



**POWERCUBE ONE**

This short manual shows how to get the Cube flight computer ready to use in the **PowerCube ONE** power supply unit. The manual includes the parameters setup in Ardupilot Mission Planer for the communication between the Cube flight computer and the **PowerCube ONE**.

1. Connect the Cube Pilot to the **PowerCube ONE** and use the 4 screws included with the package to secure it in place.
2. Power up the system with at least one battery. The power input works in a range of 6V to 35V.
3. Turn the system on by pressing the SET button for one second. Once the red LED lights up, press button I and II, while continuing to hold the SET button.
4. Connect the USB-C port to your computer and press **CONNECT** in the Mission Planner.
5. Open the **Full Parameter List** and change the settings in the recommended sequence:

#### a) **BATT and BATT2 Parameters**

Command: **BATT\_MONITOR** - Option: **DroneCan-BatteryInfo**

Komando	Δ	Wert	Default	Einheiten	Optionen	Desc
BATT_MONITOR		8	0		DroneCAN-BatteryInfo	Controls enabling monitoring of the battery's voltage and current
					Disabled	
					Analog Voltage Only	
					Analog Voltage and Current	
					Solo	
					Bebop	
					SMBus-Generic	
					DroneCAN-BatteryInfo	
					ESC	

Command: **BATT2\_MONITOR** - Option: **DroneCan-BatteryInfo**

Kommando	Δ	Wert	Default	Einheiten	Optionen	Desc
BATT2_MONITOR		8	0		DroneCAN-BatteryInfo	Controls enabling monitoring of the battery's voltage and current
Disabled Analog Voltage Only Analog Voltage and Current Solo Bebop SMBus-Generic DroneCAN-BatteryInfo ESC						

## b) CAN Parameter

Command: **CAN\_P1\_DRIVER** - Option: **First driver**

CAN_P1_DRIVER	1	0		First driver	Enabling this option enables use of CAN buses.
CAN_P2_DRIVER	0	0		First driver	Enabling this option enables use of CAN buses.
CAN_SLCAN_CPORT	0	0		0:Disabled 1:First interface 2:Second interface	CAN Interface ID to be routed to SLCAN. 0 means no routing

### c) BRD Parameter

Command: **BRD\_SAFETY\_DEFLT** – Option **0: Disabled**

Command: **BRD\_SAFETYOPTION** – Option **0**

Command: **BRD\_SBUS\_OUT** – Option **3: 100Hz**

BRD_IO_ENABLE	0	Disabled	This parameter controls the IOMCU. Setting to 0 will disable the IOMCU. Setting to 1 will enable the IOMCU but not attempt to update firmware on startup.	
BRD_OPTIONS			Options for safety button behavior	
BRD_PWM_VOLT_SEL			This controls the activation of the safety button. It allows you to control if the safety button can be used for safety enable and/or disable.	5V output. On boards with an IOMCU that support this parameter this option only affects the 8 main outputs, not the 6 noise interference computing signals to the ESCs.
BRD_RTC_TYPES			<input type="checkbox"/> ActiveForSafetyDisable <input type="checkbox"/> ActiveForSafetyEnable <input type="checkbox"/> ActiveWhenArmed <input type="checkbox"/> Force safety on when the aircraft disarms	
BRD_RTC_TZ_MIN				
BRD_SAFETY_DEFLT	0	1	0 Disabled 1 Enabled	This controls the default state of the safety switch at startup. When set to 1 the safety switch will start in the safe state (flashing) at boot. When set to zero the safety switch will start in the unsafe state (solid) at startup. Note that if a safety switch is fitted the user can still control the safety state after startup using the switch. The safety state can also be controlled in software.
BRD_SAFETY_MASK	0	0		A bitmask which controls what outputs can move while the safety switch has not been pressed.
BRD_SAFETYOPTION	0	3	Set Bitmask	This controls the activation of the safety button. It allows you to control if the safety button can be used for safety enable and/or disable, and whether the button is only active when disarmed.
BRD_SBUS_OUT	3	0	0 Disabled 1 50Hz 2 100Hz	This sets the SBUS output frame rate in Hz.

### d) Write parameters

After writing the parameters, the Cube will restart and more options are available for the **BRD** and **CAN** parameters.

Write Raw Params

Are you Sure?

☒ Show me again?

OK

## e) BATT and BATT2 Parameters

Command: **BATT\_SERIAL\_NUM** - Option: **0**

BATT_MONITOR	8	0		0:Disabled 3:Analog Voltage Only 4:Analog Voltage and Current	Controls enabling monitoring of the battery's voltage and current
BATT_OPTIONS	0	0			This sets options to change the behaviour of the battery monitor
BATT_SERIAL_NUM	0	-1			Battery serial number, automatically filled in for SMBus batteries, otherwise will be -1. With DroneCan it is the battery_id.

Command: **BATT2\_SERIAL\_NUM** - Option: **1**

BATT2_MONITOR	8	0		0:Disabled 3:Analog Voltage Only 4:Analog Voltage and Current	Controls enabling monitoring of the battery's voltage and current
BATT2_OPTIONS	0	0			This sets options to change the behaviour of the battery monitor
BATT2_SERIAL_NUM	1	-1			Battery serial number, automatically filled in for SMBus batteries, otherwise will be -1. With DroneCan it is the battery_id.

## f) CAN Parameters

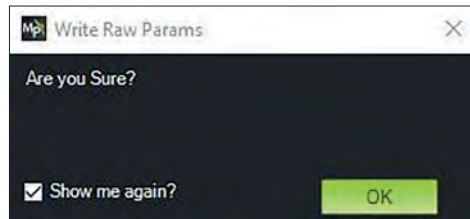
Command: **CAN\_P1\_FDBITRATE** – Option **1: 1M**

CAN_P1_DRIVER	1	0		0:Disabled 1:First driver 2:Second driver	Enabling this option enables use of CAN buses.
CAN_P1_FDBITRATE	1	8		1M 1M 2M 4M 5M	Bit rate can be set up to from 1000000 to 8000000
CAN_P2_DRIVER	0	0			Enabling this option enables use of CAN buses.

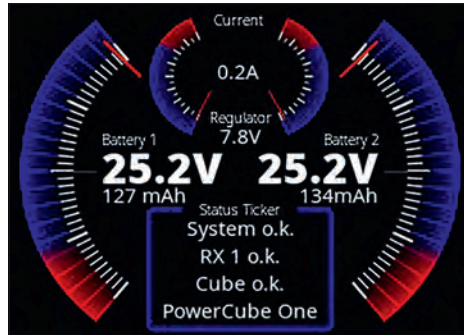
Command: **CAN\_LOGLEVEL** – Option 1: **Log Error**

CAN_LOGLEVEL	1	0	Log Error	Loglevel for recording initialisation and debug information from CAN Interface
			Log None	
CAN_P1_BITRATE	1000000	1000000	Log Error	Bit rate can be set up to from 10000 to 1000000
			Log Warning and below	
			Log Info and below	
CAN_P1_DRIVER	1	0	Log Everything	Enabling this option enables use of CAN buses.
			1: First driver	
			2: Second driver	

g) Safe settings and restart the system



When the Cube has booted up again you will see the status message: **Cube o.k.** in the PowerBox monitor.  
This means that the servo data from the Cube is correctly received in the **PowerCube ONE**.



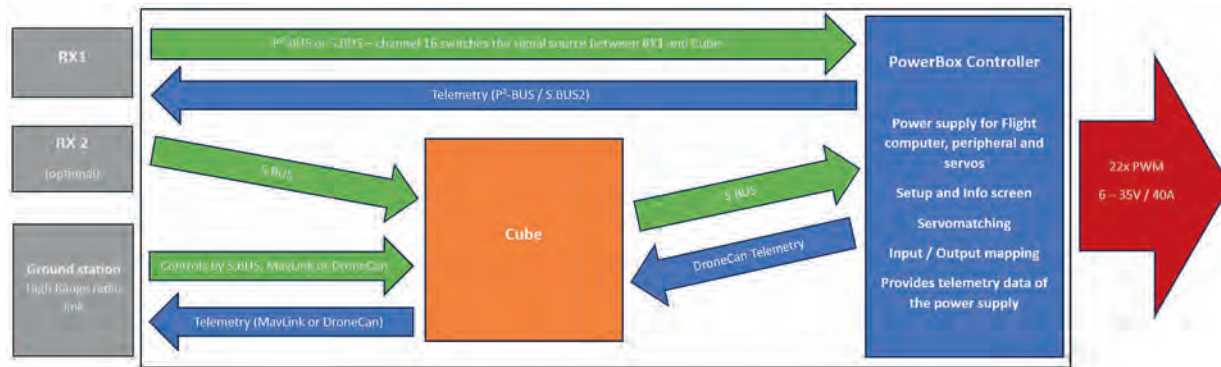
In the Mission Planner, the battery data from the **PowerCube ONE** is found in the left lower corner.



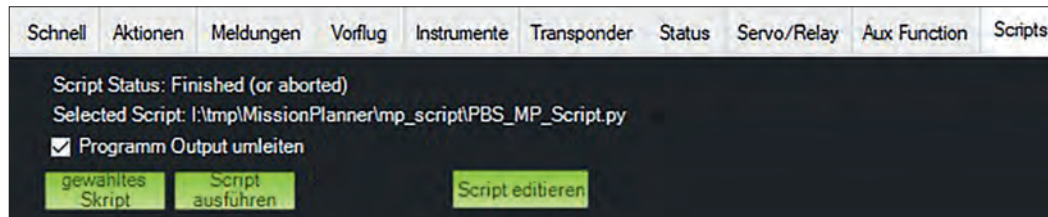


There are different systems which can be used to control the aircraft. For example, with MavLink, DroneCan or S.BUS connected to the Cube or using the RX1 input for bypassing the Cube Flight computer.

**You can see the internal signal path of the PowerCube ONE to understand how it works:**

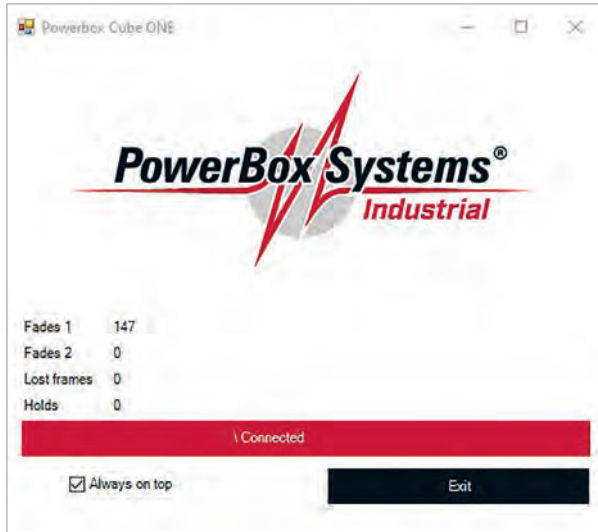


For detailed receiver data like Fades, Lost frames and Holds you can use our Script. Open the Scripts tab:






Select the Script from our download section **PBS\_MP\_Script** and execute it. You will see following screen:




For technical questions you can contact us here:  
[industrialsupport@powerbox-systems.com](mailto:industrialsupport@powerbox-systems.com)

## **PowerBox-Systems GmbH**

Dr.-Friedrich-Drechsler-Straße 35  
86609 Donauwörth  
Germany

 +49-906-99 99 9-200

 sales@powerbox-systems.com

**[www.powerbox-systems.com](http://www.powerbox-systems.com)**