

**User Manual - TRANSLATION****POLARIS SMART HMI****POLARIS SMART HMI 7" W****Typ 17-71V6-1....****ATEX / IECEx****Zone 1 and Zone 21**

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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 (2014/34/EU, EN/IEC 60079-17 and EN/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.

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 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 and English. 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, EU Declaration of Conformity may be downloaded at [www.bartec.de](http://www.bartec.de) 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 SMART HMI has 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 II 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 2014/34/EU and the national applicable ordinances EN 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 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.

#### 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 4 "Technical Data".

The POLARIS SMART HMI conform to Directive 2014/34/EU 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 "Explosion protection and approvals".

### 1.8 Warranty

#### **WARNING**

**If components other than those specified are used, protection against explosion can no longer be assured.**

- ▶ Do not take any modifications or conversions on device.
- ▶ Use only original spare parts.



The manufacturer grants a complete warranty 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 from the BARTEC delivery date. 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 SMART HMI 7,0" W** is an innovative further development of the POLARIS series.

High-resolution displays with LED technology and touch screen for an intuitive and comfortable operation. It is available as capacitive or resistive touch model.

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



Illustration 1: POLARIS SMART HMI

The POLARIS SMART HMI 7,0" W has been equipped as standard with the third-generation processor, the Intel® Atom™ with 2x 1,46 GHz. The open Windows operating system makes the device series in the market unique. Working with the BMS-Graf-Pro is also possible.



A direct connection to the control or to the process control system is possible through Ethernet.

The intrinsically safe USB interfaces can be reached directly on the back.

Wired electrical connections are made via integrated terminal compartments.

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



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.

## 2.2 Schematic design

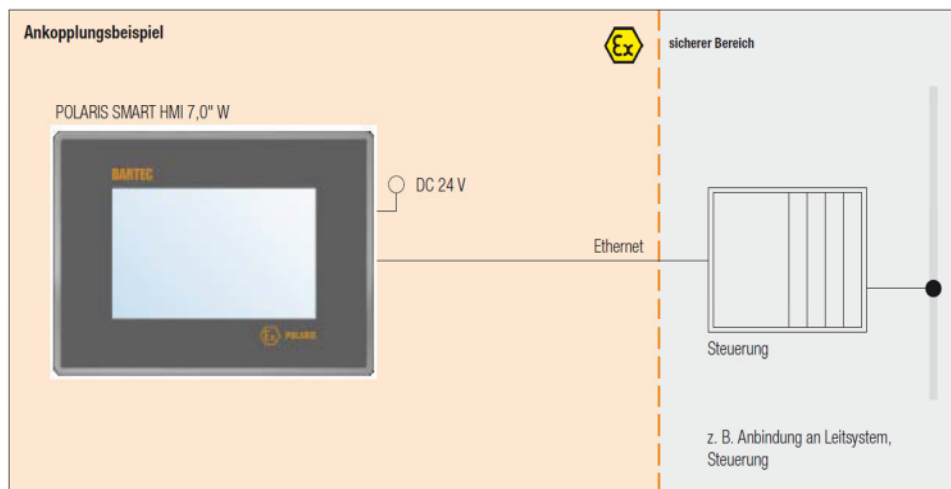





Illustration 2: System configuration

### 3. Explosion protection and approvals

POLARIS SMART HMI Type 17-71V6-1....	
<b>ATEX</b>	
<b>Ex protection type</b>	 II 2G Ex eb q [ib] IIC Gb bzw.  II 2D Ex tb IIIC T120° Db -20 °C ≤ Ta ≤ 60 °C
<b>Certification</b>	IBExU 05 ATEX 1117 X
<b>Standards</b> in accordance with EMC Directive 2014/34/EU	EN 60079-0:2012+A11:2013 EN 60079-5:2015 EN 60079-7:2015 EN 60079-11:2012 EN 60079-31:2014
<b>IECEx</b>	
<b>Ex protection type</b>	Ex eb q [ib] IIC T4 Ex tb IIIC T120 °C
<b>Certification</b>	IECEx IBE 11.0007X
<b>Standards</b> in accordance with EMC Directive 2014/34/EU	IEC 60079-0:2011 +modified+Cor.:2012+Cor.:2013      Edition: 6 IEC 60079-5:2015      Edition: 4 IEC 60079-7:2015      Edition: 5 IEC 60079-11:2011+Cor.:2012      Edition: 6 IEC 60079-31:2013      Edition: 2
 <b>Special conditions</b>	<p>The intrinsically safe circuits and the enclosure are galvanically connected. The equipotential bonding must be guaranteed at the installation of the intrinsically safe circuits.</p> <p>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).</p>

Further test certificates	
More test certificates	<a href="http://www.bartec.de">www.bartec.de</a>
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 POLARIS SMART HMI 7"



<b>Construction</b>	Front panel fitting
<b>Computer capacity</b>	<p>CPU Intel® Atom™ (E 3826), Dual Core with 2 x 1,46 GHz, RAM: 2 GB, 4 GB internal flash drive</p> <p>Optional: CPU Intel® Atom™ (E 3826), Dual Core with 2 x 1,46 GHz, RAM: 4 GB, 16 GB internal flash drive</p> <p>Hard-drive SSD with 128 GB (MLC) Optional: 100 GB (Hard disk industry)</p>
<b>Operating system</b>	<p>Windows® 10 IoT or Windows 7® Ultimate or Windows 7® Embedded or Open platform for customer-specific visualization software, e. g. ProTool, WIN CC flexible, etc. for BMS-Graf-pro Version 7</p>
<b>Display</b>	<p>7" W TFT colour display, 262.144 colours WVGA resolution, 800 x 480 pixels Brightness 500 cd/m² Visible surface approx. 152,4 x 91,4 mm Contrast 600:1, Antireflection coating glass pane</p>
<b>Touch</b>	<p>- kapazitiv, non-reflektingi through Bonding alternative: - resistive touch display (film touch)</p>



<b>Power supply</b>	DC 24 V $\pm$ 10 %
<b>Max. power consumption</b>	P <sub>max.</sub> (inkl. USB) < 25 W P <sub>max.</sub> (without USB) < 20 W Normal use without USB approx. 12,5 W
<b>Relative air humidity</b>	5 to 95 % non-condensing
<b>Vibration</b>	0.7 G/1 mm; 5 Hz-500 Hz pulse in all 3 axes
<b>Schock</b>	15 G, 11 ms pulse in all 3 axes
<b>Material</b> Front  Rear panel	Resistive: Polyester foil on anodised aluminium plate (conditionally UV-resistant) Kapazitive: hardened glass front Stainless steel
<b>Protection class</b> Front Rear site	IP65 according to EN/IEC 60079-0 IP65 according to EN/IEC 60079-0
<b>Optional approved accessories</b>	Keyboard Ex i memory stick Smart USB Device WLAN Smart USB Device Bluetooth
<b>Interface</b> (Basic version)	1 x Ex e Ethernet 100/10BaseT 2 x Ex e USB 2,0 2 x Ex i USB 2,0
<b>Permissible ambient temperature</b> Storage Operation  Optional	-20 °C to +60 °C 0 °C to +50 °C  Operation -20 °C to +60 °C
<b>Backlighting</b>	CFL technology, Service life approx. 50,000 hours (at +25 °C)
<b>Dimensions</b> (width x height x depth)	240 mm x 170 mm x 80 mm
<b>Wall cut-out</b> (width x height)	226 mm x 153 mm, Mounting in any position
<b>Weight</b>	approx. 4,8 kg

## 4.2 Keyboard



### 4.2.1 Description

The intrinsically keyboard of the SMART HMI 7" is intended for zone 1 and 2, as well as for zone 21 and 22.

The keyboard is connected to the intrinsically USB socket, besides, it can be connected to the complete POLARIS series.

The complete stainless steel keyboard can be also used in industrial extreme terms (nearly insensitive against effect of violence) and offers with the long hub keys a high ease of use. The keyboard is available in different languages.

### 4.2.2 Explosion Protection

<b>Type</b>	17-71VZ-C01*/0000
<b>Ex protection type ATEX</b>	 II 2G Ex ib IIC T4 Gb  II 2D Ex ib IIIC T120°C Db -20 °C ≤ Ta ≤ +60 °C
<b>Certification</b>	IBExU 05 ATEX 1117 X
<b>Ex protection type IECEx</b>	Ex ib IIC T4 Ex ib IIIC T120 °C
<b>Certification</b>	IECEx IBE 11.0007X
<b>More test certificates</b>	<a href="http://www.bartec.de">www.bartec.de</a>

### 4.2.3 General Data



<b>Construction</b>	Front panel fitting
<b>Material</b>	Stainless steel
<b>Protection class</b> (front)	IP65
<b>Dimensions</b> (width x height)	250 mm x 135 mm
<b>Wall cut-out</b> (width x height)	235 mm x 110 mm
<b>Installation depth</b>	32 mm
<b>Interface</b>	PS/2, USB
<b>Other features</b>	Keyboard available in various languages, with 62 buttons

## 4.3 Ex i Memory Stick



USB-Stick admitted for Agile X IS and POLARIS SMART HMI 7".



### 4.3.1 Explosion Protection

Type	17-A1Z0-0007
Ex protection type ATEX	II 2G Ex ib IIC T4 Gb -20 °C ≤ Ta ≤ 60 °C
Certification	DEMKO 16 ATEX 1803 Rev. 0
Ex protection type IECEx	Ex ib IIC T4
Certification	IECEX UL 16.0160
More test certificates	<a href="http://www.bartec.de">www.bartec.de</a>



Type	17-71VZ-5100/02**
Ex protection type ATEX	II 2G Ex ib IIC T4 Gb -20 °C ≤ Ta ≤ 60 °C
Certification	IBExU 05 ATEX 1117 X
Ex protection type IECEx	Ex ib IIC T4
Certification	IECEX IBE 11.0007X
More test certificates	<a href="http://www.bartec.de">www.bartec.de</a>

### 4.3.2 General Data

Product type	USB flash drive
Storage capacity	8 GB/16 GB
Dimensions (length x width x depth)	ca. 34 mm x 11 mm x 4 mm
Weight	<15 g
Enclosure material	Plastic/Sheet Steel
Use	Data backup and Ex i recovery stick

## 4.4 USB Smart Device

### 4.4.1 Explosionsschutz

Type	17-71VZ-A0x0/0000
Ex protection type ATEX	 II 2G Ex eb mb IIC T4 Gb  II 2D Ex tb IIIC T120 °C Db
Certification	IBExU 05 ATEX 1117 X
Kennzeichnung IECEx	Ex eb mb IIC T4 Ex tb IIIC T120 °C
Certification	IECEx IBE 11.0007X
Possible ambient temperature	-20 °C bis + 60 °C
Protection class	IP 66 (threaded base)



Suitable for the installation in 2G-, 2D-, 3G- or 3D enclosure. Connection via USB Ex-e.

### 4.4.2 Technical data

Fastening	M30 x 1,5 (suitable for fixing holes 30,3mm)
Installation	Wall thickness 1mm to 6mm impact resistance: 7Nm
Torque of panel nut	2,8 to 3,4 Nm
Material	Enclosure thermoplastic

#### Dimensions

Technical drawing showing three views of the device: top, side, and front. Dimensions A, B, C, D, and E are indicated with arrows. A is the vertical distance from the top of the device to the center of the fixing hole. B is the vertical distance between the top and bottom of the device. C is the horizontal distance between the center of the fixing hole and the center of the device. D is the diameter of the fixing hole. E is the horizontal distance from the center of the device to the center of the fixing hole.

	mm	in
A	70	2.8
B	16,5	0.65
C	Ø 30,3 <sup>+0,3</sup>	Ø 1.9 <sup>+0,01</sup>
D	3	0.12
E	40	1.6

Fixing hole of the size Ø 30,3 mm (1.9 in) with recess for anti-twist safeguard, typical position on top (12 o'clock position).

Minimum distances of the fixing holes:

- horizontal 40 mm (1.6in)
- vertical 70 mm (2.8 in)

Recommended distance for mushroom push button, shock switch as well as selector switch with protective collar: 100 mm (3.9 in)

#### 4.4.3 Electric data (USB standard)

USB-connection	Colour	Function
1	RD	V+
2	WH	Data- USB-data signal
3	GN	Data+ USB-data signal
4	BK	V-

#### Bluetooth



#### 4.4.4 Technical data (Bluetooth)

<b>Bluetooth</b>	4.0
<b>Downward compatible</b>	2.0 / 2.1 / 3.0
<b>Range</b>	Up to 10m (free terrain)
For more technical data see description of the bluetooth-stick manufacturer.	

#### WLAN

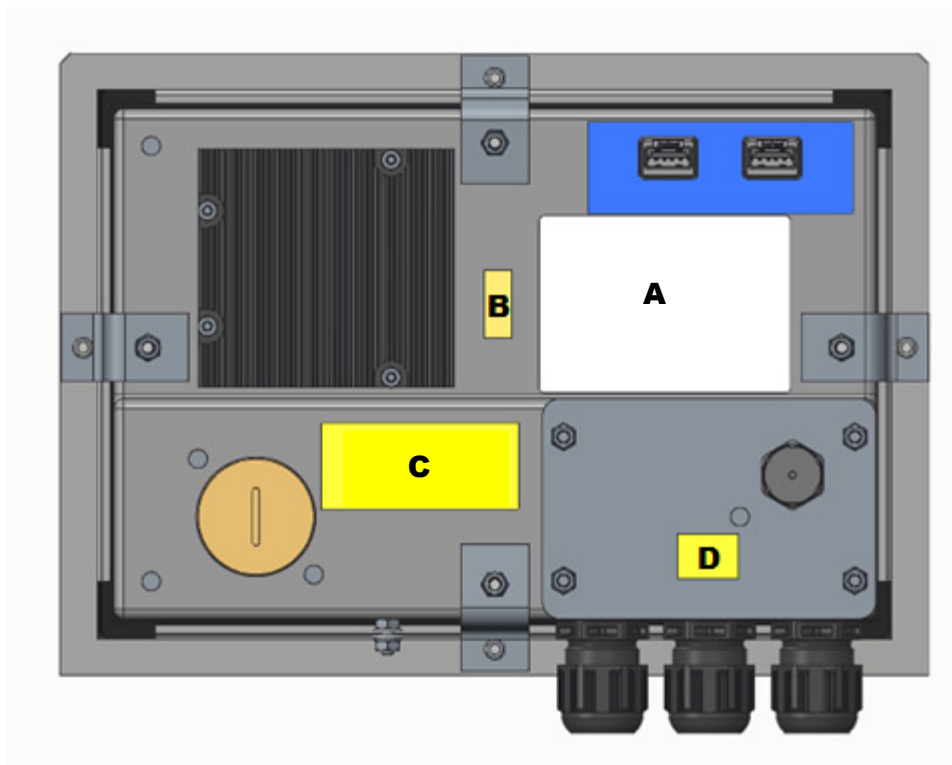
For the wireless network connection.



#### 4.4.5 Technical data (WLAN)

<b>Wifi - standard</b>	IEEE802.11n IEEE802.11g IEEE802.11b
<b>Transfer rate</b>	max. 150 Mbit/s
<b>WLAN - frequency</b>	2.4 GHz
For more technical data see description of the W-LAN-stick manufacturer.	

## 4.5 Product Labelling



<p><b>A</b></p> <p>Type label</p>	<p>Type of device, e.g. SMART HMI</p> <p>Type number</p> <p>Production number in Code 39</p> <p>Production number, enter production year and kw e.g. 000100/1713</p> <p>Version e.g. 1.0</p> <p>Appendix e.g. Built 384</p>
<p><b>B</b></p> <p>Licence sticker</p>	<p>depending on the operating system</p>
<p><b>C</b></p> <p>Warnings on the device</p>	
<p><b>D</b></p> <p>Warnhinweis auf Klemenraum!</p>	

## 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 (approx. 4,8 kg).

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

### 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 SMART HMI
- 1 x Reinforcement frame
- 1 x Set of mounting clamps
- 1 x User manual POLARIS SMART HMI

**Not enclosed:**

- Assembly Material,
- Cable for voltage supply and data line

#### 5.3.1 Accessories optional

- Keyboard, Smart Device, USB-Stick
- Enclosure and supporting system for wall, floor and table mounting

## 5.4 Assembly

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

<b>Required</b>	POLARIS - mounting clamps
<b>Tools:</b>	1 x hex key 3 mm
	1 x socket wrenches 7 mm
	POLARIS – terminal compartments-
	1 x socket wrenches 7 mm
	1 x slotted screwdriver
	POLARIS - PE-connection
	1 x socket wrenches 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, floors or tables.

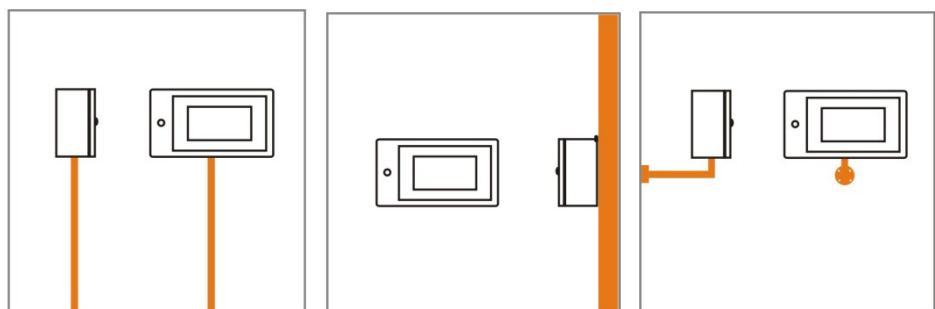


Illustration 3: Examples of floor and wallmounting in an enclosure



## 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 SMART HMI is approved for an ambient temperature 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.

### 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

### COUTION

**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

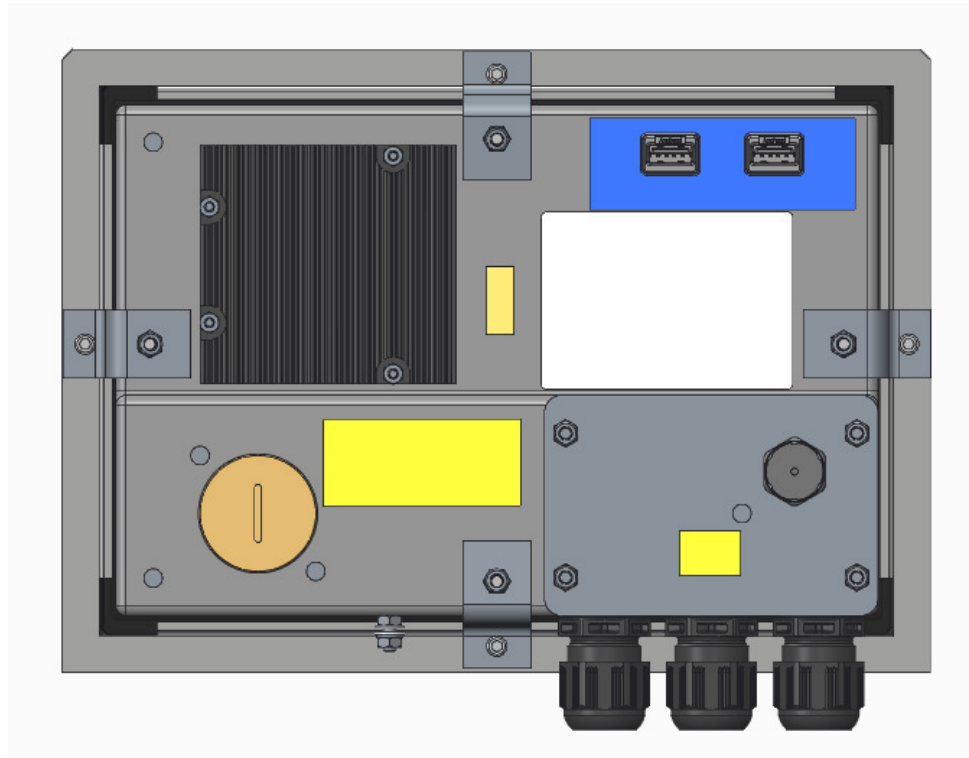
##### **⚠ CAUTION**

**This device is heavy (approx. 4,8 kg).**

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



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.



*Illustration 4: Rear panel*

### 6.2.1 Installation i 2G-/3G-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**

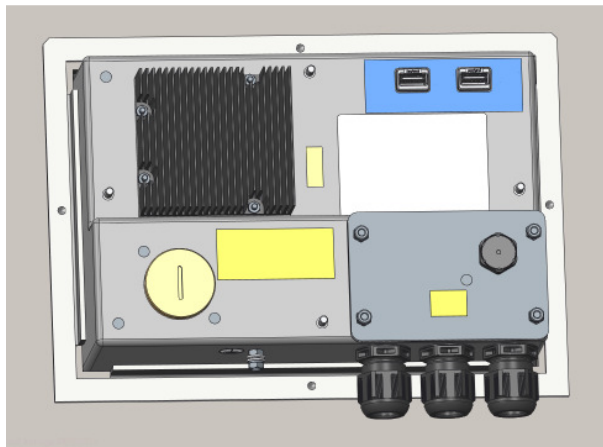
**If there is no reinforcement frame, it will not be possible to maintain the IP protection. There is a risk of fatal injury in an explosive atmosphere!**

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

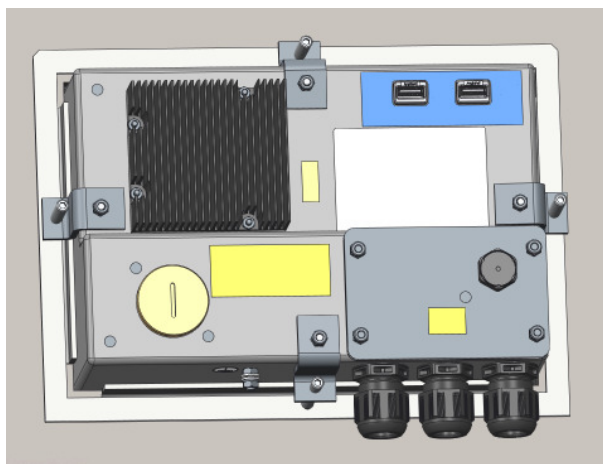
## 6.2.2 Mechanical fitting


### 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 1.3 Nm.
- (4) Tighten the clamping screw (3) of the mounting clamps to a torque of 1.0 Nm.



	Number of retaining claws	
	POLARIS SMART HMI 7"	4 pieces



Always tighten the mounting clamps crosswise.

## 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 Rear panel overview

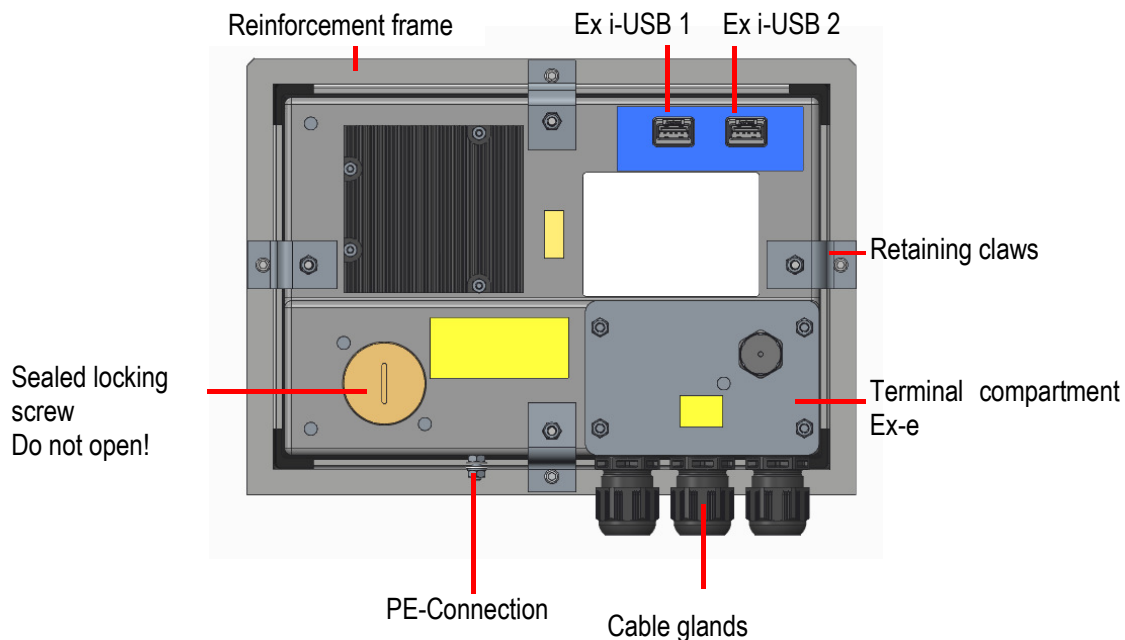


Illustration 5: Rear panel overview

### **⚠ 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.

### **⚠ DANGER**

**Terminal compartment is not closed properly with the terminal compartment lid.**  
**There is a risk of fatal injury in an explosive atmosphere!**

- Close the terminal compartment with the terminal compartment lid properly!

## 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 mm<sup>2</sup> 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.

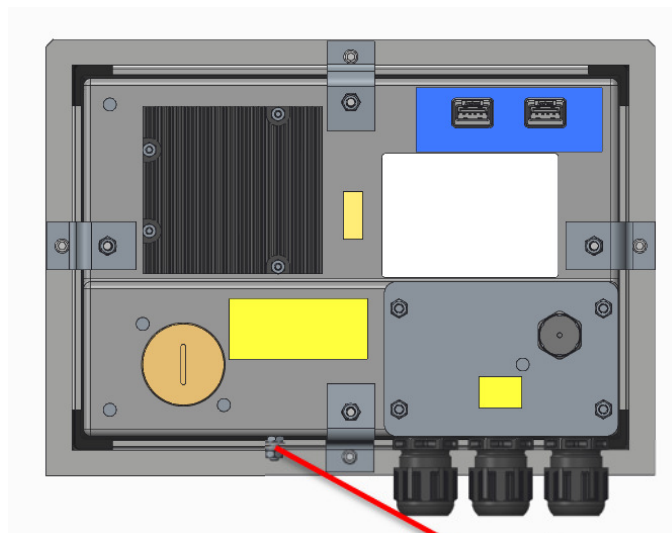
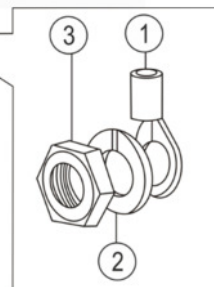


Illustration 6: PE conductor connection POLARIS



#### Work steps:

- Push non-sheathed cable with PE cable lug (1) on to earthing stud.
- Position spring washer (2) on threaded bolt and secure with hexagonal nut (3), max. torque: 2.9 Nm.
- 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 6.7.5)

## 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 of the 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!**

- ▶ Disconnect the device before starting work.
- ▶ Only use certified cable glands that have been approved for the cable diameter of the connection cable.
- ▶ Unused cable glands must be sealed using an approved blanking plug.



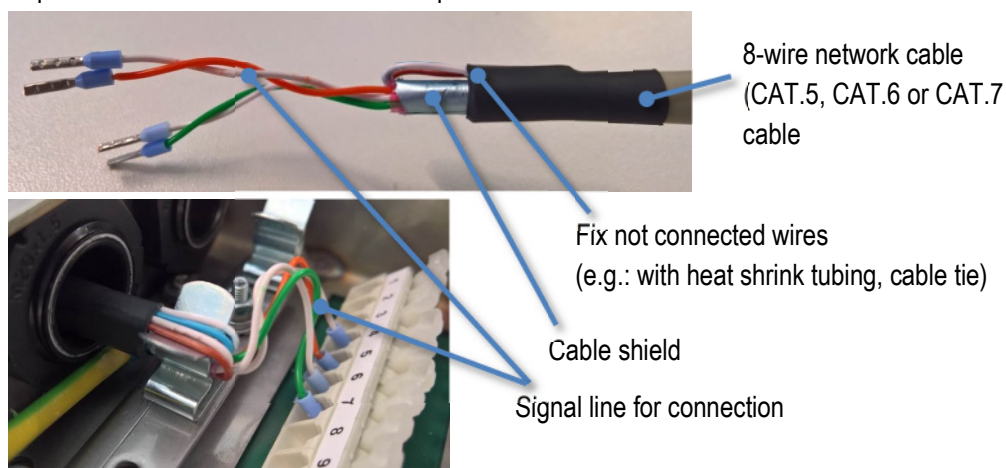
### 6.6.2 Supply voltage terminal assignment)

Mains Connection Variant DC 24 V			
Terminal	Interface	Signal	Remarks
1	Supply	+	DC 24 V $\pm$ 10 %
2	Supply	-	0 Volt
3	Supply	PE	Protective earth

### 6.6.3 Ethernet Terminal Assignment

Configuration Ethernet			
Terminal	Interface	Signal	Remarks
4	Ethernet	RxD +	100/10 BaseT Receive positive
5	Ethernet	RxD -	100/10 BaseT Receive negative
6	Ethernet	TxD +	100/10 BaseT Transmit positive
7	Ethernet	TxD -	100/10 BaseT Transmit negative

Clip the cable shield into the shield clamp.



### Assignment RJ45 plug for Ethernet to POLARIS terminal block



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



## 6.6.4 Interface 2x USB (max.480 mA)

Configuration USB		
Terminal	Interface	Signal
8	USB 3	V+
9	USB 3	Data- USB-data signal
10	USB 3	Data+ USB data signal
11	USB 3	V-
12	USB 4	V+
13	USB 4	Data- USB-data signal
14	USB 4	Data+ USB-data signal
15	USB 4	V-

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

	Plug Type A	Socket Type A
	4 3 2 1	1 2 3 4
	Plug Type B	Socket Type B
	1 2 4 3	2 1 3 4
USB connection	Colour	Function
1	RD	V+
2	WH	Data- USB-data signal
3	GN	Data+ USB-data signal
4	BK	V-



The maximum length of a lead should not exceed 1.5 m.  
Maximum current: 450 mA.

## 6.6.5 2 x Ex i USB-interface

USB socket4-pole, Type A**ATTENTION**

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

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

### Interfaces Ex-i USB 1 and Ex i USB 2

#### Extension of the USB by use of a protective case (IP20)

Only admitted accessories are allowed to connect.

(see Chapter Accessories, spare parts)



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 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 mm<sup>2</sup> LIYCY TP.

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

### 6.7.1 Voltage Supply (AC- and DC-Variants)

A regulated mains adapter with an output of at least 2 A must be used as power supply. It is not permitted to fall below or exceed the power supply of DC 24 V ± 10 % at the installation site. The voltage drop on the supply line must be observed and corrected where necessary.

The voltage drop on the supply line is calculated according to the following equation:

$\Delta U$	Voltage drop on the supply line at power supply voltage of DC 24 V	Max. 2.4 V
$\Delta U$	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	25W/24V → probably 1,5 A
$A$	Cable cross-section of the supply line	
$\kappa$	Specific conductance of copper	$56 \frac{m}{\Omega \cdot mm^2}$
$l$	Length of the supply line (consider both the outgoing and return line)	

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

Examples	Cable-cross-section	Maximum line length
Supply voltage DC 24 V	0,75 mm <sup>2</sup>	approx. 67 m
	1,5 mm <sup>2</sup>	approx. 134 m
	2,5 mm <sup>2</sup>	approx. 224 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.

### 6.7.2 Back-up fuse

The POLARIS SMART HMI with DC 24 V is internally protected by a 2 A fuse. The fuse can trip in the case of voltage drops or undervoltage.

Internal fuse		I <sup>2</sup> value	External fuse	
<b>Siba</b> <b>2 A T</b>	1500A@250V AC/DC	13 A <sup>2</sup> s	Siba Type 179021 1.6 A F	1500A@250VAC
			2.0 A F	1500A@250VAC



We recommend protecting the POLARIS with an upstream fuse to prevent blowing the fuse inside the device. Only BARTEC can change the internal fuse.

Back-up fuse DC: 4 A quick-acting.

The I<sup>2</sup> value is to be observed for other versions of the fuses.

### **6.7.3 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.

### **6.7.4 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.

### **6.7.5 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 mm<sup>2</sup> ... 1.5 mm<sup>2</sup>).

### 6.7.6 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:

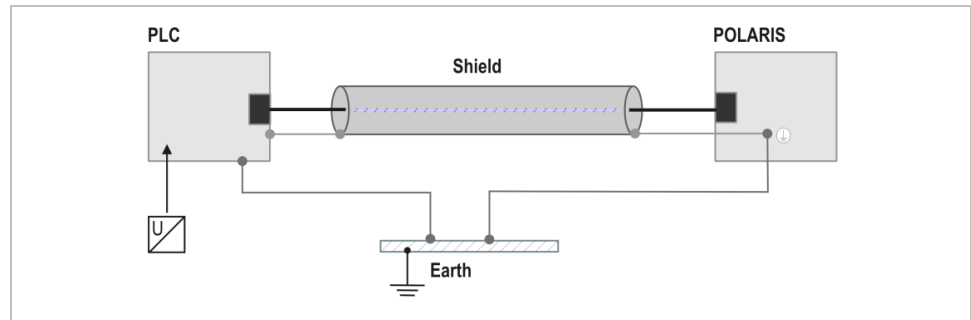


Illustration 7: Example of double-sided shield connection

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:

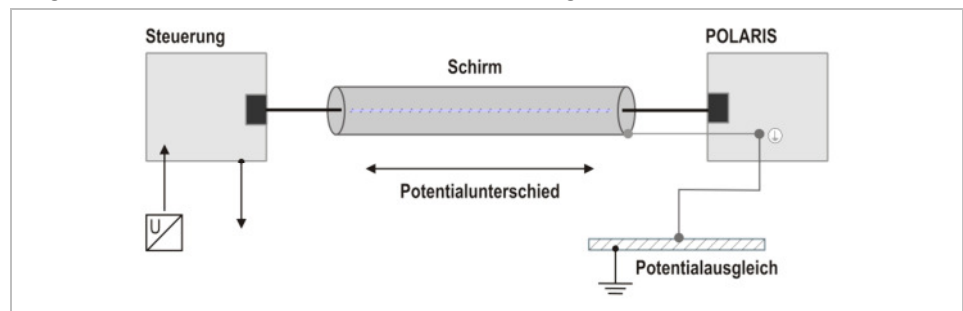


Illustration 8: Example of single-sided shield connection

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.

## **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 external 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?
- 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.

## 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 devices have the Windows 7 Embedded MUI, the Windows 7 Ultimate or the Windows 10 IOT operating system pre-installed. The licence sticker is located on the back of the POLARIS, beside the type label. According to the licence for Windows 7 Ultimate, Windows 7 Embedded and Windows 10 IOT, it is not permissible to use this system as an office PC.

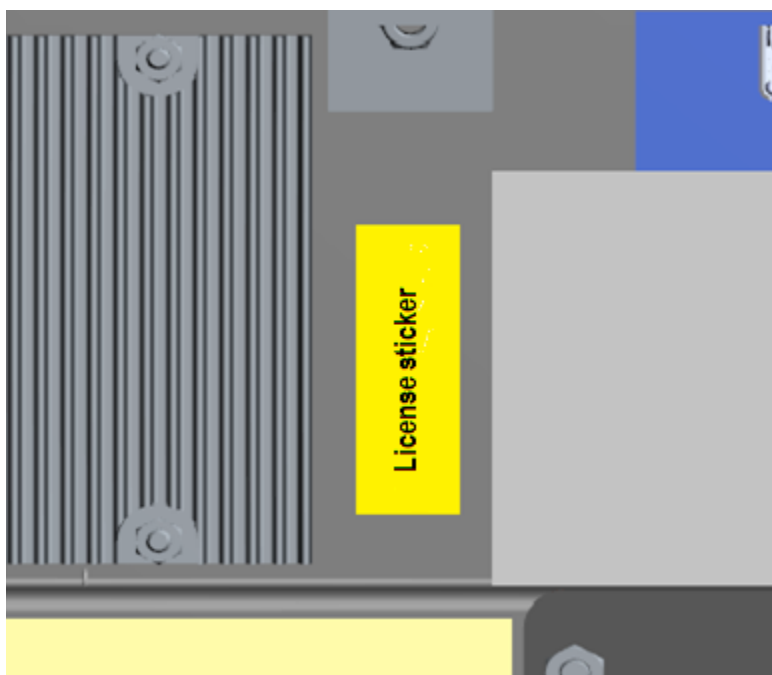


Illustration 9: License sticker

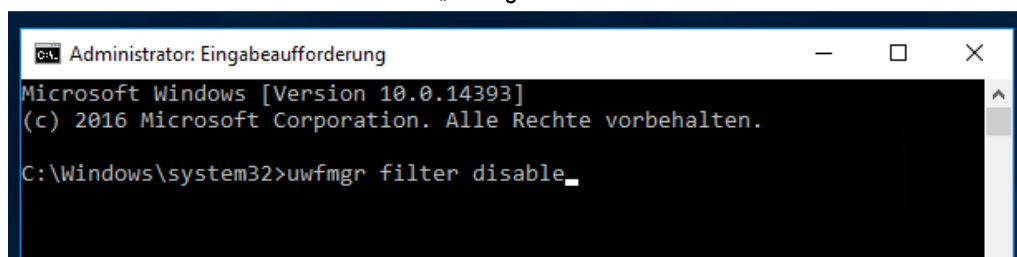


## 8.2 Commissioning Software

## 8.3 Windows 10 IOT

The devices are delivered with active writing filter (UWF). This UWF prevents that changes in the disk drive C: can be made.

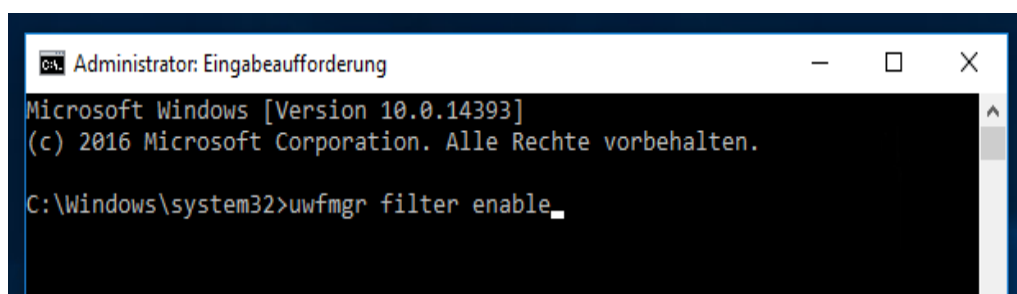
To carry out changes the UWF must be deactivated. Moreover Command Prompt (CMD) must be started as an administrator and „uwfmgr filter disable“ executed.



After a reboot the UFW is deactivated and changes in the system can be protected.

The turn on the UWF's is proceed as follows:

Start the Command Prompt (CMD) as an administrator. After the reboot of the device the command „uwfmgr filter enable“ activates the writing filter.



After the reboot the device is protected again.

Important:

- 1) To install a windows update, update a virus data bank and for changing other settings the UWF must be switched off. It can also cause problems if an applications package want to be saved on disk drive C:. In the worst case the RAM-Overlay (buffer of the changes of disk drive C:) can overrun which hinders the implementation of the applications.
- 2) Ist he UWF not activated switching off can lead to destruction of parts of the operating system up to the impossibility of another starting of the device.

## 8.4 Windows 7 Ultimate

By first introduction the operating system must be installed for the user, please follow the instructions on the screen.



The Windows 7 Ultimate operating systems do not support EWF!

## 8.5 Windows 7® Embedded MUI

### 8.5.1 EWF (Enhanced Write Filter)

#### What is EWF?

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

#### What is the as-delivered condition?



The Windows 7® Embedded MUI are supplied with an activated EWF (Enhanced Write Filter).

The data carrier that is used is divided into:

#### Partition C

boot drive with operating system protected by EWF

#### Partition D

application data (e.g. 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

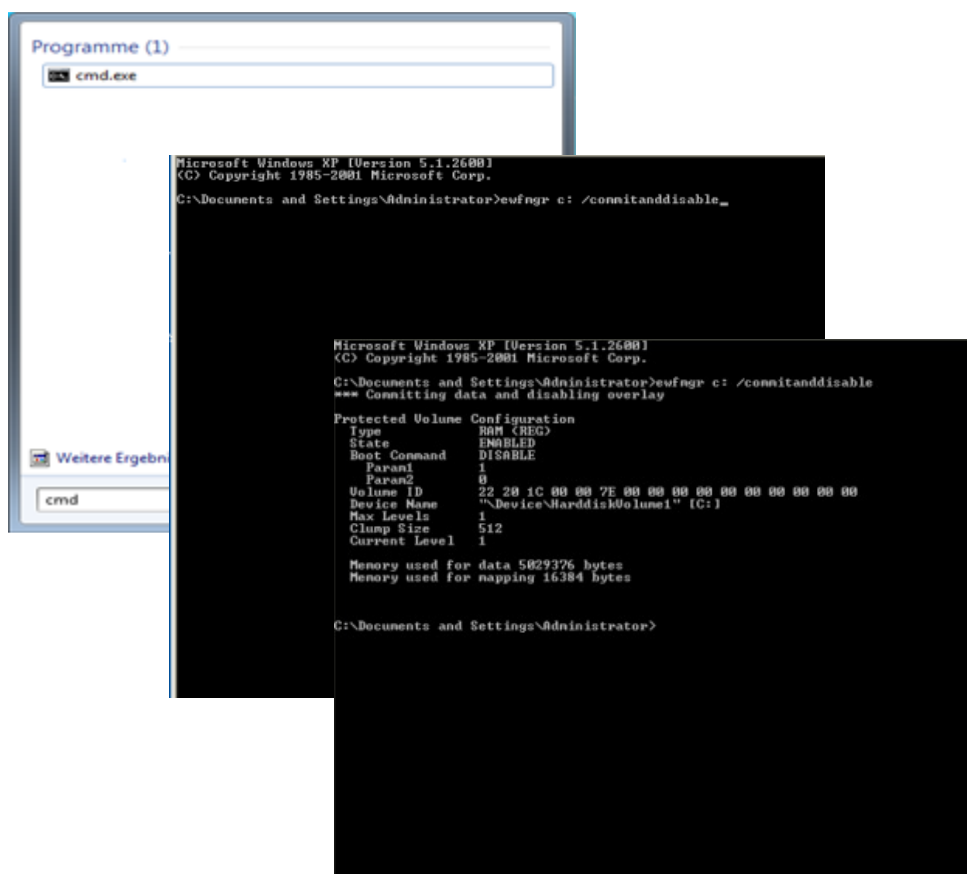
Switching off when the EWF is deactivated can cause a loss of data inside the operating system!

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

### Deactivating the EWF

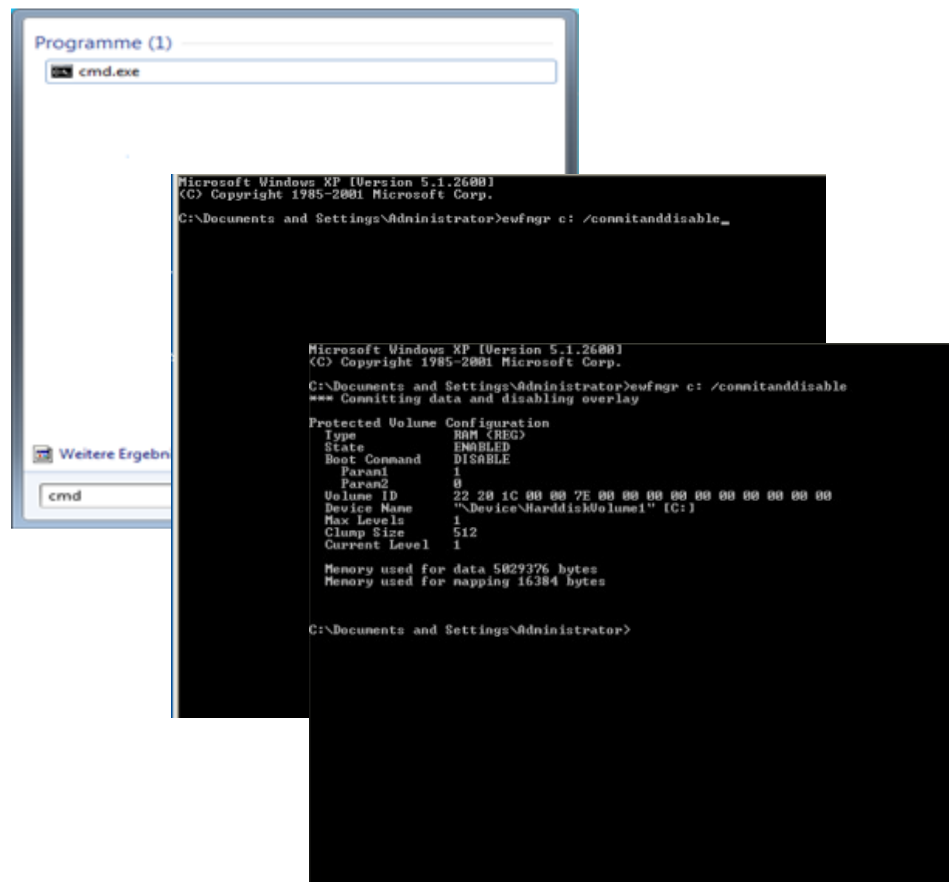
- Select "CMD" in the START MENU.
- Enter the "ewfmgr c: /commitanddisable" command line into the command window.
- Confirm with the "Enter key".
- Reboot the system.
- EWF is disabled

Changes/settings can be made in the operating system.



**Activating the EWF**

- Select "RUN" in the START menu.
- Enter CMD In the command field.
- Confirm with "OK".
- Enter the "ewfmgr c: /enable" command line into the command window.
- Confirm with the "Enter key".
- Reboot the system.
- EWF is active



## 8.6 Onboard Bartec Recovery Solution

### 8.6.1 Bartec Recovery Solution

The Bartec HMI Polaris Smart devices are equipped with an On-Board-Recovery solution. The Bartec Recovery is a software package preloaded on the devices which serves the disregard of the device in the work state. In case of a mistake every device can be booted up in the Recovery mode to move afterwards the operating system into the work state.

No other software is necessary for the restoration. The Recovery service already disposes of all necessary program routines or the Recovery-Wizard to play in the operating system anew. The process can be carried out any time if necessary also on site. The duration of the process amounts approx. 25 minutes.

### 8.6.2 Start of the device in the Recovery mode

To change in the Recovery mode, one must press the F6 key while booting up the device. This possibility is available for approx. 10 sec. During this time the announcement "**Press F6 key to start Bartec Recovery**" appears on the screen.

#### ATTENTION

**All data on Windows partition are definitely extinguished during the recovery of process!**

► All self-provided data or use data should be protected from starting the recovery.

For the Recovery mode the hard disk contains a hidden partition to the storage of the Recover engine and the image file (effigy of the operating system). If the Recovery partition exists not any more or is damaged, the device can be restored only from an external medium or USB Flash drive.



The hidden partition is approx. 10 GB. That's why the available storage space on the hard disk is lower than the given capacity.

### 8.6.3 Recovery surroundings

The Recovery mode bases on a slender Windows operating system or so-called PE surroundings (Windows Preinstallation Environment). Besides, Windows starts only with a basic equipment of services and drivers.

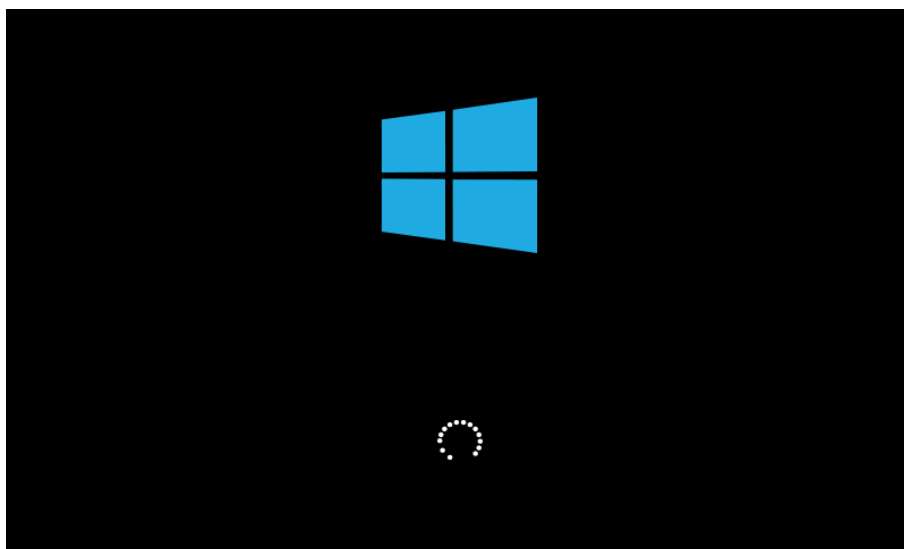


Illustration 10: Start Windows PE.

As soon as the surroundings are completely loaded and are ready for use, the Recovery engine will check in the background whether the applications necessary for the device, tools and drivers exist. All information about internal expiries is indicated in the window CMD.

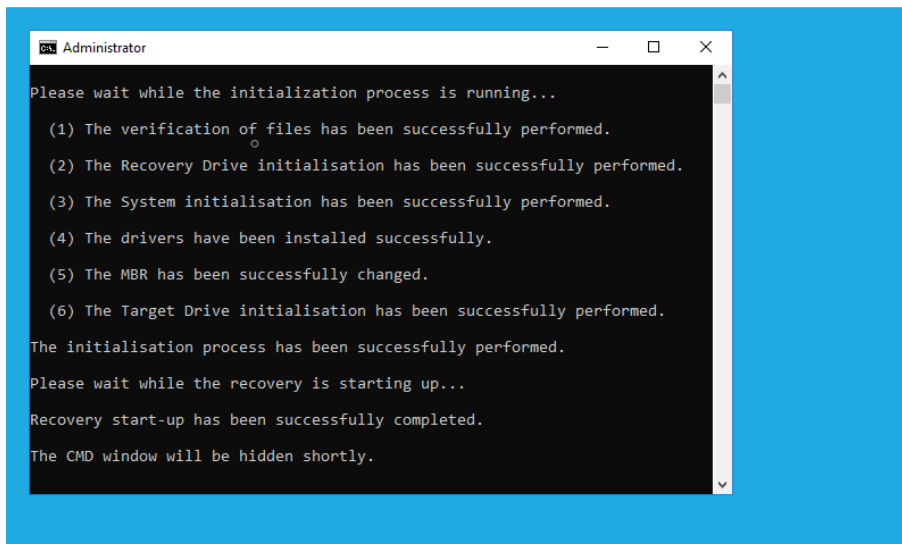


Illustration 11: CMD window with information

#### 8.6.4 4. Recovery application

Should the check be concluded successfully, the Recovery application is begun (besides, the window CMD is automatically closed). Before the restoration of the device in the work state must be agreed Microsoft software Licence terms interactively.

In case of Windows 7 Embedded of operating system (Ultimate or standard) the licence terms on Windows 7 Embedded family are indicated in the window. In case of Windows 10 IoT of operating system the licence terms on Windows 10 IoT family are to be seen.

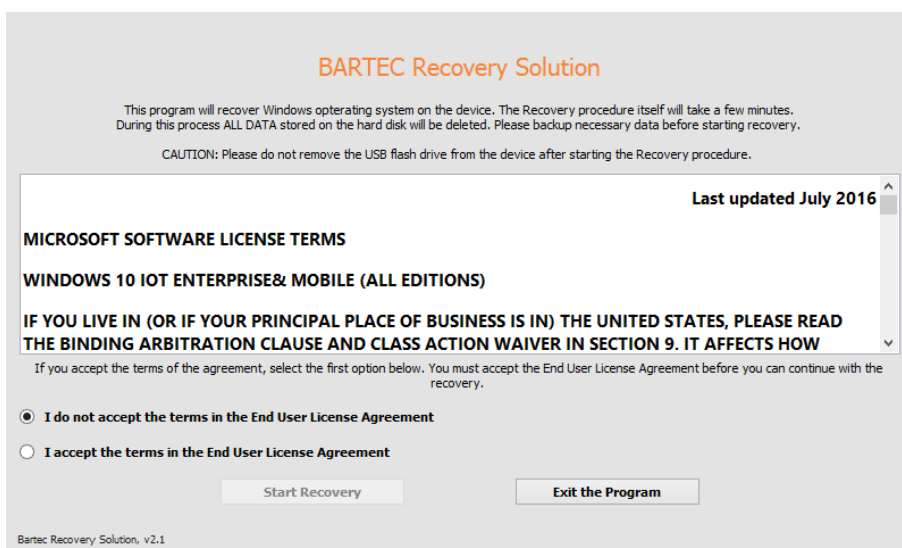


Illustration 12: Licence terms

To accept the licence terms, the option **"I accept the terms in the End User License Agreement"** must be activated or be selected. The button "Start Recovery" is released enclosed. With confirming the Recovery process is begun.



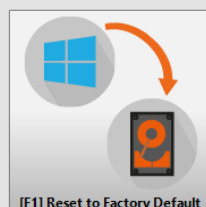
All other pictures in the instructions refer to Recovery of Windows 10 IoT Enterprise of operating system. In case of the restoration of Windows 7 Embedded Ultimate or standard of operating system the pictures look similar. Besides, all background expiries are identical, with the differences it is only about inscriptions.



The operation (navigating over window, selecting and activation of tax elements etc. ) takes place via keyboard input and mouse or Track ball-Clicks as well as by Touch.

In the next window all available Recovery functions are listed. In the upper area of the window there is information about the operating system which is played in by the Recovery programme. In the middle area there are the Recovery functions. Should all conditions be given, the function is active. Otherwise the function remains inactive.

## Windows 10 IoT Enterprise for POLARIS HMI



Bartec Recovery Solution, v2.1

*Illustration 13: Choice of functions*



If the Recovery is started by an external medium, there is beside the function to move the device into the work state also other functions for backup or restoration from the available backup. It enables therefore to provide an effigy of a running and preconfigured operating system if necessary also and to play in back in the case of a mistake.

### 8.6.5 Restoration in the work state

With confirming the function with all matching background processes is begun immediately or without following security queries.

**ATTENTION**

**With starting the restoration of the operating system in the work state all data on the operating system partition get lost!**

- Contents and format of all other partitions on the hard disk are preserved consistently.

In the upper area of the window the inscription of the well-chosen function is indicated. In the next line – the inscription of the already running background process. Should a process be computable, the proportional issue appears in the next line how far the process is already concluded. As a rule all time-luxurious processes are computable. The progress beam in the middle of the window returns the graphic picture of the percent value. For the processes without percent issue the progress beam is indicated in the uncertain form.

**ATTENTION**

**All background processes are automated completely, therefore no intervention is necessary. In addition, some background processes run in s. g. Single fashion or they are sensitive to the other parallel processes and to Interrupts of external periphery devices!**

- To avoid the interruptions of all kind, should take place during the process no keyboard input, mouse, track ball-Clicks as well as no touching of the screen.

The Recovery begins with verifying (Calculate and comparisons of the test sum) to the available effigy file.

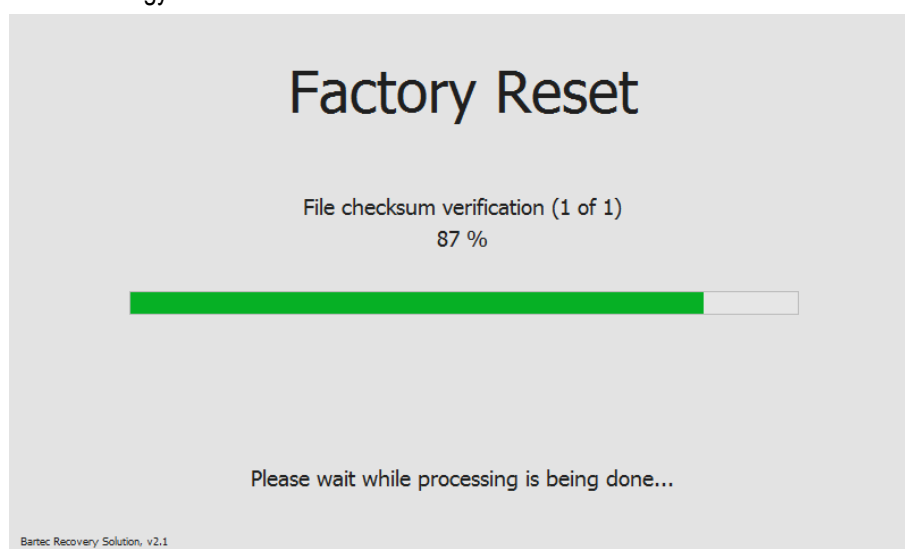
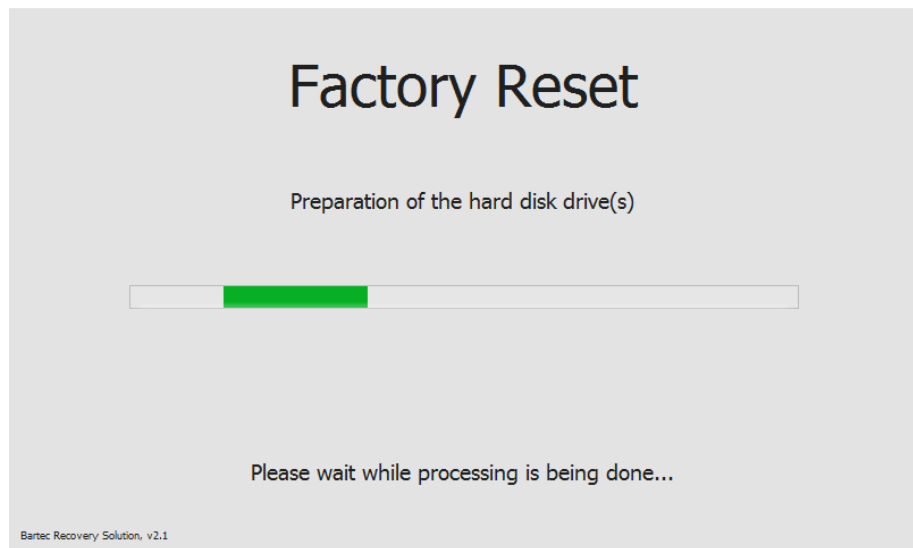


Illustration 14: Verify to the effigy file

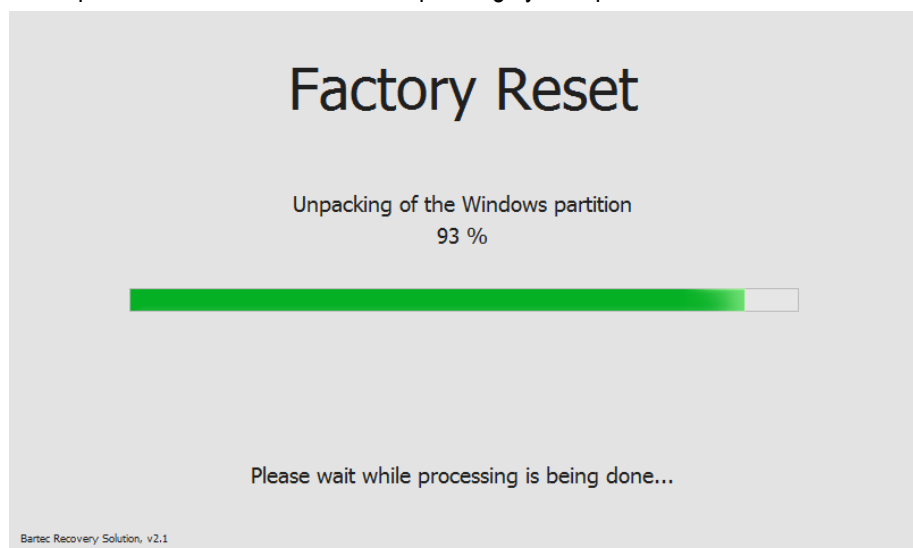
After the successful check, the formatting of the operating system partition is begun.





*Illustration 15: Prepare the partition*

After preparing the partition all files from the effigy image stored on the Recovery partition are unpacked and transferred on the operating system partition.



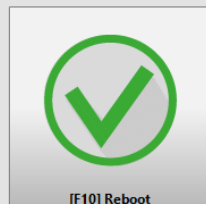
*Illustration 16: Transferred by system files on operating system partition*

Transferring of system files is the last process with the Wiederherstellung of the operating system in the work state.

### **8.6.6 Finishing the recovery**

After the Recovery process is completely concluded, it is indicated suitable information in the window. A button in the middle of the window closes the Recovery surroundings and the device restart.

Factory Reset has been  
completed successfully



Bartec Recovery Solution, v2.1

*Illustration 17: Successful closure of the recovery process*

After the new start of the device the operating system partition is active again and this restored operating system is begun.



The first start (so called: Ridge time boat) of the put back operating system can last some minutes. On this occasion, it is about two phases. During the first phase components of the device are recognised the hardware and are integrated into the operating system. During the second phase the final settings are put. Between the phases or within the phase the device is automatically restarted several times.

## 8.1 Recovery/Backup Function

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



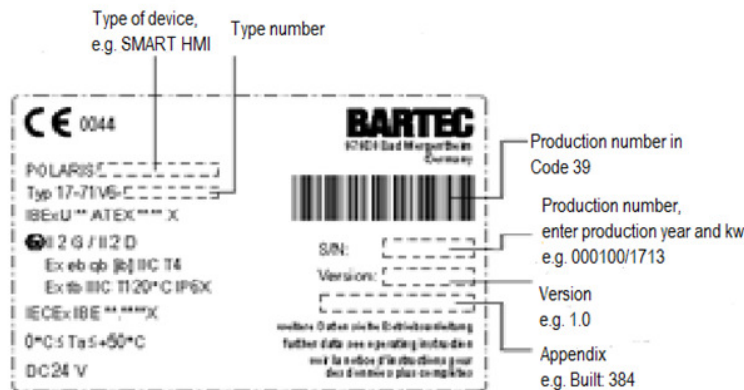
The recovery flash drive is not included in the scope of supply.  
It can be ordered from the contact address [www.bartec.de](http://www.bartec.de)

The recovery flash drive contains the functions:

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

### 8.1.1 Recovery-Stick Image

The recovery stick image for the POLARIS SMART HMI 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.

### 8.1.2 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!

### 8.1.3 Backup on the USB Stick

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

### 8.1.4 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.**

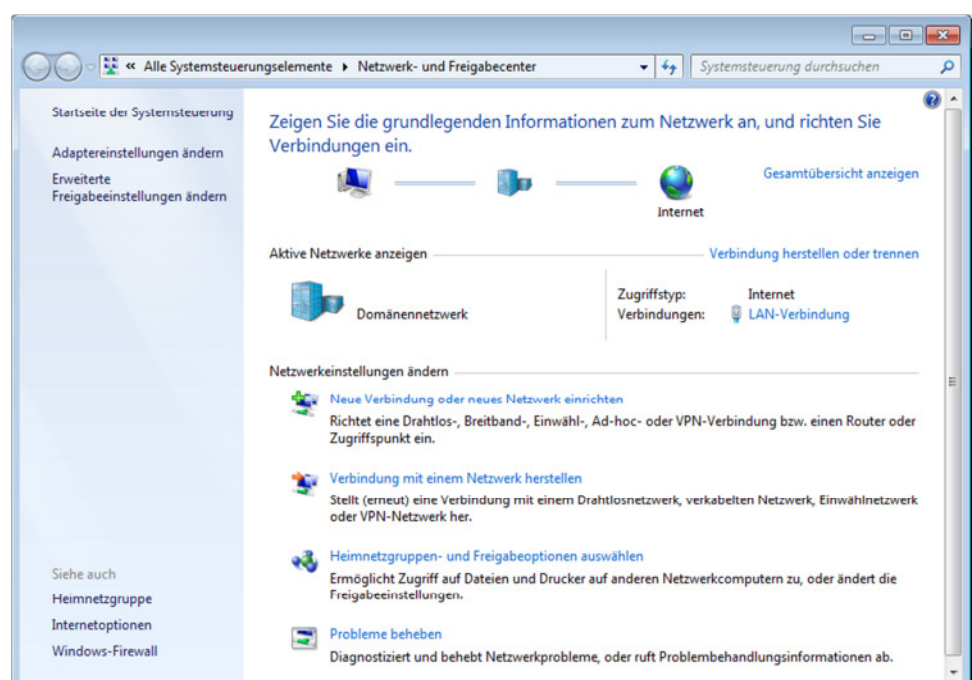
- Use the Windows button to shut down or switch off the POLARIS.
- Do not switch off the POLARIS until Windows informs the user that the data has been saved (appearance of the logout script).

## 8.2 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.

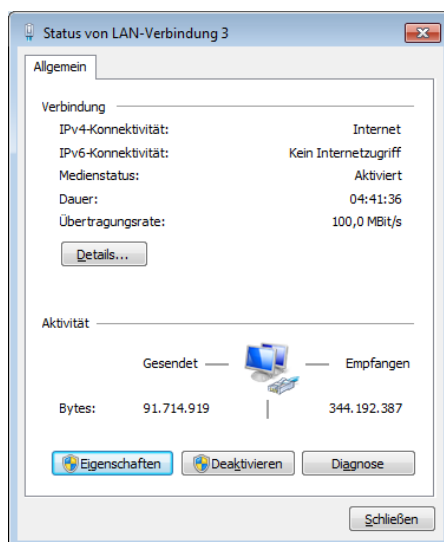


Figure 1

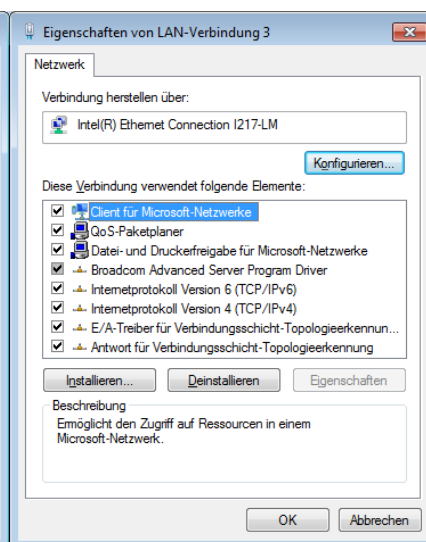


Figure 2

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

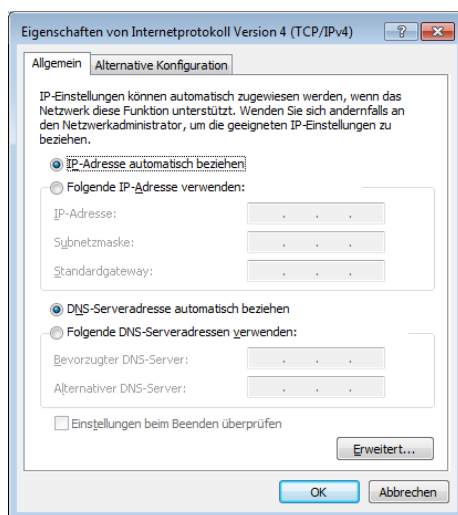


Figure 3

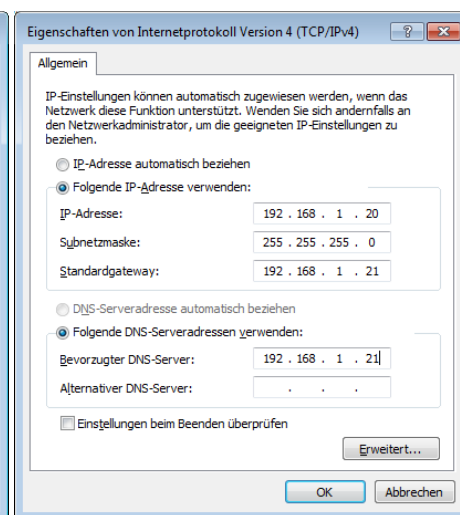


Figure 4

## 8.3 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://www.bartec.de/automation-download/>

## 9. Faults and troubleshooting

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

## 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](mailto: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](mailto: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/packageing.

## 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 Smart HMI 7 Zoll	
User manual	
Mounting clamps (assembly-kit with 4 pieces)	05-0091-0260
Reinforcement frame	05-0205-0014

Accessories/spare parts for POLARIS SMART HMI series:

Name	Order no.
Smart keyboard	17-71VZ-C01*/0000
Input devices      Trackball	17-71VZ-2000
Connection cable      for keyboard	
for trackball	
USB Smart Device      WLAN	17-71VZ-A010/0000
Bluetooth	17-71VZ-A020/0000
Ex I memory stick	17-A1Z0-0007
Enclosure for keyboard	
Mounting clamps (assembly-kit with 4 pieces)	05-0091-0260
LAN STP cable      CAT.7 4 x 2 x 23 AWG      outside: Ø 7,9 mm	02-4082-0002
CAT.7 4 x 2 x 22 AWG      outside: Ø 18 mm; armoured	02-4082-0004
Visualization software      BMS-Graf-Pro 7	17-28TF-0075
Original packing      POLARIS Smart HMI 7 Zoll	04-9039-0003

## 14. Order numbers

### Ordering information

Description	Code no.	Version	Code no.	Operating system	Code no.
POLARIS SMART HMI 7" W with capacitive touchscreen	1	2 GB RAM	00	Windows® 10 IoT	1
				Windows 7® Ultimate	2
POLARIS SMART HMI 7" W with resistive touchscreen	2	4 GB RAM, extended temperature range	11	Windows 7® Embedded Multi	3
				BMS-Graf-pro	4

Complete order no. 17-71V6-1     /0   00

Please insert correct code. Technical data subject to change without notice.  
 You will find the accessories with order details on the accessories pages.

## 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  
Glycerin  
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**

Alkalicarbonat  
Bichromat  
Blutlaubsalze

**Verschiedene Substanzen**

molekulares Chlor  
Kresolnaseifen in Lösung  
Sauerstoff  
Trikresylphosphat  
Wasser < 100 °C  
Wasserstoffperoxid < 25 %

**Wasch-, Spül- und Reinigungsmittel**

Kaliseife  
Waschmittellösungen (Tenside)  
Weichspüler

**Technische Öle und Fette**

Bohremulsion  
Dieselöl  
Firniss  
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

**BARTEC**



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

Nº 11-71V0-7C0001\_D

Wir	We	Nous
<b>BARTEC GmbH,</b>		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
<b>POLARIS Serie</b>	<b>POLARIS serie</b>	<b>POLARIS sèrie</b>
Typ 17-71V0-****/**** Typ 17-71V1-****/**** Typ 17-71V2-****/**** Typ 17-71V3-****/**** Typ 17-71V6-****/**** Typ 17-71VZ-****/****		
auf das sich diese Erklärung bezieht den Anforderungen der folgenden <b>Richtlinien (RL)</b> entspricht	to which this declaration relates is in accordance with the provision of the following <b>directives (D)</b>	se référant à cette attestation correspond aux dispositions des <b>directives (D)</b> suivantes
<b>ATEX-Richtlinie 2014/34/EU</b>	<b>ATEX-Directive 2014/34/EU</b>	<b>Directive-ATEX 2014/34/UE</b>
<b>EMV-Richtlinie 2014/30/EU</b>	<b>EMC-Directive 2014/30/EU</b>	<b>Directive-CEM 2014/30/UE</b>
<b>RoHS-Richtlinie 2011/65/EU</b>	<b>RoHS-Directive 2011/65/EU</b>	<b>Directive-RoHS 2011/65/UE</b>
<b>RED-Richtlinie 2014/53/EU</b>	<b>RED-Directive 2014/53/EU</b>	<b>Directive RED 2014/53/UE</b>
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 60079-1:2014 EN 60079-5:2015 EN 60079-7:2015 EN 60079-11:2012 EN 60079-18:2015 EN 60079-28:2015 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	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013 EN 62479 :2010 EN 62311 :2008 EN 300 328 V 2.1.1 (2016-11) EN 55022 :2010 / AC :2011 EN 55024 :2010 / A1 :2015 EN 55032 :2012 / AC : 2013 EN 55032 :2015 / AC : 2016 EN 61000-3-2 :2014 EN 61000-3-3 :2013 EN 301 489-1 V2.1.1. (2017-02) EN 301 489 -17 V3.1.1 (2017-02)	

EU Konformitätserklärung  
EU Declaration of Conformity  
Déclaration UE de conformité**BARTEC**BARTEC GmbH  
Max-Eyth-Straße 16  
97980 Bad Mergentheim  
Germany

Nº 11-71V0-7C0001\_D

Kennzeichnung	Marking	Marquage
	<b>Visualisierungseinheit</b> II 2G Ex db eb mb q [ib op pr] IIC T4 Gb II 2D Ex mb tb IIIC T120° C Db	
	<b>Zubehör</b> II 2G Ex ib IIC T4 Gb II 2D Ex ib IIIC T120° C Db	
	<b>USB Smart Device</b> II 2G Ex mb IIC T4 Gb II 2D Ex mb IIIC T120° C Db	
The marking is variable on type and components used		
Verfahren der EU-Baumuster- prüfung / Benannte Stelle	Procedure of EU-Type Examina- tion / Notified Body	Procédure d'examen UE de type / Organisme Notifié
IBExU 05 ATEX 1117 X 0637 IBExU, Fuchsmühlenweg 7, 09599 Freiberg, D		
<b>CE 0044</b>		
Bad Mergentheim, den 07.12.2017		
 i.V. Nader Halmuschi Head of BU		 i.V. Gitta Kugler Director Global Test, Certification & IP Management