PowerBox Systems®
Industrial

QUICK SETUP GUIDE

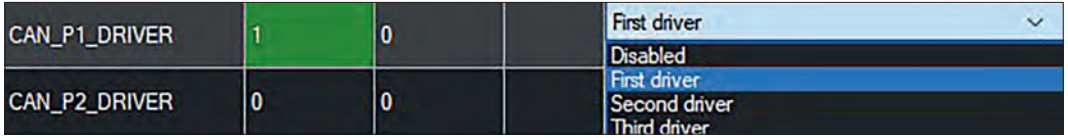
ENGINE MANAGER PRO

This short manual explains how to prepare the Cube flight computer for operation with the **Engine Manager Pro**. It describes the required parameter settings in ArduPilot Mission Planner to enable communication between the Cube flight computer and the **Engine Manager Pro**.

1. Connect the **Engine Manager Pro** with a CAN-Bus wire (4-poles) to the flight computer carrier board.
2. Connect a USB cable between the Cube flight controller (FC) and your computer, then click ***CONNECT*** in Mission Planner.
3. Open the ***Full Parameter List*** and change the settings in the recommended sequence:

a) *CAN* Parameter

Command: ***CAN_P1_DRIVER*** – Option: ***First driver***



b) *BRD_SAFETY_DEFLT*

To activate the CAN-Bus Servo output you have to set the ***BRD_SAFETY_DEFLT*** to **0**.
You will need to adjust this setting in your application.

c) Activate the EFI Data support

EFI_TYPE	5	0		DroneCAN

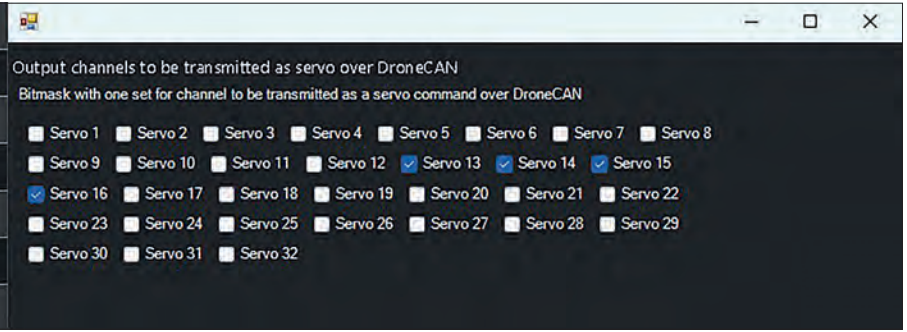
Save the parameters and restart the flight computer before you proceed.

d) Activate the Servo outputs at the CAN-Bus

Select the channels you want to use for:

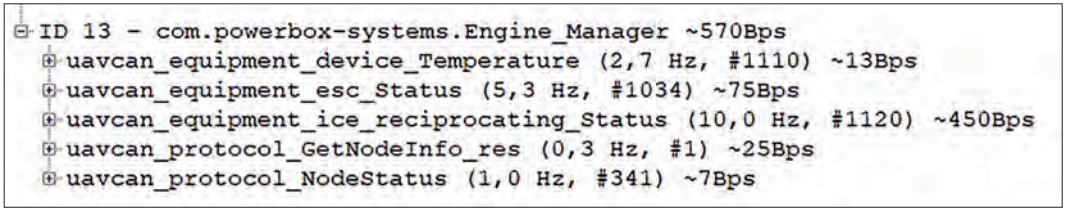
- Switching the ignition (Standard Ch15)
- Servo outputs A / B / C
- Resetting the capacity counter

CAN_D1_UC_SRV_BM	61440	0	
CAN_D1_UC_SRV_RT	50	50	Hz
CAN_D2_PROTOCOL	1	1	
CAN_D2_PROTOCOL2	0	0	
CAN_LOGLEVEL	0	0	
CAN_P1_BITRATE	1000000	1000000	
CAN_P1_DRIVER	1	0	



e) Telemetry

You will find the **Engine Manager Pro** in the CAN-Inspector with following messages:



The Messages contain:

- uavcan_equipment_device_Temperature
- 4x Temperature A – D

- uavcan_equipment_esc_Status
- 4x Temperature A – D
- Voltage of the ignition power supply
- Current of the ignition power supply
- Used capacity of the ignition power supply
- RPM

- uavcan_equipment_reciprocating_Status
- Exhaust gas temperature (Temp. input A)
- Cylinder head temperature (Temp. input B)
- Intake manifold temperature (Temp. input C)
- RPM
- Estimated consumed fuel*
- Fuel consumption rate* cm³

* To get the fuel consumption and the fuel consumption rate you have to connect a **Smoke-EL Fuel Sensor** to the P²-BUS output. No further settings are required.

f) CAN-Settings

You can make all settings of the **Engine Manager Pro** in the CAN-BUS Menu:

Komando	Wert	Min	Max	Default	Fav
Channel.A	12	0	26	0	☐
Channel.B	13	0	26	0	☐
Channel.C	14	0	26	0	☐
Channel.Ignition	15	0	26	0	☐
Fuel.Tank.Size	50	5	500	0	☐
Ign.Voltage	6.0V			6.0V 8.0V 12.0V	☐
Reset.Cap	16	0	26	0	☐
RPM.Factor	1 : 1			1:1 1:2 1:3 1:4 2:1 3:1 4:1	☐
uavcan.node_id	13	1	127	13	☐

- Channel A – C: Channel settings for the Servo outputs
- Channel Ignition: Switching channel for the Ignition power output. The threshold is at +50% throw
- Reset Cap: Channel to reset the capacity measurement for the ignition battery
- Fuel Tank Size, 50 means 5.0l
- Ign. Voltage, depending on your ignition type, select between 6.0V, 8.0V or 12.0V
- RPM Factor is a factor for the revolution calculation. For example if your engine has 2 magnets, select 2:1

For technical questions you can contact us here:
industrialsupport@powerbox-systems.com

PowerBox-Systems GmbH

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

+49 906 99999-200
sales@powerbox-systems.com

www.powerbox-systems.com