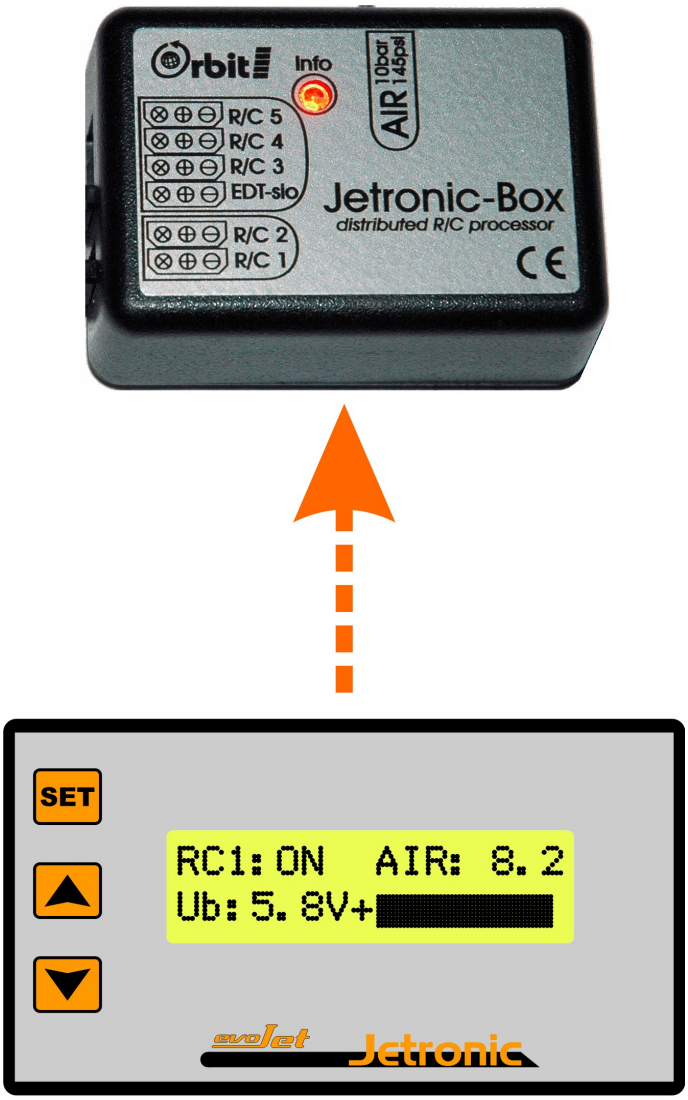
Jetronic-BOX HV[0288]

R/C Controller – Doorsequencer

with Air Failsave



Contents

Introduction

The Jetronic-BOX HV is a universal R/C controller for use in medium-sized and large model aircraft. Two R/C inputs can be programmed to control up to four R/C outputs, for example to implement a landing gear with door control or a cockpit with open/close and lock functions, where even an R/C transmitter with microprocessor control is not sufficient. Since such model functions are often realised using pneumatic systems with an air tank and a pneumatic cylinder, the Jetronic -BOX HV also features an air pressure measurement and display function as well as the corresponding adjustable pressure failsave function.

To read the current operating data and to adjust settings, a suitable display and programming unit (Engine Data Terminal) is required. The following devices are supported:

Jetronic-Display EDT, no.: 8830

Micro-EDT, no.: 8832

Graupner BOOSTER-EDT no.: 6813.10

Graupner ONBOARD-EDT no.: 6813.7

These units are equipped with an illuminated alphanumeric display and can be connected and disconnected while the system is running, or they can be permanently installed in the model (ONBOARD-EDT).

Besides the current operating parameters, such as the battery voltage, it is also possible to display additional information, such as air pressure or R/C inputs and outputs. All display and adjustment functions are accessible via a menu-controlled plain text dialog. The JETRONIC-BOX is connected to the R/C receiver via RC-1 normally, but RC-2 can be used as well (additional function).

Using a USB cable (type Jetronic-SIO2USB), the JETRONIC-BOX can be updated via the Internet, making it possible to install new functions or extensions. To do so, use the ***JetLog*** PC software shipped with the Jetronic-SIO2USB cable.

This makes the JETRONIC-BOX suitable for future model projects, too – for example, flashing position lights, warning lights or special control functions are possible.

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52379 Langerwehe
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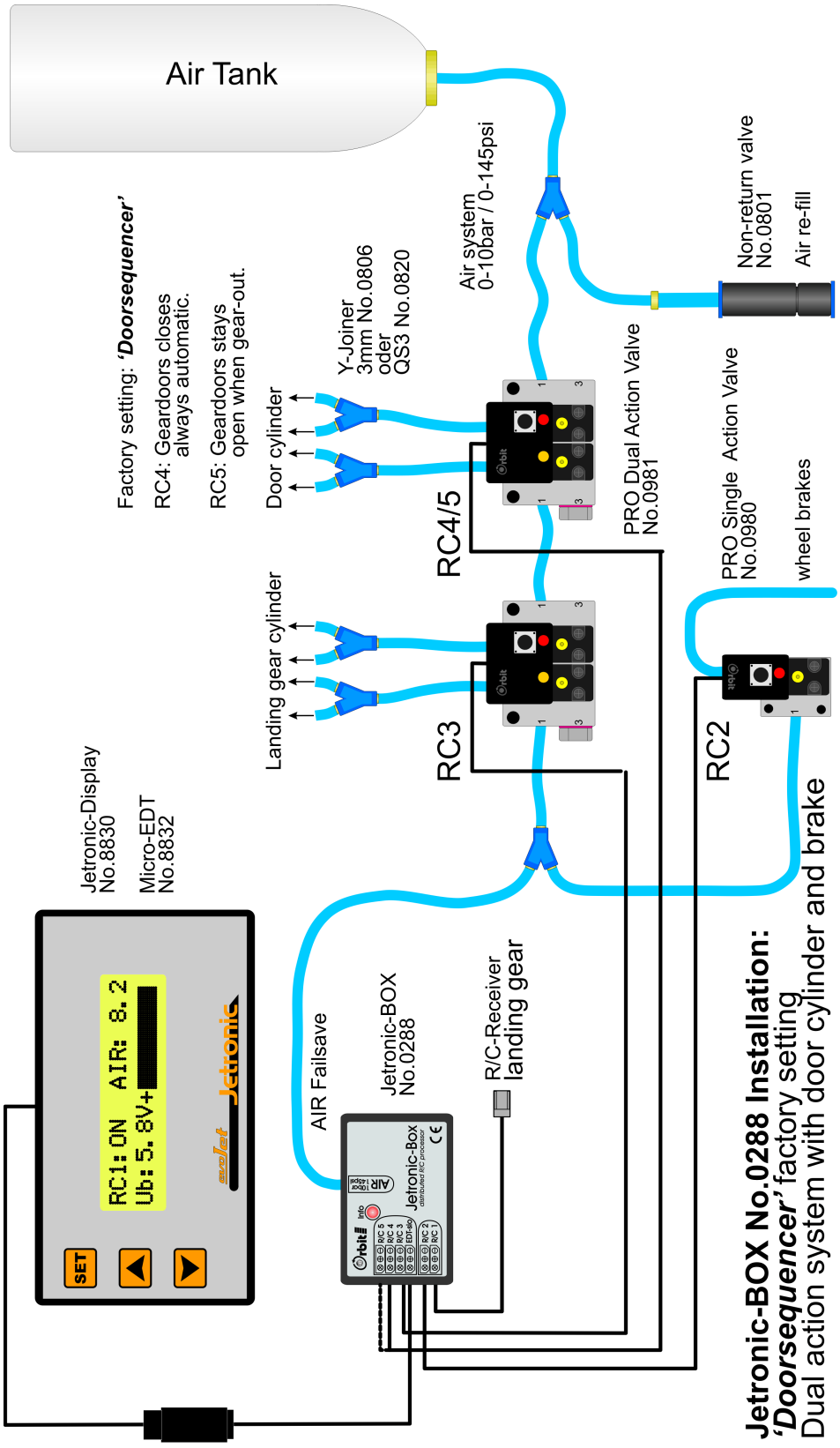
WEEE Reg.Nr.:

DE79530708

Schematic Overview *'Doorsequencer'*



Factory Setting '*Doorsequencer*'

Landing Gear with different Door Controls RC4 / RC5

RC3: The **landing gear** waits 1 second before retraction/extension.

RC4: The **door type-1 closes always automatically** after a delay of 8 seconds (gear extended) and after a delay of 6 seconds (gear retracted).

RC5: The **door type-2 stays extended open** closes after a delay of 7 seconds (gear retracted).

RC2: A brake valve is controlled by a mixing function in the transmitter when the gear is extended, e.g. from +100% to +150%.

RC1 input: gear switch ON – extended / OFF – retracted

20:RC1-MODE:	NORMAL
21:RC1-PRESET:	OUT, after power on the landing gear extends.

RC2 output: Single action brake valve

22:RC2-MODE:	OUT-RC1

RC3 output: **gear valve** or servo

30:RC3-MODE:	RC1-DIRECT
31:RC3-WAIT-OUT:	1.0 seconds, the landing gear waits before extend.
32:RC3-WAIT-IN:	1.0 seconds, the landing gear waits before retract.
33: to 37:	any, depending on the servo or valve.

RC4 output: **door type-1 closes always automatically**, valve or servo

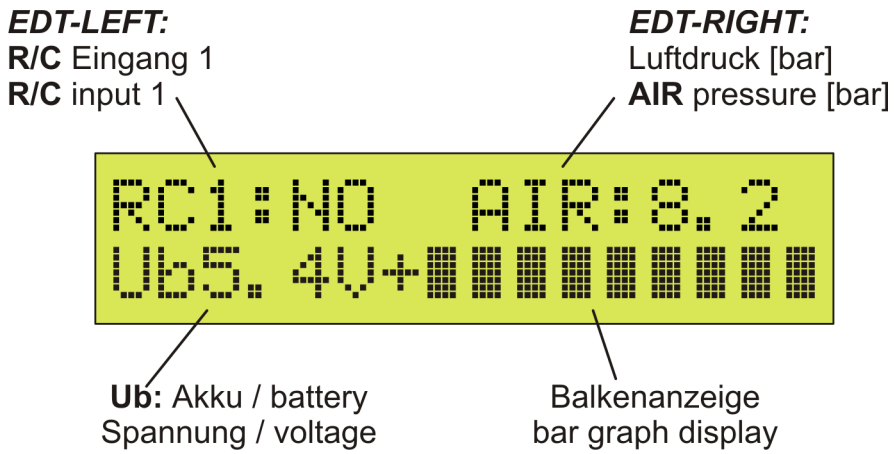
40:RC4-MODE:	RC1-TRIGGER, the door closes automatically.
41:RC4-WAIT-OUT:	8.0 seconds, the door waits when extending.
42:RC4-WAIT-IN:	6.0 seconds, the door waits when retracting.
43: to 47:	any, depending on the servo or valve.

RC5 output: **door type-2 stays extended open**, valve or servo

50:RC5-MODE:	RC1-DIRECT
51:RC5-WAIT-OUT:	0.0 seconds, the door opens immediately.
52:RC5-WAIT-IN:	7.0 seconds, the door waits when retracting.
53: to 57:	any, depending on the servo or valve.

RC6 output is not supported in this version.

Jetronic Display EDT (Engine Data Terminal)



EDT-LEFT and ***EDT-RIGHT*** are configurable function displays for operating parameters. In the BOX-SETUP menu, you can choose what should be displayed in the *LEFT* and *RIGHT* areas.

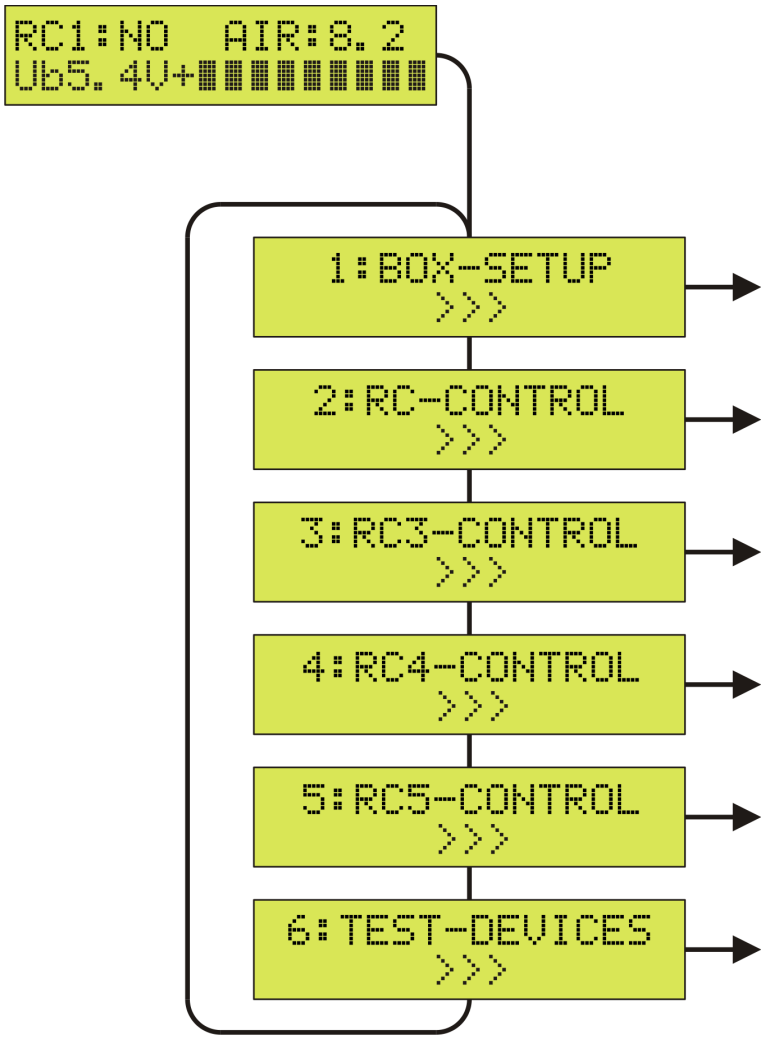
In the BOX-SETUP menu under 12:EDT→LEFT and 13:EDT→RIGHT, you can choose either to display one of the R/C ports (RC1 to RC5) or an air pressure value [bar or psi].

In the lower line of the display, the voltage of the receiver system is shown as a bar graph that also has a memory function for the minimum value (voltage under load). The measurement range can be adapted to the battery type used in the BOX-SETUP menu under 10:R/C-BATTERY.

JETRONIC-BOX – Setup

SETUP Menu

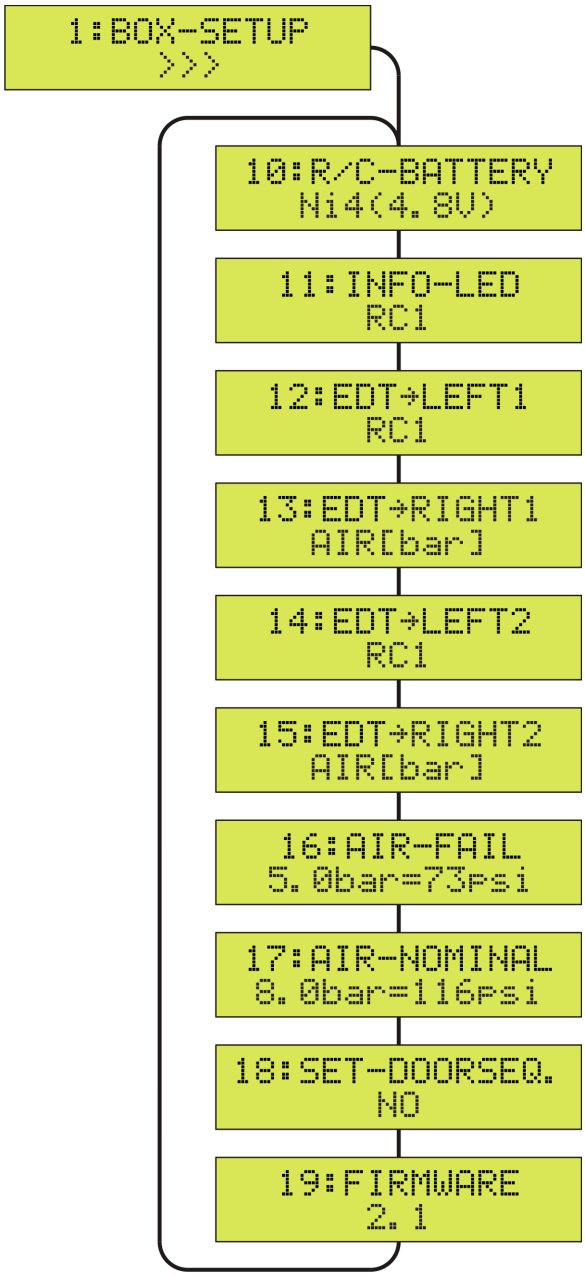
To activate the SETUP menu for changing the firmware configuration, first press the SET key, then use the Up/Down keys to switch between the available items.



To leave the SETUP menu and to return to the BOX status display, press the SET key for more than 2 seconds (ESC). In the following, the individual submenus of the SETUP menu are described.

1:BOX-SETUP Menu

To activate the 1:BOX-SETUP menu, first press the SET key, then use the Up/Down keys to switch between the available items.



To leave the 1:BOX-SETUP menu and to return to the SETUP menu, press the SET key for more than 2 seconds (ESC).

Pressing the SET key for more than 2 seconds again will return you to the operating status display (>>> changes to <<<, ESC).

1:BOX-SETUP – Basic Settings for the Box

10:R/C-BATTERY

Specifies the type of battery used (required for a correct voltage display).
Ni = NiCd or NiMh, Li = lithium ion
Default setting: **Ni4 (4.8V)**

11:INFO-LED

Specifies the display function for the info LED on the top side of the device.
OFF: No info LED function
RC1: Status of the RC1 remote control input: ON / OFF / NO signal => LED flashes.
RC2: Status of the RC2 remote control input: ON / OFF / NO signal => LED flashes.
Or display of the position switches if 20:RC2-MODE is set to POS.-SWITCH.

AIR: Air pressure display via modulated flashing of the LED between 14:AIR-FAIL (LED => OFF) and 15:AIR-NOMINAL (LED => ON).

ON: Info LED always on
Default setting: **RC1**

12/14:EDT→LEFT1/2
13/15:EDT→RIGHT1/2

Selects the display function for the left or right display area on the EDT line1/2.
RC1: Remote control input RC1 – range: ON / OFF / NO
A **!** marks the signal as FAIL signal, controlled by 14:AIR-FAIL and 24:@AIR-FAIL.
A ***** marks the signal as preset-defined, configured by 21:RC1-PRESET.

RC2: Remote control input RC2 – range: ON / OFF / NO
A **!** marks the signal as FAIL signal, controlled by 14:AIR-FAIL and 24:@AIR-FAIL.
A ***** marks the signal as preset-defined, configured by 23:RC2-PRESET.

AIR[bar]: Air pressure display in bar (kg/cm^2) – range: 0.0 – 10.0 bar
A **!** marks the signal as FAIL signal, i.e. pressure dopped below 14:AIR-FAIL.

AIR[psi]: Air pressure display in psi ($lb/inch^2$) – range: 0 – 145 psi
A **!** marks the signal as FAIL signal, i.e. pressure dopped below 14:AIR-FAIL.

RC3/4/5: Output RC3/4/5 as servo travel in % – range: ±150 %
Default setting: **RC1 und AIR[bar]**

16:AIR-FAIL

Specifies the minimum air pressure for the LED display (11:INFO-LED) as well as the safety setting (24:@AIR-FAIL).
This parameter should be set to the minimum pressure value where the landing gear is still able to extend **and** lock safely.
Range: 0.0 bar – 15:AIR-NOMINAL
Default setting: **5.0 bar**

17:AIR-NOMINAL

Specifies the nominal air pressure for the LED display (11:INFO-LED).
This parameter should be set to the pressure value nominally required for the model to take off.
Range: 14:AIR-FAIL – 10 bar
Default setting: **8.0 bar**

18:SET-DOORSEQ.

Resets the JETRONIC-BOX to the factory settings, a typical '***Doorsequencer'***.
See page 4 and page 5 for the overview and description.
Default setting: **NO**
Set value to **YES** and push the **SET**-key two times.

Landing Gear with different Door Controls RC4 / RC5

RC3: The **landing gear** waits 1 second before retraction/extension.

RC4: The **door type-1 closes always automatically** after a delay of 8 seconds (gear extended) and after a delay of 6 seconds (gear retracted).

RC5: The **door type-2 stays extended open** closes after a delay of 7 seconds (gear retracted).

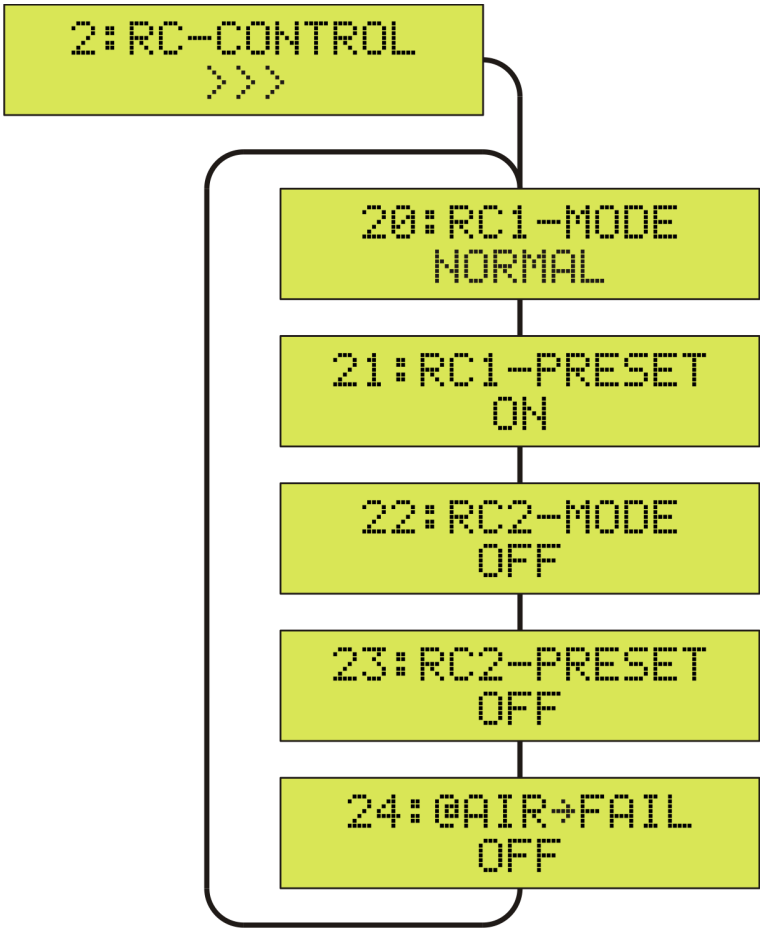
RC2: A brake valve is controlled by a mixing function in the transmitter when the gear is extended, e.g. from +100% to +150%.

19:FIRMWARE

Shows the actual firmware version.
Value: **2.1**

2:RC-CONTROL Menu

To activate the 2:RC-CONTROL menu, first press the SET key, then use the Up/Down keys to switch between the available items.



To leave the 2:RC2-CONTROL menu and to return to the SETUP menu, press the SET key for more than 2 seconds (ESC).

Pressing the SET key for more than 2 seconds again will return you to the operating status display (>>> changes to <<<, ESC).

2:RC-CONTROL – Settings for the Inputs RC1 and RC2

20:RC1-MODE
Specifies the input function for the remote control input RC1.

NORMAL: Standard remote control input, ON ≥ 1.65 ms, OFF ≤ 1.25 ms
REVERSE: Inverted remote control input, OFF ≥ 1.65 ms, ON ≤ 1.25 ms
Default setting: **NORMAL**

21:RC1-PRESET
Specifies the power-on setting for the remote control input RC1.
Use this to avoid accidental retraction of the landing gear when turning on the receiver or transmitter. On the display, this is indicated by a * at the RC1 status.

OUT: The remote control signal / the switch must first be set to OUT / ON.
IN: The remote control signal / the switch must first be set to IN / OFF.
OFF: The remote control signal is passed through. No preset.
Default setting: **OFF**

22:RC2-MODE
Specifies the function for the remote control terminal RC2.

OUT-RC1: Outputs the RC1 input 1:1, e.g. for a brake valve
NORMAL: Standard remote control input, ON ≥ 1.65 ms, OFF ≤ 1.25 ms
REVERSE: Inverted remote control input, OFF ≥ 1.65 ms, ON ≤ 1.25 ms
POS.-SWITCH: Position switch input for the position "gear retracted" active
ANALOG-IN: Measurement of a voltage between 0 and 2.5 V (additional function)

The two outermost pins (-) and (pulse) are used.

Default setting: **OUT-RC1**

23:RC2-PRESET
Specifies the power-on setting for the remote control input RC2.
Use this to avoid accidental retraction of the landing gear when turning on the receiver or transmitter. On the display, this is indicated by a * at the RC2 status.

OUT: The remote control signal / the switch must first be set to OUT / ON.
IN: The remote control signal / the switch must first be set to IN / OFF.
OFF: The remote control signal is passed through. No preset.
Default setting: **OFF**

24:@AIR→FAIL

Specifies the failsafe function that is activated when the air pressure falls below the minimum value specified with 14:AIR-FAIL.
Typically, the failsafe function activates an ON-signal-OUT at RC1 (=> extend gear). On the display, this is indicated by a -**!** at the RC1 or RC2 status.

OFF: No air pressure failsafe function

IN→RC1: Input RC1 is switched to **IN=**OFF (retract gear).

OUT→RC1: Input RC1 is switched to **OUT=**ON (extend gear).

IN→RC2: Input RC2 is switched to **IN=**OFF (retract gear).

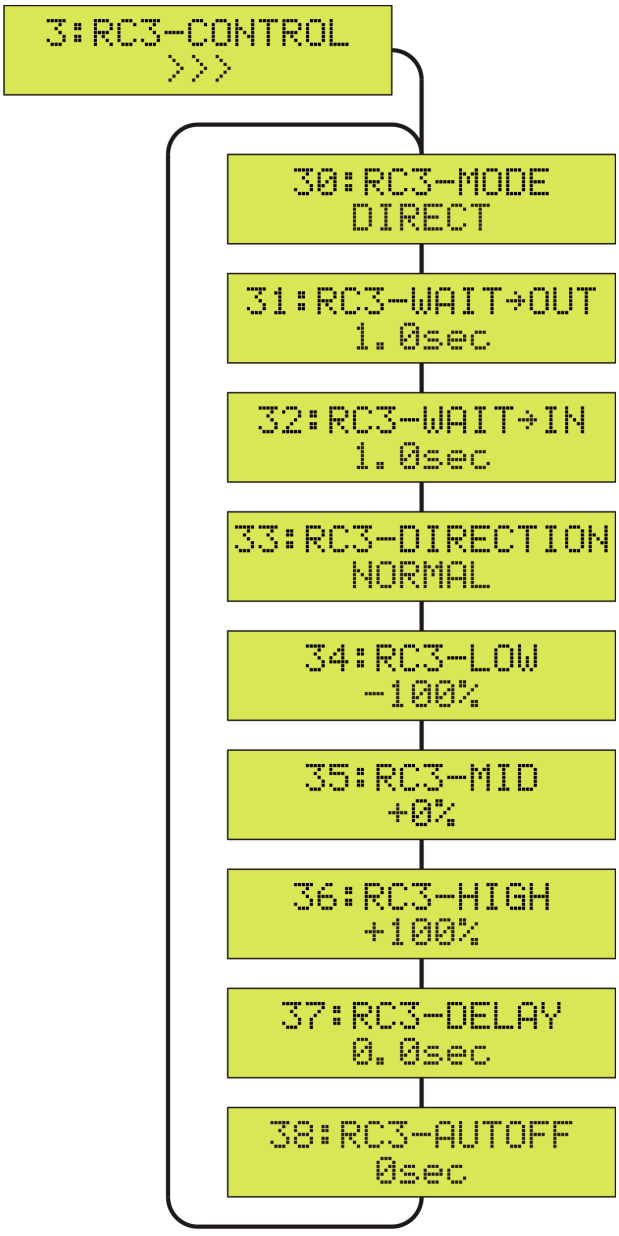
OUT→RC2: Input RC2 is switched to **OUT=**ON (extend gear).

Default setting: **OFF**

3/4/5: RC-3/4/5-CONTROL Menu

To activate the 3/4/5:RC3/4/5-CONTROL menu, first press the SET key, then use the Up/Down keys to switch between the available parameters.

To change a parameter, first press the SET key, then use the Up/Down keys to switch between the available values. A **?** marks the value to be set. Pressing the SET key finishes the procedure and saves the new value.



To leave the 3:RC3/4/5-CONTROL menu and to return to the SETUP menu, press the SET key for more than 2 seconds (ESC).

Pressing the SET key for more than 2 seconds again will return you to the operating status display (>>> changes to <<<, ESC).

3/4/5:RC3/4/5-CONTROL – Settings for the Outputs RC3, RC4 and RC5

30:RC3-MODE
Specifies the basic function for the remote control output RC3.

OFF: The output is switched off and disabled.

RC1-DIRECT for gears and doors that remain open (bistable function)
The remote control signal OFF/ON at the RC1 input switches the output between the positions **IN** (retracted)=34:RC3-LOW and **OUT** (extended)= 36:RC3-HIGH.

RC1-TRIGGER for doors that close again automatically (monostable function). An OFF→ON change of the remote control signal at the RC1 input switches the output to the position 36:RC3-HIGH for the times specified with 31:RC3-WAIT-OUT (RC1=ON). An ON→OFF change of the remote control signal at the RC1 input switches the output to the position 36:RC3-HIGH for the times specified with 32:RC3-WAIT-IN (RC1=OFF). After this time, the output returns to the position 34:RC3-LOW.

RC1-TRIGGER-LOOP (switchable endlessloop)
This function toggles the servo at RC3/4/5 automatically, as long as RC1 input is switched. All settings 31 – 38 can be used to adjust.
The value 37:DELAY must always be equal or higher as the time for the end-positions 31 and 32.

RC1-DIR.&POS. works like RC1-DIRECT, but is logical AND'ed with the retracts position-switch. For this 22:RC2-MODE must be set to POS.-SWITCH.

RC1-TRIG.&POS. works like RC1-TRIGGER, but is logical AND'ed with the retracts position-switch. For this 22:RC2-MODE must be set to POS.-SWITCH.

RC1-PROP: The output follows the remote control signal at the RC1 input proportional.
All settings 31 – 38 can be used to adjust.

31:RC3-WAIT→OUT
Specifies the OUT delaytime (extend gear).
Range: 0 – 20 seconds
Default setting: **0.0 sec**

32:RC3-WAIT→IN
Specifies the IN delaytime (retract gear).
Range: 0 – 20 seconds
Default setting: **0.0 sec**

33:RC3-DIRECTION
Specifies the direction of rotation: NORMAL or REVERSE.
Default setting: **NORMAL**

34:RC3-LOW
Specifies the lower end position (LOW).
Range: +-150 %
Default setting: **-100 %**

35:RC3-MID
Specifies the middle position (MID).
Range: +-150 %
Default setting: **+0 %**

36:RC3-HIGH
Specifies the upper end position (HIGH).
Range: +-150 %
Default setting: **+100 %**

37:RC3-DELAY
Additional rotation delay time between the positions 34:RC3-LOW and 36:RC3-HIGH.
Range: 0 – 20 seconds
Default setting: **0.0 sec**

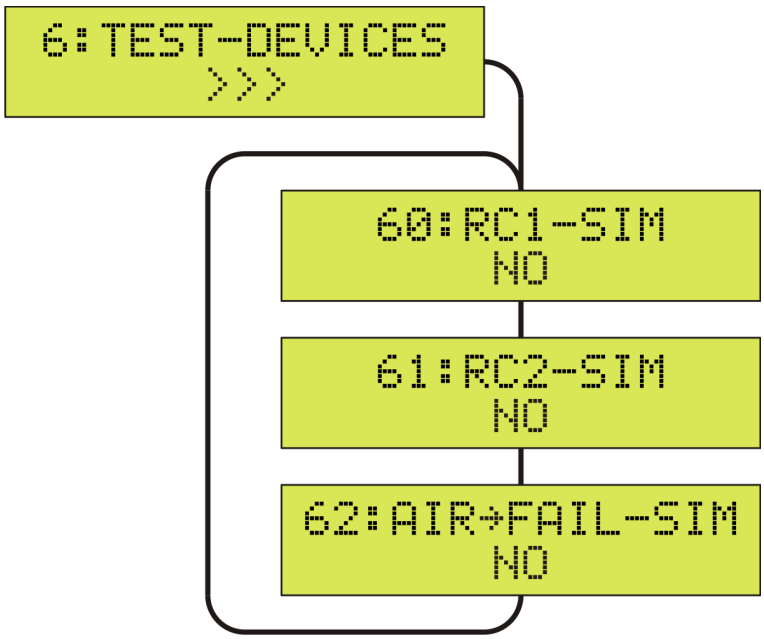
38:RC3-AUTOFF
Shutoff the RC3-Output (valve, servo) after a specific time.
Range: NO, 1 – 250 seconds
Default setting: **NO**

These settings can be applied in the same way to the outputs RC4 and RC5.

6:TEST-DEVICES Menu

To activate the 6:TEST-DEVICES menu, first press the SET key, then use the Up/Down keys to switch between the available test functions.

To activate a test function, first press the SET key, then use the Up/Down keys to test the respective system setting. A **?** marks the setting to be applied. Press the SET key again to finish a test.



To leave the 6:TEST-DEVICES menu and to return to the SETUP menu, press the SET key for more than 2 seconds (ESC).

Pressing the SET key for more than 2 seconds again will return you to the operating status display (>>> changes to <<<, ESC).

6:TEST-DEVICES – Testing the System Settings without Remote Control

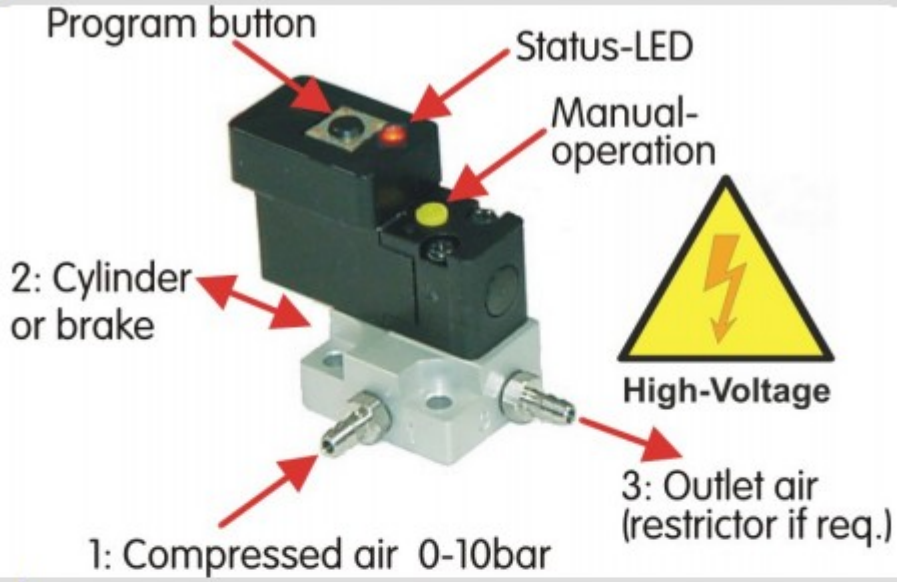
60:RC1-SIM
Simulates an ON/OFF signal at the RC1 input, as if you would use the switch on the transmitter.
Range: ON (high) / OFF (low)
Default setting: value of 21:RC1-PRESET

61:RC2-SIM
Simulates an ON/OFF signal at the RC2 input, as if you would use the switch on the transmitter.
Range: ON (high) / OFF (low)
Default setting: value of 23:RC2-PRESET

62:AIR-FAIL→SIM
Simulates a pressure loss at the air connector, as if the air pressure would drop below the value 14:AIR-FAIL (BOX-SETUP).
Range: NOMINAL / FAIL
Default setting: NOMINAL

Technical Datasheet **PRO-HV** **Single-Action-Valve [0980]**
Please read carefully before use!

Overview



Programming

The evoJet **PRO-HV Single-Action-Valve** can be operated either in ***switch mode*** for cylinders with return spring (e.g. Eurokit, Spring-Air) or in a ***proportional mode*** for air pressure brakes. To toggle between these modes, hold the ***SET-button*** pressed while turning on the R/C system. The ***status LED*** confirms the successful switchover with a flash.

- Pressing the ***SET-button*** for ***1-2 seconds*** teaches the ***valve OFF*** (2: => 3:).
  The ***status LED*** confirms this with a flash.
- Pressing the ***SET-button*** for more than ***5 seconds*** teaches the ***valve ON*** (1: => 2:).
  The ***status LED*** confirms this with a flash.
- Now the valve should follow the control input from the R/C transmitter.

Switching mode: The ***status LED*** shows ***valve ON*** (retract landing gear) or ***valve OFF*** (extend landing gear).

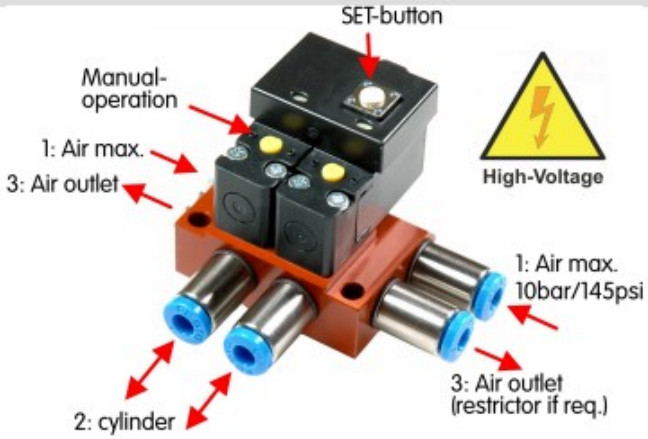
Proportional mode: The valve pulses proportionally to the control input from 0 % to 100 %. Pressing the ***SET-button*** for ***3 seconds*** stores the current R/C position (e.g. elevator) as ***valve OFF OFFSET***. The ***status LED*** confirms this by flashing. This allows the input range to be spread to the best braking effect.

Pressure range	**0 to 10 bar / 145 psi 12 l/min**
Weight	**21 g (0.6 oz)**
Connector	**JR/UNI 4.8V – 8.5 V / 150 mA**
Dimensions (W x H x D):	**16 x 28 x 30 mm (0.6“ x 1.1“ x 1.2“)**

Technical Instructions **PRO-HV** Double-Action-Valve [0981]

Please read carefully before use!

Overview



The evoJet **PRO-HV Double-Action-Valve** is made for double working air cylinders. Where both the extension and retraction of the landig gear or flaps are powered by compressed air.

Factory setting

For the operation with doorsequencers like the **Jetronic-BOX** [0288], both valves are fixed to 100% R/C-travel way. All switching can be programmed at the Jetronic-Box directly.
To leave the fixed mode and to make own settings, keep the ***SET-button*** pressed for 15 seconds while switching on the R/C-system.

Programming

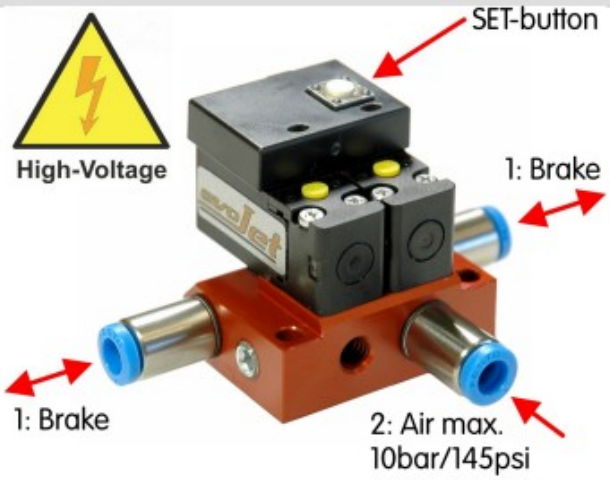
- Pressing the ***SET-button*** for ***1-2 seconds*** teaches ***valve-A ON*** (1: => 2A:).
  The ***status LED*** confirms this with a flash.
- Pressing the ***SET-button*** for more than ***5 seconds*** teaches ***valve-B ON***
  (1: => 2B:). The ***status LED*** confirms this with a flash.
- The ***valves-A*** and ***-B*** should now follow the control input from the R/C transmitter.
  The ***status LED*** indicates ***valve ON*** (1: => 2:) or ***valve OFF*** (3: <= 2:).
- To swap the **valve-A** and **-B** programming hold the ***SET-button*** pressed while turning on the R/C system. The ***status LED*** confirms the successful switchover.

Pressure range	**Max. 10 bar / 145 psi 12 l/min**
Connection	**M5 thread universal for all fittings**
Weight	**35 g (1.24 oz)**
R / C	**Futaba/JR/UNI 4.8V – 8.5V 150 mA**
Dimensions (W x H x D):	**32 x 22 x 25 mm**

Technical Instructions PRO-HV *Proportional* brake valve [0982]

Please read carefully before use!

Overview



The evoJet **PRO-*Proportional* – *brake valve*** is made for wheel-brakes using compressed air. For a scale-like and controlled braking the valve uses proportional air dosage. A double working valve technique (fill or drain) needs just a minimum amount of compressed air (low loss).

Factory setting

Both valves are preset to match 100% R/C-travel way. That is +100% => ON-full-brake and -100% => OFF-no-braking. To match your model, respective your radio system, both points (full-brake and no-braking) can be programmed to any R/C position.

Programming

- Pressing the ***SET-button*** for ***1-2 seconds*** teaches 'OFF = no-brake'.
  The ***status LED*** confirms this with a flash.
- Holding the ***SET-button*** for more than ***5 seconds*** teaches 'ON = full-brake'.
  The ***status LED*** confirms this with a flash.
- The ***valves*** should now follow the control input from the R/C transmitter.
  The ***status LED*** indicates red => fill air or orange => drain air.
- The pressure control for the brakes can be varied by extending (softer) or cutting (harder) the tube lines between the valve and the brakes. A total tube line of 1,5 – 2 meter = 60" - 80" is a good proven lenght.

Pressure range	**Max. 10 bar / 145 psi 12 l/min**
Connection	**M5 thread universal for different fittings**
Weight	**35 g (1.24 oz)**
R / C	**Futaba/JR/UNI 4.8V– 8.5 V 150 mA**
Dimensions (W x H x D):	**32 x 22 x 25 mm**

CE - Konformitätserklärung / Conformity Declaration / Déclaration de conformitè

EG-Konformitätserklärung

Für die folgend bezeichnete Produkte: Jetronic-BOX HV, PRO HV-Einkreisventil, PRO HV-Zweikreisventil; Best.-Nr. 0288, 0980, 0981, 0982, 8830, 8832 wird hiermit bestätigt, dass es den wesentlichen Schutzanforderungen entspricht, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (89/336/EWG) bzw. die elektrische Sicherheit (73/23/EG) festgelegt sind. Zur Beurteilung des Erzeugnisses hinsichtlich elektromagnetischer Verträglichkeit wurden folgende Normen herangezogen:

EMV: EN 61000-6-1 / EN 61000-6-3 EN 55014-1 / EN 55014-2

LVD: EN 60950-1

Diese Erklärung wird verantwortlich für den Hersteller:

evoJet GmbH, Am Parir 4A, 52379 Langerwehe

abgegeben durch:

Arno Hausmann, Geschäftsführer

52379 Jüngersdorf, den 31.06.11

EU Conformity Declaration

We hereby declare the following products: Jetronic-BOX HV, PRO HV-Einkreisventil, PRO HV-Zweikreisventil; Best.-Nr. 0288, 0980, 0981, 0982, 8830, 8832 conforms with the essential protective requirements as laid down in the directive for harmonising the statutory directives of the member states concerning electro-magnetic interference (89/336/EWG) and LVD (73/23/EG). This product has been tested for electro-magnetic interference in accordance with the following norms:

EMV: EN 61000-6-1 / EN 61000-6-3 EN 55014-1 / EN 55014-2

LVD: EN 60950-1

This declaration is declared by:

evoJet GmbH, Am Parir 4A, 52379 Langerwehe / Germany, and is valid for the manufacturer of the products

Arno Hausmann, Managing Director

52379 Jüngersdorf / Germany, den 31.06.11

Déclaration de conformité EG:

Pour le produits suivant: Jetronic-BOX HV, PRO HV-Einkreisventil, PRO HV-Zweikreisventil; Best.-Nr. 0288, 0980, 0981, 0982, 8830, 8832 Nous confirmons que la compatibilité électronique correspond aux directives 89/ 336/EWG et LVD (73/23/EG). Normes appliquées:

EMV: EN 61000-6-1 / EN 61000-6-3 / EN 55014-1 / EN 55014-2

LVD: EN 60950-1

Cette déclaration est sous la responsabilité du Fabricant:

evoJet GmbH, Am Parir 4A, 52379 Langerwehe / Germany

Fait à Arno Hausmann, Le Directeur d'Entreprise

52379 Jüngersdorf / Germany, den 31.06.11

Notes