# CloudLink User Manual

V1.0.5 2024.06.14



# **General Information**

## **Revision history**

Version	Release date	Changes
V1.0.0	2023.09.28	Initial version
V1.0.1	2023.10.13	Added Position Stop function
V1.0.2	2024.01.15	Added Chart Function
V1.0.3	2024.02.06	Added log download and parsing functions
V1.0.4	2024.04.20	Improved client page, added advanced features
V1.0.5	2024.06.14	Added CAN protocol adaptive function

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# **1. Product description**

CloudLink is a tuning adapter that connects your computer to your ESC.

It connects to the ESCs via CAN/UART, a power supply and a USB connection to the PC.

On the PC Client software "CloudLink", you can get ESC info and modify parameters to fit your application.



\* Application on PWM port is under development, becoming.

# 2. Wiring Diagram



# 3. ESC User interface Overview

Switch the UART CO CAN, according to ESC connection type. The operation is different.

LOUDLINK Ver	:3.3.2 Build:2024.6.	5	-
ESC	CL	) OUDLINK	
CONFIG	STATUS	UPGRADE	CHART 1 CHART 2 CHART 3
Current ESC Current onlin ESC[UAVCAN ESC0 ON ESC7 ON	0 v Self-adapt ne count 2 4] op[ESC0]	ion ~	User Param[ESCO] Note: After setting params, you need to reboot. Get Clear Set Reboot CAN ID 0 Motor Direction Reverse CAN Protocol UAVCAN Acc. Level Level1 Over Volt(V) 0 Under Volt(V) 0 Under Volt(V) 0 Under Volt(V) 0
Angle Stop angle Calibration User 0° Direction	-90~90 Standby Note:Nominal ze Note:Rotation an	NC Apply Apply Calibrate ro position gle exceeds 90 degree	LED PWM LED Control CAN PWM Width Max(us 1940 PWM Width Min(us; 1100 rees.
Connect	ed 🔵		Language: <mark>English v</mark>

#### 3.1 CAN Mode

Switch the UART CO CAN to CAN, all operations work on the ESC via can.

## 3.1.1 ESC CONFIG

CLOUDLINK Ver:3.3.2 Build:2024.6.6		
ESC CLOUDLINK	UART CAN	
CONFIG STATUS UPGRADE CHAR	T 1 CHART 2 CHART 3	
Current ESC0 V Self-adaption V Current online count 2 ESC[UAVCAN] ESC0 ON ESC7 ON	User Param[ESC0]       Note: After setting params, you need to reboot.     2       Get     Clear     Set     Reboot       CAN ID     0     Advanced       Motor Direction     Reverse        CAN Protocol     UAVCAN	
Position Stop[ESC0]	Acc. Level     Level1     Over     Volt(V)       Dcc. Level     Level1     Under Volt(V)     0       Recovery     OFF	
Angle     NC       Stop angle     -90~90     Apply       Calibration     Standby     Apply       Calibration     Standby     Apply       User 0°     Note:Nominal zero position       Direction     Note:Rotation angle exceeds 90 degrees.	LED PWM LED Control CAN V LED Status OFF V PWM Width Max(us 1940 PWM Width Min(us; 1100	
Connected	Language: <mark>English v</mark>	

#### (1) ESC list

**"Online"** list the ESCs connected via CAN1 port. Set any ESC to **"Current"**, this ESC will be tuning. CloudLink supports DRONECAN and UAVCAN protocols that adapt to the currently connected ESC.

#### (2) ESC Parm.

"GET" the selected ESC's parameters, and modify according the application you needed.

"SET" new patameters to the selected ESC, and "REBOOT" to take effect.

CAN ID	ESC's CAN id. You can modify the id number to your desired non-repeating value.
Motor Direction	Reverse the motor direction, without change phase line.
CAN Protocol	CAN communication protocol for ESCs, supports UAVCAN, DRONECAN.
Dcc. Level	Cat the mater Ace (Dec. rate Lovel 1 is smeath and lover [ is quickast
Acc. Level	Set the motor Acc./Dcc. rate. Level 1 is smooth, and levers is quickest.
Bouovoru	Revovery Level limits the effect of deceleration. MUST CHECK that the power system
Revovery	supports energy return, SET LOWEST level if NOT.
Over Volt	Set the upper/lower limit value of the bus voltage. The ESC will alarm when it exceeds the
Under Volt	limit. When power on, the limit is detected, ESC cannot start.
LED Control	Set led fixed state or controlled by CAN
LED Status	OFF/Single ON/ Double ON/Single Blink/Double Blink/ Trible Blink
	LED color: RED/GREEN/WHITE
PWM Width Max	The default Width is $1100 (MIN)$ to $1040 (MAX)$
PWM Width Min	

#### Param. List:

#### (3) Advanced

Set the ESC's operating mode, throttle hold time, dual throttle priority and CAN baud rate. The CAN baud rate of

the ESC should be the same as the CloudLink CAN baud rate.

C ESC Advanced Config	×
Read Set	]
Working mode Default mode	~
Throttle holding time 1s	$\sim$
Dual throttle priority PWM First	$\sim$
CAN Baud Rate 1M	$\sim$

#### (4) Position Stop (Optional)

Position Stop[ESC0]								
ON								
Angle	NC							
Stop angle -90~90	Apply							
Calibration Standby	Apply Calibrated							
User 0° Note:Nominal z	ero position							
Direction Note:Rotation a	angle exceeds 90 degrees.							

When the motor have a HALL sensor (optional) connected to ESC, and this function is actived, motor can stop at the target angle. Otherwise, It is disabled.

To Enable the function, turn " on, and calibrate the Hall sensor. Factory calibration is done by default.

Set target angle to the **"Stop angle"**, and click on **"Apply"** button, to change the stop position.

You can click " User 0° " to make current positon to Nominal zero position.

Position angle with respect to the nominal zero degree, you can set CW/CCW by rotate the motor more than 90° then click **"Direction "**.

#### 3.1.2 ESC STATUS

CLOUDLINK Ver:3.	3.2 Build:2024.6.6							- ×
ESC	CLO	) JDLINK					(	9
CONFIG	STATUS	UPGRADE	CHART 1	CHART 2	CHART			
				1	2	3	4	^
CAN ID 0 Mode: 4	CAN ID 7 Mode: 4			CAN_ID	0	Hardware	A1	
Ibus: 0.0A	Ibus: 0.0A			Alg. Ver	1:5:0	Alg. Date	2023/10/8	
Speed: 0 Volt: 24.0V	Speed: 0 Volt: 23.0V			Firmware	2:2:0	Soft Date	2024/1/18	
Temp: 28°C Warn: 0	Temp: 27°C Warn: 0			SVN Ver	3919	Config	2024/6/14	
Error: 8	Error: 8			Config	JAV1_ESC_	14S60A_FOC	~MN6009	
I —				Timestamp	326733			
				Mode	4	Throttle	3	
				Speed	0	Volt	24.0	
				MOS Temp	28	Motor	0	
				CAP Temp	0	Phase Cur.	0.0	
				Warn	0	Error	8	
				Obv	0	ISC	98	
				т.н К	0.0	In	• • •	Ť
Connected						Languag	je: English	~

Choose an ESC on the left and the details are displayed on the right.

#### **3.1.3 ESC UPGRADE**

Update firmware, or set ESC parameter, Motor Parameter.

Click "File" to point ESC firmware file, then "Upgrade".

Select ESC parameters and Motor parameters from the drop-down box, then "Apply".

All the above operations effect the selected ESCs. The process and result are showing meanwhile.



#### 3.1.4 ESC CHART

Select one of the connected ESCs, click "Start", Real-time status is displayed on the screen.

There are three chart forms (CHART1\ CHART2\CHART3) and a variety of parameters to choose from depending on your needs.

#### (1) CHART 1

All parameters of one ESC are illustrated on the same screen.



#### (2) CHART 2

All parameters of one ESC are illustrated on the same screen, but categorized according to similar unit scales.

CLOUDLINK Ver:3.3.2 Build:2024.6.6 –							
ESC	с	S COUDLINK			JART CAN	Ģ	
CONFIG	STATUS	UPGRADE	CHART 1	CHART 2	CHART 3		
ESC0 V	I All ☑ Mode ☑ Parm ☑ Obv ☑ Id	I 🛛 Speer 🖓 Curr 🖓 Er V Iq V IA V IE Bus Volt/MOS 1	ror 🛛 Warn 🖓 Vol 3 🖾 IC 🖓 Vd Femp	t ⊠ Temp ⊠ ISC ⊠ Vq Ω	1000 500 -500 -1000	Curr 15411101541115154112015411251541130	
25	7				30 25 20 15 10 5 0	Bus Volt/MOS Temp	
20					3 25 2	Spred/Cmd	
¥ 15					1.5 0.5 0	15411101541115154112015411251541130	
10					4 3 2 1 0	Error/Mode	
5					10 5	Vd/Vq	
0 42	28:05:10 428	3:05:15 428:0	5:20 428:0	05:25 428:	05:30 <sup>0</sup> -s	15411101541115154112015411251541130	
Conne	ected 🔵					Language: English 🗸	

#### (3) CHART 3

This chart shows a comparison of the same parameter for different ESCs.



#### 3.2 UART Mode

Switch the UART CAN to UART, all operations work on the ESC via UART port.

The fist tab LIST all ESCs connected via UART port, and tell the software version.

CLOUDLINK Ver	:3.3.2 Build:2024.6.6				- ×
ESC	CLOU	) JDLINK		UART CAN	Ģ
LIST	UPGRADE	CANID	LOG		
Uart Statu 1 ON 2 ON 3 NC 4 NC 5 NC 6 NC 7 NC 8 NC	s CAN_ID 0 7 NC NC NC NC NC NC	Firmware			
Connect	ed 🔵			Language: Englis	h ~

#### **3.2.1 ESC UPGRADE**

Update firmware, or set ESC parameter, Motor Parameter.

Click "File" to point ESC firmware file, then "Upgrade".

Select ESC parameters and Motor parameters from the drop-down box, then "Apply".

All the above operations effect the selected ESCs. The process and result are showing meanwhile.

CLOUDLINK Ver:3.3	.2 Build:2024	1.6.6					- ×
ESC		SLOUDLINK			ART CAN		œ
LIST	UPGRADE	CANID	LOG				
File ESC parm, JAV1	strator/[	Desktop/ESC_A1_APF	V2.3.0_SVN4751_ V Motor part	20240510(clean)/ES	SC_A1.bin	Upgrade	APP ~
 ⊠ All Status	CAN ID	- Process	Time F type	Version SVN	ACK		,
UART1 ON	0	100%	19 APP	2.3.0 4751(cle	an) Success		
UART2 ON	7	100%	19 APP	2.3.0 4751(cle	an) Success		
UART3 NC	NC	0%					
UART4 NC	NC	0%					
UART5 NC	NC	0%					
UART6 NC	NC	0%					
UART7 NC	NC	0%					
UART8 NC	NC	0%					
Connected						Language: Eng	jlish v

## 3.2.2 CAN\_ID allocation

Click "GET" to take the CAN\_ID of connected ESCs.

Change the ID number, if necessary, then Click "SET" to make it working one by one.

CLOUDLINK Ver	:3.3.2 Build:2024.6.6							
ESC	CLOU	) JDLINK					CAN	<del>Q</del>
LIST	UPGRADE	CANID	LOG					
Note: 1.Default CA the CAN_ID 2.ESCs used must have d 3."FAST SET" series or dup 4.REBOOT to	N_ID is 0, range is 0~63. in an UAV, ffferent CAN_ID. ' Making allocation er plicate mode as need p make effect.	asier,	figuration Get All Re UART1: ON UART2: ON UART3: NC UART4: NC UART5: NC UART6: NC UART7: NC UART8: NC Fast Set □ D	boot All CAN ID: [ CAN ID: ] CAN ID: [ CAN ID: ] CAN ID: [ CAN ID: ] CAN ID: [ Duplicate	0 7 0~63 0~63 0~63 0~63 0~63 0~63	Set Set Set Set Set Set Set	RebootRebootRebootRebootRebootRebootRebootRebootReboot	
Connect	ed 🔵						Langua	ge: English 🗸

"FAST SET" Making allocation easier.

If the checkbox **"Duplicate"** is unchecked, the system automatically serializes the IDs according to starting number.

If the checkbox **"Duplicate"** is checked, all IDs are the same as you entered. When you want the ESCs' id being set up to be the same, but they are used on different Drone.

C Batch setting	of CAN IDs ? ×	Reboot	🛆 Batch setting of CAN IDs ? × R	eboot		
Please enter the starting CAN ID (in ascending order of CAN IDs)			Please enter the specified CAN ID (all CAN IDs are the same)	eboot		
1	÷	Reboot				
	OK Cancel	Reboot	OK Cancel R	eboot		
ton easier,	UARTS: NC CAN ID: 0~03 Set	Reboot	Red VARTS: NC CAN ID: 0~03 Set R	eboot		
need.	UART6: NC CAN ID: 0~63 Set	Reboot	UART6: NC CAN ID: 0~63 Set R	eboot		
	UART7: NC CAN ID: 0~63 Set	Reboot	UART7: NC CAN ID: 0~63 Set R	eboot		
	UART8: NC CAN ID: 0~63 Set	Reboot	UART8: NC CAN ID: 0~63 Set R	eboot		
	Fast Set Duplicate		Fast Set 🗹 Duplicate			

#### 3.2.3 ESC LOG

Click "Path" to select the file save path, then click "Download" to obtain the log information of the ESCs desired.

CLOUDLINK Ver:3.3.2 Build:2024.6.6									
ESC	CL	) OUDLINK				UART 🚺 🕻	CAN		9
LIST	UPGRADE	CANID		LOG					
Path	C:/Users/	Administrator/De	sktop/tes	t				Stop	
All Status	CAN_ID Pro	cess	Time	ACK					
UART1 ON	0	100%	27	Download su	ccessful				
UART2 ON	7	94%							
UART3 NC	NC	0%							
UART4 NC	NC	0%							
UART5 NC	NC	0%							
UART6 NC	NC	0%							
UART7 NC	NC	0%							
UART8 NC	NC	0%							
L									
Connected							Languag	e: English	~

## 4. CLOUDLINK User interface Overview

## **4.1 UPGRADE**

Check CloudLink Box's firmware version, and update if necessary.

Click "File" to point Box's APP/BOOT firmware file, then "Upgrade".

Click "Get" to get the current CAN baud rate of CloudLink, you can modify the CAN baud rate of CloudLink, and

then click "Set" to set. The connected ESC should be the same baud rate as CloudLink.

CLOUDLINK	Ver:3.3.2 Build:2024.6.6		- ×
8		¢	*
ESC	CLOUDLINK		
UPGRADE	LOG CONVERSION		
	Version: [2.1.0] SVN: [4787(clean)] Build time: [May 15 2024, 19:21:40]		
		]	
	File         p0_APP(normal)_V2.1.0_SVN4/87_20240515(clean)/CB_ASU.bin         APP         v         Upgrade           100%         Time         20	]	
1		1	
	Parameter		
	Get Set		
	CAN Baud rate 1M v		
Conn	ected 🛛 🔵	Language: English	~

#### 4.2 LOG

Get log saved in CloudLink Box's flash, and download.

- (1) Click "Display" to Get log, all log files are listed, it can be point to a required day;
- (2) Click "Path" to set the save path;
- (3) Select any logs, click "**Download**" to save the log files to the path.

CLOUDLINK	Ver:3.3.2 Build	1:2024.6.6				- >
ES	c	CLOUDLIN	к			œ
UPGRAI	DE LC	G CONV	ersion			
Display	Path	C:/Users/Adminis	trator/Desktop/test	Stop Progress	Total 3, downloading 3, progress 12	.1%
<pre>✓ type0, ✓ type1, ✓ type1,</pre>	idx0_2024_1 idx0_2024_6 idx1_2024_6 idx2_2024_6 idx3_2024_6 idx4_2024_6 idx5_2024_6 idx5_2024_6 idx5_2024_6 idx7_2024_6 idx8_2024_6 idx8_2024_6 idx8_2024_6 idx10_2024_1 Select data	$\begin{array}{c} 19 \\ 10 \\ 50 \\ 23 \\ 18 \\ 28 \\ 28 \\ 28 \\ 28 \\ 28 \\ 28 \\ 28$	32024_6_7_13_51 2024_6_3_18_45_5 2024_6_5_16_1_14 2024_6_5_17_38_4 2024_6_7_10_15_17 2024_6_7_10_17_5 2024_6_7_11_20_39 2024_6_7_12_17_5 2024_6_7_13_50_46 2024_6_7_13_52_36 2024_6_3_14_58_9 	8_38542.txt 5_1486848.cube 5_8015872.cube 7_7139328.cube 7_2672.cube 8_221184.cube 0_8388608.cube 5_7667712.cube 5_2580480.cube 5_208896.cube 2_3186688.cube 44_2404352.cub	e	~
Co	nnected 🔵				Language: English	n ~

## **4.3 CONVERSION**

In this Page, "Merge" logs in download path to one file, then "Convert" to csv file type, which is easy charting

#### and analyzing.

