Manual
DATAEAGLE 3000 Series – Wireless PROFIBUS

Schildknecht AG

29. Juli 2026



Schildknecht AG
Haugweg 26
D-71711 Murr
Tel.: +49 (7144) 89718 0
Mail: info@schildknecht.ag



This document applies to the following products:

Name	Article number
DATAEAGLE Compact 3715A Master/Slave	11160 / 11161
DATAEAGLE X-treme 3715A Master/Slave	11320 / 11321
DATAEAGLE Compact 3713A Master/Slave	11164 / 11165
DATAEAGLE X-treme 3713A Master/Slave	11324 / 11325
DATAEAGLE Compact 3712A Master/Slave	11168 / 11169
DATAEAGLE X-treme 3712A Master/Slave	11326 / 11327
DATAEAGLE Compact 3333A Master/Slave	11183 / 11184
DATAEAGLE X-treme 3333A Master/Slave	11370 / 11371
DATAEAGLE Compact 3343A Master/Slave	11148 / 11149
DATAEAGLE X-treme 3343A Master/Slave	11330 / 11331
DATAEAGLE Compact 373xA	15375
DATAEAGLE X-treme 373xA	15376

Version	1.0
Language	EN
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Schildknecht AG

Haugweg 26
D-71711 Murr
Tel.: +49 (7144) 89718 0
Mail: info@schildknecht.ag

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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
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:

PROFIBUS PROFIBUS Nutzerorganisation e.V. (PNO)
PROFIsafe PROFIBUS Nutzerorganisation e.V. (PNO)

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 3000 series have been specially developed for the transparent transmission of PROFIBUS via radio.

Different radio technologies, such as Bluetooth 2.4 GHz or 869 / 915 MHz in the unlicensed band, are used for transmission. PROFIBUS speeds of up to 1.5 Mbit/s can be configured using integrated data preprocessing.
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 3000

The DATAEAGLE 3000 is suitable for the transparent transmission of PROFIBUS data via radio.
Point-to-point as well as multipoint systems can be configured.

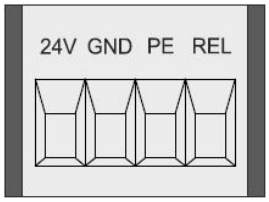


Radio interference can be suppressed via the filter time that can be configured in the master. Only after this time has elapsed do the PROFIBUS stations detect a bus fault. All interruptions of the communication within the filter time are suppressed and the plant availability is thus increased.
A too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

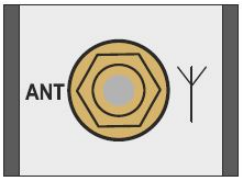


Clamps	Description
24V	24 V DC
GND	0V
PE	PE
REL	Switching output

USB port

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

Antenna connection



SMA connector for antenna

PROFIBUS Interface

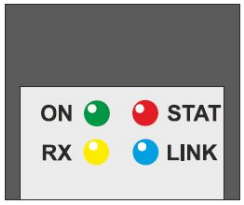


9 pin SUB-D connector for PROFIBUS

Pin assignment

PIN	Description
1	do not connect
2	do not connect
3	B/TX+/Rx+
4	do not connect
5	GND2
6	VCC2 (5V)
7	do not connect
8	A/TX-/RX-
9	do not connect

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

BF LED

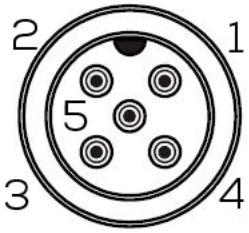
LED	Anzeige	Zustand	Beschreibung
BF	Red	On (Master)	no PROFIBUS connection
	Red	Blinking (Master)	PROFIBUS connection Searching for DP Slaves
	Off	Off	no Error

3.4 DATAEAGLE X-treme

3.4.1 Connections

Power supply

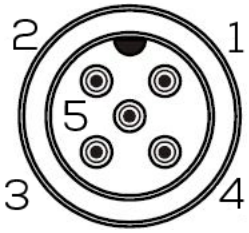
M12, A-coded, 5 pin (male)

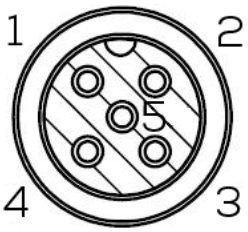


PIN	Description
1	+24 VDC
2	not connected
3	GND
4	not connected
5	PE

PROFIBUS Interface

M12, B-coded, 5 pin (male), 5 pin (female)



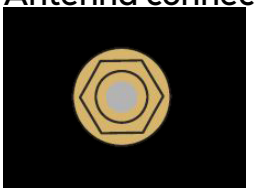


PIN	Description
1	VCC
2	A
3	GND
4	B
5	not connected

USB port

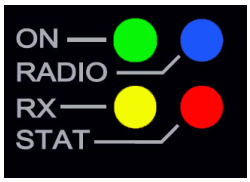
The DATAEAGLE X-treme has a USB port for configuration and software updates via the DATAEAGLE Wizard tool. This is located behind the PG screw.

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

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
BF	Red	On (Master)	no PROFIBUS connection
	Red	Blinking (Master)	PROFIBUS connection Searching for DP Slaves
	Off	Off	no Error

4 Mounting

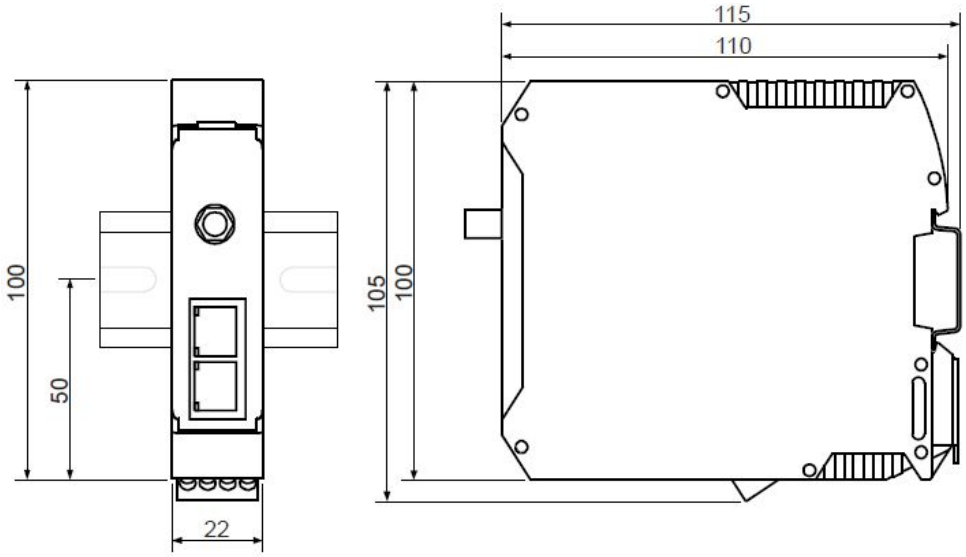
4.1 Requirements

- 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

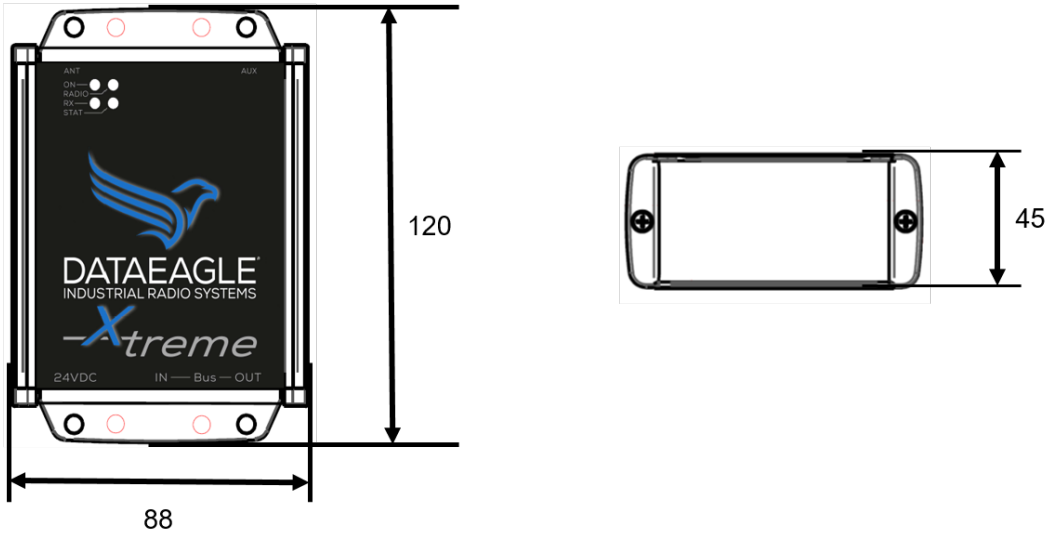
DATAEAGLE Compact

Dimensions in mm



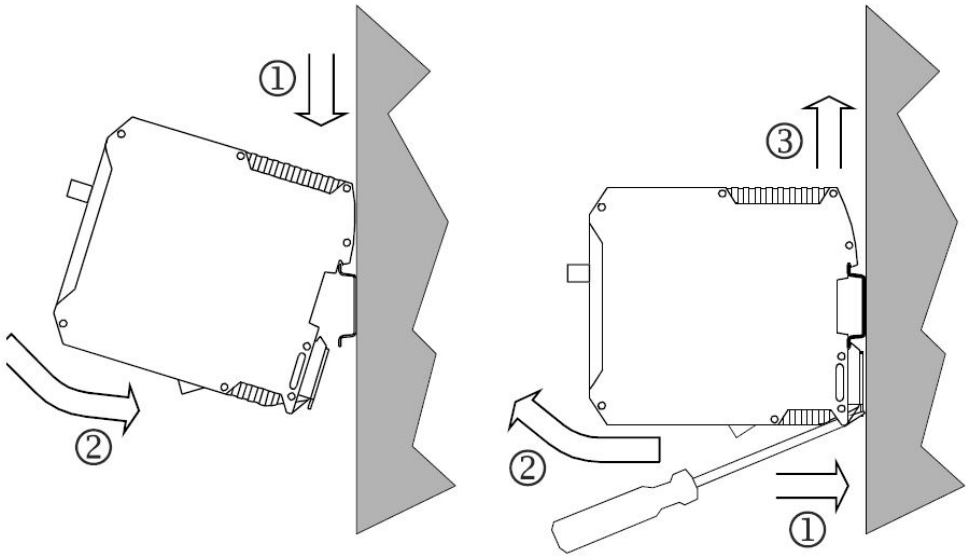
DATAEAGLE X-treme

Dimensions in mm



4.3 Mounting the components

DATAEAGLE Compact



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

Mount:

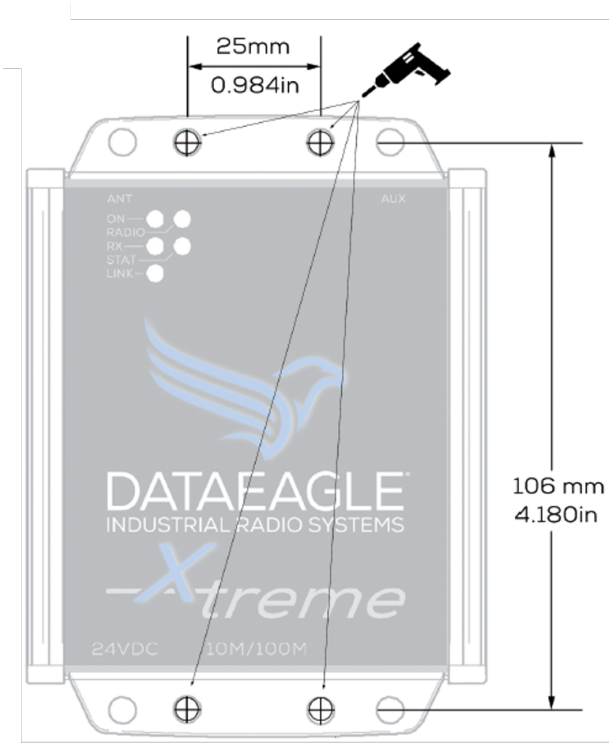
1. Place the module from diagonally above onto the top-hat rail.
2. Press the module down firmly.

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

Example:



DATAEAGLE X-treme

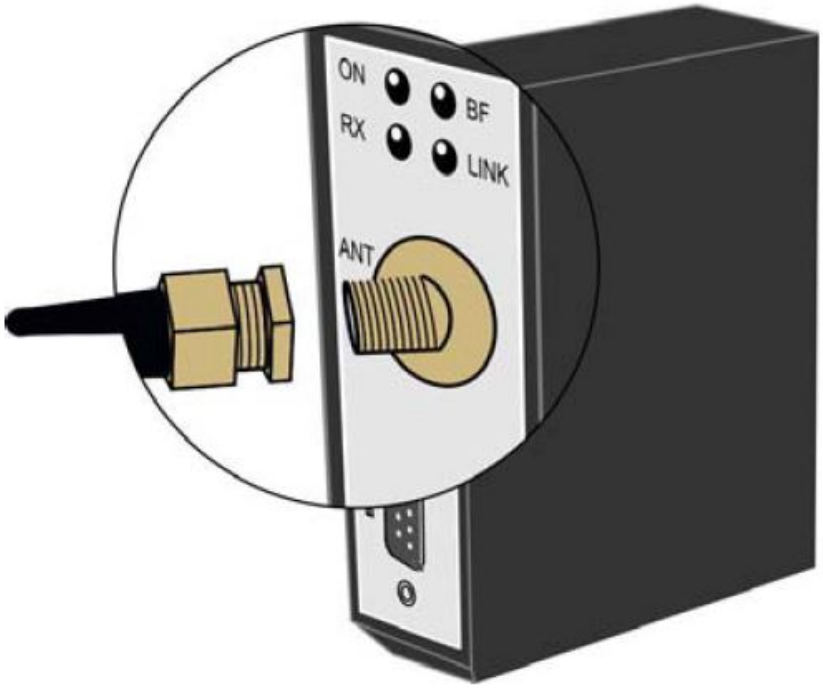


→ Attach the module to the designated location according to its mounting method.

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

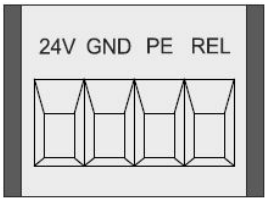
WARNING!

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

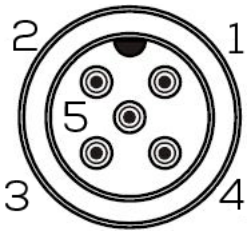
Power supply - DATAEAGLE Compact



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 PROFIBUS connection

PROFIBUS - DATAEAGLE Compact



9 pin SUB-D connector for PROFIBUS

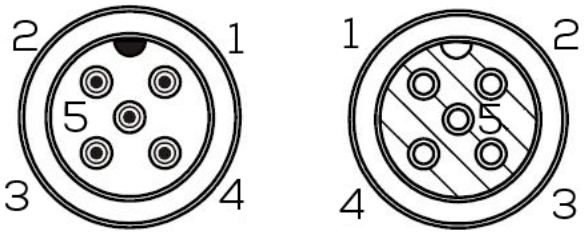
Pin assignment

PIN	Description
1	do not connect
2	do not connect
3	B/TX+/Rx+
4	do not connect
5	GND2
6	VCC2 (5V)
7	do not connect
8	A/TX-/RX-
9	do not connect

PROFIBUS termination

If DATAEAGLE Compact is the first or last station on the physical PROFIBUS, a terminating resistor must be activated on the PROFIBUS connector of the connection cable.

PROFIBUS - DATAEAGLE X-treme
M12, B-coded, 5 pin (male), 5 pin (female)



PIN	Description
1	VCC
2	A
3	GND
4	B
5	not connected

PROFIBUS termination

If the DATAEAGLE X-treme is the first or last station on the physical PROFIBUS, an M12 terminating resistor (e.g. article no.: 11890) must be screwed onto one of the two M12 connections.

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 device is in autobauding mode. This means that the DATAEAGLE searches for the correct PROFIBUS baud rate after switching on.

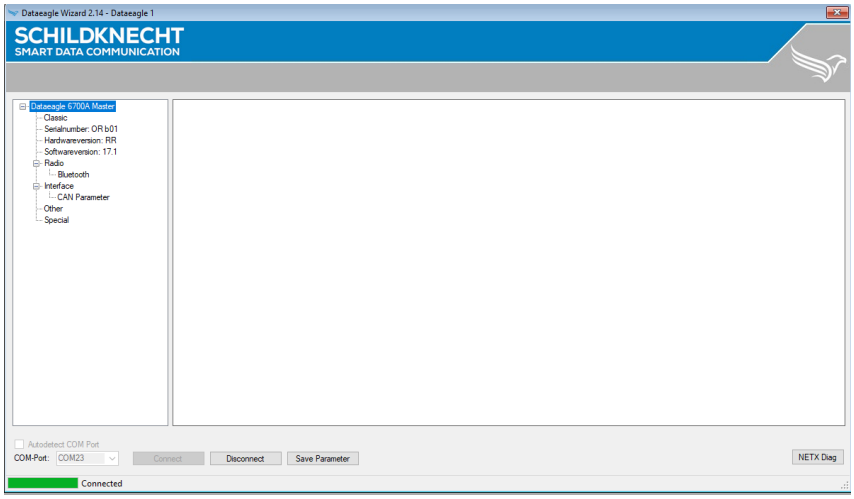
6.2 Configuration Filtertime

The following must be available for the device configuration:

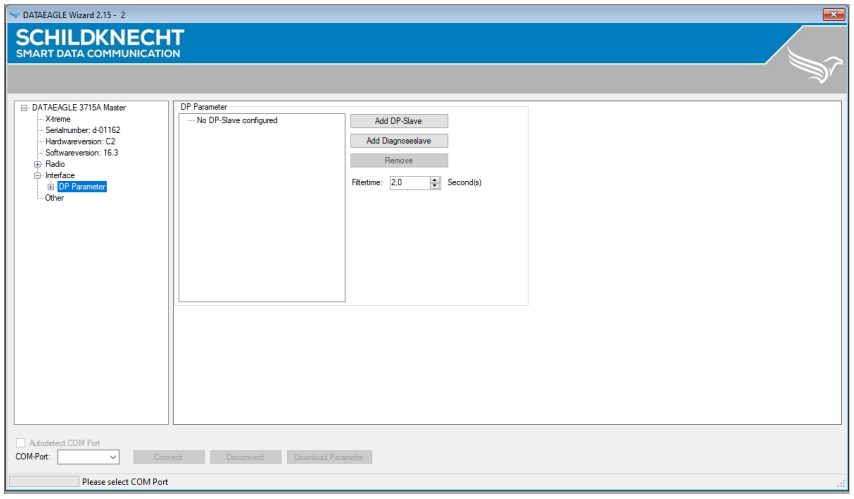
- USB driver CDM21228 (Download Link) - Installed on PC
- Configuration Tool DATAEAGLE Wizard (Download Link) - Installed on PC
- USB cable - between PC and DATAEAGLE

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 → DP 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.

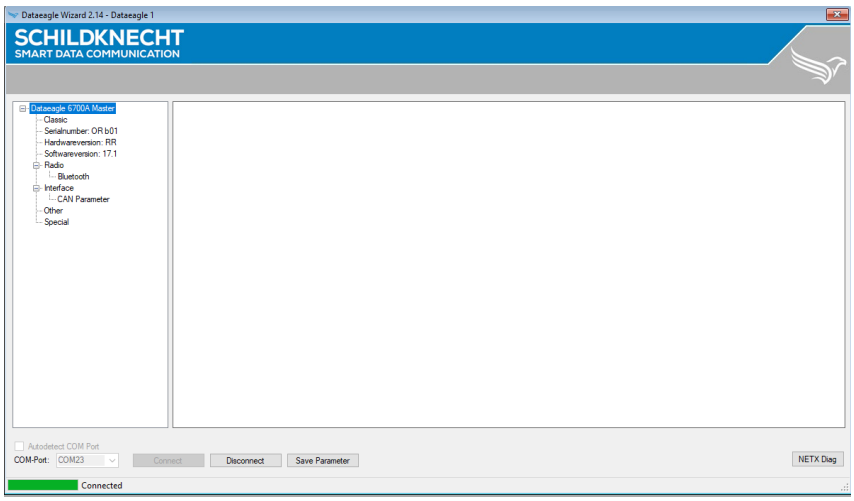
6.3 Configuration radio parameters

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

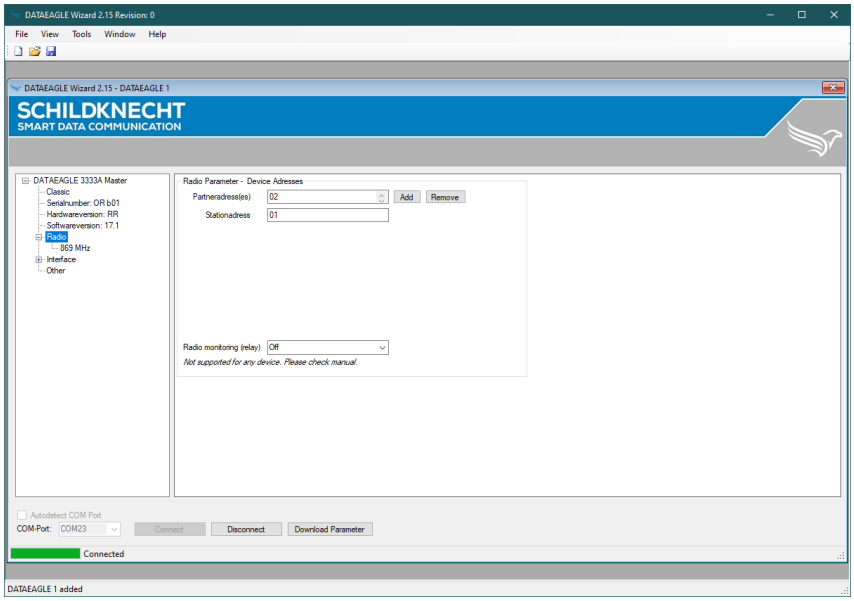
- USB driver - installed on PC
- DATAEAGLE Wizard configuration tool - installed on PC
- USB cable - between PC and DATAEAGLE

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.

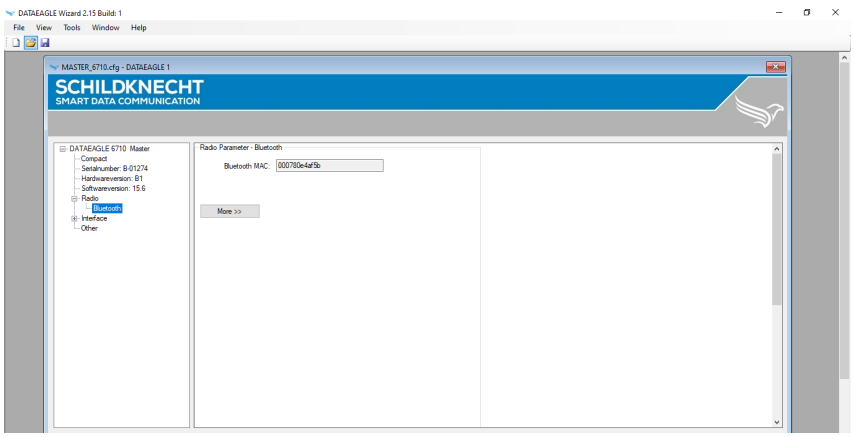
> **NOTE**
> If a radio system was ordered as a set (set configuration), no change is necessary here.

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 371x

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

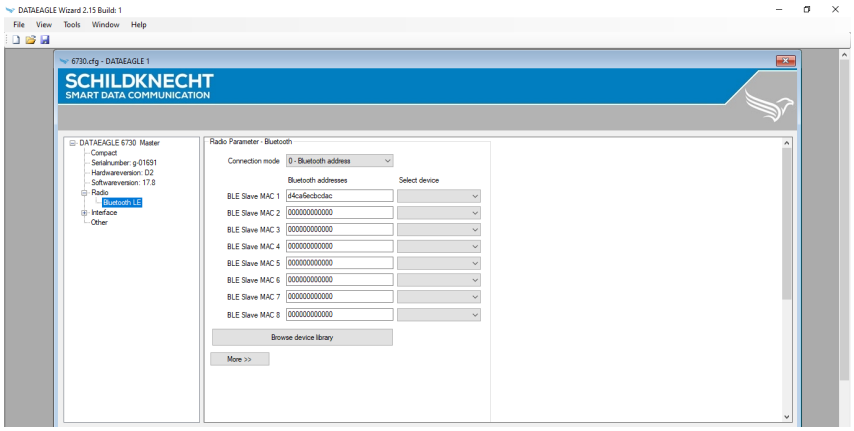


NOTE
If a radio system was ordered as a set (set configuration), no change is necessary here.

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 373x

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



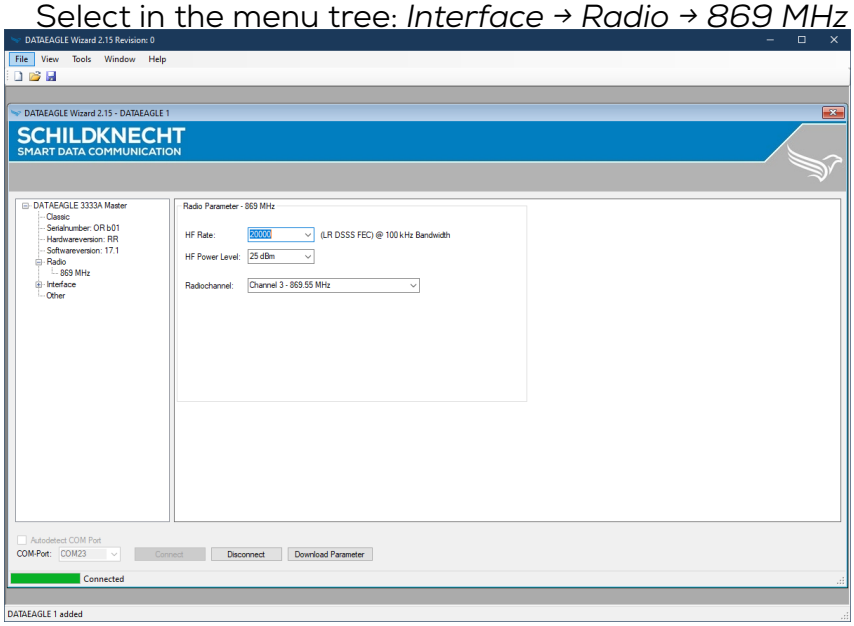
NOTE
If a radio system was ordered as a set (set configuration), no change is necessary here.

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 333x

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	20k (LR DSSS FEC) @ 100 kHz
	method	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	00: 869.40 MHz Not allowed
	(Frequency)	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

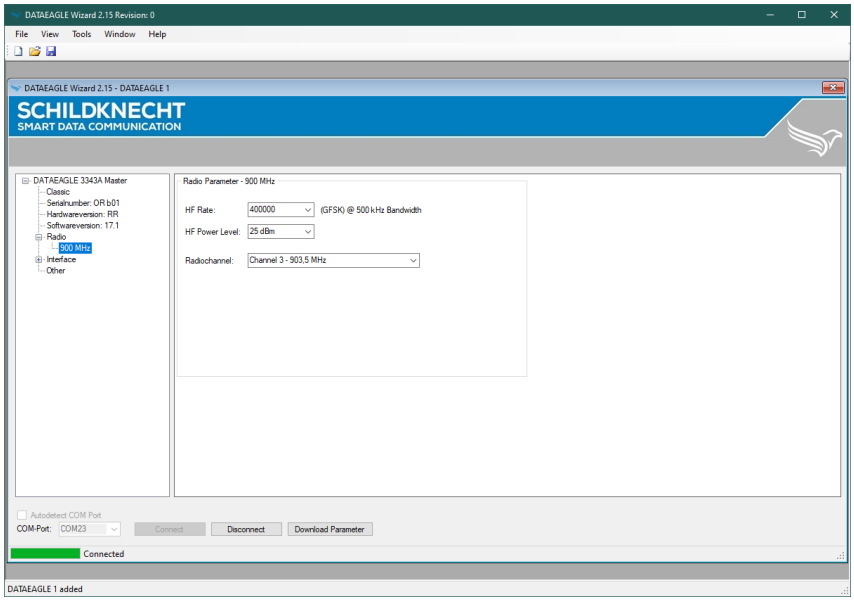
All devices in a radio system must be set to the same radio channel. DATAEAGLE radio systems in parallel operation are to be operated with different radio channels! However, it should be noted that at high RF rate only 1 system is possible due to the available bandwidth!

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 334x

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:

- Diagnostics via integrated PROFIBUS slave
- Diagnosis via the configuration tool DATAEAGLE Wizard

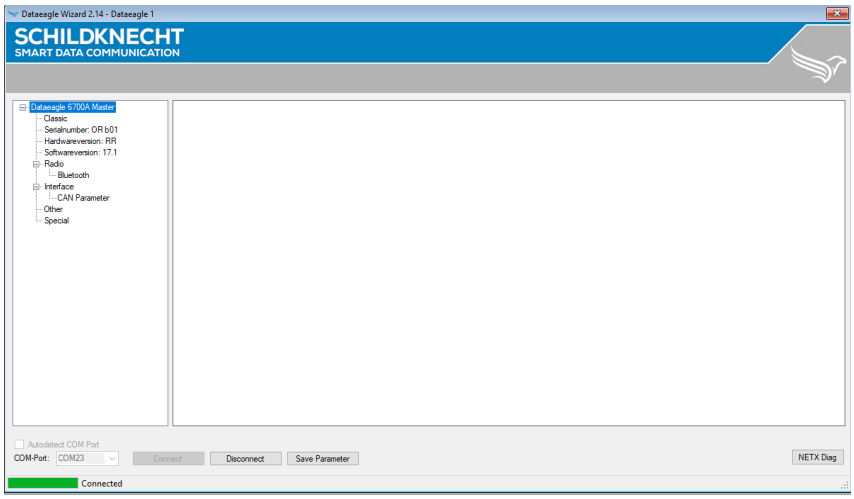
6.4.1 Integrated PROFIBUS DP diagnostic slave

The diagnostic slave is a PROFIBUS station for monitoring the radio link and the connected PROFIBUS stations.

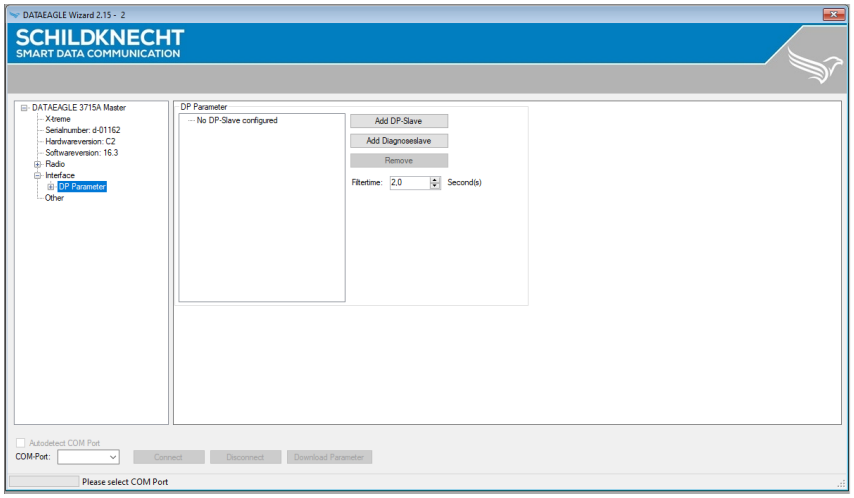
To access the data of the diagnostic slave, a PROFIBUS address must be configured on the DATAEAGLE master for the diagnostic slave. A PROFIBUS master can then access and read out this data.

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 → DP Parameter*



Configure via *Add Diagnoseslave* the PROFIBUS address for the Diagnoseslave and the PROFIBUS Master address, which should read out the Diagnoseslave.

The GSD file for integration into the hardware configuration is available for download on our website.

The diagnostic data is divided into several data blocks. Each data block is 32 bytes in size.

Data structure of the send data to the diagnostic slave:

Byte	Function	Value
0	Block selection 0-7 resp. 255	0..255
1	Block 0: Reset counters	0: No function
		1: Reset counters
	Other: Parameters, depending on the block	0..255
2..30	Parameters, depending on the block	0..255
31	reserved	0

Data structure of the received data from the diagnostic slave:

Block 0: General diagnostic values

Byte	Function	Value
0	Baudrate	1 : 1.5 MBit/s
		2 : 500 KBit/s
		3 : 187.5 KBit/s
		4 : 93.75 KBit/s
		5 : 19.2 KBit/s
		6 : 9.6 KBit/s
1	Filter setting [*100ms]	1..255 (100ms..25.5s)
2	Power-Up counter	Power-on procedures of the DATAEAGLE Master
3	PROFIBUS errors	
4/5	Total retries of the radio interface	Radio telegrams which had to be repeated
6/7	Total slave failures	Radio interrupts with PROFIBUS bus error
8/9	Total slave response telegrams	
10..13	DATAEAGLE device type	ASCII coded
14..17	DATAEAGLE Software Version	ASCII coded
18..21	PROFIBUS Interface Software Version	ASCII coded
22	Radio channel	(type-dependent)
23	HF Retries	(type-dependent)
24	HF Power	Transmitting power (type-dependent)
25	Radio device address	
26	Radio partner address	
27	Master/Slave	
28	Relay Timeout	(type-dependent)
29/30		
31	0	Block number 0

Block 1: PROFIBUS Slave addresses

Byte	Function	Value
0	PROFIBUS Address 1	1..125
		127: no PROFIBUS Slave
1	PROFIBUS Address 2	1..125
		127: no PROFIBUS Slave
..		
31	1	Block number 1

Block 2: PROFIBUS status of slave

Byte	Function	Value
0	Status Slave 1	0..10
		5: DataExchange
1	Status Slave 2	0..10
		5: DataExchange
..		
31	2	Block number 2

Block 3: Slave response time (DataExchange time)

Byte	Function	Value
0	Response time Slave 1	0..255 [*10ms]
1	Response time Slave 2	0..255 [*10ms]
..		
31	3	Block number 3

Block 4: Radio retries per PROFIBUS slave

Byte	Function	Value
0	Retries Slave 1	0..255
1	Retries Slave 2	0..255
..		
31	4	Block number 4

Block 5: Restarts (radio)

Byte	Function	Value
0	Restarts Slave 1	0..255
1	Restarts Slave 2	0..255
..		
31	5	Block number 5

Block 6: Restarts (PROFIBUS)

Byte	Function	Value
0	Restarts Slave 1	0..255
1	Restarts Slave 2	0..255
..		
31	6	Block number 6

Block 7: Average data rate (telegrams/second)

Byte	Function	Value
0	Data rate Slave 1	0..255 tel./second
1	Data rate Slave 2	0..255 tel./second
..		
31	7	Block number 7

Block 8: Control of the radio slaves

Data structure of the send data to the diagnostics slave:

Byte	Function	Value
0	Block number	8
1	Slave radio address 1	0: activated
		1: Automatic mode
		255: deactivated
2	Slave radio address 2	0: activated
		1: Automatic mode
		255: deactivated
..		
31	Block number	8

Data structure of the receive data from the diagnostics slave:

Byte	Function	Value
0	Dummy	
1	Slave radio address 1	0..9
		127: no radio slave
2	Slave radio address 2	0..9
		127: no radio slave
..		
31	Block number	8

The DATAEAGLE master cyclically tries to address all radio slaves. In some applications, system parts are deliberately de-energized and are therefore no longer accessible by radio. To avoid unnecessary timeouts, the radio nodes can be logged out via block 8.

In automatic mode, this task is performed by DATAEAGLE itself. It should be noted, however, that automatic recognition requires a certain amount of time. During this time, timeouts may occur. Every 25 seconds, the DATAEAGLE master attempts to determine whether the slave can be reached again. Then a timeout also occurs.

Block 9: Radio retries per radio slave

Byte	Function	Value
0	Radio retries Slave 1	0..255
1	Radio retries Slave 2	0..255
..		
31	9	Block number 9

Block 10: Max. Timeout time per radio slave

Byte	Function	Value
0	Max. Timeout Slave 1	0..255 Sec.
1	Max. Timeout Slave 2	0..255 Sec.
..		
31	10	Block number 10

Block 255: Reset all counters

Byte	Function	Value
0	Dummy	
1	Dummy	
..		
31	255	Block number 255

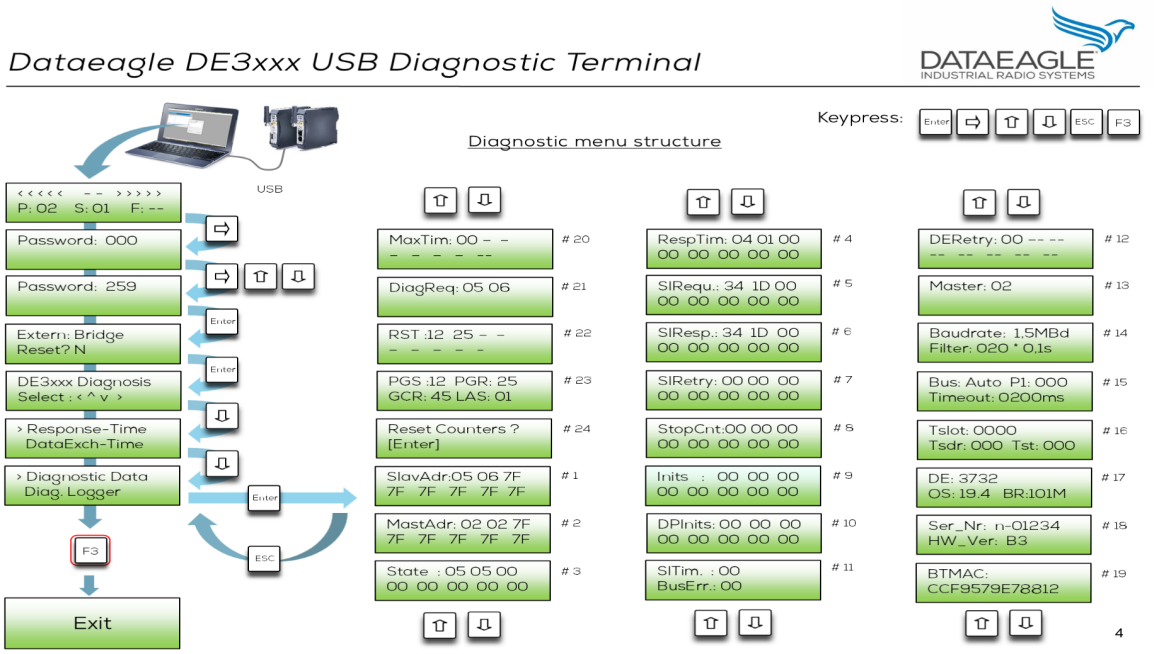
NOTE
If the block numbers are read cyclically from the PLC, byte 31 must be queried to ensure that the correct page is returned by DATAEAGLE. It may take some PLC cycles until the requested block number is returned.

6.4.2 Diagnostic via terminal mode

A detailed PROFIBUS diagnosis is possible via the terminal function of the DATAEAGLE Wizard.

Procedure:

1. Connect DATAEAGLE Master to PC via USB and apply 24 V DC.
2. In DATAEAGLE Wizard: *Tools* → *Terminalmode*. A new window opens.
3. Select COM port, optionally activate *Log Display messages*, click *Connect*.
4. Press **cursor right** → enter password **259** → press **Enter**.
5. Press **Enter** again → press **cursor down** → select *Diagnostic Data* → press **Enter**.



Addresses & Status		
Display / Meaning	**Note / Check**	
SLV: 01 02 7F ...	Preset/detected PROFIBUS slave addresses (7F = disabled)	Must match DP slave addresses in PROFIBUS config (HW config)
MST: 02 7F ...	Assigned PROFIBUS master addresses (7F = disabled)	Must match DP master address in PROFIBUS config
STA: 05 05 ...	State of slave state machine (05 = data exchange)	Values other than 05: check for configuration or address errors
ADR: 01 02 ...	Detected PROFIBUS master addresses	Active PROFIBUS stations
DRQ: 01 02 ...	Addresses requested by PROFIBUS master (Diag Request)	Shows DP slave addresses the DP master wants to address

Timing values		
Display / Meaning	**Note / Check**	
RSP: 1E 1E ...	Slave response time [10 ms]	Response time of DP slave data telegrams over radio link; depends on DP baud rate
BDR: 1500 FLT: 02	Detected baud rate / Preset filter time (dec)	Detected PROFIBUS speed and filter time configured in Wizard
AUT: 1 P1: 00 TIM: 500	Autobauding / Internal parameters / Internal timeout (dec)	
TIM: 00 00 ...	Adjusted PROFIBUS timings (0 = default → PROFIBUS-DP) (dec)	All 0 = PROFIBUS-DP standard; user-defined timing settings otherwise
MAX: 64	Max. timeout radio slaves [100 ms]	Shows the max. time a DATAEAGLE slave was unreachable via radio

Error counters		
Display / Meaning	**Note / Check**	
REQ: 1234 ...	Slave request counter	Counts telegrams sent to the DP slave
RSP: 1234 ...	Slave response counter	Counts telegrams received from the DP slave
RTY: 00 00 ...	Slave retry counter	Increments with wrong DP slave address, broken PROFIBUS cable or radio interference (counter #12 changes too)
BTO: 00 00 ...	Bus timeout counter master	Counts when DP slave is not addressed by DP master
RS1: 00 00 ...	Slave restart counter (restart by radio interference)	Counts connection drops (BUS-ERR-LED) – filter time expired; check filter time in Wizard or radio link
RS2: 00 00 ...	Slave restart counter (restart by master)	Counts connection drops triggered by the DP master
STO: 00 00 ...	Slave timeout counter / Bus error counter master	
RAD: 00 00 ...	Radio retry counter	Counts when no response from slave radio (poor radio link or interference)

Device parameters		
Display / Meaning	**Note / Check**	
TYP: 3715A OS: 19.4 4x45	DATAEAGLE type / OS version / Interface version	
SER: n-12345 HW: 02	Device serial no. / Device HW version	
BT: 8C:1F:64:55:C3:88	Bluetooth MAC address	
RST: 00 00 …	Device restart counter (DE-Master, DE-Slave 1, …)	Counts restarts/power-ons; press Enter to update DE slave counters
PGS/PGR: 00 GCR: 00 LAS: 00	PG telegrams / Global control / LAS telegrams	Increments with PG/HMI connections alongside DP connection

Control	
Display / Function	**Note**
Reset all (Error) counters	Resets all error counters. Recommended before each diagnostic session. Confirm with Enter → … DONE!

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 3715A Master/Slave - Article number: 11160 / 11161

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.2 DATAEAGLE X-treme 3715A Master/Slave - Article number: 11320 / 11321

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.3 DATAEAGLE Compact 3713A Master/Slave - Article number: 11164 / 11165

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.4 DATAEAGLE X-treme 3713A Master/Slave - Article number: 11324 / 11325

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.5 DATAEAGLE Compact 3712A Master/Slave - Article number: 11168 / 11169

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D
Max. PROFIBUS DP Slaves	8
PROFIsafe	Yes

8.6 DATAEAGLE X-treme 3712A Master/Slave - Article number: 11326 / 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, 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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)
Max. PROFIBUS DP Slaves	8
PROFIsafe	Yes

8.7 DATAEAGLE Compact 3333A Master/Slave - Article number: 11142 / 11143

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.8 DATAEAGLE X-treme 3333A Master/Slave - Article number: 11370 / 11371

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.9 DATAEAGLE Compact 3343A Master/Slave - Article number: 11148 / 11149

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.10 DATAEAGLE X-treme 3343A Master/Slave - Article number: 11330 / 11331

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.11 DATAEAGLE Compact 373xA - Article number: 15375

Master/Slave

Configuration Master	Article number: 15383
Configuration Slave	Article number: 15384

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	9 pol. SUB-D

8.11.1 Software Feature PROFIBUS Point-to-Point - Article number: 15380

Max. Number of radio slaves	1
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.11.2 Software Feature PROFIBUS Multipoint - Article number: 15381

Max. Number of radio slaves	4
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.11.3 Software Feature PROFIBUS PROFIsafe Multipoint - Article number: 15382

Max. Number of radio slaves	4
Max. PROFIBUS DP Slaves	8
PROFIsafe	Yes

8.12 DATAEAGLE X-treme 373xA - Article number: 15376

Master/Slave

Configuration Master	Article number: 15383
Configuration Slave	Article number: 15384

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. PROFIBUS transmission rate	1.5 MBit/s
PROFIBUS connection	M12, B-coded, 5 pin (male), 5 pin (female)

8.12.1 Software Feature PROFIBUS Point-to-Point - Article number: 15380

Max. Number of radio slaves	1
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.12.2 Software Feature PROFIBUS Multipoint - Article number: 15381

Max. Number of radio slaves	4
Max. PROFIBUS DP Slaves	4
PROFIsafe	No

8.12.3 Software Feature PROFIBUS PROFIsafe Multipoint - Article number: 15382

Max. Number of radio slaves	4
Max. PROFIBUS DP Slaves	8
PROFIsafe	Yes

9 Legal notice

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