

AVKES



# HANDHELD ANEMOMETER RVM 96B-1

INSTRUCTION MANUAL



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## 1. DESCRIPTION

RVM 96B-1 is a true portable, easy to use handheld anemometer, capable of measuring both wind speed and direction. It has identical characteristics as previous type, RVM 96B, except that magnetic ball compass is replaced by the electronic compass.

Wind speed is measured by an electronic system, using a 3-cup Robinson's cross, coupled to an optoelectronic transducer. Wind speed is indicated in m/s, km/h, knots, or miles/h on a backlit, transreflective liquid crystal display. Wind speed units can be selected by the user. Four R6 (AA size) alkaline batteries, located in a handle, power the electronics. Instead of batteries, four rechargeable AA size accumulators may be used.

A mechanical system with a wind vane and circular scale is provided to measure the direction of the wind. Built-in electronic compass enables RVM 96B-1 to be oriented properly during measurements of wind direction.

RVM 96B-1 may be placed on any standard photographic tripod, which can be fixed to the bottom of the RVM 96B-1 handle by a standard 1/4" screw.



A carrying case is provided for transport and storage.

## 2. INSTRUCTIONS FOR USE

At the location where wind is to be measured, RVM 96B-1 is taken out of the case. Anemometer is gripped by the handle and switched on with the ON / OFF switch (located on the handle). When switch is pushed to the "1" position, the instrument is turned on. Second push to the "1" position turns on the display illumination (which increases the power consumption). Pushing switch to the "0" position turns the instrument off.



RVM 96B-1 switches off automatically, when cup assembly is not rotating for more than 4 minutes.

After turning it on, RVM 96B-1 must be raised and held in the upright position at such a height, that the display is at the eye level. Wind speed can be immediately read from the display. On the right side of the wind speed value, wind speed unit is shown (meters per second, knots, kilometres per hour, or miles per hour). If a conversion of units is necessary, the following constants should be used:

- 1 knot equals 1.852 km/h equals 0.514 m/s or aprox. 0.5 m/s
- 1 m/s equals 3.6 km/h equals 1.942 knots or aprox. 2 knots
- 1 km/h equals 0.278 m/s equals 0.54 knots
- 1 mph equals 0.447 m/s equals 0.869 knots

To read the direction of the wind, handheld anemometer must be correctly horizontally oriented. Below the wind speed data, there is a compass ruler with the slider; correct orientation is achieved, when slider comes into the middle of "S" mark.



Scale for measuring wind direction is divided into 72 parts, each corresponding to an angle of 5 degrees. A number marks every fourth division. The values read on the scale must be multiplied by 10 to get the wind direction in degrees. Mark 9.0 on the scale (90 degrees) represents east (E) wind, 18.0 (180 degrees) south (S), 27.0 (270 degrees) west (W) wind and 0.0 (0 degrees) or 36.0 (360 degrees) north (N) wind.

The accuracy of the instrument orientation and thus the wind direction measurements may be affected by the external magnetic fields, by the presence of large masses of ferromagnetic materials or by the deformations of the natural magnetic field of the earth.

During the measurements, care should be taken not to disturb the wind field by the operator himself.

Handheld anemometer RVM 96B-1 can be fixed onto a photographic tripod or similar supporting device. For this purpose, a standard 1/4" nut is provided on the lid of the handle.

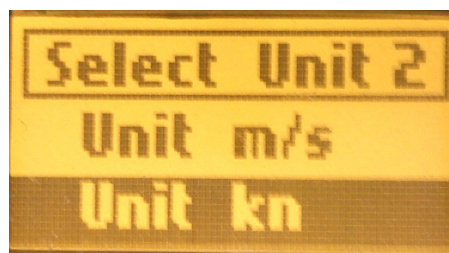
When using tripods or other supports, care should be taken always to operate instrument in a vertical position.

When the wind speed display shows **Low Battery** sign in the position of the compass ruler, it means that the batteries are exhausted and should be replaced. To replace the batteries, unscrew the lid on the handle, pull out the battery compartment and replace the batteries.

After the use, RVM 96B-1 should be switched off by returning the ON /OFF switch into its central position.

### 3. SELECTION OF WIND SPEED UNITS

RVM 96B-1 enables user to select wind speed units. To do this, turn the instrument on, then press toggle switch to "1" position for more than 5 seconds. A wind unit selection menu appears:

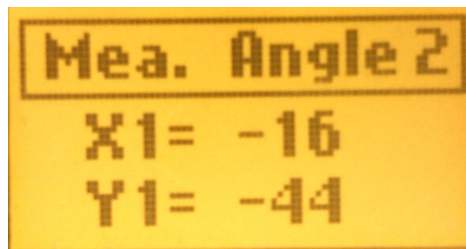


By subsequently pressing switch to "1", units are changed in the following order: m/s, kn, km/h, and mps. New unit is shown in the inverse mode. If you want to select it, press switch to the "0" position. New wind speed unit is permanently stored to the EEPROM; anemometer shows wind speed in these units, until different one is selected.

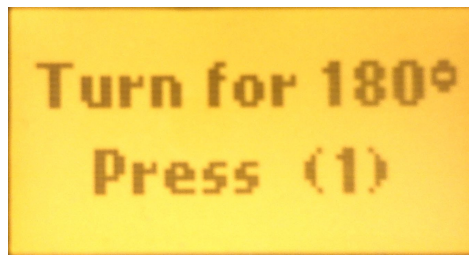
### 3. CALIBRATION OF THE COMPASS

Compass of each RVM 96B-1 is factory calibrated before delivery. If compass shows significant deviations, or if handheld is used in the environment, where larger masses of ferromagnetic materials are present, compass should be recalibrated. This is done in a following way:

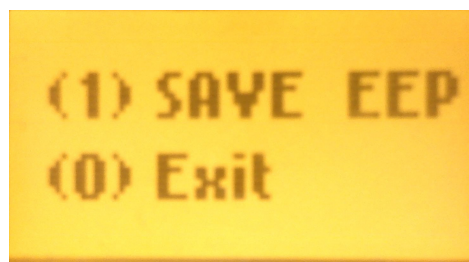
Turn the instrument on, then press toggle switch to “1” position for more than 5 seconds. Press switch to “1” several times, until you reach **Cal. Compass**. Hold RVM 96B-1 in a vertical position and push switch to “0”. Measuring window for the first angle appears (do not move handheld during measuring):



After the first angle is measured, the following message is displayed:



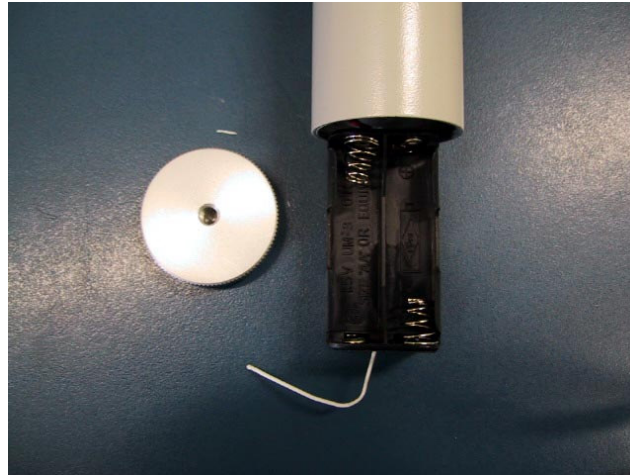
Now turn the handheld in the opposite direction (for 180 degrees), and keeping it vertical, press “1”. Second angle is measured, then



is shown. If you want to store calibration results, press “1”, otherwise press “0” to exit.

### 3. BATTERIES

Battery elements are not inserted, when the device is shipped. To insert the four R6 type (AA size) elements, lid of the handle must be unscrewed and the plastic battery compartment pulled out of the handle. Batteries must be oriented so that the negative (-) poles touch the springs in the battery compartment. After inserting the batteries, return the battery box in the handle, and close the lid.



New batteries are able to drive the instrument for approximately 60 hours of continuous use. When the battery voltage falls to the approximately 3 V, the wind-speed section of the instrument ceases to work and **Low Battery** sign is displayed. This indicates that the batteries should be replaced.

The use of the sealed, long-life alkaline batteries is strongly recommended.

### 4. MAINTENANCE

When not in use, anemometer should be kept in the carrying case.

In order to avoid any chemical damage to the device the batteries must be removed from it when RVM 96B-1 will not be used for more than a week. Care should be taken not to mechanically damage the instrument by dropping it to the ground or handling it uncarefully. Different weather conditions at normal use can not damage the instrument; however, it should not be put into water or stored for longer time in a place with the high relative humidity.

RVM 96B-1 should be cleaned by a soft cloth and a mild detergent solution.

Normally, no other maintenance or recalibration is required.

## 5. TECHNICAL DATA

	<i>WIND SPEED</i>	<i>WIND DIRECTION</i>
<b>Measuring range:</b>	from 0 m/s to 50 m/s or 0 to 100 knots or 0 to 180 km/h	from 0 deg. to 360 deg.
<b>Starting speed:</b>	0.5 m/s	0.5 m/s
<b>Accuracy and linearity:</b>	+/- 0.5 m/s	+/- 3 deg.
<b>Resolution:</b>	0.1 m/s	1 deg.
<b>Measuring system:</b>	optoelectronic	mechanical
<b>Indicator:</b>	LC display	circular scale
<b>Orientation:</b>	with the built-in electronic compass	
<b>Power supply:</b>	6 V (4 x RS 6 type / AA size batteries)	
<b>Battery life:</b>	aprox. 60 hours of continuous work without scale illumination, aprox. 30 hours with illumination	
<b>Working temperature:</b>	from - 20 deg. C to + 40 deg. C	
<b>Working rel. humidity:</b>	from 10 % to 100 % RH	
<b>Storage temperature:</b>	from - 40 deg. C to + 60 deg. C	
<b>Storage rel. humidity:</b>	from 10 % to 60 % RH without condensation	
<b>Dimensions:</b>	275 mm x 210 mm x 140 mm	
<b>Mass:</b>	approx. 0.5 kg	
<b>Material:</b>	anodised aluminium, stainless steel, fiber reinforced plastics	
<b>Tripod:</b>	Any photographic tripod with 1/4" screw	
<b>Dimensions of the case:</b>	365 x 260 x 150 mm	
<b>Total weight:</b>	approx. 1.5 kg	

## WARRANTY

Handheld anemometer RVM 96B-1      Wind Speed Units:

Date of purchase:

Sold by:

Purchased by:

(Signature & stamp)

(Signature & stamp)

The device is warranted against all defects in material or labour for a period of 12 months from a date of purchase (either purchased directly from AMES or from an authorised representative).

We commit ourselves to repair without charge any defects and technical deficiencies caused under normal operation. This warranty is valid under the following conditions:

- that the device was used in accordance with the supplied instructions
- that the defect has occurred under the normal use and is not a result of any mechanical damage, atmospheric discharge, improper use or hostile operating or storage environment
- that the instrument had not been serviced by an unauthorised persons

Under the conditions stated above we accept the obligation to repair the product within thirty days.

We guarantee the availability of spare parts for a period of ten years from the date of purchase.

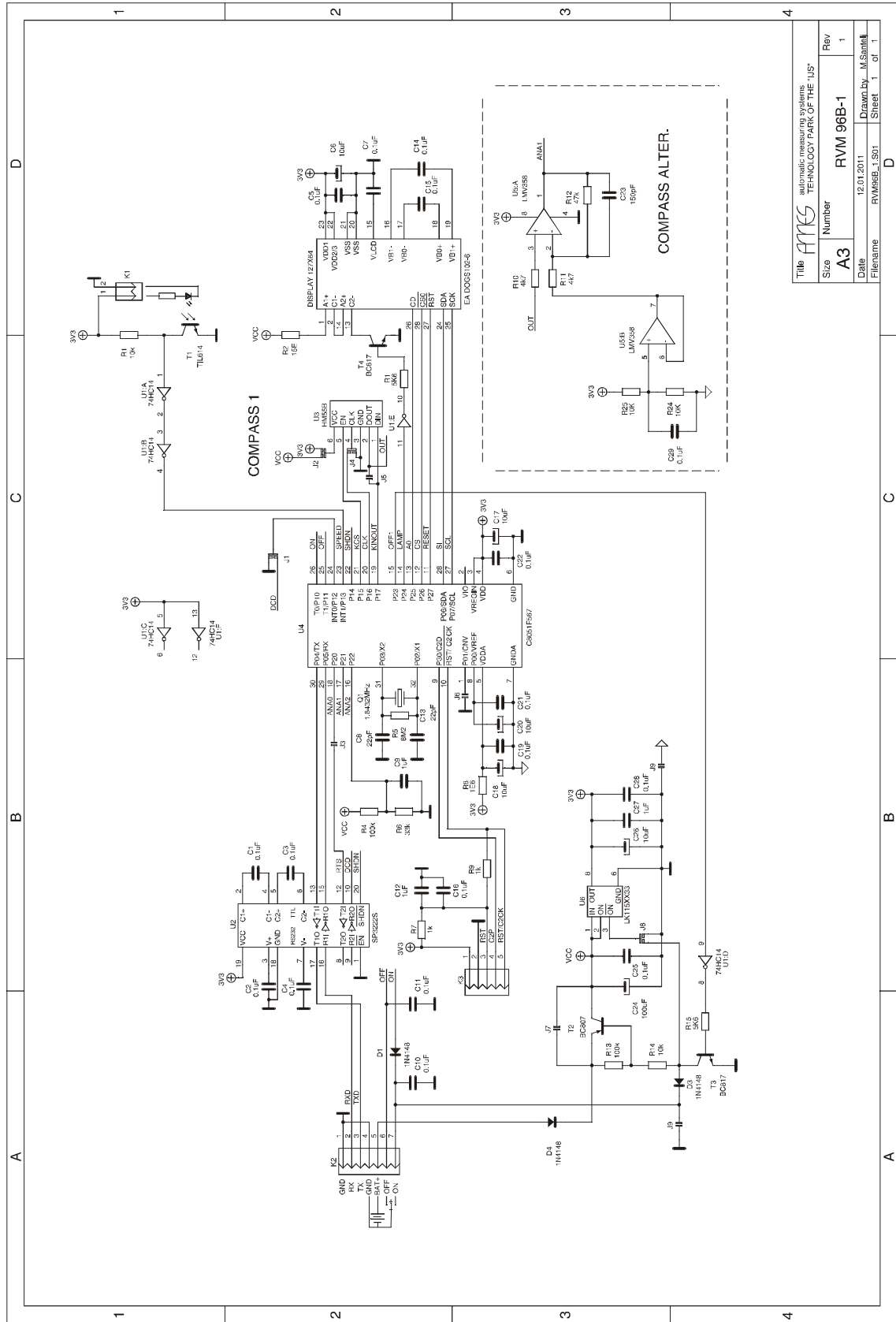
Manufacturer:

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Home page: <http://www.ames.si>

## **SPARE PARTS**

The following spare parts are available for the RVM 96B-1:

- RVM 96B-1 / SP 001: Nut for fixing the Robinson's cross on the axle
- RVM 96B-1 / SP 002: A 3-cup Robinson's cross
- RVM 96B-1 / SP 003: Upper (Teflon) bearing
- RVM 96B-1 / SP 004: Wind direction vane, complete with the counterbalance
- RVM 96B-1 / SP 005: Handle, complete
- RVM 96B-1 / SP 006: Coverlid for the handle
- RVM 96B-1 / SP 007: Battery compartment
- RVM 96B-1 / SP 008: Electronic assembly
- RVM 96B-1 / SP 010: A set of inner mechanical parts, including the axis, the stroboscope and ball bearings.



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Size	Number	RVM 96B-1	Rev
A3			1
Date	12.01.2011		Drawn by M.Samuel
Filename	RVM96B_1.S01		Sheet 1 of 1