

Revisions

- #1 2018.05.28 Initial version
- #2 2018.11.12 Modified version for UnaSensors V1 feature change.
- #2.1 2018.11.12 Add UnaSensors Bell press cancel delay time config.
- #2.2 2018.11.13 Fix Voltage MAJOR and MINOR issue.
- #2.3 2018.11.14 Fix Beacon packet format, in timer interval mode should be move count.
- #2.4 2018.12.11 Update UnaSensor Bell event data format from V3 FW, delete battery level threshold.
Naming fix for HW Table.
- #2.5 2019.01.19 Fix Voltage calculation formula, FW naming, CONFIG example, ADD FW table.
- #2.6 2019.01.21 Add and fix data packet for UnaSensor Sense negative temperature, protect deaggragate format.
- #2.7 2019.02.01 Fix UnaSensor Sense temperature and humidity data format for uplink data and downlink threshold.
- #2.8 2019.04.09 Fix UnaSensor HW version table.
- #2.8.1 2019.04.09 Fix UnaSensor HW version table with naming issue.
- #2.9.0 2019.04.30 Add Heart Beat mode.

Communication Scenario

- (1) UnaSensor broadcasts a message using Sigfox technology, optionally requesting to receive back a message from UnaCloud.
- (2) Sigfox Cloud relays the message to UnaCloud.
- (3) UnaCloud interprets the message.
- (4) If requested by the UnaSensor, UnaCloud can send back a message to it.

Message Types

UnaSensors are sending 3 types of messages (=uplink): STATUS, TIMER and EVENT.

These messages following the format below:

Byte	1	2	3	4	5	6	7	8	9	10	11	12
	Msg Type	Data1		Data2		Data3		Data4		Data5		

	Heart Beat	Device VOLTAGE		Device Mode	Device Interval	Device LED Color (High 4 bits) Long press config (Low 4 bits)	Device Cancellation time config (8 bits)					
	0x04	Actual Voltage = VOLTAGE / 1000 Ex: 0A4B 0A4B (Hex) = 2635 (Dec) Voltage = 2635/1000 = 2.635V		[Mode] 0x1: Timer 0x2: Event 0x3: Timer+Event 0x4: Event + Heart Beat [Sensitivity] 0x1: Low 0x2: Mid 0x3: High	Interval = 24h / Value Ex: 0x01 Ultra Low (uplink only) 1 msg/24h 0x04 1 msg/6h 0x30 1 msg/30 min 0x60 1 msg/15 min max: 0x8b							
SENSE	TIMER	INTERVAL	# 1/2 TEMPERATURE		# 2/2 TEMPERATURE		# 1/2 REL. HUMIDITY		# 2/2 REL. HUMIDITY			
	0x01	UINT8	MAJOR	MINOR	MAJOR	MINOR	MAJOR	MINOR	MAJOR	MINOR		
	EVENT	TEMPERATURE		REL. HUMIDITY		TRIGGER	[TRIGGER] Bit Mask of triggered Thresholds 1000 = 0x08 = MAX_1 0100 = 0x04 = LOW_1 0010 = 0x02 = MAX_2 0001 = 0x01 = LOW_2 Ex: 0x0A = MAX_1 MAX_2					
	0x02	INT16		INT16		BITMASK						
		[TEMPERATURE]:	[REL. HUMIDITY]:									
		Temperature = TEMPERATURE / 100		Humidity = REL. HUMIDITY / 100								

		Ex: 1B39 Temperature = 1B39 / 100 = 6969 / 100 = 69.69 Ex: E237 Temperature = E237 / 100 = -7625 / 100 = -76.25	Ex:0932 Humidity = 2354 / 100 = 23.54									
	Heart Beat	VOLTAGE	Mode	Interval	MAX_1		LOW_1		MAX_2	LOW_2		
	0x04	Actual Voltage = VOLTAGE / 1000 Ex:0A4B 0A4B (Hex)=2635 (Dec) Voltage = 2635/1000=2.635V	[Mode] 0x1: Timer 0x2: Event 0x3: Timer+Event 0x4: Event + Heart Beat [Sensitivity] 0x1: Low 0x2: Mid 0x3: High	Interval = 24h / Value Ex: 0x01 Ultra Low (uplink only) 1 msg/24h 0x04 1 msg/6h 0x30 1 msg/30 min 0x60 1 msg/15 min max:0x8b	[TEMPERATURE] (Temperature * 100).toHex() Ex: 12.34 12.34*100 = 1234 1234.toHex() = 0x04D2 Ex: -15.89 ABS(15.89)*100 = 1589 1589.twoComplement() = 0xF9CB	[TEMPERATURE] (Temperature * 100).toHex() Ex: 12.34 12.34*100 = 1234 1234.toHex() = 0x04D2 Ex: -15.89 -15.89*100 = -1589 1589.twoComplement() = 0xF9CB	[REL. HUMIDITY] : Humidity = REL. HUMIDITY Ex:87	[REL. HUMIDITY] : Humidity = REL. HUMIDITY Ex:23				
MOTION	TIMER	INTERVAL	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	10/10
	0x01	UINT8	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
	EVENT	STATE										

	0x02	0x01: MOTION DETECTED										
	Heart Beat	VOLTAGE	Mode	Interval								
	0x04	Actual Voltage = VOLTAGE / 1000 Ex:0A4B 0A4B (Hex)=2635 (Dec) Voltage = 2635/1000=2.635V	[Mode] 0x1: Timer 0x2: Event 0x3: Timer+Event 0x4: Event + Heart Beat [Sensitivity] 0x1: Low 0x2: Mid 0x3: High	Interval = 24h / Value Ex: 0x01 Ultra Low (uplink only) 1 msg/24h 0x04 1 msg/6h 0x30 1 msg/30 min 0x60 1 msg/15 min max:0x8b								
PROTECT	TIMER	INTERVAL	# of activity 1/10	# of activity 2/10	# of activity 3/10	# of activity 4/10	# of activity 5/10	# of activity 6/10	# of activity 7/10	# of activity 8/10	# of activity 9/10	# of activity 10/10
	0x01	UINT8	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
	EVENT	STATE										
	0x02	0x01 CLOSED 0x02 OPENED										

	Heart Beat	VOLTAGE		Mode	Interval							
	0x04	Actual Voltage = VOLTAGE / 1000 Ex:0A4B 0A4B (Hex)=2635 (Dec) Voltage = 2635/1000=2.635V		[Mode] 0x1: Timer 0x2: Event 0x3: Timer+Event 0x4: Event + Heart Beat [Sensitivity] 0x1: Low 0x2: Mid 0x3: High	Interval = 24h / Value Ex: 0x01 Ultra Low (uplink only) 1 msg/24h 0x04 1 msg/6h 0x30 1 msg/30 min 0x60 1 msg/15 min max:0x8b							
BEACON	TIMER	INTERVAL	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	10/10
	0x01	UINT8	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
	EVENT	STATE										
	0x02	0x01 MOVED										
	Heart Beat	VOLTAGE		Mode	Interval							
	0x04	Actual Voltage = VOLTAGE / 1000 Ex:0A4B 0A4B (Hex)=2635 (Dec)		[Mode] 0x1: Timer 0x2: Event	Interval = 24h / Value Ex:							

		Voltage = 2635/1000=2.635V	0x3: Timer+Event	0x01 Ultra Low (uplink only) 1 msg/24h							
			0x4: Event + Heart Beat	0x04 1 msg/6h							
			[Sensitivity]	0x30 1 msg/30 min							
			0x1: Low								
			0x2: Mid								
			0x3: High	0x60 1 msg/15 min							
				max:0x8b							

After getting a STATUS message from a UnaSensor, UnaCloud is sending back a configuration message (=downlink) according to the following format:

Byte	1	2	3	4	5	6	7	8
Bell	Mode (4 bits) Sensitivity (4 bits) [Mode] 0x1: Timer 0x2: Event 0x3: Timer+Event 0x4: Event + Heart Beat [Sensitivity] 0x1: Low 0x2: Mid 0x3: High	Data Interval Interval = 24h / Value Ex: 0x01 Ultra Low (uplink only) 1 msg/24h 0x04 1 msg/6h 0x30 1 msg/30 min 0x60 1 msg/15 min max:0x8b	LED Color(High 4 bits) Long press config (Low 4 bits) [LED Color] 0x0: Short Green Long Orange 0x1: Short Orange Long Green [Long Press] 0x0: Disable Long Press 0x1: Enable Long Press Ex: LED	Cancellation time config(8 bits) Time period range=0~255 Sec [Cancellation] 0x0:Disable 0x01:Delay 1 Sec 0x0A: Delay Time 10 Sec max:0x0A				

			Short Orange + Disable Long Press 0x10					
Sense			<p>MAX_1</p> <p>[TEMPERATURE]</p> <p>(Temperature * 100).toHex()</p> <p>Ex: 12.34 12.34*100 = 1234 1234.toHex() = 0x04D2</p> <p>Ex: -15.89 ABS(15.89)*100 = 1589 1589.twoComplement() = 0xF9CB</p>	<p>LOW_1</p> <p>[TEMPERATURE]</p> <p>(Temperature * 100).toHex()</p> <p>Ex: 12.34 12.34*100 = 1234 1234.toHex() = 0x04D2</p> <p>Ex: -15.89 -15.89*100 = -1589 1589.twoComplement() = 0xF9CB</p>	<p>MAX_2</p> <p>[REL. HUMIDITY]:</p> <p>Humidity = REL. HUMIDITY</p> <p>Ex:87</p>	<p>LOW_2</p> <p>[REL. HUMIDITY]:</p> <p>Humidity = REL. HUMIDITY</p> <p>Ex:23</p>		
Motion			x	x	x	x		
Protect			x	x	x	x		
Beacon			x	x	x	x		