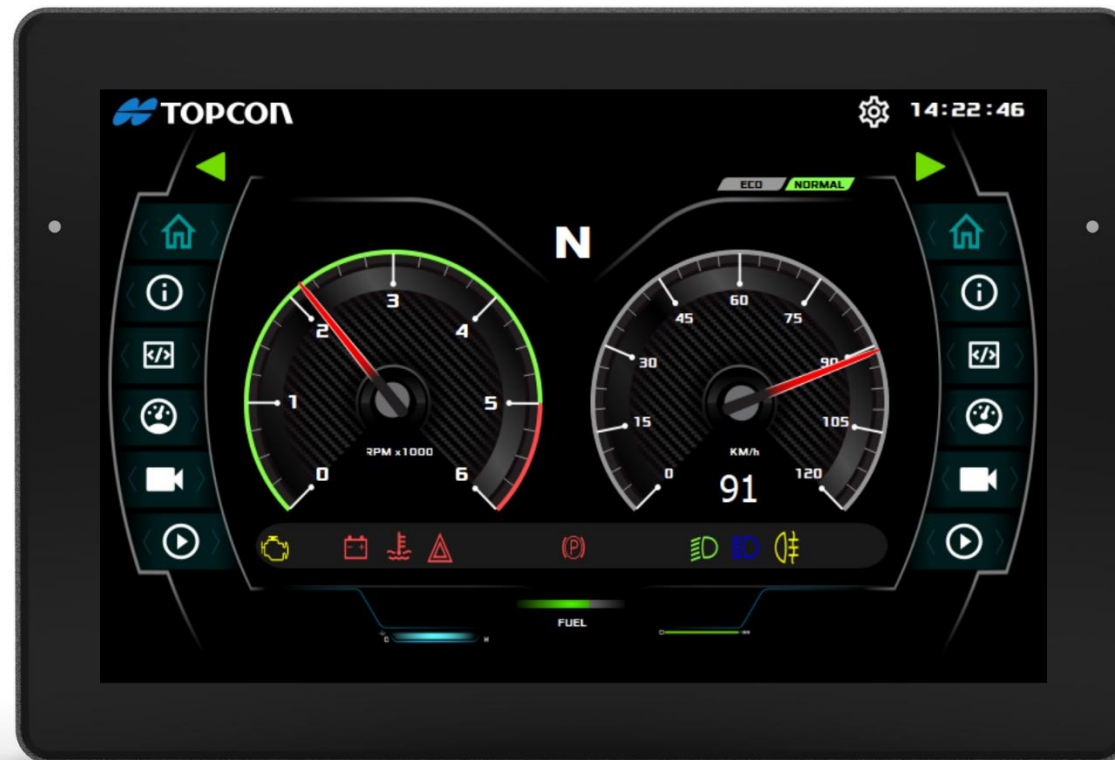


# Technical Data Sheet

## OPUS B6 Eco



# 1. Notes and Warnings

## Attention!

This description is not a substitution for the concerned product's documentation. Please do read the documentation including the manuals carefully before dealing with this product. If the safety instructions in the documentation are not followed dangerous situation can occur that can result in damages, injuries and/or death by high voltage or wrong handling. In case you do not have the correct documentation, you can order it by contacting [opus-support@topcon.com](mailto:opus-support@topcon.com). Only properly trained personnel with the correct qualification is allowed to handle the device.

## Attention!

Do not open the housing to avoid danger to high voltage. Before touching the electric assemblies make sure that the electricity is switched off completely. If the front panel is broken the device needs to be taken out of service due to risk of injury. If perceivable damages on the device exist that can compromise the functionality, it must be taken out of service due to the danger of malfunctions. These particularly include damages to the LCD display, damages to the keyboard, damages that compromise the protection level and damages to the encoder knobs.

## Please note:

All content is subject to change without notice.  
Errors and omissions excepted.

## Mounting and Handling

- Do not use the cable as a handle to carry the device.
- Mounting in clean working environment only.
- Do not mount the device under the use of violence because it can cause damage.
- The device must be mounted by trained personnel only into especially designed and tested system.
- The device may not be opened or disassembled.
- The device is to be cleaned with a moist fuzz free cotton cloth. If necessary, a mild cleaning agent may be used. Do not use acid or abrasive cleaning agents.
- The device is to be stored in a cool and dry environment and to be protected against sunshine.
- If the environmental temperature is beneath 10°C the reaction time of the display increases.

## 2. General Information

|                                                                                                                    | OPUS B6 Eco Basic                                        | OPUS B6 Eco Full                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Order Number</b><br>CAN=C++/Projektor<br>CDS=Codesys<br>ISO=ISO-VT<br>CWV=Codesys WebVisu<br>UTx=Topcon Horizon | OPUSB6EN1CANB000<br>OPUSB6EN1CDSB000<br>OPUSB6EN1ISOB000 | OPUSB6EN1CANF000<br>OPUSB6EN1CANA000<br>OPUSB6EN1CDSF000<br>OPUSB6EN1CWVF000<br>OPUSB6EN1UTSF000<br>OPUSB6EN1UTMF000<br>OPUSB6EN1UTLF000 |
| <b>Dimensions</b>                                                                                                  | 248,9 x 177,5 x 42,9 mm                                  |                                                                                                                                          |
| <b>Weight</b>                                                                                                      | ~1400 g                                                  |                                                                                                                                          |
| <b>Housing</b>                                                                                                     | Aluminum die cast, powder coated                         |                                                                                                                                          |
| <b>Mounting</b>                                                                                                    | landscape or portrait<br>standalone<br>in-dash           |                                                                                                                                          |

## 3. Display

|                        | OPUS B6 Eco Basic                        | OPUS B6 Eco Full |
|------------------------|------------------------------------------|------------------|
| <b>Type</b>            | TFT Color Graphic LCD with LED backlight |                  |
| <b>Size</b>            | 10,1 ", 259 mm (W) x 175 mm (H)          |                  |
| <b>Resolution</b>      | 1280 x 800px (WQVGA), 15:9               |                  |
| <b>Colors</b>          | 16,7 Mio.                                |                  |
| <b>Brightness</b>      | typ. 1.000cd/m²                          |                  |
| <b>Contrast Ratio</b>  | typ. 800:1                               |                  |
| <b>Optical Bonding</b> | yes                                      |                  |

## 4. Input Devices

|                        | OPUS B6 Eco Basic                | OPUS B6 Eco Full |
|------------------------|----------------------------------|------------------|
| Touch                  | PCT                              |                  |
| Keypad                 | N/A                              |                  |
| Indicators and Sensors | Light sensor<br>1 Multicolor LED |                  |

## 5. Electronics

|                             | OPUS B6 Eco Basic                                                                                                                                                                                                                                                                                                                              | OPUS B6 Eco Full         |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| CPU                         | NXP i.MX6® Dual, 800MHz                                                                                                                                                                                                                                                                                                                        | NXP i.MX6® Quad, 1000MHz |
| Mass storage                | ≥4 GByte pSLC Mode                                                                                                                                                                                                                                                                                                                             | ≥8 GByte pSLC Mode       |
| RAM                         | 1 GByte                                                                                                                                                                                                                                                                                                                                        | 2 GByte                  |
| EEPROM                      | 2.816 Byte, 1.024 Byte available for user                                                                                                                                                                                                                                                                                                      |                          |
| RTC                         | Buffered by gold cap<br>Buffered for 2 weeks at T ambient<br>Deviation: max. 1s/day                                                                                                                                                                                                                                                            |                          |
| Speaker                     | Up to 90dB @10cm distance (@1kHz) (max. @ ~8kHz),                                                                                                                                                                                                                                                                                              |                          |
| Frequency range (operating) | 660 Hz to 20 kHz                                                                                                                                                                                                                                                                                                                               |                          |
| Power Supply                | System supplied through terminal 30 (battery +, see pinout) and 31 (battery -, see pinout).<br>Terminal 15 (ignition) to be used to switch on/off.<br>Operating voltage range: 8 ... 36 V DC.<br>Short circuit protection.<br>Over-voltage protection up to 48 V for max. 5 min.<br>Inverse polarity protection up to -48 V DC for max. 5 min. |                          |

## Current consumption (without external load), max

| Power Mode | Current at 12 V | Current at 27 V |
|------------|-----------------|-----------------|
| On         | ≤ 950 mA        | ≤ 400 mA        |
| Low Power  | 450 – 950 mA    | 200 – 400 mA    |
| Sleep      | ≤ 140 mA        | ≤ 70 mA         |
| Off        | ≤ 3 mA          | ≤ 3 mA          |

## 6. Interfaces

|                           | OPUS B6 Eco Basic                                                                                                                                                                                                                        | OPUS B6 Eco Full                                                                                       |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>CAN Bus</b>            | 4 x CAN-Interface according to ISO 11898, CAN-specification 2.0 B active, up to 1 Mbit/s (default 250 Kbit/s, 500 Kbit/s, 750 Kbit/s, 1 Mbit/s)                                                                                          |                                                                                                        |
| <b>RS232</b>              | 1 x RS232-Interface<br>Type: EIA232 (only RXD, TXD, GND)<br>Speed: max. 115.200 Kbps                                                                                                                                                     |                                                                                                        |
| <b>USB</b>                | Host 2.0<br>Side connector: 1 x Type A High speed<br>Guaranteed 900 mA @ 5V<br>Back connector: 1 x Type A High speed<br>Guaranteed 900 mA @ 5V                                                                                           |                                                                                                        |
| <b>Video-Interface</b>    | 2 x analog video input, 1Vss<br>Camera control output (open drain) for special functionality (mirror, shutter, heating etc.)<br>Camera supply output guaranteed 300mA @ 12VDC<br>For optimal performance a shielded cable shall be used. |                                                                                                        |
| <b>Ethernet Interface</b> | 1 x 10/100 Mbit/s Base T                                                                                                                                                                                                                 | 1 x 10/100 Mbit/s Base T<br>Alternative:<br>1 x Automotive Ethernet Interface<br>10/100 Mbit/s Base T1 |
| <b>Inputs</b>             | N/A                                                                                                                                                                                                                                      |                                                                                                        |
| <b>Outputs</b>            | N/A                                                                                                                                                                                                                                      |                                                                                                        |
| <b>Audio</b>              | 1 x Audio output (left, right, GND)<br>AC97 compatible<br>Output power: approx. 50mW                                                                                                                                                     |                                                                                                        |

|                   |                                                                                    |
|-------------------|------------------------------------------------------------------------------------|
| <b>Wake-Input</b> | Input which can be used for Silent-Wake-On of the OPUS to reduce visible boot-time |
|-------------------|------------------------------------------------------------------------------------|

## 7. Connectors

|                 | OPUS B6 Eco Basic                                                                                                                                                                                                                       | OPUS B6 Eco Full |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Main</b>     | Tyco-AMP 1437288-6<br>Mating connector (customer) Tyco-AMP 3-1437290-7<br>Mating crimp contact (customer) Tyco AMP 3-1447221-4<br>Dummy Plug (customer) Tyco-AMP 4-1437284-3<br>For industrial use cable length should be less than 30m |                  |
| <b>Video</b>    | M12 round connector, female, 5-pole, B-coded acc. to EN 61076-2-101                                                                                                                                                                     |                  |
| <b>Ethernet</b> | M12 round connector, female, 4-pole, D-coded acc. to EN 61076-2-101                                                                                                                                                                     |                  |

## 8. Software

|                                | OPUS B6 Eco Basic                                     | OPUS B6 Eco Full |
|--------------------------------|-------------------------------------------------------|------------------|
| <b>Operating System</b>        | Linux, kernel 6.0.0 or higher                         |                  |
| <b>Application Programming</b> | OPUS Projektor Tool<br>CODESYS 3.x<br>C/C++<br>ISO-VT |                  |

## 9. Testing and Verification

### CE-Compliance

#### EU Directive 2014/30/EU (EMC) according to:

- EN 13766-1: Earth-moving and building construction machinery - Electromagnetic compatibility (EMC) of machines with internal electrical power supply - Part 1: General EMC requirements under typical electromagnetic environmental conditions
- EN ISO 14982: Agricultural and forestry machinery - Electromagnetic compatibility - Test methods and acceptance criteria
- EN 50498: Electromagnetic compatibility (EMC). Product family standard for aftermarket electronic equipment in vehicles
- EN 61000-6-2: Electromagnetic compatibility (EMC) - Generic standards - Immunity for industrial environments
- EN 61000-6-4: Electromagnetic compatibility (EMC). Generic standards. Emission standard for industrial environments

#### EMC Emission radiated

|               |                                           |
|---------------|-------------------------------------------|
| 30-75 MHz     | 62-52 <sup>1</sup> dB(μV/m) – QP – 120kHz |
|               | 52-42 <sup>1</sup> dB(μV/m) – AV – 120kHz |
| 75-400 MHz    | 52-63 <sup>2</sup> dB(μV/m) – QP – 120kHz |
|               | 42-53 <sup>2</sup> dB(μV/m) – AV – 120kHz |
| 400-1000 MHz  | 63 dB(μV/m) – QP – 120kHz                 |
|               | 53 dB(μV/m) – AV – 120kHz                 |
| 1000-2500 MHz | 73 dB(μV/m) – P – 120kHz                  |
|               | 53 dB(μV/m) – AV – 120kHz                 |
| 2500-6000 MHz | 80 dB(μV/m) – P – 1000kHz                 |
|               | 60 dB(μV/m) – AV – 1000kHz                |

QP: Quasi-Peak

AV: Average

P: Peak

1: Value decreases linearly with the logarithm of the frequency.

2: Value increases linearly with the logarithm of the frequency.

## EMC Immunity radiated

20MHz to 800MHz with amplitude modulation 800MHz to 6GHz with pulse modulation

30V/m for the radiated field (absorber lined chamber) testing method (ISO 11452-2) in vertical and horizontal polarization

OR/AND

60mA for the Bulk Current Injection (BCI) testing method (ISO 11452-4)

## EMC Emission conducted

### **12V-System** (Maximum values) **24V-System** (Maximum values)

Positive slow pulses: +37V

Positive slow pulses: +37V

Negative slow pulses: -75V

Negative slow pulses: -150V

Positive fast pulses: +75V

Positive fast pulses: +150V

Negative fast pulses: -112V

Negative fast pulses: -150V

### **12 V-System**

### **24 V- System**

Test Pulse 1 Us = 112 V; FS: C

Us=-450V; FS: C

Test Pulse 2a Us=+55V; FS: B

Us=+55V; FS: B

Test Pulse 2b Us=+10V; FS: C

Us=+20V; FS: C

Test Pulse 3a Us=-165V; FS: A

Us=-220V; FS: A

Test Pulse 3b Us=+112V; FS: A

Us=+220V; FS: A

Test Pulse 4 Us<sub>6</sub>=6V; Us=6.5 V FS: B

Us<sub>6</sub>=6V; Us=10V FS: B

(Starting profile)

Load Dump Us=+79V; FS: C

Us=+151V; FS: C

FS: Function Status

## **Electrostatic Discharge**

+/- 8kV contact discharge; FS: A

+/- 15kV air discharge; FS: A

## **EMC Susceptibility conducted**

Frequency: 150kHz–80MHz; U=10V; AM: 1kHz, 80%; FS: A

## **Burst**

$t_r=5\text{ns}$ ;  $t_d=50\text{ns}$ ; Burst duration: 15ms;

Period: 300ms;  $t=5\text{min}$ ; FS: B

Power-lines:  $U_s=+/-2\text{kV}$

Signal-lines:  $U_s=+/-1\text{kV}$

## **Surge**

$t_r=1.2\mu\text{s}$ ;  $t_d=50\mu\text{s}$ ; Amount: 5; Wait-time: 60s; FS: B

Power-lines:  $U_s=+/-0.5\text{kV}$

## **E1 – Type approval**

EU Directive ECE R 10

## **Protection Level (IP Code)**

IP 66 according to ISO 20653: Road Vehicles – Degrees of protection (IP-Code) – Protection of electrical equipment against foreign objects, water and access

## FCC

„This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. “

## Electrical

12 and 24V-Systems according to:

### Inverse Polarity resistance

5min @ -48V (no defect)

### Over voltage resistance

5min @ +48V (no defect)

### Start behavior

Start over Temperature

Start at TRoom; decrease in 5°steps to TMin; go to TRoom; increase in 5°steps to THigh; Start DUT at each T; Successful start expected

### Short circuit strength

Connect each Pin of Main-, Video- and Ethernet-Connector for 5 Min to GND and for 5 Min to 36V; FS: C

### Superimposed alternating voltage

Triangle signal, frequency sweep: 50Hz-25kHz-50Hz inside 60s; FS: A

| Level                     | 12V  | 24V   |
|---------------------------|------|-------|
| AC peak-to-peak $U_{PP1}$ | 1VAC | 4VAC  |
| AC peak-to-peak $U_{PP2}$ | 2VAC | 4VAC  |
| AC peak-to-peak $U_{PP3}$ | 4VAC | 10VAC |

## De-/Increase Supply Voltage

Sweep Voltage U<sub>Min</sub>-0V-U<sub>Min</sub> with 0.5V/min; FS: D

## Drop in Supply Voltage

| 12V System                                                                                  | 24V System                                                                                |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| U <sub>Start</sub> =U <sub>Min</sub> ; U <sub>S</sub> =4.5V<br>t <sub>d</sub> =100ms; FS: B | U <sub>Start</sub> =U <sub>Min</sub> ; U <sub>S</sub> =9V<br>t <sub>d</sub> =100ms; FS: B |

## Batteryless Operation

| 12V System                                                 | 24V System                                                 |
|------------------------------------------------------------|------------------------------------------------------------|
| U <sub>1</sub> =10V; U <sub>2</sub> =18V;<br>t=5min; FS: A | U <sub>1</sub> =20V; U <sub>2</sub> =38V;<br>t=5min; FS: A |

## Mechanical

### Vibration, noise

| Frequency [Hz] | PSD [(m/s <sup>2</sup> )/Hz] |
|----------------|------------------------------|
| 10             | 18                           |
| 20             | 36                           |
| 30             | 36                           |
| 141            | 1.64                         |
| 200            | 1.93                         |
| 300            | 1                            |
| 2000           | 1                            |

32h per Axis; FS: A

## Vibration, sinusoidal

### Resonance sweep

| Frequency | Displacement           | Acceleration |
|-----------|------------------------|--------------|
| 2 Hz      | +/- 1 mm<br>(2 mm PtP) | (0.016 g)    |
| 10 Hz     | -                      | 2g           |
| 2000 Hz   | -                      | 2g           |

1 Octave/minute, 30min per resonance

### Endurance Test:

| Frequency | Displacement]               | Acceleration |
|-----------|-----------------------------|--------------|
| 5 Hz      | +/- 0.75 mm<br>(1.5 mm PtP) | (0.075 g)    |
| 57,6 Hz   | -                           | 5g           |
| 2000 Hz   | -                           | 5g           |

0.5 Octave/minute, 8h per axis, FS: A

## Mechanical shock

Part 1: 300m/s<sup>2</sup>, 18ms, 10 times per axis/direction; FS: A

Part 2: 500m/s<sup>2</sup>, 11ms, 3 times per axis/direction; FS: A

Part 3: 500m/s<sup>2</sup>, 6ms, 10 times per axis/direction; FS: A

Part 4: 400m/s<sup>2</sup>, 6ms, 4000 times per axis/direction; FS: A

## Drop Test

Drop the DUT on each side and each edge from a high of 1m on a concrete floor.

No damage or visible damage

## Package Drop

Drop the DUT inside the package on each side and each edge from a high of 1m on a concrete floor.

No damage of the DUT

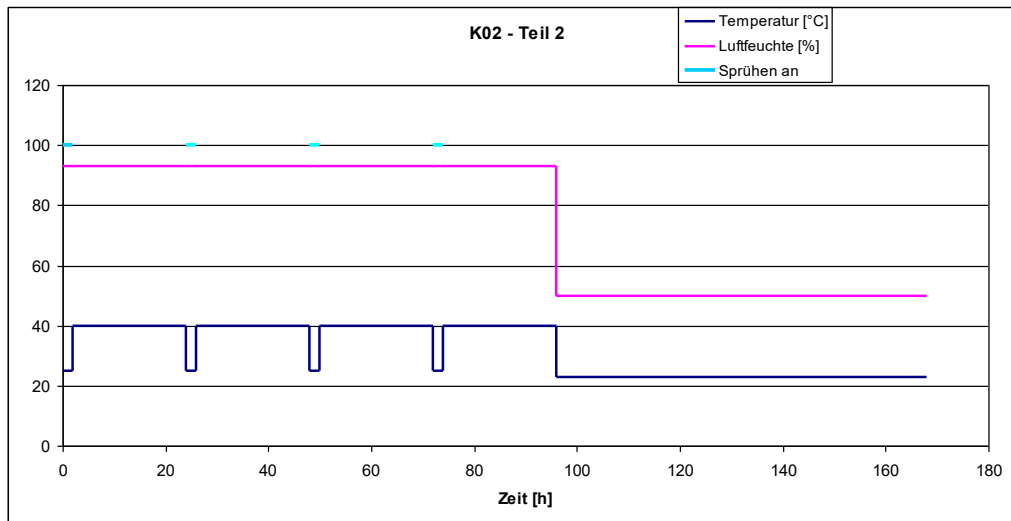
No cracks to the package

## Climate

### Salt spray resistance

Part 1: 7 cycles at 24h (8h spraying; 16h rest) salt concentration: 5%

Part 2: 4 cycles at 168h; 4 cycle:



### Chemical resistance

Apply once a day, for three days, the following chemicals with a brush over the exposed surface.

Inspect without rinsing immediately after-wards and after 100h.

Alcohol, Antifreeze liquid (Ethyl-glycol), Diesel oil, Domestic Ammonia, Gasoline, Hydraulic oil 10W40, Liquid lime, Motor oil, NPK Chemical fertilizers 20 10 20, Windscreen cleaning mixture, Ammonium Nitrate and Ammonium Phosphate fertilizers, Bovine Effluent - (up to 5% propionic acid), Diesel fuel, STOU (Super Tractor Universal Oil) lubricating oil.

Errors and technical changes expected.

### **Damp heat steady**

21days @+40°C and 93%r.H.; FS: C

### **Damp heat cyclic**

6 cycles (each 24h); TLow=+25°C; THigh=+55°C

Humidity: >= 93%r.H.; FS: A

### **Temperature/Humidity cyclic**

10 cycles (each 24h); TLow=-10°C; THigh=+65°C

Humidity: = 80-96%r.H or uncontrolled.; FS: A

#### **Operating temperature**

24h @ -30°C; FS: A

96h @ +75°C; FS: A

#### **Storage temperature**

24h @ -40°C; FS: C

48h @ +85°C; FS: C

### **Temperature cycling**

10 cycles (each 24h); TLow=-10°C; THigh=+65°C

Humidity: = 80-96%r.H or uncontrolled.; FS: A

### **Temperature shock**

100 cycles (each 2h); TLow=-30°C; THigh=+75°C; Tchange: <30s; FS: C

### **UV resistance**

Over-all time: 1500h

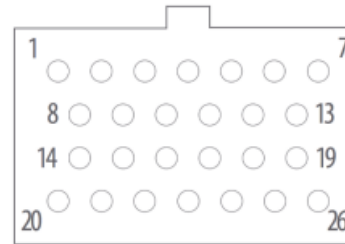
Cycle: 8h UV at +60°C, 4h 95%r.H.; No material damage, No visible change

## 10. Pinout

### Main connector

| Pin No. | Assignment     | Description                   |
|---------|----------------|-------------------------------|
| 1       | VCC            | supply voltage +; terminal 30 |
| 2       | Ignition Input | ignition input; terminal 15   |
| 3       | GND            | supply voltage -; terminal 31 |
| 4       | Wake           | Wake Input, "Doorswitch"      |
| 5       | Audio Out L    | audio output, left channel    |
| 6       | Audio Out R    | audio output, right channel   |
| 7       | Audio GND      | audio ground                  |
| 8       | CAN1H          | CAN 1 high                    |
| 9       | CAN1L          | CAN 1 low                     |
| 10      | CAN2H          | CAN 2 high                    |
| 11      | CAN2L          | CAN 2 low                     |
| 12      | CAN3H          | CAN 3 high                    |
| 13      | CAN3L          | CAN 3 low                     |
| 14      | CAN4H          | CAN 4 high                    |
| 15      | CAN4L          | CAN 4 low                     |
| 16      | RS232 RxD      | RS232 receive data            |
| 17      | RS232 TxD      | RS232 transmit data           |
| 18      | RS232 GND      | RS232 GND                     |
| 19      | n.c.           | Not connected                 |
| 20      | n.c.           | Not connected                 |
| 21      | n.c.           | Not connected                 |
| 22      | n.c.           | Not connected                 |
| 23      | SERV_EN        | service enable                |
| 24      | n.c.           | Not connected                 |
| 25      | n.c.           | Not connected                 |
| 26      | n.c.           | Not connected                 |

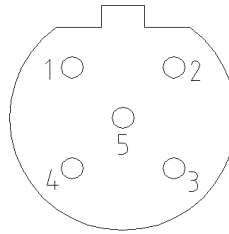
View on the rear side of the B6



OPUS displays in the industrial sector are only intended to be used with cable length less than 30 meters.

## Video connector

| Pin No. | Assignment |
|---------|------------|
| 1       | VidSig +   |
| 2       | Switch     |
| 3       | Power 12 V |
| 4       | Power GND  |
| 5       | VidSig GND |



Video- Connector, M12, female, 5 pins, b-coded,

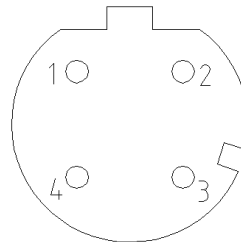
## Ethernet connector

### Industrial Ethernet

| Pin No. | Assignment |
|---------|------------|
| 1       | TD+        |
| 2       | RD+        |
| 3       | TD-        |
| 4       | RD-        |

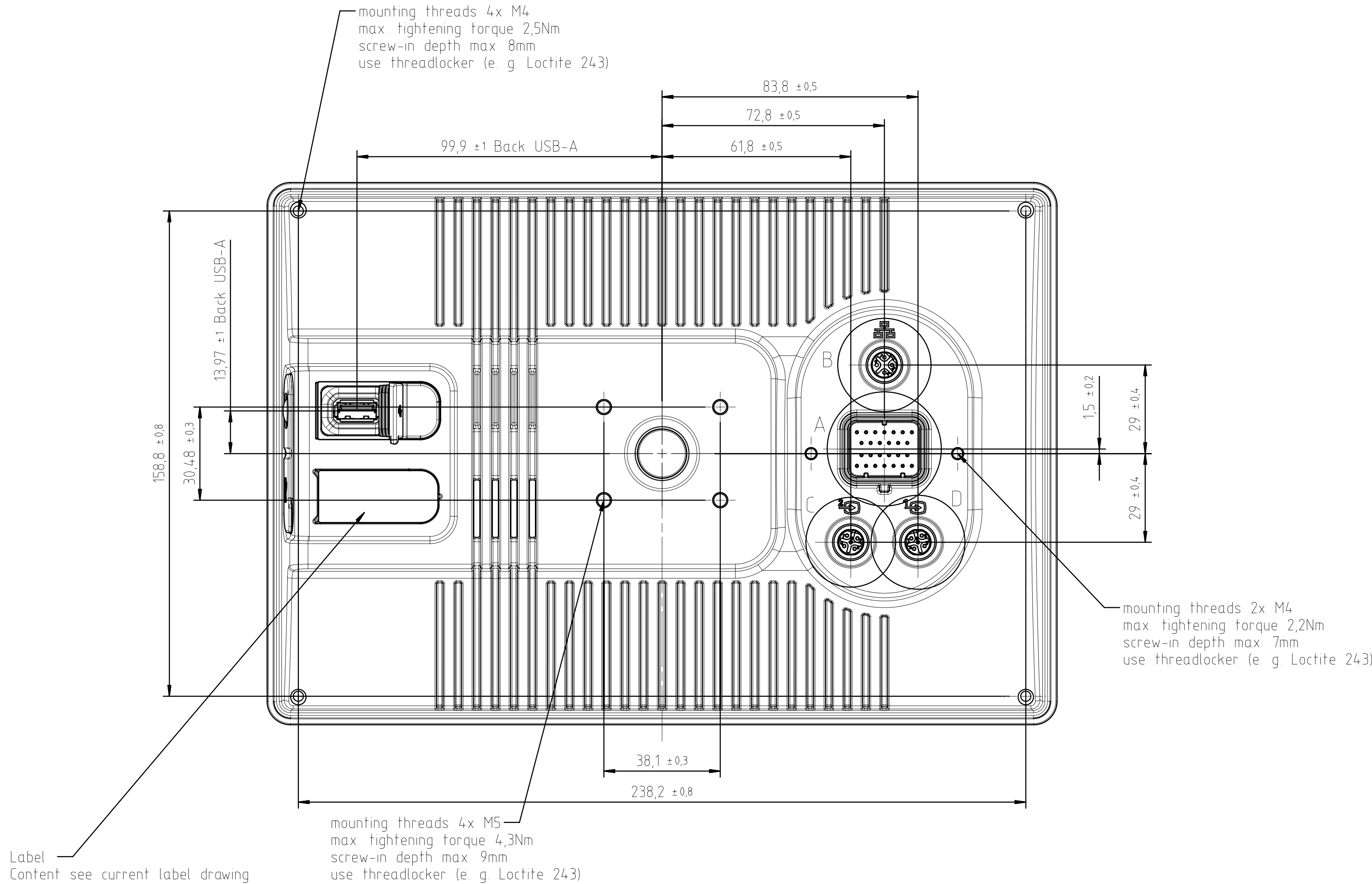
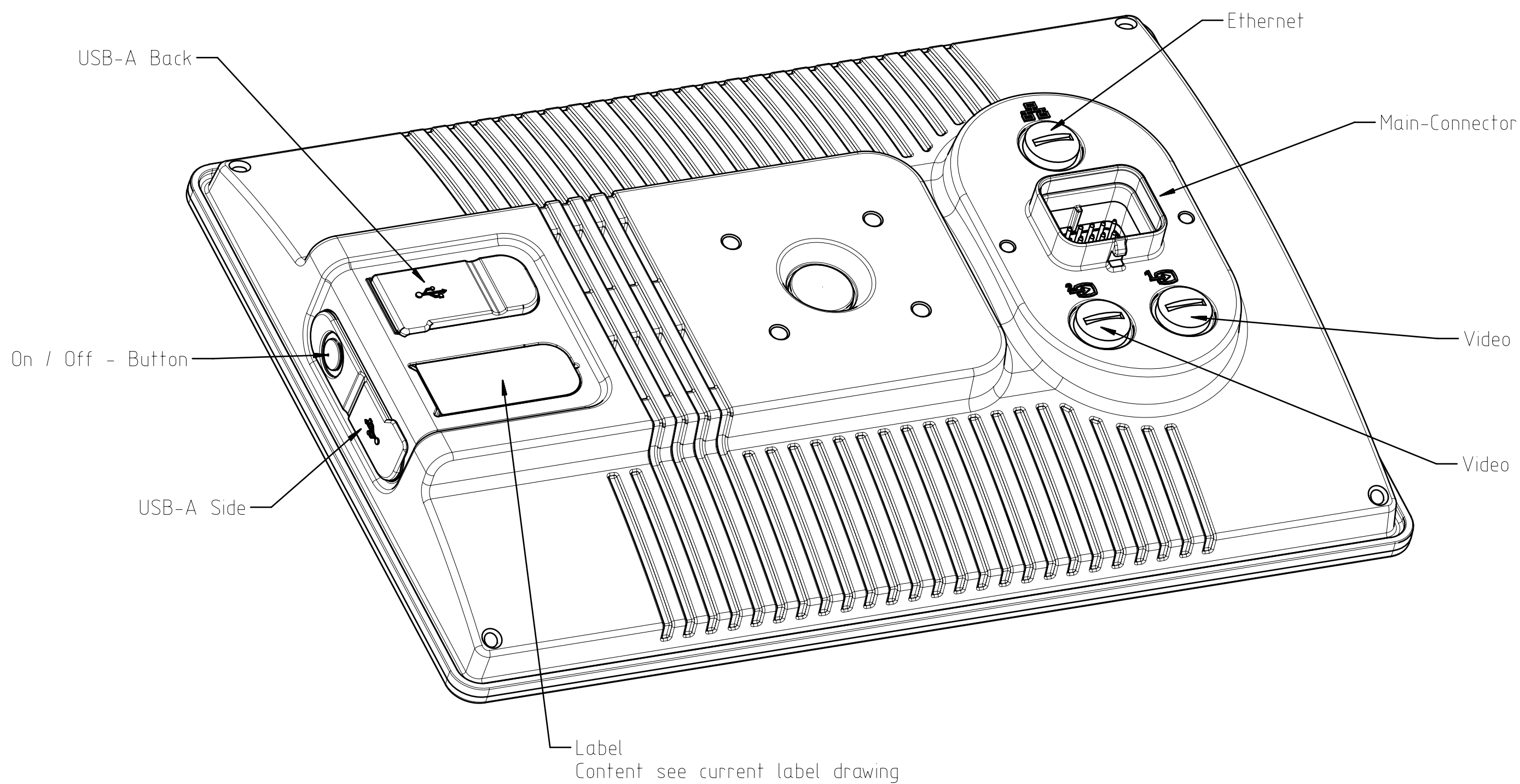
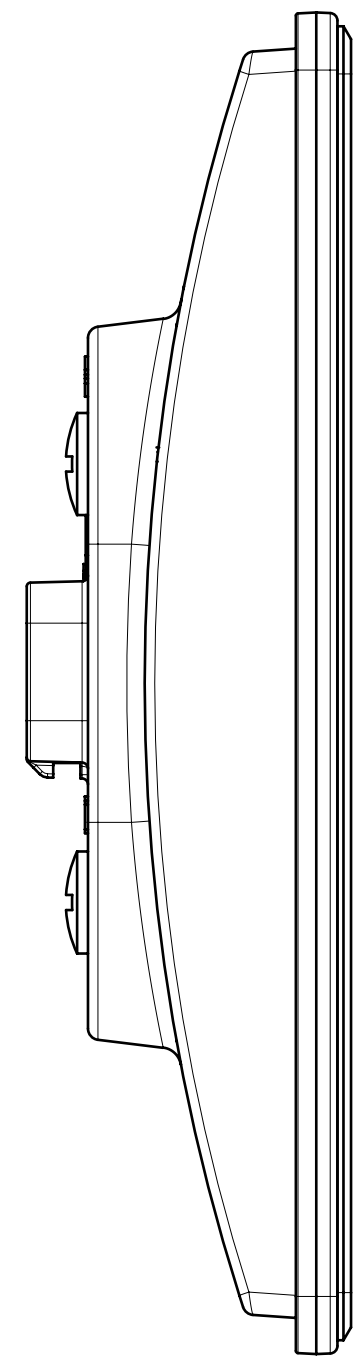
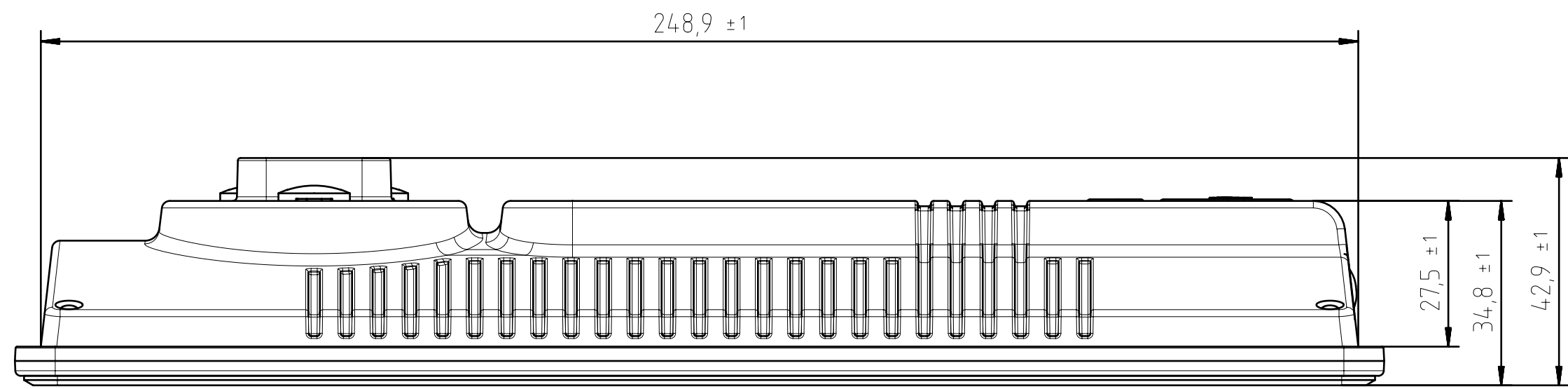
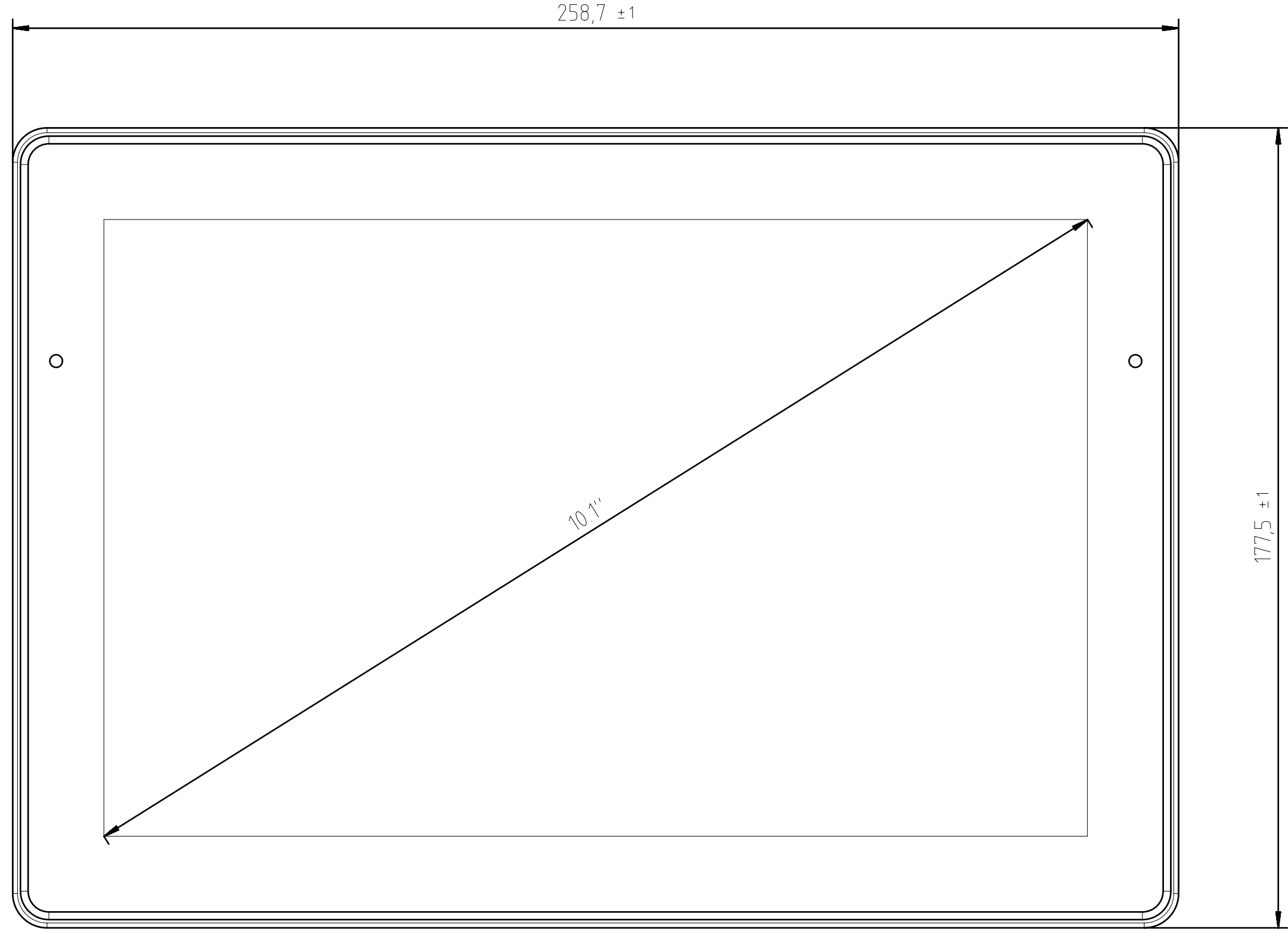
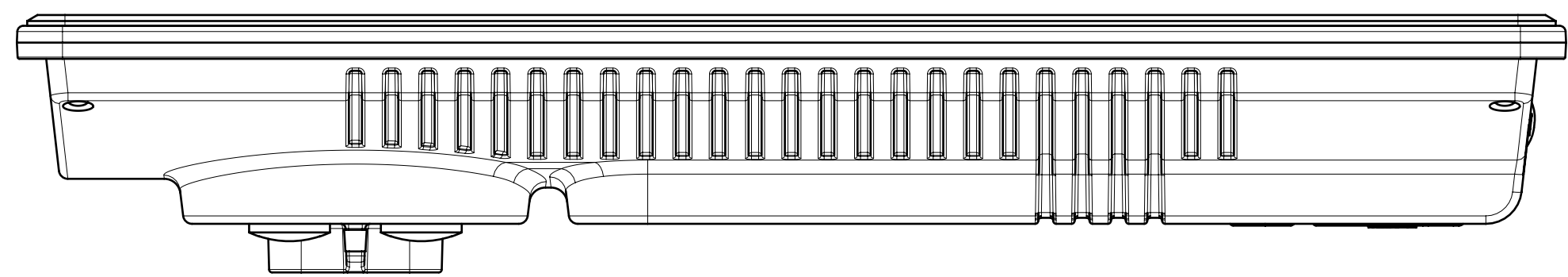
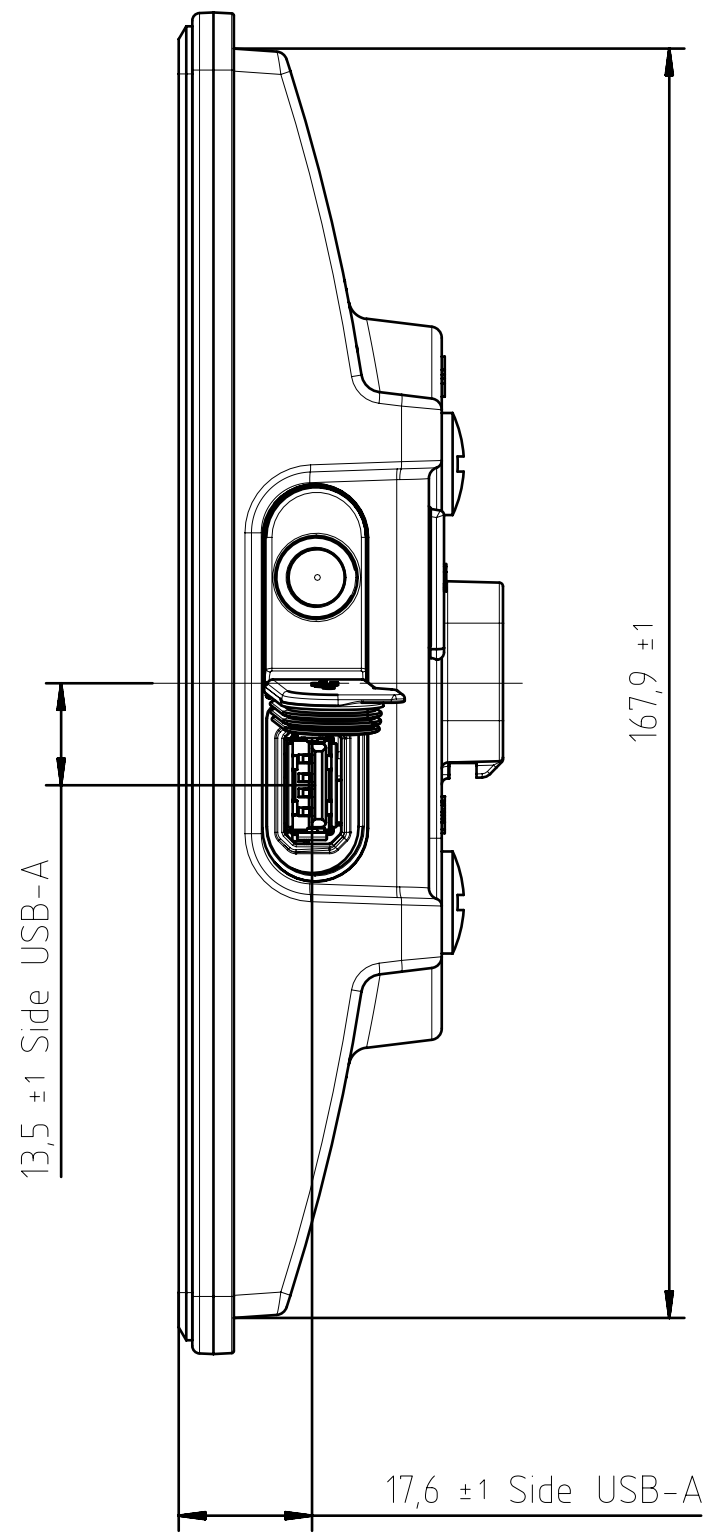
### Automotive Ethernet

| Pin No. | Assignment |
|---------|------------|
| 1       | D+         |
| 2       | n.c.       |
| 3       | D-         |
| 4       | n.c.       |



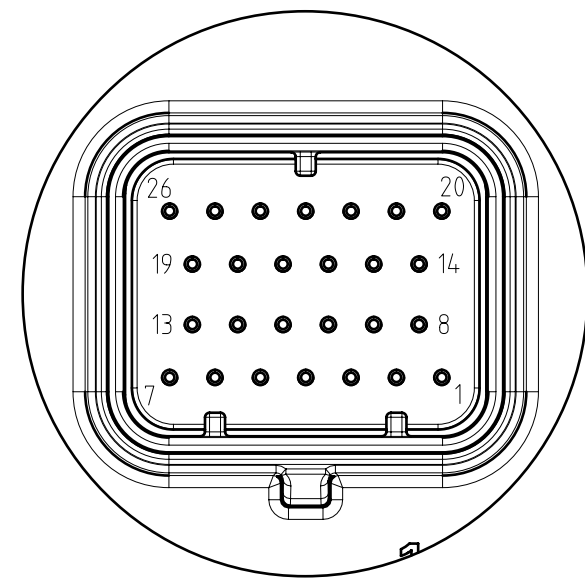
Ethernet Connector, M12, female, 4 pins, d-coded,

Device Drawing



Label Content see current label drawing

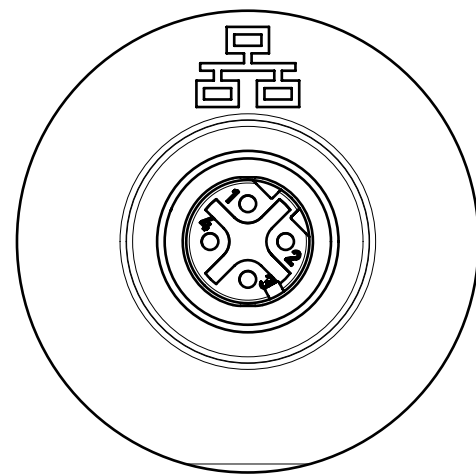
DETAIL A  
(SCALE 2:1)



Mating Connector: type:  
Tyco Electronics AMP  
Super Seal 3-1437290-7

| Pin assignment Main Connector |             |                          |
|-------------------------------|-------------|--------------------------|
| Pin                           | assignment  | description              |
| 1                             | VCC         | Supply, Clamp 30         |
| 2                             | Ignition    | Supply, Clamp 15         |
| 3                             | GND         | Supply, Clamp 31         |
| 4                             | Wake        | Wake Input, Doorswitch   |
| 5                             | Audio_Out_L | Audio line out, Stereo   |
| 6                             | Audio_Out_R | Audio line out, Stereo   |
| 7                             | Audio_GND   | Audio line out, Ground   |
| 8                             | CAN1_H      | CAN 1 - High             |
| 9                             | CAN1_L      | CAN 1 - Low              |
| 10                            | CAN2_H      | CAN 2 - High             |
| 11                            | CAN2_L      | CAN 2 - Low              |
| 12                            | CAN3_H      | CAN 3 - High             |
| 13                            | CAN3_L      | CAN 3 - Low              |
| 14                            | CAN4_H      | CAN 4 - High             |
| 15                            | CAN4_L      | CAN 4 - Low              |
| 16                            | RS232_RxD   | RS232 Receive data       |
| 17                            | RS232_TxD   | RS232 Transmit data      |
| 18                            | RS232_GND   | RS232 Ground             |
| 19                            | CAN2_R      | 120 Ohm Termination CAN2 |
| 20                            | CAN1_R      | 120 Ohm Termination CAN1 |
| 21                            | CAN4_R      | 120 Ohm Termination CAN4 |
| 22                            | -           | -                        |
| 23                            | ENA         | Service-Enable           |
| 24                            | -           | -                        |
| 25                            | -           | -                        |
| 26                            | CAN3_R      | 120 Ohm Termination CAN3 |

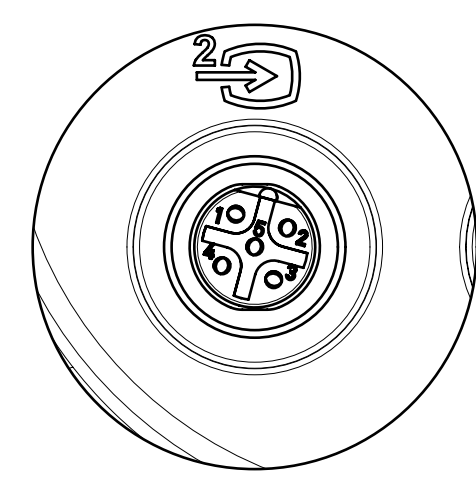
DETAIL B  
(SCALE 2:1)



| Pin Assignment M12x1 Ethernet D-coded |            |
|---------------------------------------|------------|
| Pin                                   | assignment |
| Pin 1                                 | TD+        |
| Pin 2                                 | RD+        |
| Pin 3                                 | TD-        |
| Pin 4                                 | RD-        |

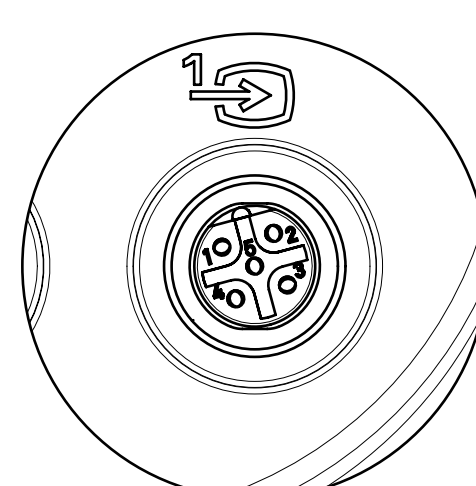
| Pin Assignment M12x1 Ethernet Automotive D-coded |            |
|--------------------------------------------------|------------|
| Pin                                              | assignment |
| Pin 1                                            | D+         |
| Pin 2                                            | -          |
| Pin 3                                            | D-         |
| Pin 4                                            | -          |

DETAIL C  
(SCALE 2:1)



| Pin Assignment M12x1 Video B-coded |            |
|------------------------------------|------------|
| Pin                                | assignment |
| Pin 1                              | VidSig +   |
| Pin 2                              | Switch     |
| Pin 3                              | Power 12V  |
| Pin 4                              | Power GND  |
| Pin 5                              | VidSig GND |

DETAIL D  
(SCALE 2:1)



| Pin Assignment M12x1 Video B-coded |            |
|------------------------------------|------------|
| Pin                                | assignment |
| Pin 1                              | VidSig +   |
| Pin 2                              | Switch     |
| Pin 3                              | Power 12V  |
| Pin 4                              | Power GND  |
| Pin 5                              | VidSig GND |

|                                                   |                                                                                    |                            |
|---------------------------------------------------|------------------------------------------------------------------------------------|----------------------------|
| General note                                      |                                                                                    |                            |
| -                                                 | update thread tightening torque and threadlocker                                   | 01/10/2023 PHB             |
| -                                                 | update Photo-C                                                                     | 01/10/2023 PHB             |
| -                                                 | update Photo-D                                                                     | 01/10/2023 PHB             |
| -                                                 | Final draft                                                                        | 01/10/2023 PHB             |
| Rev                                               | Change                                                                             | Date                       |
| Revision History                                  |                                                                                    |                            |
| General note                                      |                                                                                    |                            |
| -                                                 | All dimensions after painting / coating / plating                                  |                            |
| -                                                 | The complete geometry and missing dimensions have to be taken from the 3D-CAD-file |                            |
| -                                                 | All applicable documents (see P&ID-report) have to be considered                   |                            |
| All dimensions in mm                              |                                                                                    |                            |
| Allowed deviation                                 | Surface                                                                            | Surface quality            |
| DN 16742-105                                      | ISO EN 1822                                                                        | Rz 6.3                     |
| Size ISO 34405 ©                                  |                                                                                    | Scale: -                   |
| Scope of application                              |                                                                                    |                            |
| For this drawing all rights are reserved          |                                                                                    |                            |
| Delivery is final photo, signature and            |                                                                                    |                            |
| Protection against counterfeiting (Companion Act) |                                                                                    |                            |
| Date                                              | Name                                                                               | Part name                  |
| 01/10/2023                                        | PHB                                                                                | OPUS B6 ECO (all variants) |
| 01/10/2023                                        | EE                                                                                 |                            |
| Drawn                                             | Checked                                                                            | Rev                        |
| None                                              |                                                                                    |                            |
| PH Topcon Electronics                             |                                                                                    |                            |
| Topcon Electronics GmbH & Co. KG                  |                                                                                    |                            |
| Görlitz, Germany                                  |                                                                                    |                            |
| www.topcon-electronics.de                         |                                                                                    |                            |
| PH Topcon Electronics                             |                                                                                    |                            |
| OPUS B6 ECO (all variants)                        |                                                                                    |                            |
| PH Topcon Electronics                             |                                                                                    |                            |
| OPUS B6 ECO (all variants)                        |                                                                                    |                            |
| Sheet                                             |                                                                                    |                            |
| 1                                                 |                                                                                    |                            |
| Size                                              |                                                                                    |                            |
| A0                                                |                                                                                    |                            |