



[1] **EU-TYPE EXAMINATION CERTIFICATE - Translation**

[2] Equipment or protective systems intended for use in potentially explosive atmospheres, Directive 2014/34/EU

[3] EU-type examination certificate number **IBExU05ATEX1117 X** | Issue 3

[4] Product: **Visual Unit POLARIS**  
Type: 17-71V\*-\*\*\*\*/\*\*\*\*\* \*\*\*\*

[5] Manufacturer: BARTEC GmbH

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

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH, notified body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential test report IB-21-3-0096.

[9] Compliance with the essential health and safety requirements has been assured by compliance with: EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-5:2015, EN IEC 60079-7:2015/A1:2018, EN 60079-11:2012, EN 60079-18:2015/A1:2018, EN 60079-28:2015 and EN 60079-31:2014 except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Visual Unit:

Polaris Control	Type 17-71V0-****/*****
Polaris Panel PC	Type 17-71V1-****/*****
Polaris Remote	Type 17-71V2-****/*****
Polaris Web-Client	Type 17-71V3-****/*****

II 2G Ex db eb mb q [ib op pr] IIC T4 Gb

II 2D Ex mb tb IIIC T120° C Db  
-20 °C ≤ T<sub>amb</sub> ≤ +60 °C

The marking is variable and depends on type and components used.

Polaris SMART HMI Type 17-71V6-\*\*\*\*/\*\*\*\*\*

II 2G Ex eb q [ib] IIC T4 Gb

II 2D Ex tb IIIC T120° C Db  
-20 °C ≤ T<sub>a</sub> ≤ +60 °C

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

Intrinsically safe accessories: Type 17-71VZ-\*\*\*\*/\*\*\*\*

⊕ II 2G Ex ib IIC T4 Gb  
⊕ II 2D Ex ib IIIC T120° C Db  
-20 °C ≤ T<sub>amb</sub> ≤ +60 °C (50 °C)

Accessory:

Type 17-71VZ-A0\*\*/\*\*\*\*

⊕ II 2G Ex mb IIC T4 Gb  
⊕ II 2D Ex mb IIIC T120° C Db  
-20 °C ≤ T<sub>amb</sub> ≤ +60 °C

Type 17-71VZ-B0\*\*/\*\*\*\*

⊕ II 2G Ex eb mb IIC T4 Gb  
⊕ II 2D Ex tb IIIC T120° C Db  
-20 °C ≤ T<sub>a</sub> ≤ +55 °C

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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.

Freiberg, 2022-08-05

[13]

**Schedule**

[14]

**Certificate number IBExU05ATEX1117 X | Issue 3**

[15] **Description of product**

The visual units are control board apparatus intended for the use in hazardous areas. The visual units illustrate control 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 consists of metal enclosures filled with glass balls with shatterproof glass and it optionally contains LCD-display with touch screen, power supply, CPU, storage media as well as electronic control units and associated intrinsically safe apparatus. The visual units, USB Smart Device and intrinsically safe accessories as mouse, trackball, joystick, touch-pad and keyboard are inserted instruments for enclosures (IP code). The USB-sticks are part of the intrinsic safe accessory. The electrical connection is carried out via terminal compartments in accordance with the provided types of protection.

Optionally the USB SMART Device may be used as accessory. This is either a Bluetooth module or a wireless LAN module which is encapsulated.

The Smart Modules may be connected separately as further accessories. They are interface converters for different interfaces, e. g. USB, Profibus-DP, Ethernet, serial interfaces.

Technical data:

Type designation:	POLARIS Control	Type 17-71V0-****/*****
	POLARIS Panel PC	Type 17-71V1-****/*****
	POLARIS Remote	Type 17-71V2-****/*****
	POLARIS Web-Client	Type 17-71V3-****/*****
	POLARIS SMART HMI	Type 17-71V6-****/*****
	Intrinsically safe accessories	Type 17-71VZ-****/*****
	Accessory USB Smart Device	Type 17-71VZ-A0**/*****
	Accessory Smart Module	Type 17-71VZ-B0**/*****

Type designation:	POLARIS Control Type 17-71V0-****/***** POLARIS Panel PC Type 17-71V1-****/***** POLARIS Remote Type 17-71V2-****/***** POLARIS Web-Client Type 17-71V3-****/*****	POLARIS SMART HMI Type 17-71V6-****/*****	POLARIS Smart Module Type 17-71VZ-B0**/*****
ambient temperature range:	-20 °C ... +60 °C	-20 °C ... +60 °C	-20 °C ... +55 °C
degree of protection of enclosure:	≥ IP64 front IP54 rear	≥ IP64	≥ IP64

**Electrical data**

**Supply voltage (POLARIS Control / Panel PC / Remote / Web Client)**

12 V, 24 V DC ± 10 %

1.6 A or 4 A

or 90...253 VAC

0.2... 1.1 A

Maximum voltage  $U_m$  253 V

**Ethernet (10/100 Base T)** maximum 5 V AC/DC

**COM-Interface** maximum 30 V AC/DC

**USB** maximum 5.5 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 <sub>o</sub>	5.5 V
I <sub>o</sub>	440 mA
P <sub>o</sub>	1.25 W
R <sub>i</sub>	25 Ω
C <sub>o</sub>	55.8 μF
L <sub>o</sub>	0.15 mH

(terminals X4-X9 or X19-X24)

PS2-Ex i (connection for external input units)

U <sub>o</sub>	6.0 V
I <sub>o</sub>	2.25 A
I <sub>stationary</sub>	215 mA
P <sub>o</sub>	989 mW
C <sub>o</sub>	40 μF
L <sub>o</sub>	5 μH

**USB Ex-i**

intrinsically safe USB Interfaces (alternatively to the existing USB Ex-i interface)

U <sub>o</sub>	5.89 V
I <sub>o</sub>	1.376 A
I <sub>stationary</sub>	219 mA
P <sub>o</sub> *	905 mW
C <sub>i</sub>	1.1 μF
L <sub>i</sub>	negligible
C <sub>o</sub>	38.9 μF
L <sub>o</sub>	5 μH

\* consideration for thermal ignition

Linear characteristic

**Supply Voltage POLARIS SMART HMI**

(terminals X1-X3)

Maximum voltage U<sub>m</sub>

20...30 V DC

up to 2.5 A

253 V

**USB**

(terminals X8-15)

maximum 5.5 V AC/DC

**Ethernet (10/100 Base T)**

(terminals 4-7)

maximum 5 V AC/DC

**USB1 Ex-i and USB 2 Ex i**

intrinsically safe USB Interfaces at Polaris SMART HMI

U <sub>o</sub>	5.89 V
I <sub>o</sub>	2.845 A
I <sub>stationary</sub>	483 mA
P <sub>o</sub> *	1.94 W
C <sub>o</sub>	40 μF
L <sub>o</sub>	5 μH

\* consideration for thermal ignition

Linear characteristic

For circuits including inductances and capacitances the following has to be observed:  
The values for  $L_o$  and  $C_o$ , mentioned in the Tables above are allowed for:

- distributed inductance and capacitance e.g. as in a cable or,
- if the total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value or
- if the total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The values of  $L_o$  and  $C_o$  determined in the EU-Type Examination shall be reduced to 50 % or taken from the following table if both of the following conditions are met:

- the total  $L_i$  of the external circuit (excluding the cable)  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq 1\%$  of the  $C_o$  value.

Auxiliary module for handheld scanner	Ex ib IIC		
$C_o$ [nF]	600	600	600
$L_o$ [ $\mu$ H]	1	2	5
PS2 Ex i	Ex ib IIC		
$C_o$ [nF]	600	600	600
$L_o$ [ $\mu$ H]	1	2	5
USB Ex i	Ex ib IIC		
$C_o$ [nF]	600	600	600
$L_o$ [ $\mu$ H]	1	2	5

**Nominal voltage USB SMART Device Interface**      5 V (USB standard)  
USB 2.0

**Polaris Smart Module**

Power / Input Interface (Connection cable)  $U_{max}$  6 V (Standard USB Interface 5 V)

Output Interfaces:

- **Polaris Smart Modul USB to Ethernet and USB**  
Standard USB 2.0                    maximum 5.5 V Short circuit protection  
Ethernet (10/100 Base T)    maximum 5 V AC/DC
- **Polaris Smart Module USB to Profibus DP**  
Profibus -DP
- **Polaris Smart Module USB to Serial**  
TTY, RS422/485, 2x RS232
- **Polaris Smart Module USB to USB Hub**  
Supply Voltage                    20...30 V DC (Connection cable)  
Input Interface (Connection cable)  $U_{max}$  6 V (Standard USB Interface 5 V)  
Output Interface  
3x Standard USB 2.0                    maximum 5.5 V / Short circuit protection

*Variations compared to issue 2 of this certificate:*

*Variation 1*

A new type and new accessories have been added. Thus the type key has been extended.

*Variation 2*

Alternative, internal components as well as layout changes without influence on the intrinsically safe parameters have been assessed.

[16] **Test report**

The test results are recorded in the confidential test report IB-21-3-0096 of 2022-08-05.  
The test documents are part of the test report and they are listed there.

*Summary of the test results*

The Visual unit POLARIS type 17-71V\*\_\*\*\*\*/\*\*\*\* with accessories further fulfils the requirements of the explosion protection for the Equipment Group II and Category 2G or 2D in type of protection powder filling in combination with increased safety or flameproof enclosure, intrinsic safety and encapsulation for gases of the Explosion Group IIC and Temperature Class T4 as well as protection by enclosure for dusts of the Explosion Group IIIC and a maximum surface temperature of 120 °C.

**[17] Specific conditions of use**

- 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.
- Intensive charging processes on the operating surface of the Visual units respectively of equipment from the display (for example. pneumatic particle transport) have to be excluded.
- When using the device in dust explosive atmospheres the devices of type 17-71V0-\*\*\*\*/\*\*\*\*\* , type 17-71V1-\*\*\*\*/\*\*\*\*\* , type 17-71V2-\*\*\*\*/\*\*\*\*\* and type 17-71V3-\*\*\*\*/\*\*\*\*\* have to be mounted in a suitable and separately certified enclosure.
- The supporting frame has to be used when the visual unit is mounted in separate enclosures.
- The USB flash drive (Stick) type 17-A1Z0-0007 may only be operated in an ambient temperature range between -20 °C and +50 °C.

**[18] Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:

None

**[19] Drawings and Documents**

The documents are listed in the test report.

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Freiberg, 2022-08-05