UC51x Series

Communication Protocol

Milesight IoT

Revision History

Date	Doc Version	Description
Feb. 23, 2021	V 1.0	Initial version

Contents

1. Overview

UC51x Series use the standard Milesight IoT payload format based on IPSO. All data are based on following format:

Channel1	Type1	Data1	Channel2	Type2	Data2	Channel 3	...
1 Byte	1 Byte	N Bytes	1 Byte	1 Byte	M Bytes	1 Byte	...

Channel	Description
01	Battery
03	Valve 1
04	Pulse 1
05	Valve 2
06	Pulse 2
ff	Device information/Control package

Note:

1) All explanations and examples in this document are based on HEX format.
2) For all Milesight IoT decoder examples please find files on https://github.com/Milesight-IoT/SensorDecoders

2. Uplink Payload

Uplink payloads of UC51x Series are made up of device information and sensor data.

2.1 Device Information

UC51x series report basic device information of device everytime joining the network.

Channel	Type	Data Size/Byte	Description
ff	01(Protocol Version)	1	01=>V1
	09 (Hardware Version)	2	02 10=>V2.1
	0a(Software Version)	2	01 01=>V1.1
	0f(Device Type)	1	00=Class A 02=Class C
	16 （Device SN）	8	64 15 a5 15 85 07 00 20=> Device SN is 6415a51585070020

Examples:

ff 0b ff ff 01 01 ff 16 64 15 a5 15 85 07 00 20 ff 09 01 00 ff 0a 01 08 ff 0f 00					
Channel	**Type**	**Value**	**Channel**	**Type**	**Value**
ff	0b (Power On)	ff (reserved)	ff	01 (Protocol Version)	01(V1)
Channel	**Type**	**Value**	**Channel**	**Type**	**Value**
ff	16 (Device SN)	64 15 a5 15 85 07 00 20	ff	09 (Hardware version)	0100 (V1.0)
Channel	**Type**	**Value**	**Channel**	**Type**	**Value**
ff	0a (Software version)	0108 (V1.8)	ff	0f (Device Type)	00 (Class A)

2.2 Sensor Data

UC500 series report sensor data according to reporting interval (10min by default).
Battery level is reported every 6 hours for UC511 and 12 hours for UC512.

Channel	Type	Data Size/Byte	Description
01	75(Battery Level)	1	Unit: %
03(Valve 1)	01(Valve)	1	00=close, 01=open
04(Pulse 1)	c8(Counter)	4	Unsigned
05(Valve 2)	01(Valve)	1	00=close, 01=open
06(Pulse 2)	c8(Counter)	4	Unsigned

Examples:

01 75 64 03 01 01 04 c8 06 00 00 00 05 01 00 06 c8 00 00 00 00					
Channel	**Type**	**Value**	**Channel**	**Type**	**Value**
01	75 (Battery)	64 => 100%	03(Valve 1)	01 (Valve)	01=>Open
Channel	**Type**	**Value**	**Channel**	**Type**	**Value**
04 (Pulse 1)	c8(Pulse Counter)	06 00 00 00=>00 00 00 06=6	05(Valve 2)	01 (Valve)	00=>Close
Channel	**Type**	**Value**			
06 (Pulse 2)	c8(Pulse Counter)	06 00 00 00=>00 00 00 00=0			

3. Downlink Payload

Downlink is used for controlling the UC51x via network server remotely. Downlink port (Application port) is 85 by default and can be configured via ToolBox.

3.1 Valve Control

Basic format:

Channel	Type	Control Field	Sequence	Time Control (Option)	Flow Control (Option)
ff	1d	1 Byte	1 Byte (01 to ff)	3 Bytes (Unit: s)	4 Bytes

Control Field:

Bit	7	6	5	4-2	1-0
Description	0: Disable time control 1: Enable time control	0: Disable flow control 1: Enable flow control	0: Valve close 1: Valve open	Reserved	0: Valve 1 1: Valve 2

Examples:

Command	Description
ff 1d 20 01	Valve 1 open
ff 1d 00 02	Valve 1 close
ff 1d 21 03	Valve 2 open
ff 1d 01 04	Valve 2 close
ff 1d a0 01 3c 00 00	Valve 1 open for 60 seconds
ff 1d 80 02 3c 00 00	Valve 1 close for 60 seconds
ff 1d a1 03 3c 00 00	Valve 2 open for 60 seconds
ff 1d 81 04 3c 00 00	Valve 2 close for 60 seconds
ff 1d 60 01 06 00 00 00	Valve 1 open until pulse 1 is 6
ff 1d 61 02 10 00 00 00	Valve 2 open until pulse 2 is 16
ff 1d e0 01 3c 00 00 06 00 00 00	Valve 1 open for 60 seconds or until pulse 1 is 6
ff 1d e1 02 3c 00 00 10 00 00 00	Valve 2 open for 60 seconds or until pulse 2 is 16

Note:

1) The sequence should be increased after it has been used in one command sent to devices. For example, if you use command ff 1d 20 01 (sequence 01) to control the valve successfully, the next command should be ff 1d 20 02 (sequence 02). Wrong sequence will cause command invalid.

2) If the sequence is up to ff(255), please use sequence beginning as 01.

3) There are different replies when sending invalid or valid commands. For example, if you send command ff 1d 21 01,

Valid reply: fe 1d 21 01+ 05 01 01 06 c8 00 00 00 00

Invalid reply: fe 1d 21 01

3.2 Reporting Interval Control

Examples:

ff 03 b0 04		
Channel	**Type**	**Value**
ff	03(Set Reporting Interval)	b0 04 => 04 b0 = 1200s

-END-