

ZAC5xEN0x

Ethernet Switches



EtherNet/IP™

Operating instructions

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1. Proper Use

This wenglor product must be used in accordance with the following functional principle:

Switch

A Switch is an active network component which distributes data to the corresponding addressees within a network in a targeted fashion. wenglor switches are fitted optionally with additional Power over Ethernet technology. The power supply is integrated into existing network connection by means of Power over Ethernet. As an addition to Industrial Ethernet, there are several digital inputs and outputs directly on the switch that 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



RoHS



4. Technical Data

Order number	ZAC50EN01	ZAC50EN02	ZAC51EN01
Supply voltage	18...32 V DC	18...32 V DC	18...32 V DC
Max. Current Consumption Device *	0.3 A	0.25 A	0.3 A
Max. Current Consumption System **	2.2 A	2 A	0.3 A
max. PoE Capacity	30 W	25 W	–
Temperature range	–25...60 °C	–25...60 °C	–25...60 °C
Voltage drop switching outputs	< 2.5 V	< 2.5 V	< 2.5 V
Max. Switching current switching outputs	0.6 A	0.6 A	0.6 A
Max. total current of the digital I/O ports	1A	1A	1A
Digital I/O ports short-circuit protected	Yes	Yes	Yes
Digital I/O ports overload protected	Yes	Yes	Yes
Digital I/O ports reverse polarity protected	Yes	Yes	Yes
Number of digital I/O ports	2	2	2
Housing material	Aluminum	Aluminum	Aluminum
Protection class	IP67	IP67	IP67
Type of connection power	7/8", 5-pin	7/8", 5-pin	7/8", 5-pin
Type of Connection Industrial Ethernet Ports	M12×1, 4-pin, D-coding	M12×1, 4-pin, D-coding	M12×1, 4-pin, D-coding
Type of Connection PoE Ports	M12×1, 8-pin, type x	M12×1, 8-pin, type x	–
Type of Connection Digital I/O ports	M12×1, 4-pin, A-coding	M12×1, 4-pin, A-coding	M12×1, 4-pin, A-coding
Number of PoE ports	5	2	–
Number of Industrial Ethernet Ports	2	2	7
Number of Digital I/O ports	2	2	2
PoE Standard	IEEE802.3af	IEEE802.3af	–
PoE Classes	Class 0, 1, 2, 3	Class 0, 1, 2, 3	–
Baud Rate	10 Mbit/s / 100 Mbit/s	10 Mbit/s / 100 Mbit/s	10 Mbit/s / 100 Mbit/s
Transmission Mode	Full / Half Duplex	Full / Half Duplex	Full / Half Duplex
Webserver	Yes	Yes	Yes
Switch Mode	Store & Forward	Store & Forward	Store & Forward
VLAN Prioritization	Yes	Yes	Yes
Auto-Crossover	Yes	Yes	Yes
Auto-Negotiating	Yes	Yes	Yes
Auto-Polarity	Yes	Yes	Yes

* Maximum own power consumption of the product without additional loads

** Maximum own power consumption of the product with additional loads
Full assignment of all PoE ports (if available) without digital I/O ports

4.1. Connection table ZAC50EN0x

52

Socket 1

Suitable Plug: 50

Pin	Function	In/Out
1	TxD (+)	Out
2	TxD (-)	Out
3	RxD (+)	In
4	RxD (-)	In
5	PoE (+)	Out
6	PoE (+)	Out
7	PoE (-)	Out
8	PoE (-)	Out

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: 2

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

Socket 4

Suitable Plug: 77 78

Pin	Function
1	0 V DC
2	0 V DC
3	
4	+24 V DC U _{System}
5	+24 V DC U _{Digital I/O / Sensor}



The diagram illustrates the ZAC50EN0x device from both front and back perspectives. The front view (top) shows a blue casing with a black central panel containing four sockets labeled Socket 1 (50), Socket 2 (51), Socket 3 (2), and Socket 4 (77). The back view (bottom) shows the same device from the opposite side, with the same four sockets labeled Socket 1 (50), Socket 2 (51), Socket 3 (2), and Socket 4 (78). The website address www.westinghouse.com is visible on the back panel.

4.2. Connection table ZAC51EN01

54


Socket 1 Suitable Plug: 2

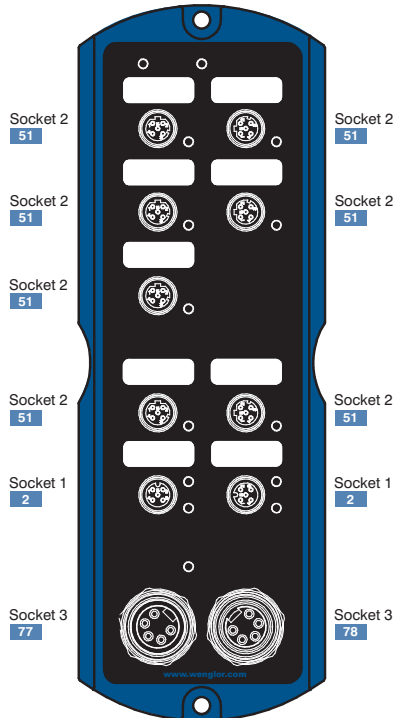
Pin	Function
1	+24 V DC
2	I/O
3	GND
4	I/O
5	

Socket 2 Suitable Plug: 51

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

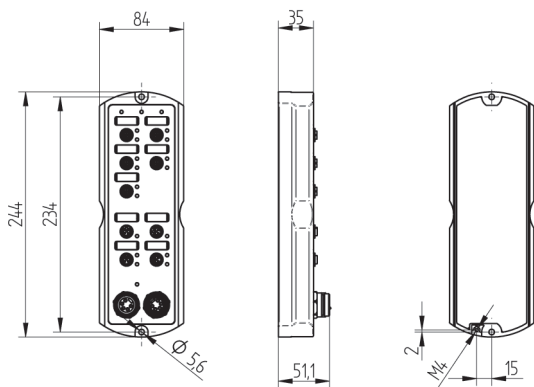
Socket 3 Suitable Plug: 77 78

Pin	Function
1	0 V DC
2	0 V DC
3	
4	+24 V DC U _{system}
5	+24 V DC U _{Digital I/O / Sensor}

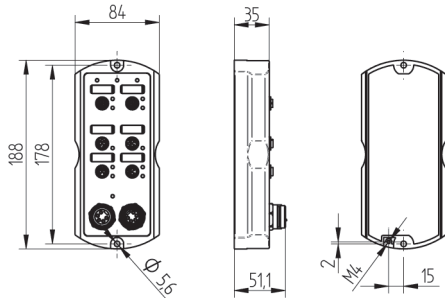


4.3. Housing Dimensions

4.3.1 ZAC5xxN01



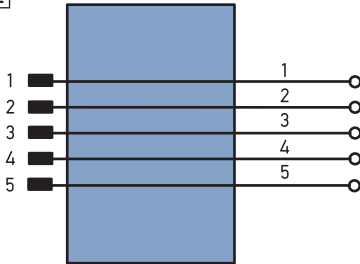
4.3.2 ZAC50xN02



4.4. Complementary Products

Connection plug, 7/8", 5-pin

S82

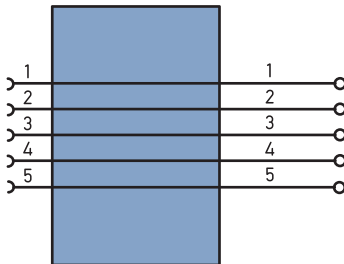


Order number: ZAT77NN01

Suitable Plug: **77**

Connection socket, 7/8", 5-pin

S87

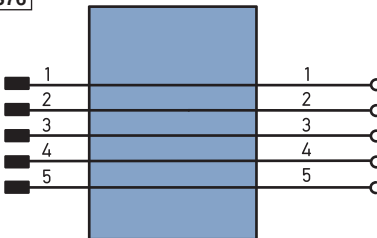


Order number: ZAB78NN01

Suitable Plug: **78**

Connecting cable, 7/8", 5-pin

S76

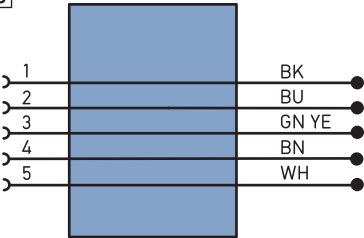


Order number: ZAV78R201, Cable length: 2 m

Suitable Plug: **78**

Connecting line, 7/8", 5-pin

S75

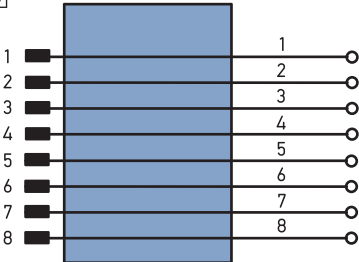


Order number: ZAS78R601, Cable length: 10 m

Suitable Plug: 78

Connector Plug RJ45; 8-pin

S48

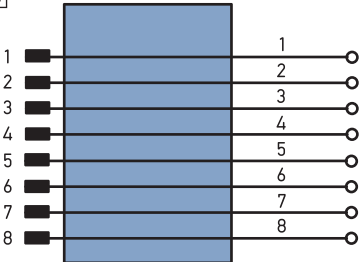


Order number: ZAT45NN01

Suitable Plug: 45

Connection plug, M12×1; 8-pin

S48

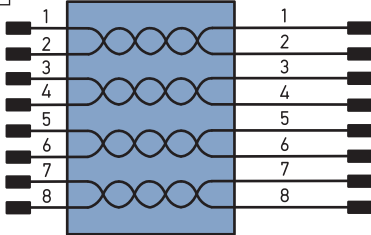


Order number: ZAT50NN01

Suitable Plug: 50

Connecting cable M12×1; 8-pin

S81

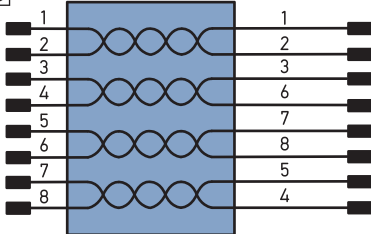


Order number: ZAV50R201, Cable length: 2 m

Order number: ZAV50R501, Cable length: 5 m

Suitable Plug: **50**

S85

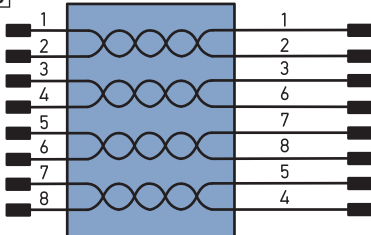


Order number: ZAV50R502, Cable length: 5 m

Suitable Plug: **50**

Connecting line M12×1, 8-pin

S85

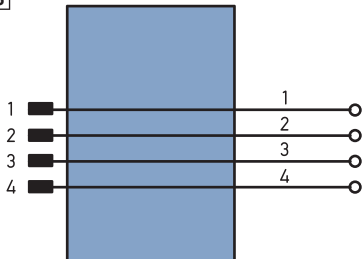


Order number: ZAS50R601, Cable length: 10 m

Suitable Plug: **50**

Connection plug, M12×1, 4-pin

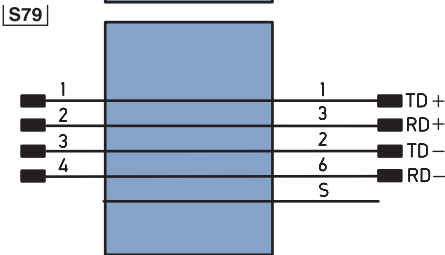
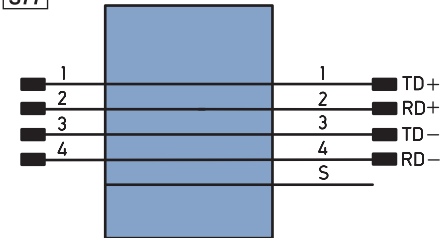
S08



Order number: ZAT51NN01

Suitable Plug: **51**

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

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.

+	Supply Voltage +
-	Supply Voltage 0 V
~	Supply Voltage (AC Voltage)
A	Switching Output (NO)
Ā	Switching Output (NC)
V	Contamination/Error Output (NO)
Ṽ	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
QSSD	Safety Output
Signal	Signal Output
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)
EN0RS422	Encoder 0-pulse 0-0 (TTL)

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
AwV	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	Contact Monitoring
EN0RS422	Encoder A/A (TTL)
EN0RS422	Encoder B/B (TTL)

ENa	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
GNYE	Green/Yellow

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 switches, the corresponding electrical and mechanical regulations, standards and safety rules must be observed. The switch must be protected against mechanical influences. The product must be fastened in such a way that the mounting position cannot change. The switch 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
Switch Mounting	4.0±0.2

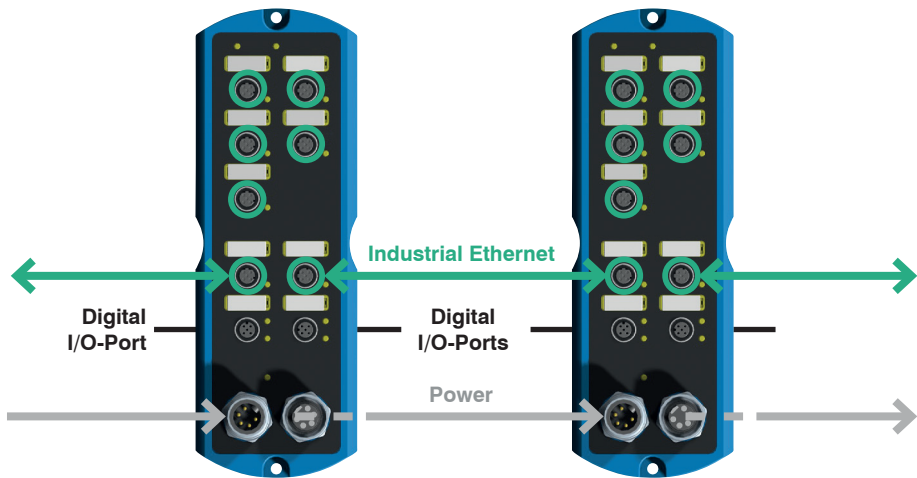
7. Initial Operation

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	FE
24 V max. 9 A	Pin 4	U_{System}
24 V max. 9 A	Pin 5	$U_{\text{Digital I/O / Sensor}}$

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

The voltage of the U_{System} must not be switched off during ongoing operation and hence must not be conducted via emergency stop circuits, since otherwise the switch and all connected Ethernet products 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 switch, there will then be the risk of a communication disruption in the event of a short-circuit on the I/O devices.

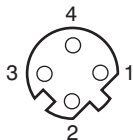
7.3. Functional Earth

The FE connection is on the lower front edge of the switch. 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 13).

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.

Assignment of the Industrial Ethernet connection:

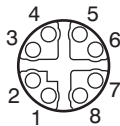


Pin	Function
1	TxD (+)
2	RxD (+)
3	TxD (-)
4	RxD (-)

7.5. Industrial Ethernet Cable with Power over Ethernet

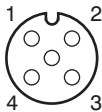
To ensure cabling as simple and reliable as possible, we recommend using our preassembled industrial Ethernet cables. It is also possible to interconnect two switches with PoE via the 8-pin network cable. The PoE supply should then be switched off on at least one of the two PoE ports (see “Industrial Ethernet Ports Settings” on page 37).

Assignment of the Industrial Ethernet connection with PoE:



Pin	Function
1	TxD (+)
2	TxD (-)
3	RxD (+)
4	RxD (-)
5	PoE (+)
6	PoE (+)
7	PoE (-)
8	PoE (-)

7.6. Connecting Digital Sensors and Actuators

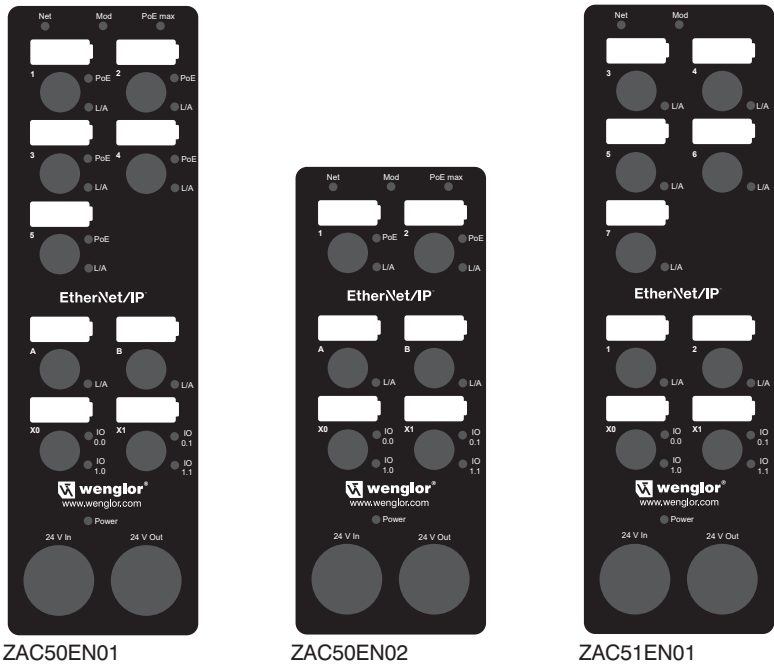


Pin	Function
1	24 V
2	Freely programmable input/output
3	0 V
4	Freely programmable input/output

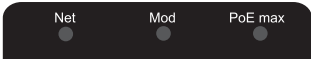
Sockets that are not used must be provided with caps, which are included in the scope of supply. Otherwise, the protection class IP67 cannot be guaranteed.

7.7. Diagnosis

Assignment example:



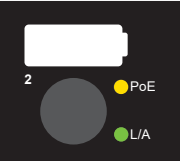
7.7.1 LED Display EtherNet/IP™ Device (ZAC50EN0x)



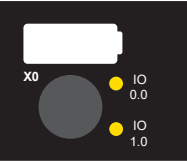
The status displays for the communication are marked on the switch with CS and MS.

Designation	Condition	Function
Net	Off	No IP address
	Green	CIP connection established
	Green flashing	IP address assigned, no CIP connection
	Red	IP address assigned twice
	Red flashing	CIP connection interrupted
Mod	Green	Ready for operation
	Green flashing	Standby
	Red	Permanent error
	Red flashing	Temporary error
PoE max	Red	Maximum PoE performance reached
	Red flashing	PoE performance monitoring was switched off

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

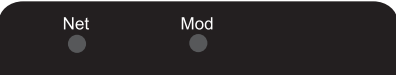


Designation	Condition	Function
PoE	Yellow	PoE in operation
	Yellow flashing	PoE function switched off
L/A	Green	Link exists
	Green flashing	Communication



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

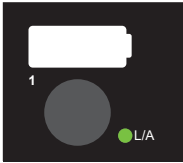
7.7.2 LED Display EtherNet/IP™ Device (ZAC51PN01)



The status displays for the communication are marked on the switch with CS and MS.

Designation	Condition	Function
Net	Off	No IP address
	Green	CIP connection established
	Green flashing	IP address assigned, no CIP connection
	Red	IP address assigned twice
	Red flashing	CIP connection interrupted
Mod	Green	Ready for operation
	Green flashing	Standby
	Red	Permanent error
	Red flashing	Temporary error

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 at UB Pin 2/4
	Red	Output	Short circuit at Pin 2/4

7.8. Operation using a controller without EDS file use

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

- Attach the switch 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.
- Create a new project in the controller
- Add a new module to this project
- When selecting the communication module „General Ethernet module“ should be used
- The properties of the new module should match the connection parameters of the relevant product. In the example of the switch the communication format selected should be „Data SINT“. To be able to access the switch in the network an IP address should be assigned in addition. In delivery condition this is requested by the product via a DHCP server.
- Creating the Config Assembly (not mandatory). Default Config = I/O ports to input, active performance monitoring, all ports are released for PoE
- After the program has been created, connect to the controller and load program

For a detailed description for different controllers and for installation of the files or project planning of the network refer to the help files of the relevant controller. wenglor provides a short exemplary instruction for commissioning of an EtherNet/IP™ device (**www.wenglor.com → Product World → Product search (order number) → Download → General instructions**).

8. Detailed description of the modules for EtherNet/IP™ devices

8.1. Identity object (0x01)

This object provides the identification of the device.

Identity Object (0x01)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	Name	Access
1	Vendor ID	Get
2	Device Type	Get
3	Product Code	Get
4	Revision	Get
5	Status	Get
6	Serial Number	Get
7	Product Name	Get
Instance Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
0x05	Reset	

8.2. Message router object (0x02)

The Message router defines the connection paths to other objects and allows access to the objects via these paths.

Message Router Object (0x02)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
4	Optional Attribute List	Get
5	Optional Service List	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	
Instance Attributes		
ID	Name	Access
1	Object list	Get
2	Number Available	Get
Instance Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	

8.3. Assembly object (0x04)

The assembly object links attributes of different objects so that they can be transmitted as a whole via a single connection.

The following assemblies are available:

Input assembly (producing) 7
Output assembly (consuming) 37
Config assembly 100

Assembly Object (0x04)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	Name	Access
3	Data	Get/Set
4	Size	Get
Instance Services		
Code	Name	
0x0E	Get_Attribute_Single	
0x10	Set_Attribute_Single	
0x18	Get_Member	
0x19	Set_Member	

8.4. Connection manager object (0x06)

This object manages internal resources for maintaining explicit and implicit connections.

Connection Manager Object (0x06)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
4	Optional Attribute List	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	Name	Access
1	Open Requests	Get/Set
2	Open Format Rejects	Get/Set
3	Open Resource Rejects	Get/Set
4	Open Other Rejects	Get/Set
5	Close Requests	Get/Set
6	Close Format Rejects	Get/Set
7	Close Other Rejects	Get/Set
8	Connection Timeouts	Get/Set
Instance Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
0x54	Forward_Open	
0x4E	Forward_Close	
0x52	Unconnected_Send	

8.5. Discrete input point objects (0x08)

This object manages a single physical input of the device.

Discrete Input Point Object (0x08)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
Class Services		
Code	Name	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	Name	Access
3	Value (0=off, 1=on)	Get
Instance Services		
Code	Name	
0x0E	Get_Attribute_Single	

8.6. Discrete output point objects (0x09)

This object manages a single physical output of the device.

Discrete Output Point Object (0x09)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
Class Services		
Code	Name	
0x0E	Get Attribute Single	
Instance Attributes		
ID	Name	Access
3	Value (0=off, 1=on)	Get/Set
4	Status (0=OK, 1=failure or alarm)	Get
Instance Services		
Code	Name	
0x0E	Get Attribute Single	
0x10	Set Attribute Single	

The visibility of an instance for “Explicit Messaging” depends on the configuration using “Configuration Assembly” and the attribute (100, 1, 1).

8.7. QoS object (0x48)

The QoS (Quality of Service) object can be used to configure the DSCP values of the different outgoing message priorities

QoS Object (0x48)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	Name	Access
4	DSCP Urgent	Get/Set
5	DSCP Scheduled	Get/Set
6	DSCP High	Get/Set
7	DSCP Low	Get/Set
8	DSCP Explicit	Get/Set
Instance Services		
Code	Name	
0x0E	Get_Attribute_Single	
0x10	Set_Attribute_Single	

8.8. Port object (0xF4)

This object describes the existing CIP ports of the device.

Port Object (0xF4)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
8	Entry Port	Get
9	Port Instance Info	Get
Class Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	
Instance Attributes		
ID	Name	Access
1	Port Type	Get
2	Port Number	Get
3	Link Object	Get
4	Port Name	Get
7	Node Address	Get
Instance Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	

8.9. TCP/IP interface object (0xF5)

This object implements mechanisms for configuration of the TCP/IP layer such as, for example, IP address, subnet mask, and gateway address.

TCP/IP Interface Object (0xF5)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attri- butes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
Instance Attributes		
ID	ID	ID
1	Status Get	
2	Configuration Capability	Get
3	Configuration Control	Get/Set
4	Physical Link Object	Get
5	Interface Configuration	Get/Set
6	Host Name	Get/Set
10	Select ACD	Get/Set
11	LastConflictDetected	Get/Set
Instance Services		
Code	Code	
0x01	Get_Attribute_All	
0x0E	Get_Attribute_Single	
0x02	Set_Attribute_All	
0x10	Set_Attribute_Single	

8.10. Ethernet link object (0xF6)

This object configures the connection-specific features (MAC ID, transmission rate, etc.) of the Ethernet interfaces.

Ethernet Link Object (0xF6)		
Class Attributes		
ID	Name	Access
1	Revision	Get
2	Max Instance	Get
3	Number of Instances	Get
6	Maximum ID Number Class Attributes	Get
7	Maximum ID Number Instance Attributes	Get
Class Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	
Instance Attributes		
ID	Name	Access
1	Interface Speed	Get
2	Interface Flags	Get
3	Physical Address	Get
6	Interface Control	Get/Set
7	Interface Type	Get
8	Interface State	Get
10	Interface Label	Get
Instance Services		
Code	Name	
0x01	Get Attribute All	
0x0E	Get Attribute Single	
0x10	Set Attribute Single	

8.11. Vendor-specific object (0x64)

The vendor-specific object 100 is used for configuration of the I/O ports and PoE ports etc.

Vendorspecific Object (0x64)			
Class Attributes			
ID	Name	Access	
Keine Class Instanz vorhanden. Attribute 1 nicht benötigt da Revision == 1			
Class Services			
Code	Name		
Keine Class Instanz vorhanden			
Instance Attributes			
ID	Name	Access	Supported by
1	Direction Register (16 bit) (see below)	Get/Set	all Switches
2	Power Monitoring (BOOL) (see below)	Get/Set	not ZAC51EN01
3	PoE Enable (8 bit) (see below)	Get/Set	not ZAC51EN01
4	WebServer Access (BOOL), 0= disable, 1=enable	Get/Set	all Switches
Instance Services			
Code	Name		
0x0E	Get Attribute Single		
0x10	Set Attribute Single		

The following table shows the assignment between the IO points of the direction register and the instances and the pin assignment of the ports.

Ports/Pins	IO LED	Assembly Bit	DIP/DOP Instance
0 / 2	0.0	0	1
0 / 4	1.0	8	3
1 / 2	0.1	1	2
1 / 4	1.1	9	4

8.11.1 Configuration assembly for ZAC50EN01 and ZAC50EN02

The configuration of the inputs/outputs is made via a configuration assembly 100.

Configuration Assembly (0x64)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Direction Access (Byte 0), (0=input (def.), 1=output)							
1	Direction Access (Byte 1), (0=input (def.), 1=output)							
2	Reserved							PM 0=off 1=on
3	PoE Enable/Disable (0=disable, 1=enable)							

The abbreviation PM in the table refers to Power Monitoring.

8.11.2 Configuration assembly for ZAC51EN01

Configuration Assembly (0x64)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Direction Access (Byte 0) (see above)							
1	Direction Access (Byte 1) (see above)							

8.12. Connections

One exclusive owner connection and several input/lists only connections are supported. The exclusive owner connection transmits exactly one byte in both directions. Up to four of the lower bits of this byte are valid for each direction. The maximum total number of valid bits for both directions corresponds to the number of physical inputs and outputs of the device, i.e. four.

Producing assembly (input) is on instance 7 decimal.
Consuming assembly (output) is on instance 37 decimal.

Structure of the assembly:

There is exactly 1 byte with the following assignment

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
—	—	—	—	Port 1 Pin 4	Port 0 Pin 4	Port 1 Pin 2	Port 0 Pin 2

9. Web-based Configuration

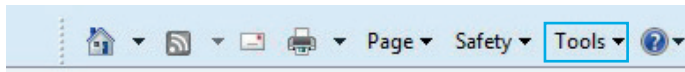
The switch is equipped with a web-based setting interface, which works independently of the operating system. You can easily set parameters for the switch using a standard web browser. In delivery condition the device expects the IP address from a DHCP server. It is not needed for normal operation on the controller.

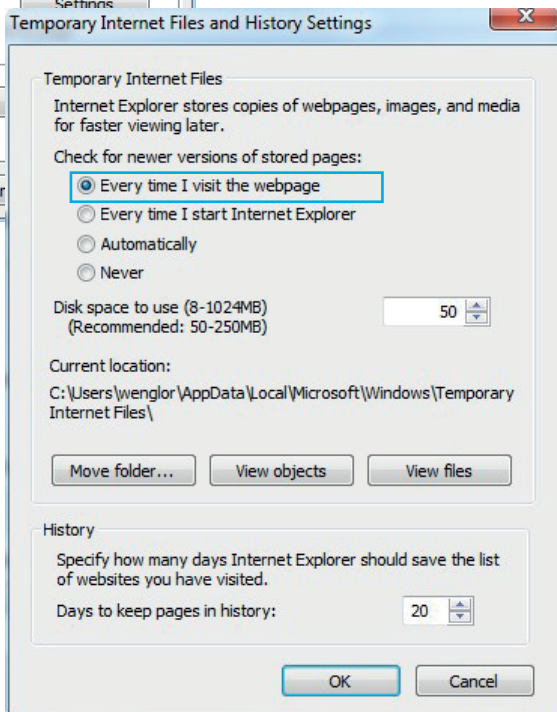
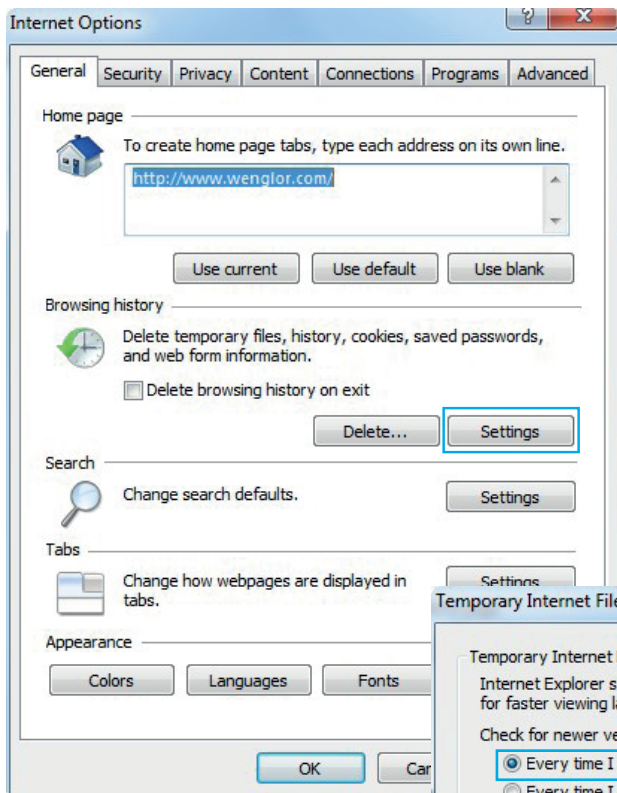
Attention:

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

9.1. Call up the Administration Interface

Start the web browser. Enter the IP address of the switch into the address line of your browser and press the ENTER key. Enter the manually configured IP address of the switch in the address bar of your browser and press the enter button. 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 **Extras → 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.





To now access the webpage of the switch (in the example ZAC50EN01), the IP address must be entered as described in the address line of the browser.

Example: `http://192.168.100.1`



The overview page **Device General** is not password-protected. If the pages of the device or port settings 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**.

9.2. Overview page


General device

Device settings

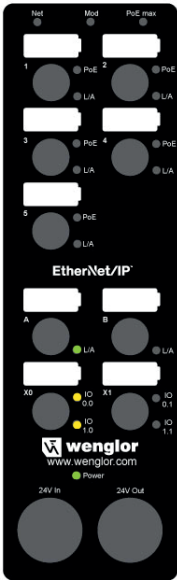
Industrial Ethernet ports

Digital I/O ports

General device



Part number	ZAC50EN01
Product version	V1.1.2
Producer	wenglor sensoric GmbH
Description	Switch EtherNet/IP with PoE
Serial number	600002170
MAC adresse	54-4a-05-07-0b-fb
Real Time Ethernet Status	offline
Unit Identifier	0x0007



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

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

9.3. Device settings

- General device
- Device settings
- Industrial Ethernet ports
- Digital I/O ports

Device settings

Network settings:

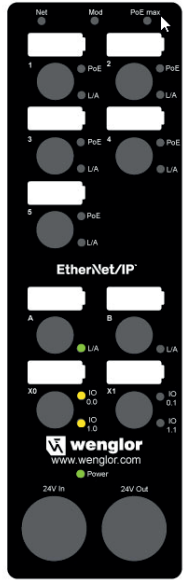
☒ Get IP address automatically
☐ Use following IP addresses:

IP-Adresse:	<input type="text" value="192.168.100.1"/>	
Subnet mask:	<input type="text" value="255.255.255.0"/>	<input type="button" value="Send"/>
Standard gateway	<input type="text" value="192.168.100.254"/>	

Max. PoE Performance Switch	30W ●
PoE Performance currently	0 W
PoE Performance currently indicated	0 W
PoE Performance Supervision	ON v

Password

Reset



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Network settings:

Network settings:

☐ Get IP address automatically
☒ Use following IP addresses:


IP-Adresse:	<input type="text" value="192.168.100.1"/>	
Subnet mask:	<input type="text" value="255.255.255.0"/>	<input type="button" value="Send"/>
Standard gateway	<input type="text" value="192.168.100.254"/>	

When a switch is not operated on a controller, it is possible to change the network settings. By default, IP address assignment is done via a DHCP server. In delivery condition, the network setting is set to "Obtain IP address automatically". If an individually set IP address is to be used the menu item "Use the following IP address" must be selected. 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 switch 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.

PoE information (ZAC50EN0x):

Max. PoE Performance Switch	30W 
PoE Performance currently	4 W
PoE Performance currently indicated	2.438 W
PoE Performance Supervision	ON 

The switch monitors the current PoE power consumption constantly. The webpage shows the maximum available PoE performance of the switch as well as the currently reserved and outgoing PoE performance. Every PoE device registers in a specific PoE performance class when starting. This performance is then reserved in the switch. Mostly, the maximum reserved performance is not demanded, however. It is possible to optimally utilize the maximum PoE performance of the switch by deactivating the PoE performance monitoring.

If the PoE performance monitoring is switched off, the functionality of the PoE device may be impaired if the performance required exceeds the max available PoE performance. The maximum required PoE performance must not exceed the maximum PoE performance of the switch. If the performance monitoring is deactivated, this is displayed on the switch with a red flashing PoE max LED. During operation, the performance monitoring can be changed from inactive to active. Here, all PoE devices are restarted automatically in order to save the reserved performance of the individual ports.

Change password:

Change

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

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

Reset:

Reset

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
- Parameter PoE: PoE monitoring is switched to one and on all ports the PoE power supply is activated
- The password is reset to the delivery state (“admin”)

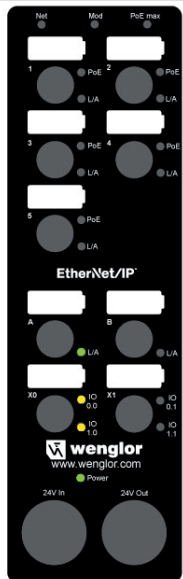
Please note: The network settings are not reset hereby! If you do not know the network settings, the device must be connected to a controller in order to reset the settings.

9.4. Industrial Ethernet Ports Settings

- General device
- Device settings
- Industrial Ethernet ports
- Digital I/O ports

Industrial Ethernet ports

PoE Port 1	PoE Port 2	PoE Port 3	PoE Port 4	PoE Port 5
Port A	Port B			



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The **Port Settings/Industrial Ethernet Ports** page provides an overview of the individual ports of the switch. You can switch between the individual ports using the tab on the uppermost level. The Industrial Ethernet ports contain information on the number of packages received correctly and incorrectly as well as packages sent correctly.

PoE Port 2 settings	
PoE Port 1	PoE Port 2
Port A	Port B
Number of error-free received packets	22
Number of defective received packets	0
Number of error-free sent packets	28
PoE in service	ON ▼
Declared power	4Watt
Performance currently displayed	2.438W

In addition to the information on packages, it is possible to activate or deactivate the PoE power supply individually for each PoE port. On the webpage, the amount of PoE performance registered and actual outgoing performance is also documented for each PoE port.

9.5. Digital I/O Ports Settings

The switch has 2 ports available with two digital inputs/outputs each. The digital inputs/outputs are configured on the **Digital I/O Ports** page.

» General device settings

» Device settings

» Industrial Ethernet ports

» Digital I/O ports

Port x0 settings

Port x0

Port x1

Configuration Pin2:

IN

Configuration Pin4:

IN

Switching Status Pin2:

0V

Switching Status Pin4:

0V

1

2

3

4

5

← +

← I/A1

← I/A2

← -

Net

Mod

PoE max

1

2

3

4

5

PoE

L/A

PoE

L/A

PoE

L/A

EtherNet/IP

A

B

X0

X1

IO 0.0

IO 0.1

IO 1.0

IO 1.1

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Power

24V In

24V Out

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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 UB. A red flashing LED indicates a short-circuit on the respective pin.

10. Maintenance Instructions

This wenglor switch is maintenance-free.

Do not use any solvents or cleaning agents that could damage the device when cleaning the switch.

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.

11. 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.

12. EU Declaration of Conformity

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

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