HOME OF SENSOR TECHNOLOGY

Desription of the LoRaWAN® interface

- AGS55+ LRW
- AKF10+ LRW
- DPA(x)+ LRW
- FTA54+ LRW
- FTK+ LRW
- LA+ LRW
- LK+ LRW
- Li65+ LRW
- LS02+ LRW
- MCS (x) LRW
- NOVOS 3 LRW
- MWF+ LRW
- WK02+ LRW
- WSA LRW

Revision

Revision	Date	Description	author
A	21.02.2022	Initial release	MD; JD
B	30.10.2023	Extension NOVOS 3 LRW	MD

Thermokons LoRaWAN® interface is used for two different purposes

- Transmitting device process data (e.g. measurement values)
- Adjusting the devices configuration

In general every LoRaWAN® telegramm consists of two parts:

- The identifier for the following data bytes
- The data bytes itself

Example: 0x 10 00A6 12 1688 13 0B

Data types

Following data types are used:

Type	*Amount of bytes*	*min value*	*max value*
INT8	1	-128	127
UINT8	1	0	255
INT16	2	-32768	32767
UINT16	2	0	65535

Measured variables

Identifier	*Data type*	*Designation*	*Unit*	*Divider*	*Description*
0x10	INT16	Temperature	°C	10	276 ≙ 27,6 °C
0x11	INT8	Relative Humidity	% rH	1	54 ≙ 54 % rH
0x12	UINT16	CO2	ppm	1	1548 ≙ 1548 ppm
0x13	UINT16	VOC	%	1	10 = 10%
0x30	UINT16	Absolute pressure	mBar/hPa	1	
0x31	INT16	Differential pressure	Pa	1	
0x32	UINT16	Volume flow	m3/h*	1	*Unit depends on device configuration
0x40	UINT16	Brightness	lux	1	3245 = 3245 lux
0x41	UINT8	Occupancy			Bit 0: actual value; 1=occupied; 0=unoccupied Bit 1-7: Amount of detected movements since last transmission
0x50	UINT8	Reed contact 1			Bit 0: actual value Bit 1-7: Amount of detected switching operation since last transmission
0x51	INT16	Leckage/ Condensation			Bit 15: Actual relay state Bit 0-14: Raw value (0-4095)
0x54	INT8	Energy level	mV	0,05	75 ≙ 1500 mV
0x9500	UINT8	Reed contact 2			Bit 0: actual value Bit 1-7: Amount of detected switching operation since last transmission

Configuration- and device parameter

Additionally to the devices payload configuration- and device parameter can be transmitted via LoRaWAN® downlink. The structure consists analog to the payloadf consists of two parts.

- The identifier for the following data bytes
- The data bytes itself

Example: 0x C000 0000012C

Device information

Identifier	*Data type*	*Designation*	*Unit*	*Default*	*Description*
0xC000	UINT16	Device key			0x 40 01 = MCS LRW 0x 40 02 = NOVOS 3 LRW 0x 40 03 = USE BAT LRW

General device configuration

Identifier	*Data type*	*Designation*	*Unit*	*Default*	*Description*
0xC100	UINT16	Control commands			1: Reset Configuration (Default values) 2: Save Configuration 3: Reboot
0xC106	UINT16	Heartbeat intervall	min	1440	
0xC107	UINT16	Hysteresis transmission behaviour		1	0= no hysteresis 2= medium hystersis 1= big hysteresis 3= small hystersis
0xC108	UINT16	Messsurement/Uplink intervall	s/min*	60/5*	Depends on device type (see software manual)
0xC10B	UINT16	Latency time digital inputs	s	10	
0x8413	UINT16	Disabeling time occupancy sensor	s	10	
0x8414	UINT16	Follow-up time occupancy sensor	s	600	

Configuration LoRaWAN®

Identifier	*Data type*	*Designation*	*Unit*	*Default*	*Description*
0xC216	UINT16	Uplink/Downlink Port		2	Gültige Ports: 1 - 223
0xC217	UINT16	Adaptive Datenrate (ADR)		1	0= disabled | 1= enabled
0xC218	UINT16	Datenrate (DR) default		3	0=DR0/Spreading Factor 12 1=DR1/Spreading Factor 11 2=DR2/Spreading Factor 10 3=DR3/Spreading Factor 9 4=DR4/Spreading Factor 8 5=DR5/Spreading Factor 7
0xC219	UINT16	TX Power		0	0=TxPower 0 (MaxEIRP) 1=TxPower 1 (MaxEIRP-2dB) 2=TxPower 2 (MaxEIRP-4dB) 3=TxPower 3 (MaxEIRP-6dB) 4=TxPower 4 (MaxEIRP-8dB) 5=TxPower 5 (MaxEIRP-10dB) 6=TxPower 6 (MaxEIRP-12dB) 7=TxPower 7 (MaxEIRP-14dB)
0xC21A	UINT16	Channel-Mask		0xFF	Bit coded: Activation of Sub-Channel 1-8 0=disabled; 1=enabled
0xC21B	UINT16	Number of Retransmissions (nbtrans)		1	Valid range: 1-15
0xC21C	UINT16	Re-Join Intervall	min	0	0 = disabeld; 0x 05 A0 = Re-Join after 1440 min
0xC21D	UINT16	Confirmation Activation (for Heartbeat)		0	0= disabled; 1=enabled