JETI model

Central Box

Central Box 400

BEC OUTPUT

BATT1   BATT2

BATTERY INPUT

24 channel servo interface

6 - 17V

LED1   LED2

Protected multi-channel servo interface

EN *User Manual*

Central Box 400

1 Introduction

The Central Box 400 is a switchboard designed for the complete management of servos in large to giant models with an emphasis on safety. The Central Box 400 has a unique design that provides overload protection at each servo output. An independent, very powerful BEC (battery eliminator circuit) for each battery input makes the Central Box an optimal solution to connect up to 24 servos. The Central Box 400 can manage the batteries and fully supports the JETI EX telemetry system. Up to two receivers with serial (PPM, EX Bus, UDI) output can be connected to the Central Box 400. With a JETI DC/DS transmitter, the full potential of the Central Box can be used, such as easy configuration of the Central Box, EX telemetry, and very fast servo response.

1.1 Features

- Two independent high-powered BEC´s for voltage stabilization of servos
- overload protection on each channel
- overload protection on Rx, Ext, and Switch outputs
- possibility to connect up to 2 receivers with serial interface (PPM, EX Bus, UDI)
- built-in Expander function with the possibility to connect JETI EX sensors
- input for magnetic switch or RC switch
- batteries connected via MPX connector
- stabilized voltage output via a pair of MPX connectors
- 100Hz mode of servo outputs (10ms period)
- supports EX telemetry (voltage, current, capacity, and temperature measurement, overload indication, ...)
- internal memory for storage of telemetry data
- USB connectivity for connection to PC
- easy settings changes via DC/DS transmitter
- firmware updatable
- suitable for use with high voltage (HV) servos
- robust metal construction with mounting holes
- LED status indication
- each output is individually configurable (channel assignment, trim, reverse, ATV)

② Description

Central Box 400 has 24 outputs for servos with individual overload protection. More over, outputs Y17-Y24 can be configured as:

- servo output
- logical input
- logical output

Control signals generated by the Central Box to servos are 5V. This solution ensures reliable servo signal transfer for longer distances.

Ext1 - **Ext4** ports can be configured for use as:

- inputs for telemetry sensors
- EX Bus expanders - used for connecting devices which support the EX Bus protocol (the Central Box, a sensor,...)

Ext4 - slot is also used as an output to connect a JETIBOX to configure the Central Box and for the firmware update connection

Rx1 - primary input for connecting receivers with serial output (EX, PPM, UDI)

Rx2 - secondary (backup) input for connecting receivers with serial output (EX bus, PPM, UDI)

Switch slot is reserved for connecting magnetic switch or RC Switch

BEC output serves as *the output for stabilized voltage to power supply other Central Boxes* that can be power supplied from the Central Box 400. The voltage at the output has *the same level* as the voltage for *supplying the servos*. Voltage for the servo outputs is adjustable from 5-8V with 0.1V steps.

For more safety, the Central Box 400 contains two BEC regulators connected in parallel. Information about the correct power supply and a faultless condition of the individual branches is indicated by green LED and also by telemetry. It is not recommended to use the BEC outputs for direct power supply of servos or receivers with servos. These devices are not individually protected. If one element of the branch supplied from the BEC output is overloaded, the

entire branch is disconnected. The BEC output current limit is 15A.

BATT1 and **BATT2** – battery inputs

To avoid accidentally disconnecting or pulling the cable with the JR or MPX connector out, e.g. due to vibrations, it is possible to install safety mechanism for connectors on the Central Box. Safety mechanism for connectors fixes not only connectors of servos, receivers, and sensors, but also BEC outputs (MPX connectors), see chapter "Safety mechanisms of connectors"
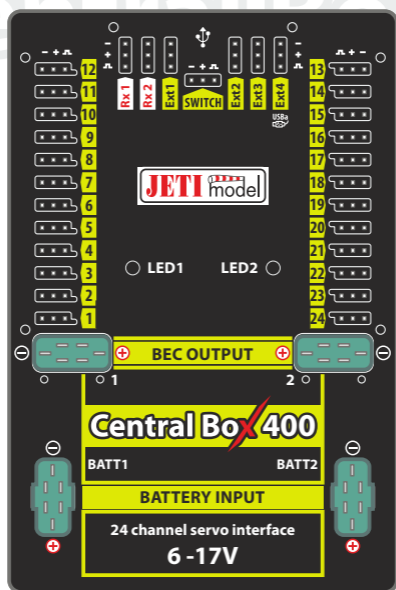

Fig. 1: Central Boxu 400 description

3 Connection

3.1 Power supply of Central Box 400

The Central Box 400 can only be powered from batteries connected to BATT1 or BATT2. When selecting the power supply it is necessary to follow the power requirements and the number of the servos you use. Batteries for power supply must be sufficiently large to prevent a decrease of the output voltage for servos when loaded (voltage depression) and to allow the overload protection function properly. Together, both power supply methods must be able to supply a 20A continuous and 120A peak current. To take full advantage of internal BEC we recommend to power the Central Box from three Lixx cells.

The power batteries are connected to the Central Box using MPX connectors. The Central Box allows up to two batteries to be connected. The selection of battery to supply power is based on the voltage set in individual BEC´s. During use, the power is actually supplied from the battery whose BEC has higher voltage set. If the voltage is the same, the power can be used from both batteries at the same time. This rule applies to the standard power supply. This means that the power battery voltage should be greater than the required BEC voltage setting. When the voltage of the batteries is different, the power is not shared and each pack is isolated from the other. This allows you to safely use batteries of different capacity, number of cells, and chemistry type. If the power for the Central Box is provided only from one battery, it can be connected via either the BATT1 or BATT2 input.
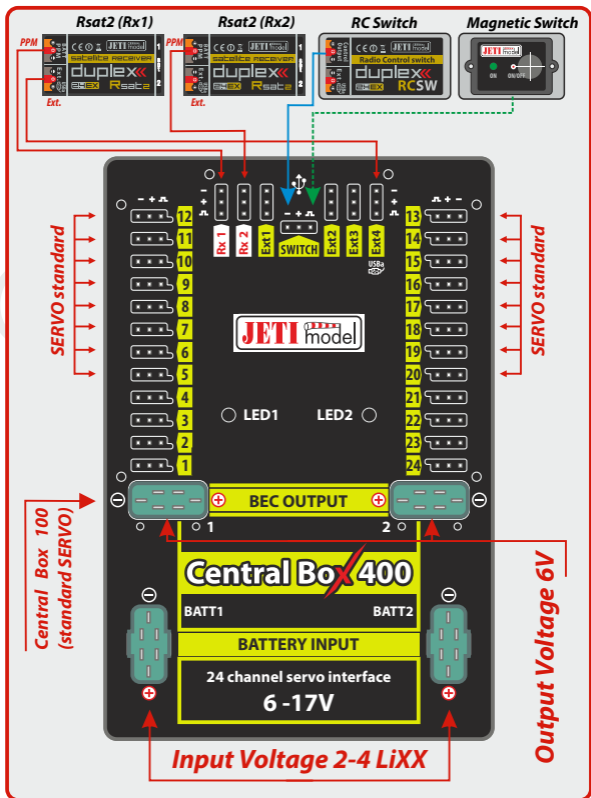
Fig. 2: Example of the Central Box 400 powered for the use with standard servos (voltage range up to 6V)
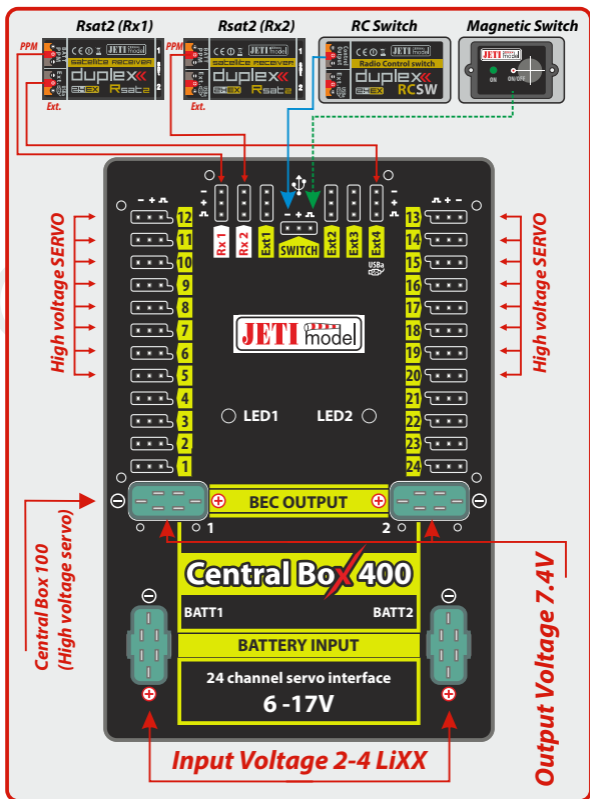
Fig. 3: Example of the Central Box 400 power for use with
HIGH Voltage servos

Caution: The Central Box can only be power supplied from
BATT1 or BATT2.

3.2 Advanced power sources settings of the Central Box 400

In the settings of the Central Box it is possible to adjust the BEC to the Advanced mode. In this mode you can adjust the voltage of individual power supplies and thus one source can be used in preference to the other one. This way you can manage which battery provides the energy. This can lead e.g. to a situation when under normal circumstances only one power supply is used. The other one is intended only as a backup. You achieve this function by adjusting the supply voltage of BEC1 greater than of the BEC2 or vice versa. E.g. UBEC1 is 7.4V and UBEC2 is set to the value of 5.5V.

The voltage stabilization of individual power sources can be deactivated. If the input battery voltage is lower than your settings, or if there is the same voltage on the BEC and on the input battery, then the voltage is not stabilized. For example if 6V are used and the U BEC is set to 8.4V, the voltage of the power supply output is max. 6V, which is not stabilized.
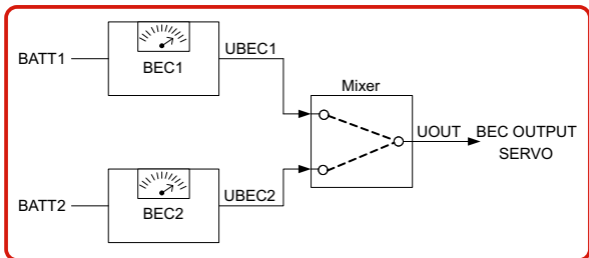
Fig. 4: The block scheme of power supply.

3.3 Overload protection of servos

The Central Box has an overload protection circuit on every servo output. In case of an overload, the affected servo output is disconnected from the power supply while the remaining servo outputs are still powered.
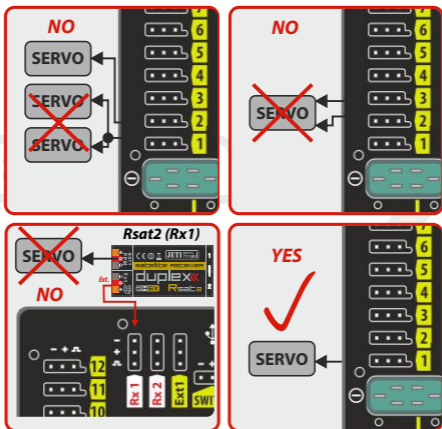
Fig. 5: Correct connection of servos to the Central Box

Caution: *It is prohibited to connect servos directly to any receiver that is powered from the Central Box 400 (Rx1 or Rx2). In this case the receiver can be fully disconnected from the power supply, which could lead to the signal loss.*

Caution: *It is not recommended:*
- *to connect more Central Box outputs to one servo*
- *to use a Y cable (connecting two servos to one output)*

3.4 Connecting Central Box – PPM variant

If you connect Duplex receivers with a possibility to switch the output to EX Bus to the Central Box, we recommend the wiring described in chapter 3.5, EX Bus variant.

The receivers can be connected to the Central Box using the **Rx1** and **Rx2** inputs.

The **Ext4** port is for output of telemetry data from the Central Box in the form of EX telemetry. To use the Central Box telemetry and other sensors connected to it, use a Duplex EX receiver. Simply connect the Central Box output labeled **Ext4** with the Duplex EX receiver input labeled **Ext.**

Configuring the Central Box is done by using a JETIBOX. You can either directly connect to the Central Box, or wirelessly connect using transmitter module, or a JETI transmitter.
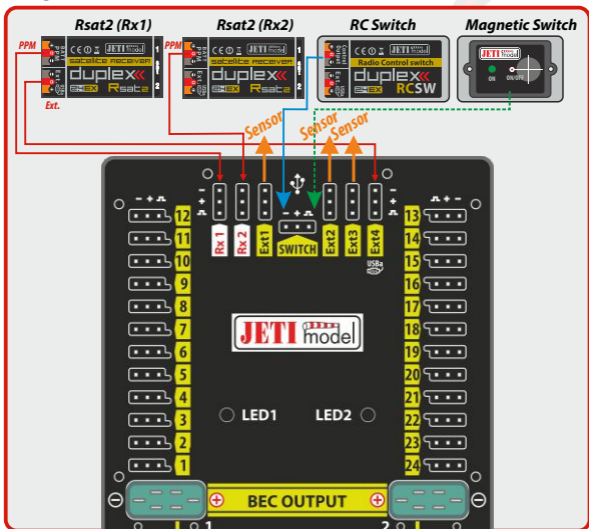

Fig. 6: Block diagram of Central Box 400 connection - PPM variant

3.5 Connecting Central Box – EX Bus variant

Receivers can be connected to the Central Box using the **Rx1** and **Rx2** inputs.

Ext1-4 are inputs for telemetry sensors. Telemetry is transmitted to the receivers via EX Bus. **Ext1-4** can also be configured as EX Bus outputs. Configuring the Central Box is, in this case, done directly in the transmitter via EX Bus.

EX Bus output from the Central Box is an input for devices supporting this standard, such as Central Boxes and certain sensors. When operating the Central Box with DC/DS transmitter, it is recommended to use two receivers communicating with the transmitter in the wireless mode, **„Double path"**.
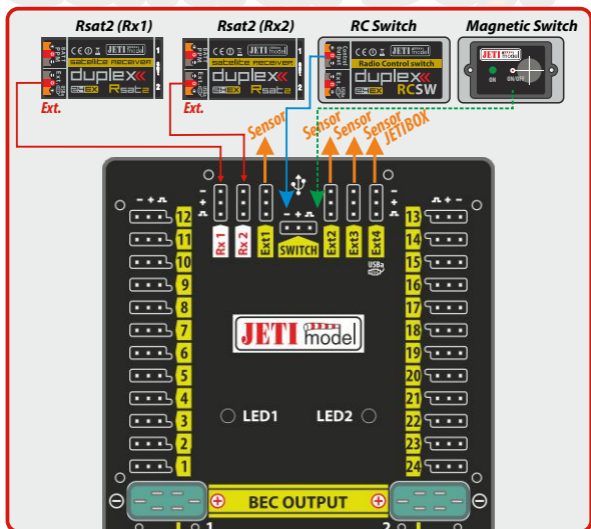

Fig. 7: Block diagram of Central Box 400 connection - EX Bus variant

The Central Box can be configured in two ways:
• by connecting a JETIBOX (directly to the Ext4 of the Central Box or wirelessly via a transmitter/transmitter module)
• using DS/DS transmitter or via Device Explorer (EX Bus)

## 3.6 Putting the Central Box 400 into operation

1. Connect the battery to BATT1 or BATT2 input of the Central Box.
2. Connect the bind plug to the Ext. pin of the auxiliary receiver.
3. Use a three-wire cable to connect PPM output of the receiver and the Rx1 input of the Central Box.
4. Switch on the DC/DS transmitter. Then the transmitter is paired with the receiver.
5. Disconnect the bind plug from the receiver. Reconnect the three-wire cable connecting the receiver with the Central Box. Disconnect the cable from the PPM output of the receiver and connect it to the Ext. output of the receiver.
6. In the transmitter menu *Menu->Advance Properties ->Wireless modules/Trainer* switch the mode to *"Double path"*.
7. Connect the bind plug to the Ext. pin of another auxiliary receiver.
8. Use a three-wire cable to connect PPM output of the receiver with the Rx2 input of the Central Box.
9. In the transmitter menu *Menu->Advanced Properties ->Wireless modules/Trainer* confirm the item *"Pair the secondary TX module"*.
10. After pairing the transmitter with the other receiver, disconnect the bind plug from the receiver. Reconnect the three-wire cable connecting the receiver with the Central Box. Disconnect the cable from the PPM output of the receiver and connect it to the Ext. output of the receiver.
11. In the transmitter menu *Menu->Model ->Device Explorer* select your auxiliary Rx from the first line and set *"Serial link"* to *"EX Bus & PPM pos."*. Follow the same procedure when setting the second receiver.

3.7 Alternative functions – logical input

Using a pin as the input is useful because of simple feedback, without the use of telemetry sensors.

If you install, for example, limit switches on a retractable undercarriage, you can have feedback about its condition during operation. The condition of digital inputs is transmitted via EX telemetry and sounds or alarms can be assigned to the events.

- This way the pin is configured as the input and its condition (disconnected, connected to the ground) is transmitted to the transmitter as other telemetry values from the sensors.
- Only keep the pin disconnected or connected to the common ground of the Central Box.
- Never connect to a different voltage. The pin works exclusively on the Pull-Up mode.
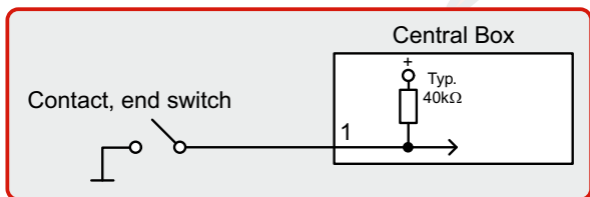
Fig. 8 Example of logical input connection

3.8 Alternative functions – logical output

In the digital output mode, only the logical level 1 or 0 is generated on the port configured this way. The value of this output is reflecting the assigned output channel and its level. If the servo position of the specified receiver channel is lower than 0%, (the decision limit point can be set by the user using the „Trigger" parameter), the output is set to permanent log. 0 (i.e. 0V). If the servo position is higher than 0%, log. 1 (i.e. 3.3V) will be generated on the pin. In the digital output mode, no control servo pulses are generated for that particular pin. With logical outputs, the Central

Box is even able to control devices that do not use servo impulse as their input, e.g. lights, sound generators, etc.
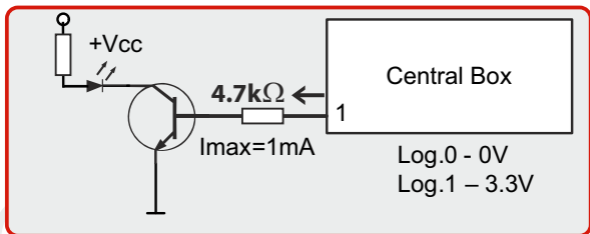

Fig. 9. Example of logical output connection

3.9 Installing safety mechanism of connectors

Vibrations in models powered mainly by gasoline engines can lead to accidental disconnection of connectors. To prevent this phenomenon, there is the possibility of installing a safety mechanism to secure all the connectors. Protective elements 2 and 3 are used to fix the JR connectors. Elements 1 fix MPX connectors.

Screw the distance spacer to the holes on the front side of the Central Box. Mount the elements 2 and 3 to the spacers and tighten them with M2.5 (torx 8) screws. Fix the elements 1 with M2x8 (torx 6) screws. All the screws are supplied with the safety mechanism of connectors.
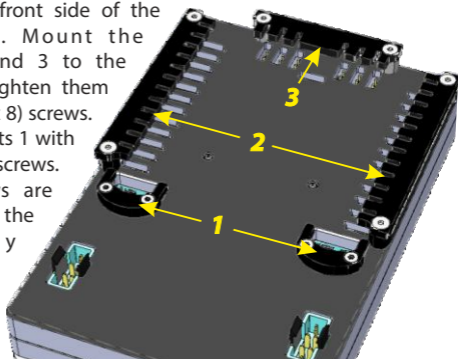

Fig. 10: Safety mechanism installed on Central Box

④ Configuration via JETIBOX

The JETIBOX terminal can be used for parameter setting and retrieving data. After connecting to the Central Box *(output Ext4)*, a startup screen appears that contains identification of the device in the first line of the JETIBOX display. The second line contains the data showing the consumed capacity of batteries.
By pushing the R button (to the right) on the JETIBOX, you get to the expander menu.

In the expander menu, the second lines of the sensors menus connected to inputs **Ext1-Ext4** are displayed. Using buttons U and D (down and up arrows) of the JETIBOX it is possible to browse through the expander inputs. The selected input is marked with a curly bracket brace after the input number, e.g. 1}. By pushing the R button (right arrow) it is possible to enter a selected sensor, where you can adjust and display its parameters.

Return from the sensor menu:
- by holding the L button (left arrow) for extended time
- by holding the L button (left arrow) for short time, if you are in the basic menu of the sensor (in the first line there is identification of the sensor and in the second line there are actual data, such as „MUI 30; 14,2V 7,8A").
The input marked 1}... means that there is no device connected to this input or the connected device is not compatible, or the input from the Central Box is not properly configured.
By pushing the D button (down), you get from the initial screen of the Central Box to its menu.

4.1 Actual values

CENTRAL BOX:

Actual Value – by pushing the **D** button (down arrow) you select the display of actual measured values

- *Accu voltage* - shows the actual voltage of both inputs
- *Accu current* - displays the actual current flowing from the battery to the output
- *Accu capacity* - consumed capacity of each battery
- *BEC voltage* – individual voltage of BEC´s
- *Output voltage* – Output voltage for servos and MPX output (merged BEC voltage)
- *Over-I Monitor* - indication of servo output; (-) output is fine (x) the output is overloaded. Outputs are ordered:
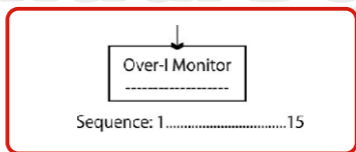
Fig. 11: Description of outputs

- *Temperature* - actual temperature of Central Box
- *Information on the status of receivers* - number of detected channels and the period of signal

4.2 Minimum / Maximum values

CENTRAL BOX: MIN / MAX – by pushing the **D** button (down arrow) you select a display of extreme records.

- *Minimal voltage* – the lowest voltage detected by the Central Box on the inputs during its operations
- *Maximal voltage* – the highest voltage detected by the Central Box on the inputs during its operation
- *Maximal current* – the highest current detected by the Central Box on the inputs during its operation
- *Min/Max Temper.* - the highest and the lowest temperature of the Central Box during its operation (since the last manual reset)

Statistics of the received signal expressed in time

R1: how long was the signal from the primary receiver available to the Central Box

R2: how long was the signal from the secondary receiver available to the Central Box

Statistics of the received signal expressed as a percentage

R1: what percentage of the total operating time was the signal from the primary receiver available to the Central Box

R2: what percentage of the total operating time was the signal from the secondary receiver available to the Central Box

• **Over-I Monitor** - indication of servo output during the operating time of the Central Box; (-) output is fine (x) the output is overloaded

4.3 Setting

CENTRAL BOX: SETTING – By pushing the **D** button (down arrow) you get to the basic setting of the device.

• **Fail Safe** – switches on/off of the Fail Safe function. If the Fail Safe function is deactivated, there is no signal generated in any Central Box outputs at the signal loss. If you activate the Fail Safe function, you can also select how the Central Box responds at the signal loss for each of the individual outputs (OUT off, hold, fail safe).

• **Signal Fault Delay** – the length of time from when the Central Box detects a signal loss to when the programmed Fail Safe output is performed. During this time the last servo input is held. After the selected time has elapsed, the Central Box outputs behave according to setting for each specific output.

• **Output Period** – setting for the period of the output signals (default Auto-synchronous mode with the transmitter). This parameter significantly affects the behavior of the servos. For analog servos the reaction (response) accelerates and the power consumption is higher when the values for the output period are lower. This can lead to vibration in some servos if the values are set too low.

• **Erase data** – by pushing the arrows R and L (right and left) together, the minimum and maximum are reset, see "Minimum / Maximum Values".

• **Output voltage –** setting the output voltage for servos and MPX outputs

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4.4 Out Pin Set

CENTRAL BOX: Out Pin Set – pushing the **D** button (down arrow) moves you to basic settings of particular outputs of the Central Box.

• **ChannelOrExt set** – selecting if the setting is applied to Y1-24 pins (Channel) or Ext.

Setting the channel:

• **Set Output pin** -selection of the output that will be used for the following settings. In this menu the output deflection of the selected output is displayed as a percentage. E.g. Y1 is the Central Box output labeled 1.

• **SetInChannel** – assigns the input channel (marked as Chx) to a specific output (marked as Yx)

• **Reverse** – reverses the output direction

• **Signal Fault -** setting behavior of the receiver in case of signal loss
   • *hold* - repeats the last valid deflection command before signal loss
   • *out off* – does not generate any signal for servo in case of signal loss
   • *FailSafe* – transition to preset deflection of individual outputs

• **FS position** – setup of the selected output deflection in case of signal loss

• **FS speed** – setup for how quickly the output transitions to its programmed deflection in case of signal loss

• **ATV High Limit Yx** – sets the upper travel (throw) limit of the output

• **ATV Low Limit Yx** – sets the lower travel (throw) limit of the output

• **Output Trim** – setting the neutral deflection of the receiver output

- *Output Group* – setting the output to a selected group of output pulses that will be generated from the receiver at the same time

Ext. setting:

- *Rx 1-2* – a list of signal detection at this input (PPM, EX Bus, L EX Bus H, UDI, ---)
- *Ext1-4* – setting the Ext functions (Telem. Input, EX Bus, JETIBOX)

4.5 Alter. Function

The Central Box enables using the servo pins also for the purposes of alternative functions, such as dig. input and output. Switching from standard servo output to alternative function switches the whole group of 8 pins to this function

- *Y1-Y8 Servo output function* – setting the group of pins 1-8. The group is either adjusted as the Servo output or Dig. In/output.
- *Y9-Y16 Servo output function* - setting the group of pins 9-16. The group is either adjusted as the Servo output or Dig. In/output.
- *Y17-Y24 Servo output function* - setting the group of pins 17-24. The group is either adjusted as the Servo output or Dig. In/output.
- *Set Output Pin* – selection of pins that is relevant for following settings. If you press the arrow down, the function setting (mode) for the specific pin is depicted.

For the logical output function (dig. output) you can set:

- *SetInChannel* - assigns the input channel (marked as Chx) to a specific output (marked as Yx)
- *TriggerLevel* - the decision level for logical output. If the servo position of the specified channel is lower than „TriggerLevelY", the output is set to log. 0. Otherwise the output is set to logical 1.
- *Reverse* - reverses the output direction
- *Signal Fault* - setting behavior of the Central Box in case of signal loss
- *hold* - repeats the last valid deflection command before signal loss
- *log.1 (high)* – logical 1 is generated on the output.
- *log.0 (low)* - logical 0 is generated on the output.

4.6 Alarms

CENTRAL BOX: Alarms – pushing the **D** button (down arrow) moves you to the menu for setting the alarms. If the alarm is set to OFF, the alarm is deactivated.

• *Capacity Alarm* - level of the capacity taken from the battery at which the alarm will sound

• *Current Alarm* - level of current drawn from the battery at which the alarm will sound

• *Voltage Alarm 1 and 2* – if the voltage of batteries drops below this level, the alarm will sound

• *Short Circuit Alarm* - Activating/deactivating the alarm for when the outputs are overloaded

• *Temperature Alarm* – Activating/deactivating alarms for the Central Box overheating (if the CB400 temperature is higher than 80°C)

• *Alarm Rx1* – the alarm is generated if the Central Box does not receive any information about valid servo positions from the Rx1 input for a period longer than 1s

• *Alarm Rx2* - the alarm is generated if the Central Box does not receive any information about valid servo positions from the Rx2 input for a period longer than 1s

4.7 Recording

CENTRAL BOX: RECORDING – pushing the **D** button (down arrow) moves you to the menu for data recording.

• *FileName Size* – the file name, size and memory usage by the file into which the data is currently stored.

• *Total/ Free* - summary information about memory usage and the remaining empty space.

• *New record* – setting up a new file

• *Record CB Telem* – enables/disables the telemetry of the Central Box

• *Record Ext Telem* – enables/disables saving external telemetry from the sensors connected to Ext1-4.

• *Delete memory* - complete deletion of the memory

4.8 Service information

CENTRAL BOX: SERVICE – pushing the **D** button (down arrow) moves you to the display of the firmware version and the menu for restoring the default settings of the Central Box.

• *PresetToSetup* – pushing arrows R and L (right and left) together leads to loading the default settings of the Central Box

• **CBOXxxx v. xx.xx ID xxxxx:xxxxx** – designation of the product with the firmware version and the serial number (ID)

5 Configuration via the DC/DS transmitter

The Central Box can be configured by a DC/DS transmitter via the Device Explorer menu. It is necessary to follow these rules for configuring the Central Box via transmitter:

- Receiver firmware version Duplex 3.12 and newer (with setting **Output mode->EX Bus**)
- The receiver must be connected to the Central Box via EX bus
- Transmitter firmware version 2.02 and newer + the device profile (CBOX400.bin) recorded in the devices directory on the SD card of the transmitter

When everything is properly connected and configured, the CBOX400 item appears in the Device Explorer menu. Entering the item moves you to the configuration menu.
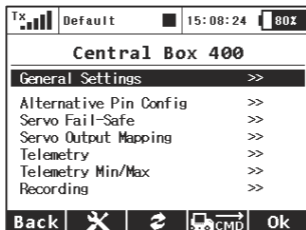
Fig. 12: Device Explorer

5.1 Settings

• **Output Period** – setting the output signals period (default: Auto synchronous mode with the transmitter). This parameter significantly affects the behavior of the servos. For analog servos the reaction (response) accelerates and the power consumption is higher when the values for the output period are lower. This can lead to vibration in some servos if the values are set too low.

• **Expander Settings** – setting alternative functions of Ext1-4 pins.
  ◦ **JETIBOX** – output for connecting JETIBOX, or EX telemetry
  ◦ **Telemetry input** – input for connecting telemetry sensor
  ◦ **EX Bus** - EX Bus output

• **Voltage Settings** – setting BEC voltage.

• **Setting type** – basic or advanced BEC settings. In the advanced settings, BEC voltages can be configured individually. By default the voltage of both BEC´s are the same.

• **Reset to factory settings** - reset to factory setting of the Central Box
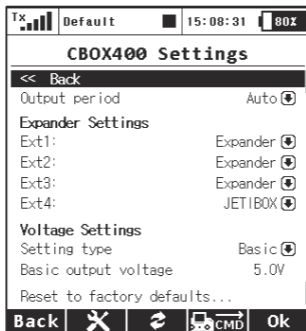
Fig. 13: Device Explorer-General Settings

5.2 Alternate functions of pins

Overall setting of alternate functions for individual pins of the Central Box. Possible settings:

• **Outpin 17-24 Config**.- alternative setting for the group of pins 17-24. The whole group of eight pins is set either as servo output, or as Digi. input/output.

• **Digi. output** – according to the value of assigned channel and the trigger level, logical 1 or 2 is generated on the output. In case the value of the assigned channel is lower than *„Trigger",* log. 0 is generated on the output. Otherwise the output is set to log. 1.

• **Digi. input** – the condition of the pin is sent to the transmitter via EX telemetry.
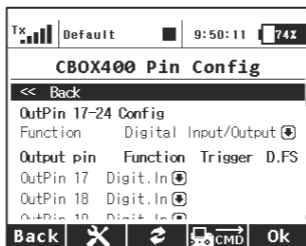
Fig. 14 Alternative pin configuration

5.3 Servo Fail-Safe

- **Fail Safe** – switches on/off the Fail-Safe function. If the Fail-Safe function is deactivated, there is no signal generated in any Central Box outputs at signal loss. If you activate the Fail-Safe function, the behavior of the Central Box output corresponds with the setting of individual outputs (Out off, Hold, Fail-Safe).

- **Fail-Safe Delay** – the period of time during which the last valid servo positions are repeated if the signal loss is detected. After the selected time has elapsed, the Central Box outputs behave according to setting for each specific output.

- **Fail-Safe setup now …** - sets the current position for the Fail-Safe value

- **Mode** - Fail-Safe mode for a specific Central Box output
  - *Hold:* repeats the last known servo position before the signal loss
  - *Out OFF:* does not generate any signal for servos in case of the signal loss
  - *Fail-Safe:* generates pre-set servo position (value) if signal loss is detected. Can be programmed with slowdown (Speed)

The Fail-Safe position can be immediately applied to the Central Box output if the cursor is on the „Value" menu item and you push the F4 function key. **„F4 (Apply)"**.

Fig. 15: Device Explorer-Fail Safe

5.4 Servo Output Mapping

• **Servo No**. – assigning outputs of the transmitter to the Central Box outputs (Output pin).

• **Group** – assigns specific output to the group of output impulses that will be generated from the receiver in the same time
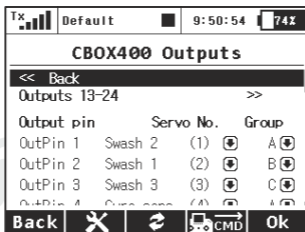

Fig. 16: Device Explorer-Servo Output Mapping

5.5 Telemetry

• **Temp.** – actual temperature of the Central Box
• **Shorted outputs No.** – actual number of overloaded outputs
• **Voltage In** – actual voltage of individual outputs of the Central Box
• **Current** – actual current drawn from the battery
• **Capacity** – capacity taken from the batteries
• **BEC voltage**- BEC output voltage
• **Output voltage** – voltage level for servos powering
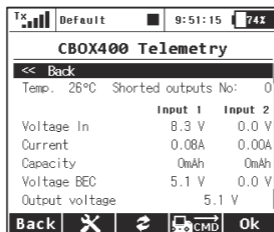
Fig. 17: Device Explorer-Telemetry

5.6 Telemetry Min/Max

• *Clear Min/Max switch* – here you can assign a control (switch, stick or knob) on the DC/DS transmitter which clears the recorded battery capacity and minimum/maximum values in the Central Box.

• *Clear Now* – allows you to immediately clear the recorded battery capacity and minimum/maximum values in the Central Box.

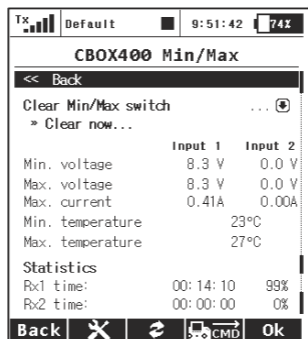Description of individual items is to be found in the chapter Minimum/Maximum values.

Fig. 18: Device Explorer-Telemetry Min/Max

5.7 Recording

- *File size* – the size of the file into which the data is currently stored.
- *Free memory* - remaining empty space for data storage
- *Current file* – current name of the file into which the data is currently stored.
- *Start new record* - setting up a new file
- *Record Central Box telemetry* - enables/disables recording of the telemetry
- *Record Ext. telemetry* - enables/disables saving external telemetry from the sensors connected to *Ext1-4.*
- *Format the internal storage* - complete deletion of the memory

Fig. 19: Device Explorer - Recording

6 Data recording

Central Box 400 is fitted with internal memory of 8 MB. This memory is used to store the telemetry from the Central Box and from the sensors connected to it. The memory has a standard FAT32 file system. The files containing the telemetry data are located in the Log. directory. The file name consists of its serial number and a log file extension, for example. "1.log". When creating a new file, the number in the file name is increased by 1 compared to the previous title. The highest number in the file name indicates the most recent record.

If the memory is full, the oldest file is deleted and the storage continues. The memory has a capacity of about 1 hour recording at full capacity, i.e. 4 telemetry sensors connected to the Central Box.

The telemetry recording starts automatically if the Central Box detects a receiver providing the information on channels on Rx1 or Rx2 pins. The recording stops automatically when you switch off the Central Box.

7 Telemetry reading

If you connect the Central Box to the PC using the USB, the Central Box is detected in the operating system as a mass storage device. After the Central Box is connected to the PC, it becomes inactive and can be used only for reading out the data via the PC. If the Central Box is powered from the batteries, it is necessary to switch it on and off after it is disconnected from the PC – to activate the memory.

8 Firmware update

The Central Box allows firmware update via a PC. The update is performed using the *JETI USBa*. The procedure is as shown below:

On the manufacturer / distributor internet pages (*www.jetimodel.com*), under *"Downloads"*, you will find an update program with the most recent firmware. Download it to your PC.

1. Connect the Central Box output labeled Ext4 with the USB adapter by means of interconnection cable.

2. Start the firmware update program for the Central Box on your PC.

3. Switch on the Central Box using the magnetic switch or the RC switch.

The USB-adapter driver installation instructions can be found in the USB-adapter instruction booklet
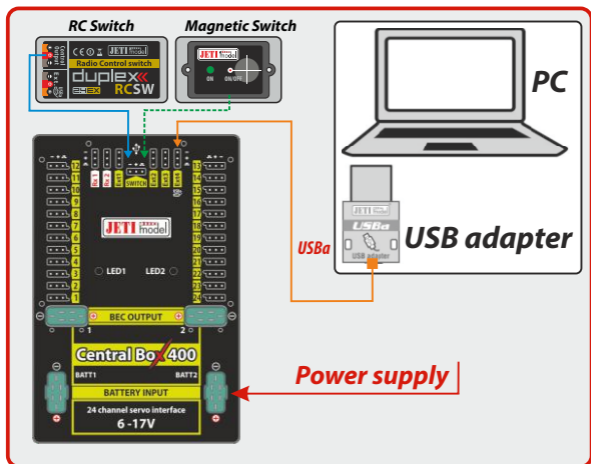
9 Technical specifications of the Central Box

Technical specifications of the Central Box 400	
Input voltage	6 – 17 V
Number of connectable accu cells	2-4 LiXX
Continuous current	30A
Output pulse current	230 A
Number of servo outputs	Up to 24
Consumption in the off state with magnetic switch	60 uA
Consumption in the off state with RC Switch	140 uA
Operating temperature	- 20°C up to +75°C
Weight	270 g
Dimensions	131x88x19 mm

⑩ Warranty, service and the technical support

Warranty and service
This product is covered by warranty for 24 months after the day of purchase provided that it has been operated in accordance with these instructions at the specified voltage and is not mechanically damaged. When claiming warranty repairs for the product, always attach a proof of purchase. Warranty and post-warranty service is provided by your dealer or the manufacturer.

Technical support
In case you are not sure about the setup or some functions of the product, do not hesitate to contact our technical support. You can contact either your dealer, or directly the manufacturer
JETI model s.r.o..
For further information see our webpages **www.jetimodel.com.**

We wish you sucessful flying with the products of:
JETI model s.r.o. Příbor, www.jetimodel.com

Declaration of Conformity

Issues name & addres:
JETI model s.r.o.
Lomena 1530, 742 58 Pribor

Object of the declaration:

Products: **Servo interface**
Trade name: **Central Box**

Model: **Central Box 400**
Country of origin: **Czech republic**

The object of declaration described above is in conformity with the requirements of the folowing EU legislations and harmonized standards:
ČSN EN 61000-6-1:2007, ČSN EN 61000-6-3:2007+A1:20011
Electromagnetic compatibility: 6440-454/2008 6440-538/2008

Signed for and on behalf of:

Tomáš Klesnil
production Manager

JETI model s.r.o.
Lomená 1530, 742 58 Příbor
Czech Republic

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