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USER MANUAL

MicroVario is a sensitive altimeter/variometer which uses the latest MEMS technology to achieve a high level of accuracy, while preserving miniature dimensions. The sensor is able to detect tiny changes in atmospheric pressure to indicate the climb/sink rate.
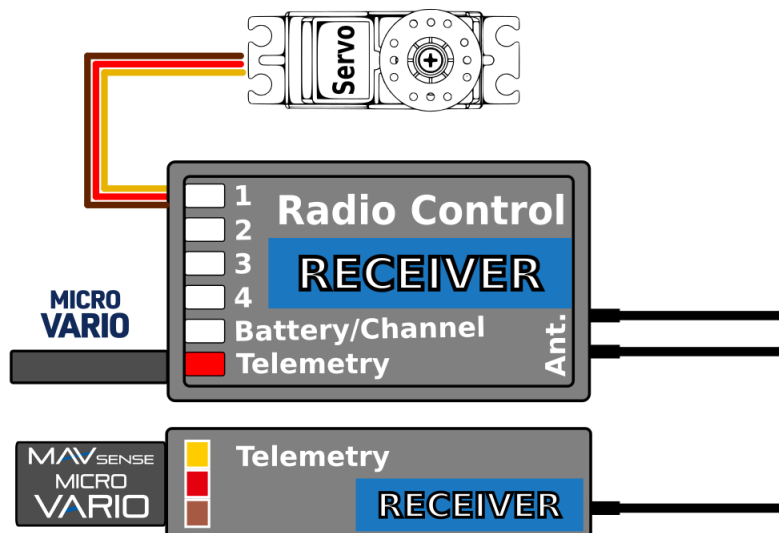
FEATURES

- Small dimensions. The sensor is connected directly to the receiver telemetry port.
- Accurate measurement of absolute/relative altitude and climb/sink rate.
- Automatic telemetry detection: Duplex EX, Hott, MSB, S.Bus2.
- Configurable alarms on altitude and climb rate.
- Configuration through the transmitter.
- Firmware updates.

	MICRO VARIO
Dimensions	21,5x10x4mm
Weight	1g
Pressure range	300÷1200hPa
Altitude resolution	0.1m
Typical variometer noise ratio	± 0.05m/s
Operating current	15mA
Operating temperature	-20 – 85°C
Supply Voltage	3.5 – 12V
Telemetry	Duplex EX, Multiplex MSB, Graupner Hott, Futaba S.Bus2
Status LED	YES

INSTALLATION

Connect the MicroVario directly to the receiver telemetry port. Please note that the sensor is very sensitive to changes in atmospheric pressure and also to mechanical stress. To reach the most accurate altitude measurements please pay attention to the receiver placement. Try to avoid any mechanical stress on the sensor. The MicroVario should not be directly exposed to the airflow and any close contact with components producing heat (such as engines or speed controllers) should be avoided.
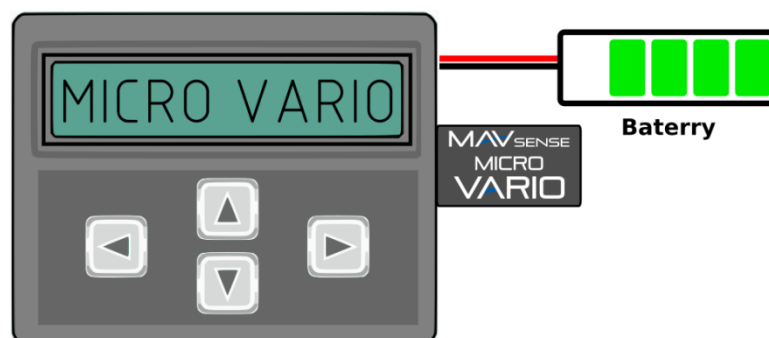
TELEMETRY AND SETTINGS

The device is compatible with JETIBOX for programming. The JETIBOX menu is divided into three sections:

- **Actual values** – displays the latest telemetry values (altitude, vario, pressure, temperature) together with minimums and maximums.
  - Reset Min/Max - press left+right buttons together to reset all minimums and maximums.
- **Settings** – basic settings of the sensor
  - **Language** – you can choose the language of the JETIBOX screen.
  - **Vario Sensitivity** – sets the amount of filtering for the pressure sensor data. By increasing the sensitivity you will get faster response to altitude changes. Please note that the indicated noise may be increased as well. (Default value: Medium)
  - **Sink Rate** – rate of airplane descent when there are no thermal effects. The value of sink rate is added to the climb rate. This will result in locating thermal streams more precisely.
    Example: When the model flies at its nominal sink rate 0.5m/s, the vario is silent. As soon as the model enters any thermal upstream, the vario wil start beeping (although the airplane may still be descending).
  - **Sealevel Pressure** – the sea level pressure is taken as a reference to calculate the absolute altitude. To get the most accurate calculation of the altitude, set the pressure at your location adjusted to the sea level. The International Standard Atmosphere Model defines the sea level pressure to be 1013hPa.
  - **Round Altitude** – permits or denies rounding the altitude values displayed on the transmitter. Relative and absolute altitude round to full meters, decimal part is omitted.
  - **Altitude Alarm** – you can set a high altitude alarm. ***)**
  - **Vario Alarm** – you can set an alarm for excessive climb or sink rate.***)**
  - **Alarm Interval** – sets the time period between alarm announcement.
- **Service** – In this menu you can view the device version and reset it to the default factory configuration.
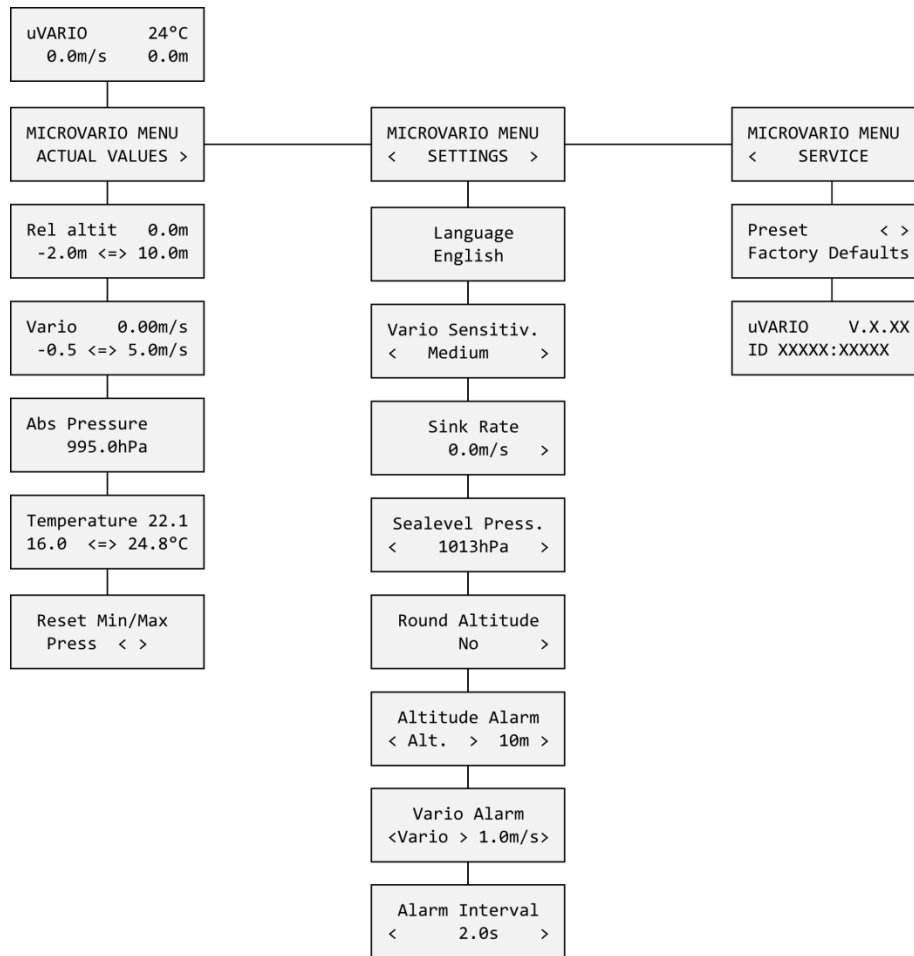
*) The alarm setting is compatible with Duplex and Hott systems.

JETIBOX Connection

Plug the MicroVario into the sensor slot of the JETIBOX. Power it up with a battery with appropriate voltage (4.5 - 8.4V). Now you can configure the sensor using the arrows on the JETIBOX.
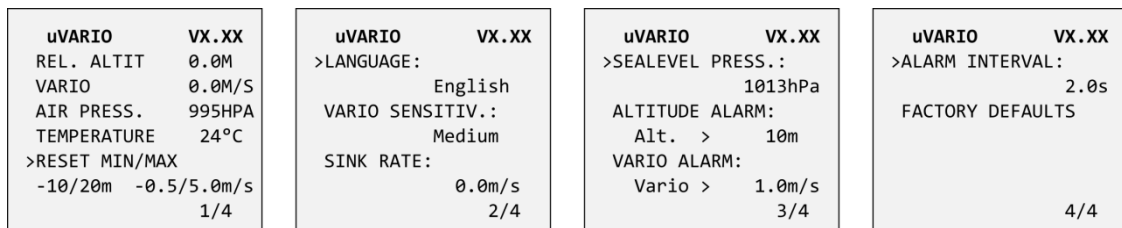
Complete menu structure:

```
        ┌─────────────────────┐
        │ uVARIO        24°C  │
        │   0.0m/s      0.0m  │
        └─────────────────────┘
                   │
   ┌───────────────┼───────────────────────────────┐
   │                                                 │
┌──────────────────┐  ┌──────────────────┐  ┌──────────────────┐
│ MICROVARIO MENU  │  │ MICROVARIO MENU  │  │ MICROVARIO MENU  │
│  ACTUAL VALUES > │──│ <   SETTINGS   > │──│ <    SERVICE     │
└──────────────────┘  └──────────────────┘  └──────────────────┘
        │                      │                      │
┌──────────────────┐  ┌──────────────────┐  ┌──────────────────┐
│ Rel altit   0.0m │  │     Language     │  │ Preset      < >  │
│ -2.0m <=> 10.0m  │  │     English      │  │ Factory Defaults │
└──────────────────┘  └──────────────────┘  └──────────────────┘
        │                      │                      │
┌──────────────────┐  ┌──────────────────┐  ┌──────────────────┐
│ Vario   0.00m/s  │  │ Vario Sensitiv.  │  │ uVARIO    V.X.XX │
│ -0.5 <=> 5.0m/s  │  │ <    Medium    > │  │ ID XXXXX:XXXXX   │
└──────────────────┘  └──────────────────┘  └──────────────────┘
        │                      │
┌──────────────────┐  ┌──────────────────┐
│ Abs Pressure     │  │    Sink Rate     │
│      995.0hPa    │  │    0.0m/s     >  │
└──────────────────┘  └──────────────────┘
        │                      │
┌──────────────────┐  ┌──────────────────┐
│ Temperature 22.1 │  │ Sealevel Press.  │
│ 16.0  <=> 24.8°C │  │ <    1013hPa   > │
└──────────────────┘  └──────────────────┘
        │                      │
┌──────────────────┐  ┌──────────────────┐
│ Reset Min/Max    │  │ Round Altitude   │
│   Press  < >     │  │    No         >  │
└──────────────────┘  └──────────────────┘
                               │
                       ┌──────────────────┐
                       │ Altitude Alarm   │
                       │ < Alt.  >  10m > │
                       └──────────────────┘
                               │
                       ┌──────────────────┐
                       │   Vario Alarm    │
                       │ <Vario > 1.0m/s> │
                       └──────────────────┘
                               │
                       ┌──────────────────┐
                       │ Alarm Interval   │
                       │ <     2.0s     > │
                       └──────────────────┘
```

Graupner Hott Menu Structure:

MicroVario offers telemetry as a standard VARIO telemetry module.

```
┌────────────────────────┐ ┌────────────────────────┐ ┌────────────────────────┐ ┌────────────────────────┐
│ uVARIO        VX.XX    │ │ uVARIO        VX.XX    │ │ uVARIO        VX.XX    │ │ uVARIO        VX.XX    │
│ REL. ALTIT    0.0M     │ │ >LANGUAGE:             │ │ >SEALEVEL PRESS.:      │ │ >ALARM INTERVAL:       │
│ VARIO         0.0M/S   │ │            English     │ │              1013hPa   │ │               2.0s     │
│ AIR PRESS.    995HPA   │ │ VARIO SENSITIV.:       │ │ ALTITUDE ALARM:        │ │ FACTORY DEFAULTS       │
│ TEMPERATURE   24°C     │ │            Medium      │ │   Alt.  >     10m      │ │                        │
│ >RESET MIN/MAX         │ │ SINK RATE:             │ │ VARIO ALARM:           │ │                        │
│ -10/20m  -0.5/5.0m/s   │ │            0.0m/s      │ │   Vario >    1.0m/s    │ │                        │
│               1/4      │ │               2/4      │ │               3/4      │ │               4/4      │
└────────────────────────┘ └────────────────────────┘ └────────────────────────┘ └────────────────────────┘
```

Futaba and Multiplex connection

Futaba and Multiplex systems do not offer wireless device configuration. The telemetry transmission is possible with the following fixed sensor slots:

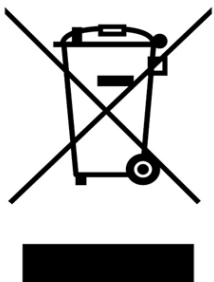|	Futaba S.Bus2	Multiplex MSB
Altitude	19	6
Vario	18	7
Note	Manual detection in the menu Linkage – Sensor. Choose F1672 vario on slot **18**.	Automatically detected by the transmitter.

SAFETY INFORMATION

- Operate the MicroVario always in dry environment and within the device limits stated in this guide. Never expose the device to excessive heat or cold.
- Never apply mechanical stress or excessive force to the MicroVario. The sensing element can be damaged or measure imprecisely if the force is applied.
- Do not remove the heat shrink tube from the device and do not try to implement any changes or modifications. This can lead to a total destruction and to the denial of any warranty claims.
- Always check the polarity of the connection. Never inverse the polarity – this could lead to total destruction.

WARRANTY

We grant a warranty of 24 months from the day of purchase under the assumption that they have been operated in conformity with these instructions at recommended voltages and that they were not damaged mechanically. Warranty and post warranty service is provided by the manufacturer.

Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)

This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.

Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.

If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.