

Senstick STB 1.0 LoRaWAN Protocol FW v1.0

1. LoraWAN CONFIG Payload (Uplink)

Parameter:	stat	period	movt	ackco	dr	fid	pid	hw	fw	SUM
Size:	1B	1B	1B	1B	1B	1B	1B	1B	1B	9B

Parameter	Name	Size	Type	Default Value	Description
Status	stat	1B	uint8	0x00	Status Codes: 0x00 - OK Bit1 - Movement Detected Packet Bit2 - Movement Detected Confirmed Bit3 - Accelerometer Failure Bit4 - Temperature Inner Sensor Fail. Bit5 - Temperature Buffer Sensor Fail. Bit6 - NFC IC Failure Bit7 - EUI IC Failure
Send Period	period	1B	uint8	15 min	Data send period in minutes.
Movement Threshold	movt	1B	uint8	11 (352 mg)	Movement threshold to send measurement. (31.25 x movt mg, 0 = OFF, range: 1 - 63)
Packet Confirm	ackco	1B	uint8	24 (6 hours)	Request confirmed packed every N transmissions. 0 = OFF
Data Rate	dr	1B	uint8	128 (ADR on, DR0)	Bit0-6 - DRx Bit7 - ADR status (0 = OFF, 1 = ON)
Family Id	fid	1B	uint8	4	Family Id
Product Id	pid	1B	uint8	11	Product Id
Hardware Version	hw	1B	uint8	1.0	Hardware version (hw / 10)
Firmware Version	fw	1B	uint8	1.0	Firmware version (fw / 10)

NOTE: For the config packet, LoRaWAN Port 3 is used.

2. LoraWAN DATA Payload (Uplink)

Parameter:	stat	tmpi	tmpb	bat	rfcnt	rtmpi	rtmpb	rbat	SUM
Size:	0/1B	2B	2B	1B	0/3B	0/2B	0/2B	0/1B	5/6/13/14B

Parameter	Name	Range	Size	Type	Description
Status	stat	0 - 255	0/1B	uint8	Status Codes: 0x00 - OK Bit0 - Movement Detected Bit1 - Accelerometer Failure Bit2 - NFC IC Failure Bit3 - EUI IC Failure Bit4 - Temperature Buffer Sensor Fail. Bit5 - Temperature Inner Sensor Fail. Bit6 - Wrong Battery Bit7 - Log unavailable
Temperature Buffer	tmpb	-128.00 - 127.00	2B	int16	Temperature Buffer (t / 100)
Temperature Inner	tmpi	-128.00 - 127.00	2B	uint16	Temperature Inner (t / 100)
Battery Level	bat	0 - 255	1B	uint8	0 = 800mV, 255 = 1800 mV
Retransmitted Packet FCNT	rfcnt	0 - 16,777,215	0/3B	uint24	Retransmitted Packet Frame Counter
RP Temperature Buffer	rtmpb	-128.00 - 127.00	0/2B	int16	Temperature Buffer (t / 100)
RP Temperature Inner	rtmpi	-128.00 - 127.00	0/2B	uint16	Temperature Inner (t / 100)
RP Battery Level	rbat	0 - 255	0/1B	uint8	0 = 800mV, 255 = 1800 mV

NOTES:

- For regular packet, LoRaWAN Port 2 is used.
- The status byte is only sent if any of the status modes is triggered.
- Retransmitted Packet parameters are only sent if packet retransmittation is requested (downlink packet).

3. LoRaWAN CONFIG Payload (Downlink) - Send Period

Parameter:	sendp	SUM
Size:	1B	1B

Parameter	Name	Size	Type	Default Value	Description
Send Period	sendp	1B	uint8	15 min	Send period in minutes

DEFAULT DOWNLINK PACKET: 0F

NOTE: For the config packet, LoRaWAN Port 3 is used.

4. LoRaWAN CONFIG Payload (Downlink) – General setup

Parameter:	dr	period	ackco	movt	SUM
Size:	1B	1B	1B	1B	4B

Parameter	Name	Size	Type	Default Value	Description
Period	period	1B	uint8	15 min	Data send period in minutes
Movement Threshold	movt	1B	uint8	11 (352 mg)	Movement threshold to send measurement. (32 x movt mg, 0 = OFF, range: 1 - 63)
Packet Confirm	ackco	1B	uint8	24 (6 hours)	Request confirmed packed every N transmissions, 0 = OFF
Data rate	dr	1B	uint8	128 (ADR on, DR0)	Bit0-6 – DRx Bit7 – ADR status (0 = OFF, 1 = ON)

DEFAULT DOWNLINK PACKET: 80 0F 18 0B

NOTE: For the config packet, LoRaWAN Port 3 is used.

5. LoRaWAN CONFIG Payload (Downlink) - Packet Retransmit

Parameter:	fcnt	SUM
Size:	3B	3B

Parameter	Name	Size	Type	Default Value	Description
Packet Retransmit	fcnt	3B	uint16	N/A	Packet f_cnt ID retransmit request.

NOTE:

- For the config packet, LoRaWAN Port 3 is used.
- Device logs 40 days of data (at 60 min send period), 14 days (at 20 min send period), 10 days (at 15 min send period), or 7 days (at 10 min send period).

6. LoRaWAN CONFIG Payload (Downlink) - Factory Defaults

Parameter:	fdef	SUM
Size:	2B	2B

Parameter	Name	Size	Type	Default Value	Description
Factory Defaults	fdef	2B	uint16	0xEEEE	Erase NFC EEPROM and restore default settings

DEFAULT DOWNLINK PACKET: EE EE

NOTE: For the config packet, LoRaWAN Port 3 is used.

7. LoRaWAN CONFIG Payload (Downlink) - Reboot

Parameter:	reboot	SUM
Size:	2B	2B

Parameter	Name	Size	Type	Default Value	Description
Reboot	reboot	2B	uint16	0xFFFF	Start REBOOT procedure

DEFAULT DOWNLINK PACKET: FF FF

NOTE: For the config packet, LoRaWAN Port 3 is used.

8. LED Indication

Event	LED Color	LED Indication	Repeats
Device Reboot	Red	1 sec Blink	3
Successful JOIN	Red	3 sec Blink	1

9. TTN Downlink Guide

[Overview](#) [Live data](#) [Messaging](#) [Location](#) [Payload formatters](#) [Claiming](#) [General settings](#)

[Uplink](#) [Downlink](#)

Schedule downlink

Insert Mode

☒ Replace downlink queue

☐ Push to downlink queue (append)

FPort*

Payload type

☒ Bytes ☐ JSON

Payload

The desired payload bytes of the downlink message

☐ Confirmed downlink

[Schedule downlink](#)

Application > End Device > Messaging > Downlink