

BB1C0xx and BB1C1xx

Control Unit



Operating Instructions

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1. General

1.1 Information Concerning these Instructions

- These instructions apply to the products Control Unit BB1C0xx and BB1C1xx
- They make it possible to use the product safely and efficiently
- These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.
- Local accident prevention regulations and national work safety regulations must be complied with as well.
- The product is subject to further technical development, and thus the information contained in these operating instructions may also be subject to change. The current version can be found at www.wenglor.com in the product's separate download area.



NOTE!

The operating instructions must be read carefully before using the product and must be kept on hand for later reference.

1.2 Explanations of Symbols

- Safety precautions and warnings are emphasized by means of symbols and attention-getting words
- Safe use of the product is only possible if these safety precautions and warnings are adhered to

The safety precautions and warnings are laid out in accordance with the following principle:



ATTENTION-GETTING WORD!

Type and Source of Danger!

Possible consequences in the event that the hazard is disregarded.

- Measures for averting the hazard.

The meanings of the attention-getting words, as well as the scope of the associated hazards, are listed below.



DANGER!

This word indicates a hazard with a high degree of risk which, if not avoided, results in death or severe injury.



WARNING!

This word indicates a hazard with a medium degree of risk which, if not avoided, may result in death or severe injury.



CAUTION!

This word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.



ATTENTION!

This word draws attention to a potentially hazardous situation which, if not avoided, may result in property damage.



NOTE!

A note draws attention to useful tips and suggestions, as well as information regarding efficient, error-free use.

1.3 Limitation of Liability

- The product has been developed taking into account the state of the art as well as the applicable standards and guidelines.
- We reserve the right to make technical changes.
- A valid declaration of conformity can be found at www.wenglor.com in the download area of the product.
- wenglor sensoric elektronische Geräte GmbH (hereinafter „wenglor“) accepts no liability for:
 - » Failure to observe the operating manual,
 - » Unsuitable or improper use of the product,
 - » Excessive use, incorrect or negligent treatment of the product,
 - » Incorrect installation or commissioning,
 - » Use of untrained personnel,
 - » Use of unauthorized spare parts or
 - » Improper or unauthorized changes, modifications or repair work to the products.
- This operating manual does not contain any guarantees/warranties from wenglor with regard to the processes described or certain product properties.
- wenglor assumes no liability with regard to printing errors or other inaccuracies contained in this operating manual, unless it can be proven that wenglor was aware of the errors at the time the operating manual was created.

1.4 Copyrights

- The contents of these instructions are protected by copyright law.
- All rights are reserved by wenglor.
- Commercial reproduction or any other commercial use of the provided content and information, in particular graphics and images, is not permitted without previous written consent from wenglor.

2. For Your Safety

2.1 Use for Intended Purpose

The control unit receives data from the imaging devices (e.g. digital cameras or 2D/3D sensors) via an Ethernet interface, evaluates the data and reads out results via various interfaces. The control unit's compact housing is cooled passively without a fan.

This product can be used in the following industry sectors:

- Special machinery manufacturing
- Heavy machinery manufacturing
- Logistics
- Automotive industry
- Food industry
- Packaging industry
- Pharmaceuticals industry
- Plastics industry
- Woodworking industry
- Consumer goods industry
- Paper industry
- Electronics industry
- Glass industry
- Steel industry
- Aviation industry
- Chemicals industry
- Alternative energy
- Raw materials extraction

2.2 Use for Other than the Intended Purpose

- Not a safety component in accordance with 2006/42/EU (Machinery Directive)
- The product is not suitable for use in potentially explosive atmospheres.
- The product may only be used with accessories supplied or approved by wenglor, or combined with approved products. A list of approved accessories and combination products can be accessed at www.wenglor.com on the product detail page.



DANGER!**Risk of personal injury or property damage in case of use for other than the intended purpose!**

Use for other than the intended purpose may lead to hazardous situations.

- Observe instructions regarding use for intended purpose.
-

2.3 Personnel Qualifications

- Suitable technical training is a prerequisite.
- In-house electronics training is required.
- Trained personnel who use the product must have uninterrupted access to the operating instructions.



DANGER!

Risk of personal injury or property damage in case of incorrect initial start-up and maintenance!

Personal injury and damage to equipment may occur.

- Adequate training and qualification of personnel.
-

2.4 Modification of Products



CAUTION!

Risk of personal injury or property damage if the product is modified!

Personal injury and damage to equipment may occur. Non-observance may result in loss of the CE marking and the guarantee may be rendered null and void.

- Modification of the product is impermissible.
-

2.5 General Safety Precautions



CAUTION!

Risk of personal injury or property damage due to hot surfaces!

Danger of burns if the control unit's cooling fins are touched.

- Avoid touching the cooling fins.
-

NOTE!



- These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life
- In the event of possible changes, the respectively current version of the operating instructions can be accessed at www.wenglor.com in the product's separate download area.
- Read the operating instructions carefully before using the product
- Protect the sensor against contamination and mechanical influences

2.6 Approvals and protection class



3. Technical Data

3.1 Control Units without Industrial Ethernet Interface

Order number	BB1C001	BB1C006	BB1C007	BB1C008	BB1C009
Technical Data					
Electrical Data					
Supply Voltage	18...36 V DC				
Current Consumption (Ub = 24 V)	< 1,8 A	< 1,8 A	< 2,2 A	< 2,2 A	< 2,2 A
	0...45 °C	0...45 °C	0...40 °C	0...40 °C	0...40 °C
Switching Output Voltage Drop	< 2,5 V				
PNP Switching Output/Switching Current	100 mA				
Electrical isolation	Yes				
Short-circuit proof	Yes				
Reverse polarity protected	Yes				
Number of switching outputs	8				
Number of digital inputs	8				
Number of USB 2.0 ports	2				
Number of USB 3.0 ports	2				
Number of Gigabit Ethernet RJ45 ports	2				
Number of DVI ports	1				
Number of DisplayPort interfaces	1				
Number of VGA ports	1				
Protection class	III				
Mechanical Data					
Housing Material	Metal				
Degree of protection	IP50				
Wall Mounting	Ja (im Lieferumfang enthalten)				
Function					
Profile Analysis	Yes			Yes	Yes
Image analysis		Yes	Yes		
1D/2D code reading			Yes		
Image-based pattern matching			Yes		
Combined Height Profile				Yes	
Seam Tracking					Yes
Robot interface					Yes
General Data					
Software	uniVision Profile	uniVision Image	uniVision Image Extended	uniVision Profile Extended	uniVision Profile Seam Tracking
Processor	Intel® Core™ i3	Intel® Core™ i3	Intel® Core™ i7	Intel® Core™ i7	Intel® Core™ i7
Cycle rate	2,4 GHz	2,4 GHz	2,3 GHz	2,3 GHz	2,3 GHz
RAM	4 GB	4 GB	8 GB	8 GB	8 GB
Hard disk	250 GB SSD				

Order number	BB1C001	BB1C006	BB1C007	BB1C008	BB1C009
Technical Data					
Interfaces					
Ethernet			Yes		
Digital I/O			Yes		
USB port			Yes		
DVI-D port			Yes		
VGA port			Yes		
DisplayPort Connection			Yes		

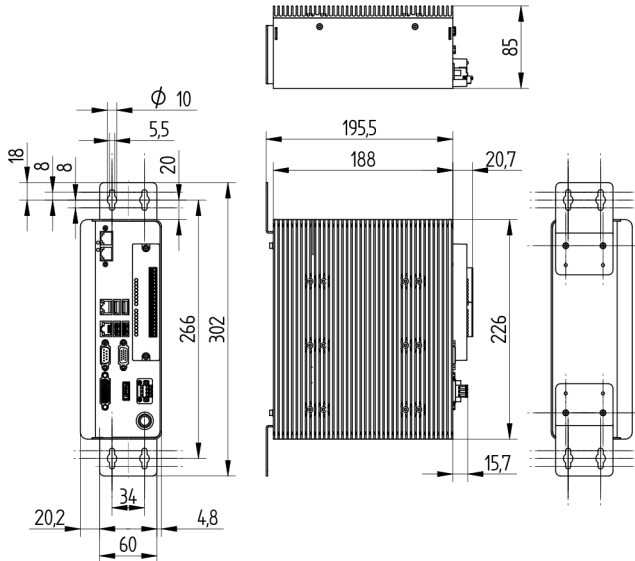
Unused terminals must be protected against penetration by dust in order to maintain IP 50 protection.

3.2 Control Units with Industrial Ethernet (BB1C1xx)

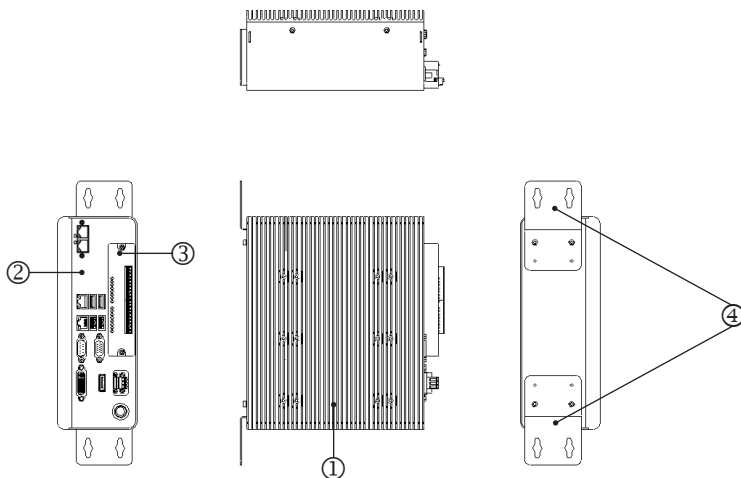
Order No	BB1C101	BB1C102	BB1C103	BB1C104	BB1C105
Technical Data					
Electrical Data					
Supply Voltage	18...36 V DC				
Current consumption (Ub = 24 V)	< 1,8 A	< 2,2 A	< 1,8 A	< 2,2 A	< 2,2 A
Temperature range	0...45 °C	0...40 °C	0...45 °C	0...40 °C	0...40 °C
Switching Output Voltage Drop	< 2,5 V				
PNP Switching Output/Switching Current	100 mA				
Electrical isolation	Yes				
Short-circuit proof	Yes				
Reverse polarity protected	Yes				
Number of switching outputs	8				
Number of digital inputs	8				
Number of USB 2.0 ports	2				
Number of USB 3.0 ports	2				
Number of Gigabit Ethernet RJ45 ports	2				
Number of Industrial Ethernet RJ45	2				
Number of DVI ports	1				
Number of DisplayPort interfaces	1				
Number of VGA ports	1				
Protection class	III				
Mechanical Data					
Housing	Metal				
Degree of Protection	IP50				
Wall Mounting	yes (included in the delivery)				
Function					
Profile Analysis	Yes	Yes			Yes
Combined Height Profile		Yes			Yes
Seam Tracking					
Robot interface					
Image analysis			Yes	Yes	Yes
1D/2D code reading				Yes	Yes
Image-based pattern matching				Yes	Yes
General Data					

Order No	BB1C101	BB1C102	BB1C103	BB1C104	BB1C105
Technical Data					
Software	uniVision Profile	uniVision Profile Extended	uniVision Image	uniVision Image Extended	uniVision All in One
Processor	Intel Core i3	Intel Core i7	Intel Core i3	Intel Core i7	Intel Core i7
Cycle rate	2,4 GHz	2,3 GHz	2,4 GHz	2,3 GHz	2,3 GHz
RAM	4 GB	8 GB	4 GB	8 GB	8 GB
Hard disk	250 GB SSD				
Interfaces					
Ethernet	Yes				
Profinet IO, CC-C	Yes				
EtherNet/IP	Yes				
Digital I/O	Yes				
USB port	Yes				
DVI-D port	Yes				
VGA port	Yes				
DisplayPort connection	Yes				

3.3 Dimensional Drawings



3.4 Layout



- ① = cooling fins
- ② = front panel with interfaces
- ③ = digital I/O adapter
- ④ = wall mounting system

3.5 Scope of Delivery

- Product
- Mounting kit for wall mounting (ZB1E001)
- Adhesive feet for tabletop operation
- Quickstart

4. Transport and Storage

4.1 Transport

Upon receipt of shipment, inspect the goods for damage in transit. In the case of damage, conditionally accept the package and notify the manufacturer of the damage. Then return the device making reference to damage in transit.

4.2 Storage

The following points must be taken into condition with regard to storage:

- Do not store the product outdoors.
- Store the product in a dry, dust-free place.
- Protect the product against mechanical impacts.
- Protect the product against exposure to direct sunlight.



ATTENTION:

Risk of property damage in case of improper storage!

The product may be damaged.

- Comply with storage instructions.
-

5. Installation and Electrical Connection

5.1 System Overview

5.1.1 2D/3D Profile Sensors

Connectable 2D/3D Profile Sensors are listed on our website in the respective product category. Accessories for 2D/3D Profile Sensors are also listed on the product page of the respective sensor.

5.1.2 Digital Cameras and Accessories

Connectable digital cameras are listed on our website in the respective product category. Accessories for each digital camera are also listed on the respective product pages.

5.1.3 Software

DNNF012	uniVision for Linux	Configurable standard software
DNNF020	uniVision for Windows	Configurable standard software for Windows
DNNP011	VisionApp 360 plugin	Software plugin for combined point clouds of several 2D/3D profile sensors

5.1.4 Mounting Technology

ZB1Z001	Mounting system for H-rail mounting
ZB1E001	Mounting kit for wall mounting (replacement part)

5.1.5 Complementary Accessories

ZNNG026	Monitor with 230 V connector cable, DisplayPort cable
Z0044	Key Pad

5.2 Installation

- Protect the product from contamination during installation.
- Observe all applicable electrical and mechanical regulations, standards, and safety rules
- Protect the product against mechanical influences.
- Make sure that the product is mounted in a mechanically secure fashion.
- Ensure adequate open space around the cooling fins in order to permit effective heat exchange between the control unit and the environment.

NOTE!

Sources of electromagnetic interference in direct proximity to the device may cause malfunctioning.

- Position the device at an adequate distance from sources of interference.
- It's advisable to mount the device inside the control cabinet.



ATTENTION!

Risk of property damage in case of improper installation!

The product may be damaged.

- Comply with installation instructions.



CAUTION!

Risk of personal injury or property damage during installation!

Personal injury and damage to the product may occur.

- Ensure a safe installation environment.



The control unit can be mounted in two different ways:

- Wall mounting (included in scope of delivery)
- ZB1Z001 for H-rail mounting

Proceed as following in order to mount the control unit:

1. Attach the two mounting brackets or the H-rail mounting system to the back or the side of the control unit with the included screws.
2. Secure the control unit to the wall with the two mounting brackets or to the H-rail with the H-rail mounting system.

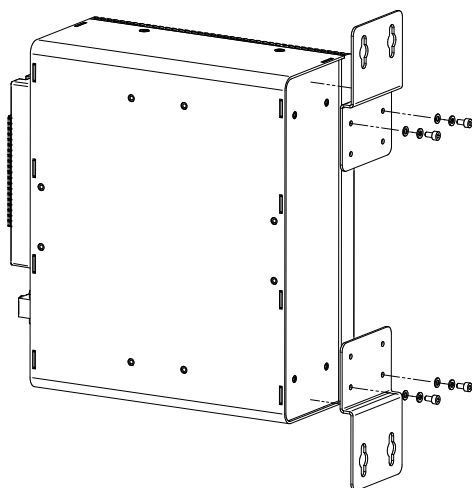
NOTE!

In the case of the H-rail mounting system, the lock must point down.



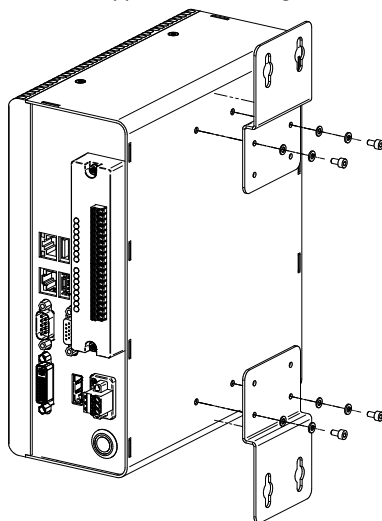
5.2.1 Standard Installation Position

- Interfaces at the front.
- Mounting system attached to the back of the control unit.



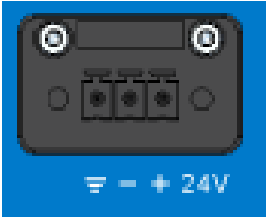
5.2.2 Alternative Installation Position

- Interfaces at the top, at the bottom or at the side.
- Mounting system attached to the side opposite the cooling fins.



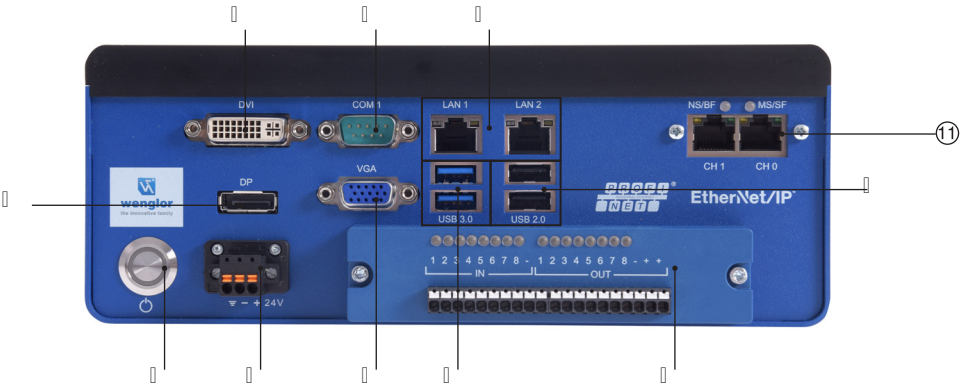
5.3 Electrical Connection

- Connect the product to 18 to 36 V DC.



Pin	Description
1	Protective conductor
2	Ground
3	18...36 V DC

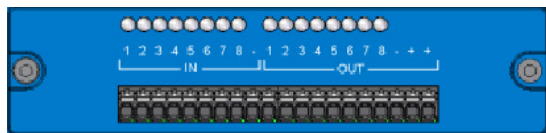
5.4 Interfaces



No.	Description	Explanation
1	Button	Illuminated on/off button
2	Voltage supply	18...36 V DC
3	Displayport	DisplayPort socket connector for monitor
4	DVI	DVI socket connector for monitor
5	VGA	VGA socket connector for monitor
6	RS-232	Serial port (not used)
7	Network interfaces	10/100/1000 MBit network interface
8	USB 2.0	Two USB 2.0 ports for mouse, keyboard, external hard disk etc.
9	USB 3.0	Two USB 3.0 ports for mouse, keyboard, external hard disk etc.
10	Digital inputs/outputs	8 optically isolated inputs and 8 optically isolated outputs with LED display
11	Industrial Ethernet (Profinet, EtherNet/IP)	2 ea. Industrial Ethernet interface (only available with certain control units)

5.5 Digital Inputs and Outputs

The control unit is equipped with eight inputs and eight outputs. They are electrically isolated from the control unit. Inputs and outputs are connected to separate grounding



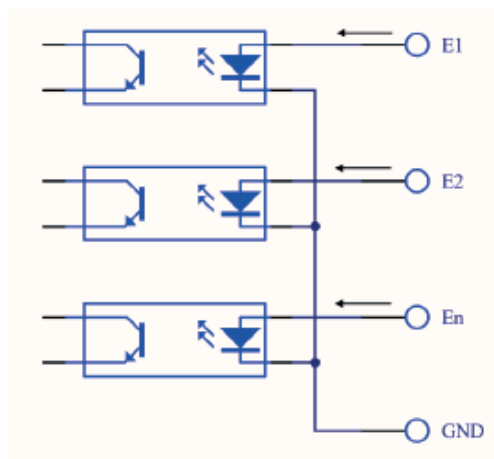
5.5.1 Inputs

- Low level: 0 to 1.5 V
- High level: 5 to 24 V
- Electrically isolated
- Reverse polarity protected and short-circuit proof
- Display of input signals via LEDs
- Input resistance: 1.2 k Ω at 0.5 W
- Max. Insulation voltage: 2500 V rms

Example:

If input 1 at the control unit is used, the input signal must be connected to E1. Furthermore, the minus pole ("–") of the input pins must be connect- ed to ground.

Wiring of the Optically Isolated Inputs



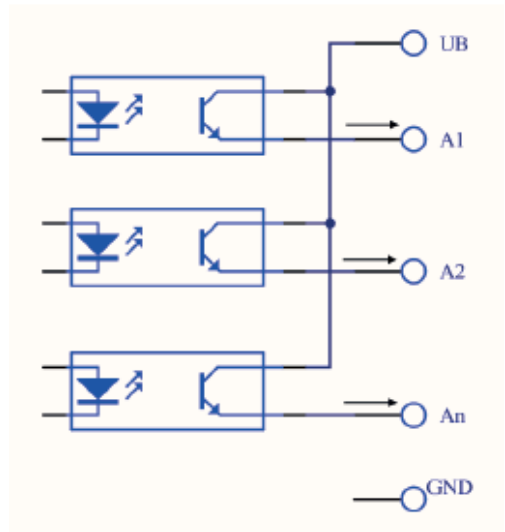
5.5.2 Outputs

- Maximum switching current, PNP outputs: 100 mA
- Output voltage: 5 to 35 V DC
- Electrically isolated
- Reverse polarity protected and short-circuit proof
- Display of output signals via LEDs
- Two equivalent “+” pins at the outputs

Example:

If input 1 at the control unit is used, the output signal comes from A1. Furthermore, one of the two plus pins (“+”) must be connected to supply voltage, and GND must be connected to ground.

Wiring of the Optically Isolated Outputs



6. Software

The control unit is equipped with preinstalled software as a standard feature.

Information and explanations concerning individual software solutions can be found on the respective software product page on the Internet (see <https://www.wenglor.com/en/uniVision-Software-for-Sensor-Parameterization/s/Themenwelt+Software+uniVision>).



NOTE!

Utilized third-party software licenses can be found directly on the product, and on our website at: <https://www.wenglor.com/license/>.

7. Maintenance Instructions



NOTE!

- This wenglor Sensor is maintenance-free.
- Cleaning and inspection of the plug connections at regular intervals is advisable.
- Do not clean with solvents or cleansers which could damage the device.
- The product must be protected against contamination.

8. Proper Disposal

wenglor sensoric GmbH does not accept the return of unusable or irreparable products. Respectively valid national waste disposal regulations apply to product disposal.

9. Appendix

9.1 Change Index, Operating Instructions

Version	Date	Description/Change
1.0.0	18.07.16	Initial version of the operating instructions
1.0.1	31.10.16	8 GB RAM with BB1C002 and BB1C003, alternative mounting position
1.0.2	27.02.17	Hard disk: 250 GB SSD instead of 120 GB SSD
1.1.0	04.06.18	Expanded to include BB1C005
1.2.0	17.06.19	Expanded to include BB1C006 and BB1C007
1.3.0	30.07.19	Modification of the Complementary Accessories: Monitor ZNNG026
1.4.0	13.03.20	<ul style="list-style-type: none">Expanded to include new control units with Industrial Ethernet (amongst others Profinet)Additional third-party software licenses
1.5.0	20.10.20	Expanded to include EtherNet/IP
1.6.0	26.03.21	Minor troubleshooting
1.7.0	03.01.22	Minor troubleshooting
1.8.0	22.06.22	Expanded to new Control Unit BB1C009
1.9.0	26.05.23	Small bug fixes
2.0.0	15.06.23	Supplement BB1C4xx
2.1.0	03.07.23	Small bug fixes
2.2.0	31.07.23	Removal of BB1C4xx

9.2 EU Declaration of Conformity

The EU declaration of conformity can be found on our website at www.wenglor.com in the product's separate download area.