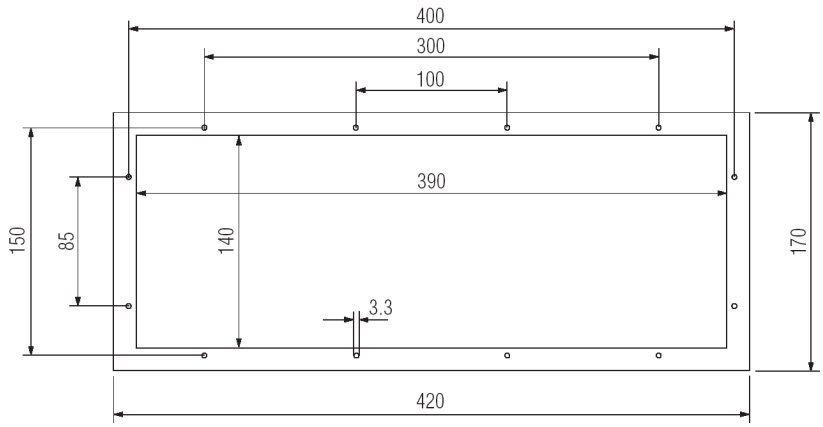
Type	17-71VZ-40..
Ex protection type ATEX	⟨Ex⟩ II 2G Ex ib IIC T4 ⟨Ex⟩ II 2D Ex ib IIIC T120°C -20 °C ≤ Ta ≤ +60 °C
Certification	IBExU 05 ATEX 1117 X
Standards	EN 60079-0:2009 EN 60079-11:2012 EN 60079-31:2009
Ex protection type IECEx	Ex ib IIC T4 Ex ib IIIC T120°C IP6X
Certification	IECEx IBE 11.0007X
Standards	IEC 60079-0:2007 Edition: 5 IEC 60079-11:2011-06 Edition: 6 IEC 60079-31:2008 Edition: 1

3.2.2 General Data



Construction	Front panel fitting
Material	Polyester foil on aluminium sheet (conditionally UV-resistant)
Protection class (front)	IP65
Dimensions (width x height)	420 mm x 170 mm
Wall cut-out (width x height)	391 mm x 140 mm
Installation depth	18 mm
Weight	approx. 700 g
Other features	Keyboard available in various languages

Dimensions and wall cut-out for keyboard (mm)

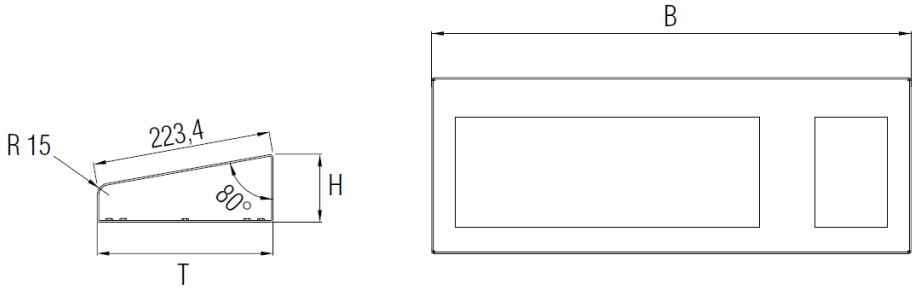


All hole diameter: 3.3 mm

3.2.3 Characteristics Enclosure for mouse and keyboard

Order no.	05-0041-0277
Material	Stainless steel 1.4301; AISI 304
Dimensions (width x height x depth)	600 mm x 85 mm x 220 mm
Protection class	IP65

Dimensions (mm)



3.3 Finger mouse, Trackball, Touchpad and Joystick

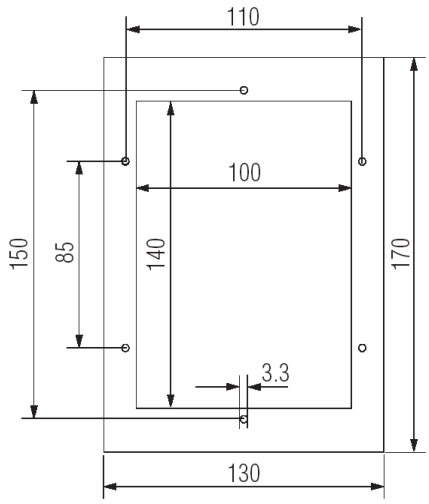
3.3.1 Explosion protection

Ex protection type ATEX	II 2G Ex ib IIC T4 II 2D Ex ib IIIC T120°C -20 °C ≤ Ta ≤ 60 °C
Certification	IBExU 05 ATEX 1117 X
Standards	EN 60079-0:2009 EN 60079-11:2012 EN 60079-31:2009
Ex protection type IECEx	Ex ib IIC T4 Ex ib IIIC T120°C IP6X
Certification	IECEx IBE 11.0007X
Standards	IEC 60079-0:2007 Edition: 5 IEC 60079-11:2011-06 Edition: 6 IEC 60079-31:2008 Edition: 1

3.3.2 General Data

Construction	Front panel fitting
Material	Polyester foil on aluminium sheet (conditionally UV-resistant)
Protection class (front site)	IP65
Dimensions (width x height)	130 mm x 170 mm
Wall cut-out (width x height)	100 mm x 140 mm

Dimensions and wall cut-out (mm)



All hole diameter: 3.3 mm

Finger mouse

Type	17-71VZ-1000
Installation depth	15 mm
Weight	approx. 270 g

Touchpad

Type	17-71VZ-2000
Installation depth	15 mm
Weight	approx. 250 g

Trackball

Type	17-71VZ-3000
Installation depth	43 mm
Weight	approx. 500 g

Joystick without button

Type	17-71VZ-8000
Installation depth	43 mm
Weight	approx. 500 g

Joystick with button

Type	17-71VZ-9000
Installation depth	43 mm
Weight	approx. 500 g

3.4 Ex i Memory Stick

3.4.1 Explosion Protection

Type	17-71VZ-5000/0100
Ex protection type ATEX	II 2G Ex ib IIC T4 -20 °C ≤ Ta ≤ 60 °C
Certification	IBExU 05 ATEX 1117 X
Standards	EN 60079-0:2009 EN 60079-11:2012
Ex protection type IECEx	Ex ib IIC T4
Certification	IECEx IBE 11.0007X
Standards	IEC 60079-0:2007 Edition: 5 IEC 60079-11:2011-06 Edition: 6

3.4.2 General Data

Product type	USB flash drive
Storage capacity	4 GB
Dimensions (length x width x depth)	approx. 92 mm x 22 mm x 7.2 mm
Weight	28 g
Material Enclosure	Anodised aluminium
Use	Data backup and Ex i recovery stick

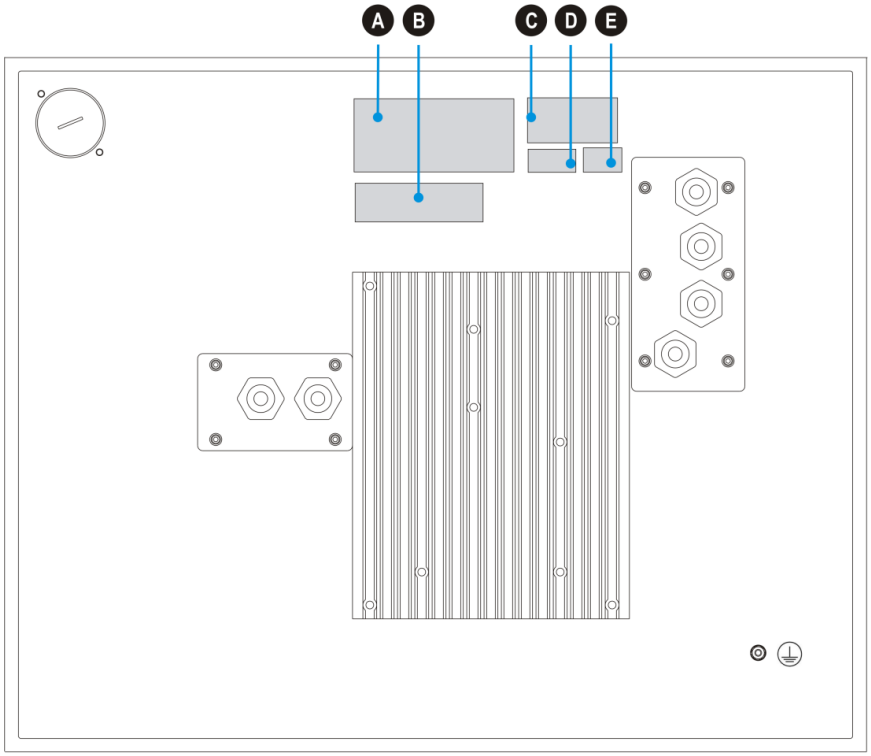
3.5 USB Device WLAN

3.5.1 Explosion Protection

Type	17-71VZ-6000/0100
Explosion Protection ATEX	II 2G Ex qb IIC T4 II 2D Ex tb IIIC T120 °C
Certification	IBExU 05 ATEX 1188 X
Explosion Protection IECEx	Ex qb IIC T4 Ex tb IIIC T120 °C
Certification	IBECEx IBE 12.0016X
Ambient temperature	-20 °C to +60 °C
Protection class	IP 54 (screw base)

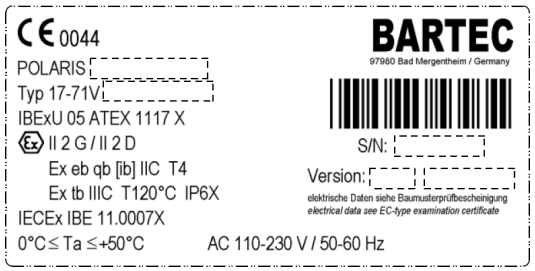
The Ex d socket is needed for the connection.

3.6 Product Labelling



A

Example:
Type label with label ATEX and IECEx



B

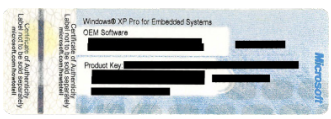
Warnings on the device

C

Type label with label INMETRO

D

Licence sticker



E

Test sticker

4. Transport, Storage, Scope and Assembly

4.1 Transport

A written report of any transport damage or missing items must be given to the appointed forwarder and to BARTEC GmbH immediately on receipt of the delivery.

Damage caused by incorrect storage and transport shall not fall within the warranty provisions of BARTEC GmbH.

CAUTION

This device is heavy (23-38 kg).

There is a risk of injury if it is lifted or moved incorrectly.

▶ You will need help from others when transporting it.

4.2 Intermediate Storage

ATTENTION

Damage to property through incorrect storage!

▶ Comply with the correct storage temperatures.
▶ Keep the POLARIS free of moisture.

4.3 Scope of Delivery

1 x POLARIS PROFESSIONAL Panel PC
1 x Reinforcement frame
1 x Set of mounting clamps
1 x User manual POLARIS PROFESSIONAL - Panel PC

4.3.1 Accessories

Optional:
- Keyboard, finger mouse, touchpad, trackball, joystick
- Enclosure and supporting system for wall, floor and table mounting
- Fibre optic converter

Not enclosed: Assembly material and cable for voltage supply and data line

4.4 Assembly

Before assembling the device, make sure you have all the components and documents.

Required Tools:	POLARIS (mounting clamps)	1 x hex key 3 mm 1 x slotted screwdriver
	POLARIS termination compartments	1 x hex key 2.5 mm 1 x slotted screwdriver
	POLARIS PE connection	1 x ring spanner 7 mm
	POLARIS accessories	1 x socket wrench 5.5 mm
	System solution in an "Exclusive" enclosure	1 x hex key 5 mm (to fix the supporting system in place)

4.4.1 Installation options

The POLARIS can be installed directly in:

- Enclosures
- Switch cabinet doors
- Operating consoles

POLARIS Panel PCs are mounted by fitting them into front panels, which can be done with very little effort. On request, we supply the operating devices as ready-to-use system solutions in stainless steel enclosures for mounting onto walls, floors or tables.

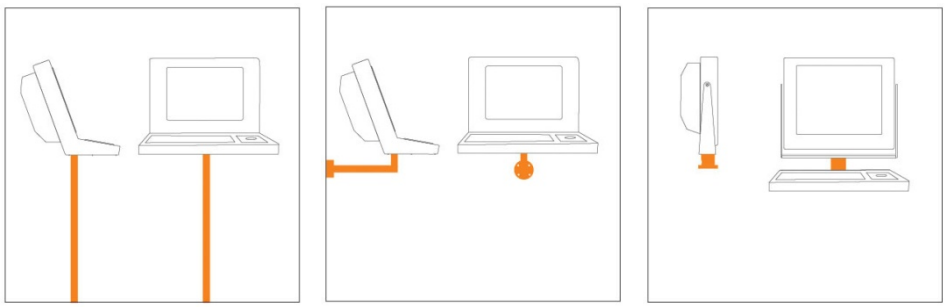


Illustration 8: Examples of floor, wall and table mounting in an "Exclusive" enclosure

5. Installation

We recommend setting up and testing the entire system before its ultimate installation in the ex-area. If a long connection cable is not available, please use a patch cable to test the basic functions.

DANGER

Electrostatic charging through a stream of particles.

There is a risk of fatal injury in an explosive atmosphere!

- ▶ Make sure there are no highly energetic charging mechanisms at the user interface on the display unit or its accessories.
- ▶ Do not install the device in the stream of particles.

DANGER

No PE connection. Risk of fatal injury in an explosive atmosphere!

- ▶ The POLARIS must be integrated in the equipotential bonding.

The POLARIS Series is approved for an ambient temperature of from 0 °C to +50 °C or from -20 °C to +60 °C and a relative air humidity of from 5 to 95 % without condensation.

5.1 Requirements

- The place where the POLARIS is installed must have sufficient mechanical stability/fastening.
- The enclosure intended for accommodating the POLARIS must be designed to bear the device's weight.
- If a supporting system is used, the surface underneath and the means of fastening the supporting system must be designed to bear the weight of the POLARIS.
- Choose the optimum height for operating the POLARIS Panel PC.
- Ensure good lighting conditions for a perfectly legible display (no direct exposure to the sun's rays).
- Do not mount in direct proximity to switching or current changing devices.
- Only install the POLARIS in conjunction with the reinforcement frame in an IP65 enclosure. Failure to comply with this can lead to water penetrating and damaging the device.

POLARIS with CFL backlighting:

- The POLARIS must be heated when at temperatures below 0 °C. We furthermore recommend protecting the display from the cold, e.g. with a door on the front of the enclosure.
- The POLARIS should be heated when at temperatures below +10 °C to avoid the service life of the backlighting being curtailed.

Outdoor installation

ATTENTION

Damage from condensation or overheating!

- ▶ Avoid direct sunlight!
  Remedy: e.g. shelter with sufficient air circulation.
- ▶ Remove condensation on the POLARIS immediately.
- ▶ A POLARIS built into an enclosure must be heated and not removed from the mains.
- ▶ Equip the protective housing with breather.

5.2 Mechanical Installation

CAUTION

This device is heavy (23-38 kg).

There is a risk of injury if it is lifted or moved incorrectly.

▶ You will need help from others when transporting it.

Only qualified personnel, i.e. trained skilled specialists will have the necessary specialised know-how to be able to perform all the mechanical work. Familiarity with and the technically perfect implementation of the safety instructions described in this manual are preconditions for safe installation and commissioning.

DANGER

Sealed locking screw! The device is closed in the factory.

The explosion protection is lost if opened, and danger to life exists in an explosive atmosphere!

▶ Do not open the locking screw!

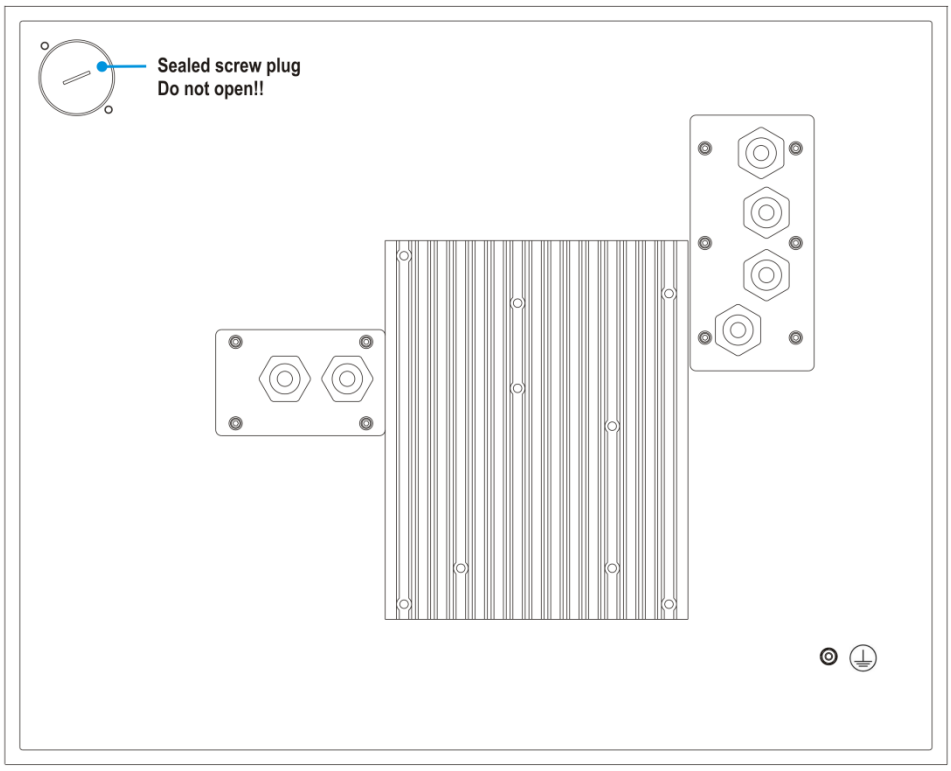


Illustration 9: Rear panel POLARIS

5.2.1 Installation in 2G/3D enclosure

In order to guarantee the IP degree of enclosure protection = IP54 for installation in 2G enclosures of Ex e type of protection (e.g. control equipment), and = IP6X for installation in 2D enclosures in areas where combustible dusts exist - with “protection through the enclosure” type of protection - the reinforcement frame should be used for fastening on the front side.

A reinforcement frame is inserted between the retaining brackets and the enclosure material for good transmission of the clamping force. This ensures even transmission of force.

DANGER

If there is no reinforcement frame, it will not be possible to maintain the IP protection. There is a risk of fatal injury in an explosive atmosphere!

- ▶ Only use enclosure with at least 2 mm wall thickness.
- ▶ Insert the reinforcement frame between the holder and the enclosure.

Reinforcement frame for maintenance of Protection Class IP65	
POLARIS 15" / 15" Sunlight	05-0205-0009
POLARIS 17.3"	05-0205-0013
POLARIS 19.1"	05-0205-0010
POLARIS 24"	05-0205-0012

Work steps:

- Insert the POLARIS into the cut-out in the enclosure.
- From the back, place the reinforcement frame over the POLARIS.
- Use screws to fasten all mounting clamps onto the POLARIS and tighten the clamping screws evenly.

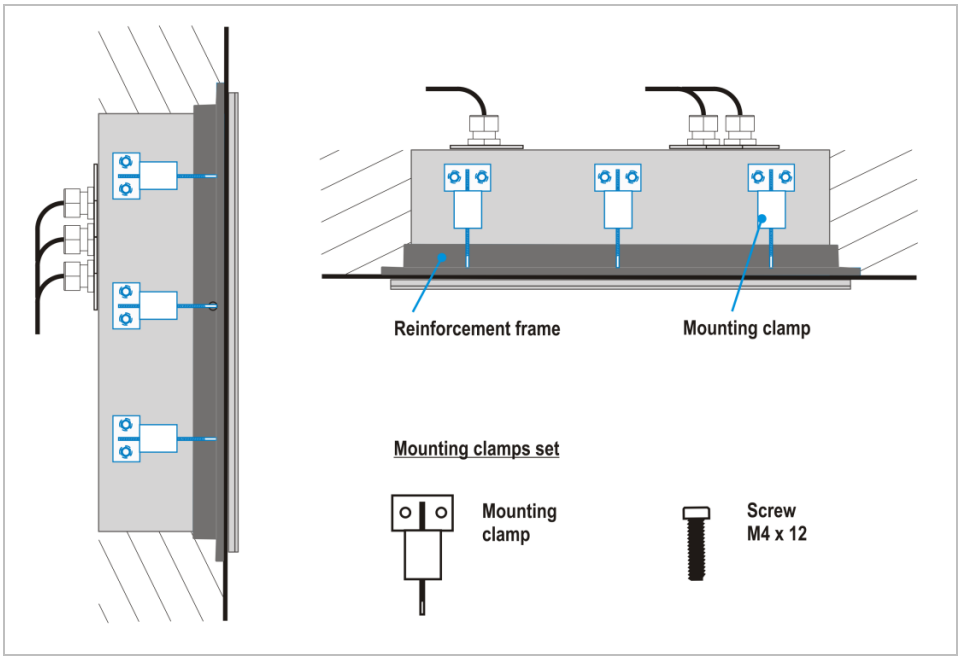


Illustration 10: Minimum installation depth and set of mounting clamps

5.2.2 Installation as a System Solution in the Stainless Steel Enclosure

The POLARIS is available as a ready-made system solution in a stainless steel enclosure e.g. the "Exclusive" stainless steel enclosure, for floor, wall or table mounting.

Work steps:

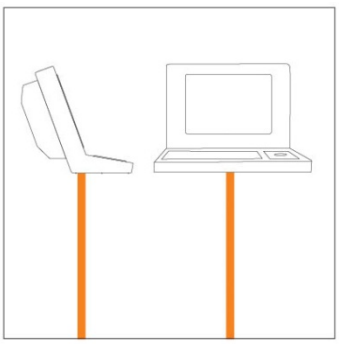
- Prepare supply and data line(s).
- Prepare installation on the basis of the drilling template (see illustration 11 - 13).
- Install supply and data line(s) in the base.
- Fasten the supporting system.
- Pull supply and data line(s) through the cable glands provided into the enclosure. Ensure there is sufficient length.
- Mount the enclosure on the supporting system.
- Open the enclosure and insert the data line(s) through the cable glands and connect up. Close unused cable glands with blanking plugs.

For POLARIS built into the enclosure door:

The open door must be supported and secured during the installation and servicing phase. Otherwise the wall thickness specified may lead to the door sagging slightly when open.

- Close the enclosure door.

Floor mounting (Stainless steel enclosure "Exclusive")



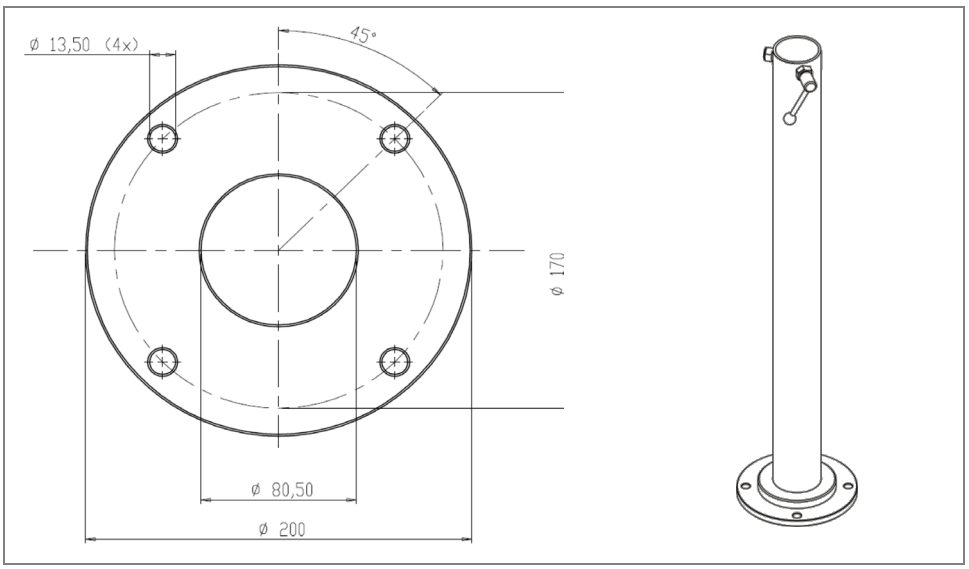
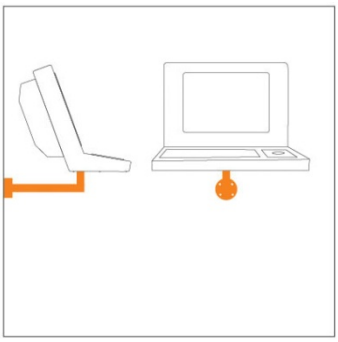


Illustration 11: Drilling pattern - supporting system for floor mounting

Wall mounting (Stainless steel enclosure "Exclusive")



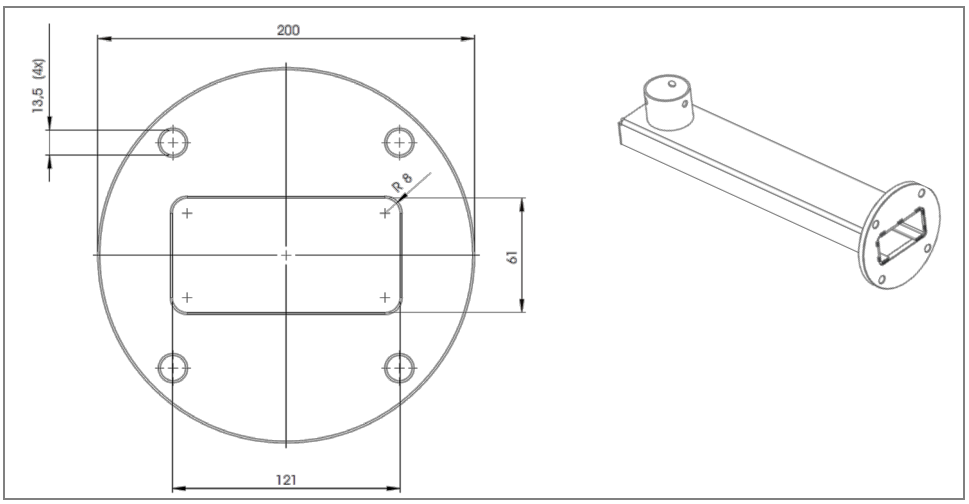


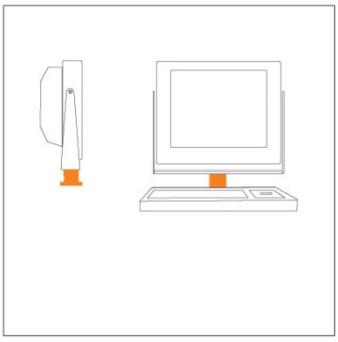
Illustration 12: Drilling pattern - supporting system for wall mounting

Table mounting swivel/tilt (Stainless steel enclosure "Exclusive")

CAUTION

Movable enclosure parts on the swivel-mounted enclosure.
There is a risk of injury by hands being crushed.

- ▶ 3 people are needed for assembly/disassembly.
- ▶ When lifting the POLARIS, always pick up the swivel-mounted adapter and enclosure together.
- ▶ Hold up the POLARIS on both sides (two people), so that the third person can lay the supply and data line(s) in the supporting system. Make sure that your fingers do not get caught between the swivel adapter and the enclosure as you set up the POLARIS.



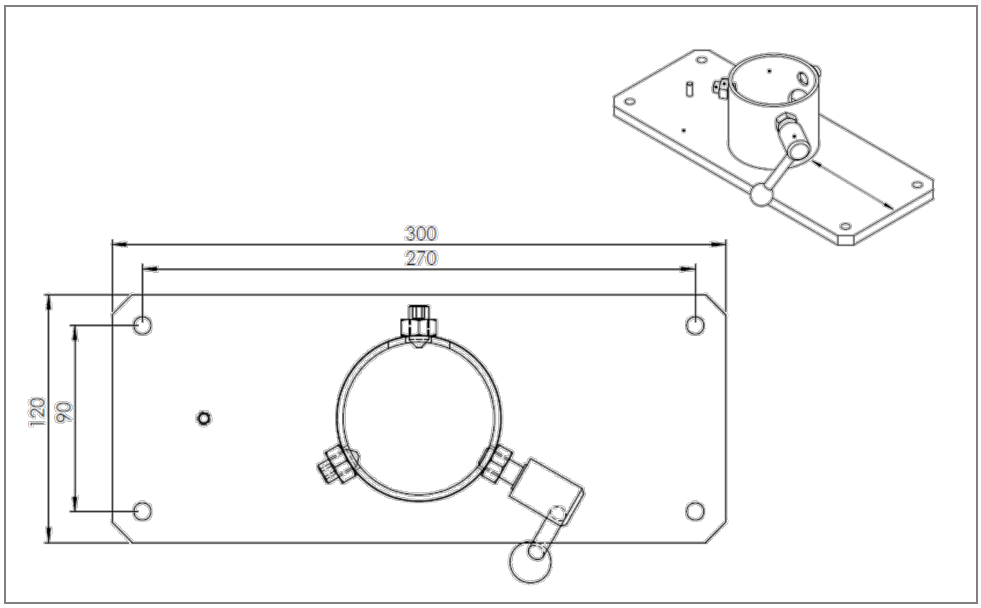


Illustration 13: Drilling pattern - supporting system for table mounting

Inclining

- The POLARIS is fixed in position by means of the two side handle screws.
- The angle of inclination can be changed once both handle screws have been loosened.

Tools: hex key 5 mm

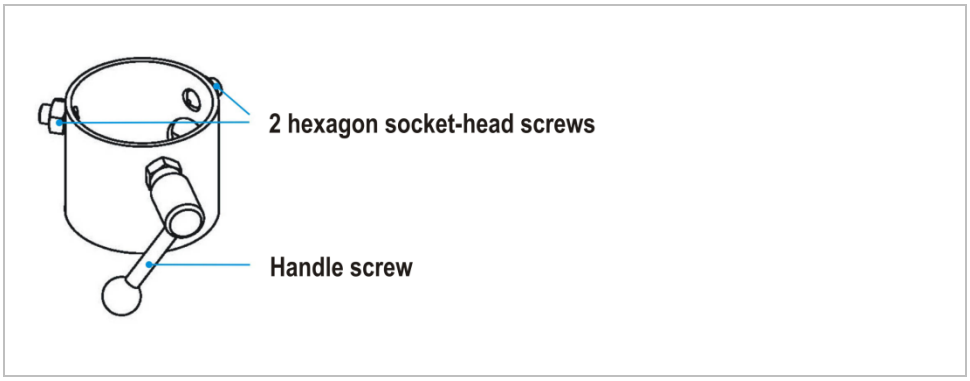


Illustration 14: Swivel-mounted adapter

Rotating

- The POLARIS is fixed in position on the supporting system by means of two hexagon socket-head screws (M10) and a handle screw.
- The angle of rotation can be changed once the screws have been loosened.

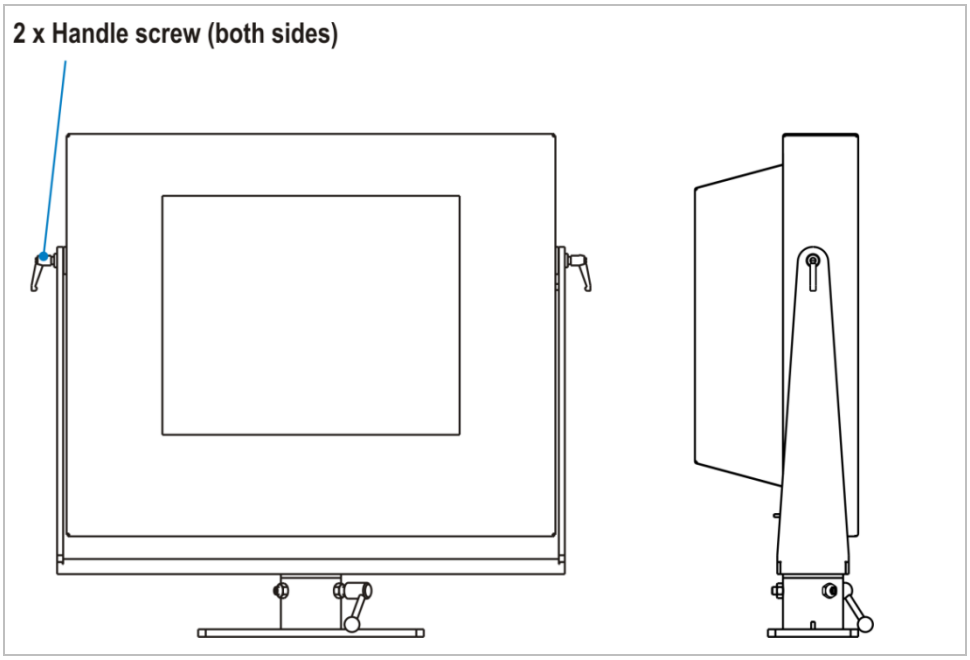


Illustration 15: Side handle screw

5.3 Electrical Installation

5.3.1 Installation guidelines

Only qualified personnel, i.e. trained electricians will have the required specialised knowledge to be able to do all the electrical work.

Familiarity with and the technically perfect implementation of the safety instructions described in this manual are preconditions for safe installation and commissioning.

- The user may do only the wiring at the terminals that are accessible to him/her (Ex i and Ex e terminal compartment).
- Any unused cable glands on the Ex e terminal compartment should be closed using an approved blanking plug.
- More extensive dismantling work on the device may be done only by the manufacturer or by persons authorised by the manufacturer for this purpose. The device is factory-sealed. Never open it!
- The equipotential bonding connection point must be connected to the equipotential bonding conductor in the hazardous area. Since the intrinsically safe circuits are galvanically connected to earth, equipotential bonding is required throughout the entire installation of the intrinsically safe circuits.
- The safety and accident prevention regulations applicable to the respective individual case must be observed.
- Devices must be properly installed first before they may be operated.
- It must be possible at all times to disconnect the devices from the voltage supply (in fixed installations by means of an all-pole mains isolating switch or fuse).
- It must be ensured that the supply voltage agrees with the specifications in this user manual and the tolerances must be observed. Use smoothed direct current.
- Malfunctioning cannot be ruled out if levels exceed or drop below the specified tolerances.
- If there is a power failure or if the power supply is interrupted, make sure the system has not been put into a dangerous, undefined condition.
- EMERGENCY STOP mechanisms must remain effective throughout all modes and states of operation.
- Connection cables (particularly data transmission cables) must be selected and laid in a way that ensures that capacitive and inductive interference will not have any adverse effect on the equipment. Appropriate measures must be taken to handle line interruptions to prevent any undefined states occurring.
- Wherever malfunctioning can cause material damage or personal injuries, additional external safety circuits must be provided (e.g. limit switch, mechanical interlocking devices etc.).

5.4 Terminal compartments

DANGER

Sealed locking screw! The device is closed in the factory.

The explosion protection is lost if opened, and danger to life exists in an explosive atmosphere!

▶ Do not open the locking screw!

DANGER

Non-certified cable glands and non-sealed cable entries endanger the IP protection and accordingly the protection against explosions. There is a risk of fatal injury in an explosive atmosphere!

▶ Use Ex-certified cable glands.

▶ Close non-sealed cable entries.

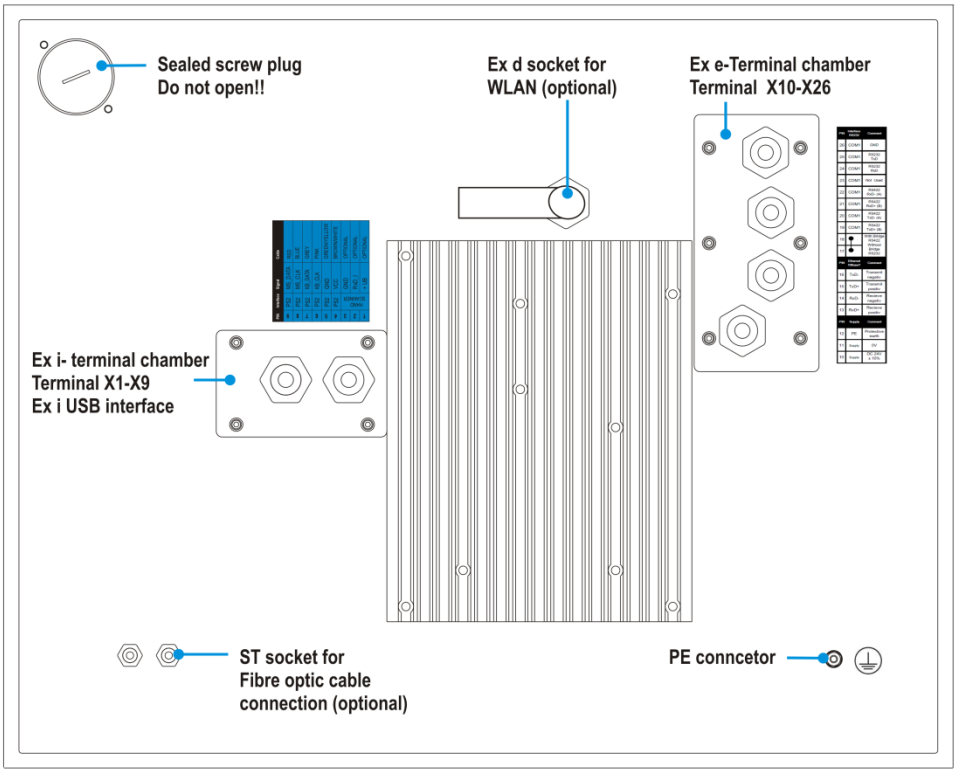


Illustration 16: Pin assignment POLARIS

5.5 Ex e terminal compartments

5.5.1 Cable entries

When connecting cables and leads to supplies / communications equipment in increased safety protected areas, Ex certified cable entries must be used which are suitable for each type of cable and lead. You must maintain the protection concept “e” and include a suitable sealing element so that an IP rating of at least IP 54 is maintained.

⚠ DANGER

Do not connect cables and leads while the power supply is active.
Danger to life exists in an explosive atmosphere!

▶ Disconnect the device before beginning any work.

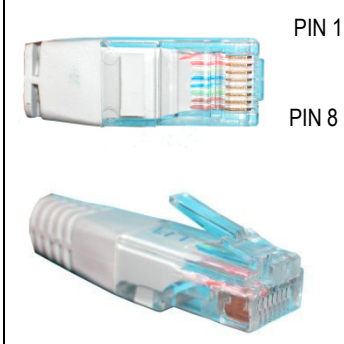
5.5.2 Supply voltage terminal assignment

Mains Connection Variant AC			
Terminal	**Interface**	**Signal**	**Remarks**
X10	Supply	L	AC 110 - 230 V ± 10 %
X11	Supply	N	Neutral
X12	Supply	PE	Protective earth
Mains Connection Variant DC 24 V			
Terminal	**Interface**	**Signal**	**Remarks**
X10	Supply	+	DC 24 V ± 10 %
X11	Supply	-	0 Volt
X12	Supply	PE	Protective earth

5.5.3 Ethernet terminal assignment

Configuration Ethernet			
Terminal	**Interface**	**Signal**	**Remarks**
X13	Ethernet	RxD +	10BaseT Receive positive
X14	Ethernet	RxD -	10BaseT Receive negative
X15	Ethernet	TxD +	10BaseT Transmit positive
X16	Ethernet	TxD -	10BaseT Transmit negative

Assignment RJ45 plug for Ethernet to POLARIS Panel PC terminal block

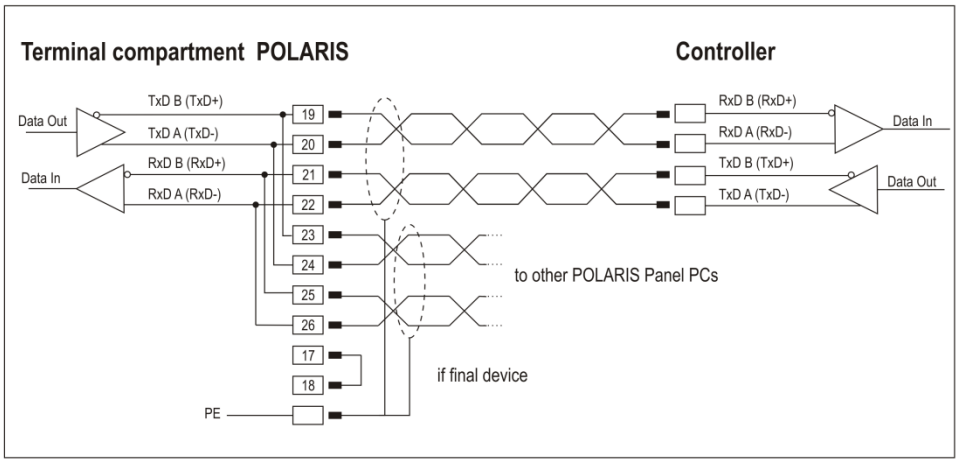


Connection RJ45		POLARIS
PIN	**Signal**	**Terminal**
1	TX+	X13
2	TX-	X14
3	RX+	X15
4	not used	
5	not used	
6	RX-	X16
7	not used	
8	not used	

5.5.4 RS422 interface

Configuration RS422				
Terminal	**Interface**	**Signal**	**Remarks**	
X17 X18	Termination On/Off		Jumper between terminal X17 and X18 for activation of the terminator resistors	
X19	Interface COM 1	TxD B (TxD+)	Transmission cable	Input
X20	Interface COM 1	TxD A (TxD-)	Transmission cable	Input
X21	Interface COM 1	RxD B (RxD+)	Receiving cable	Input
X22	Interface COM 1	RxD A (RxD-)	Receiving cable	Input
X23	Interface COM 1	TxD B (TxD+)	Transmission cable	Output
X24	Interface COM 1	TxD A (TxD-)	Transmission cable	Output
X25	Interface COM 1	RxD B (RxD+)	Receiving cable	Output
X26	Interface COM 1	RxD A (RxD-)	Receiving cable	Output

Connection of a controller via an RS422 interface of the POLARIS.



▶ Maximum length of the data line 1,000 m.

Pins 19-23, 20-24, 21-25, 22-26 are already connected inside.

In most cases, internal EMC measures allow the installation of termination resistors at the beginning and the end of the bus line to be dispensed with.

Depending on local conditions, there might occasionally be impairment of data transfer.

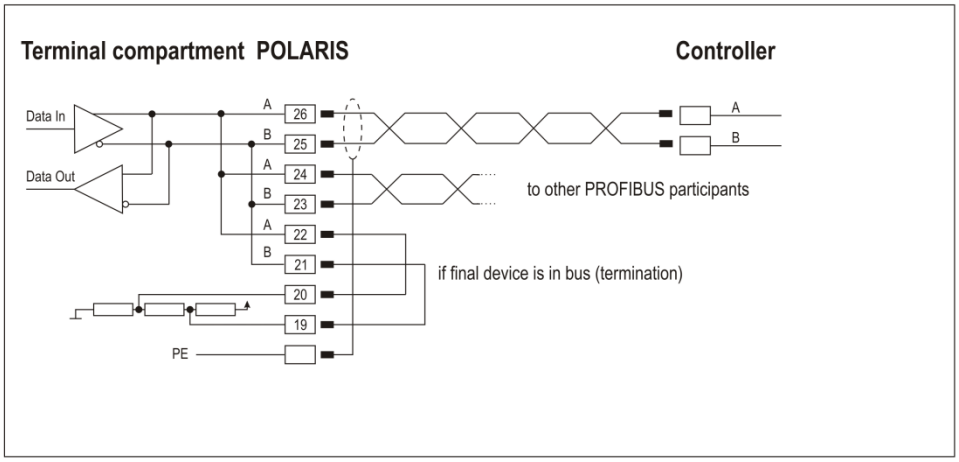
The appropriate pin assignment of the controller can be found in the manufacturer's interface description.

5.5.5 BARTEC PROFIBUS-DP Interface (optional)

The interface PROFIBUS-DP (BARTEC) may only be applied in combination with visualization software BMS-Graf-pro 7.

Configuration PROFIBUS-DP (BARTEC)			
Terminal	**Interface**	**Signal**	**Remarks**
X17	not connected		
X18	not connected		
X19	Interface COM 1	Termination B2	Bridge for terminating network (B1-B2)
X20	Interface COM 1	Termination A2	Bridge for terminating network (A1-A2)
X21	Interface COM 1	Termination B1	Bridge for terminating network (B1-B2)
X22	Interface COM 1	Termination A1	Bridge for terminating network (A1-A2)
X23	Interface COM 1	Out B	Signal B Output
X24	Interface COM 1	Out A	Signal A Output
X25	Interface COM 1	In B	Signal B Input
X26	Interface COM 1	In A	Signal A Input

Connection of a controller via a PROFIBUS-DP interface of the POLARIS.



▶ Maximum line length: see PNO specification.

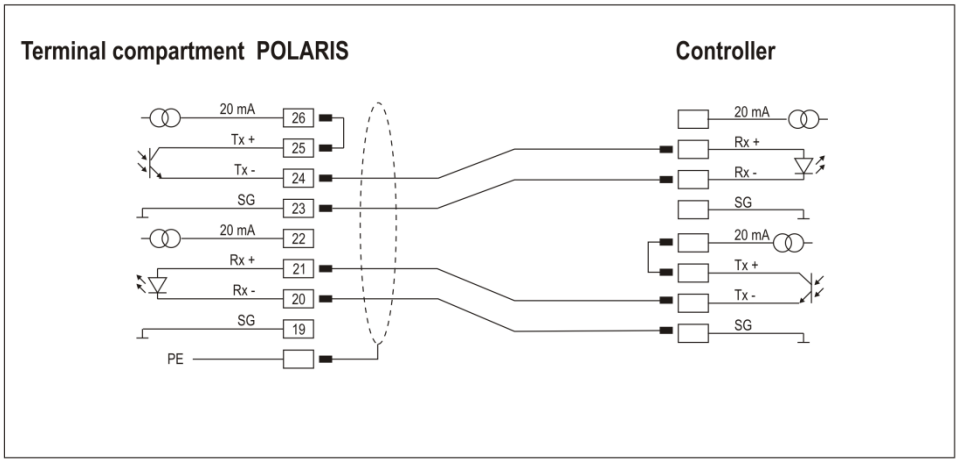
Pins 26-24-22, 25-23-21 are already connected inside.

See the interface description from the controller manufacturer for the relevant pin assignment of the controller.

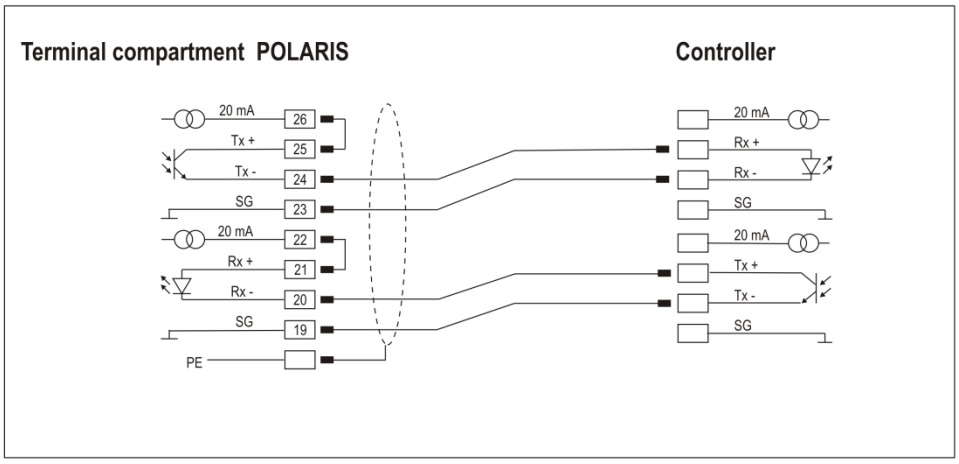
5.5.6 TTY interface (optional)

Configuration TTY			
Terminal	**Interface**	**Signal**	**Remarks**
X17	Not connected		
X18	Not connected		
X19	Interface COM 1	GND	Signal ground for receiver
X20	Interface COM 1	Rx-	Cathode
X21	Interface COM 1	Rx+	Anode
X22	Interface COM 1	20 mA	Signal power source for receiver
X23	Interface COM 1	GND	Signal ground for transmitter
X24	Interface COM 1	Tx-	Emitter
X25	Interface COM 1	Tx+	Collector
X26	Interface COM 1	20 mA	Signal power source for transmitter

The transmitter is active and the receiver is passive in both the POLARIS and the control.



In the POLARIS the transmitter and receiver are active. The control is completely passive.



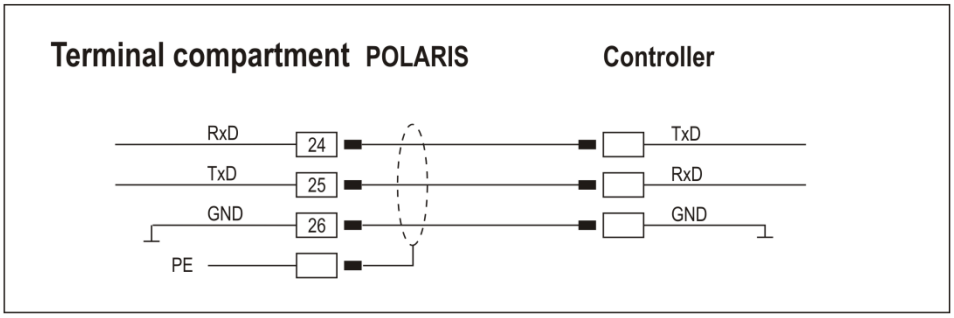
▶ Maximum line length depending on baud rate of up to 1,000 m.

See the interface description from the controller manufacturer for the relevant pin assignment of the controller.

5.5.7 RS232 interface (optional)

Configuration RS232			
Terminal	**Interface**	**Signal**	**Remarks**
X17	Not connected		
X18	Not connected		
X19	Not connected		
X20	Not connected		
X21	Not connected		
X22	Not connected		
X23	Not connected		
X24	Interface COM 1	RxD	Receive
X25	Interface COM 1	TxD	Transmit
X26	Interface COM 1	GND	Signal ground

Connection of a controller via RS232 interface of the POLARIS.



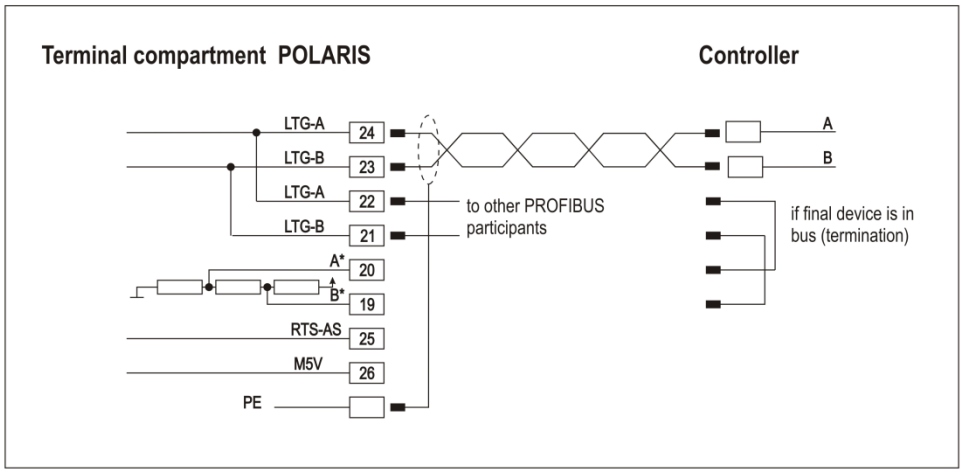
▶ Maximum length of the data line 15 m.

See the interface description from the controller manufacturer for the relevant pin assignment of the controller.

5.5.8 Siemens PROFIBUS-DP interface (optional)

Configuration Siemens PROFIBUS (supported only WinCC flexible)			
Terminal	**Interface**	**Signal**	**Remarks**
X17	Not connected		
X18	Not connected		
X19	Interface COM 1	B*	Termination
X20	Interface COM 1	A*	Termination
X21	Interface COM 1	LTG-B	Out B
X22	Interface COM 1	LTG-A	Out A
X23	Interface COM 1	LTG-B	In B
X24	Interface COM 1	LTG-A	In A
X25	Interface COM 1	RTS-AS	
X26	Interface COM 1	M5V	

Connection of a controller via a Siemens PROFIBUS-DP interface of the POLARIS.



▶ Maximum line length: see PNO specification.

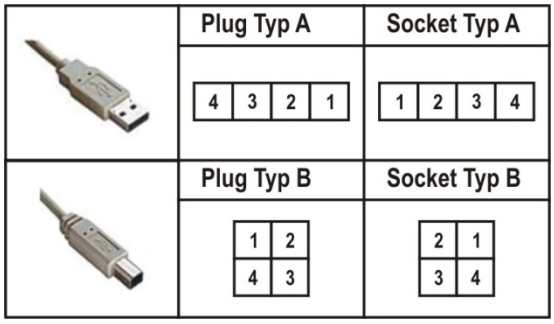
Pins 24-22, 23-21 are already connected inside.

See the interface description from the controller manufacturer for the relevant pin assignment of the controller.

5.5.9 USB interface (optional)

Configuration USB			
Terminal	**Interface**	**Signal**	
X17 - X22	not connected		
X23	USB	VCC	+5 V
X24	USB	Data-	USB data signal
X25	USB	Data+	USB data signal
X26	USB	GND	

The individual conductors are colour-coded in a 4-wire USB cable as follows:



Panel PC	USB connection	Colour	Function
X23	1	RD	VCC (+5V)
X26	4	BK	GND
X25	3	GN	+ Data
X24	2	WH	- Data

The maximum length of a lead should not exceed 2 m.
Maximum current: 500 mA.

5.5.10 Interface RS232/USB (optional)

Configuration RS422/USB				
Terminal	**Interface**	**Signal**		
X17 - X18	not connected			
X19	COM 1	TxD B (TxD+)	Transmission cable	Input
X20	COM 1	TxD A (TxD-)	Transmission cable	Input
X21	COM 1	RxD B (RxD+)	Receiving cable	Input
X22	COM 1	RxD A (RxD-)	Receiving cable	Input
X23	USB	VCC	+5 V	
X24	USB	Data-	USB data signal	
X25	USB	Data+	USB data signal	
X26	USB	GND		

5.6 Ex i terminal compartment

Do not connect the keyboard, mouse, trackball, touchpad, joystick or the hand-held scanner while the power supply is active.

DANGER

Accessories which have not been approved jeopardise the explosion protection. Danger to life exists in an explosive atmosphere!

▶ Only use POLARIS accessories!

The cover for the Ex i terminal compartment need not be used when deploying a protective enclosure with protection class of at least IP20.

5.6.1 Connection of Ex i keyboard to the POLARIS (optional)

PS/2 for input devices					
Terminal	**Interface**	**Colour**	**Signal**	**Remarks**	
X4	PS/2	WH/BR	VCC	Supply voltage	
X5	PS/2	GN/YE	GND	Mass connected to protective earth	
X6	PS/2	PK	KB_CLK	Keyboard	clock signal
X7	PS/2	GR	KB_DATA	Keyboard	data signal
X8	PS/2	BL	MS_CLK	Mouse	clock signal
X9	PS/2	RD	MS_DATA	Mouse	data signal

- Make the connection between the POLARIS Panel PC and the Ex i keyboard.
- Connection by means of a 1.80-metre-long connection cable
- Keyboard and mouse Type 05-0068-0163
- Keyboard and trackball/joystick Type 05-0068-0172
- Keyboard and touchpad Type 05-0068-0183

  (Optional: 3-metre-long connection cable)

5.6.2 Ex i USB interface for BARTEC Ex i memory stick

USB socket, 4-pole, Type A

Extension of the USB when using a protective enclosure (IP20)

The USB wall bushings on the protective enclosure must correspond at least to protection class IP20.

The following types of cable should be used for the extension (max. 2 m).

Cable name: Inline E258105 AWM STYLE 2725, 80°C 30V VW-1
28AWGX1P, 24AWGX2C; USB 2.0 High speed cable

5.6.1 Connection of a BARTEC BCS 160ex hand scanner (optional)

Do not connect the hand scanner when there is an active power supply.

Configuration of hand scanner connection (optional)			
Terminal	**Interface**	**Signal**	**Remarks**
X1	Hand scanner	+UB	Supply voltage +5 V
X2	Hand scanner	RxD-I	Data input RS232-Signal
X3	Hand scanner	GND	Earth connected to protective ground

Intrinsically safe data and supply current circuits Terminal X1-X3	U_0	5.5	V
	I_0	440	mA
	P_0	1.25	W
	R_i	25	Ω
	C_0	55.8	µF
	L_0	0.2	mH

The BCS 160ex hand scanner series can only be used with the original connection cable from BARTEC.

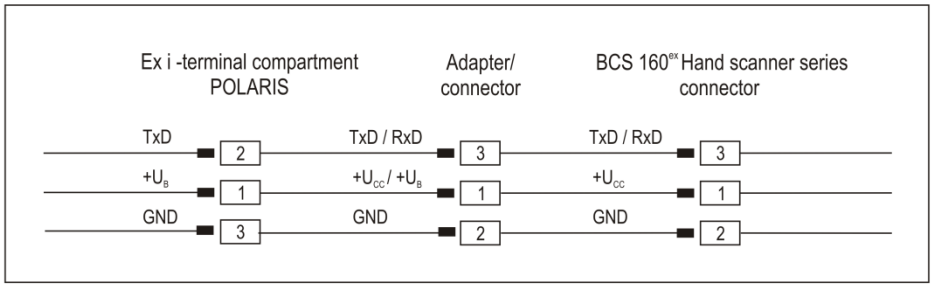
Connection cable to BCS 160ex Barcode hand scanner (pre-assembled)

Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
POLARIS supply module	RS232/RS422 RS232/RS422	Smooth spiral	1.8 m 3.8 m	17-21BE-M000/0000 17-21BE-M010/0000

Connection cable to BCS 160ex BT Bluetooth hand scanner (pre-assembled)

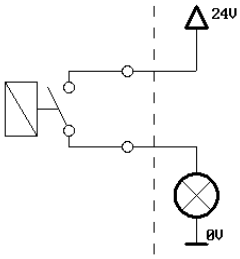
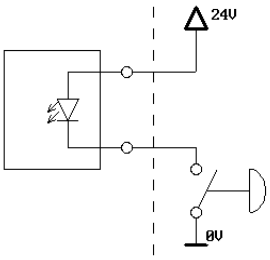
Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
POLARIS supply module	RS232/RS422 RS232/RS422	Smooth spiral	1.8 m 3.8 m	17-21BE-M020/0000 17-21BE-M030/0000

Terminal connection diagram: BCS 160ex hand scanner to supply module by means of connector/adapter.



5.7 Connection via cable bushing (optional)

Potential-free "Digital I/O"

Inputs/ Outputs	Conductor coloring	Max. voltage/ current	Remarks	Example
Output 1	WH	200 mA / 24 V		
	BN			
Output 2	GN	200 mA / 24 V		
	YE			
Output 3	GY	200 mA / 24 V		
	PK			
Input 1	BU	24 V	Anode	
	RD	0 V	Cathode	
Input 2	BK	24 V	Anode	
	VT	0 V	Cathode	
Input 3	GY-PK	24 V	Anode	
	RD-BU	0 V	Cathode	
Input 4	WH-GN	24 V	Anode	
	BN-GN	0 V	Cathode	

Place all cables on Ex e terminals.

5.7.1 WLAN Connection Using Ex d Socket (optional)

The optional Ex d socket provides the possibility of a USB interface.

The BARTEC WLAN device can be connected to this.

Technical data, see data sheet.

5.7.2 Fibre-Optic Port (optional)

For the fibre-optic transmission a fibre-optic converter is used inside the POLARIS and it converts the Ethernet/IP to fibre-optic signals (Ethernet/IP Ex e connection is not required).

For transmission a converter of the same type is needed for the non-hazardous area. This is included in the scope of supply.

Technical Data

Connection of the POLARIS	ST connector
External fibre-optic converter	Connection of the ST connector/RJ 45 plug
Power supply	external power pack
Data rate	100 MBit/s
Permissible ambient temperatures	
Storage/transport	-20 °C to +80 °C
Operation	-20 °C to +80 °C
Multi-mode	
Range	up to 2 km
Fibre type	62.5/125 µm or 50/125 µm
Min. transmitting power	19 dBm
Min. sensitivity	31 dBm
Wave length	1310 m
Plug connector	ST (MS400161)
Single-mode	
Range	up to 15 km
Fibre type	9/125 µm
Min. transmitting power	15 dBm
Min. sensitivity	31 dBm
Wave length	1310 m
Plug connector	ST (MS400163)

The POLARIS fibre-optic connection is approved for op pr. The following must be observed when installing.

⚠ DANGER

There is a risk of fatal injury in an explosive atmosphere!

- ▶ Protect the ST sockets from impact effects.
- ▶ Make sure the plug on the fibre-optic cable is connected or closed before you put the POLARIS into operation.
- ▶ The fibre optic cable must laid with protection. (e.g. robust cabling, protective tubes or cable channel)

5.8 EMC (Electromagnetic Compatibility)

This is a class A unit and can cause radio interference in residential areas; if it does, the owner/managing operator may be required to implement suitable measures and pay for loss or damage.

Only shielded conductors may be used as connecting conductors. This applies both to the data line and to all other conductors too.

The data lines must be stranded in pairs.
Example 2 x 2 x 0.75 mm² LIYCY TP.

As far as possible, separate conductors should be used for power supply and data.

5.8.1 Voltage Supply (AC and DC Variants)

To supply voltage to the DC variant, it is necessary to use a regulated power supply unit with a power level of at least 5 A. The voltage supply at the place of installation may neither exceed nor drop below DC 24 V ± 10 %. Observe the voltage drop on the supply cable and correct if necessary.

The voltage drop in the DC variant of the supply line is calculated with the following formula:

ΔU	Voltage drop on the supply line at power supply voltage of DC 24 V	Max. 2.4 V
ΔU	Voltage drop on the supply line with maximum permissible mains adapter overvoltage DC 24 V +10 % (26.4 V)	Max. 4.8 V (until 10% undervoltage is achieved)
I	Electricity for a Panel PC	At least 4 A
A	Cable cross-section of the supply line	
κ	Specific conductance of copper	$56\frac{m}{\Omega \cdot mm^2}$
l	Length of the supply line (consider both the outgoing and return line)	

$$R = \frac{l}{\kappa \cdot A} \quad R = \frac{\Delta U}{I} \qquad \Delta U = \frac{l}{\kappa \cdot A} \cdot I$$

If the voltage drop cannot be balanced out or the calculation produces excessive cable cross-sections, a separate mains adapter must be installed near the installation site.

Example: pressure-tight encapsulation or ex-free area on the outside of the building.

As a result of the connection of the power supply to the POLARIS, the earth for the power supply is connected to the PE. It is essential to ensure that the earth for the power supply on the POLARIS, if this is not electrically isolated, indicates no potential difference to the PE/PA.

5.8.2 Back-up fuse

In the DC variant The POLARIS PROFESSIONAL Panel PC series is protected internally by a 4-A time-lag fuse and in the AC variant it is protected by a 1.6 A time-lag fuse. Voltage dips or undervoltage can blow the fuse.

We recommend protecting the POLARIS with an upstream fuse to prevent blowing the fuse inside the device. Only BARTEC can change the internal fuse.
Upstream fuse for AC: 1.6 A quick-acting / DC: 4 A quick-acting.

5.8.3 Interference suppression

Certain basic measures must be taken to ensure freedom from interference when the POLARIS are installed:

- The interference voltages coupled into the device via power, data and signal line and the electrostatic voltage caused by contact are to be dissipated through the equipotential bonding.
- The installation point should be as far as possible away from fields of electromagnetic interference. This is especially important if there are frequency converters in the vicinity. Under certain circumstances will it be advisable to set up partitions to isolate the graphic display from interference.
- If inductive devices are fitted in the vicinity (e.g. contactor, relay or solenoid coils), especially if they are powered from the same source, protective circuits (e.g. RC elements) must be installed.
- Power supply and data cables must be laid so as to avoid interference. This can be achieved, for example, by avoiding laying such cables in close proximity to high-current carrying cables.

5.8.4 Shielding

- Only cables with braided shielding should be used (recommended cover density > 80%).
- Sheet shielding should not be used.
- Generally, connection of the shielding at both ends results in optimum damping of all interference frequencies.
- Connection of the shielding at one side only may be more advisable if a difference in potential exists and no equipotential bonding cable can be laid.

5.8.5 Connection of shielding

A low impedance connection to the circuit protective conductor is important to ensure a low current fault path. When sub-D connectors are used, the shielding should always be connected to the metal casing of the sub-D plug.

The plug casing of some controllers is not always well connected to earth. In such cases it may prove advantageous to insulate the shielding from the sub-D plug of the controller and connect it directly to the protective earth conductor by means of a cable that should be kept as short as possible (0.75 mm² …1.5 mm²).

5.8.6 Examples of Shielding Connections

Double-sided shield connection on the connecting cables:

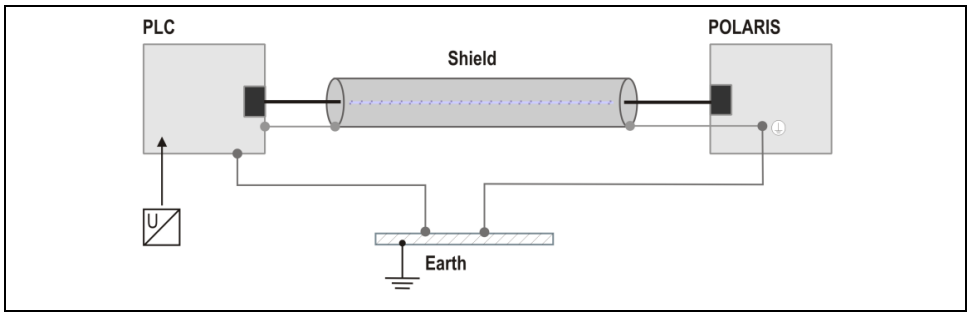


Illustration 17: Example of double-sided shield connection

Generally, connection of the shielding at both ends results in optimum damping of all interference frequencies. This method is to be recommended when there is good equipotential bonding between the individual units. In such cases it is possible to make use of the controller's voltage supply cable even if this is not electrically isolated.

Single-sided shield connection on the connecting cables:

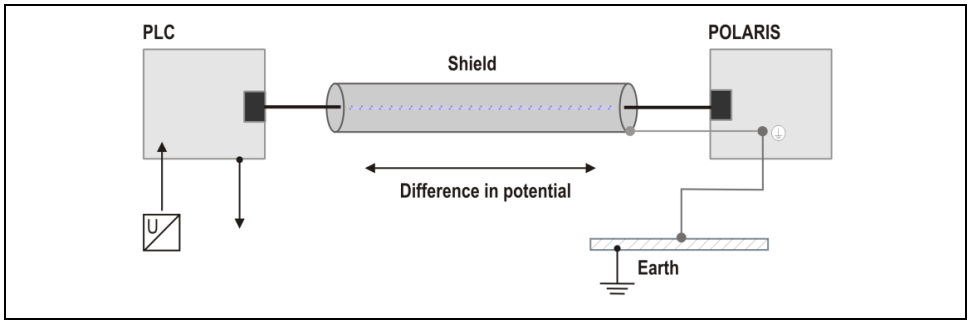
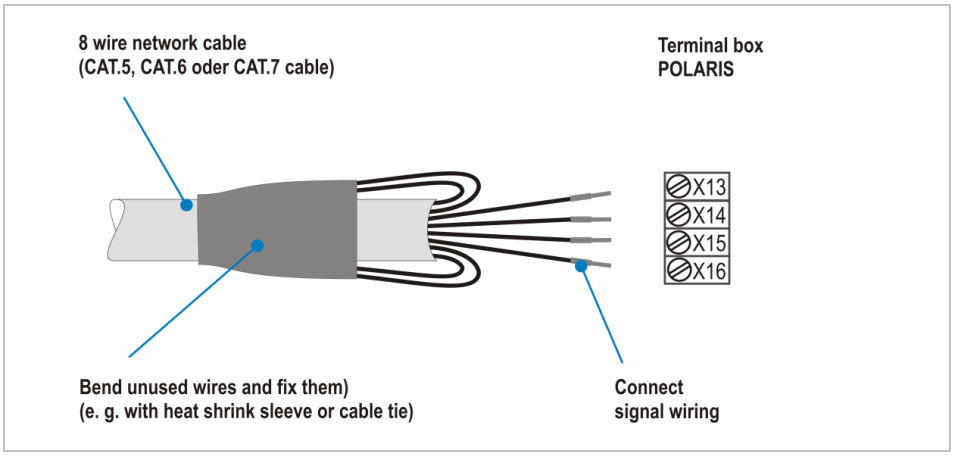


Illustration 18: Example of single-sided shield connection

Connection of the shielding at one end only is recommended when there is inadequate equipotential bonding, or none at all. In such cases an electrically isolated power supply unit must be used. Before the equipment goes into service the directions from the controller manufacturer regarding proper assembly and operation must be read carefully. They should then be applied taking full account of the recommendations we make here.

5.8.7 Ethernet



6. Commissioning

For electrical systems the relevant installation and operating specifications (e.g. Directives 99/92/EC and 94/9/EC, BetrSichV and the applicable national ordinances, IEC 60 079-14 and the DIN VDE 0100 series) must be observed.

The operator of an electrical system in a hazardous environment must keep the operating equipment in an orderly condition, operate it correctly, monitor it and do the required maintenance and repairs.

Before commissioning the devices, check that all components and documents are there.

6.1 Final Inspection

Check the following requirements before commissioning the device:

Only open the ex e terminal compartment with terminals for the supply and data line(s) once it has been ensured that no potentially explosive atmosphere is present and that the power supply has been turned off.

- ▶ Has the reinforcement frame between the bracket and enclosure been inserted?
- ▶ Is there no damage to seals, cable connections or glass panel?
- ▶ Are the supply and data line(s) correctly wired?
- ▶ Have the supply and data line(s) been tightened in the screw terminals?
- ▶ Are all terminal compartments closed?
- ▶ Have all cable glands been tightened and all open cable entries closed with blanking plugs?

Only start the POLARIS (if a potentially explosive atmosphere is present) once the final inspection has been carried out.

ATTENTION

POLARIS with CFL backlighting:

Damage to property resulting from failure to comply with ambient conditions!

Once the heating is switched on, the POLARIS can be used at ambient temperatures from -20 °C to +50°C.

- ▶ Observe the storage temperatures and protect POLARIS from moisture.
- ▶ If the ambient temperature is under 0 °C, the heating must be put on 24 hours before the POLARIS is put into operation.
- ▶ If the POLARIS is switched off at ambient temperatures under 0 °C, an advance heating time of 24 hours must be observed again.

7. Operation

Once the final inspection has been carried out, the device can be put into operation.

The POLARIS series does not have any ON/OFF switch.

7.1 Operating System

The POLARIS series are fully pre-installed with the Windows XP Professional or optional Windows 7 operating systems. The license sticker is affixed on the back of the POLARIS, next to the type plate. Please note that according to the license issued for Windows XP Embedded the application of this system as an Office PC is not permitted.

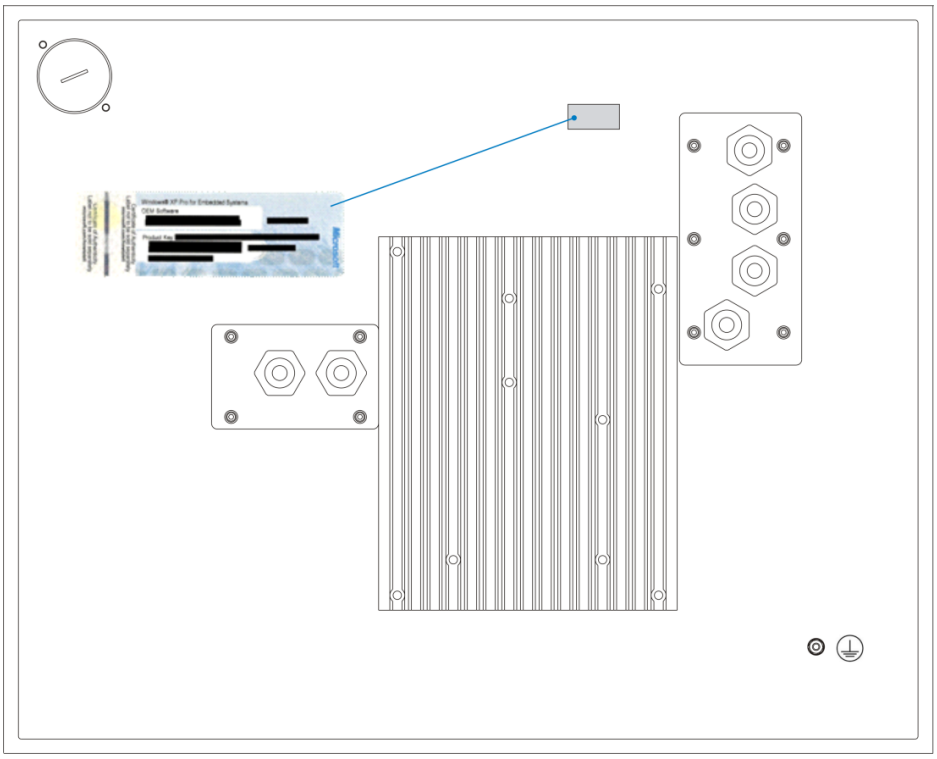


Illustration 19: License sticker

7.2 Recovery/Backup Function

The POLARIS can be restored to delivery status by means of a recovery stick.

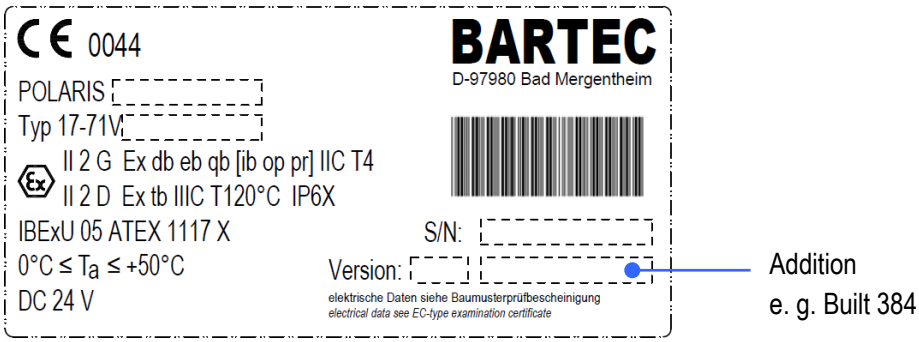
The recovery flash drive is not included in the scope of supply.
It can be ordered from the contact address support-polaris@bartec.de

The recovery flash drive contains the functions:

- image recovery (factory reset) flash drive
- backup
- restoration

7.2.1 Recovery-Stick Image

The recovery stick image for the POLARIS Panel PC can be found on the POLARIS type label.



The POLARIS can be restored to the original state only with the BARTEC recovery stick or BARTEC recovery stick image.

7.2.2 Backup

We expressly point out that it is the user's responsibility to make a backup of the POLARIS and all its functions!

We expressly recommend that such a backup of the POLARIS be saved on an external storage medium (USB stick [recovery stick], CD, DVD or suchlike) and/or in the company network!

7.2.3 Backup on the USB Stick

- Insert the recovery/reset/backup stick into the USB port.
- Boot up the POLARIS and follow the instructions.

7.2.4 Switching Off and Shutting Down

Irrespective of the application, the Microsoft Windows operating system saves important data in the working memory during system operation. Before the PC or the POLARIS is switched off, this data must be saved on the hard disk.

ATTENTION

Shutting down the POLARIS in an orderly fashion prevents malfunctioning in the operating system.

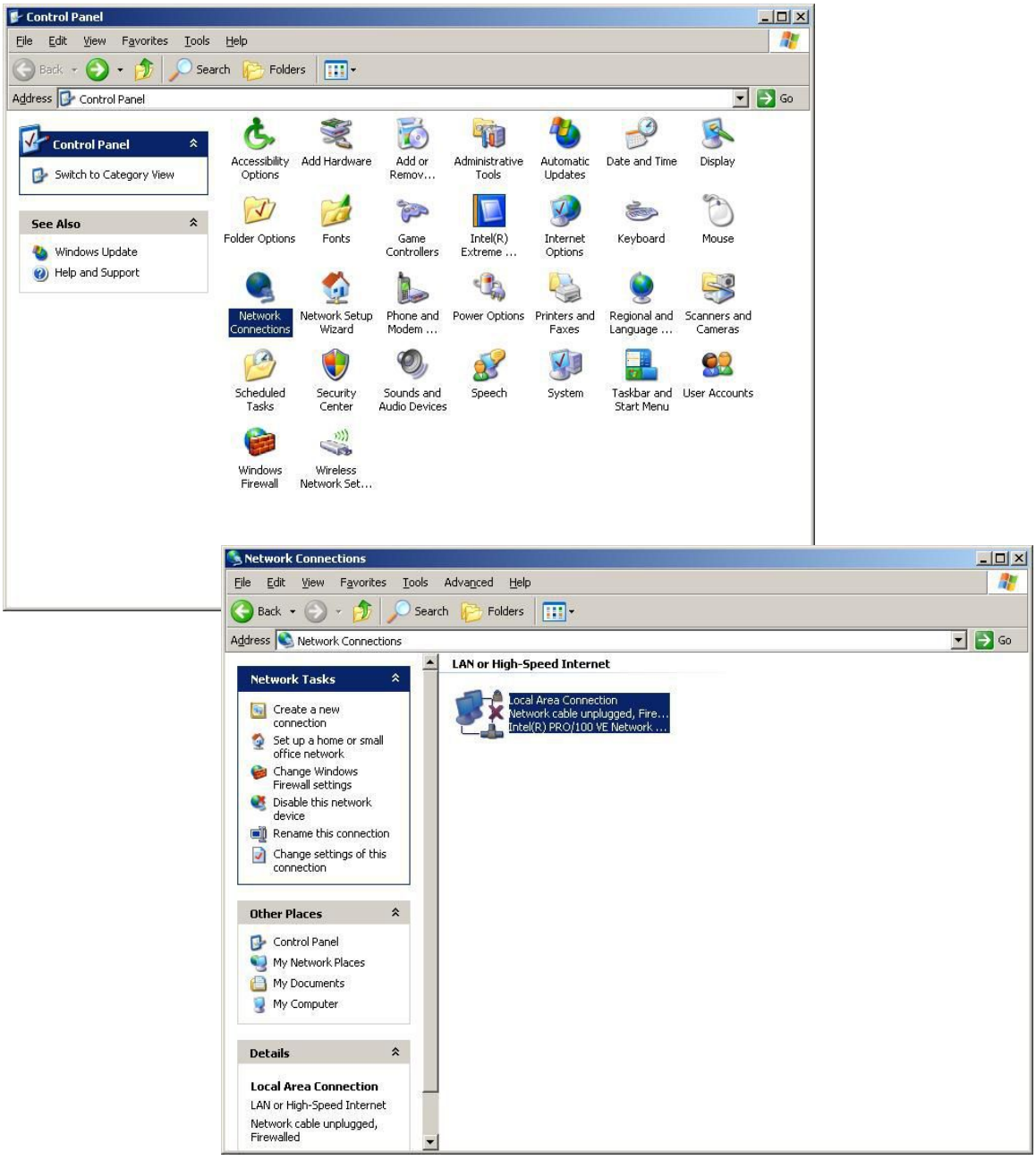
- ▶ Use the Windows button to shut down or switch off the POLARIS.
- ▶ Do not switch off the POLARIS until Windows informs the user that the data has been saved (appearance of the logout script).

7.3 Network (Ethernet) setup

7.3.1 Requirements

Network (Ethernet) setup: Physical connection (connection of Ethernet cable to a network (e. g. switch, hub, server)

- ▶ Go to Start ⇨ Control panel <double click>.
- ▶ Mark "Network connections" and activate with <double click>.
- ▶ Select LAN connection with < double click >.



- ▶ To select the function Internet Protocol click (figure 1) on sub item "Properties"
- ▶ With a < double click > on Internet Protocol (figure 2) the function is activated.

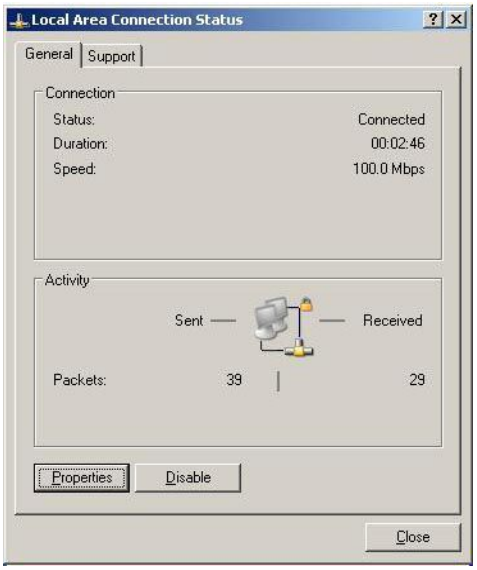


Figure 1

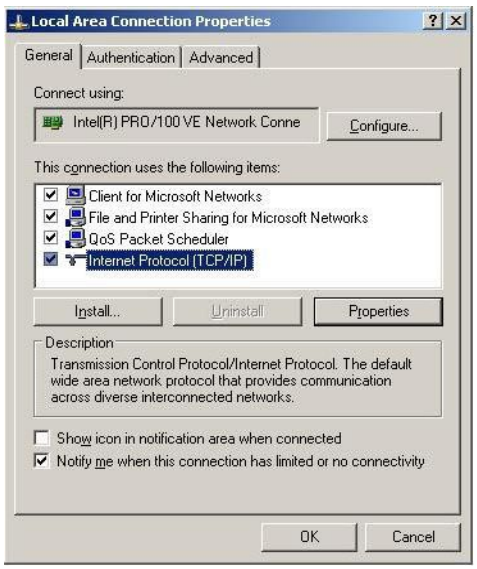


Figure 2

- ▶ The chart (figure 3) appears when the network and a DHCP server are available.
- ▶ Configuration example (figure 4) when no DHCP server is available (connection via switch or HUB).

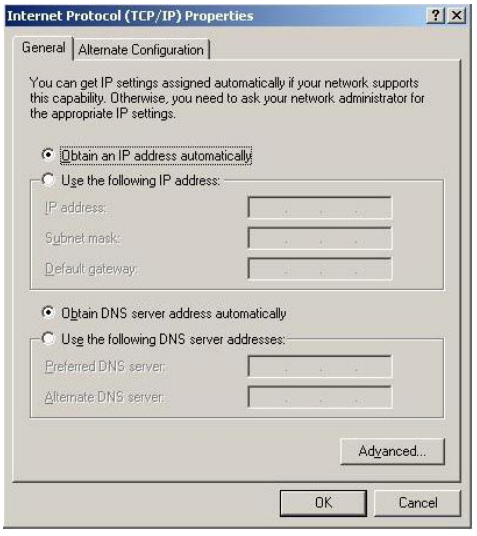


Figure 3

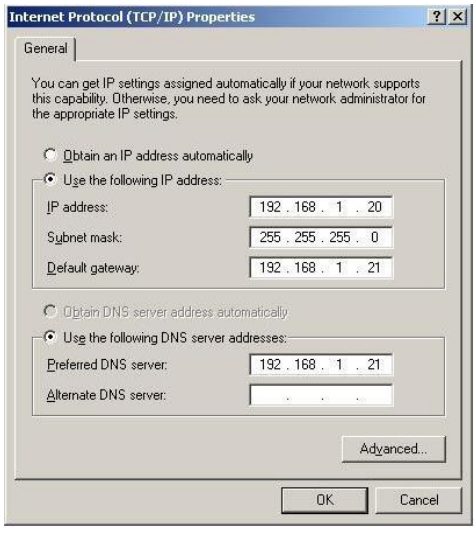


Figure 4

7.4 Touch Screen

In the device variants with touchscreen, the touchscreen software is pre-installed already.

The touch screen software is available for download at:

http://www.bartec.de/automation-download/

8. Faults and Troubleshooting

Fault	Possible cause	Remedy
Nothing is shown on the display	No power supply present	Check connection of the power supply
	External back-up fuse has tripped	Check fuse
	Internal fuse has tripped	Return to the manufacturer
	Backlighting faulty	Return to the manufacturer Replace the backlighting
	Device malfunction	Return to the manufacturer
No current consumption	No power supply present	Check connection of the power supply
	External back-up fuse has tripped	Check the fuse
	Internal fuse has tripped	Return to the manufacturer
	Device malfunction	Return to the manufacturer
Display turns on and off constantly	Power supply is too low.	Check diameter and length of cable. see Chapter 5.8
Display always has stripes.	Display is defective or the device doesn't boot up.	Return to the manufacturer
Dark background	The backlighting is coming to the end of its service life.	Return to the manufacturer Replace the backlighting
	Power Save activated	Press any button.
Touchscreen not working	Driver deactivated Driver not installed	Check driver installation or install a driver.
Mouse cursor and point of contact on the screen do not agree	Touchscreen calibrated incorrectly.	Calibrate touchscreen.

9. Maintenance, Inspection, Repair

Only trained and qualified personnel may commission and do maintenance work on the POLARIS! Trained qualified personnel are people who are familiar with the installation, assembly, commissioning and operation of the POLARIS, have been instructed about the risks and have the appropriate qualifications by virtue of the work they do.

9.1 Maintenance intervals

The mechanical status of the devices should be checked at regular intervals. The length of the maintenance intervals depends on the ambient conditions. We recommend checking at least once a year. Regular maintenance is not necessary if operated appropriately in conformance with the installation instructions and with due consideration to the ambient conditions.

⚠ DANGER

Prevent electrostatic charging in hazardous (potentially explosive) areas.

There is a risk of a fatal injury in an explosive atmosphere!

▶ Take devices out of hazardous areas before wiping them dry or cleaning them!

ATTENTION

There is a risk of condensation forming when installed outside. Damage to property may occur if this is not checked!

▶ Regularly check the POLARIS for the formation of condensation.

9.2 Inspection

Under IEC 60079-17, IEC 60079-19, EN 60079-17 and EN 60079-19, the owner/ managing operator of electrical installations in hazardous areas is obliged to have these installations checked by a qualified electrician to ensure that they are in a proper condition.

9.3 Maintenance and Repair Work

Adhere to the applicable regulations under Directive 99/92/EC, IEC 60079-19 and IEC 60079-17 when servicing, doing maintenance work on and testing associated operating equipment!

Assembly/disassembly, operating and maintenance work may be done only by trained specialists. The statutory rules and other binding directives on workplace safety, accident prevention and environmental protection must be observed.

9.3.1 Instructions for Repairs

If you wish to send in a defective device for repair, please read the RMA procedure guidance first. Then fill in and sign the RMA (Return Merchandise Authorisation) form and send it to our "Retouren Center".

E-mail: services@bartec.de
Fax: +49 7931 597-119

We cannot guarantee any contractually agreed processing times for devices that are sent in without an RMA number.

The RMA guide and the RMA form are available on our homepage for downloading.

http://www.bartec.de
> Quality and culture
> RMA form

Have you any questions? Write us an e-mail or call us.

E-mail: services@bartec.de
Phone: +49 7931 597-444

10. Disposal

The component of the POLARIS contains metal, plastic parts and electronic components.

Our devices are intended as professional electric devices for business use only, referred to as B2B devices under the WEEE-Directive. The WEEE directive sets the framework for waste electric and electronic equipment handling procedures which are to apply throughout the EU.

This means that you are not permitted to dispose of this equipment in normal household refuse. It should not be given to the collection sites set up by the public waste management authorities either but instead it should be disposed of in a separate collection in an environmentally sound manner.

Any product we supply can be returned by our customers to us when the time has come to dispose of it. We will ensure that it is disposed of in accordance with the respective applicable statutory regulations.

The sender pays the costs of the dispatch/packaging.

11. Dispatch and Packaging Instructions

ATTENTION

Sensitive Devices! Damage to property due to incorrect packaging!

- ▶ Take the device's maximum weight into account when selecting the packaging and mode of transport.
- ▶ Use the original packaging for transportation.

12. Accessories, Spare Parts

Included in the scope of the delivery:

Name		Order no.
POLARIS Panel PC with Windows® XP Professional or Windows® 7		
Driver for Mainboard and Touch		
Mounting clamps		
Reinforcement frame	POLARIS 15" / 15" Sunlight	05-0205-0009
	POLARIS 17.3"	05-0205-0013
	POLARIS 19.1"	05-0205-0010
	POLARIS 24"	05-0205-0012

Accessories, Spare Parts for POLARIS PROFESSIONAL series

Name			Order no.
Keyboard in respective national language			17-71VZ-40.0
Input devies	Mouse		17-71VZ-1000
	Trackball		17-71VZ-2000
	Touchpad		17-71VZ-3000
	Joystick without button		17-71V2-8000
	Joystick with button		17-71V2-9000
Connection cable	for keyboard and mouse	1.8 m	05-0068-0163
		3.0 m	03-0068-0204
	for keyboard and trackball/joystick	1.8 m	03-0068-0172
		3.0 m	05-0068-0205
	for keyboard and touchpad	1.8 m	03-0068-0183
		3.0 m	03-0068-0206
USB Device WLAN (Ex d socket necessary)			17-71VZ-6000/0100
Ex i memory stick			17-71VZ-5000/0100
Enclosure "Exclusive"	POLARIS 15" / 15" Sunlight		03-8900-0224
	POLARIS 17.3"		on request
	POLARIS 19.1"		03-8900-0225
	POLARIS 24"		on request
Support system	Stand for floor mounting		05-0005-0050
	Support arm for wall mounting		05-0005-0058
	Stand for desk mounting		05-0005-0070
Enclosure for keyboard and mouse			05-00410277
Mounting clamps	4 pieces		05-0091-0111
	6 pieces		05-0091-0112
Label strip,	white DIN A4 sheet, for laser printer		03-8900-0224
LAN STP cable	CAT.7 4x2x23 AWG, outer diameter: 7.9 mm		02-4082-0002
	CAT.7 4x2x22 AWG, outer diameter: 18 mm; armoured		02-4082-0004
Visualization software	BMS-Graf-Pro 7		17-28TF-0075
BCS 160ex			17-21BA-M3.S.-……
External converter	Converter external	RS232-RS422 Non Ex	03-9600-0258
MPI interface	Converter external	MPI - RS422 Non Ex	17-28TZ-0007
Fibre optic converter			on request
Original packing	POLARIS 15" / 15" Sunlight		04-9035-0007
	POLARIS 17.3"		on request
	POLARIS 19.1"		04-9035-0008
	POLARIS 24"		on request

13. Order Numbers

Selection chart

Version	Code no.	Interfaces	Code no.	Input voltage range	Code no.
Panel PC 15" Professional without touchscreen	4	RS422	00	AC 90 to 253 V	0
Panel PC 15" Professional with touchscreen	6	BARTEC PROFIBUS-DP	04		
Panel PC 17.3" Professional without touchscreen	E	RS422, supply module for hand-held scanner	08		
Panel PC 17.3" Professional with touchscreen	F	BARTEC PROFIBUS-DP, supply module for hand-held scanner	12		
Panel PC 19.1" Professional without touchscreen	5	RS232	32		
Panel PC 19.1" Professional with touchscreen	7	TTY	36		
Panel PC 24" Professional without touchscreen	C	RS232, supply module for hand-held scanner	40	DC 24 V	2
Panel PC 24" Professional with touchscreen	D	TTY, supply module for hand-held scanner	44		
		Siemens PROFIBUS-DP/MPI	64		
		USB Ex e	72		
		Further Interface combinations on request	XX		

Complete order no. 17-71V1-☐0☐☐/☐000/☐000

Operating system	Code no.
Windows® XP Professional	P
Windows 7® Ultimate	U
Windows 7® Embedded MUI	F

Selection chart

Version	Code no.	Interfaces	Code no.	Input voltage range	Code no.
Panel PC 15" Sunlight without touchscreen	4	RS422	00	AC 90 to 253 V	0
		BARTEC PROFIBUS-DP	04		
		RS422, supply module for hand-held scanner	08		
		BARTEC PROFIBUS-DP, supply module for hand-held scanner	12		
		RS232	32		
		TTY	36		
Panel PC 15" Sunlight with touchscreen	6	RS232, supply module for hand-held scanner	40	DC 24 V	2
		TTY, supply module for hand-held scanner	44		
		Siemens PROFIBUS-DP/MPI	64		
		USB Ex e	72		
		Further Interface combinations on request	XX		

Complete order no. 17-71V1- ☐ 2 ☐☐ / ☐ 000/ ☐ 000

Operating system	Code no.
Windows® XP Professional	P
Windows 7® Ultimate	U
Windows 7® Embedded MUI	F

14. Additional Information

Resistance list – polyester front foil
POLARIS series

BARTEC

The polyester front foil material used for the POLARIS series in accordance with DIN 42115, section 2, is resistant against the testing material specified as follows:

Alcohols
Ethyl acohol
Cyclohexanone
Glycol
Glycerol
Isopropanol
Methanol

Hydrocarbons
Aliphatic hydrocarbons
General
Benzine
Benzene
Toluene
Xylene

Chlorinated hydrocarbons
Chlorofluorocarbon
Perchloroethylene
III-trichloroethane
Trichloroethylene

Ester
Ethyl acetate

Other organic solvents
Aether
Dimethyl formamide
Dioxane

Acids	
Formic acid	< 50 %
Acetic acid	
Phosphoric acid	< 30 %
Hydrochloric acid	≤ 10 %
Nitric acid	≤ 10 %

Aldehydes
Acetaldehyde
Formaldehyde

Caustic solutions	
Ammonia	< 2 %
Caustic soda	< 2 %

Saline solutions
Alkalicarbonate
Bichromate
Prussiate of potash

Different substances	
Molecular chlorine	
Liquid cresolphenole soaps	
Oxygen	
Tricresyl phosphate	
Water	< 100 °C
Hydrogen peroxide	< 25 %

Detergents, scavengers and cleaning agents
Potassium soap
Detergent solutions (tenside)
Fabric softeners

Technical oils and fats
Cutting emulsion
Diesel oil
Varnish
Heating oil
Paraffin oil
Ricinus oil
Silicone oil
Turpentine oil and turpentine oil substitute

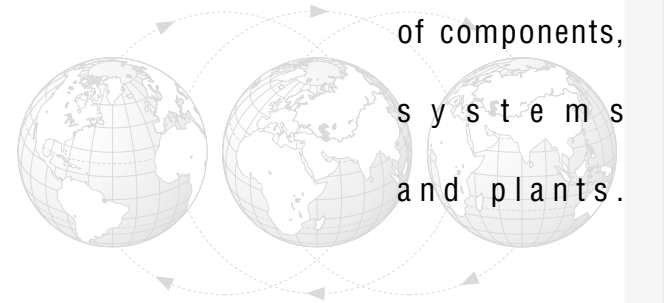
(Where not stated otherwise: concentration = 100%)

Polyester membranes have a limited resistance to UV light and should therefore not be exposed to direct sunlight for extended periods of time.

D_BMS791.doc • Resistance list Polyester front foil • Revision 1 / Status: July, 18th 2006 • Technical data subject to change

BARTEC

BARTEC protects people and the environment by the safety of components, systems and plants.



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