

# **Senstick Temperature Food Probe 4.0 LoRaWAN Protocol FW v1.0**

## 1. LoraWAN CONFIG Payload (Uplink)

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

Parameter	Name	Size	Type	Default Value	Description
Status	stat	1B	uint8	0x00	Status Codes: 0x00 - OK Bit0 - Movement Detected Packet Bit1 - Movement Detected Confirmed Bit2 - Accelerometer Failure Bit3 - NFC Failure Bit4 - EUI IC Failure
Send Period	period	1B	uint8	15 min	Data send period in minutes.
Movement Threshold	movt	1B	uint8	0	Movement threshold to send measurement. (32 x movt mg, 0 = OFF, range: 1 - 63)
Packet Confirm	ackco	1B	uint8	24	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	4	Product Id
Hardware Version	hw	1B	uint8	4.0	Hardware version (hw / 10)
Firmware Version	fw	1B	uint8	1.0	Firmware version (fw / 10)

NOTE: For config packet LoRaWAN Port 3 is used.

## 2. LoraWAN DATA Payload (Uplink)

<b>Parameter:</b>	stat	bat	soil	<b>SUM</b>
<b>Size:</b>	1B	2B	2B	<b>4/5B</b>

Parameter	Name	Range	Size	Type	Description
Status	stat	0 - 255	0/1B	uint8	Status Codes: Bit0 - Movement Detected Packet Bit1 - Movement Detected Confirmed Bit2 - Accelerometer Failure Bit3 - NFC Failure Bit4 - EUI IC Failure
Battery Level	bat	0 - Vbat	2B	uint8	Battery Level
Temperature Probe	tp	-128.00 - 127.00	2B	int16	Temperature Probe

### NOTES:

- For regular packet LoRaWAN Port 2 is used.
- Status byte is only visible if any of the status modes is triggered.

## 3. LoraWAN DATA + PROBE DEBUG DATA Payload (Uplink)

<b>Parameter:</b>	stat	bat	tp	vsen	vntc	vdda	<b>SUM</b>
<b>Size:</b>	1B	2B	2B	2B	4B	2B	<b>12/13B</b>

Parameter	Name	Range	Size	Type	Description
Status	stat	0 - 255	0/1B	uint8	Status Codes: Bit0 - Movement Detected Packet Bit1 - Movement Detected Confirmed Bit2 - Accelerometer Failure Bit3 - NFC Failure Bit4 - EUI IC Failure
Battery Level	bat	0 - Vbat	2B	uint8	Battery Level
Temperature Probe	tp	-128.00 - 127.00	2B	int16	Temperature Probe
Sensor voltage	vsen		2B	uint16	Sensor voltage measured on ADC
NTC resistance	vntc		4B	uint32	Calculated NTC Resistance
VDDA voltage	vdda	Approx. 3.1V	2B	uint16	MCU analog voltage

## NOTES:

- For regular packet LoRaWAN Port 2 is used.
- Status byte is only visible if any of the status modes is triggered.

#### 4. LoraWAN ALERT Payload (Uplink)

<b>Parameter:</b>	movd	<b>SUM</b>
<b>Size:</b>	1B	<b>1B</b>

Parameter	Name	Size	Type	Default Value	Description
Alert	movd	1B	Bool	0x00	Movement detection flag

NOTE: For alert packet LoRaWAN Port 1 is used.

#### 5. LoRaWAN CONFIG Payload (Downlink) – General setup

<b>Parameter:</b>	period	movt	ackco	dr	<b>SUM</b>
<b>Size:</b>	1B	1B	1B	1B	<b>4B</b>

Parameter	Name	Size	Type	Default Value	Description
Period	period	1B	uint8	15 min	Data send period in minutes
Movement Threshold	movt	1B	uint8	0	Movement threshold to send measurement. (32 x movt mg, 0 = OFF, range: 1 - 63)
Packet Confirm	ackco	1B	uint8	24	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: 0F 00 18 FF

NOTE: For config packet LoRaWAN Port 3 is used.

## 6. LoRaWAN CONFIG Payload (Downlink) - Send Period

<b>Parameter:</b>	sendp	<b>SUM</b>
<b>Size:</b>	1B	<b>1B</b>

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

DEFAULT DOWNLINK PACKET: 0F

NOTE: For config packet LoRaWAN Port 3 is used.

## 7. LoRaWAN CONFIG Payload (Downlink) - Reboot

<b>Parameter:</b>	reboot	<b>SUM</b>
<b>Size:</b>	2B	<b>2B</b>

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

DEFAULT DOWNLINK PACKET: FF FF

NOTE: For config packet LoRaWAN Port 3 is used.

## 8. LoRaWAN CONFIG Payload (Downlink) - Factory Defaults

<b>Parameter:</b>	fdef	<b>SUM</b>
<b>Size:</b>	2B	<b>2B</b>

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 config packet LoRaWAN Port 3 is used.

## 9. LoRaWAN CONFIG Payload (Downlink) – Debug Enable

<b>Parameter:</b>	dbggen	<b>SUM</b>
<b>Size:</b>	2B	<b>2B</b>

Parameter	Name	Size	Type	Default Value	Description
Debug enable	dbggen	2B	uint16	0x6400	Additional probe debug bytes in the payload (0x6401 = ON)

DEFAULT DOWNLINK PACKET: 64 00

NOTE: For config packet LoRaWAN Port 3 is used.

## 10.TTN Downlink Guide

Overview Live data **Messaging** Location Payload formatters Claiming General settings

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Uplink **Downlink**

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### Schedule downlink

**Insert Mode**

Replace downlink queue  
 Push to downlink queue (append)

**FPort** \*

3

**Payload type**

Bytes  JSON

**Payload**

00 00 00 00 00 |

The desired payload bytes of the downlink message

Confirmed downlink

**Schedule downlink**

Application > End Device > Messaging > Downlink