Elsys sensors payload

All Elsys LoRa sensor devices use the same payload structure.

1 Elsys payload

1.1 Sensor data payload

One transmission can contain several sensor measurements.

Sensor data	Sensor data	....	Sensor data

1.2 Sensor data

Size:	1	1-n	0-4
Sensor data:	Type	Data	[OFFS]

1.2.1 Sensor Type

Type of sensor and number of offset bytes

Bit:	2 [7-6]	6 [5-0]
Type bits:	NOB	STYPE

1.2.1.1 NOB (Number of offset bytes)

Bit 7	Bit 6	Name
0	0	0 Offset bytes
0	1	1 Offset byte
1	0	2 Offset bytes
1	1	4 Offset bytes

Elektroniksystem i Umeå AB
www.elsys.se
Industrivägen 12
90130 Umeå
Sweden

email: info@elsys.se
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1.2.1.2 Stype

Bits 5…0	(hex)	Type	Data size	Comment
0	0x00	Reserved		
1	0x01	Temperature	2	-3276.5°C-->3276.5°C (Value of: 100→10.0 °C)
2	0x02	Humidity	1	0-100%
3	0x03	Acceleration/level	3	X,Y,Z -127-127 (Value of:63=1G)
4	0x04	Light	2	0-65535 Lux
5	0x05	Motion (PIR)	1	0-255 (Number of motion count)
6	0x06	Co2	2	0-10000ppm
7	0x07	Battery	2	0-65535mV
8	0x08	Analog1	2	0-65535mV
9	0x09	GPS	6	3 bytes lat, 3 bytes long,binary
10	0x0A	Pulse count	2	0-65535 (between two send intervals)
11	0x0B	Pulse count ABS	4	Absolute value 0-4294967295
12	0x0C	External temp1	2	-3276.5C-->3276.5C
13	0x0D	External Digital/Button	1	0,1 (on/off, down/up)
14	0x0E	External distance	2	0-65535mm
15	0x0F	Motion (acceleration movements)	1	0-255 (interrupts from accelerometer)
16	0x10	External IR temperature	4	2bytes internal temp 2 bytes external, -3276.5C-->3276.5C
17	0x11	Occupancy	1	0-255 (0 --> no body,1-->body,2--> Body) ERS Desk: 0 --> no body,1-->Pending(entering, leaving),2--> Occupied ERS Eye: 0 --> no body, 1-->PIR triggered. 2--> Heat triggered
18	0x12	External water leak	1	0-255
19	0x13	Grideye (room occupancy)	65	1byte ref,64byte pixel temp 8x8 (reserved for future use)
20	0x14	Pressure	4	Pressure data (hPa)
21	0x15	Sound	2	Sound data,1 byte peak/ 1byte avg (dB)
22	0x16	Pulse count 2	2	0-65535
23	0x17	Pulse count 2 ABS	4	Absolute value 0-4294967295
24	0x18	Analog 2	2	0-65535mV
25	0x19	External temp 2	2	-3276.5C-->3276.5 °C (Value of: 100→10.0 °C)
26	0x1A	External digital 2	1	0,1 (on/off, down/up)
61	0x3D	Debug information	4	Data depends on debug information
62	0x3E	Sensor settings	n	Sensor setting sent to server at startup (first package). Sent on Port+1. See sensor settings for more information.
63		RFU		Reserved for future use

1.2.2 Data

Sensor value

1.2.3 Offset

Number of second's since data was sampled

1.3 Example

1.3.1 Temperature

1.3.1.1 Temperature 20.5°C

```
"0x01,0x00CD" Payload 3 bytes
 TYPE,DATA
```

1.3.1.2 Temperature 20.5°C 10 sec ago

```
"0x41,0x00CD,0x0A" Payload 4 bytes
 TYPE, DATA ,OFFSET
```

1.3.1.3 Temperature 20.5°C 24 hours ago

```
"0xC1,0x00CD,0x00015180" Payload 7 bytes
```

1.3.1.4 Temperature 20.5°C and 26.8°C 10 sec ago

```
"0x01,0x00CD,0x41,0x010C,0x0A" Payload 7 bytes
 TYPE, DATA ,TYPE, DATA ,OFFSET
```

1.3.2 Combined sensors

1.3.2.1 Raw data

```
"0100e202290400270506060308070d62"
```

1.3.2.2 Decoded into groups

```
TYPE,DATA
  01 00e2 → Type: Temperature, Value: 226→22.6°C
  02 29   → Type: Humidity, Value: 41%Rh
  04 0027 → Type: Light, Value: 39Lux
  05 06   → Type: Motion,Value:6
  06 0308 → Type: Co2,Value:776ppm
  07 0d62 → Type: Voltage,Value:3426→3.426V
```

2 RAW payload (obsolete)

All sensor data are sent without header and offset and only the latest value are sent.

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www.elsys.se
Industrivägen 12
90130 Umeå
Sweden

email: info@elsys.se

2.1 Sensor data payload

One transmission can contain several sensor measurements.

Sensor data	Sensor data	....	Sensor data

2.2 Sensor data

Size:	1-n
Sensor data:	Data

2.2.1 Sensor data size

Type	Data size	Comment
Reserved		
Temperature	2	-3276.8°C -->3276.7
Humidity	1	0-100%

2.2.2 Sensor data order

Sensor data are always sent in the same order. If the sensor type is inactivated the data is removed and remaining data is shifted to the left.

sensor 1	sensor 2	sensor 3	sensor 4
Temperature	Humidity	Acceleration	Battery

2.3 Example

2.3.1 Temperature

2.3.1.1 *Temperature 20.5C*

```
“0x00CD” Payload 2 bytes
```

2.3.1.2 *Temperature 20.5C ,Humidity 30%*

```
“0x00CD,0x1E” Payload 3 bytes
```

2.3.1.3 *Humidity 30%*

```
“0x1E” Payload 1 byte
```

2.3.1.4 *Humidity 30%, Battery 3.61V*

```
“0x1E,0x0E1A” Payload 3 bytes
```

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