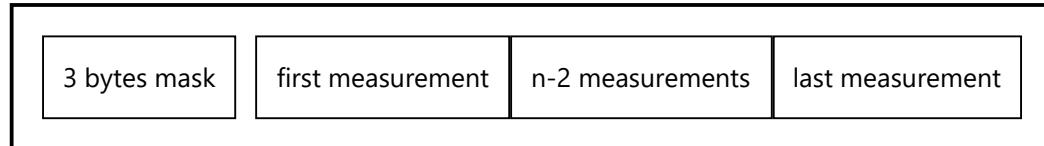


Enerthing payload description

The Enerthing payload is set in two parts. The first three bytes are a mask. The following bytes are the corresponding measurements with the length of one (Int 8) or two (Int16) bytes. The two byte measurements are send MSB first. The measurements are in the same order as the mask's flags. Some measurements need to be converted from int to float by applying a factor to the sent value. This can be read in the *description* column of the following table. The column *Measurement name* corresponds with the name in our Payload Formatter.

Payload structure



Payload measurements

Mask	Datatype	Unit	Measurement name	Value range	Description
0x000001	Unsigned Int 16	mV	battery	2600-3800	Battery voltage in mV
0x000002	Unsigned Int 16	mV	photovoltaic	0-5500	Photovoltaic voltage in mV
0x000004	Unsigned Int 16	µA	impp_pv	0-32767	Photovoltaic current in µA
0x000008	Unsigned Int 16	µW	photovoltaic_power	0-32767	Photovoltaic power in µW
0x000010	Signed Int 16	°C * 100	temperature	-32768-32767	Divide by 100 to get the temperature in °C as float with two decimal places
0x000020	Unsigned Int 16	% RH * 100	humidity	0-10000	Divide by 100 to get the relative humidity in % RH as float with two decimal places

Mask	Datatype	Unit	Measurement name	Value range	Description
0x000080	Unsigned Int 16	ppm	co2	0-5000	Co2 concentration in ppm
0x000100	Unsigned Int 8	enum, <i>calibration_mode</i>	co2_calibration	1-2	Last co2 calibration type
0x000200	Unsigned Int 8	%	motion	0-100	<p>Value \geq 1 % \rightarrow PIR has been triggered at least one time in the last interval (15 min default).</p> <p>Value = 100 % \rightarrow the PIR has been triggered continuously in the last interval.</p>
0x000400	None	boolean	event_motion	0-1	Motion event occurs when the PIR sensor registers motion after a certain time without motion. It is set by the mask, there is no additional payload byte
0x000800	Signed Int 8	°C	event_heating	-2-2	Currently not used
0x001000	Unsigned Int 8	boolean	event_desktop	0-1	Currently not used
0x002000	Unsigned Int 8	enum, <i>event_manipulation</i>	event_manipulation	0-4	Manipulation status of the device

Mask	Datatype	Unit	Measurement name	Value range	Description
0x004000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_current_power_monitor	0-10	Initial self test for the current power monitor
0x008000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_barometer	0-10	Initial self test for the barometer
0x010000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_accelerometer	0-10	Initial self test for the accelerometer
0x020000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_co2	0-10	Initial self test for the co2 sensor
0x040000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_pyd	0-10	Initial self test for the motion sensor
0x080000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_nfc	0-10	Initial self test for the nfc interface
0x100000	Unsigned Int 8	enum, <i>validation_result</i>	validation_test_battery	0, 9, 10	Initial battery voltage measurement

Enums

calibration_mode

Integer Value	Name	Description
1	PERIODIC_CALIBRATION	The sensor has been automatically calibrated
2	MANUAL_CALIBRATION	The Sensor has been manually calibrated

validation_result

Integer Value	Name	Description
0	OK	Sensor works correct
1	SPI_ERROR	Communication error on the SPI bus
2	I2C_ERROR	Communication error on the I2C bus
3	THRESHOLD_ERROR	Invalid measurement has been taken

Integer Value	Name	Description
4	TIMEOUT	Sensor timed out during measurement
5	UNDEFINED_ERROR	General error
6	NOT_INITIALIZED	Sensor is not initialized
7	ID_ERROR	Sensor returned wrong sensor id
8	BATTERY_ERROR	Unable to read the battery voltage
9	BATTERY_LOW	Batter voltage is between 3250 mV - 3300 mV
10	BATTERY_CRITICAL	Battery voltage is under 3250 mV

event_manipulation

Integer Value	Name	Description
0	NONE	No event occurred
1	TOUCH	The sensor has been touched, but is still in its original position
2	FALL	The sensor has fallen down
3	MOVING	The sensor is still in movement 5 seconds after the initial touch
4	NEW_POS	The sensor has been moved to a new position but is not moving anymore 5 seconds after initial touch

Example

Payload

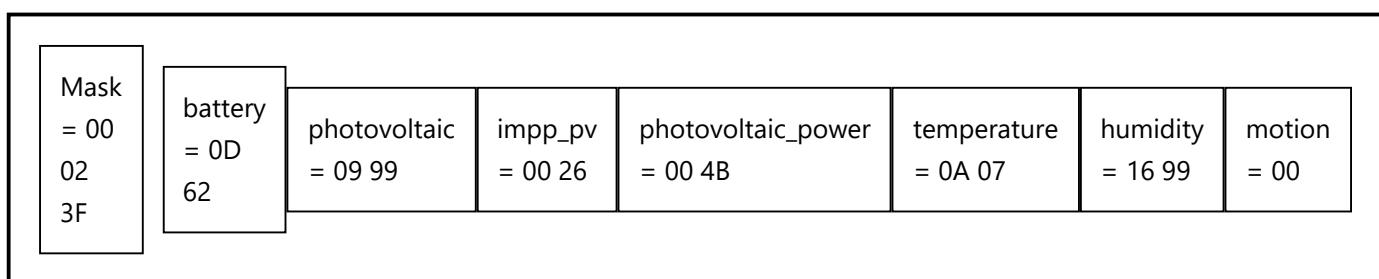
00 02 3F 0D 62 09 99 00 26 00 4B 0A 07 16 99 00

Destructure payload

Payload Mask	measurement mask	Result bitwise and	measurement length in byte	resulting payload for measurement	remaining payload
00 02 3F	0x000001	true	2	0D 62	09 99 00 26 00 4B 0A 07 16 99 00
00 02 3F	0x000002	true	2	09 99	00 26 00 4B 0A 07 16 99 00
00 02 3F	0x000004	true	2	00 26	00 4B 0A 07 16 99 00
00 02 3F	0x000008	true	2	00 4B	0A 07 16 99 00

Payload Mask	measurement mask	Result bitwise and	measurement length in byte	resulting payload for measurement	remaining payload
00 02 3F	0x000010	true	2	0A 07	16 99 00
00 02 3F	0x000020	true	2	16 99	00
00 02 3F	0x000040	false	0	none	00
00 02 3F	0x000080	false	0	none	00
00 02 3F	0x000100	false	0	none	00
00 02 3F	0x000200	true	0	00	none
00 02 3F	0x000400	false	0	none	none
00 02 3F	0x000800	false	0	none	none
00 02 3F	0x001000	false	0	none	none
00 02 3F	0x002000	false	0	none	none
00 02 3F	0x004000	false	0	none	none
00 02 3F	0x008000	false	0	none	none
00 02 3F	0x010000	false	0	none	none

Visual representation



Result:

Measurement	Value	Unit
battery	3426	mV
photovoltaic	2457	mV
impp_pv	38	µA
photovoltaic_power	75	µW
temperature	25.67	°C
humidity	57.85	% RH
motion	0	%