

EASY PROTECT Radio
Information for system integrators
firmware v1.6.0

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1 Behaviour overview

EASY PROTECT Radio is a smoke detector based on the principle of optical light scattering. In addition, it provides a number of features that allow the remote monitoring of the device status.

These features and messages are:

- Battery end of life
- Smoke chamber pollution pre-warning
- Smoke chamber pollution warning
- Test button failure
- Acoustic alarm failure
- Removal detection
- Test alarm released
- Smoke alarm released
- Obstruction detection
- Surrounding area monitoring
- LED failure

2 Commissioning of a device

EASYPROTECT Radio, LoRa version, is delivered in “sleep mode” with smoke detection and IR communication switched off.

It can only be started by mounting it to the backplate which is meant to be used in connection with this device. Once started, all functions will be initialized automatically and especially smoke detection will start. Smoke detection will be switched off once removed from the backplate.

After first installation, a test alarm should be issued. Please do also refer to the installation manual of the device for further information and guidelines.

For normal use cases, no IR commands are needed to commission a device. Some rare conditions may exist in connection with radio, as described in the related section.

3 Radio behavior

3.1 During commissioning

All ZENNER devices are delivered in OTAA mode per default. If ABP mode is required, this requires special support not described in this document.

At first mounting to the backplate, the device will automatically start its join procedure.

Join procedure is defined as follows:

- Device will send out a join request and wait for join accept
- If no join response is received by the device, it will repeat sending a join request every minute, max. 4 further transmissions (5 join requests in total)
- During the join procedure the yellow LED of the device indicates the result of the join procedure:
 - Fast blinking yellow LED indicates that the device did not receive a join accept so far during the join procedure
 - Slow blinking yellow LED indicates that a join accept was received
- Join procedure ends after 20 minutes, whether a join accept was received or not
- If no join accept was received during the join procedure, the device will send every day at a randomized time after midnight one join request until a join accept is received.

The yellow LED does not indicate these later join attempts

3.2 Transmission scheme

Default transmission configuration is transmission scenario 2. In transmission scenario 2 the following packets are sent:

Packet type	Schedule	Details	remarks
SP 0	N/A		
SP 1	daily	Confirmed packet, max. 2 retransmissions	
SP 2	N/A		
SP 3	N/A		

SP 4	N/A		
SP 5	N/A		
SP 6	N/A		
SP 7	N/A		
SP 8	N/A		
SP 9.0	N/A		
SP 9.1	Sent every month except the month of first activation	No retransmissions	
SP 9.2	Sent immediately after first activation and from then on every 6 months	No retransmissions	
AP 1.0	Event based	Max 5 AP packets per month, no retransmissions	
AP 2.0	N/A		

Please note:

Similar to metering devices, where the SP1 packet contains the meter value at the end of the calendar day, the SP1 of EASY PROTECT Radio contains the state at the end of the day. Which means for example that if a device was removed and mounted back at the same day, this will not be reflected in the SP1 packet.

3.3 Packet content

Packet format specification is given in separate doc (LoRa-radio-packet-definitions).

3.3.1 SP packets

The “day value” encoded in an SP1 packet is coded as follows:

Battery end of life	0x0200
Smoke chamber pollution pre-warning	0x0800
Smoke chamber pollution warning	0x1000
Test button failure	0x2000
Acoustic alarm failure	0x4000

Removal detection	0x8000
Test alarm	0x0001
Smoke alarm	0x0002
Obstruction detection	0x0004
Surrounding area monitoring	0x0008
LED failure	0x0010

The device specific status summary is defined for EASY PROTECT Radio as follows:

Removal	Bit 0
Battery end of life	Bit 2
Acoustic alarm failure	Bit 3
Obstruction detection	Bit 4
Surrounding area monitoring	Bit 5

Examples:

- Payload 1104000000 indicates obstruction detection
- Payload 110C000000 indicates obstruction and surrounding area monitoring
- Payload 9127014421210000000000 indicates surrounding area monitoring and removal detection at 4-Jan-18
- Payload 921C00010201000110000867D332530000 indicates firmware version 1C000102, LoRa WAN version 1.0.1, LoRa command version 0.1, device type 08, meter ID 67D33253

3.3.2 AP packets

A maximum of 5 AP packets is sent by the device per calendar month. AP Packets are only sent once (no retransmission).

The following status codes are supported:

Removal	0x02
Battery end of life	0x0C
Horn drive level failure	0x16
Obstruction detection	0x1A
Object in the surrounding area	0x1C

Example:

Payload A002004921 indicates removal at 9-Jan-18

4 Helpful IR commands

For EASY PROTECT Radio, the following two commands may be useful:

- SendJoinRequest (0x35 0x06)
- CheckJoinAccept (0x35 0x07)