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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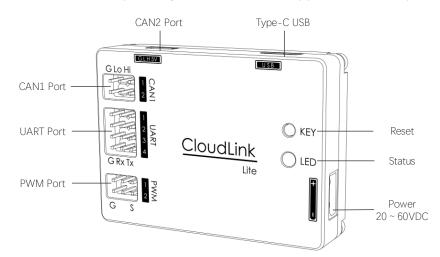
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1. Product description

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

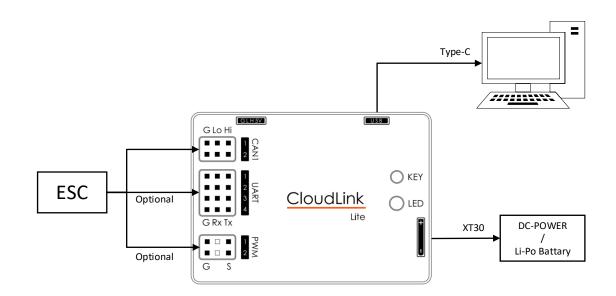
It connects to the ESCs via CAN/UART, a power supply and a USB connection to the PC.

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 | e count 2 1] | 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 Recovery OFF |
| | Standby Note:Nominal ze | NC Apply Apply Calibrate ro position gle exceeds 90 degree | LED Control CAN PWM Width Max(us 1940 LED Status OFF PWM Width Min(us; 1100 |
| Connect | ed 🔵 | | Language: English 🗸 |

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 Self-adaption Current online count 2 ESC[UAVCAN] ESC0 ON ESC7 ON | User Param[ESC0] Note: After setting params, you need to reboot. Get Clear Set Reboot CAN ID 0 Motor Direction Reverse CAN Protocol UAVCAN | |
| Position Stop[ESC0] | Acc. Level Level1 Over Volt(V) 0 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.

| ESC's CAN id. You can modify the id number to your desired non-repeating value. |
|--|
| Reverse the motor direction, without change phase line. |
| CAN communication protocol for ESCs, supports UAVCAN, DRONECAN. |
| Cat the mater Ass (Des rate Lovel 1 is smeath and lover 5 is suiskest |
| Set the motor Acc./Dcc. rate. Level 1 is smooth, and lever5 is quickest. |
| Revovery Level limits the effect of deceleration. MUST CHECK that the power system |
| supports energy return, SET LOWEST level if NOT. |
| Set the upper/lower limit value of the bus voltage. The ESC will alarm when it exceeds the |
| limit. When power on, the limit is detected, ESC cannot start. |
| Set led fixed state or controlled by CAN |
| OFF/Single ON/ Double ON/Single Blink/Double Blink/ Trible Blink |
| LED color: RED/GREEN/WHITE |
| The default $M(dth is 1100 (M(N)) to 1040 (MAN))$ |
| The default Width is 1100 (MIN) to 1940 (MAX). |
| |

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 | \sim |
| 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

| LOUDLINK Ver:3.3 | |) JDLINK | | | | | | Ģ |
|------------------------|------------------------|-------------|---------|-----------|----------|-------------|-------------|-----|
| CONFIG | STATUS | UPGRADE | CHART 1 | CHART 2 | CHAR | Т 3 | | |
| CAN ID 0 | CAN ID 7 | | | 1 | 2 | 3 | 4 | ^ |
| Mode: 4 Cmd: 3 | Mode: 4 Cmd: 3 | | | CAN_ID | 0 | Hardware | A1 | |
| Ibus: 0.0A Speed: 0 | Ibus: 0.0A Speed: 0 | | | Alg. Ver | 1:5:0 | Alg. Date | 2023/10/8 | |
| Volt: 24.0V | 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_FOO | ~MN6009 | |
| | | | | 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 < | 0 0 | To. | 0.0 | • * |
| Connected | | | | | | Languag | ge: English | |

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

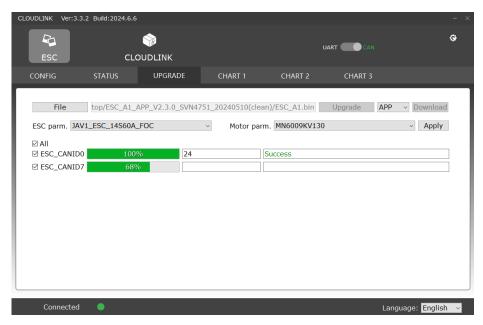
3.1.3 ESC UPGRADE

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.



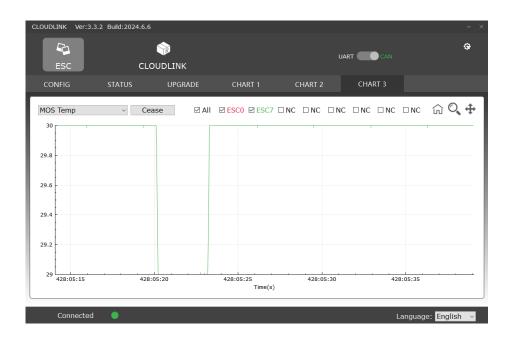
(2) CHART 2

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

| CLOUDLINK Ver: | :3.3.2 Build:2024.6.1 | 5 OUDLINK | | | UART CAN | - × |
|----------------|-----------------------|---|-------------|-----------|-----------------|---------------------|
| CONFIG | STATUS | UPGRADE | CHART 1 | CHART 2 | CHART 3 | |
| ESC0 V AI | | ☑ Speet ☑ Curr ☑ Er ☑ Iq ☑ IA ☑ IE Bus Volt/MOS 1 | B ☑ IC ☑ Vd | | ∫ Q ↔ 50 -50 | 0 |
| 25 | | | <u></u> | / | | Bus Volt/MOS Temp |
| 20 27 15 | | | | | 2 | 5 |
| 10 | | | | | | Error/Mode |
| 5 | | | | | | |
| Connect | | :05:15 428:0 | 5:20 428:0 | 05:25 428 | :05:30 -1 | 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 | | | 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. | | 4.6.6 | | | uart 🌒 C | AN | - × |
|-------------------------|---------|---------|-----------|----------------------------|---------------------|-----------|----------------|
| LIST | UPGRADE | CANID | LOG | | | | |
| File ESC parm. JAV1_ | | | | 751_2024051 parm. MN600 | 0(clean)/ESC_A1.bin | Upgrade | APP ~ Apply |
| ☑ All Status | CAN_ID | Process | Time F_ty | pe Version | SVN ACK | | |
| UART1 ON | 0 | 100% | 19 | APP 2.3.0 | 4751(clean) Succes | S | |
| UART2 ON | 7 | 100% | 19 | APP 2.3.0 | 4751(clean) Succes | S | |
| ☑ 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: | English 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.

| ESC CLOUDLINK | | | | IRT | CAN | |
|---|---------------|-----------|------|-----|--------|---|
| LIST UPGRADE CANID | LOG | | | | | |
| | Configuration | | | | | |
| lote: | Get All Re | boot All | | | | |
| | UART1: ON | CAN ID: | 0 | Set | Reboot | |
| .Default CAN_ID is 0, he CAN_ID range is 0~63. | UART2: ON | CAN ID: | 7 | Set | Reboot | |
| .ESCs used in an UAV, | UART3: NC | CAN ID: | 0~63 | Set | Reboot | |
| nust have different CAN_ID. | UART4: NC | CAN ID: | 0~63 | Set | Reboot | |
| "FAST SET" Making allocation easier, | UART5: NC | CAN ID: | 0~63 | Set | Reboot | |
| eries or duplicate mode as need. | UART6: NC | CAN ID: | 0~63 | Set | Reboot | |
| .REBOOT to make effect. | UART7: NC | CAN ID: | 0~63 | Set | Reboot | |
| | UART8: NC | CAN ID: | 0~63 | Set | Reboot | |
| | Fast Set 🗆 🛙 | Duplicate | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | _ | _ | _ | _ | | _ |

"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 | C Batch setting | of CAN IDs | ? × | Reboot |
|--|---------------------------|---------|--------|--|-------------------|-----------|--------|
| Please enter the starting CAN ID (in ascending order of CAN IDs) | | | Reboot | Please enter the specified CAN ID (all CAN IDs are the same) | | | Reboot |
| 1 | | | | | | | |
| | ОК | Cancel | Reboot | | | OK Cancel | Reboot |
| ion easier, | UAKTS: NC CAN ID: 0~0. | set set | Reboot | n easier, | UAKTS: NC CAN ID: | 0~03 Set | Reboot |
| need. | UART6: NC CAN ID: 0~63 Se | Set | Reboot | ieed. | UART6: NC CAN ID: | 0~63 Set | Reboot |
| | UART7: NC CAN ID: 0~6 | Set | Reboot | | UART7: NC CAN ID: | 0~63 Set | Reboot |
| | UART8: NC CAN ID: 0~63 | 3 Set | Reboot | | UART8: NC CAN ID: | 0~63 Set | Reboot |
| | 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 | CLC |) DUDLINK | | | UART | CAN | Ģ | |
| LIST | UPGRADE | CANID | | LOG | | | | |
| Path | C:/Users/A | dministrator/Des | ktop/tes | t | | | Stop | |
| All Status | CAN_ID Proce | 255 | Time | ACK | | | | |
| UART1 ON | 0 | 100% | 27 | Download successf | ul | | | |
| 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% | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Connected | • | | | | | Langua | ge: 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 50_APP(normal)_V2.1.0_SVN4787_20240515(clean)/CB_A50.bin APP Upgrade 100% Time 20 |] | |
| 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:2024.6.6 | | | | - × |
|---------------------|----------------|----------------------------|------------------|------------------------|------------------------------|
| ESC | cio | | | | Ģ |
| UPGRADE | LOG | CONVERSION | | | |
| Display Path | C:/Users// | Administrator/Desktop/test | Stop Progress | Total 3, downloading 3 | , progress 12.1% |
| ☑ type0_idx0_202 | 24_1_19_10 | _50_23_2024_6_7_13_51 | _8_38542.txt | | ^ |
| ✓ type1_idx0_202 | 4_6_3_18_ | 28_47_2024_6_3_18_45_ | _5_1486848.cube | | |
| ✓ type1_idx1_202 | 24_6_5_14_3 | 32_58_2024_6_5_16_1_1 | 4_8015872.cube | | |
| type1_idx2_202 | 4_6_5_16_ | 20_47_2024_6_5_17_38_ | 47_7139328.cube | e | |
| type1_idx3_202 | 24_6_7_10_: | 15_3_2024_6_7_10_15_1 | .7_28672.cube | | |
| type1_idx4_202 | 24_6_7_10_ | 15_37_2024_6_7_10_17_ | _58_221184.cube | | |
| type1_idx5_202 | 4_6_7_10_ | 18_1_2024_6_7_11_20_3 | 9_8388608.cube | | |
| type1_idx6_202 | 4_6_7_11_ | 20_39_2024_6_7_12_17_ | 5_7667712.cube | | |
| type1_idx7_202 | 4_6_7_13_3 | 29_7_2024_6_7_13_50_4 | 6_2580480.cube | | |
| type1_idx8_202 | 4_6_7_13_ | 51_8_2024_6_7_13_52_3 | 86_208896.cube | | |
| □ type1_idx9_202 | 24_5_30_10 | _47_4_2024_5_30_11_22 | 2_2_3186688.cube | 2 | |
| type1_idx10_20 | 24_6_3_14 | _32_19_2024_6_3_14_58 | _44_2404352.cut | be | ~ |
| □ All □ Select da | ta 1 ~ | 1 ~ | | | |
| Connected | • | | | Lang | uage: <mark>English ~</mark> |

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.

