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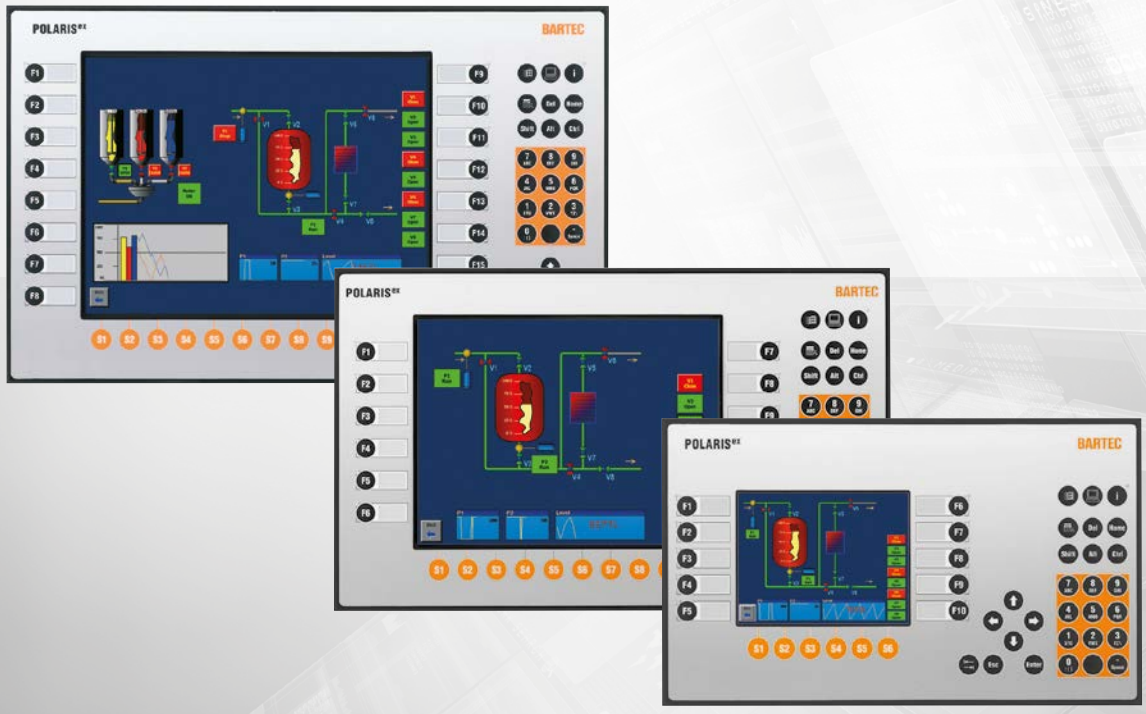

POLARIS COMFORT 5.7" up to 12.1" Zone 1/Zone 21

User Manual

BARTEC

User Manual - TRANSLATION

POLARIS COMFORT

POLARIS Panel PCs 5.7" / 10.4" / 12.1"

Type 17-71V1-….

ATEX / IECEx / CSA

Zone 1 and Zone 21

Document no. 11-71V1-7D0011 /357370

Revision 1 / Status: 30 June 2017

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

Content	Pages
English	1-57

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1. Basic safety instructions

1.1 Notes on this manual

Read carefully before putting the devices into operation.

The user manual is a fixed part of the product. It must be kept in the direct vicinity of the device and the installation, operating and service staff must have access to it at all times.

The user manual contains important information, safety instructions and test certificates which are necessary for the perfect function of the device in operation.

The user manual is directed at all individuals concerned with the commissioning, handling and servicing of the product. The applicable guidelines and standards for areas with gas and dust atmosphere (2014/34/-EU, EN/IEC 60079-17 and EN/IEC 60079-19) must be observed when conducting this work.

Knowledge of the safety and warning information in this user manual and the strict compliance with it is essential for safe installation and commissioning. Accidents, injuries and material damage can be avoided by circumspect handling and systematically following the instructions.

The examples, tables, and figures provided in this user manual are for illustration purposes. Due to the different requirements of the respective application, the BARTEC company cannot assume responsibility or liability for actual use based on the examples and figures.

The BARTEC company reserves the right to carry out technical changes at any time.

In no event will BARTEC company be responsible or liable for indirect or consequential damages resulting from the use or application of this user manual.

Safety instructions and warnings are specially highlighted in these operating instructions and marked by symbols.

DANGER

DANGER describes a directly imminent danger. If not avoided, death or severe injury will be the consequence.

WARNING

WARNING describes a possibly imminent danger. If not avoided, death or severe injury may be the consequence.

CAUTION

CAUTION describes a possibly imminent danger. If not avoided, mild or slight injury may be the consequence.

ATTENTION

ATTENTION describes a possibly damaging situation. If not avoided, the plant or objects in its vicinity may be damaged.

Important information on effective, economical & environmentally compliant handling.

1.1.1 Languages

The original user manual with safety information is written in English. All other available languages are translations of the original user manual.

The user manual is available in English. If further languages are required, these must be requested from BARTEC or stated on placing an order.

1.1.2 Changes in the document

BARTEC reserves the right to change the content of this document without notification. No warranty is assumed for the correctness of the information. In cases of doubt, the German safety instructions apply because it is not possible to rule out errors of translation or printing. In the case of legal disputes, the “General Terms and Conditions of Business” of the BARTEC GmbH also apply.

The current versions of the datasheets, operating instructions, certificates and EU declarations of conformity can be downloaded from **www.bartec.de** or may be requested 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 Intended use

1.3.1 Exclusive purpose

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

The POLARIS COMFORT series 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 Unintended 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 eclusive intended purpose.

1.4 Duties of the operator

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 information

1.5.1 General

- 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 General safety information for operation

1.6.1 Maintenance

The pertinent erection and operating provisions for electrical systems must be observed! (e.g. Directive RL 2014/34/EU, BetrSichV and nationally applicable ordinances EN 60079-14, IEC 60079-14 and the series DIN VDE 0100)!

Observe the national waste disposal regulations when disposing of materials.

1.6.2 Servicing

No constant servicing will be necessary if operated correctly under consideration of the assembly instructions and environmental conditions. See Chapter "Service, inspection, repair" in this respect.

1.6.3 Inspection

According to EN/IEC 60079-17 and EN/IEC 60079-19, the operator of electrical systems in potentially explosive atmospheres is obliged to have these inspected by an electrician to ensure correct condition.

1.6.4 Repairs

Repairs to explosion-proof equipment may only be performed by persons authorized by BARTEC, who must employ the latest technological practices, observe the manufacturer's instructions and use only original spare parts. The applicable regulations are to be observed here.

1.6.5 Commissioning

It must be checked that all components and documents are available before commissioning.

1.7 Labelling, test certificate and standards

The device features an explosion protection label, as well as a test certificate. For an explanation of the symbols and information used, see chapter 4 "Technical data".

The POLARIS COMFORT series complies with Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive). For information on standards that must be observed, see chapter 3 "Explosion protection and approvals".

1.8 Warranty

WARNING

Explosion protection cannot be guaranteed if non-specified components are used.

- ▶ Do not make any changes or perform any reconstruction work on the device.
- ▶ Use only original spare parts.

The manufacturer provides a full warranty exclusively for the spare parts it supplies. When using parts from third parties, there is no guarantee that they have been designed or manufactured to handle the requisite stress or offer the requisite degree of safety.

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).

BARTEC grants a warranty period of one year on the POLARIS series, starting from the BARTEC delivery date. The warranty period for accessories is 1 year from the date of delivery. This warranty covers all parts of the delivery and is limited to the free-of-charge replacement of or repair of the defective parts by BARTEC. The packaging supplied should ideally be retained for this purpose (return shipping). If necessary and following written consultation, the products should be sent to us with an RMA form. No claims may be submitted for repair work to be performed at the installation location.

2. Product description

2.1 Definition

The **POLARIS COMFORT Touch Panels** are the all-rounders for machine-oriented operation and observation in hazardous areas. High-resolution displays with LED technology and touch screen for an intuitive and comfortable operation are now available in the standard variant.

State-of-the-art LED display technology ensures an optimum contrast event with a large viewing angle.

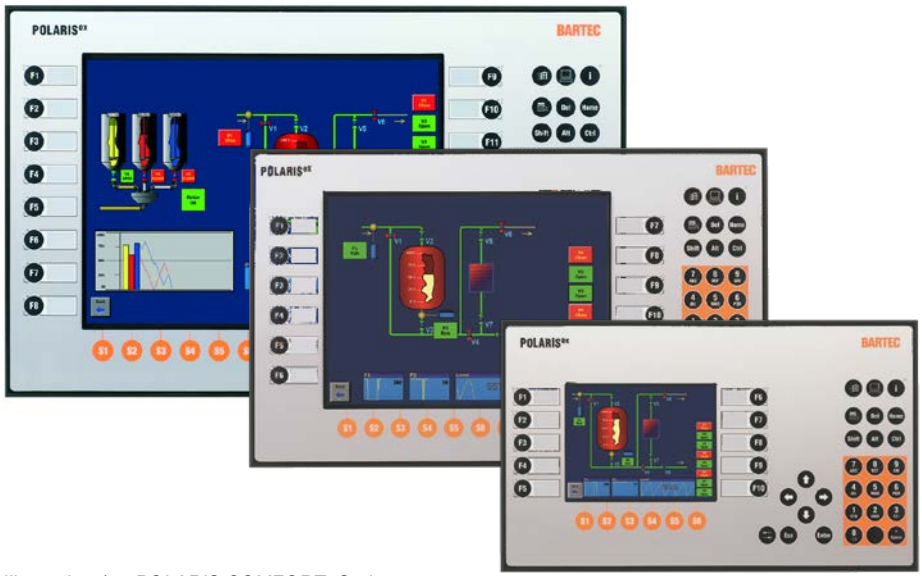


Illustration 1: POLARIS COMFORT- Series

The **POLARIS COMFORT** series works with the new generation of BARTEC BMS-Graf-pro 7.x.x.x visualisation software. It has sufficient processing power to comfortably manage all tasks such as image presentation, communication for controlling, and the transfer of projects through Ethernet.

Illustration 2: "BMS-Graf-pro Version 7" visualization software

The project files can be transferred through the Ethernet connection or by means of the Ex i version of BARTEC´s USB memory flash drive. Alternative possibilities are the presentation of HTML pages or the use as a remote client.

Illustration 3: Ex i USB memory stick

A direct connection to the control or to the process control system is possible through Ethernet, PROFIBUS-DP or serial COM interfaces. A finger mouse, trackball, touchpad and joystick are available as options.

Standard assembly of the POLARIS COMFORT series is mounting on the front panel which can be performed quickly and easily. On request we also supply the POLARIS COMFORT series as a turn-key system solution in a stainless steel enclosure for wall and floor mounting. Customised designs are possible on request.

Illustration 4: Types of enclosure

2.2 Schematic design

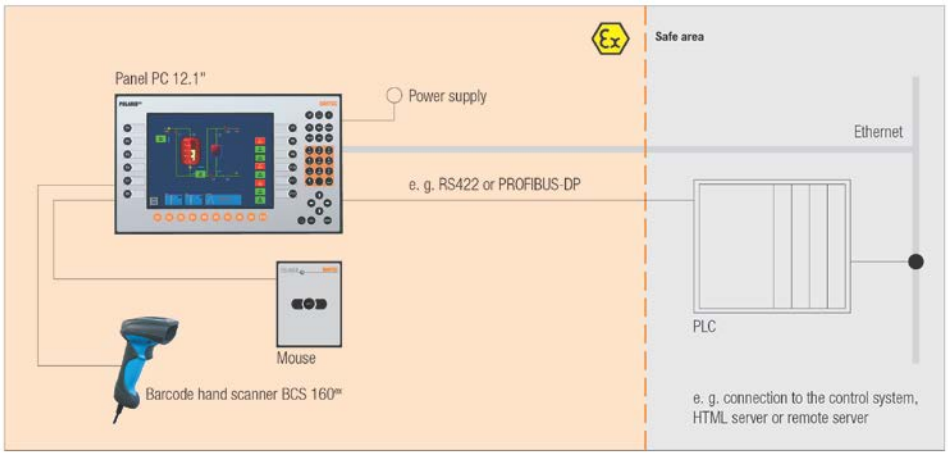


Illustration 5: Simple set-up

3. Explosion protection and approvals

POLARIS COMFORT Type 17-71V1-….	
ATEX	
Ex protection type	II 2G Ex eb qb [ib op pr] IIC T4 bzw. 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 in accordance with EMC Directive 2014/34/EU	EN 60079-0:2012+A11:2013 EN 60079-1:2007 EN 60079-5:2007 EN 60079-7:2007 EN 60079-11:2012 EN 60079-28:2007 EN 60079-31:2014
IECEx	
Ex protection type	Ex db eb qb [ib op pr] IIC T4 Ex tb IIIC T120 °C
Certification	IECEx IBE 11.0007X
Standards in accordance with EMC Directive 2014/34/EU	IEC 60079-0:2011 Edition: 6 IEC 60079-1:2007-04 Edition: 6 IEC 60079-5:2015 Edition: 4 IEC 60079-7:2006-07 Edition: 4 IEC 60079-11:2011 Edition: 6 IEC 60079-28:2006-08 Edition: 1 IEC 60079-31:2013 Edition: 2
Special conditions	The intrinsically safe circuits and the enclosure are galvanically connected. The equipotential bonding must be guaranteed at the installation of the intrinsically safe circuits. High charging mechanisms at the operation surface of the Visual units respectively accessories (for example pneumatic particle transport) must be excluded at the application. The degree of protection (IP code) must be ensured by the installation of the units in enclosures (IP code).
CSA	
Ex protection type	Class I, Zone 1 (A)Ex d e q [ib op pr] IIC T4; Gb Class II, Zone 21 (A)Ex tb IIIC T120 °C; Db
Certification	CSA 15.70010166

Further test certificates	
INMETRO	11/UL-BRHZ-0131X
Customs Union Russia (EAC)	TC RU C-DE.GB06.B.00334
Korea	KTL 14-KB4BO-0258X
India	CCEs P261984
More test certificates	www.bartec.de
EU-conformity	
RoHS-Directive	2011/65/EU
Standards in accordance with EMC Directive 2014/30/EU	EN/IEC 61000-6-2:2005 EN 61000-6-4:2007 + A1:2011 IEC 61000-6-4:2006 + A1:2010 EN 60529:1991 + A1 2000 + A2 :2013 IEC 60529:1989 + A1 1999 + A2 :2013
Electrical safety	EN/IEC 61010-1:2010
Product labelling	CE 0044

4. Technical data

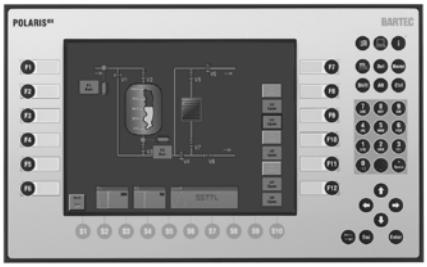
4.1 General data

Construction	Front panel fitting optional turn-key system solutions in a stainless steel enclosure as floor or wall mounting.
Computer capacity	LX800 Prozessor, 500 MHz Compact Flash 4 GB
Operating system	Windows® XP Embedded (pre-installed) **Note: protected by EWF e.g. Built 008**
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 1 x Ex i for PS/2 for intrinsically safe mouse
Interface (optional)	**only POLARIS Touch Panel 10.4" and 12.1"** 1 x Ex i Supply module for hand-held scanner
Display	TFT-colour display
Supply voltage	DC 24 V ± 10 %
Backlighting	LED technology Service life approx. 50,000 hours (at +25 °C)
Computer capacity	LX800 Prozessor, 500 MHz Compact Flash 4 GB
Permissible ambient temperature Storage/Transport Operation	 -20 °C to +50 °C 0 °C to +50 °C (optional -20 °C to +50 °C)
Relative air humidity	5 to 95 % non-condensing
Vibration	0.7 g/1 mm; 5 Hz-500 Hz pulse in all 3 axes
Shock	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

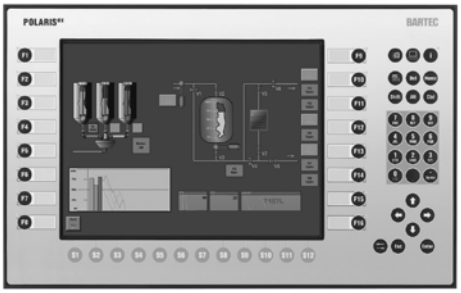
4.1.1 Characteristics POLARIS Touch Panel 5.7"

Display 	5.7" graphics-capable TFT colour display VGA resolution , 640 x 480 pixels 262,144 colours Brightness 700 cd/m^2 Visible surface approx. 115 x 86 mm Contrast 800:1
Keyboard (short-stroke keys)	Alphanumeric key block 4 cursor keys 6 special keys 10 function keys able to be labelled with LEDs
Max. power consumption	P_{max} <30 W
Dimensions (width x height x depth)	335 mm x 199 mm x 130 mm
Wall cut-out (width x height)	321 mm x 179 mm ± 0,5 mm
Weight	approx. 10 kg

4.1.2 Characteristics POLARIS Touch Panel 10.4"

Display 	10.4" graphics-capable TFT colour display SVGA resolution, 800 x 600 pixels 262,144 colours Brightness 400 cd/m^2 Visible surface approx. 211 x 158 mm Contrast 700:1
Keyboard (short-stroke keys)	Alphanumeric key block 4 cursor keys 10 special keys 12 function keys able to be labelled with LEDs
Max. power consumption	P_{max} <30 W
Dimensions (width x height x depth)	400 mm x 246 mm x 130 mm
Wall cut-out (width x height)	386 mm x 226 mm ± 0.5 mm
Weight	approx. 14 kg

4.1.3 Characteristics POLARIS Touch Panel 12.1"

Display 	12.1" graphics-capable TFT colour display XGA resolution,1024 x 768 pixels 262,144 colours Brightness 500 cd/m^2 Visible surface approx. 246 x 184 mm Contrast 700:1
Keyboard (short-stroke keys)	Alphanumeric key block 4 cursor keys 12 special keys 16 function keys able to be labelled with LEDs
Max. power consumption	P_{max} <35 W
Dimensions (width x height x depth)	440 mm x 275 mm x 130 mm
Wall cut-out (width x height)	425 mm x 255 mm ± 0.5 mm
Weight	approx. 18 kg

4.2 Finger mouse, trackball, touchpad and joystick

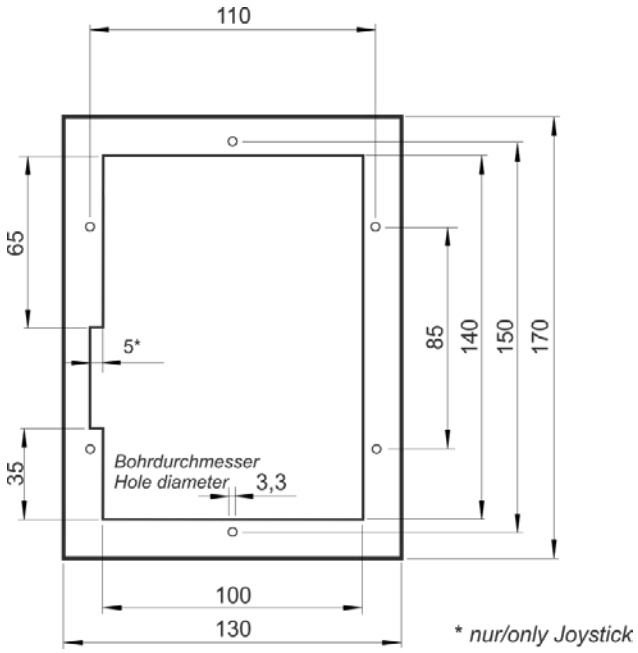
4.2.1 Explosion Protection

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
Ex protection type IECEx	Ex ib IIC T4 Ex ib IIIC T120 °C
Certification	IECEx IBE 11.0007X
Ex protection type	Class I, Zone 1 (A)Ex ib IIC T4; Gb Class II, Zone 21 (A)Ex ib IIIC T120 °C; Db
Certification	CSA 15.70010166
More test certificates	www.bartec.de

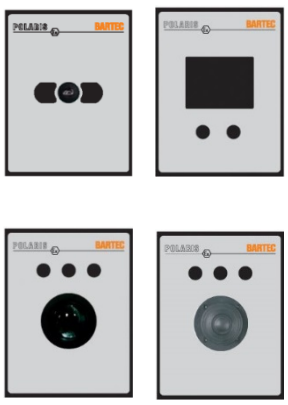
4.2.2 General data

Construction	Front panel fitting
Material	Polyester foil on aluminium sheet (conditionally UV-resistant)
Protection class	
Fingermouse/Joystick/Touchpad	IP65 front site
Trackball Static	IP65 front site
Dynamic	IP56 front site
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)



4.2.3 Variants



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

4.3 Ex i memory stick

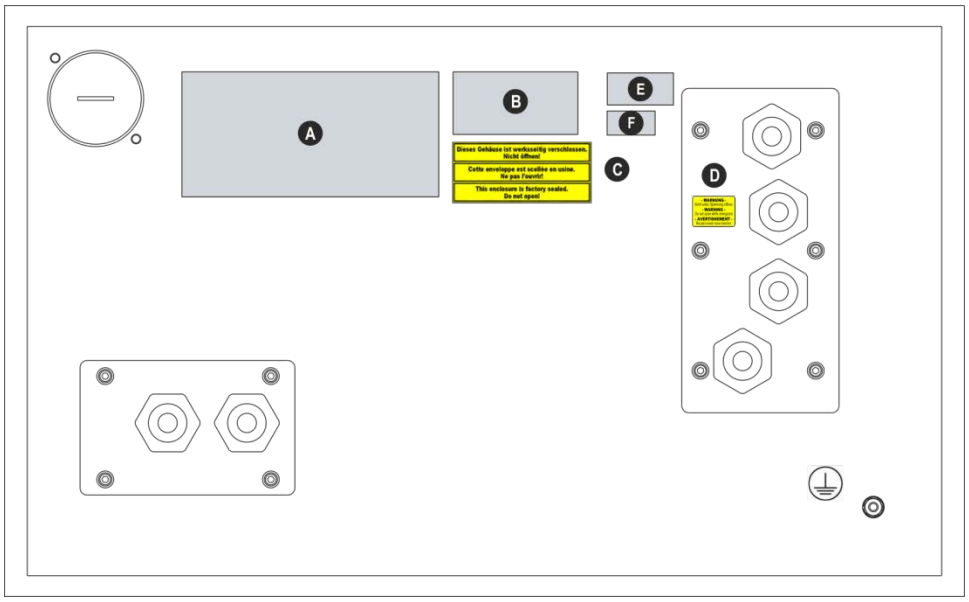
4.3.1 Explosion Protection

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 EN 60079-31:2009
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 IEC 60079-31:2008 Edition: 1
More test certificates	www.bartec.de

4.3.2 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
Enclosure material	Anodised aluminium
Use	Data backup

4.4 Product labelling



A **Example:** **Type label with label ATEX and IECEx**	CE 0044 POLARIS ***** Typ 17-7"V*-**** IBExU 05 ATEX 1117 X II 2 G / II 2 D Ex eb qb [ib] IIC T4 Ex tb IIIC T120°C IP6X IECEx IBE 11.0007X KTL 14-KB4BO-0258X TC RU C-DE. ГБ06.В.00334 0°C≤ Ta ≤ +50°C DC 24 V C US Class I, Zone 1 A/Ex d e q [ib] IIC T4; Gb Class II, Zone 21 A/Ex tb IIIC T120°C; Db CSA 15.70010166 BARTEC 97980 Bad Mergentheim Germany S/N: 000100 / 1703 Version: *** Built: *** weitere Daten siehe Betriebsanleitung further data see operating instruction voir la notice d'instructions pour des données plus complètes
B **Type label with label INMETRO**	Segurança INMETRO BARTEC 97980 Bad Mergentheim / Germany 11/UL-BRHZ-0131X ATENÇÃO - NÃO SEPARE QUANDO ENERGIZADO ATENÇÃO - ESTE INVÓLUCRO VEM SELADO DA FÁBRICA. NÃO ABRA.
C **Warnings on the device**	Dieses Gehäuse ist werksseitig verschlossen. Nicht öffnen! Cette enveloppe est scellée en usine. Ne pas l'ouvrir! This enclosure is factory sealed. Do not open!
D **Warning on terminal compartment!**	- WARNUNG - Nicht unter Spannung öffnen - WARNING - Do not open while energized - AVERTISSEMENT - Ne pas ouvrir sous tension
E **Licence sticker**	depending on the operating system
F **Test sticker**	Ex geprüft A 0712

5. Transport, storage, scope and assembly

5.1 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 (10-18 kg).

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

▶ You will need help from others when transporting it.

5.2 Intermediate storage

ATTENTION

Damage to property through incorrect storage!

▶ Comply with the correct storage temperatures.

▶ Keep the POLARIS free of moisture.

5.3 Scope of delivery

1 x POLARIS Touch Panel

1 x Reinforcement frame

1 x Set of mounting clamps

1 x User manual POLARIS COMFORT – Touch Panel

Not enclosed:

– Assembly material,

– Cable for voltage supply and data line

5.3.1 Accessories optional

– Enclosure and supporting system for wall and floor mounting

5.4 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 hey key 2,5 mm 1 x slotted screwdriver
	POLARIS PE-connection	1 x ring spanner 7 mm

5.4.1 Installation options

The POLARIS can be installed directly in:

- Enclosures
- Switch cabinet doors
- Operating consoles

The POLARIS series 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 or floors.

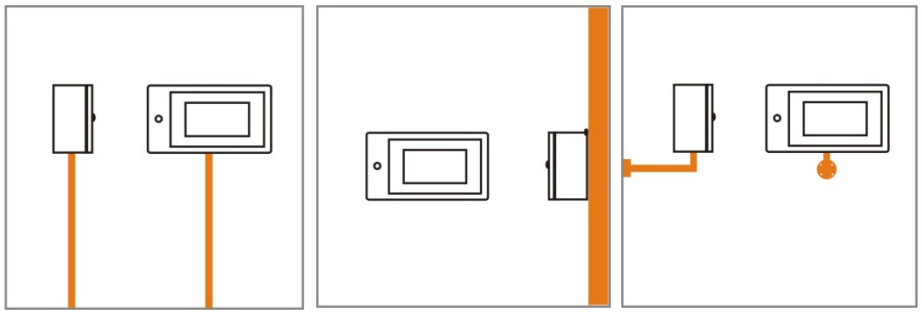


Illustration 6: Examples of floor and wall mounting

6. 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 +50 °C and a relative air humidity of from 5 to 95 % without condensation.

6.1 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

Selecting the location

CAUTION

Pay attention to wall and ground condition!

- ▶ A sufficiently stable wall (e.g. concrete or limestone) or floor (e.g. concrete) must be selected for securing the load-bearing system.
- ▶ The structural stability of the wall or floor must be able to bear 4 times the weight of the POLARIS as system solution.
- ▶ The support arm system must be assembled using suitable mounting materials (M12) (e.g. dowels or stud bolts).

– Choose the optimum height for operating the POLARIS.

– 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.

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.

6.2 Mechanical installation

CAUTION

This device is heavy (10-18 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.

6.2.1 Installation in2G-/2D-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.

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.

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 BASIC 5.7"	05-0205-0006
POLARIS BASIC 10.4"	05-0205-0008
POLARIS BASIC 12.1"	05-0205-0007

Fit the reinforcement frame

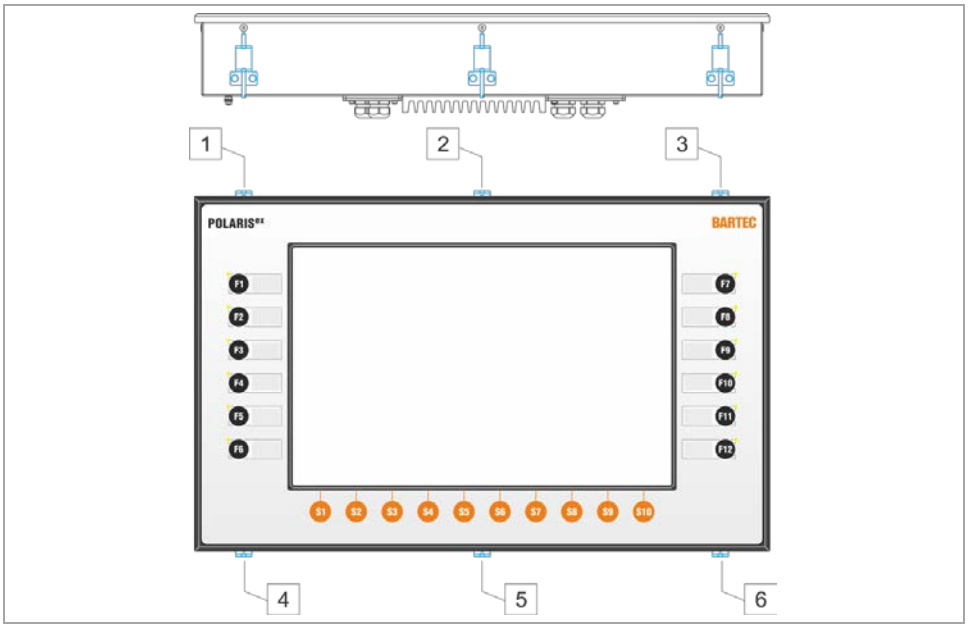


Illustration 7: Minimum installation depth and mounting reinforcement frame

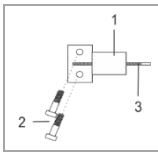
Work steps

(1) Insert the POLARIS into the cut-out in the enclosure.

(2) From the back, place the reinforcement frame over the POLARIS.

(3) Using the M4x12 (2) screws to fasten the mounting clamps (1) to the rear side of the POLARIS and tighten to 1.37 Nm.

(4) Tighten the clamping screw (3) of the mounting clamps to a torque of 1.02 Nm.



Number of retaining claws	
POLARIS COMFORT 5,7"/10,4"/12,1"	6 pieces

Always tighten the mounting clamps crosswise.

6.2.2 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. for floor, wall or table mounting.

CSA approval

The CSA approval for the POLARIS series only includes the basic device POLARIS COMFORT.

Other system solutions and mounting systems (e.g. table mounting) have **not** been tested and approved in accordance with CSA.

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.

Selecting the location

CAUTION

Pay attention to wall and ground condition!

A sufficiently stable wall (e.g. concrete or limestone) or floor (e.g. concrete) must be selected for securing the load-bearing system.

- ▶ The structural stability of the wall or floor must be able to bear 4 times the weight of the POLARIS as system solution.
- ▶ The support arm system must be assembled using suitable mounting materials (M12) (e.g. dowels or stud bolts).

Stainless steel enclosure "Standard" for floor and wall mounting	
Type	**Dimensions** (Width x Height x Depth)
POLARIS BASIC 5.7"	500 mm x 280 mm x 200 mm
POLARIS BASIC 10.4"	560 mm x 320 mm x 200 mm
POLARIS BASIC 12.1"	600 mm x 350 mm x 200 mm

Work steps

(1) Prepare supply and data line(s).

(2) Prepare installation on the basis of the drilling template (see illustration 8 - 9).

(3) Install supply and data line(s) in the base.

(4) Fasten the supporting system.

(5) Pull supply and data line(s) through the cable glands provided into the enclosure. Ensure there is sufficient length.

(6) Mount the enclosure on the supporting system.

(7) Open the terminal compartments on the POLARIS and feed the supply and data line(s) through the cable glands and wire them. Block unused terminal compartments with a blanking plug.

(8) Close the door of the enclosure.

6.2.3 Floor mounting stainless steel enclosure

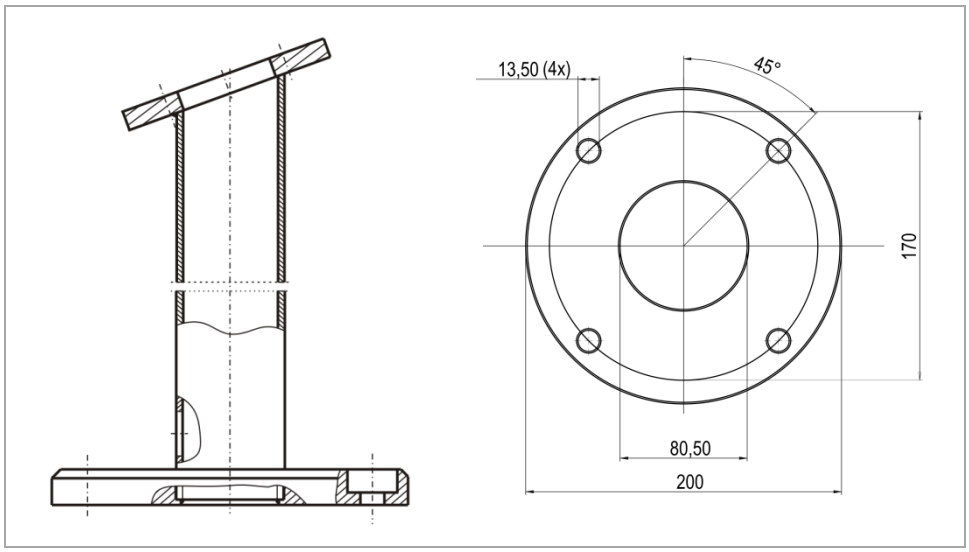


Illustration 8: Base – drilling template base plate

6.2.4 Wall mounting Stainless steel enclosure

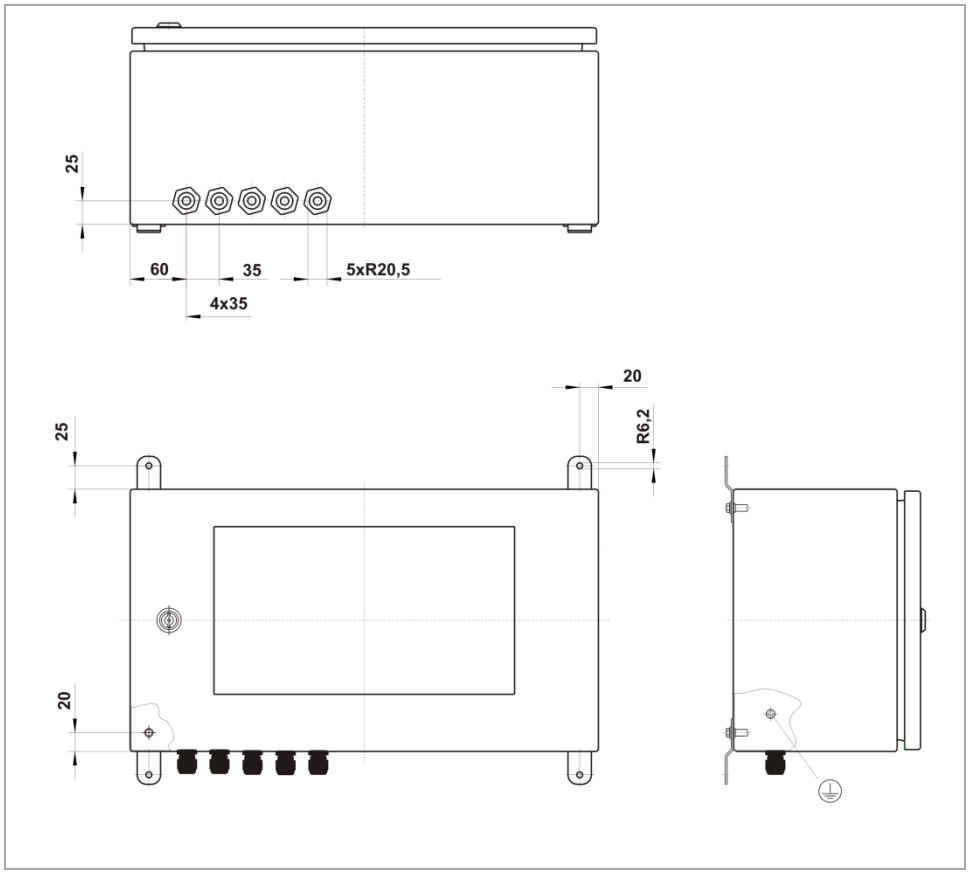


Illustration 9 Wall mounting – dimensions of mounting straps

6.3 Electrical Installation

6.3.1 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.).

6.4 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.

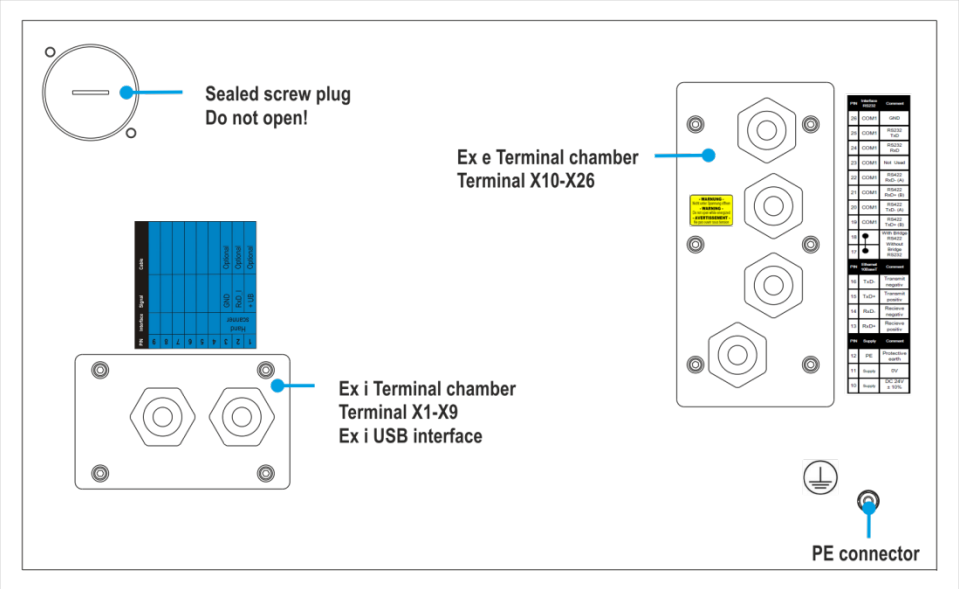


Illustration 10: Pin assignment POLARIS

All connection screws and terminals in the terminal compartment must be tightened with a torque spanner under consideration of the recommended torque of 0.4 Nm up to a max. 0.5 Nm.

6.5 PE conductor connection

DANGER

Death or danger of injury as a result of no PE conductor connection.
There is no explosion protection.

- ▶ Equipotential bonding with a core cross-section of at least 4 mm² is to be set up for the POLARIS (see Figure).
- ▶ Secure PE conductor connections against self-loosening.

Stainless steel enclosure

- ▶ Attach equipotential bonding to the enclosure.
- ▶ All moving parts must be earthed.
- ▶ Secure PE conductor connections against self-loosening.

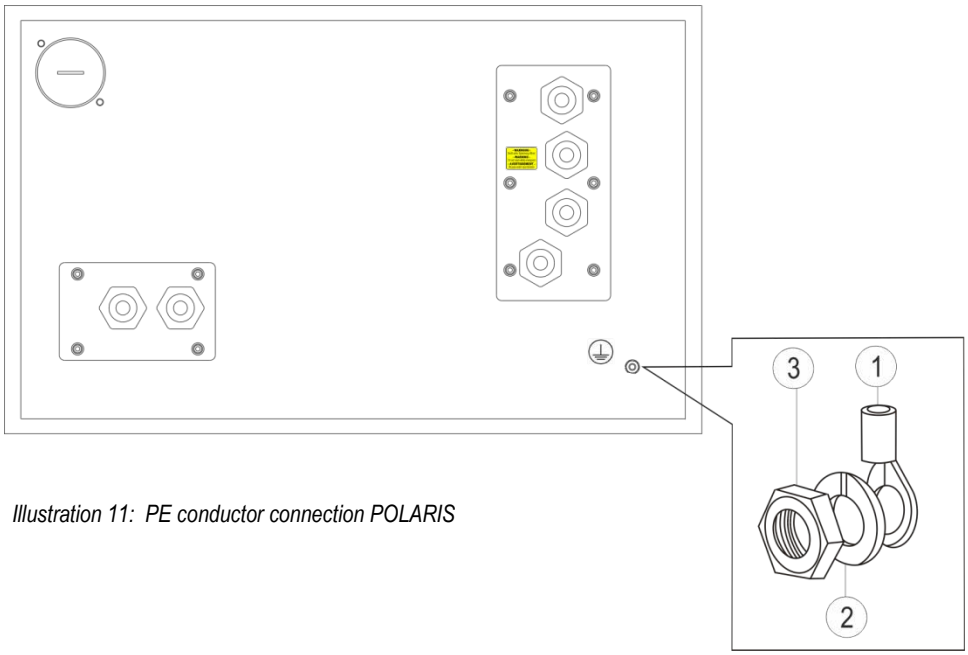


Illustration 11: PE conductor connection POLARIS

Work steps

(1) Push non-sheathed cable with PE cable lug (1) on to earthing stud.

(2) Position spring washer (2) on threaded bolt and secure with hexagonal nut (3), max. torque: 2.9 Nm.

(3) Lay cable close to enclosure so that it cannot become loose.

ATTENTION

Device can be damaged by differences in potential!

- ▶ Avoid differences in potential (see Chapter 6.9.5)

6.6 Ex e terminal compartments

6.6.1 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.

The terminal area of the M20 cable glands is printed on the cable glands.

A different terminal area may only be substituted with a cable gland that complies with the current version of the approval.

The assembly instructions and installation conditions for the cable glands must be observed.

Tightening torque oft he cable glands

Torque	Connecting thread	Nut
non-armoured cables	2,3 Nm	1,5 Nm
armoured cables	8 Nm	5 Nm

⚠ DANGER

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

- ▶ Das Gerät vor Beginn der Arbeiten spannungsfrei schalten.
- ▶ Nur zertifizierte Kabelverschraubungen verwenden, die für den Kabeldurch-messer der Anschlussleitung zugelassen sind
- ▶ Nicht benötigte Kabelverschraubungen müssen durch einen zugelassenen Blindstopfen verschlossen werden.

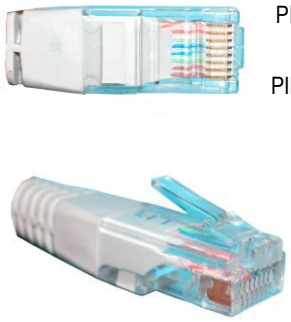
6.6.2 Supply voltage terminal assignment)

Mains Connection Variant DC 24 V			
Terminal	**Interface**	**Signal**	**Remarks**
X10	Supply	L	DC 24 V ± 10 %
X11	Supply	N	Neutral
X12	Supply	PE	Protective earth

6.6.3 Ethernet Terminal Assignment

Configuration Ethernet 10BaseT			
Terminal	**Interface**	**Signal**	**Remarks**
X13	Ethernet	RxD +	100/10 BaseT Receive positive
X14	Ethernet	RxD -	100/10 BaseT Receive negative
X15	Ethernet	TxD +	100/10 BaseT Transmit positive
X16	Ethernet	TxD -	100/10 BaseT Transmit negative

Assignment RJ45 plug for Ethernet to POLARIS Touch Panel terminal block

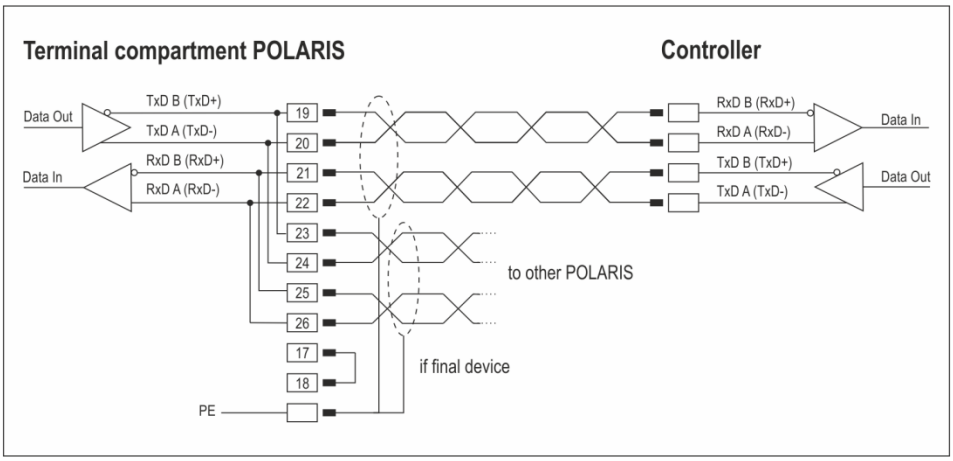


Connection RJ45		POLARIS
PIN	Signal	Terminal
1	TX+	X13
2	TX-	X14
3	RX+	X15
4	not used	
5	not used	
6	RX-	X16
7	not used	
8	not used	

6.6.4 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

RS422 connection mode (full-duplex)



Maximum length of the data line 1,000 m.

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

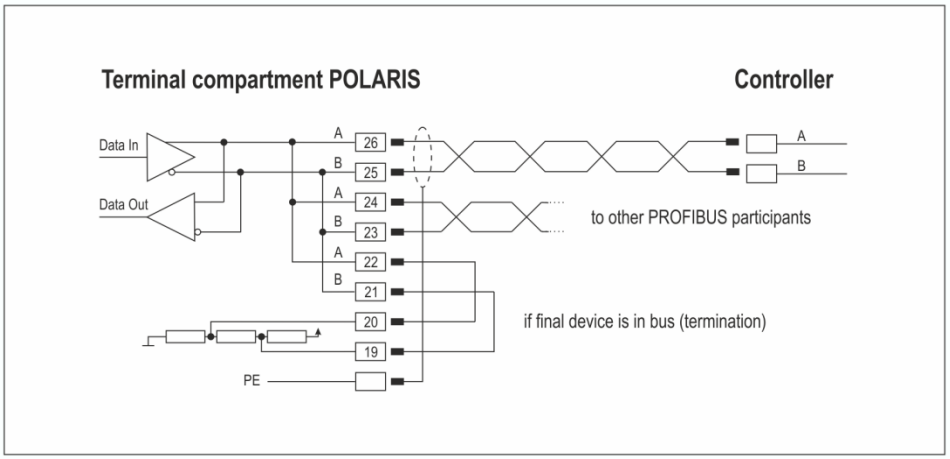
Setting of the terminal resistors at the start and end of the bus line is not necessary in most cases due to internal EMC measures. Depending on local circumstances, the data transmission may worsen in individual cases.

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

6.6.5 BARTEC PROFIBUS-DP interface (optional)

Configuration PROFIBUS-DP			
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 the PROFIBUS-DP interface of the POLARIS.



Maximum line length: see PNO specification.

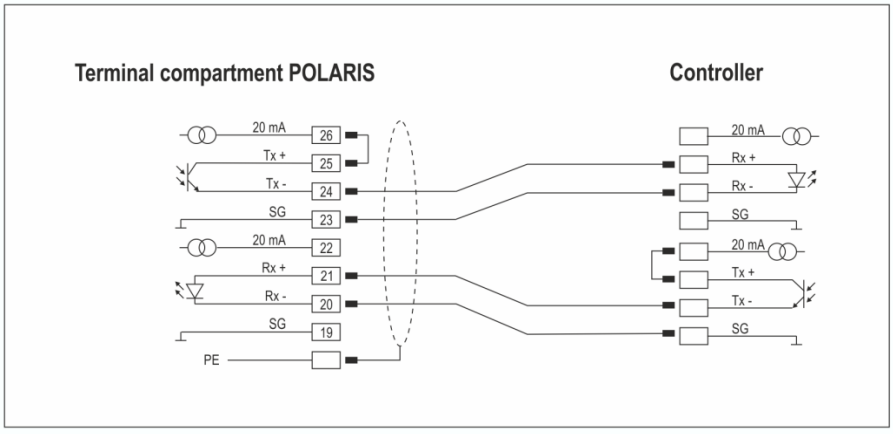
Pins 26-24-22, 25-23-21 are already connected inside.

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

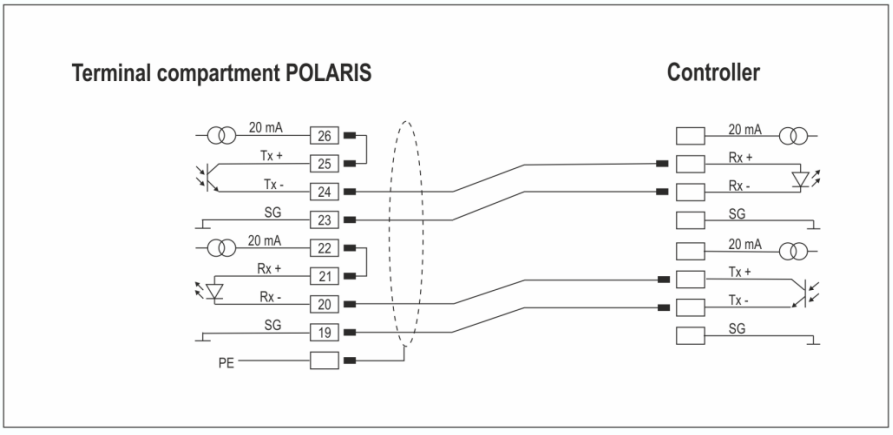
6.6.6 TTY interface (optional)

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.



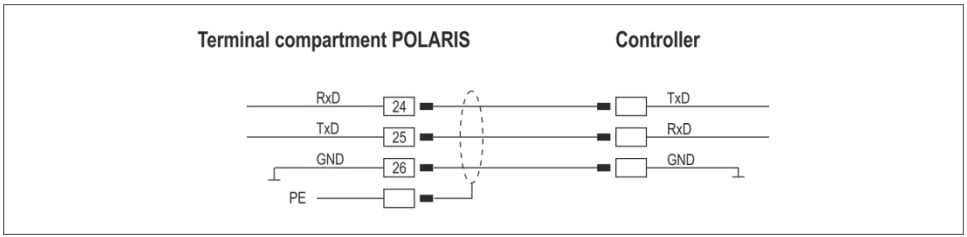
Maximum line length depending on baud rate of up to 1,000 m.

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

6.6.7 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.



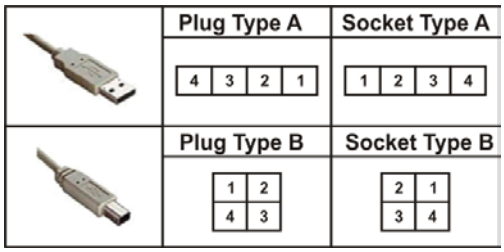
Maximum length of the data line 15 m.

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

6.6.8 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:



Touch Panel	USB connection	Colour	Function
X23	1	RD	VCC (+5 V)
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.

6.6.9 Interface RS422/Ex e USB (optional)

Configuration RS422/Ex e 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		

6.7 Ex i terminal compartment

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.

6.7.1 Connection of Ex i input device to the POLARIS (optional)

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

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	not used				
X7	not used				
X8	PS/2	BL	MS_CLK	Mouse	clock signal
X9	PS/2	RD	MS_DATA	Mouse	data signal

– Make the connection between the POLARIS 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)

6.7.2 Ex i USB interface for BARTEC Ex i memory stick

USB socket, 4-pole, Type A

ATTENTION

The Ex i interface has not been designed for USB devices with their own power supply. Damage to property through incorrect use!

▶ Do not connect any USB equipment with its own power supply to the Ex i interface.

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

6.7.3 Ex d socket (optional)

DANGER

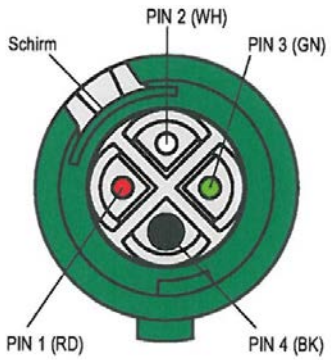
Live plug-in connections! Risk of fatal injury if opened in an explosive atmosphere!

▶ Before opening the protective cap on the Ex socket on the POLARIS, make sure there is no connection to voltage.

▶ Plug-in connections must be closed with a protective cap immediately after separation. The closing element must be positioned correctly.

▶ Use flanged socket outlets and appliance couplers only with appropriate plug-in connectors/couplings that are not damaged in any way.

Plug-in connectors in the (red insert) series cannot be combined with plugs in the new geometrically modified (green insert) series. When replacements are delivered, the plug-in system must be replaced in pairs.



PIN	Signal	Colour
Pin 1	VCC1	RD
Pin 2	Data-	WH
Pin 3	Data +	GN
Pin 4	GND	BK

6.7.4 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-held scanner	+UB	Supply voltage +5 V
X2	Hand-held scanner	RxD-I	Data input RS232-Signal
X3	Hand-held scanner	GND	Earth connected to protective ground

Intrinsically safe data and supply current circuits Terminals 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. Not compatible is the hand scanner BCS 160ex with 1D72D Imager (Typ 17-21BA-M31S/I0000000)

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

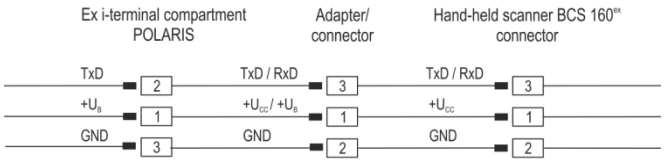
Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
POLARIS supply module	RS232/RS422 RS232/RS422	smooth spiral	1.8 m 3.8 m	17-21BE-M000/0000 17-21BE-M010/0000

Connection cable to Ex base station of 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.



6.7.1 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 Operation	 -20 °C bis +80 °C 0 °C bis +55 °C
Multi-mode Range Fibre type Min. transmitting power Min. sensitivity Wave length Plug connector	 up to 2 km 62.5/125 µm or 50/125 µm 19 dBm 31 dBm 1310 m ST (MS400161)
Single-mode Range Fibre type Min. transmitting power Min. sensitivity Wave length Plug connector	 up to 15 km 9/125 µm 15 dBm 31 dBm 1310 m 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)

6.8 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

6.8.1 Voltage Supply (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 2 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 POLARIS	At least 1.5 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)	

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

Examples	Cable-cross-section	Maximum line length
Supply voltage DC 24 V	0,75 mm²	approx. 50 m
	1,5 mm²	approx. 100 m
	2,5 mm²	approx. 170 m

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.

6.8.2 Back-up fuse

The POLARIS COMFORT is fused internally in the DC model with a 2.5 A slow-blowing fuse. The fuse may be triggered in the case of voltage breaks or under-voltage.

Internal fuse		I^2 value	External fuse	
Little fuse 1.6 A T	1500A@250VAC	6.83 A^2 s	Siba 1.6 A F	1500A@250VAC
			Siba 2.0 A F	1500A@250VAC
			Siba 2.5 A F	1500A@250VAC
Little fuse 2.5 A T	1500A@250VAC	22.29	Eska 1.6 A M	1000A@250VAC
			Eska 2 A M	1000A@250VAC

We recommend that the POLARIS is secured with a back-up fuse to avoid triggering the internal fuse in the device. The internal fuse can only be replaced by BARTEC.

Back-up fuse DC: 2.5 A slow-blowing

The I^2 value is to be observed for other versions of the fuses.

6.8.3 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.

6.8.4 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.

6.8.5 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).

6.8.6 Examples of Shielding Connections

ATTENTION

Device can be damaged by differences in potential!

▶ Avoid differences in potential.

Double-sided shield connection on the connecting cables

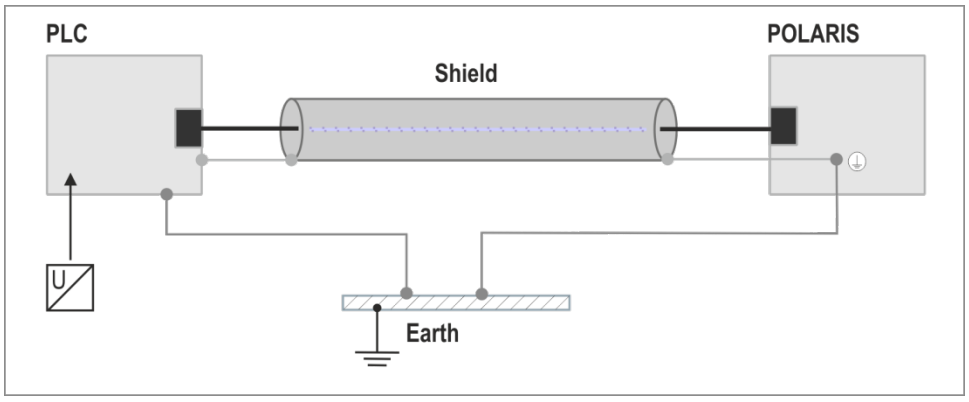


Illustration 12: Example of double-sided shield connection

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:

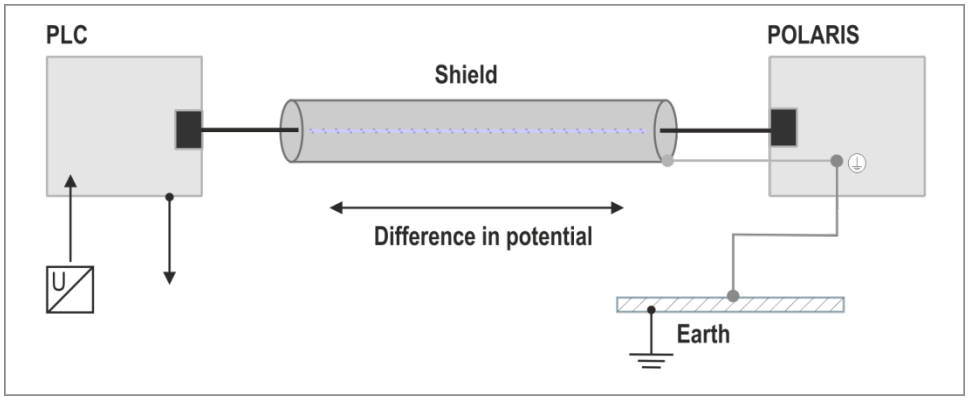
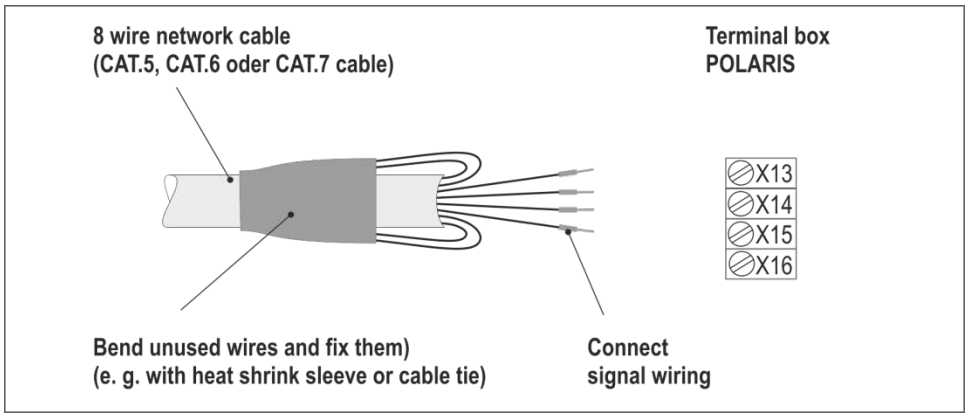


Illustration 13: Example of single-sided shield connection

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.

6.8.7 Ethernet



7. Commissioning

For electrical systems the relevant installation and operating specifications (e.g. Directives 2014/34/EU, 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.

7.1 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.

POLARIS COMFORT

- 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?
- Is the PE connection correctly earthed?
- 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.

7.2 Commissioning Software

7.2.1 EWF (Enhanced Write Filter)

What is EWF?

The Enhanced Write Filter is a write protection and it protects the POLARIS Touch Panel operating system if there is a power failure, ensuring that the POLARIS Touch Panel will be able to start perfectly.

What is the as-delivered condition?

The POLARIS Touch Panel 5.7", 10.4" and 12.1" with Windows XP Embedded are supplied with an activated EWF (Enhanced Write Filter).

Processor LX800: Built 008

The CF card (4 GB) used is divided into:

Partition C Size: approx. 2 GByte

boot drive with operating system protected by EWF

Partition D Size: approx. 1.8 GByte

application data (BMS Graf Runtime) not protected by EWF

Behaviour when EWF is activated?

Partition C

When the EWF is activated, it is **not** possible to write on Partition C. All write accesses to the C: partition are redirected into an RAM overlay. The changes that are made are **not** available after rebooting.

Partition D

Is not protected by EWF. Write access to Partition D is possible at any time. The data is still available after a reboot.

Data can be lost during write access if there is a power failure.

Procedure when changing system settings

ATTENTION

Switching off when the EWF is deactivated can cause a loss of data inside the operating system!

- ▶ Activate the EWF immediately after changes.
- ▶ Shut down the operating system properly.

Deactivating the EWF

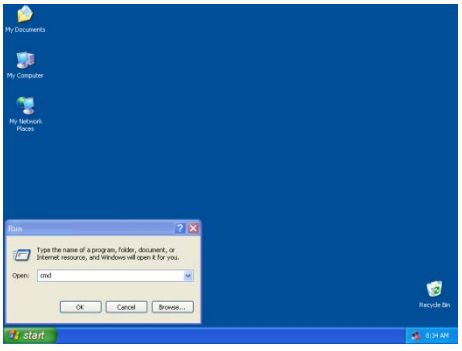
(1) Select "CMD" in the START MENU.

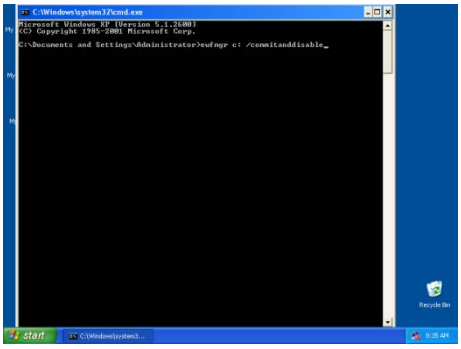
(2) Enter the "ewfmgr c: /commitanddisable" command line into the command window.

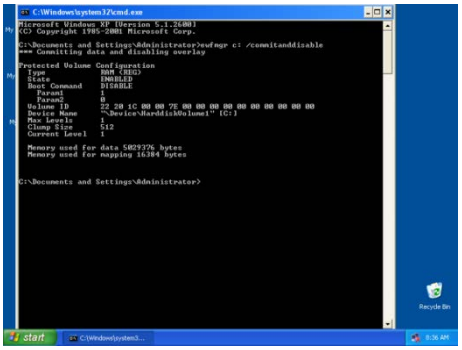
(3) Confirm with the Enter key.

(4) Reboot the system.

(5) Changes/settings can be made in the operating system.

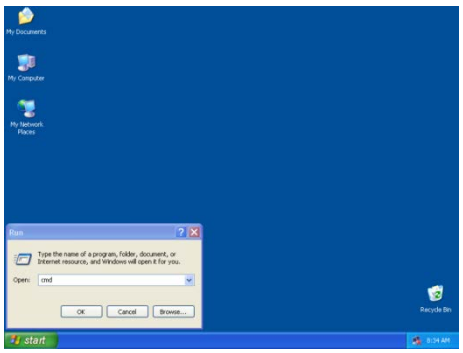


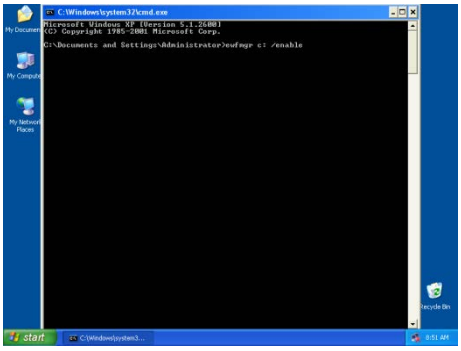


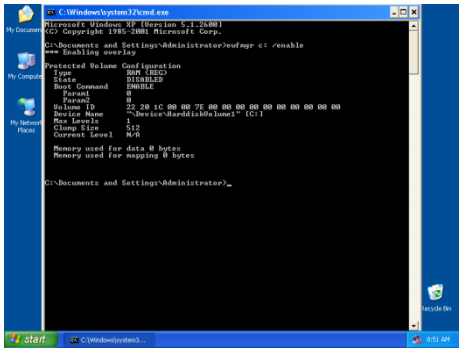


Activating the EWF

(1) Select "RUN" in the START menu.
(2) Enter CMD In the command field.
(3) Confirm with "OK".
(4) Enter the "ewfmgr c: /enable" command line into the command window.
(5) Confirm with the Enter key.
(6) Reboot the system.
(7) EWF is active.





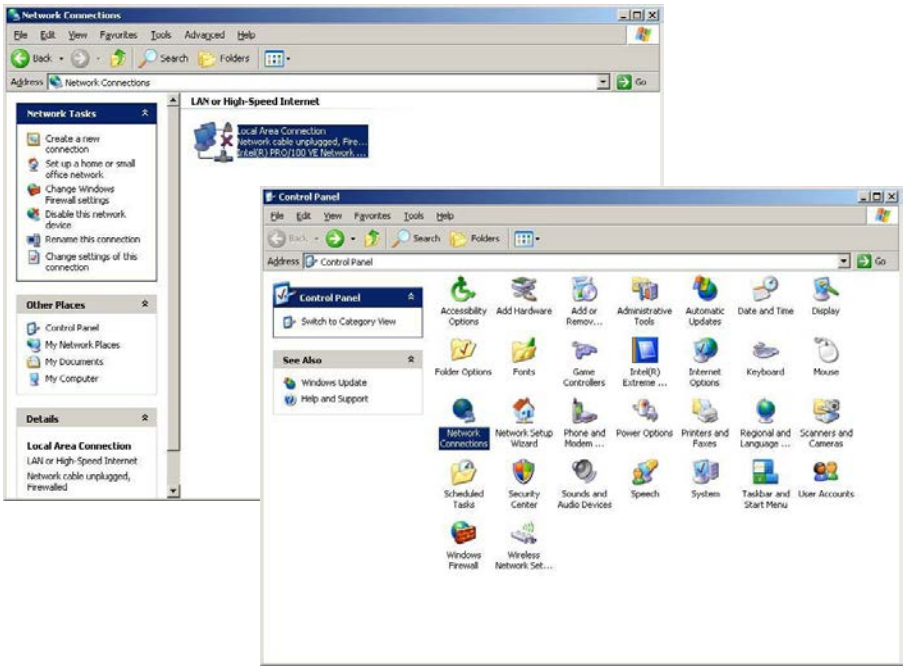


7.2.2 Network (Ethernet) Setup

Requirements

Network (Ethernet) setup: Physical connection (connection of Ethernet cable to a network).

– Go to Start ⇨ Control panel <double click>.
– Mark "Network connections" and start 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 started.

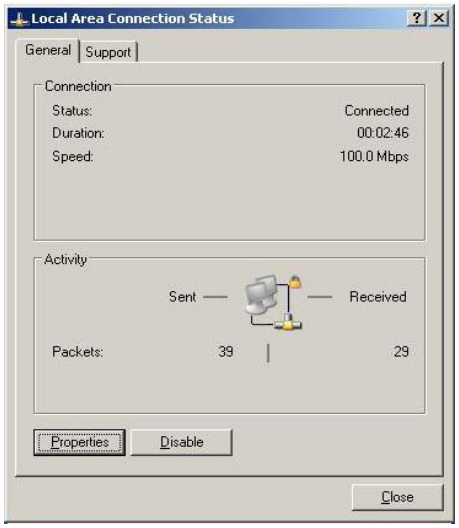


Figure 1

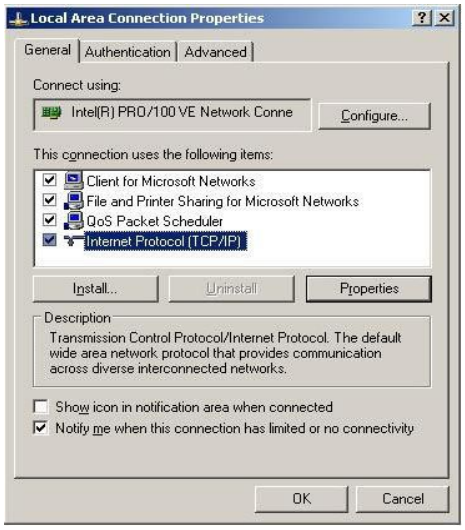


Figure 2

– The chart (figure 3) appears when the network and a DHCP server are available.
– Configuration example (figure 4) when no DHCP server is available.

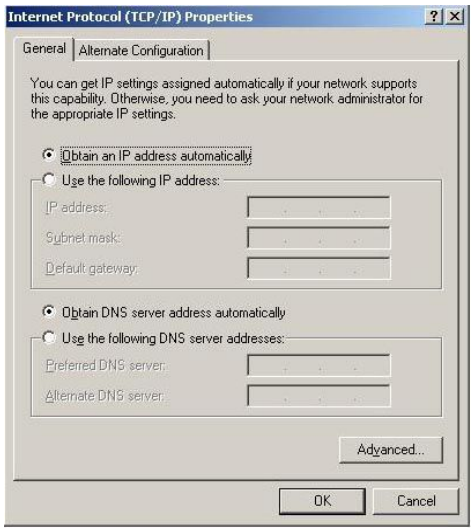


Figure 3

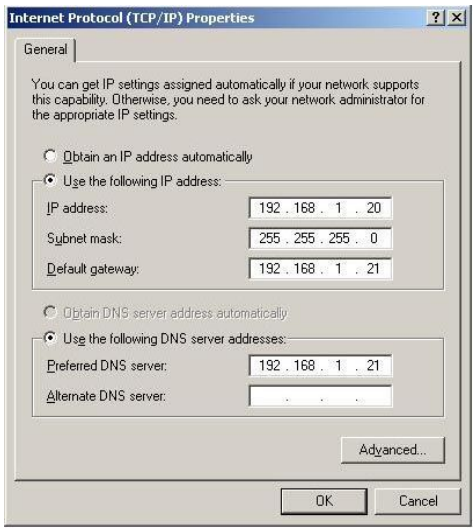


Figure 4

7.2.3 Keyboard Settings

Keyboard customization to suit the respective application	

This is not necessary with the BMS Graf pro visualisation software. The use of software from other sources must be checked in each individual case.

PS/2 Code zu 49600217

Hard-ware definition		Keycodes for level 0 Windows	Keycodes for level 1 BMS-Graf-pro	Keycodes for level 2 WinCC flexable	Keycodes for level 3 Rockwell
button	lettering	button	button	button	button
S1	F1	F1	F1	F1	F1
S2	F2	F2	F2	F2	F2
S3	F3	F3	F3	F3	F3
S4	F4	F4	F4	F4	F4
S5	F5	F5	F5	F5	F5
S6	F6	F6	F6	F6	F6
S7	F7	F7	F7	F7	F7
S8	F8	F8	F8	F8	F8
S9	F9	F9	F9	F9	F9
S10	F10	F10	F10	F10	F10
S11	F11	F11	F11	F11	F11
S12	F12	F12	F12	F12	F12
S14	Del	Del	Del	Del	Del
S15	Info-Key	Print-Screen	Print-Screen	Print-Screen	Print-Screen
S16	Shift	Shift Left	Shift Left	Shift Left	Shift Left
S17	Alt	Alt Left	Alt Left	Alt Left	Alt Left
S18	Ctrl	Ctrl Left	Ctrl Left	Ctrl Left	Ctrl Left
S19	7 ABC	Num 7	7 /	Num 7	Num 7
S20	8 DEF	Num 8	8 (	Num 8	Num 8
S21	9 GHI	Num 9	9)	Num 9	Num 9
S22	4 JKL	Num 4	4 $	Num 4	Num 4
S23	5 MNO	Num 5	5 %	Num 5	Num 5
S24	6 PQR	Num 6	6 &	Num 6	Num 6
button	lettering	button	button	button	button
S25	1 STU	Num 1	1 !	Num 1	Num 1
S26	2 VWX	Num 2	2 "	Num 2	Num 2
S27	3 YZ\	Num 3	3 §	Num 3	Num 3
S28	0 :()	Num 0	0 =	Num 0	Num 0
S29	.	Num .	.	Num .	Num .
S30	- Space	Num -	-	Num -	Num -
S31	Cursor left	Cursor left	Cursor left	Cursor left	Cursor left
S32	Cursor up	Cursor up	Cursor up	Cursor up	Cursor up
S33	Cursor right	Cursor right	Cursor right	Cursor right	Cursor right
S34	ESC	ESC	ESC	ESC	ESC
S35	Cursor down	Cursor down	Cursor down	Cursor down	Cursor down
S36	Num enter	Num enter	Num enter	Num enter	Num enter
S37	Windows button	Left GUI	Left GUI	Left GUI	Left GUI
S38	Kontex-menu	App	App	App	App
S39	Home	Home	Home	Home	Home
S40	F13	F13	m	Shift F1	Left Shift F1

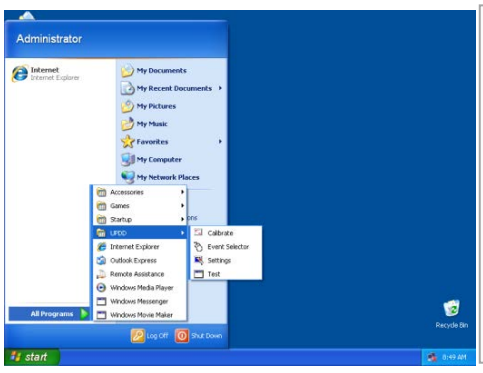
Hard-ware definition		Keycodes for level 0 Windows	Keycodes for level 1 BMS-Graf-pro	Keycodes for level 2 WinCC flexable	Keycodes for level 3 Rockwell
S41	F14	F14	n	Shift F2	Left Shift F2
S42	F15	F15	o	Shift F3	Left Shift F3
S43	F16	F16	p	Shift F4	Left Shift F4
S44	S1	Shift F1	a	Shift F9	Right Alt F1
S45	S2	Shift F2	b	Shift F10	Right Alt F2
S46	S3	Shift F3	c	Shift F11	Right Alt F3
S47	S4	Shift F4	d	Shift F12	Right Alt F4
S48	S5	Shift F5	e	Ctrl F1	Right Alt F5
S49	S6	Shift F6	f	Ctrl F2	Right Alt F6
S50	S7	Shift F7	g	Ctrl F3	Right Alt F7
S51	S8	Shift F8	h	Ctrl F4	Right Alt F8
S52	S9	Shift F9	i	Ctrl F5	Right Alt F9
S53	S10	Shift F10	j	Ctrl F6	Right Alt F10
S54	S11	Shift F11	k	Ctrl F7	Right Alt F11
S55	S12	Shift F12	l	Ctrl F8	Right Alt F12
S56	Computer-button	Scroll-Lock	Scroll-Lock	Scroll-Lock	Scroll-Lock
S60	TAB	TAB	TAB	TAB	TAB

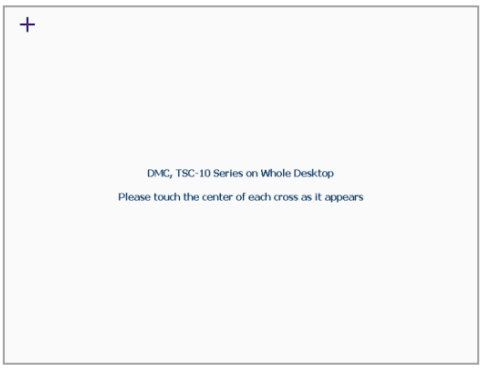
7.2.4 Touch Screen

In the POLARIS with touch screen, the touch screen software is pre-installed already. The touch screen software is available for download under
http://automation.bartec.de

Calibration

- Open the program by clicking on
- **Start> All programs> UPDD> Calibrate**.
- Follow the instructions.





The EWF must be deactivated first before the touch screen can be calibrated.

8. Operation

The device can be put into operation after the final check has been made.

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

8.1 Operating System

The POLARIS series are fully pre-installed with the Windows XP Embedded 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 (until 12/31/2015).

8.2 Autostart Menu / Download

Once the operating voltage has been applied, the POLARIS Touch Panel boots in XP Embedded. The user [administrator] is logged on automatically with a password [22021963] an input is not necessary. The Explorer starts, which in turn runs the Autostart menu in Autostart.

8.2.1 Autostart-Menu

Splash screen:

If no key is pressed, the last application selected is started, which can be:

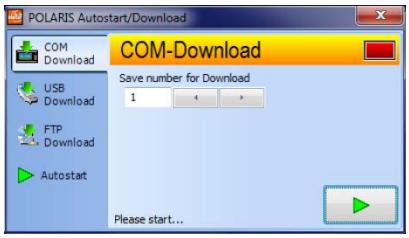
a: BMS-Graf-Runtime

b: Internet Explorer

c: Remote desktop

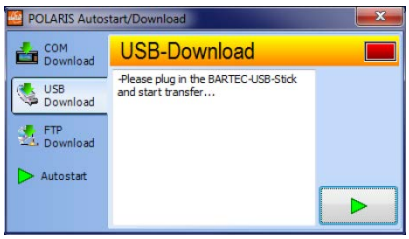
If a key is pressed or a mouse button clicked within 5 seconds of the appearance of the start screen, the following settings can be made:

Download the BMS-Graf-pro Project through the serial interface.



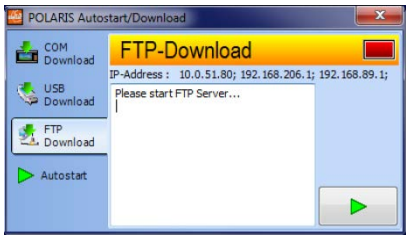
- ▶ Set the station number and activate the download server  .
- ▶ Start the transfer into BMS-Graf-pro.
- ▶ The BMS-Graf-Runtime starts automatically after the transfer.

Transfer of the BMS-Graf-pro project data from the BARTEC USB stick to the POLARIS



- Insert the BARTEC USB stick (containing BMS-Graf-pro) into the intrinsically safe USB port and start the transfer .
- The BMS-Graf-Runtime starts automatically if the project was transferred successfully.

Start the FTP transfer into the BMS-Graf-pro



- Start the FTP server.
- Once the FTP server has started after switching on, data can be transmitted at any time without the need to reboot the FTP server. It is only necessary to reboot the FTP after a system start-up.
- The BMS-Graf runtime ends automatically and starts again after transmission.

Setting of the application to be automatically started.

The standard application which is to start automatically immediately or the next time the device starts is selected from among the Autostart options. Parameters for the applications (Remote Desktop and Internet Explorer) must be set in the corresponding program-specific options.

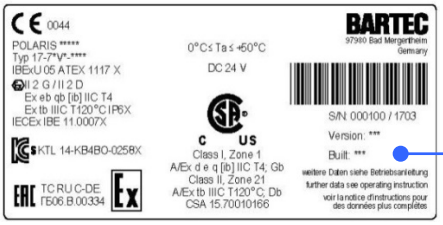
8.3 Recovery/Backup Function

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 and restoration

8.3.1 Recovery-Stick Image



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

Addition z. B. Built 384

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

8.3.2 Backup

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

We strongly recommend saving such a POLARIS backup on a "recovery stick"!

8.3.3 Backup on the USB Stick

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

8.3.4 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).

9. Faults and troubleshooting

Fault	Possible cause	Remedy
No display	Device has shut down.	Reboot the device.
	Power Save Mode / screen saver is switched on	Press any key.
	No voltage supply	Check voltage supply and external line fuse.
	Voltage present No current consumption	Internal fuse tripped Return to manufacturer
	Backlighting defective	Return to manufacturer Replace backlighting
	Device defective	Return to manufacturer
Windows doesn´t start	Faults in the operating system	Install the operating system again Recovery stick
There are always stripes on the display.	Display defective or CPU does not boot up.	Return to manufacturer.
Display turns on and off	Voltage supply faulty	The power from the power supply unit is too low. Supply line cross-section is too narrow.
Dark background	The backlighting is coming to the end of its service life.	Return to manufacturer. Replace the backlighting.
Project cannot be transferred with the USB stick.	Wrong USB flash drive (stick) used.	Check if the BARTEC Ex i memory stick is being used.
	No directory created on the USB flash drive.	See user manual for BMS-Graf pro V7.x.x.x http://automation.bartec.de

10. 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.

10.1 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.

10.2 Inspection

Under EN/IEC 60079-17 and EN/IEC 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.

10.3 Maintenance and repair work

Adhere to the applicable regulations under EN/IEC 60079-17 and EN/IEC 60079-19 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.

10.3.1 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

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

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

11. 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.

12. 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.

13. Accessories, spare parts

Included in the scope of the delivery:

Name				Order no.
POLARIS Touch Panel with Windows® XP Embedded				
Driver for Mainboard and Touch				
Mounting clamps				
Reinforcement frame	POLARIS 5.7"			05-0205-0006
	POLARIS 10.4"			05-0205-0008
	POLARIS 12.1"			05-0205-0007

Accessories/spare parts for POLARIS Touch Panels:

Name				Order no.
Visualization software	BMS-Graf-Pro 7			17-28TF-0075
Ex i memory stick				17-71VZ-5000/0100
Mounting clamps	4 pieces			05-0091-0111
	6 pieces			05-0091-0112
Input devices	Mouse			17-71VZ-1000
	Trackball			17-71VZ-2000
	Touchpad			17-71VZ-3000
	Joystick with button			17-71V2-9000
Connection cable	for mouse	1.8 m		05-0068-0163
		3.0 m		03-0068-0204
	for trackball/joystick	1.8 m		03-0068-0172
		3.0 m		05-0068-0205
	for touchpad	1.8 m		03-0068-0183
		3.0 m		03-0068-0206
Enclosure for floor mounting with stand				
	POLARIS 5.7"			07-56D7-9011/9002
	POLARIS 10.4"			07-56D7-9611/9002
	POLARIS 12.1"			07-56D7-9711/9002
Enclosure for wall mounting including mounting straps				05-0005-0050
	POLARIS 5.7"			07-56D7-9011/9001
	POLARIS 10.4"			07-56D7-9611/9001
	POLARIS 12.1"			07-56D7-9711/9001
Label strip	white DIN A4 sheet, for laser printer			03-3600-258
Hand-held scanner BCS 160^{ex}				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
Original packing	POLARIS 5.7"			04-9035-0004
	POLARIS 10.4"			04-9035-0005
	POLARIS 12.1"			04-9035-0006

14. Order numbers

POLARIS Touch Panel 5.7"

Selection chart

Version	Interfaces	Code no.
Touch Panel 5.7"	RS422	00
	BARTEC PROFIBUS-DP	02
	RS232	09
	TTY	11
	BARTEC PROFIBUS-DP, Ex d-USB	33
	RS422/Ex e USB	37
	Further Interface combinations on request	XX

Complete order no. 17-71V1-A0 ☐☐ /X000
Please insert correct code.

POLARIS Touch Panel 10.4"

Selection chart

Version	Interfaces	Code no.
Touch Panel 10.4"	RS422	00
	BARTEC PROFIBUS-DP	02
	RS422, supply module for hand-held scanners	04
	BARTEC PROFIBUS-DP, supply module for hand-held scanners	06
	RS232	09
	TTY	11
	RS232, supply module for hand-held scanners	13
	TTY, supply module for hand-held scanners	15
	BARTEC PROFIBUS-DP, Ex d-USB	33
	RS422/Ex e USB	37
	Further Interface combinations on request	XX

Complete order no. 17-71V1-90 ☐☐ /X000
Please insert correct code.

POLARIS Touch Panel 12.1"

Selection chart

Version	Interfaces	Code no.
Touch Panel 12,1"	RS422	00
	BARTEC PROFIBUS-DP	02
	RS422, supply module for hand-held scanners	04
	BARTEC PROFIBUS-DP, supply module for hand-held scanners	06
	RS232	09
	TTY	11
	RS232, supply module for hand-held scanners	13
	TTY, supply module for hand-held scanners	15
	BARTEC PROFIBUS-DP, Ex d-USB	33
	RS422/Ex e USB	37
	Further Interface combinations on request	XX

Complete order no. 17-71V1-80 ☐☐ /X000
Please insert correct code.

15. Additional information

Beständigkeitsliste –Polyester-Frontfolie
POLARIS-Serie

BARTEC

Seite 1 von 1

Die bei der POLARIS-Serie eingesetzte Polyester-Frontfolienmaterialien sind nach DIN 42115 Teil 2 gegen nachfolgend aufgeführte Prüfmittel beständig:

Alkohole
Äthanol
Cyclohexanol
Glykol
Glyzerin
Isopropanol
Methanol

Kohlenwasserstoffe
aliphatische Kohlenwasserstoffe
allgemein
Benzin
Benzol
Toluol
Xylol

Chlorkohlenwasserstoffe
Fluorchlorkohlenwasserstoffe
Perchloräthylen
III-Trichloräthan
Trichloräthylen

Ester
Äthylacetat

Sonstige organische Lösungsmittel
Äther
Diäthylformamid
Dioxan

Säuren	
Ameisensäure	< 50 %
Essigsäure	
Phosphorsäure	< 30 %
Salzsäure	≤ 10 %
Salpetersäure	≤ 10 %

Aldehyde
Acetaldehyd
Formaldehyd

Laugen	
Ammoniak	< 2 %
Natronlauge	< 2 %

Salzlösungen
Alkalicarbonate
Bichromate
Blutlaubensalze

Verschiedene Substanzen	
molekulares Chlor	
Kresolfenolseifen in Lösung	
Sauerstoff	
Trikresylphosphat	
Wasser	< 100 °C
Wasserstoffperoxid	< 25 %

Wasch-, Spül- und Reinigungsmittel
Kaliseife
Waschmittelösungen (Tenside)
Weichspüler

Technische Öle und Fette
Bohremulsion
Dieselöl
Firnis
Heizöl
Paraffinöl
Ricinusöl
Siliconöl
Terpentinöl und Terpentinölersatz

(Wenn nicht anders angegeben: Konzentration = 100%)

Polyesterfolien haben gegenüber UV-Licht eine beschränkte Resistenz und sollten deshalb nicht für längere Zeit direktem Sonnenlicht ausgesetzt werden.

D_BMS785.doc • Beständigkeitsliste Polyester-Frontfolie • Revision 1 / Stand: 18. Juli 2006 • Technische Änderungen vorbehalten

16. Declaration of conformity

EU Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de conformité

N° 11-71V0-7C0001_B

BARTEC
BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Wir	We	Nous
BARTEC GmbH,		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
POLARIS Serie	**POLARIS serie**	**POLARIS sèrie**
Typ 17-71V0-**/****** **Typ 17-71V1-****/****** **Typ 17-71V2-****/****** **Typ 17-71V3-****/****** **Typ 17-71VZ-****/******		
auf das sich diese Erklärung bezieht den Anforderungen der folgenden **Richtlinien (RL)** entspricht	to which this declaration relates is in accordance with the provision of the following **directives (D)**	se référant à cette attestation correspond aux dispositions des **directives (D)** suivantes
ATEX-Richtlinie 2014/34/EU **EMV-Richtlinie 2014/30/EU** **RoHS-Richtlinie 2011/65/EU**	**ATEX-Directive 2014/34/EU** **EMC-Directive 2014/30/EU** **RoHS-Directive 2011/65/EU**	**Directive-ATEX 2014/34/UE** **Directive-CEM 2014/30/UE** **Directive-RoHS 2011/65/UE**
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous

EN 60079-0:2012+A11 :2013
EN 60079-1:2007
EN 60079-5:2007
EN 60079-7:2007
EN 60079-11:2012
EN 60079-28:2007
EN 60079-31:2014

EN 61000-6-2:2005
EN 61000-6-4:2007
+A1 :2011
EN 60529 :1991
+A1 :2000 +A2 :2013
EN61010-1 :2010

Kennzeichnung	Marking	Marquage

Visualisierungsgerät
II 2G Ex eb qb [ib op pr] IIC T4 bzw
II 2G Ex db eb qb [ib op pr] IIC T4
II 2D Ex tb IIIC T120° C

Zubehör
II 2G Ex ib IIC T4
II 2D Ex ib IIIC T120° C

03-0383-0362

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EU Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de conformité

BARTEC

BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

№ 11-71V0-7C0001_B

Verfahren der EU-Baumuster-prüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié

IBExU 05 ATEX 1117 X
0637 IBExU, Fuchsmühlenweg 7, 09599 Freiberg, D

CE 0044

Bad Mergentheim, den 20.01.2017

i.V. Nader Halmuschi
BU Leiter

i.V. Michael Schulte
Leiter GW PZ

03-0383-0362

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All certificates see www.bartec.de

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