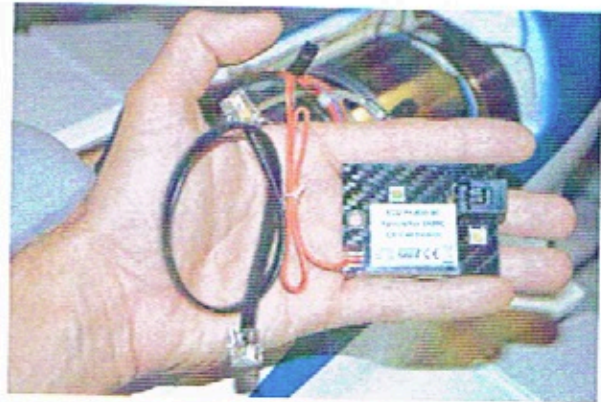# ECU Protocol Data Converter (JJXC)

A Data Protocol-Converter compatible to Jeti Telemetry and JetCat Engine-Control-Unit (ECU) from Version 6.x und 10.x

Firmware Version 1.0

Use and Features:

- Easy implementing, no PC is necessary! Plug and Play!
- Compatible to ECU´s from JetCat with Version 6.x and 10.x
- Following ECU measuring values are transmitted to the radio control:
    - ECU accumulation-voltage (Volt) with adjustable low voltage warning
    - EGT exhaust temperature (°C)
    - Turbine driving-speed (U/min.)
    - Tank fuel volume (mL) with adjustable fuel alarm (buffer)
    - Fuel flow-rate (mL)
- The most important GSU data are visible in your radio control
- **Galvanic separation** of ECU- to receiver current circuit (it avoids electric blockages caused by the turbine or the turbine current circuit)
- Future-proof!!! A supplementary software upgrade is possible (new features)
- 20Mhz RISC CPU (fast processing of the measure values) Nano Watt Technology
- Small, light, also fits in smaller models
- English Manual
- Made in Germany
- Supports the Jeti Telemetry directly at the receiver (external socket) or via Jeti Sensor EX-4 Expander (new EX Version) in connection with further sensors.

Following Jeti transmitter and Display Boxes with Sensor Data are supported by the JJXC ECU Protocol Converter:

Transmitter DS-16

Transmitter DC-16

Jeti Profi Box Ver. 1.17 & 1.20

Jeti Box (Old Classic version)

⚠ **Please read this manual before implementing the JJXC Converter!!!**

Assembly

⚠ The Telemetry bus-cable (Servo JR cable) gets plugged in the EXT socket at the receiver or at one of the 4 ports at Jeti Expander. If you intend to implement an Expander, you have to use the Jeti EX-4 Expander (reference number. H80001300).

The JJXC Converter is plugged in subordinately by Jeti EX sensors at EX-4. If you like to plug in further sensors, please be aware of the JR cable polarity at EX-4 (see label print).

The included „Western plug cable" is plugged in between JJXC Protocol Converter and ECU LED board.
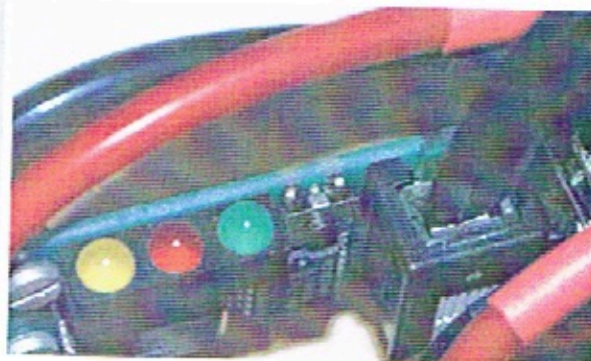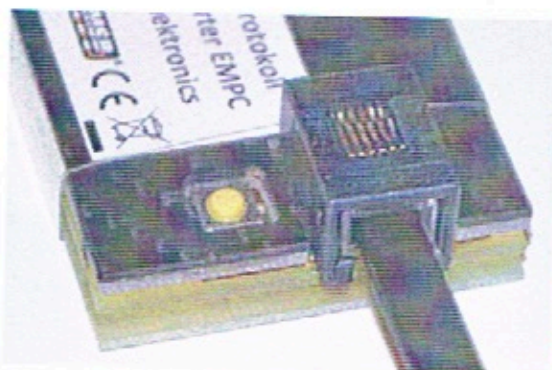

The JJXC Protocol Converter has to be secured against displacing. The assembly is finished thereby.

Attention with JetCat ECU Version 6.x! It is no simultaneously working of GSU and ECU JJXC Protocol Converter possible. It absolutely has to be checked, that GSU and Protocol Converter are not plugged in simultaneously. The power supply system of the ECU might possibly overloaded.

By using JetCat ECU 10.x, a parallel operation of JJXC and Mini GSU is possible during Bus action. During this Bus action the Western-Socket is free. Please also reference your JetCat Manual concerning the operation of Mini GSU and ECU Version 10.x.

Function elements
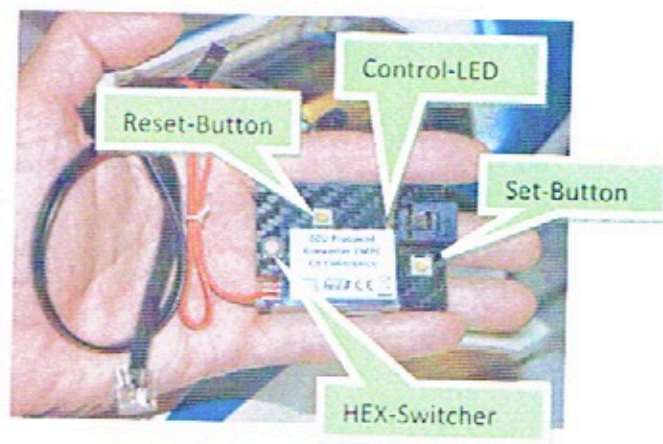
Note! The Set-Button has no function at JJXC!

Switching on/operation

The ECU and the radio control have to be ready to operate. Please be aware that the Hex-Switcher is **not** in position 0. Otherwise the JJXC would branch into its Setup Menu. More information continues later.

The JJXC uses the classical Jeti Box Emmulation/Function for displaying its measured values. JJXC is attained via the Menu MX in the transmitter DC- and DS 16 or via Jeti Profi Box.

If everything is wired correctly and it is switched on, the following page appears in MX Menu.
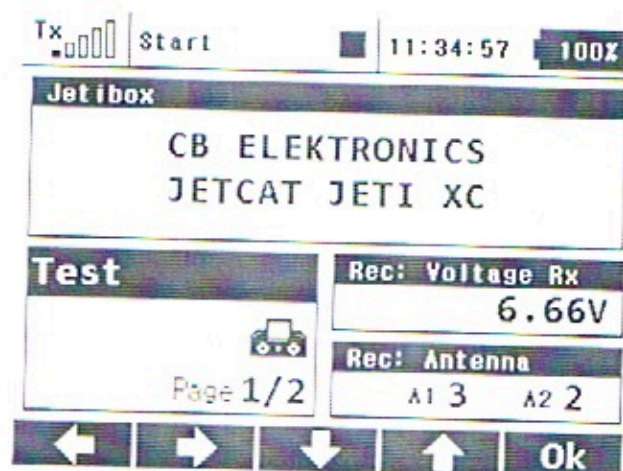
Please push the Cursor button 'downwards' once. Then you reach the Menu for the turbine measured values.

```
Tx .ıll  Start          ■  12:22:51  100%
┌─────────────────────────────────────┐
│ Jetibox                             │
│        »8,3V »27C »»»0mL            │
│        »»»»»»»0RPM 3800mL           │
├──────────────────┬──────────────────┤
│ Test             │ Rec: Voltage Rx  │
│                  │           6.68V  │
│           [icon] ├──────────────────┤
│                  │ Rec: Antenna     │
│      Page 1/2    │   A1 9     A2 9   │
├──────────────────┴──────────────────┤
│  ⬅   ➡   ⬇   ⬆   Ok                 │
└─────────────────────────────────────┘
```
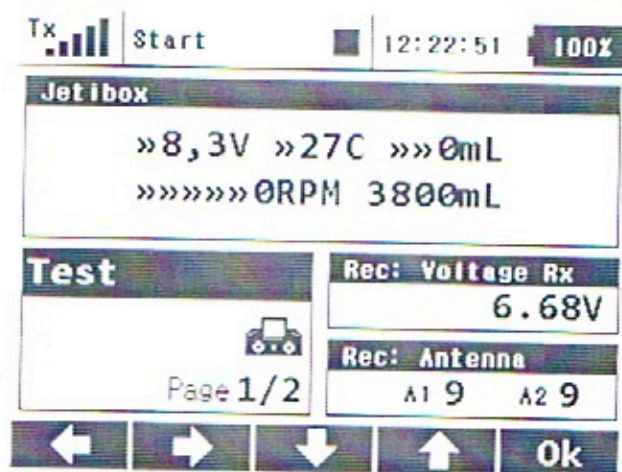
In the upper row you see the ECU operating voltage, the exhaust temperature EGT and the fuel flow-rate of the Kerosine pump. In the lower row the turbine driving-speed and the tank volume is displayed.
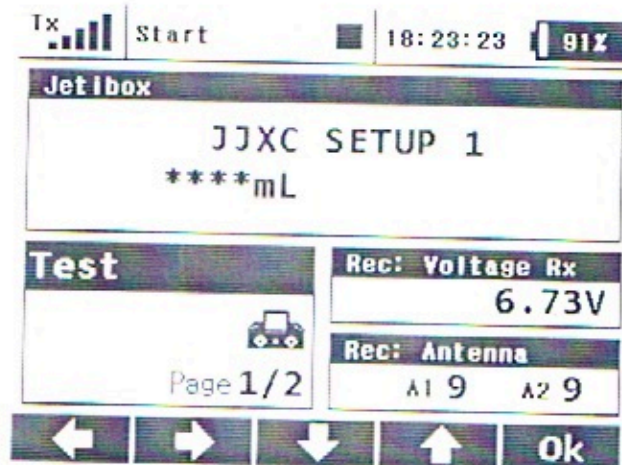
⚠ Attention: It is essential that you define your tank-volume in the appropriate Menu of your JetCat ECU. Only in this case, the fuel volume display works correctly.

Warning thresholds at JJXC

⚠ To select Setup Menu, you have to set the Hex-Switcher on position 0 (Null) before switching on. After switching on, please wait about two seconds. The ECU JJXC Protocol Converter is now in Setup Position-1 'Kerosine Alarm in ml'.

```
Tx .ıll  Start          ■  18:23:23  91%
┌─────────────────────────────────────┐
│ Jetibox                             │
│          JJXC  SETUP  1             │
│       ****mL                        │
├──────────────────┬──────────────────┤
│ Test             │ Rec: Voltage Rx  │
│                  │           6.73V  │
│           [icon] ├──────────────────┤
│                  │ Rec: Antenna     │
│      Page 1/2    │   A1 9     A2 9   │
├──────────────────┴──────────────────┤
│  ⬅   ➡   ⬇   ⬆   Ok                 │
└─────────────────────────────────────┘
```

By rotating the Hex-Switcher the Kerosine Fuel threshold might be changed appropriately to the table.

JJXC Setup-1 Kerosine Fuel-Volume in mL		
Hex Switcher/ Switch Position	Function / Alarm threshold in mL	Note / Application
0	Start Setup	Request of Setup Menu valid for Setup 1 & 2
F	OFF	Warning for Kerosine Fuel-Volume is switched off
E	1800mL	Threshold values for the Kerosine Fuel-Warning. By underrun the Jeti 'M' Morse Warning gets displayed.
D	1600mL	
C	1400mL	
B	1200mL	
A	1000mL	
9	800mL	
8	600mL	
7	400mL	
6	300mL	
5	No function	
4	No function	
3	No function	
2	No function	
1	No function	

Please choose one value or deactivate the warning. The warning is adjusted at 1000mL by delivery.

Please push the 'Arrow downwards button 'at the Jeti Box transmitter controller. The adjusted Kerosine threshold gets saved in JJXC. In the following the Setup Position-2 Voltage Alarm is displayed.

```
Tx ..ıll  Start        ■  18:24:38 [ 91%

Jetibox
            JJXC SETUP 2
            ****VOLT


Test                       Rec: Voltage Rx
                                    6.72V
            🔊
            Page 1/2       Rec: Antenna
                           A1 9    A2 9

    ←      →      ↓      ↑      Ok
```
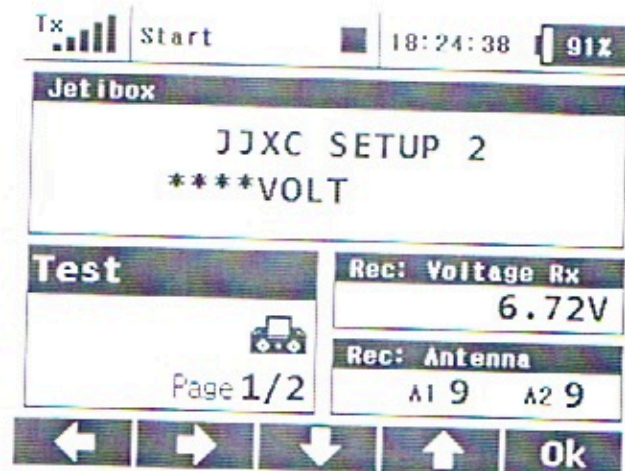
By rotating the Hex-Switcher the Voltage Alarm Threshold might be changed appropriately to the table.

JJXC Setup-2 ECU Spannung		
Hex Switcher / Switch Position	Function / Alarm Threshold in Volt	Note/ Application
0	Start Setup	Request of Setup Menu valid for Setup 1 & 2
F	OFF	Warning for ECU Voltage is switched off
E	10,8V	Threshold Values for the end-of-discharge voltage for a 3 cell LIPO Accumulator
D	10,5V	
C	10,2V	
B	9,6V	Threshold Values for the end-of-discharge voltage for a 3 cell LiFePo Accumulator
A	9,3V	
9	9,0V	
8	7,2V	Threshold Values for the end-of-discharge voltage for a 2 cell LIPO Accumulator
7	7,0V	
6	6,8V	

5	No function	
4	No function	
3	No function	
2	No function	
1	No function	

Please choose one value or deactivate the warning. The warning is adjusted at 9.0 Volt by delivery.

```
Tx .ıll  Start        ■  18:25:00 ▯ 91%
┌─────────────────────────────────────┐
│ Jetibox                             │
│                                     │
│        JJXC  SETUP  2               │
│        9,0VOLT                      │
│                                     │
├──────────────────┬──────────────────┤
│ Test             │ Rec: Voltage Rx  │
│                  │           6.72V  │
│      🖵          ├──────────────────┤
│                  │ Rec: Antenna     │
│      Page 1/2    │   A1 9     A2 9   │
├────────┬────────┬────────┬──────────┤
│   ←    │   →    │   ↓    │  ↑  │ Ok  │
└────────┴────────┴────────┴──────────┘
```

Via Jeti Box the Voltage Alarm is displayed with the Morse code 'U'. Please push the „Arrow downwards button "at the Jeti Box transmitter controller again. The adjusted Voltage Threshold gets saved in JJXC. In the following the regular CB Electronics welcome page is displayed. From this page you can change tot he normal ECU Display Page.

⚠ Attention!! Important!!

It is essential that the ECU Display page is active, if the Morse code Alarm for ECU Voltage and Kerosine should be put to sound!!

```
Tx .ıll  Start        ■  12:24:18 ▮ 100%
┌─────────────────────────────────────┐
│ Jetibox                             │
│                                     │
│     »8,2V  657C  103mL              │
│     »54700RPM  3767mL               │
│                                     │
├──────────────────┬──────────────────┤
│ Test             │ Rec: Voltage Rx  │
│                  │           6.68V  │
│      🖵          ├──────────────────┤
│                  │ Rec: Antenna     │
│      Page 1/2    │   A1 9     A2 9   │
├────────┬────────┬────────┬──────────┤
│   ←    │   →    │   ↓    │  ↑  │ Ok  │
└────────┴────────┴────────┴──────────┘
```

In case that you would like to select another sensor via the Jeti Box Function, you have to leave the JJXC via ECU Menu by pushing the upwards arrow for some seconds. It is then guaranteed that the alarm signal is further displayed (Morse code 'M' and 'U').

Inside the transmitter DS- and DC-16 you can link the Warning Signals 'M' and 'U' with the release of a WAVE language file. Appropriate WAVE Audio files for free application might be found on the annexed CD-ROM. These files might be integrated in the Audio file in the particular language version inside your transmitter.

Tip!! If an Alarm Signal appears, you can stop this by changing to CB Electronics welcome page.
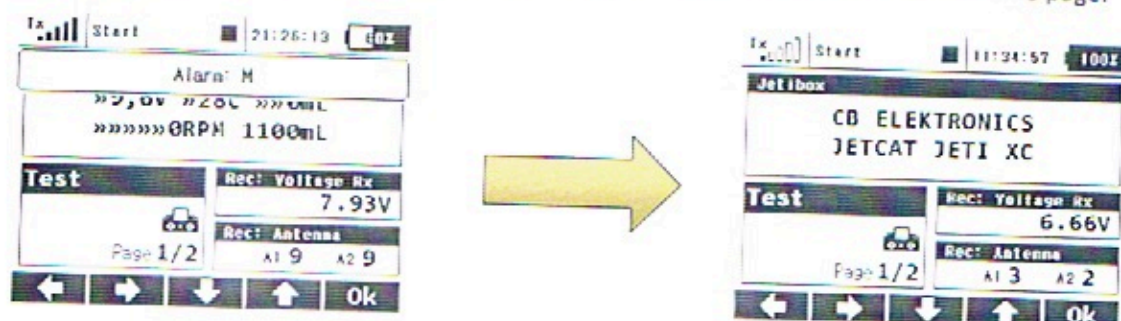
For regular operating the Hex-Switcher might <u>not</u> be in position ‚0'!

⚠ Before you fly the first time please do a range-test with your transmitter!!! Attention: You are always commited to have intervisibilty to your airplane. Use the voice sound file announcements for the alarm release.

All descriptions can be transferred analogously to Jeti Profi Box. Exception: At Jeti Profi Box no WAVE Audio files can be used.

After switching on the radio control the „handshake"between Telemetry Bus and ECU electronic occurs automatically. Now you can fly. The current telemetry-data are transmitted to your radio control.

JJXC Protocol Converter Spezifications	
Input voltage of ECU	5.0 Volt
Measure values	ECU-Voltage, EGT, RPM, Tank- Volume and Flowrate
Alarm values	ECU-Voltage and Tank buffer
Save of Setup and Alarm	Yes always in EEPROM
Galvanic seperation ECU/ RC	Yes
Startup-Time	2sec.
Optical signalisation	Bus Transmit
Jeti compatible	Yes
Measurements B x L x D in mm	46 x 60 x 10
Weight	35gr.

Technical changes reserved!

Scope of delivery: JJXC Protocol Converter with connection cable to ECU (RJ-11), Manual, CD-ROM with Audio WAVE Files.

Service and warranty:

Dear customer, we from CB Electronics have done everything possible, to deliver you an acceptable product. However, should there be any problems, we want you to cooperate with us. Before you bring your product to a specialist or send it back to us, you should check it on your own, to avoid unnecessary costs. If we inspect your ECU JJXC-Bus protocol converter and observe that there is no mistake we have to charge an administrative fee of 10 Euro. However, should there be any defect, in spite of all guaranty and quality arrangements, the ECU JJXC protocol converter gets repaired for free or replaced completely if you are in the guaranty time of 24 month. After the guaranty time or if you have a self-inflicted defect (e.g. wrong polarity of the input voltage, destruction caused by vibration, crash consequences) the ECU JJXC-Bus protocol gets repaired or replaced completely for costs, also during your guaranty time. Technical changes reserved. We assume no liability for consequential damages, errors, or printing mistakes. CB Electronics assumes no liability for damages, that were caused during your handling of ECU JJXC-Bus protocol converter, because we cannot observe and control your handling.

Certification

The ECU JJXC-Bus protocol converter corresponds to following terms of references and norms with certificate from October 1st 2011.

EU reference 2004/108/EG (EMV)
DIN EN Norm 55014-1:2006 + A1:2009

⚠️

A handling on a power supply unit or mains adapter is not acceptable!!!

The relevant declaration of conformity can be requested on the below- mentioned address.

Disposal

The symbol of scratched waste container on the product, the manual or the package indicates that this product or parts of it are not allowed to dispose in normal household garbage at the end of its lifetime. Please dispose this product in an appropriate disposal factory in your community or town. There the gadget gets disposed professional and for free. By return you make an important contribution to environmental protection.
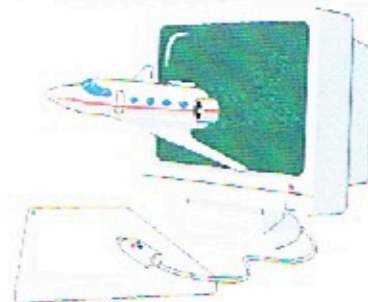
All our products are conformable with ROHS.
WEEE-Reg. Nr. DE 49765279

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All Jeti descriptions are a Trade-Mark of Jeti model. We would like to say Thank You for the relinqiushment of the Jeti Protocol Documentation by Jeti Model and the ECU Protocol Release by JetCat.