senzemo

Senspuck Pure 1.0 - Battery
LoRaWAN Protocol
FW v1.0

1. LoraWAN JOIN Parameters

Parameter	Description
AppEUI/JoinEUI	7BB3D57ED0045EA2
AppKey	CE5372B3A494D6BEE5E36413D3EF5438
Send Period	12 min

NOTE: The JOIN parameters can not be changed.

2. LoraWAN DATA Payload - CO2 & TVOC (Uplink)

Parameter:	stat	t	rh	ap	tvoc	iaq	co2	vol	**SUM**
Size:	1B	2B	2B	2B	2B	2B	2B	2B	**15B**

Parameter	Name	Range	Size	Type	Description
Status	stat	0 - 255	1B	uint8	Status Codes: 0x00 - OK Bit0 - Battery Low Power Bit1 - EUI Failure Bit2 - T/RH Failure Bit3 - AP Failure Bit4 - CO2 Failure Bit5 - VOC Failure
Temperature	t	-128.00 - 127.00	2B	int16	Temperature (t / 100)
Relative Humidity	rh	0.00 - 100.00%	2B	uint16	Relative Humidity (rh1 / 100)
Air Pressure	ap	300 - 1200 mbar	2B	uint16	Air Pressure (ap / 10)
TVOC	tvoc	0 - 10.00 mg/m3	2B	uint16	Total VOC (tvoc/100)
IAQ	iaq	0 - 7.00	2B	uint16	Indoor AQ index (iaq/100)
CO2	co2	0 - 5,000 ppm	2B	uint16	CO2
Voltage	vol	0 - 4,000 mV	2B	uint16	Voltage Storage

NOTE: LoRaWAN Port 2 is used.

3. LoraWAN DATA Payload - CO2 (Uplink)

Parameter:	stat	t	rh	ap	co2	vol	**SUM**
Size:	1B	2B	2B	2B	2B	2B	**11B**

Parameter	**Name**	**Range**	**Size**	**Type**	**Description**
Status	stat	0 - 255	1B	uint8	Status Codes: 0x00 - OK Bit0 - Battery Low Power Bit1 - EUI Failure Bit2 - T/RH Failure Bit3 - AP Failure Bit4 - CO2 Failure Bit5 - VOC Failure
Temperature	t	-128.00 - 127.00	2B	int16	Temperature (t / 100)
Relative Humidity	rh	0.00 - 100.00%	2B	uint16	Relative Humidity (rh1 / 100)
Air Pressure	ap	300 - 1200 mbar	2B	uint16	Air Pressure (ap / 10)
CO2	co2	0 - 5,000 ppm	2B	uint16	CO2
Voltage	vol	0 - 4,000 mV	2B	uint16	Voltage Storage

NOTE: LoRaWAN Port 2 is used.

4. LoraWAN CONFIG Payload (Uplink)

Param:	stat	ackco	dr	conf	lth	lin	fid	pid	hw	fw	**SUM**
Size:	1B	1B	1B	1B	1B	1B	1B	1B	1B	1B	**10B**

Parameter	**Name**	**R/W**	**Size**	**Type**	**Default Value**	**Description**
Status	stat	R	1B	uint8	0x00	Status Codes: 0x00 - OK Bit0 - Battery Low Power Bit1 - EUI Failure Bit2 - T/RH Failure Bit3 - AP Failure Bit4 - CO2 Failure Bit5 - VOC Failure
Packet Confirm	ackco	R/W	1B	uint8	24	Request confirmed packed every N transmissions. 0 == OFF.
Data Rate	dr	R/W	1B	uint8	0 - 7 (128)	DR0 - DR7 (x = DRx) Bit7 - ADR On
Config	conf	R/W	1B	uint8	1	Bit0 - VOC On/Off
LED Threshold	lth	R/W	1B	uint8	100	LED Threshold VOC level (lth * 10) 0 - LED Off
LED Intensity	lin	R/W	1B	uint8	2	0 - LED Off 1 - LED Intensity Low 2 - LED Intensity High
Family Id	fid	R	1B	uint8	3	Family Id.
Product Id	pid	R	1B	uint8	1	Product Id.
Hardware Version	hw	R	1B	uint8	1.0	Hardware version (hw / 10).
Firmware Version	fw	R	1B	uint8	1.0	Firmware version (fw / 10).

NOTE: For Config packet, LoRaWAN Port 3 is used.

5. LoRaWAN RECEIVE Payload Config (Downlink)

Param:	ackco	dr	cong	lth	lin	**SUM**
Size:	1B	1B	1B	1B	1B	**5B**

Parameter	**Name**	**R/W**	**Size**	**Type**	**Default Value**	**Description**
Packet Confirm	ackco	R/W	1B	uint8	24	Request confirmed packed every N transmissions. 0 == OFF.
Data Rate	dr	R/W	1B	uint8	0 - 7 (128)	DR0 - DR7 (x = DRx) Bit7 - ADR On
Config	conf	R/W	1B	uint8	1	Bit0 - VOC On/Off
LED Threshold	lth	R/W	1B	uint8	100	LED Threshold CO2 level (lth * 10)
LED Intensity	lin	R/W	1B	uint8	2	0 - LED Off 1 - LED Intensity Low 2 - LED Intensity High

DEFAULT DOWNLINK PACKET: 18 80 03 64 02

NOTE: For Config packet LoRaWAN Port 3 is used.

WARNING: TVOC sensor requires 48 hours of operation for accurate data readings.

6. LoRaWAN CONFIG Payload (Downlink) - Reboot

Param:	reboot	**SUM**
Size:	2B	**2B**

Parameter	**Name**	**R/W**	**Size**	**Type**	**Default Value**	**Description**
Reboot	reboot	W	2B	uint16	0xFFFF	Start REBOOT procedure.

DEFAULT DOWNLINK PACKET: FF FF

7. LoRaWAN CONFIG Payload (Downlink) - Factory Defaults

Param:	fdef	**SUM**
Size:	2B	**2B**

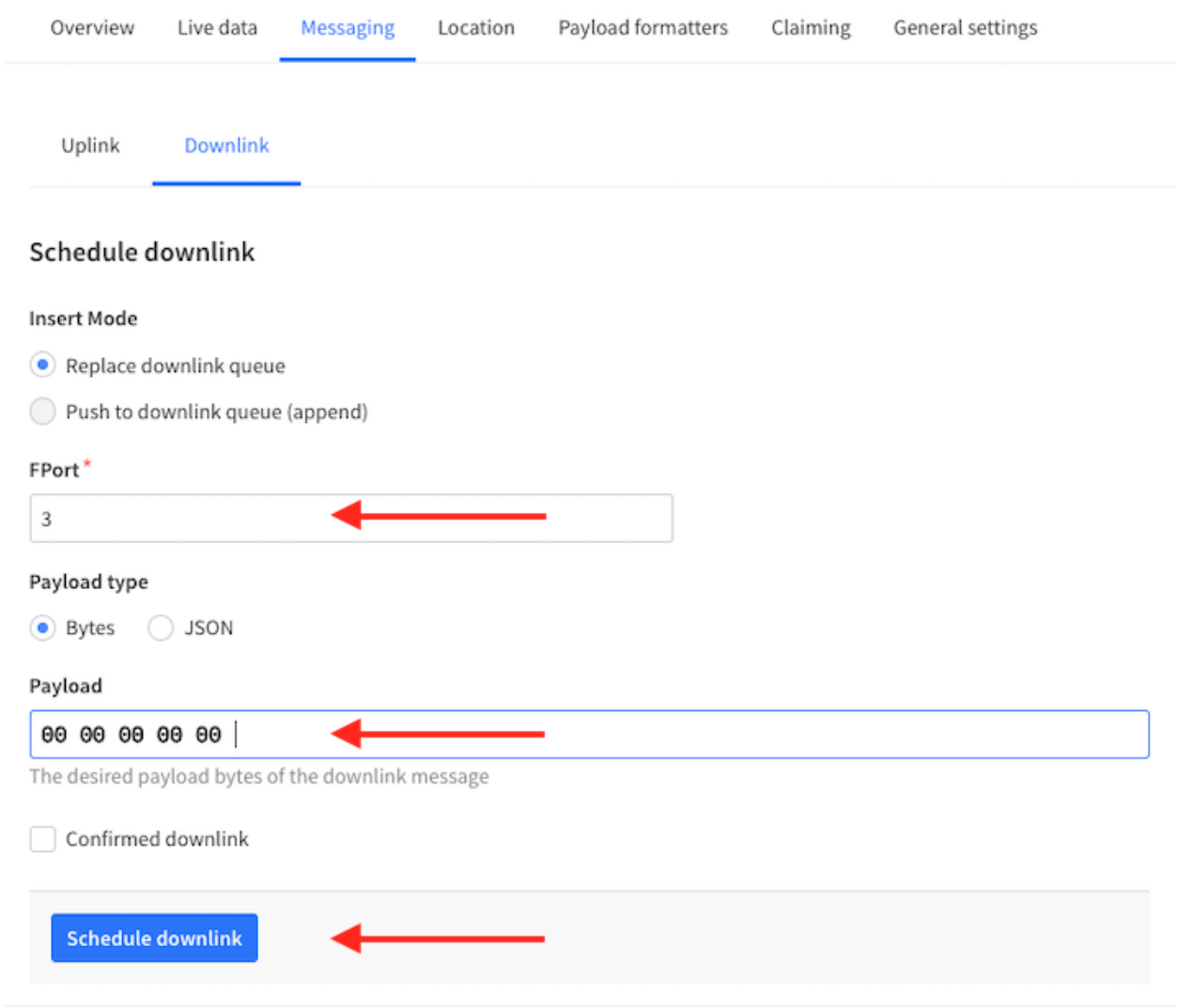
Parameter	**Name**	**R/W**	**Size**	**Type**	**Default Value**	**Description**
Factory Defaults	fdef	W	2B	uint16	0xEEEE	Erase NFC EEPROM.

DEFAULT DOWNLINK PACKET: EE EE

8. LED - Blink Sequence

- Boot Ok - 1x Blink
- 1x LED Blink if CO2 is more than “lth” value,
- 2x LED Blink if CO2 is more than 2,000 ppm,
- 5x repeat every 12 minutes if the value remains greater than “lth”,
- repeat every 60 minutes until value remains greater than “lth”.

9. TTN Downlink Guide



Application > End Device > Messaging > Downlink