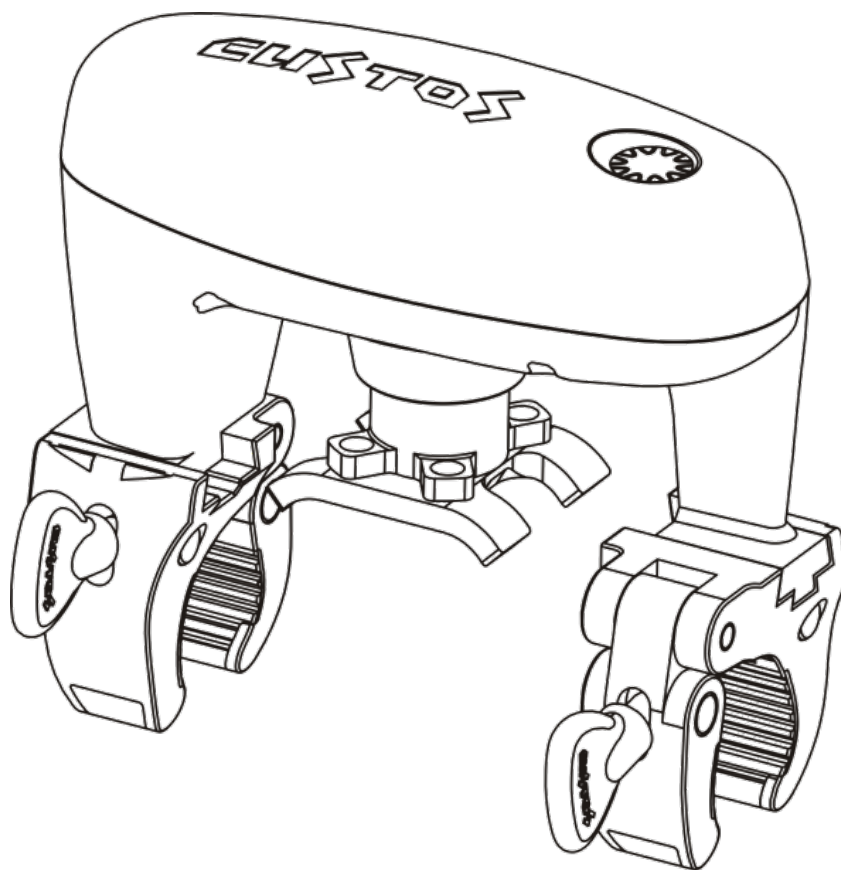


Custos Ball Valve Servo

ubitech 



Samy Wong

INDEX

1. DOCUMENT REVISION
 - 1.1. Revision Change History
2. FIRMWARE SUPPORT
 - 2.1. Firmware Revision & Change
3. UPLINK PAYLOAD
 - 3.1. Uplink Port Setting
 - 3.2. Uplink Frame
4. DOWNLINK PAYLOAD
 - 4.1. Downlink Port Setting
 - 4.2. Downlink Frame

1. DOCUMENT REVISION

1.1 Revision Change History

API Revision	Details	Date	Editor
V1.3.x	New document format	10-Sep-20	Samy
V1.3.1	Firmware support update	18-Sep-20	Samy
V1.3.2	Change wording from "Heartbeat Period" to "Heartbeat Interval"	13-Oct-20	Samy

2. FIRMWARE SUPPORT

2.1 Firmware Revision & Change – This API support below Firmware Version

FW Version	Details	Date	By
V1.2.52	Fixed Chirpstack LoRa Network Server OTAA join processing	18-Sep-20	Jacky
V1.2.51	Fixed Class-C compatible issue	09-Sep-20	Jacky
V1.2.50	Uplink report format (no battery data frame)	31-Aug-20	Jacky

3. UPLINK PAYLOAD

3.1 Port Setting – “End-device to Application Server”

End-device to Application Server	Port #
Alarm Frame	10
Heartbeat Frame	16

3.2 Uplink Frame

Function	Data Type	Details	Default
Alarm & Event	unsigned char	Bit0: Remote Leak Sensor Probe	
		Bit1: RESERVED	
		Bit2: Heartbeat Interval Event “Default Setting is every 24 Hours”	
		Bit3: Report every Hour	
		Bit4: RESERVED	
		Bit5: Valve CLOSED	
		Bit6: Valve OPENED	
		Bit7: RESERVED	
Battery Report (Percentage) <i>** Reserved for feature used</i>	unsigned char	BATT_HIGH_LVL=3.6V	
		BATT_LOW_LVL=1.8V	
		Battery Percentage computation formula:	
		$(\text{BattMeasured} - \text{BATT_LOW_LVL}) * 100 / (\text{BATT_HIGH_LVL} - \text{BATT_LOW_LVL})$	
Temperature (°C)	signed short	0.1 °C Signed MSB	
Firmware Version	signed short	Major Version	
	unsigned char	Minor Version	
	unsigned char	Revision Number	
	unsigned char		

4. DOWNLINK PAYLOAD

4.1 Downlink Port Setting – “Application Server to End-device”

Application Server to End-Device	Port #
Configure Parameter	10

4.2 Downlink Frame

Function	Command	Data Type	Details	Default
Heartbeat Interval (Minute)	0x01	unsigned char	0x0001 ~ 0x10E0	0x05A0 “24 Hours”
Valve Operation (Close/Open)	0x02	unsigned char	0x00 / 0xFF 0x00 = CLOSE Valve 0xFF = OPEN Valve	
Configure Uplink Message Type	0x04	unsigned char	0x00 = Unconfirmed Uplinks 0xFF = Confirmed Uplinks	