

((SENSONEO))

Quatro Sensor

PAYLOAD DESCRIPTION

for LoRa, NBIoT, GPRS & CATM1

SENSONEO j.s.a
Stare Grunty 12
841 04 Bratislava
Slovakia

info@sensoneo.com
support@sensoneo.com
www.sensoneo.com

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Author:	DM
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Quatro Sensor FW 175 Payload Description for LoRaWAN, NBIoT, GPRS, and CATM1

TX data structure

Offset	Name	Type	Note	Size in B	Description
0	head	sens_tx_head_t	2B, 4b, 4b, 8b	4	0xFF; 0xFF; 4b = 0 (QS); 4b = 0 - Master, 1 - slave, 2 - standalone; 8b = FW version
4	c_id	uint32_t	Sensor ID (little endian)	4	Convert from little endian to big endian
8	events	uint8_t	Events (see table below)	1	see Events table below
9	sonar0	uint8_t	value * 2 = distance [cm]	1	hex to decimal * 2 = measured distance in cm
10	sonar1	uint8_t	value * 2 = distance [cm]	1	hex to decimal * 2 = measured distance in cm
11	sonar2	uint8_t	value * 2 = distance [cm]	1	hex to decimal * 2 = measured distance in cm
12	sonar3	uint8_t	value * 2 = distance [cm]	1	hex to decimal * 2 = measured distance in cm
13	voltage	uint8_t	2500 + value * 10 = voltage [mV]	1	2500 + (value from hex to decimal * 10) = voltage in mV
14	temperature	uint8_t	temperature [°C]	1	hex to decimal
15	tilt	uint8_t	sensor tilt [°]	1	hex to decimal (used in older FWs 162 to 169)
16	timestamp	uint32_t	unix timestamp (little endian)	4	From little endian to big endian and then from hex to decimal = UNIX timestamp
20	latitude	float	GPS latitude (little endian)	4	From little endian to big endian and then float hex to decimal = GPS degrees
24	latitude_dir	char	Latitude dir	1	4E = N (hex to ascii) or 53 = S (hex to ascii)
25	longitude	float	GPS longitude (little endian)	4	From little endian to big endian and then float hex to decimal = GPS degrees
29	longitude_dir	char	Longitude dir	1	45 = E (hex to ascii) or 57 = W (hex to ascii)
30	events_cnt	uint8_t	events counter	1	hex to decimal
31	crc	uint8_t	CRC value for data validation	1	Security feature
32	tx_event	uint8_t	Event count	1	Number of events

Events

HEX	Event	Description
0x01	SENS_EVENT_MEASURE	Measurement ended
0x02	SENS_EVENT_FIRE	Temperature threshold
0x04	SENS_EVENT_TILT	Tilt threshold
0x08	SENS_EVENT_SLAVE	Slave device TX
0x10	SENS_EVENT_LOWBAT	Battery Low
0x20	SENS_EVENT_GPSFIX	GPS fix done
0x40	SENS_EVENT_STARTUP	After startup or reboot

Payload example

fff02af99012002011407070775160027549c5d939840424edf968841450d4401	
ffff	header
02af	0 = QS ; 2 = standalone ; af = 175
99012002	99 01 20 02 ----> 02200199
01	01 from Events table = measurement ended
14	14 (hex) = 20 (dec) ; 20 * 2 = 40 cm
07	7 (hex) = 7 (dec) ; 7 * 2 = 14 cm
07	7 (hex) = 7 (dec) ; 7 * 2 = 14 cm
07	7 (hex) = 7 (dec) ; 7 * 2 = 14 cm
75	75 (hex) = 117 (dec) ; 2500 + (117 * 10) = 3670 mV
16	16 (hex) = 22 (dec) ; temperature = 22°C
00	not applicable for this FW
27549c5d	27 54 9c 5d -> 5d9c5427 (hex) = 1570526247 (dec) UNIX time = 10/08/2019 @ 9:17am (UTC)
93984042	93 98 40 42 -> 42409893 (hex) = 48.148998260498046875 (float)
4e	4e (hex) = N (ascii)
df968841	df 96 88 41 -> 418896df (hex) = 17.0736675262451171875 (float)
45	45 (hex) = E (ascii)
0d	0d (hex) = 13 (dec) ; 13th message in a row
4	CRC
01	Event count