Description of the Payload

Wireless Ultrasonic Sensor
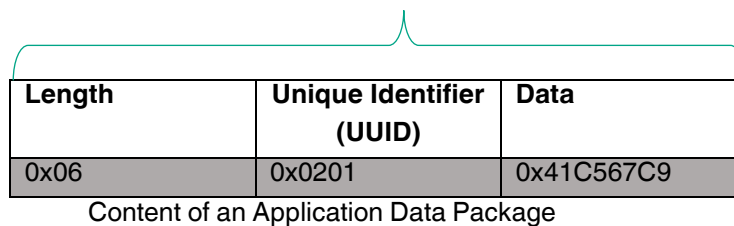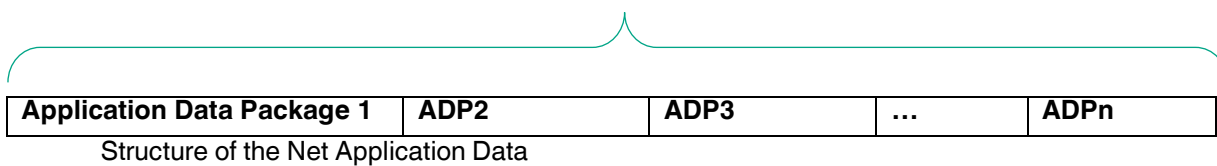**WILSEN.sonic.level**

WS-UCC*-F406-B15-B41*

PEPPERL+FUCHS

LoRaWAN™

Support: fa-info@pepperl-fuchs.com
Internet: www.pepperl-fuchs.com

General Structure of a LoRAWAN Payload

The general structure of a LoRaWAN Payload is as follows:

Commands of physical Layer	Commands of MAC layer	Application Payload	MIC of MAC Layer	CRC of physical layer

Application Data Package 1	ADP2	ADP3	…	ADPn

Structure of the Net Application Data

Length	Unique Identifier (UUID)	Data
0x06	0x0201	0x41C567C9

Content of an Application Data Package

The WILSEN.sonic.level provides its measurement values and information via three different Payloads.

Payload 1

In case GPS positioning is deactivated, the payload for the transmission of measurement data is as follows:

Length of Payload: 20 Bytes

Structure of the Application Data Payload:

ADP1	ADP2	ADP3	ADP4
Proximity in cm	Fill Level in %	Temperature in °C	Battery Status

The following table shows further details on the individual Data Packages:

Unique Identifier UUID (16bit)	Data Package Name	Data type	Data Length (Byte)	Additional Information
0x0B01	proxx_cm	uint16	2	Proximity in cm
0x0B06	fillinglvl_percent	uint8	1	Fill Level in %
0x0201	temp_celcius	float	4	Temperature in °C
0x5101	battery_vol	uint8	1	Battery Status: Value is provided in Volt/10

An example for this Payload is:

04 0B 01 00 24 03 0B 06 64 06 02 01 41 CA 1F DC 03 51 01 26

```
Proximity in cm    Fill Level in %    Temperature in °C    Battery Status
```

The frequency at which data of this Payload is transmitted depends on the set "LoRa Payload Interval". (See manual WILSEN.sonic.level, chapter „LoRa Parameters Menu").

Payload 2

In case GPS positioning is activated, the payload for the transmission of measurement data is as follows:

ADP1	ADP2	ADP3	ADP4	ADP5	ADP6
Proximity in cm	Fill Level in %	Temperature in °C	Battery Status	Geographical Latitude	Geographical Longitude

Length of Payload: 34 Bytes

Structure of the Application Data Packages:

Unique Identifier UUID (16bit)	Data Package Name	Data Type	Data Length (Byte)	Additional Information
0x0B01	proxx_cm	uint16	2	Proximity in cm
0x0B06	fillinglvl_percent	uint8	1	Fill Level in %
0x0201	temp_celcius	float	4	Temperature in °C
0x5101	battery_vol	uint8	1	Battery Status: Value is provided in Volt/10
0x5001	latitude	int32	4	Geographical Latitude: Decimal value in latitude/1000000
0x5002	longitude	int32	4	Geographical Longitude: Decimal value in longitude/1000000

An example for this Payload is:

04 0B 01 00 24 03 0B 06 64 06 02 01 41 CA 1F DC 03 51 01 26 06 50 01 00 00 00 00 06 50 02 00 00 00 00

The frequency at which data of this Payload is transmitted depends on the set "GPS Interval". (See manual WILSEN.sonic.level, chapter „Sensor Menu", „GPS Submenu").

Note
In case GPS positioning is activated, the sensor transmits Payload 1 at the set LoRa Payload Interval and Payload 2 at the set GPS Interval.

Payload 3

Independently of Payload 1 or 2 additionally the sensor transmits Payload 3 ("Heartbeat") every 24 hours. Payload 3 contains information about the sensor in the form of the counter readings for the frequencies of the ultrasonic measurements, the LoRa transfer, the GPS positioning, as well as the battery status.

This Payload has the following structure:

ADP1	ADP2	ADP3	ADP4	ADP5
P+F Serial Number	Counter Reading LoRa transfers	Counter Reading GPS Positioning	Counter Reading Ultrasonic Measurements	Battery Status

Length of Payload: 38 Bytes

Structure of the Application Data Packages:

Unique Identifier UUID (16bit)	Data Package Name	Data Type	Data Length (Byte)	Additional Information
0x5101	Battery Status	uint8	1	Battery Status: Value is provided in Volt/10
0x2A25	P+F Serial Number	uint8(14)	14	
0x3101	Counter Reading LoRa-Transfer	uint16	2	Number of LoRa transmissions
0x3102	Counter Reading GPS Positioning	unit16	2	Number of GPS positionings
0x3103	Counter Reading Ultrasonic Measurements	uint32	4	Number of ultrasonic measurements

An example for this Payload is:

10 2A 25 5F 50 46 5F 4C 6F 52 61 5F 56 31 2E 31 5F 04 31 01 1E E1 04 31 02 00 05 06 31 03 00 00 21 7E 03 51 01 26

Note
This payload transfer cannot be changed. Even if the LoRa and GPS transmission intervals are deactivated, this payload is transmitted as a vital sign (= heartbeat) of the sensor.