MVario

The MVario System measures the atmospherical pressure and calculates with the obtained data the altitude above sea level, the rate of climb as well as the rate of descent and records extreme values of these data. The changes of rates of climb and descent are signalled and if preadjusted limits are exceeded, alerts are calling for attention. Informations of the sensor are transmitted via the Duplex System to the user.

The Duplex System takes advantage of the 2,4GHz band for communication and is not only transmitting model control data to the model, but is also receiving data from the model back to the transmitter. The telemetric data gained during operation are shown as actual measured values in real time on the LCD screen of the JETIBOX.

Technical Parameter	**MVario**
Dimensions	20x11x5
Weight with cables	6g
Measuring accuracy of absolute/realative altitude	±9m/±3m
Measurement range	300÷1100hPa
Operating temperature	-10÷85°C
Supply voltage	3,5 ÷ 8,4V
Current consumption	6mA

The sensor renders possible to adjust an acoustic signal for the climb rate/descent rate or for exceeding of a preadjusted limit value. The acoustic signal consists of 4 different kinds (steps) for climbing and the same amount of steps for descending. The step width can be adjusted by the user. The ***climb*** signal consists of ***short*** interrupted tones, the ***descent*** signal of ***long*** interrupted tones.

Design of the MVario Sensor:

The MVario is a sensitive barometric sensor. Any pressure change results in a change of altidude above sea level, of climb rate a. s. o. The sensor should be solely influenced by static atmospheric pressure, not by any airflow through the model. Therefore placement of the sensor in the model should be considered carefully. Place the sensor in the model in a horizontal position (the MVario name sticker on top) in a position where only static atmospheric pressure can have an effect.

Connecting the MVario see fig. page 5.**:**

The MVario comprises an **exit** marked Ext. (*black connector*) and an **input** (*red connector*). Via the **exit** (*black connector*) of the sensor informations are transmitted to the receiver or to the JETIBOX, and it serves as current supply as well. Via the **input** (*red connector*) the acoustic signalling of the MVario can be activated/deactivated and furthermore it is used for connecting up to a free receiver channel.

1. The triple-core cable with JR plug (*black connector*) can be plugged in directly into the JETIBOX (socket with the marking Impulse, + -). For current supply you have to use the second input of the JETIBOX with the marking (+ -), please apply a voltage of 5-8,4V. When taking advantage of this type of connection you must be aware that there exists no wireless data transfer and the measured data are directly shown on the LCD screen of the JETIBOX. This connection type allows no alert signal generation and no acoustical signals of the Vario, because the buzzer is a component of the transmitter module which is not connected in that case. Alert signals are shown on the LCD-screen only.

2. Connect the triple-core cable of the MVario sensor with JR plug (*black connector*) to the back side of the DUPLEX receiver (to the socket marked Ext.). Connect the input of the MVario with JR plug (*red connector*) to a free receiver channel. The MVario module gets its current supply via the receiver. In order to adjust parameters of the MVario connect the JETIBOX to the transmitter module and switch on receiver and transmitter.

3. Connect the triple-core cable of the MVario sensor with JR plug (*black connector*) to one of the EXPANDER inputs. Connect the input of the MVario with JR plug (*red connector*) to a free receiver channel. The expander renders connection of several telemetry sensors to one receiver possible. In such a case gets the MVario sensor its current supply via the expander and the expander via the receiver.

Besides other competencies of the JETIBOX terminal it handles also duties like parameter adjustments and data readout. After connection to the MVario sensor an introduction screen appears showing in the first line the identification of the sensor and the realive altitude above sea level. In the second line you see the indicator and the value of the Vario (climb rate/descent rate in m per 1s). The indicator of the Vario consists of eight positions. The number of filled positions forms the size of the Vario indication. The symbol „>“ stands for one step of climb. The Symbol „<“stands for one step of descent. By pushing the JETIBOX button D (downward arrow) you will enter the MVario sensor menu.

MVARIO Sensor Menu:

SENSOR MENU: *ACTUAL VAL* – by pushing the button D (downward arrow) you will select the display of actual measurement values

Rel/Abs Altitude - relative and absolute altitude above sea level. After switching on a comparison basis (zero altitude) is created from the absolute altitude for the relative altidude. The relative altitude is the result of the difference of the actual absolute altitude and the comparison basis (zero altitude).

Vario – indicates the actual rate of climb/rate of descent in meters per 1s.

Abs. Pressure – indicates the actual atmospherical pressure in hPa.

Temperature – indicates the actual temperature of the sensor.

SENSOR MENU: *MIN/MAX* - by pushing the button D (downward arrow) you select recording of extreme values which occured during measurements.

Vario MIN/MAX – indicates the minimum descent rate and the maximum climb rate

Altitude MAX – indicates the achieved maximum relative altitude

Temp MIN/MAX – indicates the minimum and maximum temperature of the sensor

SENSOR MENU: *SETTING* - by pushing the button D (downward arrow) you will change to the basic setup of the MVario sensor.

Erase data – manual deletion of extremes. By simultaneous pushing of the arrow buttons R and L (right and left) all records of measured parameters (minimum and maximum) will be deleted.

Sensor sens. – adjustment of sensor sensitivity which determines the indicator step length of the introduction screen and the step length of the acoustic signal. (For instance - sensitivity adjustment of 1m: If the Vario indicator picture of the introduction screen is fully filled up then the value of climb rate/descent rate corresponds with 4m and step length of the acoustic signal with ±1m)

Beep period – adjustment of the time between a group of tones of the Vario acoustic signals. The number of tones corresponds with the change of climb rate/descent rate which has occured during the set time.

Trigger level – adjustment of the value of the input pulse length, after whose exceeding the extremes become deleted and the acoustic signalling of the climb rate/descent rate starts. As long as the MVario input is not connected to the receiver channel the acoustic signalling is switched on constantly and deleting of extremes does not proceed automatically. (We recommend connection of the input to the receiver channel which is controlled from the transmitter by a switch or by the throttle channel.)

Reverse – reversation adjustment of the input signal evaluation. (For instance, as long as the trigger level „Trigger level“ is set to 1.50 ms and „Reverse“ to OFF). MVario evaluates an infringement if the input signal is longer than 1.50 ms and an automatic deletion of extremes occurs. Furthermore, extremes recording starts and acoustic signalling of the Vario will be switched on. If the input signal lies below the trigger level, no recording of extremes will occur and signalling is switched off.)

Alti. above sea – adjustment of the reference altitude above sea level for sensor calibration. For exact measurements of the absolute altidude the known altitude above sea level must be set at a point, where the sensor will be operating further on.

Beep Vario Alarm – adjustment of the Morse alphabet character which will represent infringement of the Vario alert setting by an acoustical tone of the DUPLEX Tx transmitter module.

Beep Alti. Alarm – adjustment of the Morse alphabet character which will represent infringement of the altidude alert setting by an acoustical tone of the DUPLEX Tx transmitter module

Vario beep – adjustment of one of 4 modes of the Vario acoustic signalling. *„ON“* is the active signalling of climb and descent flight. *„ON – DESCENT“* is the active acoustic signalling for descent flight only. *„ON – CLIMB“* is the active acoustic signalling for climb flight only. In the *„OFF“* mode the Vario acoustic signalling is switched off. These adjustments do not affect the acoustical alert signalling which is always switched on. (If you want to be informed about violation of one set alert only, signalling of the vario must be switched off. We do not recommend simultaneous setting of alerts as well as signalling of the Vario.)

Factory setting – by pressing arrow push buttons R and L (right and left) simultaneously the sensor will be resetted to factory settings.

SENSOR MENU: *ALARMS* – by pushing the button D (downward arrow) you will change to the setup of particular alerts. If an adjusted parameter becomes passed over, the LCD screen of the JETIBOX will show in the second line of the introduction screen alternately the original data with the matching alert and the buzzer of the transmitter module will emit the alert signal. The first tone is the revelation tone and the second one beeps the Morse code of the chacter representing the corresponding alert. If the alert is in position OFF, the given alert is switched off.

Vario High Al. – adjustment of the signal representing high climb rate, if the value measured by the Vario exceeds the set value, the alert will be activated.

Vario low Al. - adjustment of the signal representing high descent rate, if the value measured by the Vario exceeds the set value, the alert will be activated.

Alti. High Al. - adjustment of the signal representing the relative altitude, if the value of the relative altitude exceeds the set value, the alert will be activated

Warranty:

For this product we grant a warranty of 24 months from the day of purchase under the assumption that it has been operated in conformity with these instructions at recommended voltages and that it has not been damaged mechanically. Warranty and post warranty service is provided by the manufacturer.

We wish you sucessful flying with the products of:
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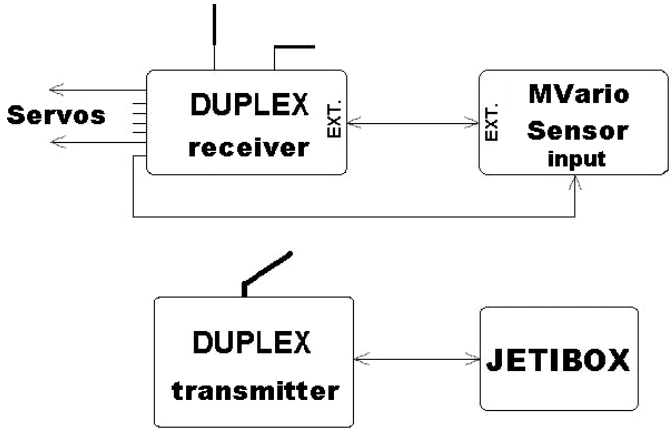
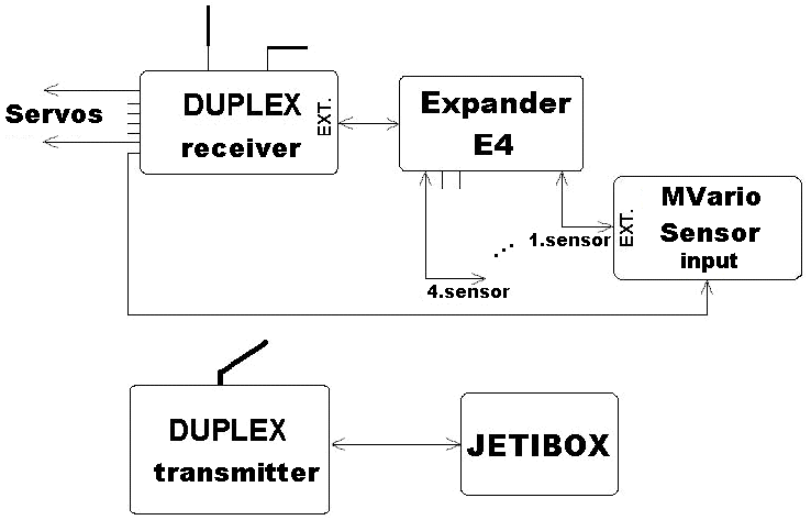
Connetion alternatives of the MVARIO sensor:

1. **directly to the JETIBOX**. In that case it is mandatory to apply a voltage source of 5 to 8,4V, for instance a receiver battery. The triple core cable with JR plug (*black connector*) must be connected to the JETIBOX (to the socket marked impulse, + -). The triple core cable with JR plug (*red socket*) is not connected.

2. **directly to the receiver input** (Ext.). This layout allows connection of one MVario sensor which obtains its current supply via the receiver. The triple core cable with JR plug (*black socket*) must be connected to the DUPLEX receiver (to the input marked EXT). The triple core cable with JR plug (*red socket*) is connected to the receiver channel.



3. **Connection via an Expander** Ex. This arrangement allows simultaneous data processing of several sensors (depending on type of expander), current supply of the sensors is realized via the expander. The triple core cable with JR plug (*black socket*) is connected to the expander. The triple core cable with JR plug (*red socket*) must be connected to a free receiver channel.



Menu of the MVARIA Sensor as shown by the LCD Screen of the JETIBOX: