



Lightricity Beacon Packet Format

Version 0.0.1

Revision	Date	Description
0.0.1	17/08/2021	Initial Draft Version

Beacon format

***All bytes are in little endian format**

Byte Offset	Description	Value	Remarks
0	Data length	0x02	2 bytes
1	Data type	0x01	Flags
2	Data	0x06	LE and BR/EDR flag
3	Data length	-	Depends on "Lightricity Data"
4	Data type	0xFF	Manufacturer specific data
5	Company ID (LSB)	0x96	Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A	
7	Frame Type	1 - 255	0 – Not used 1 - Default value 2 to 255 – RFU
8	Lightricity Data Size (Bit 6-7)	1 - 4	Size of "Lightricity Data" (Byte offset 9) 00 – 1 byte 01 – 2 bytes 10 – 3 bytes 11 – 4 bytes
	Lightricity Data Type (Bit 0 - 5)	0 - 63	0 – Vendor ID 1 – Sensor ID 2 – Beacon counter (Maximum 2 Bytes, resets to 0, if the light level is too low) 3 – MAC address 4 – TX Power 5 to 20 – RFU 21 – Temperature (Unit – degC) (8.8 fixed-point, Always 2 bytes) 22 – Humidity (8.8 fixed-point, Always 2 bytes) 23 – Pressure (Unit - Pa) 24 – Lux (Unit – Lux) 25 – Co2 (Unit - ppm) 26 – Acceleration* (X, Y, Z) (Unit – mg) (8.8 fixed-point) *Always 6 bytes (Ignore 'Lightricity Data Size (Bit 6-7)') 27 – Motion (0 – Idle, 1 - Motion) 28 – Button event (0 – No Event, 1 – Button pressed) 29 to 63 – RFU
9	Lightricity Data	-	Depends on data type and data size (byte offset 8)

Example #1

- Raw data - 0201060FFF960A 01 00 01 41 0910 42 0001 55 EDF7
- Sensor ID – 4105
- Beacon counter – 256
- Temperature – -20.67 degC

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x0F		15 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
11	Lightricity Data - Byte 0	0x09		Sensor ID – 0x1009 (4105)
12	Lightricity Data - Byte 1	0x10		
13	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
14	Lightricity Data - Byte 0	0x00		Beacon Counter – 0x0100 (256)
15	Lightricity Data - Byte 1	0x01		
16	Lightricity Data Size (Bit 6-7)	01	0x55	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	010101		21 – Temperature (Unit – degC)
17	Lightricity Data - Byte 0	0xED		Temperature – 0xF7ED (-2067) -2067 – -20.67 degC
18	Lightricity Data - Byte 1	0XF7		

Example #2

- 02010614FF960A 01 00 01 41 0910 02 FF 55 0993 56 E10A 57 5525
- Sensor ID - 4105
- Beacon counter - 255
- Temperature - 24.51 degC
- Humidity - 27.85 %
- Pressure - 9557 Pa

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x14		20 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
11	Lightricity Data - Byte 0	0x09		Sensor ID – 0x1009 (4105)
12	Lightricity Data - Byte 1	0x10		
13	Lightricity Data Size (Bit 6-7)	00	0x02	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
14	Lightricity Data - Byte 0	0xFF		Beacon counter – 0xFF (255)
15	Lightricity Data Size (Bit 6-7)	01	0x55	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	010101		21 – Temperature (Unit – degC)
16	Lightricity Data - Byte 0	0x09		Temperature – 0x0993 (2451) 2451 – 24.51 degC
17	Lightricity Data - Byte 1	0x93		
18	Lightricity Data Size (Bit 6-7)	01	0x56	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	010110		22 – Humidity (Unit – %)
29	Lightricity Data - Byte 0	0xE1		Humidity – 0x0AE1 (2785) 2785 – 27.85 %
20	Lightricity Data - Byte 1	0x0A		
21	Lightricity Data Size (Bit 6-7)	01	0x57	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	010111		23 – Pressure (Unit – Pa)
22	Lightricity Data - Byte 0	0x55		Pressure – 0x2555 (9557) 9557 Pa
23	Lightricity Data - Byte 1	0x25		

Example #3

- 0201060FFF960A 01 00 01 41 0910 42 0001 56 E10A
- Sensor ID - 4105
- Beacon Counter - 256
- Humidity - 27.85 %

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x0F		15 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
11	Lightricity Data - Byte 0	0x09		Sensor ID – 0x1009 (4105)
12	Lightricity Data - Byte 1	0x10		
13	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
14	Lightricity Data - Byte 0	0x00		Beacon counter – 0x0100 (256)
15	Lightricity Data - Byte 1	0x01		
16	Lightricity Data Size (Bit 6-7)	01	0x56	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	010110		22 – Humidity (Unit – %)
17	Lightricity Data - Byte 0	0xE1		Humidity – 0x0AE1 (2785)
18	Lightricity Data - Byte 1	0x0A		2785 – 27.85 %

Example #4

- 02010610FF960A 01 00 01 41 0910 42 0001 97 B0AD01
- Sensor ID - 4105
- Beacon Counter - 256
- Pressure - 110000 Pa

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x10		16 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity Company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
11	Lightricity Data - Byte 0	0x09		Sensor ID – 0x1009 (4105)
12	Lightricity Data - Byte 1	0x10		
13	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon Counter
14	Lightricity Data - Byte 0	0x00		Beacon counter – 0x0100 (256)
15	Lightricity Data - Byte 1	0x01		
16	Lightricity Data Size (Bit 6-7)	10	0x97	10 – 3 bytes
	Lightricity Data Type (Bit 0 - 5)	010111		23 – Pressure (Unit – Pa)
17	Lightricity Data - Byte 0	0xB0		Pressure – 0x01ADB0 (110000) 110000 Pa
18	Lightricity Data - Byte 1	0xAD		
19	Lightricity Data - Byte 2	0x01		

Example #5

- 0201060EFF960A 01 00 01 02 07 41 1010 583B03
- Beacon Counter - 7
- Sensor ID - 4106
- Light: 1654 lux

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x0E		14 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	00	0x02	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon Counter
11	Lightricity Data - Byte 0	0x07		Beacon counter – 0x07 (7)
12	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
13	Lightricity Data - Byte 0	0x10		Sensor ID – 0x1010 (4106)
14	Lightricity Data - Byte 1	0x10		
15	Lightricity Data Size (Bit 6-7)	01	0x58	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	011000		24 – Lux (Unit – lux)
16	Lightricity Data - Byte 0	0x3B		Lux – 0x033B (1654)
17	Lightricity Data - Byte 1	0x03		1654 – 1654 lux

Example #6

- 0201060EFF960A 01 00 01 42 0001 41 1010 18C8
- Beacon counter - 256
- Sensor ID - 4106
- Light: 200 lux

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x0E		14 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
11	Lightricity Data - Byte 0	0x00		Beacon counter – 0x0100 (256)
12	Lightricity Data - Byte 1	0x01		
13	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
14	Lightricity Data - Byte 0	0x10		Sensor ID – 0x1010 (4106)
15	Lightricity Data - Byte 1	0x10		
16	Lightricity Data Size (Bit 6-7)	00	0x18	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	011000		24 – Lux (Unit – lux)
17	Lightricity Data - Byte 0	0xC8		Lux – 0xC8 (200) 200 – 200 lux

Example #7

- 0201060FFF960A 01 00 01 42 0001 01 AF 595B03
- Beacon Counter - 256
- Sensor ID - 4107
- CO2 level: 859 ppm

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x0F		15 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
11	Lightricity Data - Byte 0	0x00		Beacon counter – 0x0100 (256)
12	Lightricity Data - Byte 1	0x01		
13	Lightricity Data Size (Bit 6-7)	00	0x01	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
14	Lightricity Data - Byte 0	0xAF		Sensor ID – 0xAF (175)
16	Lightricity Data Size (Bit 6-7)	01	0x59	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	011001		25 – CO2 (Unit – ppm)
17	Lightricity Data - Byte 0	0x5B		CO2 – 0x035B (859) 859 – 859 ppm
18	Lightricity Data - Byte 1	0x03		

Example #8

- 0201060FFF960A 01 00 01 42 0001 41 1210 DA 0900FFF9D403
- Beacon Counter - 256
- Sensor ID - 4108
- Acceleration: 9 mg/X, -7 mg/Y, 980 g/Z

Byte Offset	Description	Value		Remarks
0	Data length	0x02		2 bytes
1	Data type	0x01		Flags
2	Data	0x06		LE and BR/EDR flag
3	Data length	0x13		19 bytes
4	Data type	0xFF		Manufacturer specific data
5	Company ID (LSB)	0x96		Lightricity company ID (0x0A96)
6	Company ID (MSB)	0x0A		
7	Frame Type	0x01		Frame Type – 0x01
8	Lightricity Data Size (Bit 6-7)	00	0x00	00 – 1 byte
	Lightricity Data Type (Bit 0 - 5)	000000		0 – Vendor ID
9	Lightricity Data - Byte 0	0x01		Vendor ID – 0x01
10	Lightricity Data Size (Bit 6-7)	01	0x42	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000010		2 – Beacon counter
11	Lightricity Data - Byte 0	0x00		Beacon counter – 0x0100 (256)
12	Lightricity Data - Byte 1	0x01		
13	Lightricity Data Size (Bit 6-7)	01	0x41	01 – 2 bytes
	Lightricity Data Type (Bit 0 - 5)	000001		1 – Sensor ID
14	Lightricity Data - Byte 0	0x12		Sensor ID – 0x1012 (4108)
15	Lightricity Data - Byte 1	0x10		
16	Lightricity Data Size (Bit 6-7)	11	0xDA	6 bytes*
	Lightricity Data Type (Bit 0 - 5)	011010		26 – Acceleration (Unit – mg) *For type 26, Data size shall be always 6 bytes
17	Lightricity Data - Byte 0	0x09		Acceleration X axis – 0x0009 (9) 9 – 0.009 g
18	Lightricity Data - Byte 1	0x00		
19	Lightricity Data - Byte 2	0xFF		Acceleration Y axis – 0xFFFF (65529) 65529 – -0.007 g
20	Lightricity Data - Byte 3	0xF9		
21	Lightricity Data - Byte 4	0xD4		Acceleration Z axis – 0x03D4 (980) 980 – 0.98 g
22	Lightricity Data - Byte 5	0x03		