EN

wenglor
the innovative family

ZAI02PN0x

Connection Boxes

PROFINET®

Operating instructions

Available as PDF only
Status: 12.09.2016
www.wenglor.com

EN

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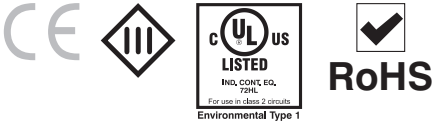
1. Use for Intended Purpose

This wenglor product must be used in accordance with the following functional principle:
Connection Box
The connection box is used for reducing the cabling work involved when there are many Sensors/actuators in a system and for connecting them to an industrial Ethernet network. The digital inputs and outputs can be activated or evaluated via the network.

2. Safety Precautions

- This operating instruction is part of the product and must be kept during its entire service life.
- Read this operating instruction carefully before using the product.
- Installation, start-up and maintenance of this product has only to be carried out by trained personnel.
- Tampering with or modifying the product is not permissible.
- Protect the product against contamination during start-up.
- Not a safety component in accordance with the EU Machinery Directive.

3. Approvals and IP Protection



4. Technical Data

Order number	ZAI02PN01	ZAI02PN02
Supply voltage	18...32 V DC	
Power consumption of device max. *	0.1 A	
Power consumption of system max. **	1.8 A	
Temperature range	–25...60 °C	
Voltage drop switching outputs	< 2,5 V	
Max. Switching current switching outputs	0.6 A	2 A
Max. total current of the I/O ports	9 A	
Sensor Supply Voltage (Pin 1)	200 mA	
Inputs according to DIN EN 61131-2:2003	Type 2	
Digital I/O ports short-circuit protected	yes	
Digital I/O ports overload protected	yes	
Digital I/O ports reverse polarity protected	yes	
Number of standard I/O pins	16	
Housing material	Aluminum	
Weight	1100 g	
Protection class	IP67	
Type of connection power	7/8", 5-pin	
Type of Connection Industrial Ethernet ports	M12×1, 4-pin, D-coding	
Type of Connection Digital I/O ports	M12×1, 4-pin, A-coding	
Number of Industrial Ethernet ports	2	
Number of Digital I/O ports	8	
Baud Rate	10 Mbit/s / 100 Mbit/s	
Transmission Mode	Full / Half Duplex	
Webserver	yes	
Switch Mode	Store & Forward	
VLAN Prioritization	ja	
Default IP	192.168.100.1	
Auto-Crossover	yes	
Auto-Negotiating	yes	
Auto-Polarity	yes	
Protection class	III	

* Maximum own power consumption of the product without additional loads
** Maximum own power consumption of the product with additional loads
Full assignment of all digital I/O ports with sensor supply (without outputs)

4.1. Connection table ZAI02PN0x

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Socket 1 — Suitable Plug: 2

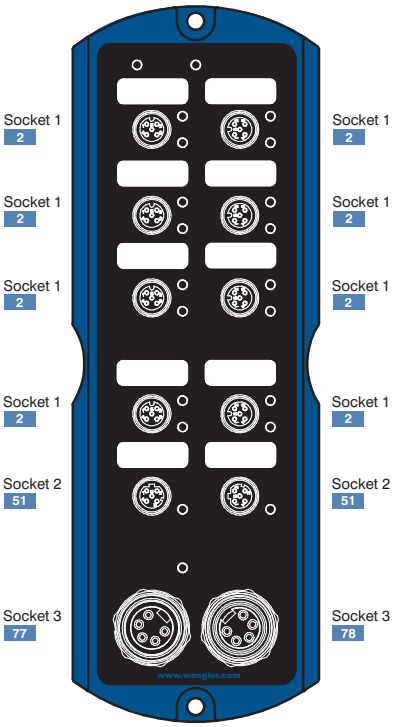
Pin	Function
1	+24 V DC
2	I/O
3	GND
4	I/O
5	

Socket 2 — Suitable Plug: 51

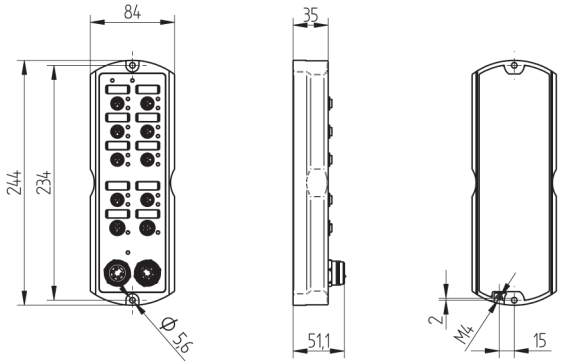
Pin	Function	In/ Out
1	TxD (+)	Out
2	RxD (+)	In
3	TxD (−)	Out
4	RxD (−)	In

Socket 3 — Suitable Plug: 77 78

Pin	Function
1	0 V DC
2	0 V DC
3	⏚
4	+24 V DC $U_{System/Sensor}$
5	+24 V DC $U_{Digital\ I/O}$



4.2. Housing Dimensions



4.3. Complementary Products

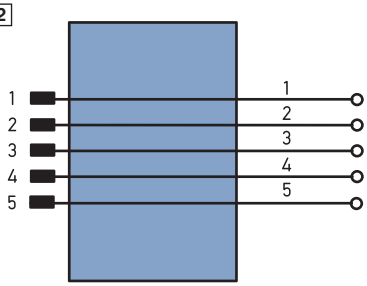
wenglor offers Connection Technology providing field wiring means.

Connection plug, 7/8", 5-pin

Order number: ZAT77NN01

Suitable Plug: 77

S82

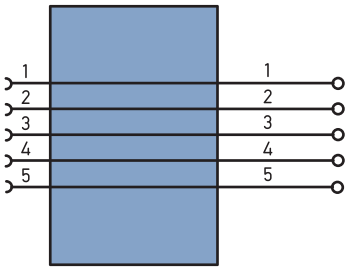


Connection plug, 7/8", 5-pin

Order number: ZAB78NN01

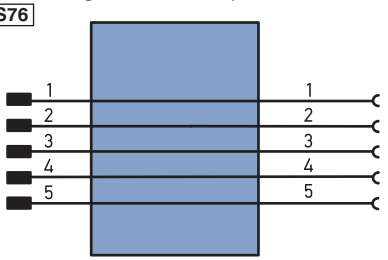
Suitable Plug: 78

S87



Connecting cable, 7/8", 5-pin

S76

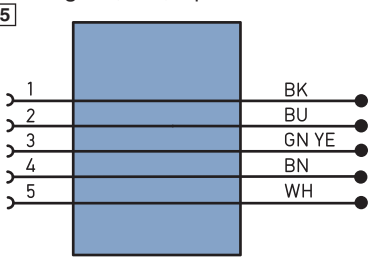


Order number: ZAV78R201, Cable length: 2 m

Suitable Plug: 78

Connecting line, 7/8", 5-pin

S75

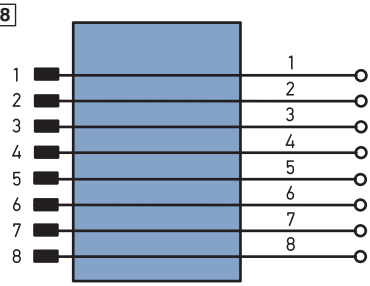


Order number: ZAS78R601, Cable length: 10 m

Suitable Plug: 78

Connector Plug RJ45; 8-pin

S48

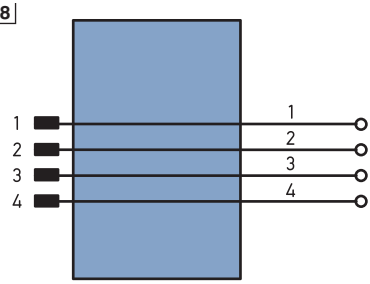


Order number: ZAT45NN01

Suitable Plug: 45

Connection plug, M12×1, 4-pin

S08



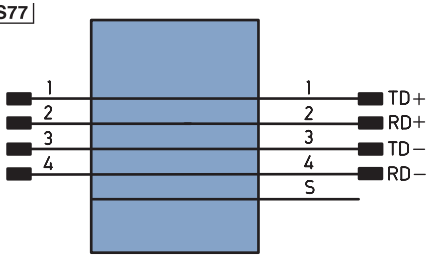
Order number: ZAT51NN01

Suitable Plug: 51

EN

Connecting cable M12×1; 4-pin; D-coding

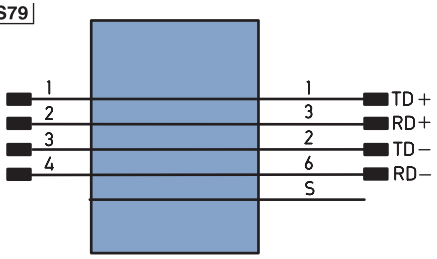
S77



Order number: ZAV51R201, Cable length: 2 m
Order number: ZAV51R601, Cable length: 10 m

Suitable Plug: 51

S79



Order number: ZAV51R202, Cable length: 2 m
Order number. ZAV51R602, Cable length: 10 m

Suitable Plug: 51

2 Connection and power supply cables
M12×1; 4-pin, different lengths are available for connecting the Sensor/actuator.

Legend

+	Supply Voltage +
–	Supply Voltage 0 V
~	Supply Voltage (AC Voltage)
A	Switching Output (NO)
Ā	Switching Output (NC)
V	Contamination/Error Output (NO)
V̄	Contamination/Error Output (NC)
E	Input (analog or digital)
T	Teach Input
Z	Time Delay (activation)
S	Shielding
RxD	Interface Receive Path
TxD	Interface Send Path
RDY	Ready
GND	Ground
CL	Clock
E/A	Output/Input programmable
	IO-Link
PoE	Power over Ethernet
IN	Safety Input
OSSD	Safety Output
Signal	Signal Output
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)
PT	Platinum measuring resistor
nc	not connected
U	Test Input
Ū	Test Input inverted
W	Trigger Input
O	Analog Output
O–	Ground for the Analog Output
BZ	Block Discharge
AMV	Valve Output
a	Valve Control Output +
b	Valve Control Output 0 V
SY	Synchronization
E+	Receiver-Line
S+	Emitter-Line
⏚	Grounding
SnR	Switching Distance Reduction
Rx+/–	Ethernet Receive Path
Tx+/–	Ethernet Send Path
Bus	Interfaces-Bus A(+)/B(–)
La	Emitted Light disengageable
Mag	Magnet activation
RES	Input confirmation
EDM	Contactor Monitoring
ENARS422	Encoder A/Ā (TTL)
ENA	Encoder A
ENB	Encoder B
AMIN	Digital output MIN
AMAX	Digital output MAX
AOK	Digital output OK
SY In	Synchronization In
SY OUT	Synchronization OUT
OLT	Brightness output
M	Maintenance

Wire Colors according to DIN IEC 757

BK	Black
BN	Brown
RD	Red
OG	Orange
YE	Yellow
GN	Green
BU	Blue
VT	Violet
GY	Grey
WH	White
PK	Pink

5. Application Notes

The Ethernet ports are fitted with overvoltage discharge protection. Internal varistors limit voltage surges to approx. 70 V. The connecting cables of the Digital I/O ports must not be longer than 30 m.

6. Mounting Instructions

When mounting and operating the connection box, the corresponding electrical and mechanical regulations, standards and safety rules must be observed. The connection box must be protected against mechanical influences. The connection box must be fastened in such a way that the mounting position cannot change. The product is designed for use in the industrial sector. The industrial environment is characterized in that consumers are not connected directly to the public low-voltage mains network. Additional measures must be taken for use in the residential sector, business and commercial sectors.
The table below defines the tightening torques of the plugs and fastening options for ensuring compliant and faultless operation.

Connection type	Tightening torque in (Nm)
M12	0.4
7/8" plug	1.5
FE ground strap	2.2±0.2
Connection box mounting	4.0±0.2

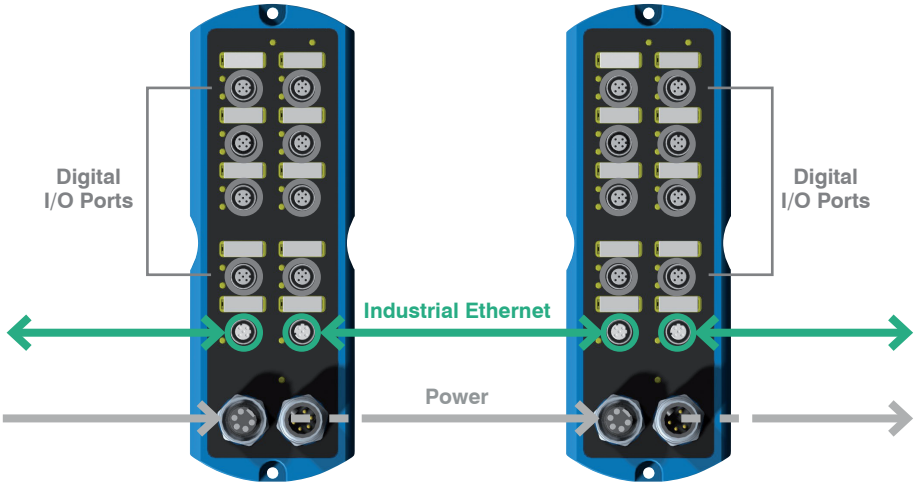
7. Initial Operation

Project planning, installation, start-up, maintenance and testing of the devices may only be carried out by qualified electrical technicians familiar with the safety standards of automation technology.

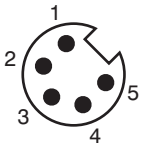
Only cables and accessories that meet the standards and requirements for safety, electromagnetic compatibility and, if necessary, telecommunications terminal equipment and the specifications. In case of damage, the product must not be used further on. In the event of improper use, the guarantee and liability claim against the manufacturer shall lapse.

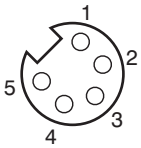
Information concerning which cables and accessories are approved for installation can be found at **www.wenglor.com** or are described in this manual.

7.1. System Structure



7.2. Power Cable





Power In		
0 V	Pin 1	
0 V	Pin 2	
⏚	Pin 3	
24 V max. 9 A	Pin 4	$U_{System/Sensor}$
24 V max. 9 A	Pin 5	$U_{Digital\ I/O}$

Power Out	
0 V	Pin 1
0 V	Pin 2
⏚	Pin 3
24 V max. 9 A	Pin 4
24 V max. 9 A	Pin 5

The 7/8" plug is designed for a maximum current of 9 A per pin. This must be taken into account when looping the supply voltage.

The connection box must be connected to a power supply of 18 to 32 V DC. The $U_{System/Sensor}$ supplies the connection with voltage and the $U_{Digital\ I/O}$ provides the power supply of the Digital I/O ports.

The voltage of $U_{System/Sensor}$ must not be switched off during ongoing operation and hence must not be conducted via emergency stop circuits, since otherwise the connection box will not be able to participate in the communication.

Measures must be taken in all cases to ensure that the supply voltage, measured at the remotest participant, does not fall short of the system supply voltage of 18 V DC.

To be complied with in reactive operation:
If the power supply of the Digital I/O ports is merged with the voltage supply of the connection box, there will then be the risk of a communication disruption in the event of a short-circuit on the I/O devices.

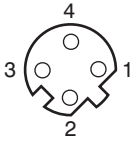
7.3. Functional Earth

The FE connection is on the lower front edge of the connection box. To ensure proper functioning in accordance with the EMC regulations specified in the data sheet, we recommend using our ground strap, which is included in the scope of delivery (for tightening torque see “Mounting Instructions” on page 9).

7.4. Industrial Ethernet Cable

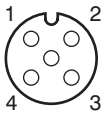
wenglor provides a variety of preassembled industrial Ethernet cables.
To ensure cabling as simple and reliable as possible, we recommend using our preassembled industrial Ethernet cables. It is advisable to only use cables certified in accordance with PROFINET standard in order to ensure safe and compliant operation (please also see PROFINET Cabling and Interconnection Technology – Guideline for PROFINET).

Assignment of the Industrial Ethernet connection (D-coding):



Pin	Function
1	TxD (+)
2	RxD (+)
3	TxD (–)
4	RxD (–)

7.5. Connecting Digital Sensors and Actuators



Pin	Function
1	24 V
2	Freely programmable input/output
3	0 V
4	Freely programmable input/output

Sockets that are not used must be provided with caps, which are included in the scope of supply. Otherwise, the protection class IP67 cannot be guaranteed.

A short-circuit on the IO-pins triggers an alarm in the controller. This message that can be enabled via the device parameters indicates whether a short-circuit to ground or $U_{Digital\ I/O}$ is present. In the event of a short-circuit on the Digital I/O ports, the communication with the connection box via PROFINET remains unaffected. Even the inputs can still be read, but a separate power supply of $U_{Digital\ I/O}$ and $U_{System/Sensor}$ is required, however.

ZAI02PN01 and ZAI02PN02 Connection Boxes are equipped with a mechanism which protects the electronics from overheating. Both of the Connection Boxes switch the digital outputs off in the case of overtemperature, for example due to excessive current output or operation outside of the specified ambient temperature range.

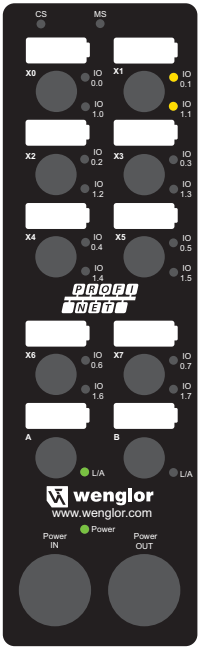
After a cool-down phase, the Connection Boxes are started back up again automatically. The momentary status can be read out via the PROFINET “Status” module.

Overall current monitoring for digital I/O voltage ($U_{Digital\ I/O}$) has also been integrated into the ZAI02PN02. This is necessary because current of up to 4 A can be made available at each port. However, the utilized power plug has a rating of max. 9 A. This total may not be exceeded by the sum of all digital outputs. If the limit value is nevertheless violated, the Connection Box is switched to an error status and all outputs are deactivated. The Connection Box then has to be reset in order to start it back up again. Supply power must be briefly interrupted to this end.

Looping through to the power out socket is not monitored in this case, and adherence to the specified maximum current values for the power in plug must be assured by the user.

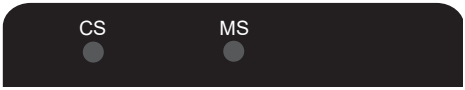
7.6. Diagnosis

Assignment example:



ZAI02PN0x

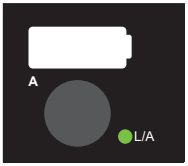
7.6.1 LED Display PROFINET



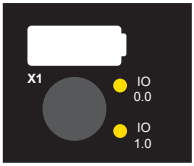
The status display for the communication is marked on the connection box with CS and MS.

Designation	Condition	Function
CS (Communication Status)	Off	Connection (AR) with controller established
	Green	Protocol not initialized
	Red	No connection (AR) with controller established
MS (Module Status)	Off	Module status OK
	Red	Device fault
	Red flashing	Detection function, may be activated via Engineering Tool

The LED display on the M12 sockets displays the diagnosis for the corresponding socket.



Designation	Condition	Function
L/A	Green	Link exists
	Green flashing	Communication via port



Designation	Condition	Function	
IO 0.0/IO 1.0	Yellow	Input	UB at Pin 2/4
		Output	Switching Output to UP Pin 2/4
	Red	Output	Short-circuit at Pin 2/4

7.7. Operation on a Controller

If you wish to start up the device on a controller, please carry out the following steps:

- Attach the connection box to the supply voltage and connect this to the controller via one of the Ethernet ports. You can find the appropriate connection technology on the wenglor homepage.
- Install the associated device-specific electronic description file (with Profinet the GSDML file) in the Hardware Manager of the controller. You will find the required file ready for download at: **www.wenglor.com → Product World → Product Search (Enter the product number) → Download → Product Description File.**
- The following procedure can be applied by way of example (example based on the Step 7 Engineering Tool of a Simatic-S7 controller from Siemens):
  - Insert the device into the Profinet cable
  - Afterwards, call up the object properties of the device
  - Assign a name of your choice to the device
  - Allocate an Ethernet address to the device
  - Assign the product by means of device names/IP address (detection via Mac address)
  - Transfer the configuration to the controller

A detailed description for different controllers and for the installation of the files or for the project planning of the network can be found in the help files of the relevant controller. wenglor offers an example quick guide on starting up a PROFINET device for the Simatic-S7 controller from Siemens and the appropriate software Step 7 Engineering Tool **(Product World → Product Search (Enter the product number) → Download → General instructions**).

7.7.1 Overview of the modules for PROFINET

Name	Cyclical/input	Parameter slot
16 bit digital input/output	Digital input/output	1 (fixed)

The following describes the detailed design of the modules.

7.7.2 Detailed description of the modules for PROFINET devices

DAP 3/5: ZAI02PN01 V1.0/ZAI02PN02 V1.0
Module ID: 0x00000301
Submodule: 0x00000000

Parameter:

Name	Data type	Byte offset	Bit offset	Bit length	Default value	Value range	Change-able	Index	Length
Web server Access	BitArea	0	0	1	0: Enabled		Yes	300	1 byte

DAP 3/5 uses module 2
Module 1: 16 bit digital in/out
Module ID: 0x00000002
Submodule: 0x00000002

Format cyclical input and output data:
Example: x1P4 ➔ Digital I/O Port 1, Pin 4

ZAI02PN0x	Input							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	x7P2	x6P2	x5P2	x4P2	x3P2	x2P2	x1P2	x0P2
Byte 1	x7P4	x6P4	x5P4	x4P4	x3P4	x2P4	x1P4	x0P4
Byte 2	Statusbyte 0							
Byte 3	Statusbyte 1							

ZAI02PN0x	Output							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	x7P2	x6P2	x5P2	x4P2	x3P2	x2P2	x1P2	x0P2
Byte 1	x7P4	x6P4	x5P4	x4P4	x3P4	x2P4	x1P4	x0P4

Device Status
Process Data Input

Statusbyte	Bit position	Significance
0	0	Error (active as soon as another error bit is activated)
	1	Internal device fault
	2	$U_{digital\ I/O}$ too low
	3	Outputs switched off (due to excessive temperature)
	4	Short-circuit on at least one output
	5	–
	6	Temperature too high
	7	Temperature too low
1	0–7	–

Parameter:

IO-Direction Pin2

Name	Data type	Byte offset	Bit offset	Bit length	Default value
IO Port 0	BitArea	0	0	1	0: Input
IO Port 1	BitArea	0	1	1	0: Input
IO Port 2	BitArea	0	2	1	0: Input
IO Port 3	BitArea	0	3	1	0: Input
IO Port 4	BitArea	0	4	1	0: Input
IO Port 5	BitArea	0	5	1	0: Input
IO Port 6	BitArea	0	6	1	0: Input
IO Port 7	BitArea	0	7	1	0: Input

IO-Direction Pin4

Name	Data type	Byte offset	Bit offset	Bit length	Default value
IO Port 0	BitArea	0	0	1	0: Input
IO Port 1	BitArea	0	1	1	0: Input
IO Port 2	BitArea	0	2	1	0: Input
IO Port 3	BitArea	0	3	1	0: Input
IO Port 4	BitArea	0	4	1	0: Input
IO Port 5	BitArea	0	5	1	0: Input
IO Port 6	BitArea	0	6	1	0: Input
IO Port 7	BitArea	0	7	1	0: Input

IO-Parameter

Name	Data type	Byte offset	Bit offset	Bit length	Default value
Short circuit diagnosis	Bit	0	0	1	0: deactivated

7.7.3 Diagnostic alarms

The appropriate alarm module should be set up in the controller in the case of an alarm message originating from the connection box by short circuit at the ports (hardware interrupt OBs OB40-OB47). If this is not the case, the CPU goes into the STOP mode in the case of an interrupt triggering event. The following alarm messages are output from the connection box to the controller:

Diagnostic I/O: Short-circuit after V_{CC} (coming)

Api	0x00000000
Slot	0x0001
Subslot	0x0001
Channel	0: Port 0 (Pin2 or Pin4) 1: Port 1 (Pin2 or Pin4) 2: Port 2 (Pin2 or Pin4) 3: Port 3 (Pin2 or Pin4) 4: Port 4 (Pin2 or Pin4) 5: Port 5 (Pin2 or Pin4) 6: Port 6 (Pin2 or Pin4) 7: Port 7 (Pin2 or Pin4)
AlarmSpecifier	0x01, Diagnosis appears
ChannelErrorType	0x0100 (manufacturer-specific)

Diagnostic I/O: Short-circuit after V_{CC} (going)

Api	0x00000000
Slot	0x0001
Subslot	0x0001
Channel	0: Port 0 (Pin2 or Pin4) 1: Port 1 (Pin2 or Pin4) 2: Port 2 (Pin2 or Pin4) 3: Port 3 (Pin2 or Pin4) 4: Port 4 (Pin2 or Pin4) 5: Port 5 (Pin2 or Pin4) 6: Port 6 (Pin2 or Pin4) 7: Port 7 (Pin2 or Pin4)
AlarmSpecifier	0x02, Diagnosis disappears
ChannelErrorType	0x0100 (manufacturer-specific)

Diagnostic I/O: Short-circuit after Gnd (coming)

Api	0x00000000
Slot	0x0001
Subslot	0x0001
Channel	0: Port 0 (Pin2 or Pin4) 1: Port 1 (Pin2 or Pin4) 2: Port 2 (Pin2 or Pin4) 3: Port 3 (Pin2 or Pin4) 4: Port 4 (Pin2 or Pin4) 5: Port 5 (Pin2 or Pin4) 6: Port 6 (Pin2 or Pin4) 7: Port 7 (Pin2 or Pin4)
AlarmSpecifier	0x01, Diagnosis appears
ChannelErrorType	0x0101 (manufacturer-specific)

Diagnostic I/O: Short-circuit after Gnd (going)

Api	0x00000000
Slot	0x0001
Subslot	0x0001
Channel	0: Port 0 (Pin2 or Pin4) 1: Port 1 (Pin2 or Pin4) 2: Port 2 (Pin2 or Pin4) 3: Port 3 (Pin2 or Pin4) 4: Port 4 (Pin2 or Pin4) 5: Port 5 (Pin2 or Pin4) 6: Port 6 (Pin2 or Pin4) 7: Port 7 (Pin2 or Pin4)
AlarmSpecifier	0x02, Diagnosis disappears
ChannelErrorType	0x0101 (manufacturer-specific)

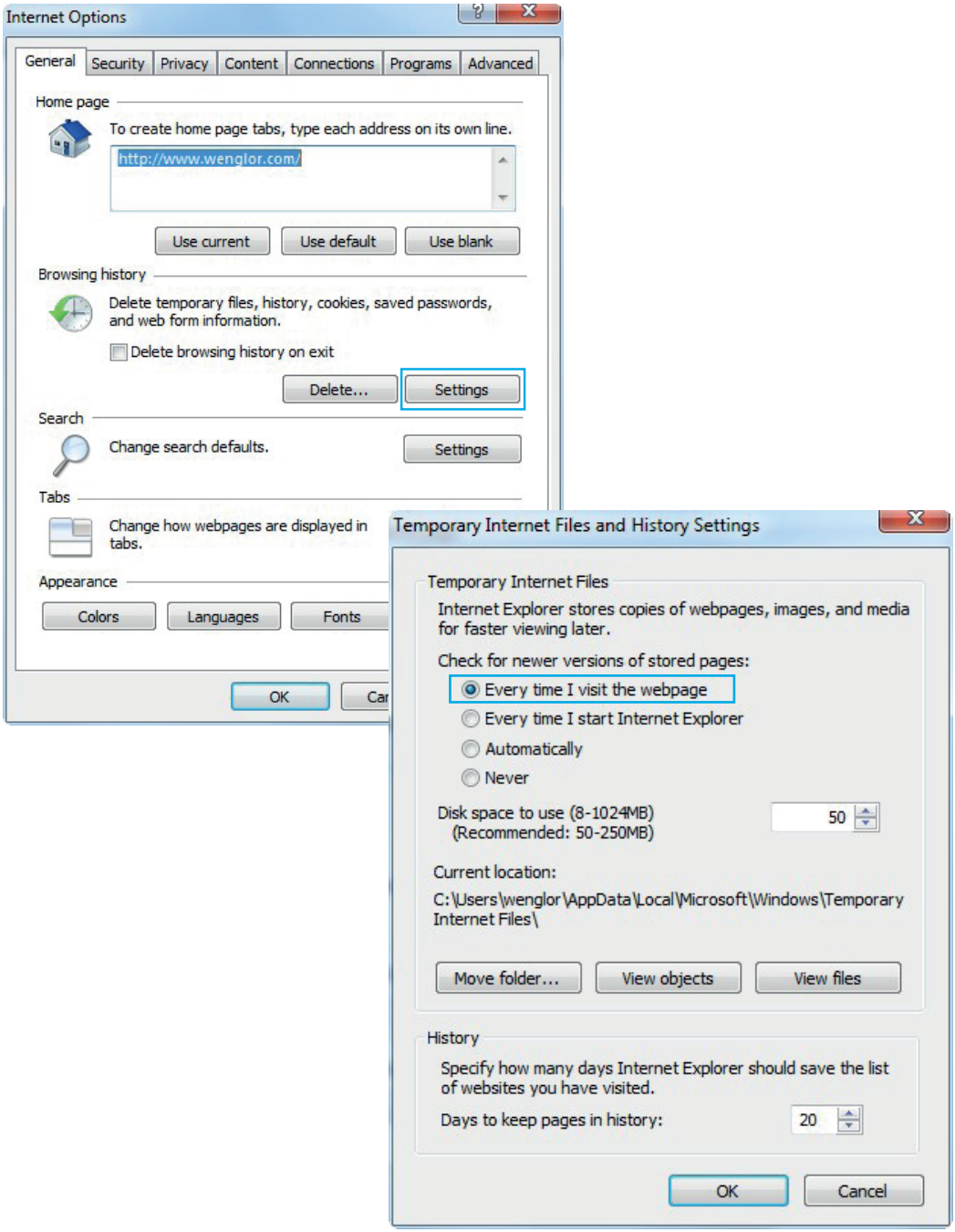
8. Web-based Configuration

The connection box is equipped with a web-based setting interface, which works independently of the operating system. You can easily set parameters for the connection box using a standard web browser. The network settings are preset to the IP address 192.168.100.1, subnet mask 255.255.255.0 and standard gateway 192.168.100.254. The preset values are always assumed in the instructions.

Attention:
When using on a controller, settings changed through the website are overwritten by the controller.

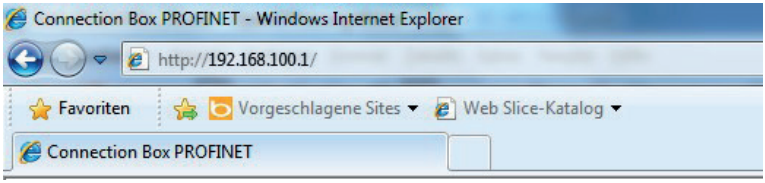
8.1. Call up the Administration Interface

Start the web browser. Enter the IP address of the connection box into the address line of your browser and press the ENTER key. The IP address of the connection box is preset to 192.168.100.1. To ensure that the browser displays the current website settings, the website in question must always be refreshed automatically in case of change. This setting must be changed browser-specific and is demonstrated here by means of Internet Explorer as an example. Under **Tools → Internet options → Browsing history → Settings** the selection should be set to **Every time I visit the webpage**. Otherwise, any changes to the homepage might be displayed incorrectly.


Internet Options
General
Security
Privacy
Content
Connections
Programs
Advanced
Home page
To create home page tabs, type each address on its own line.
http://www.wenglor.com/
Use current
Use default
Use blank
Browsing history
Delete temporary files, history, cookies, saved passwords, and web form information.
Delete browsing history on exit
Delete...
Settings
Search
Change search defaults.
Settings
Tabs
Change how webpages are displayed in tabs.
Appearance
Colors
Languages
Fonts
OK
Temporary Internet Files and History Settings
Temporary Internet Files
Internet Explorer stores copies of webpages, images, and media for faster viewing later.
Check for newer versions of stored pages:
Every time I visit the webpage
Every time I start Internet Explorer
Automatically
Never
Disk space to use (8-1024MB)
(Recommended: 50-250MB)
50
Current location:
C:\Users\wenglor\AppData\Local\Microsoft\Windows\Temporary Internet Files\
Move folder...
View objects
View files
History
Specify how many days Internet Explorer should save the list of websites you have visited.
Days to keep pages in history:
20
OK
Cancel

To now access the webpage of the connection box (in the example ZAC02PN01), the IP address must be entered as described in the address line of the browser.

Example: http:\\192.168.100.1 (delivery state)



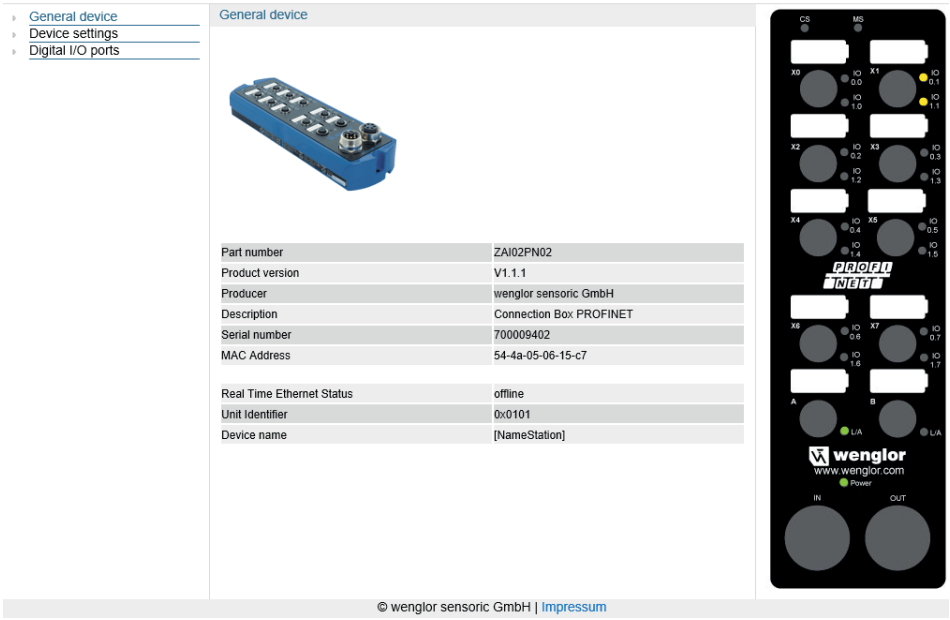
The overview page **General Device** is not password protected. If other pages are accessed, a password prompt appears.

The following user data are preset in the delivery state:

User name: admin
Password: admin

The password can be changed on the page **Device settings.**

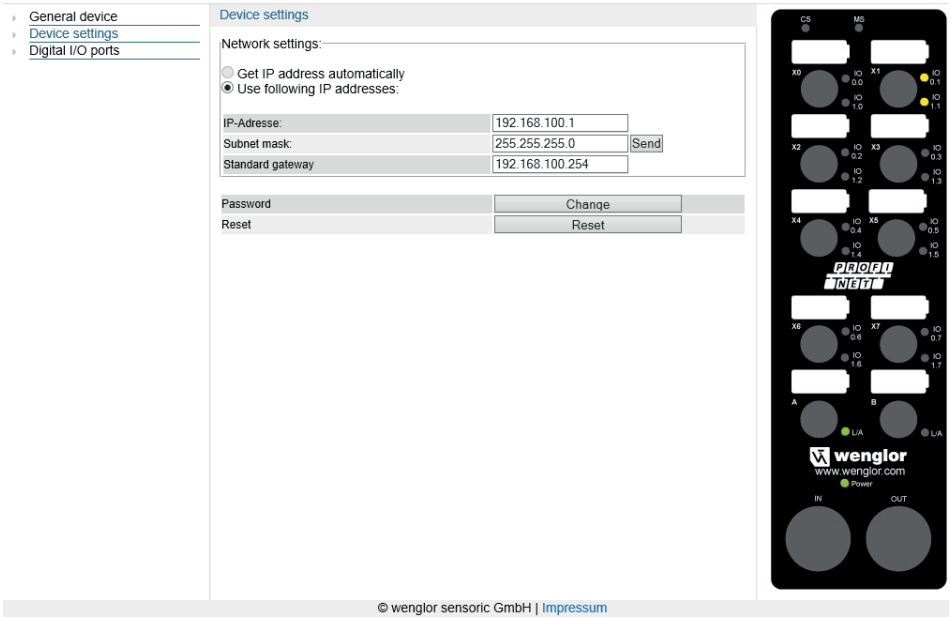
8.2. Overview Page



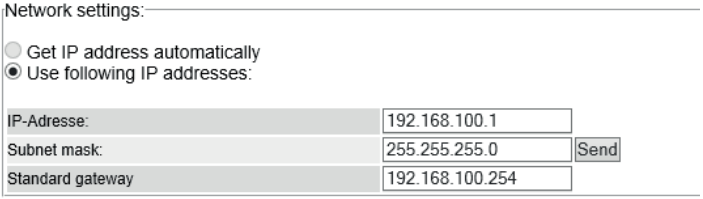
After the connection is established, the overview page of the connection box is displayed.

Through the language selection, the website can be changed from English (delivery state) to German. Italian, French or Spanish.

8.3. Device settings



Network settings:



When a connection box is not operated on a controller, it is possible to change the network settings. The network settings are saved by pressing the “Send” button. To make the changes of the network settings take effect, it is necessary to disconnect the connection box briefly from the power supply.

WARNING: Error-free operation of the product can only be guaranteed if the correct network settings are entered in the web user interface. Any incorrect entry of the values could cause the device to be no longer accessible in the network.
It must be ensured that supply power is not interrupted while making changes to network settings. Furthermore, supply power must maintained for at least an additional 5 minutes after the network settings have been saved to memory.

Change password:

An additional window opens, in which the new password can be entered.

Please note: If you forget the password, the connection box can only be set to the delivery state via a reset on the controller.

Reset:

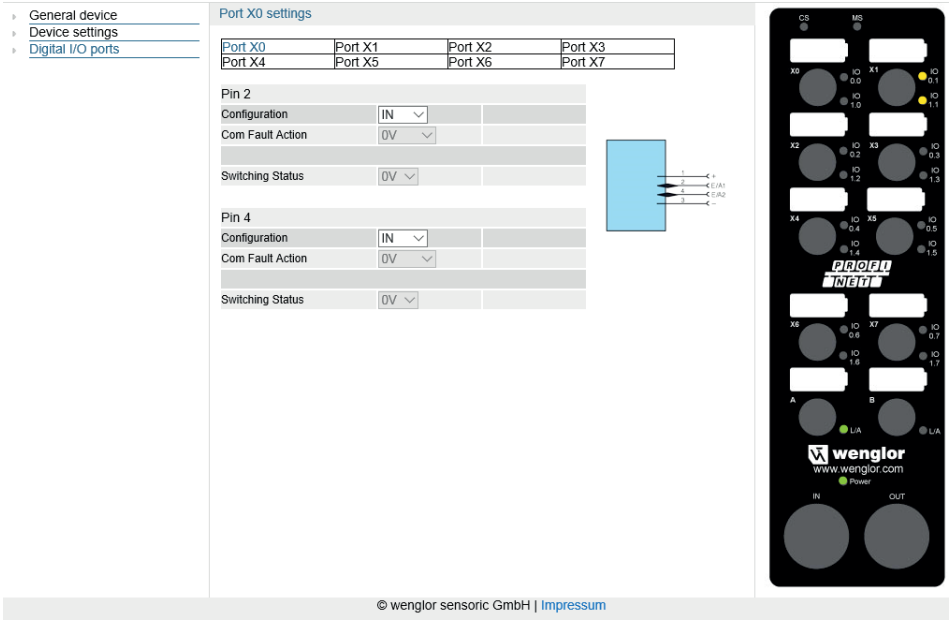
The following settings can be reset to the delivery state by pressing the “Reset” button:

- Parameter of the Digital I/O ports: All Digital I/O ports are switched to input
- The password is reset to the delivery state (“admin”).

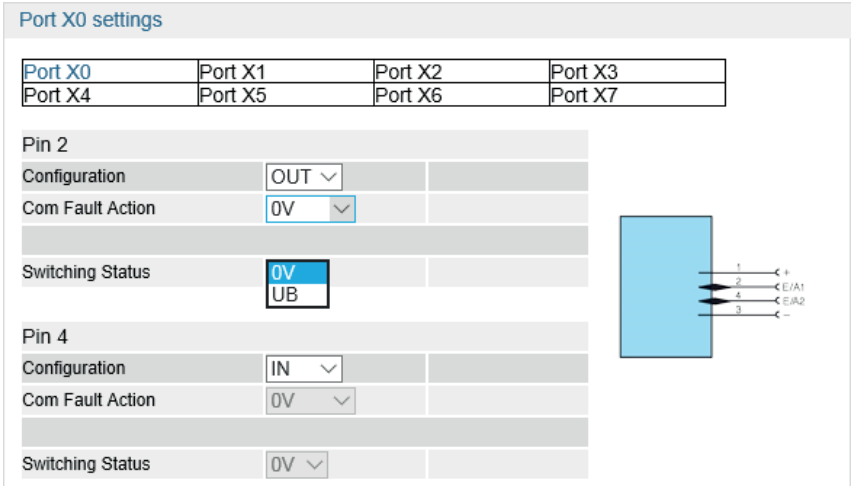
Please note: The network settings are not reset hereby! If you do not know the network settings, the device must be connected to a controller in order to reset the settings.

8.4. Digital I/O Ports Settings

The connection box has 8 ports available with two digital inputs/outputs each. The digital inputs/outputs are configured on the **Digital I/O ports** page.



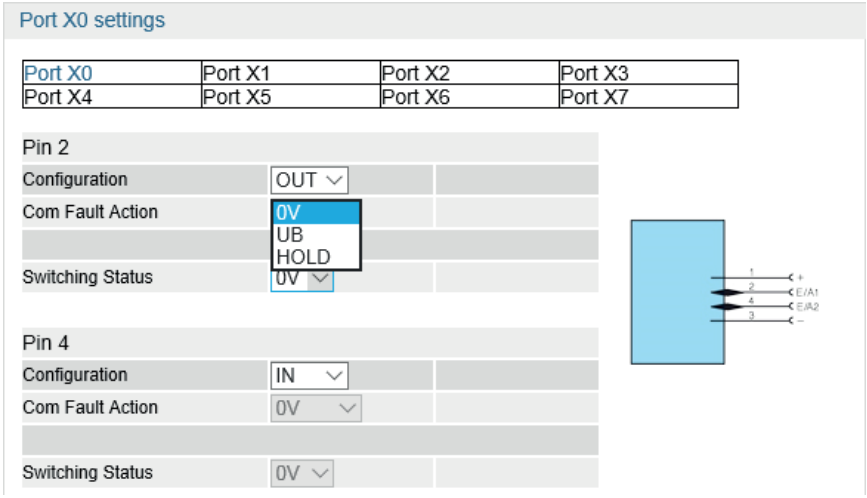
Pin 2 and pin 4 can each be configured as input or output. If the pin is configured as output, the pin can be set manually to 0 V or U_B. A red flashing LED indicates a short-circuit on the respective pin.



NOTE!
This function is only available via the website and keeps it`s settings while controller is in operation.

COM fault action:
This function stipulates the output function of the output pins after a network crash.
Selection can be made from amongst:

- 0V = switch outputs off (default)
- UB = switch outputs on
- Maintain (the previous state)



9. Maintenance Notes

This wenglor connection box is maintenance-free.
Do not use any solvents or cleaning agents that could damage the device when cleaning the connection box. The following gives a brief overview:

- Always use clean water for cleaning by using neutral detergents together with a soft, non-scratch, non-abrasive and non-fibrous cloth – strong pressure or rubbing must be avoided.
- Coarse soiling of greasy, oily or sooty surfaces and the removal of adhesive residues can be cleaned using aromatic-free white spirit or isopropyl alcohol (IPA).
- Use cleaning agent at a maximum of 25 °C.
- Never use steam cleaners.
- Never use solvents with aromatic compounds, alcohol, ketones, ester, glycol ether or halogenated hydrocarbons for cleaning.
- When cleaning with liquids, all open ports must be locked with the protective caps provided.

10. 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.

11. EU Declaration of Conformity

The EU declaration of conformity can be found on our website at www.wenglor.com in download area.

The wenglor sensoric GmbH, hereafter called wenglor for short, points out that notes and information in this operating manual may be subject to constant development and technical changes and are therefore only published under reservation.

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