AMBU – Smart Ultrasonic Water Meter – LoRaWAN Payload Explanation

1) Uplink Frame Format

Lora payload frame structure & order is detailed in below table –

Order	No of Bytes	Description
1	4	Current Date & Time
2	4	Cumulative Volume in litres (xxxxxx.xxx m3)
3	1	Status Code
4	2	Log date of Volume of past day - 1
5	4	Cumulative Volume previous day - 1 (midnight Stamp)
6	4	Cumulative Volume previous day - 2
7	4	Cumulative Volume previous day - 3
8	4	Cumulative Volume previous day - 4
9	4	Cumulative Volume previous day - 5

2) Status Code – Description

Status Code is 1-byte, and its bit indexing is explained in below table –

Bit No / Status	7	6	5	4	3	2	1	0
Cover Open								x
Low Battery - Comm							x	
Low Battery - Mains						x		
Burst					x			
Dry				x				
Leak			x					
Reverse		x						
Freeze	x							

Status Code 0x11 means Dry & cover open conditions exists in meter

Whenever COVER OPEN tamper is detected, meter will send frame uplink

3) Explanation with Example payload

Let's take example to understand the uplink data packet, payload length is 31 bytes

Payload – 2b0b1435520200001114 35b60100007a010000f8000000770000004a000000

2b0b1435 // 4-byte CP32 date & time // decoded as 20/05/24 11:43

52020000 // Cumulative volume, value in decimal as 594 litres

11 // Status Code – Dry & Cover open exists

1435 // log date of previous day midnight stamp i.e. date - 20/05/24

b6010000 // Cumulative volume previous day – 1, value in decimal is 438 litres
log date 20/05/24

7a010000 // Cumulative volume previous day – 2, value in decimal is 378 litres.
log date 19/05/24

F8000000 // Cumulative volume previous day – 3, value in decimal is 248 litres
log date 18/05/24

77000000 // Cumulative volume previous day – 4, value in decimal is 119 litres
log date 17/05/24

4a000000 // Cumulative volume previous day – 5, value in decimal is 74 litres
log date 16/05/24

Downlink Message to configure uplink frequency

Command – 680808687301510d7f0d05a00316

68 // Start of Header
08 // packet length
08 // packet length
68 // Restart header
73 // fixed value
01
51
0d
7f
0d
05 a0 // this is uplink time in minutes. 0x05a0 = 1440 (d) i.e. meter will send uplink every 1440 minutes i.e. every 24 hours. Change this to 0x003C for sending every 60 minutes.
03
16