**BARTEC**

*Operator stations*

# User Manual   Version 2.00

**POLARIS**   Panel PC 19.1" and Panel PC 15"

Type 17-71V1-....

**Wichtiger Hinweis zum Transport und Versand**

# ! Empfindliche Geräte !

**Es ist unbedingt erforderlich das Gerät in der Originalverpackung
zu versenden, um Beschädigungen am Gerät zu vermeiden.**

**Important note concerning transportation and shipping**

# ! Sensitive equipment !

**It is absolutely necessary to deliver the equipment in the original
packaging in order to avoid damage occuring with the equipment.**

**Important : concerne l'expédition et le transport**

# ! Produits fragiles !

**Il est important d'expédier le matériel dans l'emballage
d'origine afin d'éviter tout dégât dû au transport.**

**BARTEC**

# USER MANUAL

## POLARIS

### Panel PC 19.1" / Panel PC 15"

English

# Contents

# Contents

## 1. System description

**POLARIS** Panel PCs are the extension of the proven and tested BAT family. The equipment is characterised by its excellent brilliance and its very wide reading angle. The screen of the **POLARIS Panel PCs 19.1"** is a TFT-Display with SXGA resolution (1,280 x 1,024 pixels) and the **POLARIS Panel PC 15"** with XGA resolution (1,024 x 768 pixels). The Panel PCs are based on a fast Intel$^®$Pentium$^®$M processor and include all standard interfaces.

The 19.1" and 15" Panel PCs are the highlights of the POLARIS series. These devices are perfectly suitable for controlling complex systems such as chemical and pharmaceutical production lines.

Due to the innovative POLARIS series, the familiar comfort of PCs is now also available in hazardous areas, in zones 1 + 2 as well as in 21 + 22.
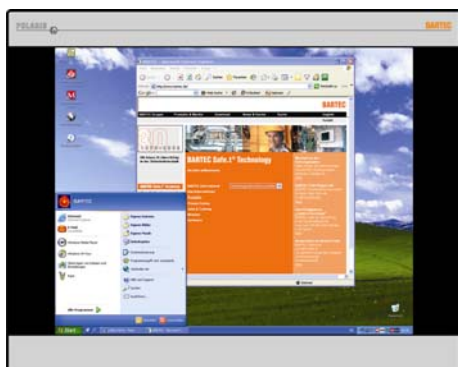


| | |
|---|---|
| **POLARIS Panel PC 19.1"** | **POLARIS Panel PC 15"** |

An intrinsically safe keyboard and mouse, trackball and touchpad are available for front panel installation. Optional a touch screen (intrinsically safe) is also possible, providing absolute maximum operating convenience.
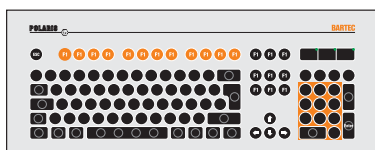


**Keyboard**    **Mouse**    **Trackball**    **Touchpad**

The front panel fitting permits easy installation. On request, the devices can also be supplied in the form of complete system solutions in a stainless steel enclosure for wall, floor or ceiling mounted installation.



Examples:
**POLARIS Panel PC with Touch-Screen**

By means of WLAN technology, individual computers or network equipment such as printers or DSL access points can be connected to an existing local network (LAN) wirelessly or local networks can be set up completely wirelessly. Powerful visualisation and operation of processes is now possible directly on site. Wired electrical connections are established via a terminal box in type of protection "e" (increased safety).

An intrinsically safe USB interface for a USB Ex i memory stick allows for easy transmission of equipment configuration.



**USB Ex i memory stick**

Windows® XP Professional is preinstalled in Panel PCs as a standard. Thus various software packages can be run on Panel PCs such as customer-specific software or other standard visualisation software. Of course, the operator can also work with the BARTEC programming package "BMS Graf pro".

**BMS Graf pro – Version V6.x.x.x**
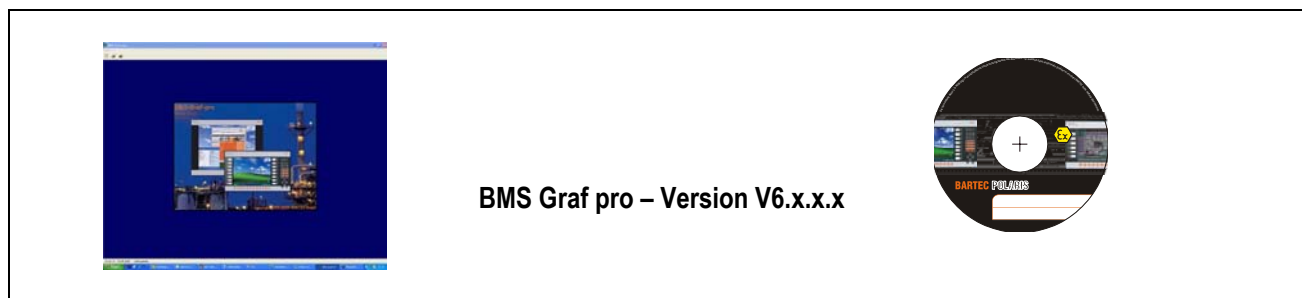
## 2. Technical data POLARIS Panel PC

### 2.1 Characteristics data Panel PC 19.1" und Panel PC 15"

| | | |
|---|---|---|
| **Type** | : | 17-71V2-.0../.000 |
| **Ex protection type** | : | ⟨Ex⟩ II 2G Ex e q [ib] IIC T4 |
| | | ⟨Ex⟩ II 2D tD A21 T 80°C IP 6X (front side) |
| **Certification** | : | IBExU05ATEX1117 X |

### 2.2 General data

| | | | |
|---|---|---|---|
| **Construction** | : | Front panel fitting | |
| | | System solution in stainless steel enclosure for wall, floor or ceiling mounting | |
| **Computer capacity** | : | Pentium® M Processor, 1.1 GHz | |
| | | Graphic memory 32 MB | |
| | | 512 MB RAM, 20 GB memory | |
| **Operating system** | : | Windows® XP Embedded (pre-installed) | |
| | | Open platform for customer-specific visualisation software, e. g. ProTool, WIN CC flexible, etc. | |
| **Interface** | : | Ethernet 10BaseT | |
| | | RS422/RS485 or PROFIBUS-DP | |
| | | USB for Ex i memory stick | |
| | | 2 x PS/2 intrinsically for intrinically safe keyboard and mouse | |
| **Optional interface modules** | : | Supply module for hand-held scanner | |
| | | WLAN | |
| | | USB-Touch | |
| | | additional USB | |
| **Power supply** | : | AC 230 V ± 10 %, 50 Hz to 60 Hz | |
| **Max. power take-up $P_{max}$** | : | 70 W | |
| **Admissible ambient temperature** | : | Storage | -20 °C to +50 °C |
| | | Operation | 0 °C to +50 °C |
| **Material** | : | Front | Polyester foil on aluminium sheet |
| | | Rear side | Sheet steel |
| **Protection class** | : | IP 65 (front side) | |

Below +10 °C the unit has to be heated in order to guarantee the lifetime of the backlight illumination.

## 2.3 Characteristics data Panel PC 19.1"



| | | |
|---|---|---|
| **Display** | : | 19.1" TFT graphic display |
| | | SXGA resolution 1,280 x 1,024 pixels |
| | | 16.7 million colours |
| | | Brightness 250 cd/m$^2$ |
| | | Visible area approx. 380 x 305 mm |
| | | Contrast 700:1 |
| | | Antireflection coating glass pane |
| | | Optional touch screen |
| **Dimensions** | : | 498 mm x 400.5 mm x approx. 135 mm |
| **Wall cut-out** | : | 484 mm x 386.5 mm ± 0.5 mm |
| **Weight** | : | approx. 33 kg |
| **Backlight illumination** | : | CFL technology |
| | | Service-life approx. 40,000 hours at +25 °C |

## 2.4     Characteristics data Panel PC 15"



| | | |
|---|---|---|
| **Display** | : | 15" TFT graphic display |
| | | XGA resolution 1,024 x 768 pixels |
| | | 262,144 colours |
| | | Brightness 350 cd/m$^2$ |
| | | Visible area approx. 304 x 228 mm |
| | | Contrast 400:1 |
| | | Antireflection coating glass pane |
| | | Optional touch screen |
| **Dimensions** | : | 411 mm x 332 mm x approx. 135 mm |
| **Wall cut-out** | : | 394.5 mm x 315.5 mm ± 0.5 mm |
| **Weight** | : | approx. 23 kg |
| **Backlight illumination** | : | CFL technology |
| | | Service-life approx. 50,000 hours at +25 °C |

## 2.5 Characteristics data keyboard



| | | |
|---|---|---|
| **Type** | : | 17-71VZ-40../.... |
| **Ex protection type** | : | ⟨Ex⟩ II 2G Ex ib IIC T4 |
| | | ⟨Ex⟩ II 2D tD A21 T 80°C IP 6X (front side) |
| **Certification** | : | IBExU05ATEX1117 X |
| **Keyboard** | : | Front panel fitting |
| **Dimensions** | : | 420 mm x 170 mm (weight x height) |
| **Installation depth** | : | 18 mm |
| **Wall cut-out** | : | 390 mm x 140 mm |
| **Weight** | : | approx. 700 g |

**Dimensions and wall cut-out for keyboard**



Hole diameter: 3.3 mm
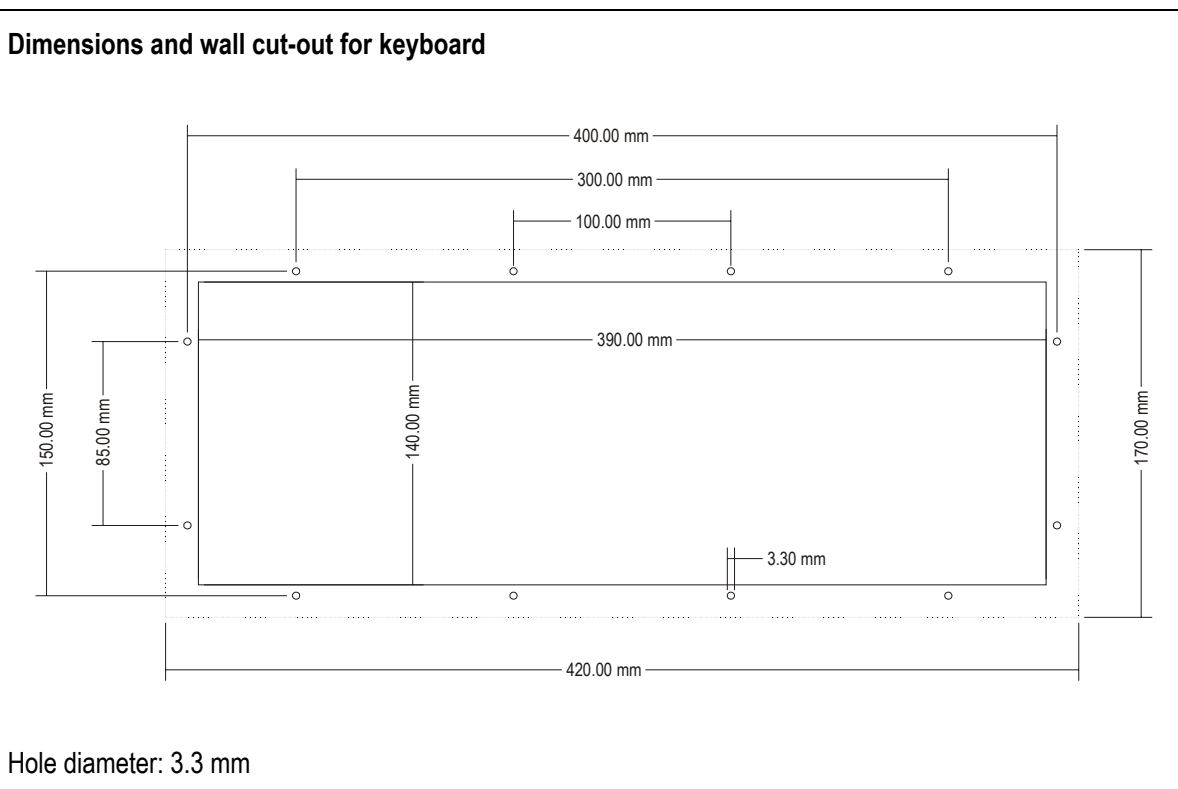
## 2.6　Characteristics data mouse, trackball and touchpad

### 2.6.1　Mouse

| | | |
|---|---|---|
| **Ex protection type** | : | ⟨Ex⟩ II 2G Ex ib IIC T4 |
| **Certification** | : | IBExU05ATEX1117 X |
| Type | : | 17-71VZ-10../.... |
| Dimensions | : | 130 mm x 170 mm (weight x height) |
| Wall-cut out | : | 100 mm x 140 mm |
| Installation depth | : | 15 mm |
| Weight | : | approx. 270 g |

### 2.6.2　Trackball

| | | |
|---|---|---|
| **Ex protection type** | : | ⟨Ex⟩ II 2G Ex ib IIC T4 |
| | | ⟨Ex⟩ II 2D tD A21 T 80°C IP 6X (front side) |
| **Certification** | : | IBExU05ATEX1117 X |
| Type | : | 17-71VZ-20../…. |
| Dimensions | : | 130 mm x 170 mm (weight x height) |
| Wall-cut out | : | 100 mm x 140 mm |
| Installation depth | : | 43 mm |
| Weight | : | approx. 500 g |

### 2.6.3　Touchpad

| | | |
|---|---|---|
| **Ex protection type** | : | ⟨Ex⟩ II 2G Ex ib IIC T4 |
| **Certification** | : | IBExU05ATEX1117 X |
| Type | : | 17-71VZ-30../…. |
| Dimensions | : | 130 mm x 170 mm (weight x height) |
| Wall-cut out | : | 100 mm x 140 mm |
| Installation depth | : | 15 mm |
| Weight | : | approx. 250 g |

**Dimensions and wall cut-out for mouse, trackball and touchpad**
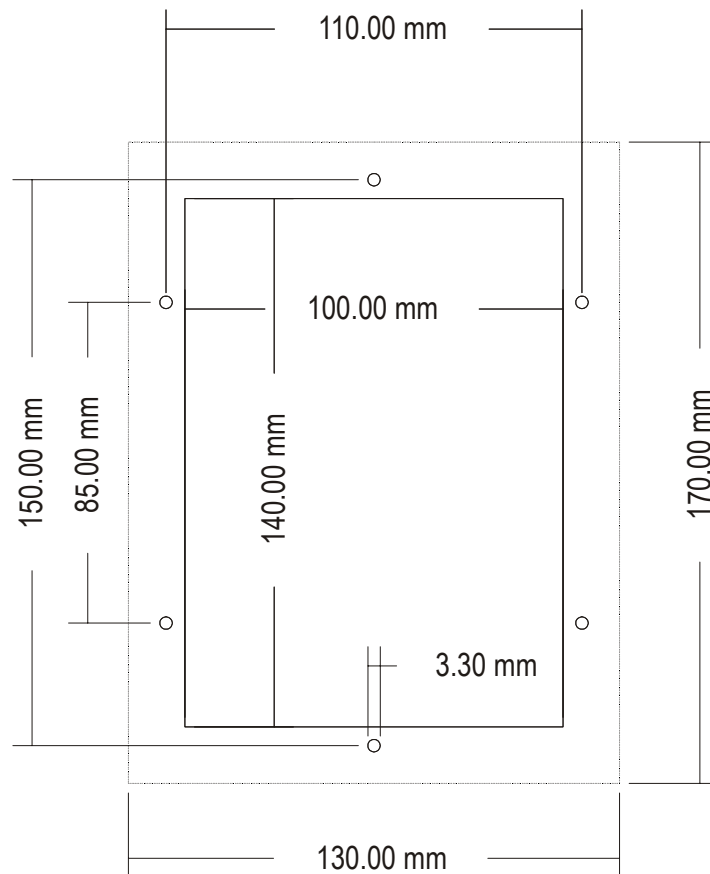


Hole diameter: 3.3 mm

# 3. Terminal assignment

## 3.1 Terminal assignment Ex e

| Terminal | Interface | Signal | Remarks |
|---|---|---|---|
| X10 | Supply | L | AC 230 V ± 10 % |
| X11 | Supply | N | Neutral |
| X12 | Supply | PE | Protective earth |
| **Configuration of RS422 interface of Ethernet 10BaseT** | | | |
| X13 | Ethernet | RxD + | 10BaseT Receive positive |
| X14 | Ethernet | RxD - | 10BaseT Receive negative |
| X15 | Ethernet | TxD + | 10BaseT Transmit positive |
| X16 | Ethernet | TxD - | 10BaseT Transmit negative |
| **Configuration of RS422 interface** | | | |
| X17 | Termination On/Off | | Jumper between terminal X17 and X18 for activation of the terminator resistors |
| X18 | | | |
| 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 |

**When interface used with PROFIBUS-DP interface in place of RS422:**

| **Configuration of PROFIBUS-DP interface** | | | |
|---|---|---|---|
| Terminal | Interface | Signal | Remarks |
| X17 | GND PROFIBUS | PE | Additional ground |
| X18 | not connected | N.C. | |
| 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 |

## 3.2 Terminal assignment Ex i

| Terminal | Interface | Colour | Signal | Remarks |
|---|---|---|---|---|
| | Scanner connection (optional) | | | |
| X1 | Hand-held scanner | | +UB | Supply voltage +5 V |
| X2 | Supply | | RxD-I | Data input RS232 signal |
| X3 | Supply | | GND | Mass connected to protective earth |
| **PS/2 interface for input devices** | | | | |
| X4 | PS2 | WH/BN | VCC | Supply voltage |
| X5 | PS2 | GN/YE | GND | Mass connected to protective earth |
| X6 | PS2 | PK | KB_CLK | Keyboard    clock signal |
| X7 | PS2 | GR | KB_DATA | Keyboard    data signal |
| X8 | PS2 | BL | MS_CLK | Mouse        clock signal |
| X9 | PS2 | RD | MS_DATA | Mouse        data signal |

## 3.3 Electrical installation

### 3.3.1 EMC notes

**This device is class A equipment and may cause interference in domestic electrical equipment. If this occurs, the installer of the device may be required to implement appropriate counter measures.**

**All connection cables must be shielded. This applies both to data lines and to other cables.**

**The data cables must be twisted in pairs. Example: 2 x 2 x 0.75 mm² LIYCY TP.**
**If possible, cables for power supply and data must be laid separately.**

### 3.3.2 Interference suppression

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

■ Interference voltages injected into the unit via power and signal cables and static charges caused by contact are to be conducted to earth (e.g. grounding screw terminal fixed to the back of the unit). This earthing point must be connected to the PE conductor by means of the shortest possible low resistance copper conductor or must be integrated in the equipotential bonding. If this point is not observed, the measures taken to suppress interference and preclude damage to the device effectively will be impaired.

■ 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 it will be advisable to set up partitions to isolate the POLARIS Panel PC from interference.

■ If inductive unit 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, for example, be achieved by avoiding laying such cables in close proximity to high current carrying cables.

### 3.3.3 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.

### 3.3.4 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 with the protective earth conductor by means of a cable that should be kept as short as possible (0.75 mm² …1.5 mm²).

### 3.3.5 Examples of how shielding can be connected

**Connection of shielding at both ends** of the cables linking the controller and POLARIS Panel PC:
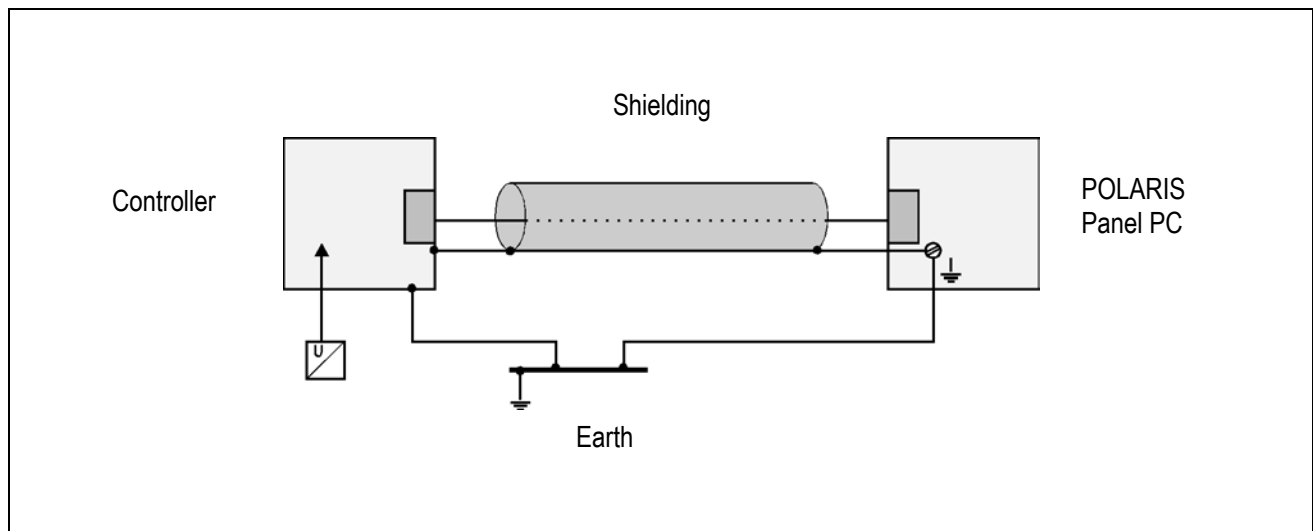


Generally, connection of the shielding at both ends results in optimum damping of all interference frequencies. This method is to be recommended when there is good equipotential bonding between the individual units. In such cases it is possible to make use of the controller's voltage supply cable even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

**Connection of shielding at one end only** of the cables linking the controller and Panel PC:
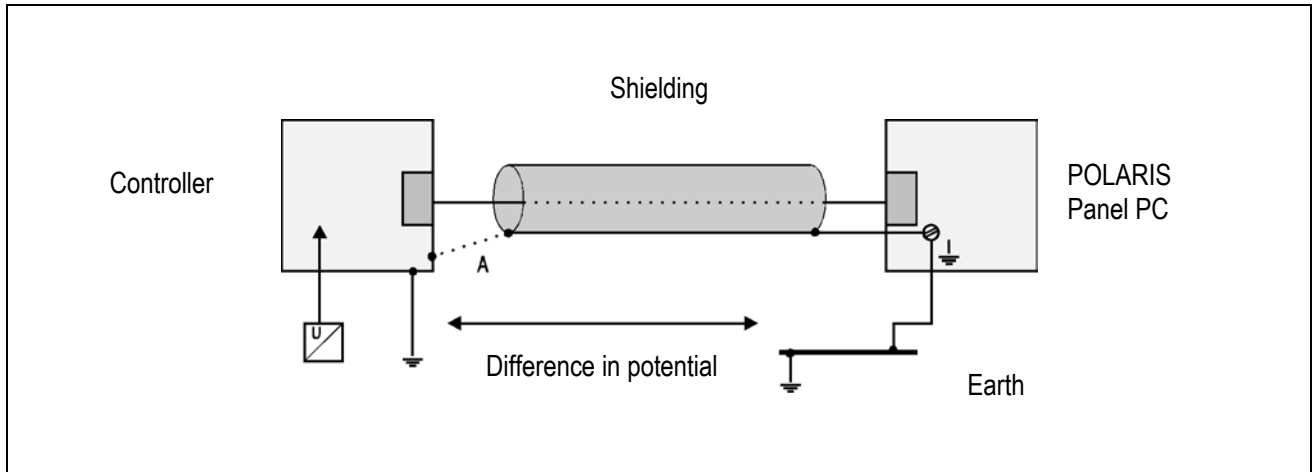


Connection of the shielding at one end only is recommended when there is inadequate equipotential bonding, or none at all. In such cases an electrically isolated power supply unit must be used.

If the shielding were connected at both ends, the equipotential bonding current would flow to point A and this must be avoided at all costs, as the resultant interference pulses could be passed on to the devices via the data cable. When shielding is connected at one end only it must be on the side that has the lowest resistance earth connection.

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.

### 3.3.6    Connection of Ethernet cable to POLARIS Panel PCs
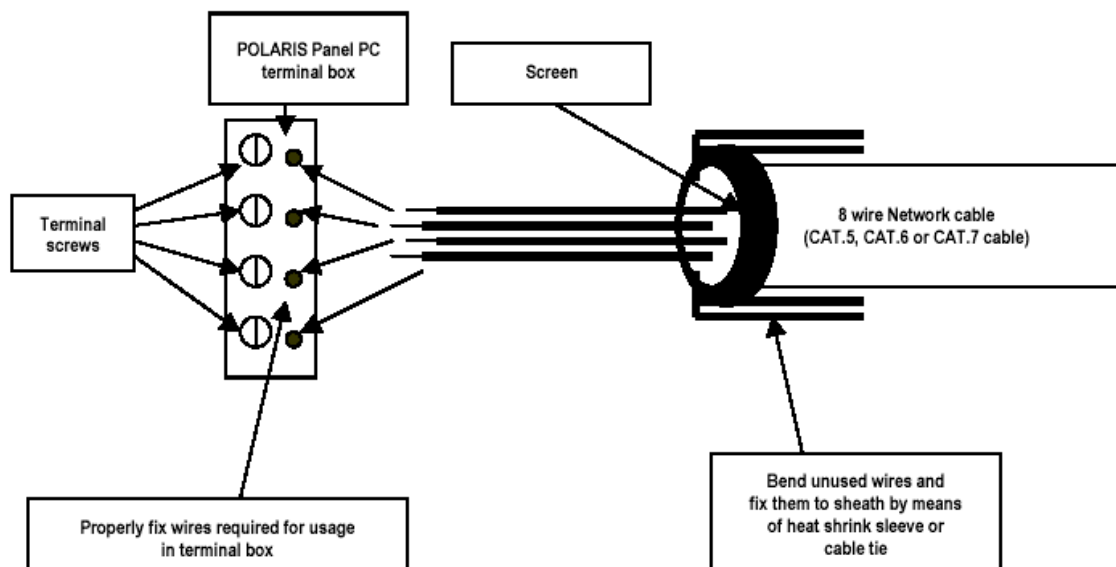
## 4. Overview of connection diagram

### 4.1 Possible connection
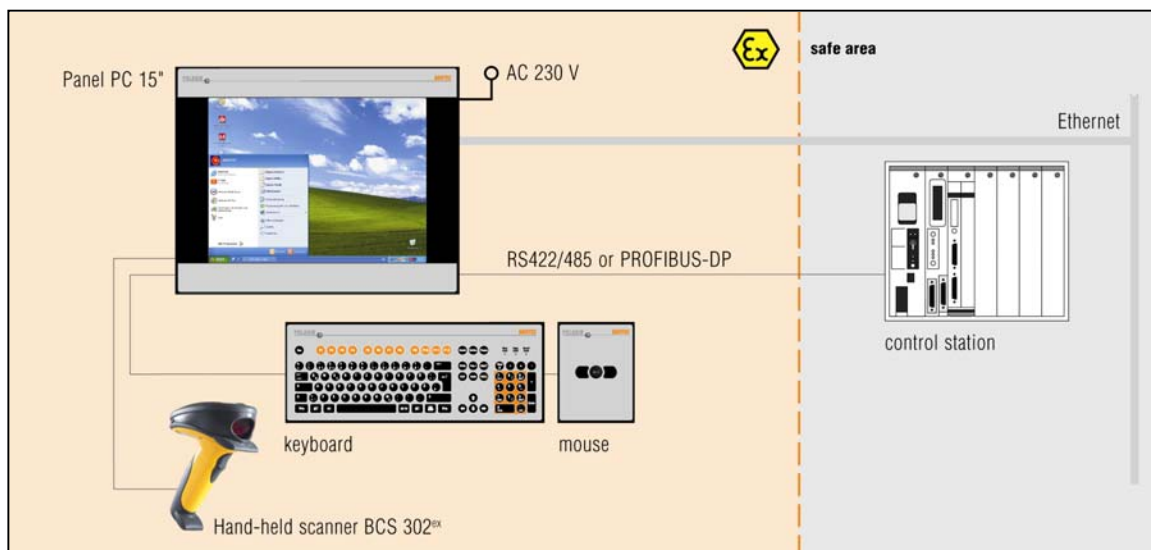
## 5.  Notes on the installation of POLARIS Panel PC

## 5.1  Safety instructions

For electrical appliances, the appropriate regulations for setting-up and operation have to be observed (e.g. directive 1999/92/EC, directive 94/9EC, BetrSichV and national regulations/acts, IEC/EN 60 079-14 and VDE 0100).

The operator of an electrical appliance in an area where there is an explosion hazard has to maintain the resources in a proper condition, operate them correctly, monitor them and carry out maintenance and repair work (BetrSichV and national regulations/acts and EN 60 079-14).

Where the IP rating is concerned, only original replacement parts may be used (e.g. lid seal).

> ⚠ **WARNING**
>
> **The unit may be opened only in the manufacturer's works!**
>
> **The unit is factory sealed! Do not open!**

### 5.1.1  Safety-relevant notice

Inside areas of explosive atmospheres any electrostatic charging mechanism on the surface of the indicating terminals have to be excluded if they are stronger than manual rubbing (e.g. cleaning by hand).

## 5.2  Maintenance

For the maintenance, servicing and checking of associated resources, adhere to the valid regulations in accordance with directive 1999/92/EC, IEC 60079-19 and EN60079-17 !

Installation / dismantling, servicing and maintenance work may only be carried out by trained specialists. The general statutory regulations and other binding directives on workplace safety, accident prevention and environmental protection must be adhered to.

Observe the national disposal of waste regulations when disposing of this equipment at the end of its useful life.

### 5.2.1  Servicing

If operated correctly, in accordance with the installation instructions and environmental conditions, no regular servicing is necessary.

### 5.2.2  Inspection

In accordance with IEC 60079-19 and EN 60079-17, the site operator has an obligation to ensure that any electrical appliance installed within, an area containing gases and dust, which could be potentially explosive, is correctly installed by trained personnel and that the installation is regularly inspected and correctly maintained to ensure the safety of the operatives in the area.

## 5.3 Installation options

The POLARIS Panel PC can be installed directly in

- Switch cabinet doors
- Mimic panels
- Enclosures

In order to guarantee IP 65, use the reinforcement frame and the enclosure's own IP rating has to be suitable for the application.

**The following points should be taken into consideration when installing the POLARIS Panel PC:**

- Convenient height for operation.
- Good lighting so that the display will be easily readable.
- At ambient temperatures below 0°C, the POLARIS Panel PC has to be heated.
- Below +10°C the POLARIS Panel PC needs to be heated to maintain the lifetime of the backlight illumination.
- Avoid installing in the immediate vicinity of switching devices or converters.

**Note:    Only use heating systems, which are certified for explosive areas!**

**The following factors should be taken into consideration in order to ensure proper and workmanlike installation:**

- The installation location must be sufficiently stable / fixed.
- The enclosure in which the POLARIS Panel PC is mounted must be strong enough to support its weight.
- Following the cutting out of the opening into which the POLARIS Panel PC is to be fitted, the surface must be dressed to ensure it is smooth, level and undamaged so as to preserve the integrity of the seal.

### 5.3.1    Cable glands / Conduits

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.

## 5.4    Mechanical installation

In order to achieve an even clamping pressure, it is recommended that the reinforcement frame (not included in the scope of the delivery) be inserted between the mounting clamps (included in scope of the delivery) and the enclosure.

■    Tighten the fixing screws in the mounting brackets slightly.

■    Check the position of the display and the seal.

■    Tighten the set screws so as to ensure an adequate seal on the POLARIS
Panel PC is assured.

### 5.4.1    Recommended enclosure

■    **Stainless steel enclosure with wall thickness > 2 mm.** In this case the reinforcement frame between the retaining clips and enclosure material should always be used.

■    **Reinforcement frame** for maintenance of Protection Class IP 65
for      POLARIS Panel PC 19.1"          (05-0205-0010)
for      POLARIS Panel PC 15"            (05-0205-0009)

### 5.4.2    Special installation instructions

In order to guarantee the IP degree of enclosure protection  = IP 54  for installation in 2G enclosures of Ex e type of protection (e.g. control equipment), and = IP 6X 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.

### 5.4.3    Cover Ex i terminal box

When using a housing with a degree of protection of at least IP 20, the cover for the Ex i box can be dispensed with.

### 5.4.4 General data

■ The user is allowed to perform only the wiring work necessary on the terminals accessible to him. Any more extensive dismantling of the device may be performed only by the manufacturer or by persons authorized by the manufacture. The unit is factory sealed. Do not open!

■ Ex i-terminal compartment marked:

➡ with terminals for

    - USB Ex i memory stick    Type 17-71VZ-50..

➡ with terminals for Ex i input device (Ex i-data)

| | |
|---|---|
| - Keyboard | Type 17-71VZ-40../.... |
| - Mouse | Type 17-71VZ-10../.... |
| - Trackball | Type 17-71VZ-20../.... |
| - Touchpad | Type 17-71VZ-30../.... |
| - Hand-held scanner BCS 302$^{ex}$ | Type 17-21BA-0020 (not possible in combination with touch screen) |

Work may be performed on the terminal compartment with the system live even if explosive atmospheres are present.

| ⚠ WARNING | **Do not connect the keyboard, mouse, trackball and touch pad while energised!** |
|---|---|

■ The Ex e terminal compartment with terminals for the power supply and data cable may be opened only provided it has been ensured that no explosive atmosphere is present and that the power is off.

■ The unit may only be started (if an explosive atmosphere is present) once it has been ensured that the unit is completely closed and that all bolts and screws have been correctly tightened.

■ Stand-alone POLARIS Panel PC and flush-fitted units with a damaged glass must be taken out of operation immediately.

### 5.4.5 Installation guidelines

■ The external earth connection facility should be connected to the equipotential bonding conductor of the potentially explosive area. Since the intrinsically safe circuits are direct-connected to earth, equipotential bonding must be maintained during complete installation of the intrinsically safe circuits.

■ All current safety and accident prevention regulations must be observed.

■ Units must only be operated after proper installation.

■ It must be possible to de-energise the products at any time (in fixed installations by means of an mains switch or fuse which isolates each of the supply cables). The PE terminals on the back of the unit must be connected to the protective earth conductor.

■ It must be ensured that supply voltage is the same as that stated in this manual and that the tolerances are adhered to.

■ Malfunctions may occur if the stated tolerances are either exceeded or are insufficient.

■ Steps must be taken to ensure that the system is not put into hazardous, undefined states in the event of power failures.

■ EMERGENCY STOP switches must remain effective in all operating modes and conditions.

■ Connection cables (especially data transmission cables) must be selected and installed so as to preclude impairment of the system's functionality by capacitive or inductive interference. Appropriate measures must be taken to deal with open circuit states in such a way that the system cannot enter undefined states

■ Wherever malfunctions are liable to cause injury to persons or damage to property additional external safety circuits must be installed (e.g. limit switches, mechanical interlocks, etc.)

# 6. Connection cables (pin assignment)

## 6.1 RS 422 interface

Connection of a controller via an RS 422 interface of the POLARIS Panel PC.

**RS422 Modul**
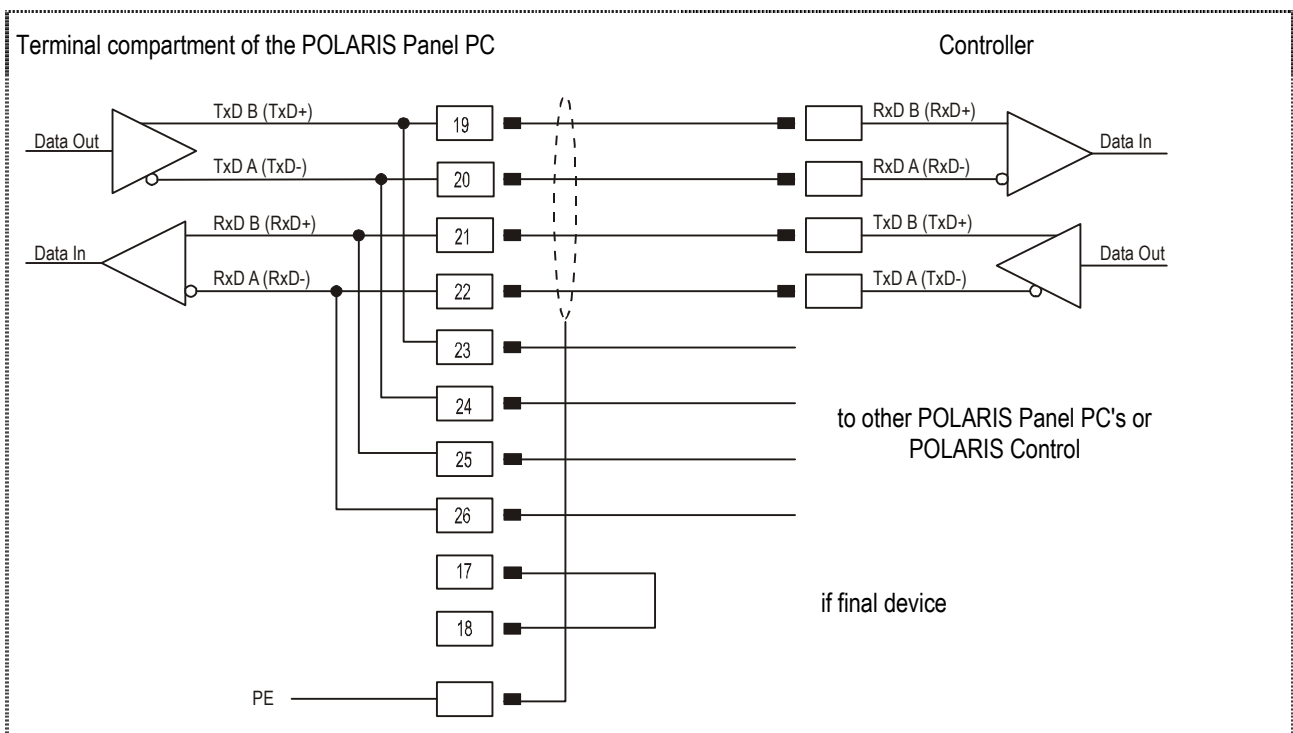


Pins 19-23, 20-24, 21-25, 22-26 are already connected inside.

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

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

## 6.2    RS 485 interface

**BARTEC supplies all the RS 485 interfaces as RS 422.**

Connection of a controller via an RS 485 interface of the POLARIS Panel PC.

**RS485 Modul**

Terminal compartment of the POLARIS Panel PC                                    Controller

| | |
|---|---|
| TxD B (TxD+) | 19 — TxD B (TxD+) / RxD B (RxD+) |
| Data Out | |
| TxD A (TxD-) | 20 — TxD A (TxD-) / RxD A (RxD-) |
| Tx enable | |
| RxD B (RxD+) | 21 |
| Data In | |
| RxD A (RxD-) | 22 |
| | 23 |
| | 24 |
| | 25 — to other POLARIS Panel PCs or POLARIS Control |
| | 26 |
| | 17 |
| | 18 — if final device |
| PE | |

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

**If it is intended to use the RS422 as an RS485 interface, Pin 21/Pin 23 and Pin 22/Pin must be bridged externally.**

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

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

Depending on local conditions, there might occasionally be impairments of data transfer.
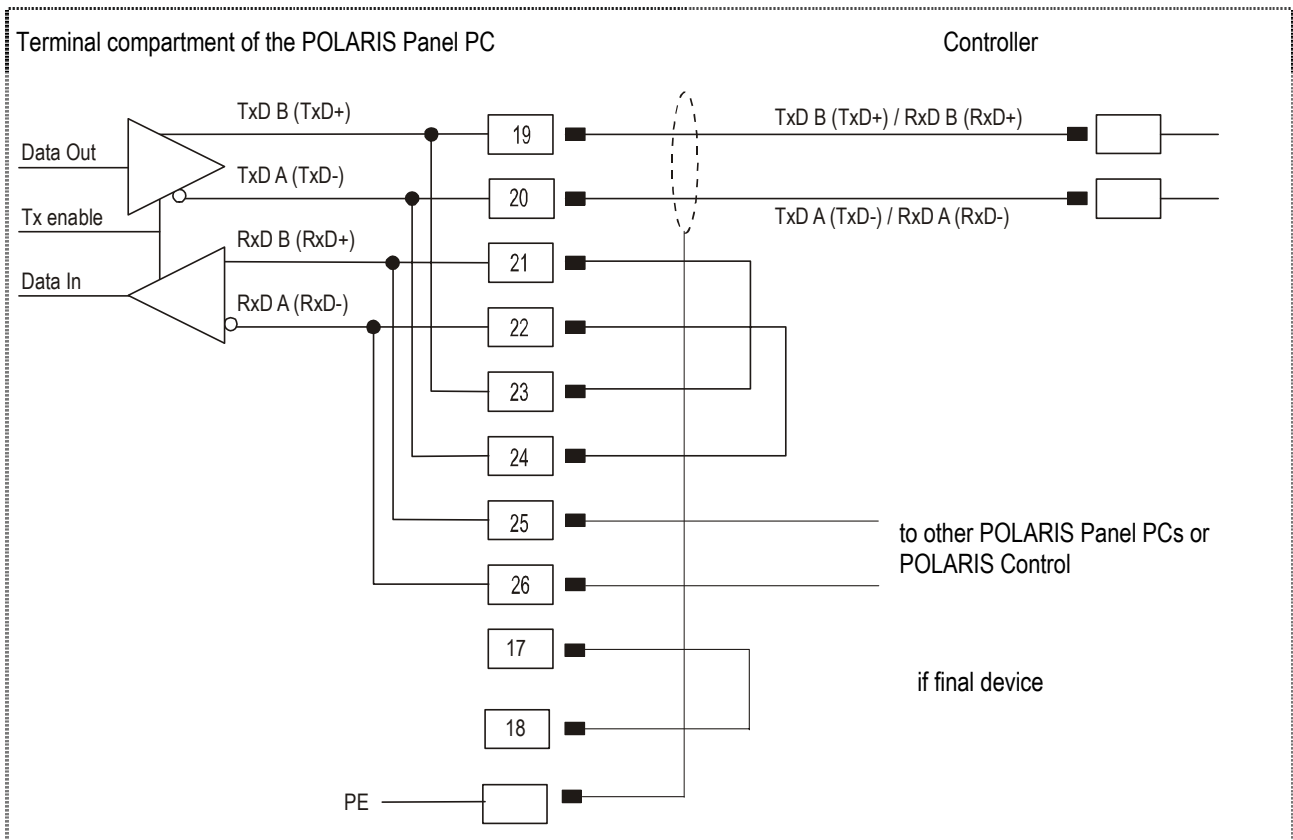
## 6.3    PROFIBUS-DP interface

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

The PROFIBUS-DP interface may only be applied in combination with the visualisation software BMS Graf pro.

**PROFIBUS-DP module**
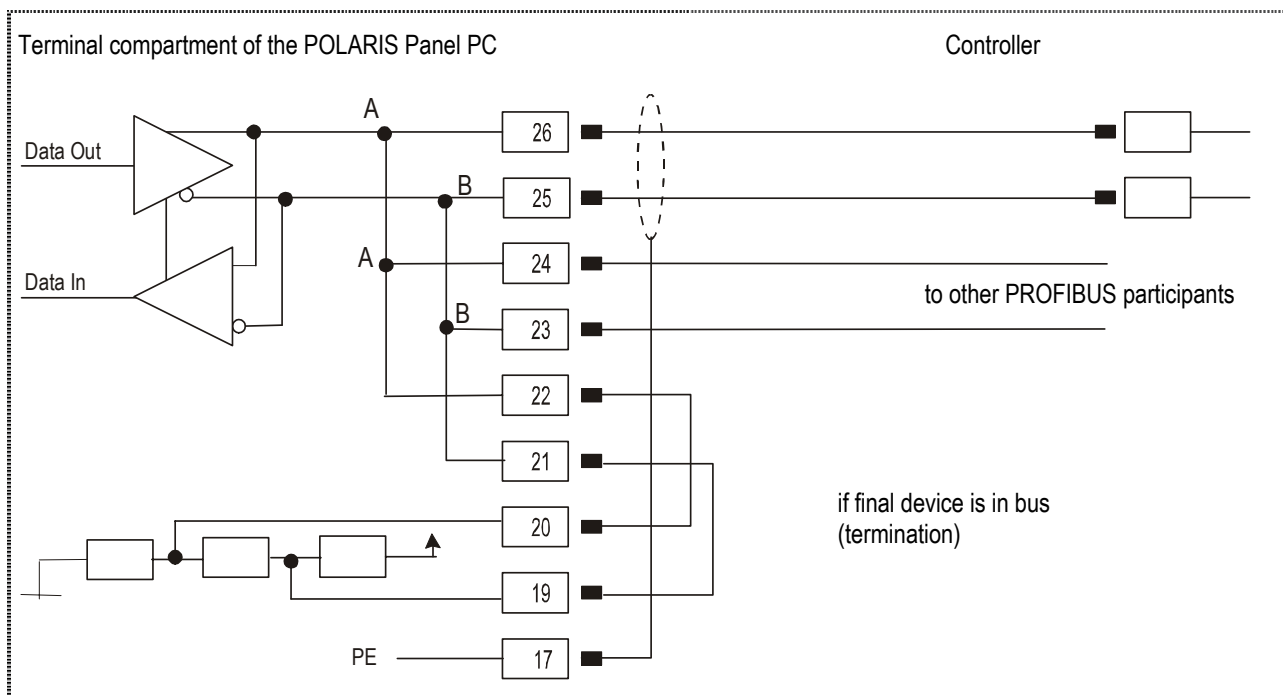


See the interface description from the controller manufacturer for the relevant pin assignment of the controller.

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

## 6.4 Supply module for BCS 302ex

Terminal connection diagram for hand-held scanner BCS 302ex to supply module via a connector/adapter.

| Panel PC Terminal no. | Description | Adapter / connector PIN | Description | BCS 302ex PIN | Description |
|---|---|---|---|---|---|
| 2 | TxD | PIN 3 | TxD / RxD | PIN 3 | TxD / RxD |
| 1 | $+U_B$ | PIN 1 | Ucc / $+U_B$ | PIN 1 | Ucc |
| 3 | GND | PIN 2 | GND | PIN 2 | GND |

---
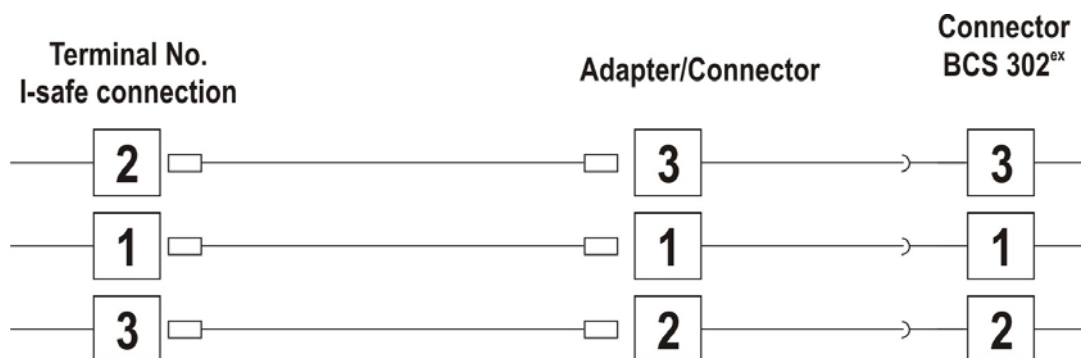
## 7. Installation additional components

### 7.1 Connection of Ex i keyboard to the POLARIS Panel PC

■ Make the connection between the POLARIS Panel PC and the Ex i keyboard.

■ Connection via connecting cable, longer than approx. 1.80 m

    - Keyboard and mouse         Type 05-0068-0163

    - Keyboard and trackball      Type 05-0068-0172

    - Keyboard and touchpad     Type 05-0068-0183

⚠️ **WARNING**

**If you use another USB stick than the BARTEC Ex i USB memory stick, the USB interface can be destroyed.**

### 7.2 Connection of BARTEC USB Ex i memory stick

**Preconditions:**     BARTEC USB Ex i memory stick (it is not allowed to apply any other USB stick!)

                      Connect BARTEC USB Ex i memory stick to the intrinsically safe socket for the USB Ex i memory stick during operation.

⚠️ **WARNING**

**Only apply the USB equipment mentioned as follows in the safe area!**

### 7.3 Connection of USB CD Rom drive

**Precondition:**     USB CD ROM drive with external power supply (USB 1.1 compatible!)
                    Connection to the intrinsically safe socket of the USB Ex i memory stick

### 7.4 Connection of USB mouse and USB keyboard

**Precondition:**     USB HUB (own power supply), USB mouse, USB keyboard
                    Connection to the intrinsically safe socket of the USB Ex i memory stick

---

---

# 8. Configuration of POLARIS Panel PCs

## 8.1 Network (Ethernet) setup

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

1. Go to Start ⇨ Control panel <double click>

2. Mark "Network connections" (chart 1) and activate with <double click>
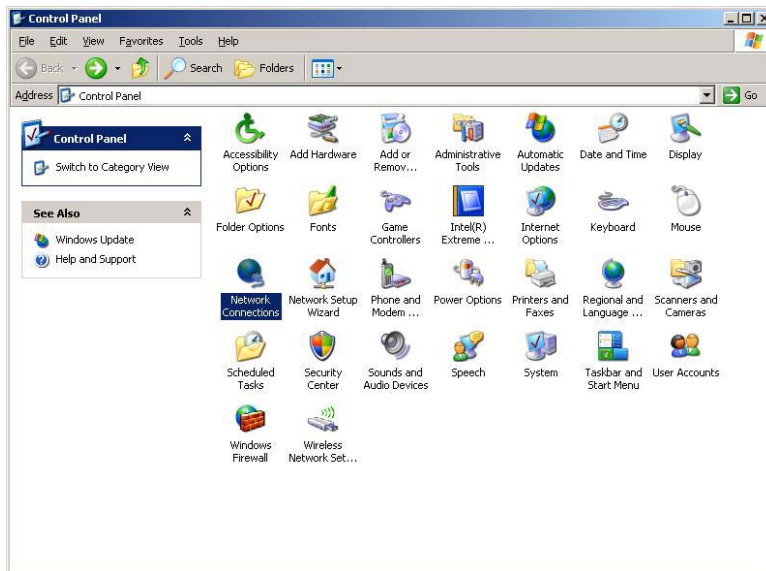


*Chart 1*

3. Select LAN connection (chart 2) with < double click >
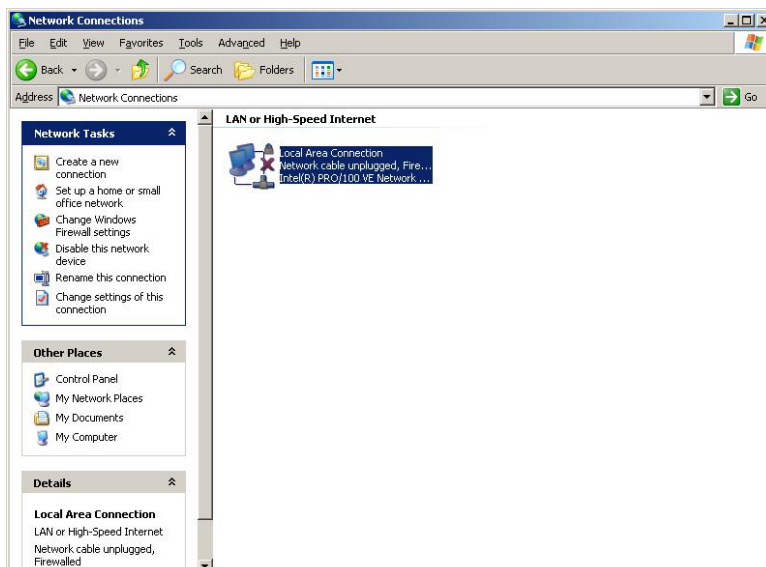


*Chart 2*

4.     To select the function Internet Protocol click on sub item "Properties"
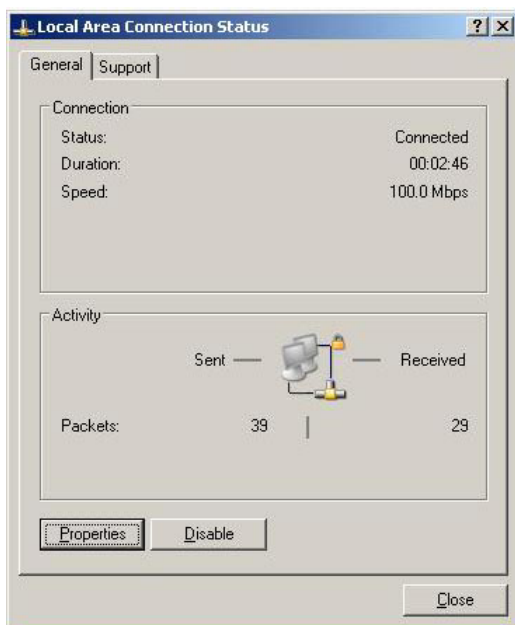


*Chart 3*

5.     With a < double click > on Internet Protocol the function is activated (chart 4)
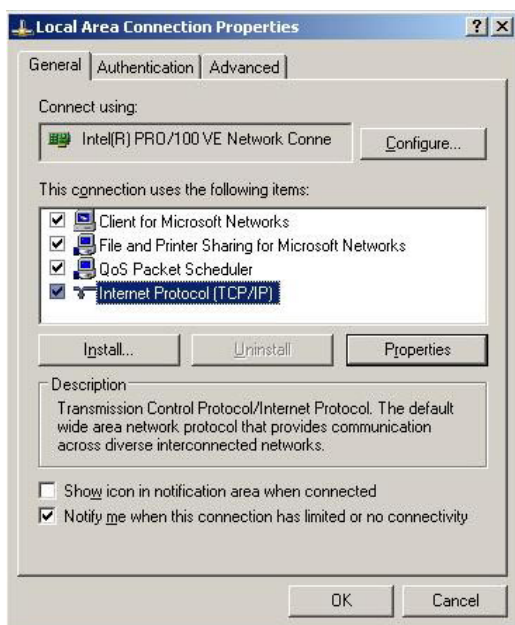


*Chart 4*

6. The following chart appears when the network and a DHCP server are available.
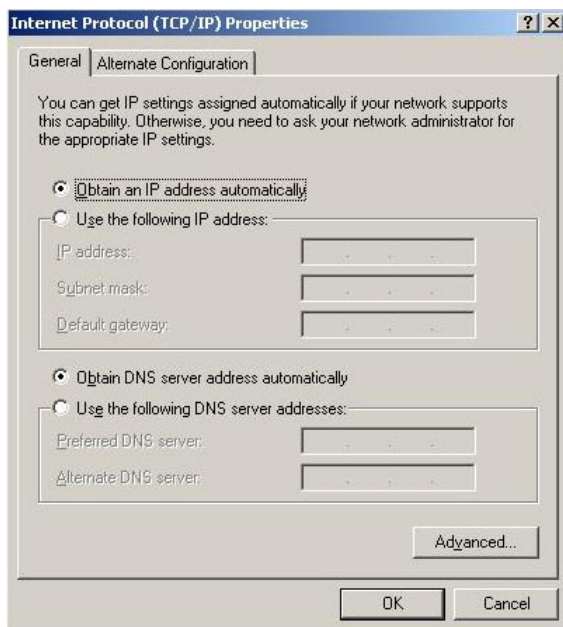


*Chart 5*

7. Configuration example (chart 6) when no network and no DHCP server are available (connection via switch or HUB)
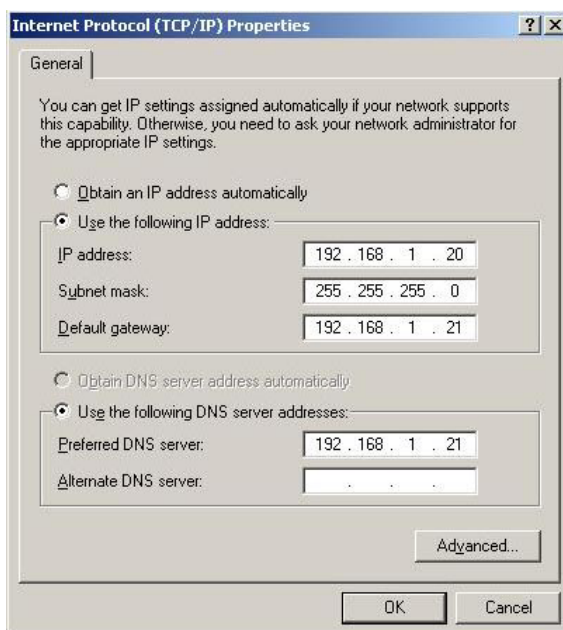


*Chart 6*

## 8.2 Calibration of touch screen

<Double click> on the touch screen symbol in the notification area     .

The following window opens:
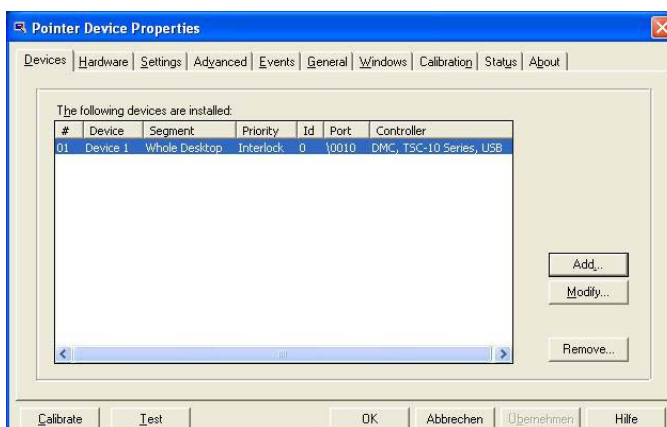


Select the function "Calibrate" (bottom left) to open the following window:



The following is displayed on the screen:

> Touch arrow tight or cross centers as they appear. Calibration will terminate if no touch is received within 10 seconds. Press escape to abort the calibration.

### 8.2.1 Touch screen signs and symbols in notification area

The mouse symbol indicates which key function of the mouse is carried out when the touch screen is touched. in this case it is the left mouse button.

when touching the symbol once the function changes once to the right mouse button until it is touched again. Then standard settings apply again.

The touch screen symbol indicates that the touch screen software is installed and that it is ready for operation. Should the symbol with a red star appear then there is no connection to the touch screen or the touch screen is not detected.

## 9. Accessories

**Included in the scope of the delivery:**

| Name | Order No. |
|---|---|
| WINDOWS XP Professional | |
| Driver for Mainboard and Touch | |
| Mounting clamps | 05-0091-0112 |

**Not included in the scope of the delivery:**

| Name | | | Order No. |
|---|---|---|---|
| Enclosure for POLARIS Panel PC 19.1" | "Exclusive" | | 03-8900-0225 |
| Enclosure for POLARIS Panel PC 15" | "Exclusive" | | 03-8900-0224 |
| Stand for floor mounting, rotary" | | | 05-0005-0050 |
| Support arm for wand mounting, rotary" | | | 05-0005-0058 |
| Keyboard in respective national language | | | 17-71VZ-40.0 |
| Mouse | | | 17-71VZ-1000 |
| Trackball | | | 17-71VZ-2000 |
| Touchpad | | | 17-71VZ-3000 |
| Connection cable | for keyboard and mouse | 1.8 m | 05-0068-0163 |
| | | 3.0 m | 03-0068-0204 |
| Connection cable | for keyboard and trackball | 1.8 m | 03-0068-0172 |
| | | 3.0 m | 05-0068-0205 |
| Connection cable | for keyboard and touchpad | 1.8 m | 03-0068-0183 |
| | | 3.0 m | 03-0068-0206 |
| Reinforcement frame for POLARIS Panel PC 19.1" | | | 05-0205-0010 |
| Reinforcement frame for POLARIS Panel PC 15" | | | 05-0205-0009 |
| Program software BMS Graf Pro | German | | 17-28TF-0071/0100 |
| | English | | 17-28TF-0071/0200 |
| | French | | 17-28TF-0071/0300 |
| Upgrade for BMS Graf Pro | German | | 17-28TF-0071/0101 |
| | English | | 17-28TF-0071/0201 |
| | French | | 17-28TF-0071/0301 |
| User Manual | German | | 03-0390-0020 |
| (1 exemplar included in scope of the delivery) | English | | 03-0390-0021 |
| | French | | 03-0390-0022 |
| Hand-held scanner BCS 302ex with integrated decoder | | | 17-21BA-002. |
| USB Ex i memory stick | | | 17-71VZ-5000 |

EG-Konformitätserklärung
EC-Declaration of Conformity
CE-Déclaration de Conformité

**BARTEC**

| Wir | We | Nous |
|---|---|---|

**BARTEC GmbH, Max-Eyth-Strasse 16, D-97980 Bad Mergentheim**

| erklären, dass das Produkt | declare, that the product | attestons, que le produit |
|---|---|---|

**POLARIS Serie** | **POLARIS series** | **POLARIS série**

**Typ-Nr.: 17-71Vx-xxxx/xxxx**

CE

| auf das sich diese Erklärung bezieht, den Bestimmungen der folgenden Richtlinien entspricht | to which this declaration relates is in accordance with the provision of the following directives | se référant à cette attestation correspond aux dispositions des directives sulvantes |
|---|---|---|

| 94/9/EG, 89/336/EWG | 94/9/EC, 89/336/EEC | 94/9/CE, 89/336/CEE |
|---|---|---|

| 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 60 079 - 0: 2004,
E IEC 60 079 - 5: 2005,
EN 60 079 - 7: 2003,
E IEC 60 079 - 11: 2005,

EN 61 000 - 6 - 2: 2001
EN 61 000 - 6 - 4: 2001
EN 60 950 - 1: 2001
E EN 61 241 - 0: 2004 mit
EN 61 241 - 1: 2004

| EG-Baumusterprüf-bescheinigung | EC-Type Examination Certificate | Attestation d'examen CE de type |
|---|---|---|

**IBExU 05 ATEX 1117 X**

| Qualitätssicherung Produktion | Production Quality Assessment | Assurance Qualitée Production |
|---|---|---|

**TÜV 96 ATEX 1086 Q**

| Kennzeichnung | Marking | Marquage |
|---|---|---|
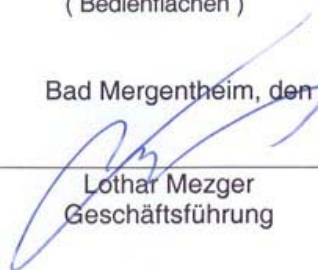
CE 0032
Ex II 2G Ex e q [ib] IIC T4
Ex II 2G Ex d e q [ib] IIC T4
Ex II 2G Ex ib IIC T4 ( Zubehör )
Ex II 2D tD A21 IP 6X T80 °C ( Bedienflächen )
0 °C ≤ Ta ≤ 50 °C

Bad Mergentheim, den 29.08.2005

Lothar Mezger
Geschäftsführung

## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[1] **EG-BAUMUSTERPRÜFBESCHEINIGUNG**
gemäß Richtlinie 94/9/EG, Anhang III

[2] Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, **Richtlinie 94/9/EG**

[3] EG-Baumusterprüfbescheinigungsnummer: **IBExU05ATEX1117 X**

[4] Gerät: Visualisierungseinheit POLARIS
Typ 17-71V*-****/****

[5] Hersteller: BARTEC GmbH

[6] Anschrift: Max-Eyth-Strasse 16
97980 Bad Mergentheim, GERMANY

[7] Die Bauart des unter [4] genannten Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung festgelegt.

[8] IBExU Institut für Sicherheitstechnik GmbH, BENANNTE STELLE Nr. 0637 nach Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass dieses Gerät die in Anhang II der Richtlinie festgelegten grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau des Gerätes zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen erfüllt.
Die Prüfergebnisse sind in dem Prüfbericht IB-05-3-212 vom 20.09.2005 festgehalten.

[9] Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit EN 60079-0:2004, prIEC 60079-5:2005, EN 60079-7:2003, prIEC 60079-11 (31G/143/CDV) und prEN 61241-0:2002, EN 61241-1:2004 und prIEC 61241-11 (31H/194/FDIS).

[10] Falls das Zeichen „X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser EG-Baumusterprüfbescheinigung unter [17] hingewiesen.

[11] Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

[12] Die Kennzeichnung des unter [4] genannten Gerätes muss die folgenden Angaben enthalten:

Ⓔ II 2G Ex e q [ib] IIC T4 bzw. Ⓔ II 2G Ex d e q [ib] IIC T4
Zubehör: Ⓔ II 2G Ex ib IIC T4
Bedienflächen: Ⓔ II 2D tD A21 IP 6X T 80° C
Trackball, Tastatur: Ⓔ II 2D ibD 21 T 120 °C

$$0\ °C \leq T_a \leq 50\ °C$$

**IBExU** Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7 - 09599 Freiberg, Germany
Tel.: 03731 3805-0 - Fax: 03731 23650

Zertifizierungsstelle Explosionsschutz
Im Auftrag

*(signature)*

(Dr. Lösch)

Freiberg, 22.09.2005

- Siegel -
(Kenn-Nr. 0637)

Bescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit. Bescheinigungen dürfen nur unverändert weiterverbreitet werden.

**Anlage**

Seite 1 von 3
IBExU05ATEX1117 X

## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[13]                                        **Anlage**

[14]         **zur EG-BAUMUSTERPRÜFBESCHEINIGUNG IBExU05ATEX1117 X**

[15]    **Beschreibung des Gerätes**
Die Visualisierungseinheiten sind Schalttafeleinbaugeräte zur Verwendung in explosionsgefährde-
ten Bereichen und stellen Steuerfunktionen mittels Bildschirm dar. Sie haben Anschlussmöglichkei-
ten für Ethernet-, COM- und LWL-Datenübertragung sowie eigensicheres Zubehör. Die Geräte in
unterschiedlichen Abmessungen bestehen aus mit Glaskugeln gefüllten Metallgehäusen mit Si-
cherheitsglasscheibe und beinhalten LCD-Bildschirm mit Touch, Stromversorgungen, CPU, Hard-
disk sowie elektronische Steuereinheiten und zugehörige eigensichere Betriebsmittel.
Das eigensichere Zubehör wie Maus, Trackball, Touch-Pad, Tastatur und USB-Stick sind Einbau-
geräte für IP-Gehäuse. Der elektrische Anschluss erfolgt über Anschlussräume entsprechend den
vorgesehenen Zündschutzarten.

| | |
|---|---|
| Umgebungstemperaturbereich | 0 °C bis 50 °C |
| Schutzart des Gehäuses: | IP 6X   frontseitig |
| | IP 54   rückseitig |

| | |
|---|---|
| Typbezeichnung: | POLARIS Control    Typ 17-71V0-****/**** |
| | POLARIS Panel PC  Typ 17-71V1-****/**** |
| | POLARIS Remote   Typ 17-71V2-****/**** |
| | Zubehör             Typ 17-71VZ-****/**** |

**Elektrische Daten**

| | |
|---|---|
| **Versorgungsspannung** | 24 VDC ± 10 % |
| (Kl. X1-X2 bzw. X10-X12) | bis 1,6 A |
| oder ab  15"-Gerät | 230 VAC ± 10 % |
| | bis 0,4 A |
| Bemessungsspannung $U_m$ | 253 V |

| | |
|---|---|
| **Ethernet (10 Base T)** | bis 5 V  AC/DC |
| (Kl. X10-16) | |

| | |
|---|---|
| **COM-Schnittstelle** | bis 30 V AC/DC |
| (Kl. X3-12 bzw. X17-X26) | |

**Eigensichere Daten- und Versorgungsstromkreise** in Zündschutzart  Ex ib IIC

(Kl. X1-X3)                              Zusatzmodul für Handscanner

| | |
|---|---|
| $U_O$ | 5,5 V |
| $I_O$ | 440 mA |
| $P_O$ | 1,25 W |
| $R_i$ | 25 Ω |
| $C_O$ | 55,8 µF |
| $L_O$ | 0,2 mH |

(Kl. X4-X9)                              ext. Tastatur/Eingabegerät

| | |
|---|---|
| $U_O$ | 6,0 V |
| $I_O$ | 2,29 A |
| $I_{stationär}$ | 0,16 A |
| $P_O$ | 0,20 W |
| $C_O$ | 40 µF |
| $L_O$ | 5 µH |

Kennlinie linear

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IBExU05ATEX1117 X

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## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[16]  **Prüfbericht**
Der Nachweis des Explosionsschutzes ist im Detail im Prüfbericht IB-05-3-212 dargelegt.

Zusammenfassung der Prüfergebnisse
Die Visualisierungseinheiten POLARIS mit Zubehör Typ 17-71V*-****/**** erfüllen die Anforderungen des Explosionsschutzes für Gerätegruppe II und der Gerätekategorie 2G bzw. 2D in Zündschutzart Sandkapselung in Verbindung mit Erhöhter Sicherheit bzw. Druckfester Kapselung, Eigensicherheit und Schutz durch Gehäuse für Gase der Explosionsgruppe IIC und der Temperaturklasse T4 bzw. einer Oberflächentemperatur von max. 120 °C.

[17]  **Besondere Bedingungen**
Die eigensicheren Stromkreise und das Gehäuse sind galvanisch verbunden. Im gesamten Verlauf der Errichtung der eigensicheren Stromkreise muss Potentialausgleich bestehen.
Es sind hochenergetische Lademechanismen an der Bedienoberfläche der Visualisierungseinheiten bzw. des Zubehörs (z. B. pneumatischer Partikeltransport) bei der Anwendung auszuschließen.
Die IP-Schutzart muss durch den Einbau der Geräte in IP-Gehäuse gewährleistet sein.
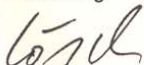
[18]  **Grundlegende Sicherheits- und Gesundheitsanforderungen**
Erfüllt durch Einhaltung von Normen (siehe [9]).

Im Auftrag

Freiberg, 22.09.2005

(Dr. Lösch)

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IBExU05ATEX1117 X

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## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[1] **EC-TYPE EXAMINATION CERTIFICATE**
according to Directive 94/9/EC, Annex III
(Translation)

[2] Equipment and Protective Systems intended for use
in Potentially Explosive Atmospheres, Directive 94/9/EC

[3] EC-Type Examination Certificate Number: **IBExU05ATEX1117 X**

[4] Equipment: Visual unit POLARIS
Type 17-71V*-****/****

[5] Manufacturer: BARTEC GmbH

[6] Address: Max-Eyth-Strasse 16,
97980 Bad Mergentheim, GERMANY

[7] The equipment mentioned under [4] and any acceptable variation thereto are specified in the schedule to this EC-Type Examination Certificate.

[8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with article 9 of the Council Directive 94/9/EC of 23rd March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of the equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in test report IB-05-3-212 of 20th September 2005.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2004, prIEC 60079-5:2005, EN 60079-7:2003, prIEC 60079-11 (31G/143/CDV) and prEN 61241-0:2002, EN 61241-1:2004, prIEC 61241-11 (31H/194/FDIS).

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified under [17] in the schedule to this EC-Type Examination Certificate.

[11] This EC-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

[12] The marking of the equipment mentioned under [4] shall include the following:

⟨Ex⟩ II 2G Ex e q [ib] IIC T4 resp.    ⟨Ex⟩ II 2G Ex d e q [ib] IIC T4
Accessories:    ⟨Ex⟩ II 2G Ex ib IIC T4
Operator control panel:    ⟨Ex⟩ II 2D tD A21 IP 6X T 80 °C
Trackball, Keyboard:    ⟨Ex⟩ II 2D ibD 21 T 120 °C

$0\,°C \leq T_a \leq 50\,°C$

**IBExU Institut für Sicherheitstechnik GmbH**
Fuchsmühlenweg 7 - 09599 Freiberg, Germany
☎ +49 (0) 3731 3805-0 - 📠 +49 (0) 3731 23650

Authorised for certifications
- Explosion protection -

By order

*(signature)*

(Dr. Lösch)

- Seal-
(ID no. 0637 )

Freiberg, 22nd September 2005

Certificates without signature and seal are not valid.
Certificates may only be duplicated completely and unchanged.
In case of dispute, the German text shall prevail.

**Schedule**

Page 1 of 3
IBExU05ATEX1117 X

## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[13]                                    **Schedule**

[14]  **to EC-TYPE EXAMINATION CERTIFICATE IBExU05ATEX1117 X**

[15]  **Description of the equipment**

The visual units are control board apparatus intended for the use in hazardous areas. The visual units illustrate controller functions on the display. They have terminals for Ethernet, COM- and LWL-data transmission as well as intrinsically safe equipment. The equipment with different dimensions consist of metal enclosures filled with glass balls with shatterproof glass and they contain LCD-display with touch screen, power supply, CPU, hard disc as well as electronic control units and associated intrinsically safe apparatus.

The intrinsically safe equipment like mouse, trackball, touch-pad, keyboard and USB-stick are inserted instruments for enclosures (IP code). The electrical connection is carried out via terminal compartments in accordance with the provided types of protection.

| | |
|---|---|
| Ambient temperature range: | 0 °C to 50 °C |
| Degree of protection of the enclosure: | IP 6X  front side |
| | IP 54  back side |

| Type designation: | POLARIS Control | type 17-71V0-****/**** |
|---|---|---|
| | POLARIS Panel PC | type 17-71V1-****/**** |
| | POLARIS Remote | type 17-71V2-****/**** |
| | accessories | type 17-71VZ-****/**** |

**Electrical data**

| | |
|---|---|
| **Power supply circuit** (Terminals X1-X2 resp. X10-X12) or from visual unit of the size 15" | 24 VDC ± 10 % to 1.6 A 230 VAC ± 10 % up to 0.4 A |
| Rated voltage ($U_m$) | 253 V |
| **Ethernet (10 Base T)** (Terminals X10-X16) | up to 5 V AC/DC |
| COM-interface (Terminals X3-X12 resp. X17-X26) | up to 30 V AC/DC |

**Intrinsically safe data- and supply circuits** in type of protection Ex ib IIC

(Terminals X1-X3)                     Auxiliary module for handheld scanner

| | |
|---|---|
| $U_O$ | 5.5 V |
| $I_O$ | 440 mA |
| $P_O$ | 1.25 W |
| $R_i$ | 25 Ω |
| $C_O$ | 55.8 µF |
| $L_O$ | 0.2 mH |

(Terminals X4-X9)                     external keyboard/input unit

| | |
|---|---|
| $U_O$ | 6.0 V |
| $I_O$ | 2.29 A |
| $I_{stationary}$ | 0.16 A |
| $P_O$ | 0.20 W |
| $C_O$ | 40 µF |
| $L_O$ | 5 µH |

linear characteristic

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## IBExU Institut für Sicherheitstechnik GmbH
### An-Institut der TU Bergakademie Freiberg

[16] **Test Report**
The detailed verification of the explosion protection is recorded in the Test Report IB-05-3-212.

Summary of test results:
The Visual units POLARIS with accessories type 17-71V*-****/**** fulfil the requirements of explosion protection for the Equipment Group II and Category 2G respectively 2D in type of protection Powder filling in combination with Increased safety respectively flameproof enclosures, Intrinsic safety and protection by enclosure for gases of the Explosion Group IIC and Temperature Class T4 respectively with a maximum surface temperature of maximum 120 °C.
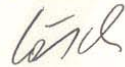
[17] **Special conditions**
The intrinsically safe circuits and the enclosure are galvanically connected. In the whole course of the formation of intrinsically safe circuits equipotential bonding must be guaranteed. High energy load mechanism on the operating surface of the Visual units respectively of equipment (for example pneumatic particle transport) have to be excluded. The Degree of protection (IP code) must be ensured by mounting the units in enclosures (IP code).

[18] **Essential health and safety requirements**
Confirmed by compliance of standards (see [9]).

By order

Freiberg, 22nd September 2005

(Dr. Lösch)

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IBExU05ATEX1117 X

## Resistance list – Polyester front foil
### POLARIS series

**BARTEC**

Page 1 of 1

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

**Alcohols**
Ethanol
Cyclohexanol
Glycol
Glycerol
Isopropanol
Methanol

**Hydrocarbons**
Aliphatic hydrocarbons
General
Petrol
Benzene
Toluol
Xylol

**Chlorinated hydrocarbons**
CFC
Perchloroethylene
III-Trichloroethane
Trichloroethane

**Esters**
Ethyl acetate

**Other organic solvents**
Acetone
Dia. ethyl form amide
Dioxan

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

**Aldehyde**
Acetaldehyd
Formaldehyd

**Caustic lotions**
Ammonia              < 2 %
Caustic soda solution   < 2 %

**Salt lotions**
Alkalicarbonate
Bichromate
Prussiates of potash

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

**Household cleaning agents**
Potash soap
Tenside
Fabric softener

**Technical Oils and Fats**
Drilling lotions
Diesel oil
Varnish
Fuel oil
Paraffin oil
Ricinus oil
Silicone oil
Turpentine oil and turpentine oil substitute

(Where not stated otherwise: concentration = 100%)

D_BMS791.doc • Resistance list Polyester front foil • Revision 0 / Status: December 12th, 2005 • Technical data subject to change

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