

# Manual

## DATAEAGLE 4000 Series - Wireless ETHERNET

Schildknecht AG

28. Februar 2023



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This document applies to the following products:

<b>Name</b>	<b>Article number</b>
DATAEAGLE Compact 4715	11170
DATAEAGLE X-treme 4715	11420
DATAEAGLE Compact 4713	11171
DATAEAGLE X-treme 4713	11421
DATAEAGLE Compact 4712	11174
DATAEAGLE X-treme 4712	11422
DATAEAGLE Compact 4710	11175
DATAEAGLE X-treme 4710	11423
DATAEAGLE Compact 4333	11144
DATAEAGLE X-treme 4333	11327
DATAEAGLE Compact 4343	11158
DATAEAGLE X-treme 4343	11374
DATAEAGLE Compact 473x	15475
DATAEAGLE X-treme 473x	15476

Version	1.0
Language	EN
Date	28. Februar 2023

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# 1 Introduction

## 1.1 Service and Support

The members of our service team are at your disposal for all questions regarding installation and commissioning.

Call us at +49 (7144) 89718 0 or send an  
E-mail to: [info@schildknecht.ag](mailto:info@schildknecht.ag)

You can also find more information and documentation on our website:  
<https://www.schildknecht.ag>

## 1.2 About this document

This document contains information on

- Assembly and electrical installation
- Commissioning and parameterization
- Fault diagnosis and troubleshooting
- Conformity and approval

### Please note

- Read this chapter carefully, only then work with the documentation and the device.
- Read the documentation carefully before commissioning the device.
- Keep the document for the entire service life of the device in a place that is accessible to all users at all times.

General knowledge of automation technology is required to understand the document. In addition, the planning and use of automation systems requires technical expertise that is not provided in this document.

### Function of this documents

This document instructs the technical personnel of the machine manufacturer or the machine operator on the safe use of the described devices. It instructs **not** on the safe use of the machine in which the devices are or will be integrated. Information on this can be found in the operating instructions for the machine.



### 1.3 Trademark

In this documentation the trademarks of the following companies and institutions are used:

<b>PROFINET</b>	PROFIBUS Nutzerorganisation e.V. (PNO)
<b>PROFIsafe</b>	PROFIBUS Nutzerorganisation e.V. (PNO)
<b>EtherNet/IP</b>	Open DeviceNet Vendor Association, Inc (ODVA)
<b>openSAFETY</b>	Ethernet POWERLINK Standardization Group(EPSSG)



## 2 For your safety

- Read this chapter carefully.
- Only then work with the DATAEAGLE module.

### 2.1 General safety instructions

#### **ATTENTION!**

#### **High electrical voltage in the machine / plant.**

Death or serious injury due to electric shock.

→When working on the machine / modules, observe the five safety rules of electrical engineering.

#### **Protection of persons and property**

→ According to DIN VDE 0105-100 - Operation of electrical installations - Part 100: General requirements

#### **The five safety rules**

##### ***Protect from high electrical voltage***

1. unlocking
2. securing against reconnection
3. establishing absence of voltage on all poles
4. grounding and short-circuiting
5. covering or isolating adjacent live parts

#### **Qualified personnel**

The module may only be installed, commissioned and operated by qualified personnel who have been instructed in safety technology.

You are knowledgeable if you meet the following conditions:

- have a suitable electrotechnical training.
- have been instructed by the machine operator in the operation of the equipment and the valid safety regulations
- have access to the operating instructions and the manual
- are familiar with the safety standards of automation technology
- are familiar with the basic and technical standards applicable to the specific application

#### **Use of the module**

- Observe all regulations on safety and accident prevention during project planning, installation, commissioning, operation and testing of the module.
- When using aggressive medium, check the material resistance.





---

**NOTE: Only qualified Schildknecht AG personnel may intervene in the hardware and software.**

---

### WARNING!

#### **High electrical voltages!**

Death or serious injury due to electric shock. Due to a defect of the power supply unit, voltages higher than 120 V DC or 50 V AC may be applied to touchable parts.

- Only use a power supply that allows max. 60 V DC or 25 V AC in the event of a fault. It must conform to SELV or PELV.
- The power supply must be SELV and LPS compliant according to UL/IEC 60950-1 or ES1 and PS2 compliant according to UL/IEC 62368-1.

#### **Protective measures of the operator of the machine**

- Observe the instructions in this manual.
- Observe the test specifications in the operating instructions of all connected components.

**Electromagnetic radiation** Keep a minimum distance of 20 cm from the antennas while operating the equipment.

## **2.2 Intended use**

The DATAEAGLE transmits data in industrial applications. It is designed according to EN 60529 for protection class IP20 (Compact) or IP65 (X-treme) and can be used in control cabinets up to protection class IP67.

The DATAEAGLE may only be used for the cases provided for in the operating instructions and manual and only in conjunction with the third-party devices and components recommended or approved by Schildknecht AG.

Correct and safe operation of the product requires proper transport, storage, assembly and installation, as well as careful operation.

Intended use also includes EMC-compliant electrical installation. The module is intended for use in an industrial environment. Radio interference may occur when used in residential areas.

- When using the module in residential and mixed areas, observe the applicable standards.

### Foreseeable misuse

- Do not modify the module structurally, technically or electrically.
- Do **not** use the module outside the areas described in this manual, the technical data and the operating instructions.
- Do **not** use the module as a safety-related device. It does not comply with the relevant standards. Safety functions of the system are not guaranteed!
- Do **not** use the off-state of the outputs of the module for safety-related requirements of the plant/machine!
- Do **not** use the module for permanent operation in liquids.
- Do **not** clean the module with a high-pressure cleaner.

## 2.3 Environmentally friendly disposal

### Observe country-specific waste disposal regulations!

- Always dispose of unusable devices in accordance with the applicable country-specific regulations for waste disposal (e.g. according to European waste code 16 02 14).

### Material separation only by qualified personnel!

- Be careful when disassembling the device, you may injure yourself.
- Take the separated components to the appropriate recycling.

### Disposal

The product can be returned to Schildknecht AG in case of disposal. This also applies to the original packaging and any batteries or rechargeable batteries. Devices contaminated with hazardous substances will not be taken back for repair or disposal.





## Return

- Mark the product and packaging with '**For disposal**'.
- Pack the product
- Send the package to:  
**Schildknecht AG**  
**Haugweg 26**  
**71711 Murr | GERMANY**

We ensure disposal in accordance with German statutory regulations. The last owner is responsible for the transport to the return point up to the destination.

## 2.4 CE Declaration of Conformity

For information on the Declaration of Conformity and EC Directives, see:  
<https://www.schildknecht.ag/download/dataeagle-konformitaetserklaerung/>

Alternatively, on our website <https://www.schildknecht.ag> in the Downloads section.

## 2.5 Warranty and liability claims

Warranty and liability claims are lost if

- the product is not used as intended,
- damage is due to failure to observe the operating instructions,
- the staff was/is not knowledgeable.

## 3 Description

### 3.1 Introduction

The modules of the DATAEAGLE 4000 series have been specially developed for the transmission of Ethernet via radio.

Depending on the device type, transmission has been optimised for Ethernet, PROFINET, PROFI-safe, EtherNet/IP and openSAFETY via UDP. Some device variants are multi-protocol compliant. Details on this can be found in the chapter 8

Different radio technologies, such as Bluetooth 2.4 GHz or 869 / 915 MHz in the unlicensed band, are used for transmission. Due to the integrated data pre-processing, the fieldbus communication can be configured like a cable. For example, with PROFINET the IO cycle can be set to 1 ms.

In addition, the wireless systems are easy to connect and put into operation like a cable - plug & play.

There are 2 different housing variants Compact (IP 20) for control cabinet mounting and X-treme (IP65) for use in direct industrial environments or outdoors.

Our software DATAEAGLE Wizard allows a quick set-up of the essential settings, such as radio parameters. The commissioning is therefore done in a very short time.

### 3.2 Operating principle DATAEAGLE 4000

The DATAEAGLE 4000 is suitable for the transparent transmission of Ethernet data via radio.

Point-to-point as well as multipoint systems can be configured.



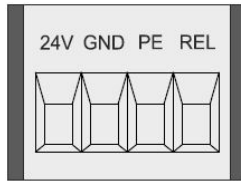
Radio interference can be suppressed via the filter time that can be configured in the master. Only after this time has elapsed do the fieldbus stations detect a bus fault. All interruptions of the communication within the filter time are suppressed and the plant availability is thus increased.

A too high configured filter time (factory setting: 2 seconds), can lead to a delayed shutdown reaction of the connected devices in case of an error. Therefore, please check whether the system with the set filter time matches the required reaction speed.

## 3.3 DATAEAGLE Compact

### 3.3.1 Connections

#### Power supply



Clamps	Description
24V	24 V DC
GND	0V
PE	PE
REL	Switching output

#### USB port

DATAEAGLE Compact has a USB port for configuration and software updates via the DATAEAGLE Wizard tool.

#### Antenna connection



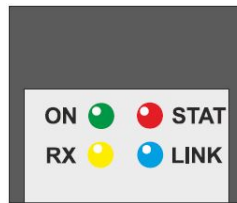
SMA connector for antenna

#### Ethernet Interface



2 x RJ45 (integrated Switch) 10/100 MBit Ethernet

### 3.3.2 LEDs



#### ON LED

LED	Indication	State	Description
ON	Green	Permanently lit	Power ok
	Off	Off	Power not ok

#### RX LED

LED	Indication	State	Description
RX	Yellow	Flashing	Radio reception
	Off	Off	No radio reception

#### LINK LED

LED	Indication	State	Description
LINK	Blue	On/Blinking	Radio connection(s) active
	Off	Off	Radio Connection(s) inactive

#### STAT LED

LED	Anzeige	Zustand	Beschreibung
STAT	Red	On (Master)	no Ethernet connection
	Red	Blinking (Master)	Ethernet error detected
	Off	Off	no Error detected

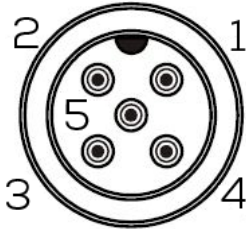
For more information, check the device diagnostics.

## 3.4 DATAEAGLE X-treme

### 3.4.1 Connections

#### Power supply

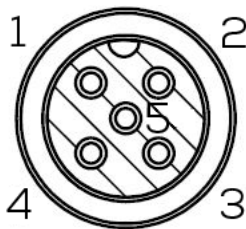
M12, A-coded, 5 pin (male)



PIN	Description
1	+24 VDC
2	not connected
3	GND
4	not connected
5	PE

#### Ethernet Interface

M12, D-coded, 4 pin (female)

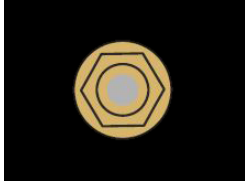


PIN	Description
1	TD+
2	RD+
3	TD-
4	RD-

## USB port

The DATAEAGLE X-treme has a USB port for configuration and software updates via the DATAEAGLE Wizard tool. This is located behind the PG screw.

## Antenna connection



SMA connector for antenna

### 3.4.2 LEDs



#### ON LED

LED	Indication	State	Description
ON	Green	Permanently lit	Power ok
	Off	Off	Power not ok

#### RX LED

LED	Indication	State	Description
RX	Yellow	Flashing	Radio reception
	Off	Off	No radio reception

#### RADIO LED

LED	Indication	State	Description
RADIO	Blue	On/Blinking	Radio connection(s) active
	Off	Off	Radio Connection(s) inactive



**STAT LED**

LED	Anzeige	Zustand	Beschreibung
STAT	Red	On (Master)	no Ethernet connection
	Red	Blinking (Master)	Ethernet error detected
	Off	Off	no Error detected

For more information, check the device diagnostics.

**LINK LED**

LED	Indication	State	Description
LINK	Yellow	On/Blinking	Ethernet connection(s) active
	Off	Off	No Ethernet Connection(s)



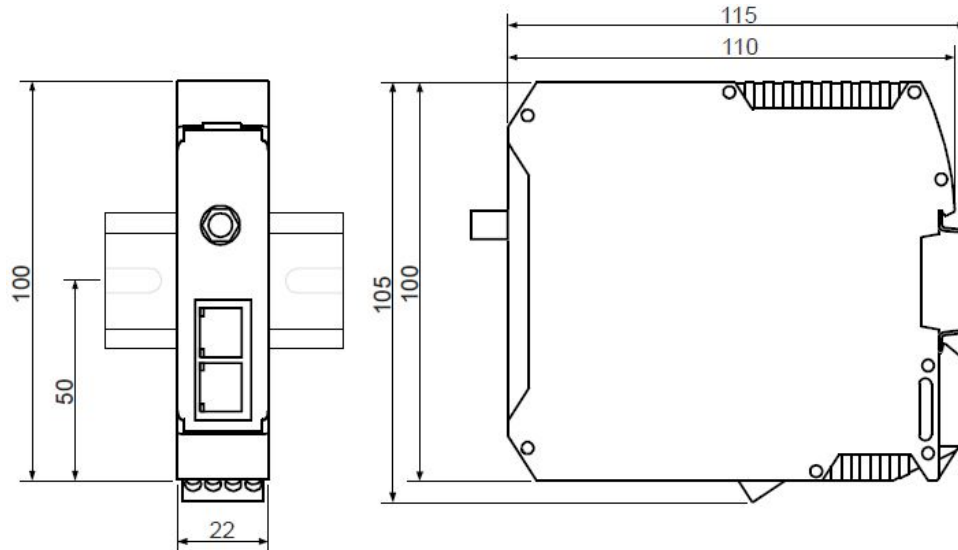
## 4 Mounting

### 4.1 Requirements

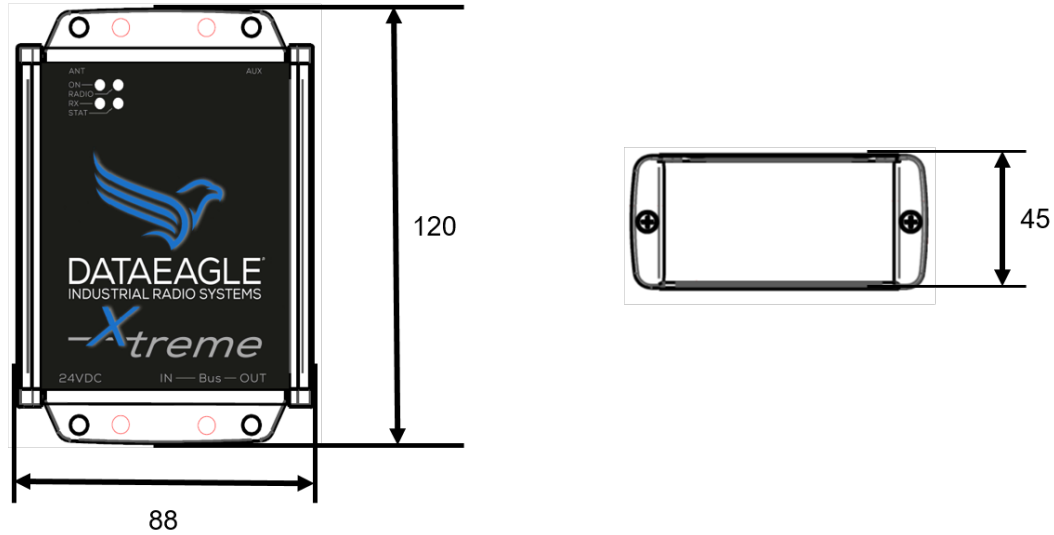
- Mounting site in the immediate vicinity of the plant
- Flat mounting surface for mechanically stress-free mounting
- Grounded mounting surface for grounding of the ground strap
- Short cable routes to all components
- Sufficient space for easy device replacement and for the connection of the plug-in connectors
- Suitable mounting location with regard to vibration and shock load, temperature and humidity (see "4. Technical data" )
- Protected to prevent disconnection of the connecting cables by personnel or equipment.
- Diagnostic LEDs of the device can be viewed during operation

## 4.2 Dimensions

### DATAEAGLE Compact Dimensions in mm

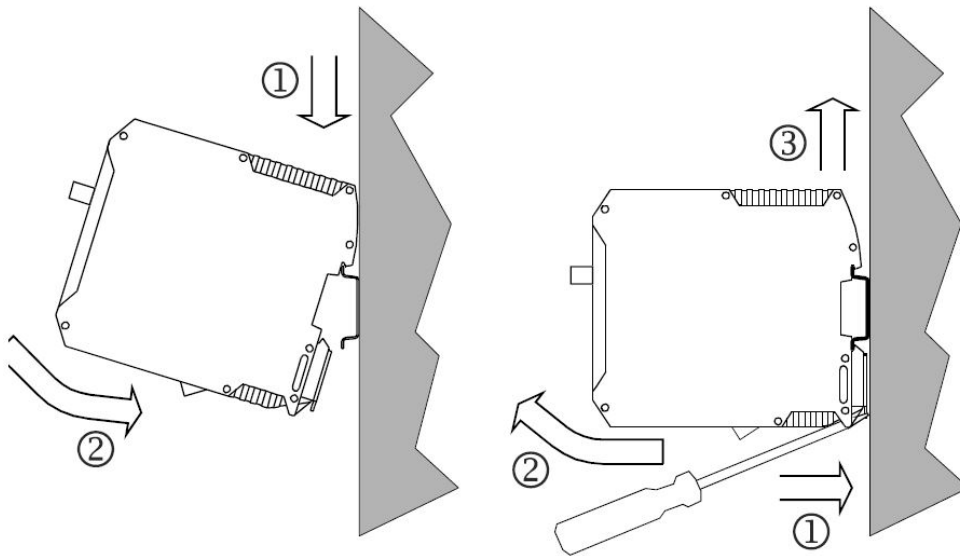


### DATAEAGLE X-treme Dimensions in mm



## 4.3 Mounting the components

### DATAEAGLE Compact



→ Fasten the module at the designated place according to its fastening type.

#### **Mount:**

1. Place the module from diagonally above onto the top-hat rail.

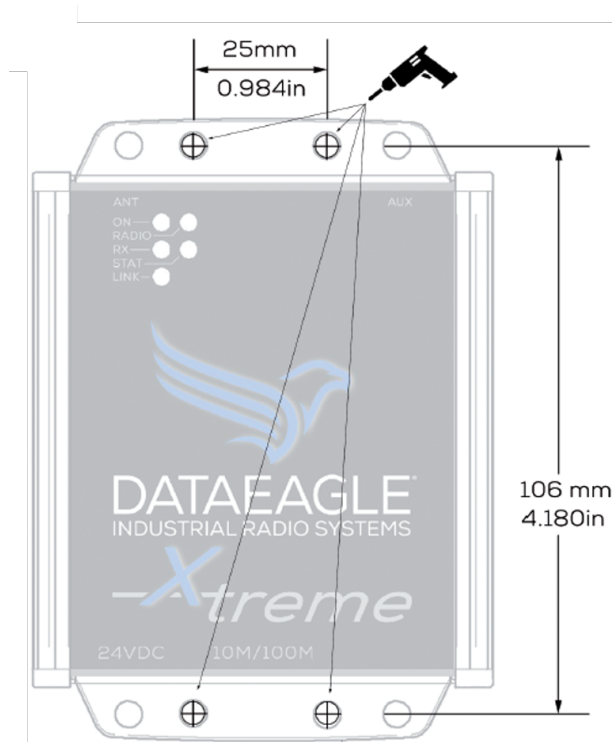
2. Press the module down firmly.

*The foot latch engages. The unit is firmly seated on the top-hat rail.*

Example:



## DATAEAGLE X-treme



→ Attach the module to the designated location according to its mounting method.

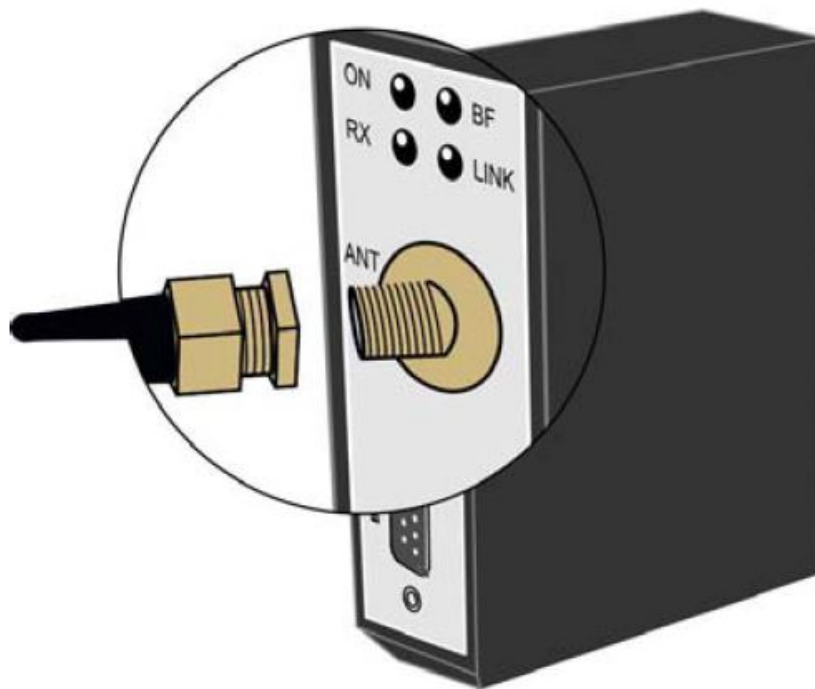
### **Mount:**

1. If necessary, drill holes for mounting according to the enclosed drilling template →

<https://www.schildknecht.ag/download/x-treme-drill-template-bohrschablone/>.

2. Screw the device tightly.

## 4.4 Mounting the antennas



1. Connect the SMA connectors of the antennas or antenna cables.
2. Attach the antennas to the designated locations.

### ATTENTION!

Tighten the screw connections of the antennas or antenna cables only hand-tight.

### FURTHER NOTES ON ANTENNA INSTALLATION!

You will find further information on antenna mounting and alignment in our Antenna 101 → <https://lp.schildknecht.ag/en/whitepaper-antenna101>



## 4.5 Disassembly and module replacement

### Remove line connections

1. Remove the power supply.
2. Unscrew the antenna cable/antenna.

### Remove module (See assembly of the module)

### Mount new module (See assembly of the module)

1. Mount the new module.
2. Connect the wires to the new module (See Connection power supply).



## 5 Installation

### **WARNING!**

**Danger to life due to electric shock.**

Operation of the device only intended on 24V DC voltage (safety extra-low voltage)

Death and serious injuries as well as considerable property damage can be the result.

→ Connection of the device may only be carried out by an electrician in accordance with IEC 60364!

→ Do not connect this equipment directly to other networks!

→ Observe five safety rules! See chapter 2.1

### **CAUTION!**

**Electromagnetic interference!**

Uncontrolled processes and damage due to disturbed data transmission!

→ Observe the chapter **Improving EMC resistance 7.1 during all installation steps.**

---

### **NOTE**

Connected cables must be approved for 60°C.

---

## 5.1 Power supply connection

### **WARNING!**

**Fire hazard due to short circuit!**

Supply lines and/or modules damaged by short circuits can overheat and cause fires!

→ Provide intelligent current monitoring and fuse. The fuse protection must be designed for max. 2A.

### **ATTENTION!**

**Electromagnetic interference due to incorrect voltage supply!**

Electromagnetic interference may occur if rated operating voltages other than 24 V DC of the SELV (safety extra low voltage) category are used.

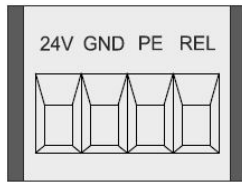
→ Only use power supplies that comply with the SELV category.

→Note technical data





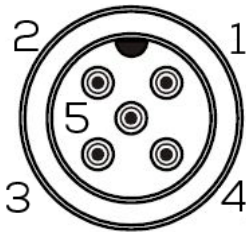
### Power supply - DATAEAGLE Compact



Clamps	Description
24V	24 V DC
GND	0V
PE	PE
REL	Switching output

### Power supply - DATAEAGLE X-treme

M12, A-coded, 5 pin (male)



PIN	Description
1	+24 VDC
2	not connected
3	GND
4	not connected
5	PE

## 5.2 Ethernet connection

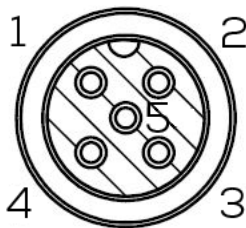
### Ethernet - DATAEAGLE Compact



2 x RJ45 (integrated Switch) 10/100 MBit Ethernet

### Ethernet - DATAEAGLE X-treme

M12, D-coded, 4 pin (female)



PIN	Description
1	TD+
2	RD+
3	TD-
4	RD-



## 6 Commissioning

### WARNING!

#### Risk of burns

Loosening or making electrical connections during operation is prohibited! In case of non-observance, there is a risk of electric arcs which can lead to burns.

→ Disconnect the module from the power supply.

### CAUTION!

#### Uncontrolled processes

Material damage and personal injury due to incorrectly performed commissioning phases (e.g. initial commissioning, recommissioning and in the event of changes to the configuration).

Always carry out commissioning in this order:

1. insert module
2. have the system checked and approved by a qualified person
3. commission

### ATTENTION

#### Dysfunctions in the living area

The devices of EMC class A can cause disturbances in the living area.

→ The operator must take appropriate measures.

### 6.1 Delivery state of the modules

#### NOTE

New devices are preconfigured at the factory.

In the delivery state, the units are configured as a radio network. The Ethernet participants/connections that are connected after the radio link are automatically detected.

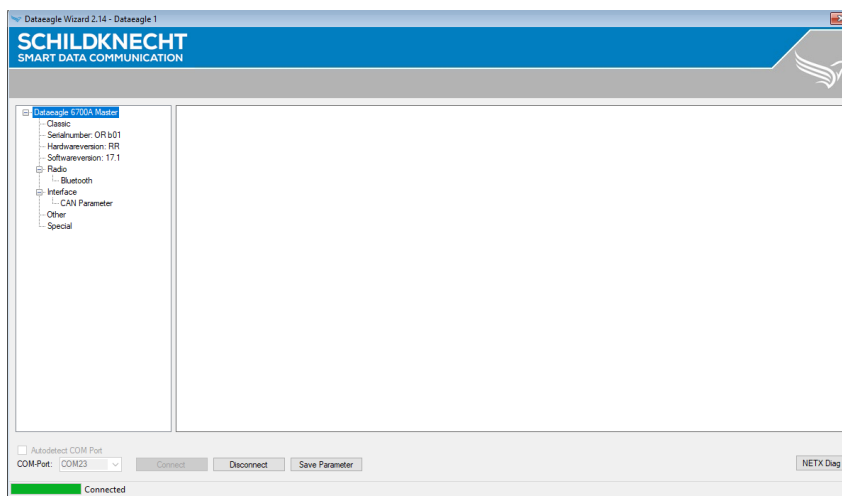
## 6.2 Configuration Filvertime

The following must be available for the device configuration:

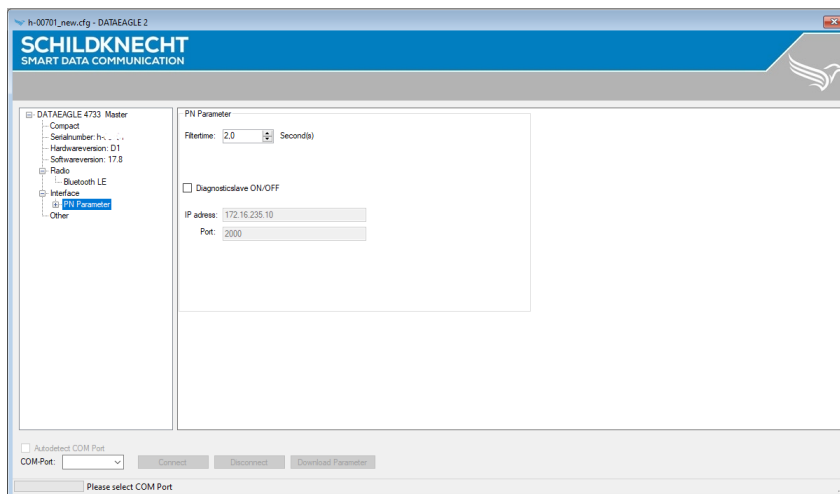
- USB driver CDM21228 ([Download Link](#)) - Installed on PC
- Configuration Tool DATAEAGLE Wizard ([Download Link](#)) - Installed on PC
- USB cable - between PC and DATAEAGLE

Connect DATAEAGLE to the PC via the USB cable and start the DATAEAGLE Wizard configuration software.

Select *Autodetect COM Port* and then *Connect* to connect to DATAEAGLE and read the configuration. The DATAEAGLE must be switched on for this.



Select in the menu tree: *Interface* → *PN Parameter*



Set the filter time to the desired value.

#### NOTE

The filter time is configured to 2 seconds at the factory. A too high configured filter time can lead to a delayed shutdown reaction of the connected devices in case of an error. Therefore, please check whether the system with the set filter time matches the required reaction speed.

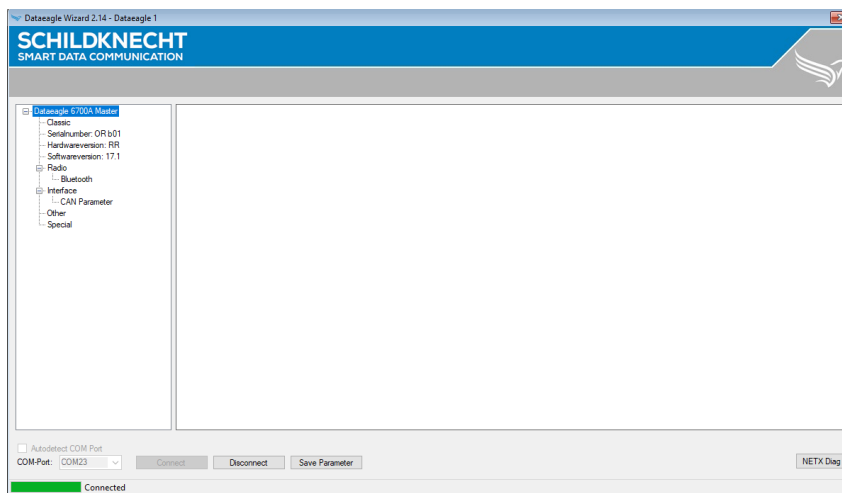
## 6.3 Configuration radio parameters

The following must be available for the device configuration (all components included in the scope of delivery):

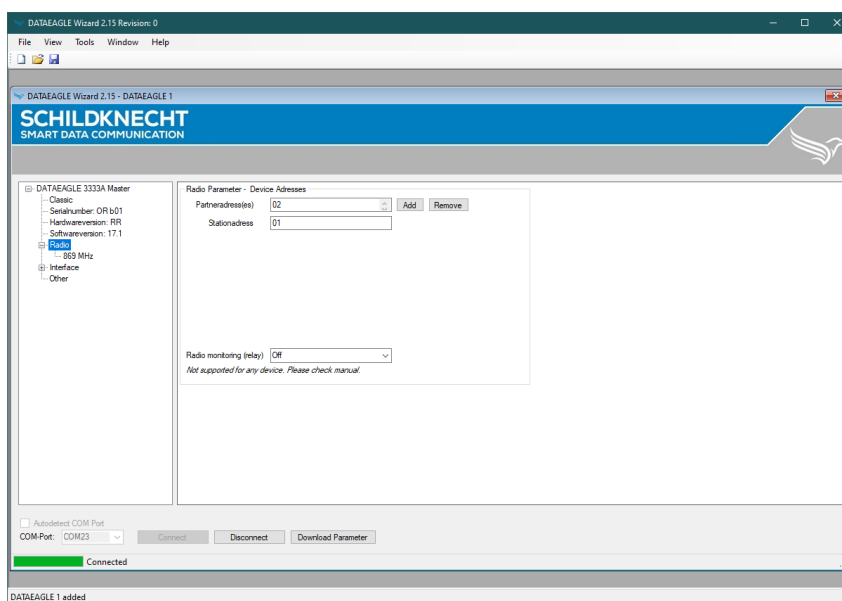
- USB driver - installed on PC
- DATAEAGLE Wizard configuration tool - installed on PC
- USB cable - between PC and DATAEAGLE

Connect DATAEAGLE to the PC via the USB cable and start the DATAEAGLE Wizard configuration software.

Select *Connect* to connect to DATAEAGLE and read the configuration. The DATAEAGLE must be switched on for this.



Select in the menu tree: *Interface* → *Radio*





The logical radio device addresses, such as the partner and station address, are set under Radio. These are used independently of the radio technology used for logical addressing within the radio network.

---

**NOTE**

If a radio system was ordered as a set (set configuration), no change is necessary here.

---

Each device has its own logical radio device address (station address) and one or more radio partner addresses in the radio network.

**Example:**

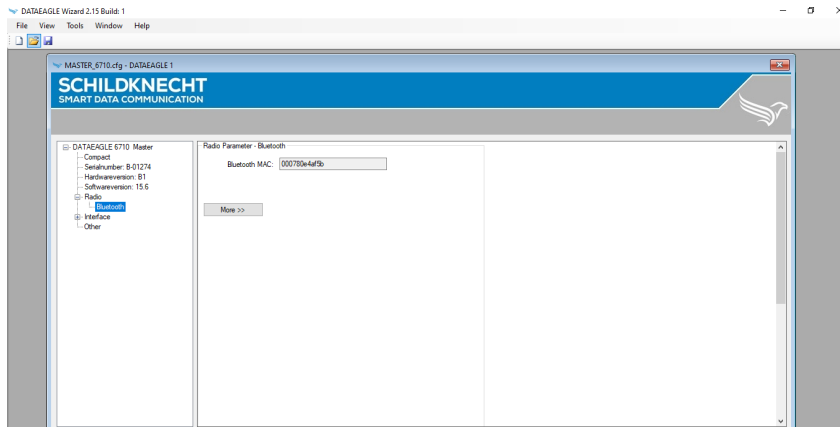
Master has the station address 01 and the partner addresses 02 and 03.

Slave 1 has the station address 02 and the partner address 01.

Slave 2 has the station address 03 and the partner address 01.

### 6.3.1 2,4 GHz Bluetooth - DATAEAGLE Compact/X-treme 471x

Select in the menu tree: *Interface* → *Radio* → *Bluetooth*



---

#### NOTE

If a radio system was ordered as a set (set configuration), no change is necessary here.

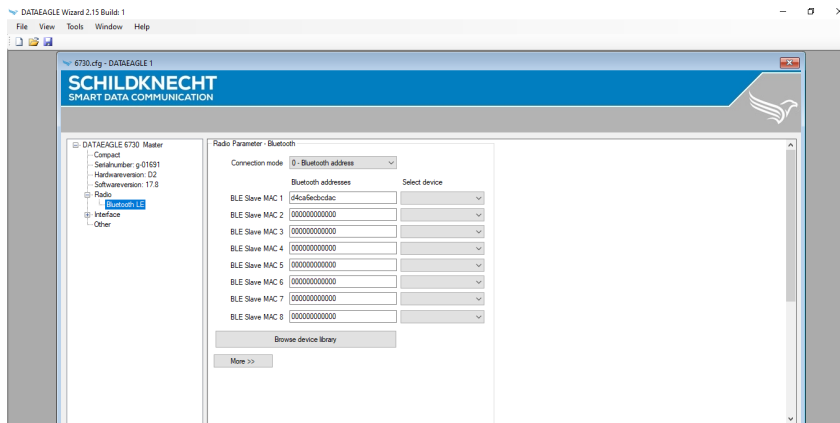
---

The Bluetooth MAC address must be read out at the master and entered at the slave.



### 6.3.2 2,4 GHz Bluetooth 5 - DATAEAGLE Compact/X-treme 473x

Select in the menu tree: *Interface* → *Radio* → *Bluetooth LE*



---

#### NOTE

If a radio system was ordered as a set (set configuration), no change is necessary here.

---

The Bluetooth MAC address must be read out at the slave and entered at the master.

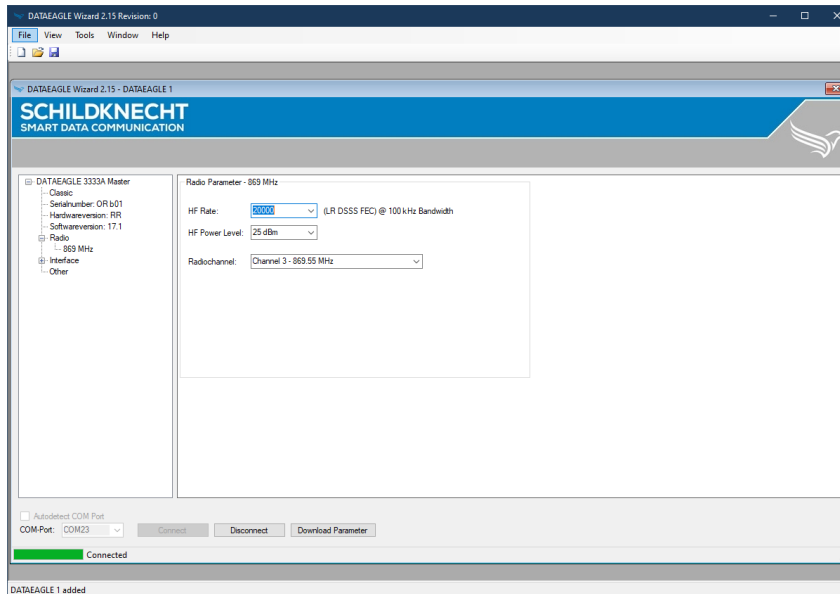
If a radio network is configured, several Bluetooth MAC addresses must be configured in the master (BLE slave MAC 1, BLE slave MAC 2, ...).

### 6.3.3 869 MHz - DATAEAGLE Compact/X-treme 433x

#### NOTE

If a radio system was ordered as a set (set configuration), no change is necessary here.

Select in the menu tree: *Interface* → *Radio* → *869 MHz*



**Configuration parameters 869 MHz**

Value	Description	Comment
HF Rate	Modulation method	20k (LR DSSS FEC) @ 100 kHz Channel 1 or 3 only Highest range, slow  38.4k (GFSK) @ 100 kHz Bandwidth- Channel 1 or 3 only  50k (GFSK) @ 200 kHz Bandwidth - Channel 3 only  100k (GFSK) @ 200 kHz Bandwidth - Channel 3 only Low range, fast
Channel	Radio channel (Frequency)	00: 869.40 MHz Not allowed 01: 869.45 MHz 02: 869.50 MHz 03: 869.55 MHz 04: 869.60 MHz
HF Power Level	Transmitting power	12-25 dBm

**ATTENTION!**

Selectable settings are CE compliant according to EN 300 220 standard. Other combinations are not permitted!

**NOTE:** The higher the RF rate, the faster the transmission but the range is shorter

All devices in a radio system must be set to the same radio channel. DATAEAGLE radio systems in parallel operation are to be operated with different radio channels! However, it should be noted that at high RF rate only 1 system is possible due to the available bandwidth!

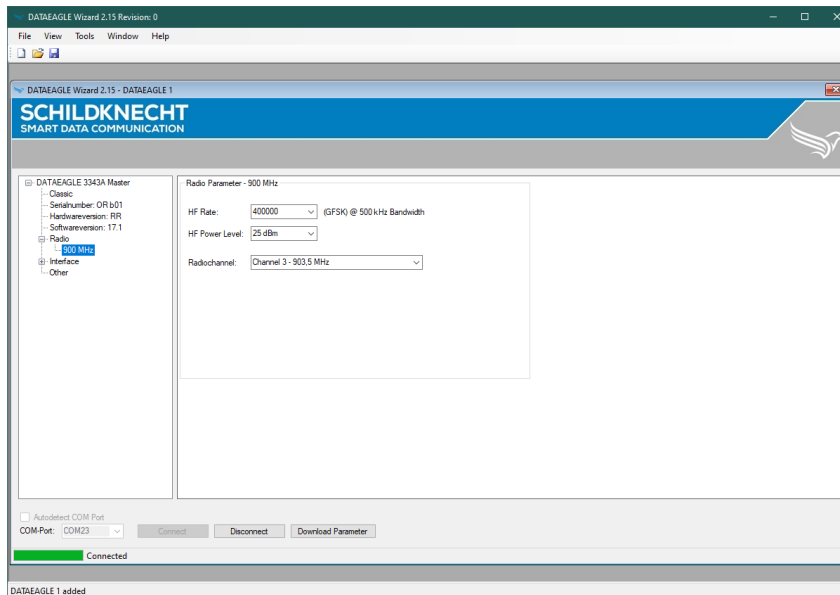
It makes sense to reduce the transmitting power in order not to influence neighboring radio systems in the same frequency band!

### 6.3.4 915 MHz - DATAEAGLE Compact/Xtreme 434x

#### NOTE

If a radio system was ordered as a set (set configuration), no change is necessary here.

Select in the menu tree: *Interface* → *Radio* → *900 MHz*



**Configuration parameters 915 MHz**

Value	Description	Comment
HF Rate	Modulation method	30k (LR DSSS FEC) @ 500kHz Bandwidth - Channel 1-51  240k (LR DSSS FEC) @ 500 kHz Bandwidth - Channel 1-51  400k (GFSK) @ 500 kHz Bandwidth - Channel 1-51
Channel	Radio channel	01: 902.5 MHz 02: 903 MHz ..... 500 kHz / Channel 51: 927,5 MHz
HF Power Level	Transmitting power	12-25 dBm

**ATTENTION!**

Selectable settings are FCC Part 15 compliant. Other combinations are not permitted!

**NOTE:** The higher the RF rate, the faster the transmission but the range is shorter

All devices in a radio system must be set to the same radio channel.  
DATAEAGLE radio systems in parallel operation are to be operated with different radio channels!  
It makes sense to reduce the transmitting power in order not to influence neighboring radio systems in the same frequency band!



## 6.4 Diagnosis

2 variants of device diagnostics are available:

- Diagnosis via UDP
- Diagnosis via the DATAEAGLE Wizard configuration tool

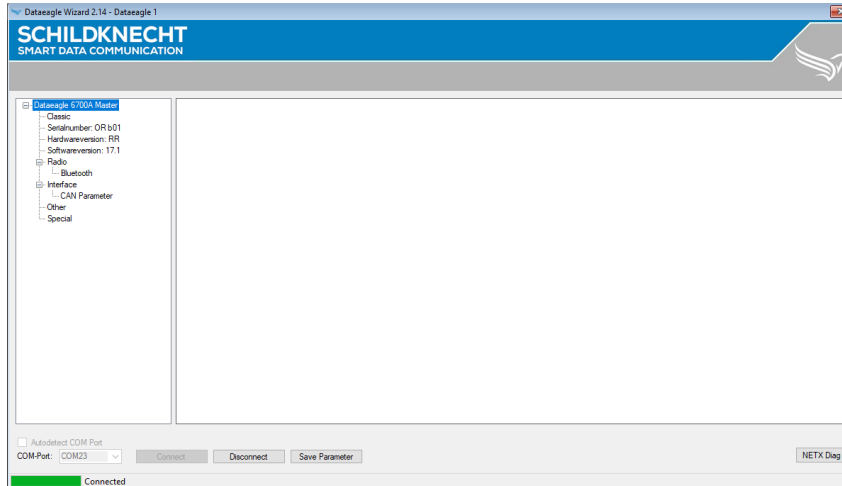
### 6.4.1 Integrated UDP diagnostic slave

The integrated UDP diagnostic slave can be used to monitor the radio link and the connected fieldbus devices.

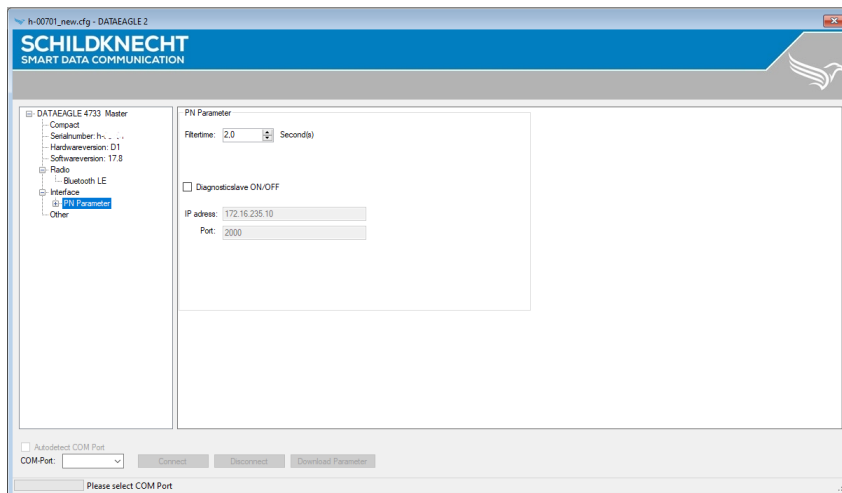
In order to access the data of the diagnostic slave, an IP address and a UDP port must be configured on the DATAEAGLE master for the diagnostic slave.

To do this, connect DATAEAGLE to the PC via the USB cable and start the DATAEAGLE Wizard configuration software.

Select *Autodetect COM Port* and then *Connect* to connect to DATAEAGLE and read the configuration. The DATAEAGLE must be switched on for this.



Select in the menu tree: *Interface* → *PN Parameter*

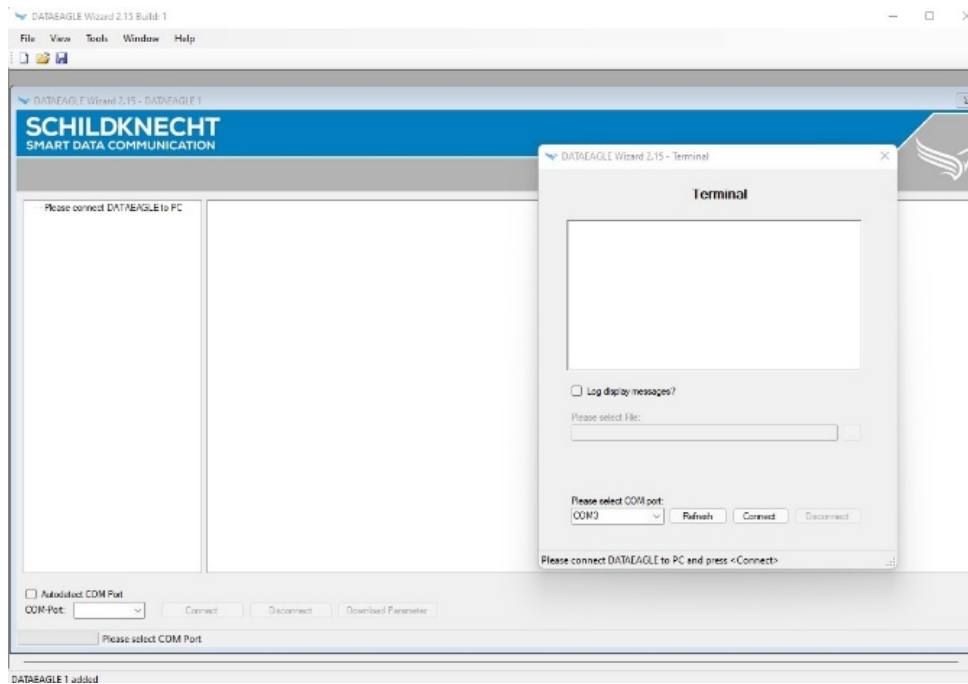


The document ([DATAEAGLE 4000 Series - Dignostic via UDP - EN.pdf](#)) describes and explains the diagnostic via UDP.

### 6.4.2 Diagnostic via terminal mode

A diagnosis is also possible via the terminal function of the DATAEAGLE Wizard. The following steps are necessary for this.

In the DATAEAGLE Wizard, use the "Tools" menu to select "Terminalmode". A new window opens. Check the COM port and select "Connect".



The document ([DATAEAGLE 4000 Series - Diagnostic via DATAEAGLE Wizard - EN.pdf](#)) describes and explains the display in the terminal.





## 7 Tips and tricks

### 7.1 Improvement of EMC resistance

#### 7.1.1 Introduction

##### Industrial use

The device is manufactured and developed according to the latest state of the art. Both the robust mechanical construction and the design of the electronic components are designed for industrial use.

To ensure trouble-free operation, rules must be observed when installing the devices in systems. If these are not observed, the high interference and destruction resistance of the devices will be partially ineffective.

The immunity of the entire system depends largely on correct installation, location and wiring.

- Check the controller manufacturer's assembly instructions for safe operation.
- Bring these into line with the recommendations for EMC-compliant design.
- Then install the device

#### 7.1.2 Basic rules

##### PE connection (protective earth)

Interference voltages coupled into the device via the supply and signal lines, as well as electrostatic voltages transmitted by touch, are discharged to the grounding point.

→ Connect the grounding point to the **PE-connector** of the device with low impedance using the shortest possible copper conductor.

##### Shielding

Shielded lines reduce the **probability of interference**:

- by a factor of 100 compared to unshielded cables
- by a factor of 1000 if looping is also avoided.

The density of the braided shield should be at least 85%. To prevent the interference currents coupled onto the cable shield from becoming interference sources themselves, a low-impedance connection to the grounding point is particularly important.

→ **Always** use shielded cables for interfaces and power supplies.

→ Use shielding braid with a density of at least 85 %.

→ **Always** connect the shield on both sides to the EMC ground (usually PE).

##### Bus and power lines



→ Lay bus lines at least 20 cm away from power lines in separate cable ducts.

#### **Unused wires**

→ Always connect all unused wires of a line to PE on both sides.

#### **Connector housing**

→ Take metallic or metallized connector housings

→ Always place the shield of the cable on the connector housing.

#### **Mounting plate**

The mounting plate forms the EMC ground (star point) and is largely responsible for interference suppression.

→ Always mount all electronic devices on a galvanized mounting plate in the control cabinet. This allows the interference energy to flow directly back to the source of interference.

→ Do not use coated surfaces, such as yellow chromated anodizing.

---

#### **NOTICE:**

Sufficient dissipation of the RF fields via the PE network is not possible due to the high line impedance. Therefore, the PE network is not the same as the EMC ground, although they are directly connected electrically.

---

#### **EMC ground**

→ Make all connections with the EMC ground as short and large as possible.

---

#### **NOTICE::**

Make sure that all metallic housings have good contact with the galvanized mounting surface.

---

#### **Sources of interference for RF fields**

##### **ATTENTION**

#### **Danger from sources of interference for HF fields**

Electronic or electrical components without a closed metal housing are a source of interference for RF fields.

→ Make sure that all electronic or electrical components that could be a source of interference from RF fields have a closed metal housing.



## Protective conductor

### ATTENTION

#### Unfavorable protective conductor connections and conductor loops

EMC measures can be bypassed and rendered ineffective by unfavorable PE conductor connections and conductor loops. PE conductor loops can act like antennas and couple interference.

→ Route protective conductors of the individual system components in a star configuration to the equipotential bonding rail.

## 7.2 Optimal antenna mounting

Instructions for antenna mounting and alignment can be found in our Antenna 1x1 → <https://www.schildknecht.ag/download/antennen-1mal1/>



## 8 Technical data

### **WARNING!**

**Danger to life due to electric shock.**

**Operation of the device only intended on 24 V DC (safety extra-low voltage).**

Death and serious injuries as well as considerable property damage can be the result.

- The device may only be connected by an electrician in accordance with IEC 60364!
- No direct connection of these devices to other networks!
- Observe five safety rules! See chapter 2.1

## 8.1 DATAEAGLE Compact 4715 - Article number: 11170

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	130g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	1
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	PROFINET
Max. PROFINET devices	4
PROFIsafe	No



## 8.2 DATAEAGLE X-treme 4715 - Article number: 11420

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	1
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	PROFINET
Max. PROFINET devices	4
PROFIsafe	No

## 8.3 DATAEAGLE Compact 4713 - Article number: 11171

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	130g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No



## 8.4 DATAEAGLE X-treme 4713 - Article number: 11421

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No





## 8.5 DATAEAGLE Compact 4712 - Article number: 11174

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	130g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	PROFINET
Max. PROFINET devices	8
PROFIsafe	Yes

## 8.6 DATAEAGLE X-treme 4712 - Article number: 11422

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	PROFINET
Max. PROFINET devices	8
PROFIsafe	Yes

## 8.7 DATAEAGLE Compact 4710 - Article number: 11175

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	130g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	Ethernet



## 8.8 DATAEAGLE X-treme 4710 - Article number: 11423

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth
Transmitting power	100mW (EIRP)
Indoor range	100m
Outdoor range	300m
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	Ethernet

## 8.9 DATAEAGLE Compact 4333 - Article number: 11144

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE
Weight	160g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	869 MHz
Transmitting power	500mW (EIRP)
Indoor range	300m
Outdoor range	1-3 km
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No

## 8.10 DATAEAGLE X-treme 4333 - Article number: 11327

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	869 MHz
Transmitting power	500mW (EIRP)
Indoor range	300m
Outdoor range	1-3km
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No

## 8.11 DATAEAGLE Compact 4343 - Article number: 11158

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	FCC
Weight	160g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	915 MHz
Transmitting power	500mW (EIRP)
Indoor range	300m
Outdoor range	1-3 km
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No

## 8.12 DATAEAGLE X-treme 4343 - Article number: 11374

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	FCC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	915 MHz
Transmitting power	500mW (EIRP)
Indoor range	300m
Outdoor range	1-3km
Max. Number of radio slaves	4
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)
Optimized for	PROFINET
Max. PROFINET devices	6
PROFIsafe	No





## 8.13 DATAEAGLE Compact 473xA - Article number: 15475

### General

Power supply	24 V DC
Power supply connection	terminals
Power consumption	100mA
Protection class	IP20
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	130g
Wide	22,5 mm
Height	99 mm
Depth	114,5 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth 5
Transmitting power	8dBm
Indoor range	100m
Outdoor range	300m
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	RJ 45

**8.13.1 Software Feature Ethernet Multipoint - Article number: 15480**

Max. Number of radio slaves	4
Optimized for	Ethernet

**8.13.2 Software Feature Multiprotokoll Point-to-Point - Article number: 15481**

Max. Number of radio slaves	1
Optimized for	PROFINET, EtherNet/IP
Max. Number of participants/connections	4
Safety communication	No

**8.13.3 Software Feature Multiprotokoll Multipoint - Article number: 15482**

Max. Number of radio slaves	4
Optimized for	PROFINET, EtherNet/IP
Max. Number of participants/connections	6
Safety communication	No

**8.13.4 Software Feature Multiprotokoll Safe Point-to-Point - Article number: 15485**

Max. Number of radio slaves	1
Optimized for	PROFINET, EtherNet/IP, openSAFETY via UDP
Max. Number of participants/connections	4
Safety communication	Yes

**8.13.5 Software Feature Multiprotokoll Safe Multipoint - Article number: 15483**

Max. Number of radio slaves	4
Optimized for	PROFINET, EtherNet/IP, openSAFETY via UDP
Max. Number of participants/connections	8
Safety communication	Yes

## 8.14 DATAEAGLE X-treme 473xA - Article number: 15476

### General

Power supply	24 V DC
Power supply connection	M12, A-coded, 5 pin (male)
Power consumption	100mA
Mounting	4-hole screw mounting
Protection class	IP65
Temperature range	-20...+60 °C
Conformity	CE, FCC, IC
Weight	280g
Wide	88 mm
Height	120 mm
Depth	42 mm
Color	Black

### Radio technology

Frequency	2,4 GHz Bluetooth 5
Transmitting power	8dBm
Indoor range	100m
Outdoor range	300m
Antenna connection	SMA Anschluss (female) - 50 Ohm

### Interface

Max. Ethernet transmission rate	100 MBit/s
2-port Switch	Yes
Ethernet connection	M12, B-coded, 5 pin (male), 5 pin (female)

**8.14.1 Software Feature Ethernet Multipoint - Article number: 15480**

Max. Number of radio slaves	4
Optimized for	Ethernet

**8.14.2 Software Feature Multiprotokoll Point-to-Point - Article number: 15481**

Max. Number of radio slaves	1
Optimized for	PROFINET, EtherNet/IP
Max. Number of participants/connections	4
Safety communication	No

**8.14.3 Software Feature Multiprotokoll Multipoint - Article number: 15482**

Max. Number of radio slaves	4
Optimized for	PROFINET, EtherNet/IP
Max. Number of participants/connections	6
Safety communication	No

**8.14.4 Software Feature Multiprotokoll Safe Point-to-Point - Article number: 15485**

Max. Number of radio slaves	1
Optimized for	PROFINET, EtherNet/IP, openSAFETY via UDP
Max. Number of participants/connections	4
Safety communication	Yes

**8.14.5 Software Feature Multiprotokoll Safe Multipoint - Article number: 15483**

Max. Number of radio slaves	4
Optimized for	PROFINET, EtherNet/IP, openSAFETY via UDP
Max. Number of participants/connections	8
Safety communication	Yes



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