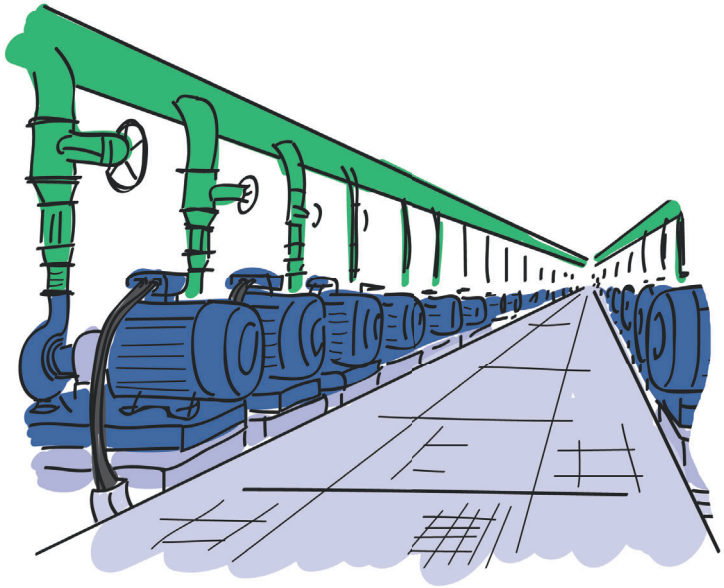
A4900 Vibrio

Step by Step

MASTER THE LANGUAGE OF YOUR MACHINERY



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Top Panel

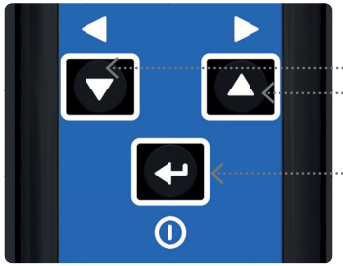
LED stroboscope

ACC ICP® - input

IR no-contact temperature sensor

Phones output

Buttons



Arrow buttons

Enter button

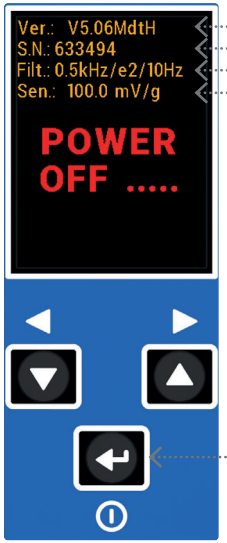
Batteries

USB-C connector for charging and data transfer

Charging

Fully charged

Press the Enter button to switch on the device



Firmware version

Serial number

Filters

Sensor sensitivity

Press and hold the Enter button to switch off the device

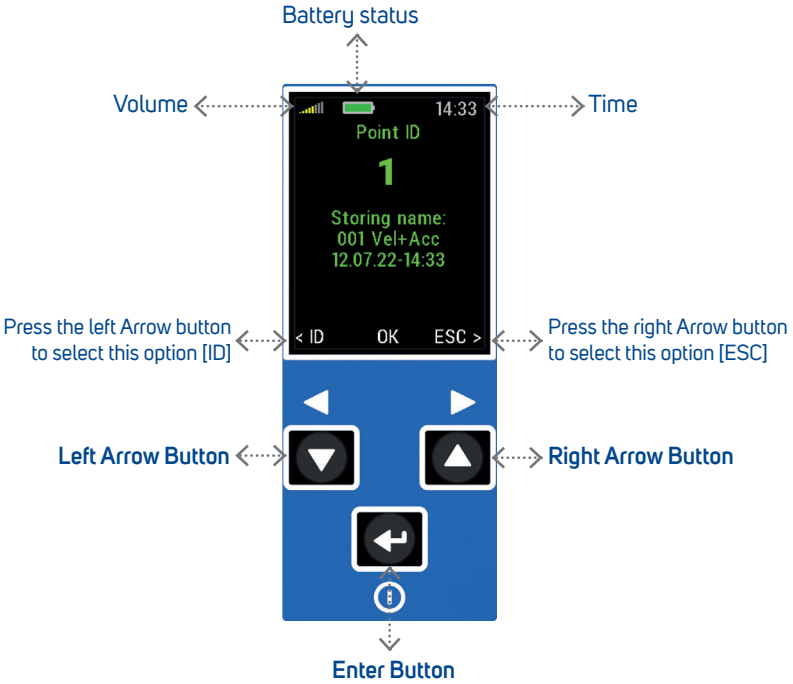
When you hold the Enter button, you can see the power-off screen, when release the button the instrument is swithed off

Arrow Buttons

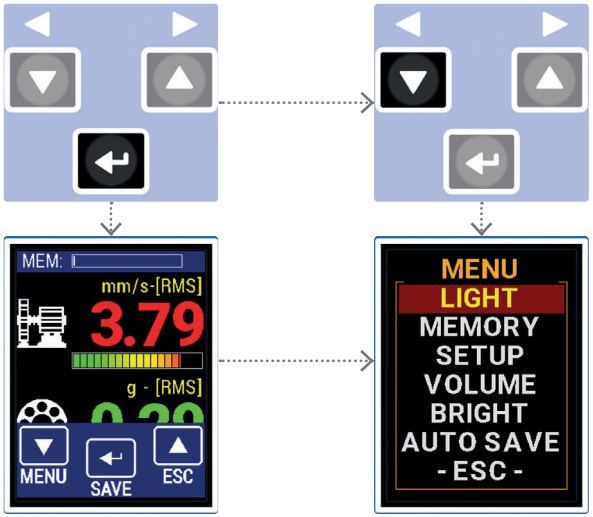
- switch between the measurement modes
- select the right or left item from the menu at the bottom
- move between items (up/down) in menu

Enter Button

- switches the instrument on/off
- confirmes the selection
- selects the middle item from the menu at the bottom
- opens the Basic menu

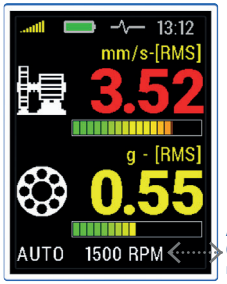


1. To open the Basic menu press the Enter button (on any measurement screen)
2. Then press the left Arrow button to open the Menu



3. You can select the following items from the menu:
   - **Light**
     to switch on the torch or the stroboscope (see page 11)
   - **Memory**
     for route measurement (see page 12 - 13)
   - **Setup**
     setup of speed, alarms, units, time, etc. (see page 14)
   - **Volume**
     for headphones volume setup (see page 15)
   - **Bright**
     setup of display brightness (see page 15)
   - **Auto Save**
     on-line data saving (see page 16 - 17)
   - **-Esc-**
     back to the measurement screen

Overall values - RMS



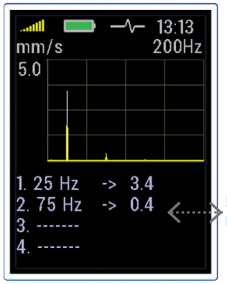
Automatic speed detection (the speed can also be set manually)

RMS vibration values:
10 - 1000 Hz in mm/s (ips)
0.5 - 16 kHz in g

Overall values - PEAK

Peak vibration values (0-P):
10 - 1000 Hz in mm/s (ips)
0.5 - 16 kHz in g

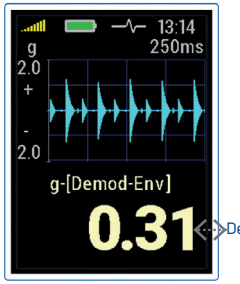
Spectrum



Displays the 4 top peaks found

FFT analysis of vibrations:
1 - 200 Hz in mm/s (ips) RMS

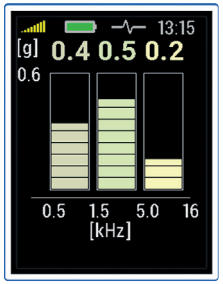
Demod time signal



Demod-Envelope value

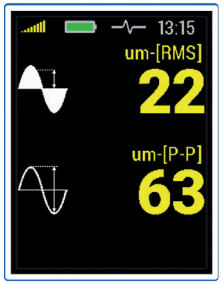
Demod time signal:
0.5 - 16 kHz in g

Frequency bands



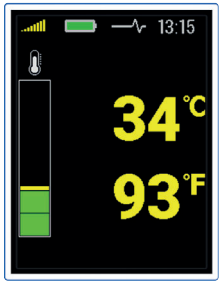
RMS vibration values:
0.5 - 1.5 kHz in g
1.5 - 5 kHz in g
5 - 16 kHz in g

Displacement



Overall RMS and Peak displacement:
2 - 100 Hz in µm (mils)
(see page 14 for setup)

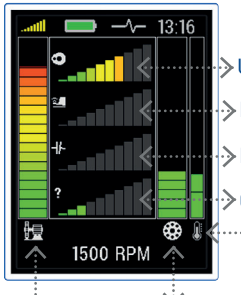
Temperature



Temperature in degrees Celsius and Fahrenheit:

- less than 30°C (86°F)
- 30 - 45°C (86 - 113°F)
- 45 - 60°C (113 - 140°F)
- 60 - 75°C (140 - 167°F)
- more than 75°C (167°F)

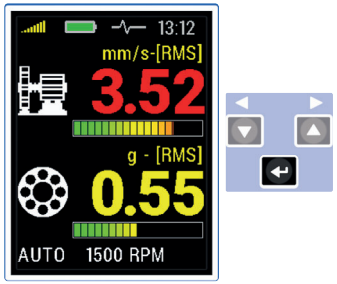
FASIT (Fault Source Identification Tool)



Unbalance
Looseness
Misalignment
Other failure
Bearing condition
Temperature
Overall machine condition

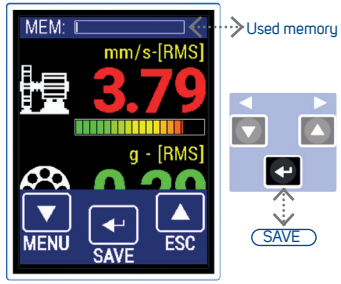
Saving Data From Measurement Screen (Vibrio M only)

1.



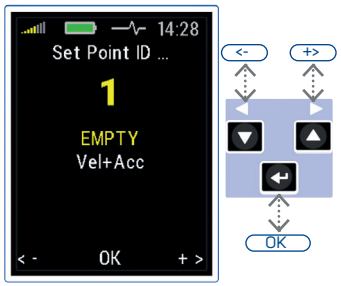
Press the Enter button on any measurement screen

2.



Press the Enter button [SAVE]

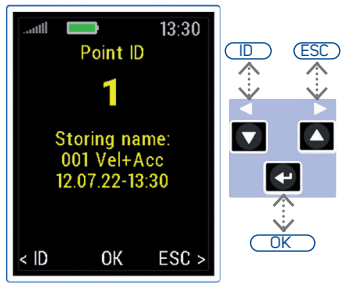
3.



Select the Point ID (1-250) with the Arrow buttons

Press the Enter button [OK] to confirm

4.



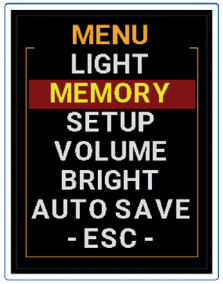
[ID] go back to the Point ID setting

[ESC] go back to the measurement

Press the Enter button [OK] to save the data

Clearing Data (Vibrio M only)

1.

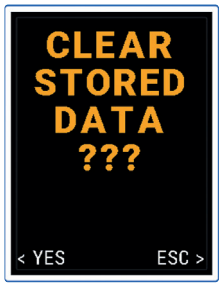


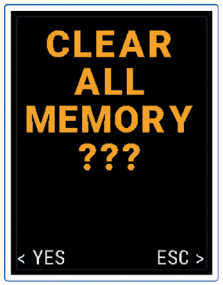
Go to **MENU/MEMORY**

2.

This removes all measured data. It removes route data and also the data saved manually (off-route). But the route structure (list of machines) is not removed and route can be collected again.

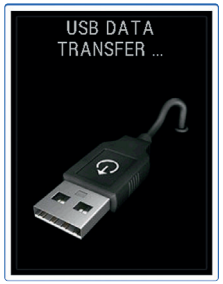
This clears all the data (readings and route structure) in the memory. It works like formatting.





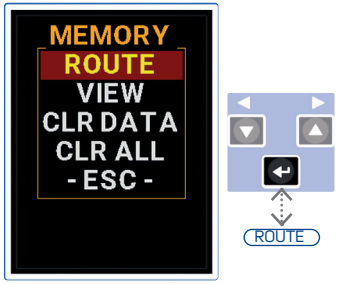
Memory - Route Measurement (Vibrio M only)

1.



Firstly the route must be loaded to the device from the DDS software

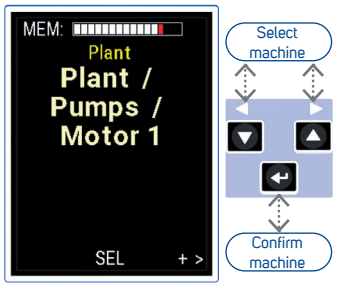
2.



Go to MENU/MEMORY/ROUTE

VIEW ... view off-route readings
CLR DATA ... delete all readings
CLR ALL ... delete all readings and route structure

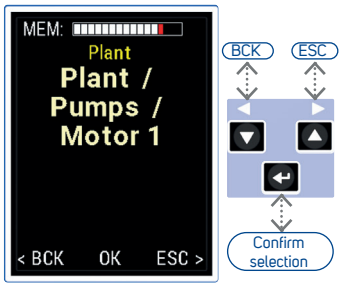
3.



Use the Arrow buttons to switch between the machines in route

Press the Enter button [SEL] to confirm the selection

4.

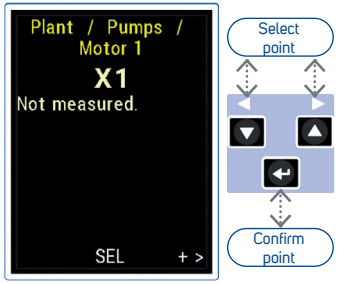


[BCK] go back to machine selection

[ESC] escape from the route

Press the Enter button [OK] to confirm the selection

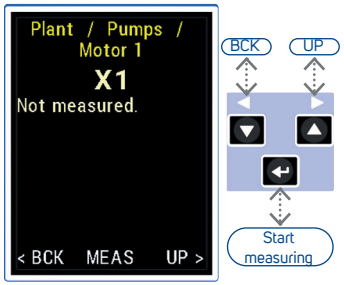
5.



Use the Arrow buttons to switch between the points in route

Press the Enter button [SEL] to confirm the selection

6.



[BCK] go back to point selection

[UP] go back to machine selection

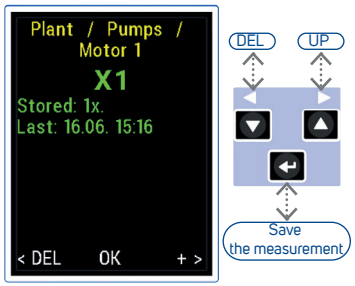
Press the Enter button [MEAS] to start measuring

7.

Measurement progress can be seen on the screen

If the temperature is defined in the route, this measurement is taken first

8.



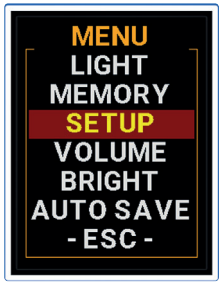
[DEL] delete the measurement

[UP] save and move to the next point

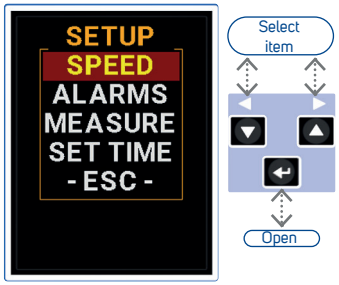
[OK] save the measurement

Setup

1.



2.



Go to MENU/SETUP

Speed
- Auto
- Manual
- Off

Alarms
- Adash (speed is required)
- R13 (rigid, group 1 and 3)
- F13 (flexible, group 1 and 3)
- R24 (rigid, group 2 and 4)
- F24 (flexible, group 2 and 4)

(R13, F13, R24, F24 → ISO 20816-3)

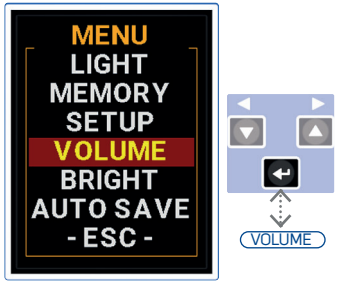
Measure
- Units
  - Metric
  - Imperial
- Disp.val.
  - RMS/0-P
  - RMS/P-P
  - 0-P/P-P

(RMS/0-P, RMS/P-P, 0-P/P-P → Displacement)
- RTE mode
  - Normal (black background)
  - Inverse (available for route only)

Set time — Setup of time and date

Volume, Brightness

1.

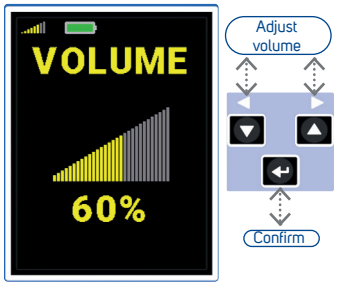


Go to MENU/VOLUME

HEADPHONES WARNING !

Listen at moderate volumes to avoid ear damage. Remove the headphones from ears while moving the sensor or reconnecting the cable.

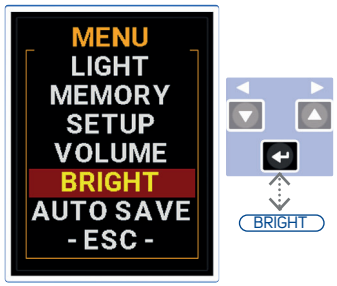
2.



Adjust the phones volume with the Arrow buttons

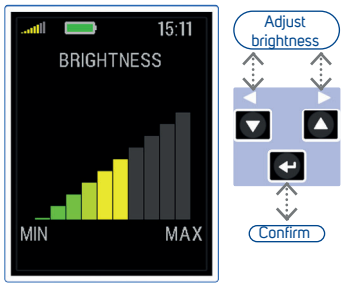
Press the Enter button to confirm

1.



Go to MENU/BRIGHT

2.

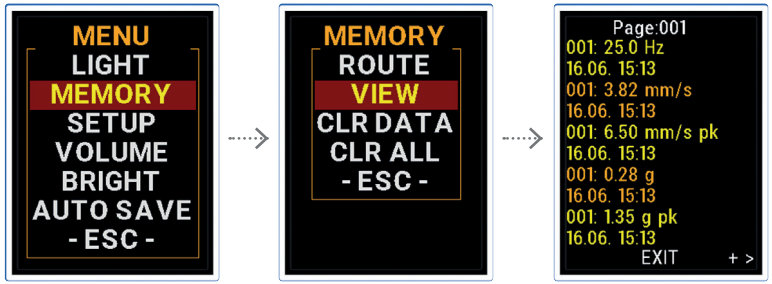


Adjust the brightness with the Arrow buttons

Press the Enter button to confirm

Viewing Data

Go to **MENU/MEMORY/VIEW**

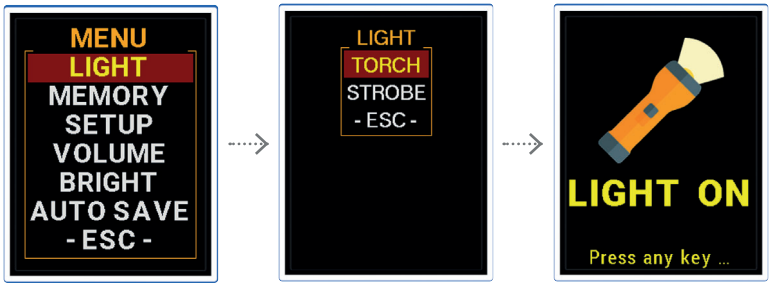


The list of saved readings appears. Every readings is described in two lines. The Point ID and value are on first line and time/date of reading on the second. Use Arrow buttons for listing.

Torch

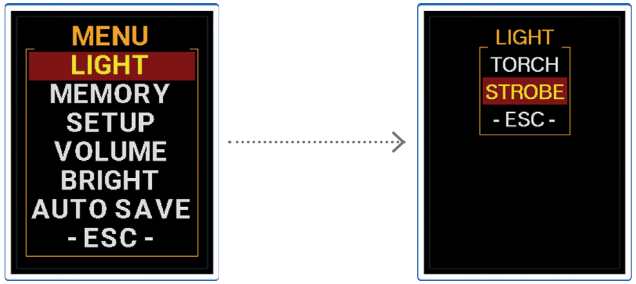
Go to **MENU/LIGHT/TORCH**

Press any button to switch off the Torch mode

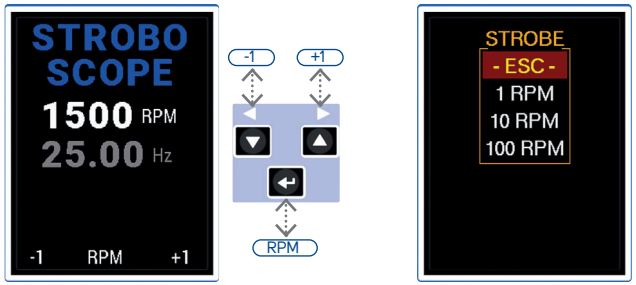


The stroboscope or stroboscopic lamp, commonly called a strobe, is a device which produces regular flashes of light on selected frequency. When we have to study or to visually inspect machinery, which has cyclically moving parts, then the stroboscope enables the user to freeze the movement (usually rotation). Imagine a rotating disc with one hole. When the flashes of light are synchronized with the disc rotation speed, then there is just one flash made during one rotation.

It means that the disc is lit up when the hole is always in the same position. It is the principle of the illusion of frozen movement.

1. 

Go to **MENU/LIGHT/STROBO**

2. 

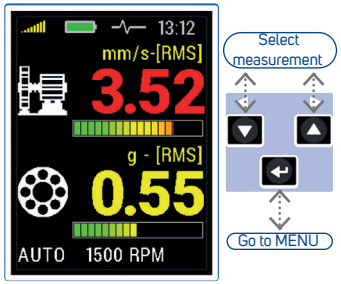
Initially the strobo uses the speed frequency (if it is known) or the last speed from memory.
The step (1, 10, 100 RPM) is displayed on the bottom line of the screen.

To turn off open the STROBO menu, select **-ESC-** and press Enter button.

If you need to change the step then press the Enter button [RPM] and the STROBO menu appears.

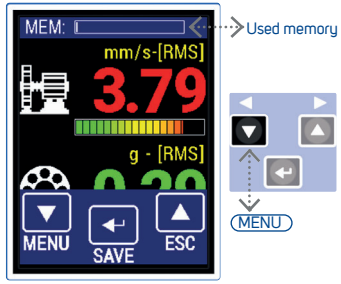
Select required step and press the Enter button.

1.



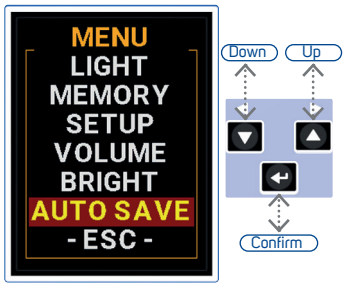
Select the type of measurement you want to save and press the Enter button

2.



Press the left Arrow button [MENU]

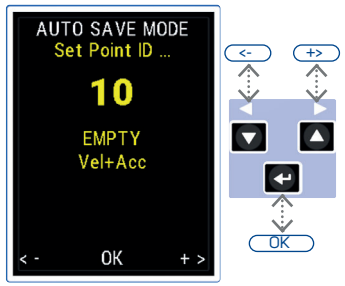
3.



Select AUTO SAVE item

Press the Enter button [OK] to confirm

4.

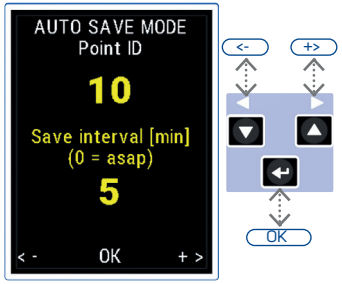


Select the Point ID (1-250) with the Arrow buttons

Press the Enter button [OK] to confirm

Auto Save (Vibrio M only)

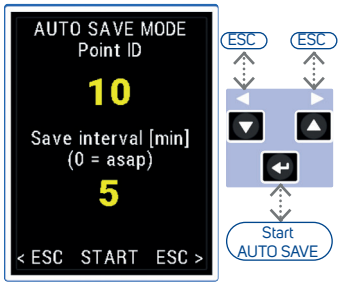
5.



Select the time interval for data saving (1-60 minutes, 0 is for the maximum speed of data storage)

Press the Enter button [OK] to confirm

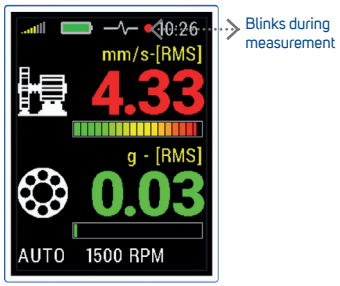
6.



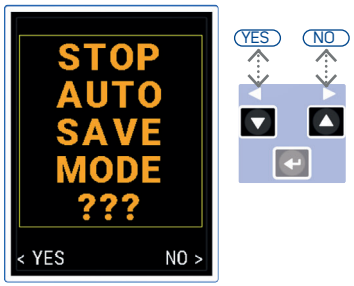
[ESC] escape from the AUTO SAVE

Press the Enter button [OK] to start data saving

7.



To stop AUTO SAVE mode press any button and confirm on the next screen



Press the left Arrow button [YES] to switch off the AUTO SAVE mode

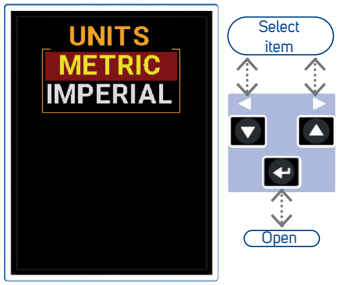
Press the right Arrow button [NO] to continue measurement

Proximity Option (Vibrio MP only)

1.

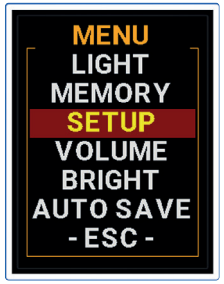
When the device is switched on, select Prox for proximity option

2.

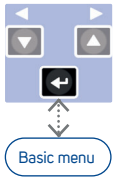


Select Metric or Imperial units

The A4900 Vibrio MP needs to be connected to a proximity sensor for proximity measurement! (The default sensor sensitivity is set to 7.87 mV/µm, 200 mV/mil)



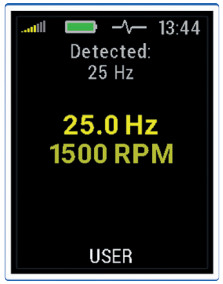
Press the Enter button for the Basic menu



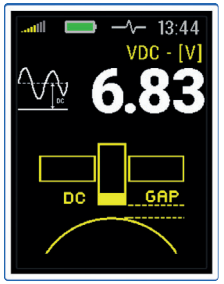
Off route data can be saved to the memory (the route cannot be performed with the proximity measurements)

Proximity Measurements (Vibrio MP only)

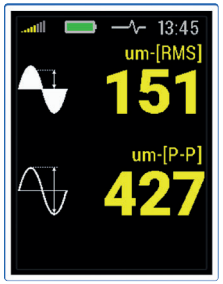
Speed



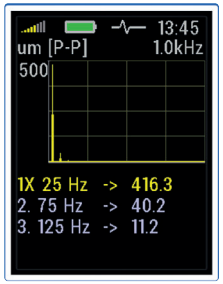
DC part of signal



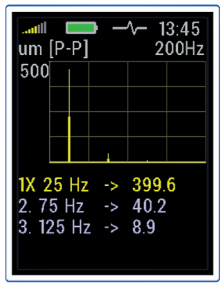
Displacement 1 - 1000 Hz



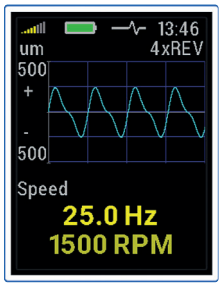
Spectrum 1 kHz or 2.5 kHz



Spectrum 200 Hz

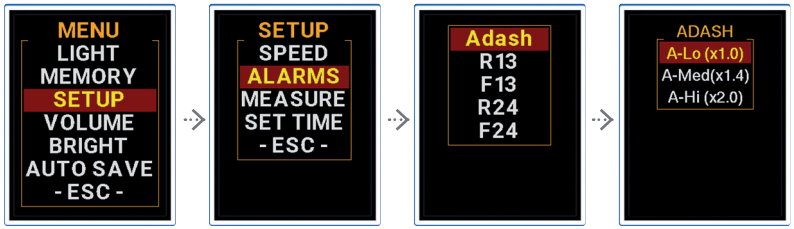


Time signal 1 - 1000 Hz

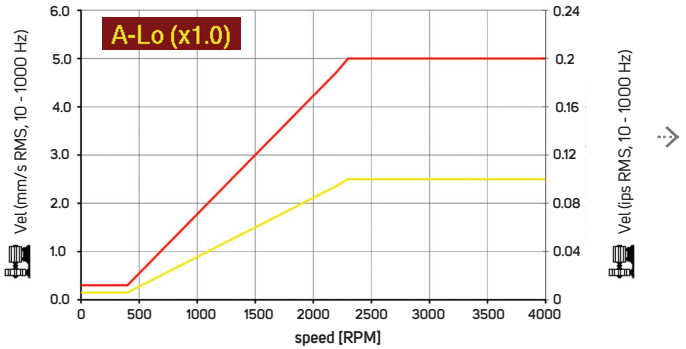


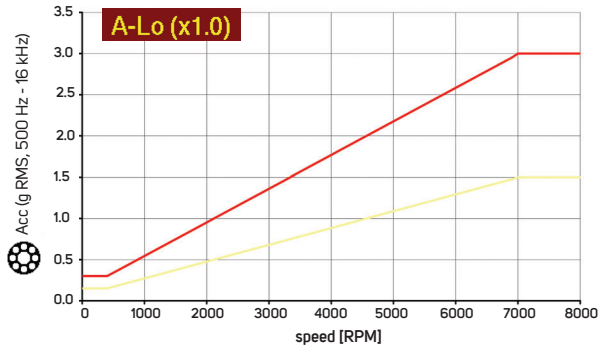
Adash Limit Values

Below you can see graphs, according to which the instrument determines vibration limits depending on machine speed



A-Lo(x1.0) are standard Adash limit values. The options A-Med(x1.4) and A-Hi(x2.0) are for experienced users only. The numbers 1.4 and 2.0 are coefficients by which original limit values are multiplied in those cases.





ISO 20816-3

The default setting uses the limit values for machines groups 2 and 4 with rigid foundation

CLASSIFICATION OF VIBRATION VALUES FOR MACHINES OF GROUP 1

300 kW - 50 MW

Foundation class	RMS velocity values mm/s	in/s	border zone	
Rigid **(R13)**	2.3	0.09	A/B	
	4.5	0.18	B/C	
	7.1	0.28	C/D	
Flexible **(F13)**	3.5	0.14	A/B	
	7.1	0.28	B/C	
	11.0	0.43	C/D	

CLASSIFICATION OF VIBRATION VALUES FOR MACHINES OF GROUP 2

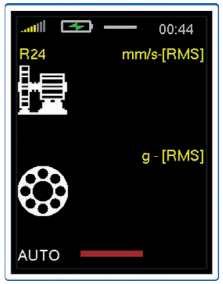
15 kW - 300 kW

Foundation class	RMS velocity values mm/s	in/s	border zone	
Rigid **(R24)**	1.4	0.06	A/B	
	2.8	0.11	B/C	**DEFAULT FACTORY SETTING**
	4.5	0.18	C/D	
Flexible **(F24)**	2.3	0.09	A/B	
	4.5	0.18	B/C	
	7.1	0.28	C/D	

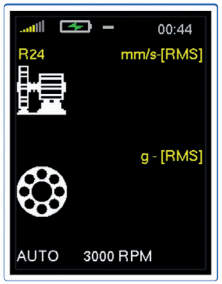
Machine Rotation Speed Detection

Adash limits require machine rotation speed information. The speed detection appears before the first vibration measurements (first screen).

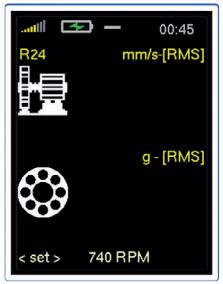
After switching the instrument on the first screen (Overall values) appears, but without the vibration values. The speed value is required for the classification of vibration measurements. The speed value is used for **Warning** and **Alert** limits calculation. The instrument runs the speed detection process (the red bar increases on the bottom of screen).



The user can switch off the automatic speed detection in **MENU/SETUP/SPEED**.



Detected speed value is displayed at the bottom. The word AUTO in front of the value informs, that automatic detection was used.



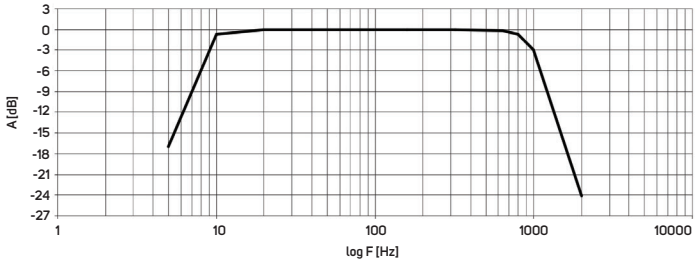
If the automatic detection is not successful, then the last speed value appears with word <set>. When no button is used in 4 sec, then the displayed value is accepted. Using left/right Arrow buttons change the speed to correct value. Set the speed and press middle Enter button.

Technical Specifications

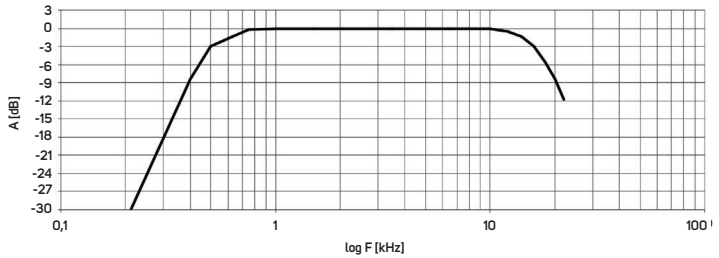
Input:	1 x ICP® powered accelerometer
Input range:	60 g PEAK with standard 100 mV/g sensor (e.g. 600 g PEAK for 10 mV/g sensor, the sensitivity is editable in the unit)
Measurements:	Velocity RMS: 10 - 1 000 Hz [mm/s, ips] Velocity PEAK: 10 - 1 000 Hz [mm/s, ips] Acceleration RMS: 500 - 16 000 Hz [g] Acceleration Peak: 500 - 16 000 Hz [g] Velocity time: 1 - 1 000 Hz [mm/s, ips], 2048 samples * Velocity spectrum: 1 - 200 Hz [mm/s, ips], 200 lines Velocity spectrum: 1 - 1 000 Hz [mm/s, ips], 800 lines * Acceleration time: 1 - 16 000 Hz [g], 2048 samples* Acceleration spectrum: 1 - 16 000 Hz [g], 800 lines* Acceleration Demod-Envelope RMS: 500 - 16 000 Hz [g] Acceleration Demod-Envelope Peak: 500 - 16 000 Hz [g]* Acceleration Demod-Envelope time: 500 - 16 000 Hz [g], 2048 samples Acceleration Demod-Envelope spectrum: 500 - 16 000 Hz [g], 800 lines, range 400 Hz* Displacement RMS: 2 - 100 Hz [µm, mil] Displacement 0-Peak: 2 - 100 Hz [µm, mil] Displacement Peak-Peak: 2 - 100 Hz [µm, mil] Temperature non-contact measurement: -70 - 380°C (-94 - 716°F)
Other functions:	LED stroboscope (0.17-300 Hz, 10 - 18 000 RPM) LED torch Vibration stethoscope
Memory:	4 MB for data 120 960 overall values 900 measurements of 800 line spectra or 2048 sample time signals may be stored
Data storing:	Off-Route Route with DDS software for Vibrio M (free download)
Interface:	USB C - 3.0, 2.0 compatible
Software:	Free version of DDS software (limited database size)
Display:	Colour graphic TFT display 240x320 pixels, diagonal 2.2" (54 mm), sunlight readable
Output:	1 x AC signal 8 Ω / 0,5 W for external headphones (signal listening)
Power:	Rechargeable Li-Ion battery, 16 hours of continuous operation, USB-C charging
Temperature:	Operating: -5°C to 55°C
Dimensions:	170 x 85 x 40 mm
Weight:	380 g (without cable, sensor and magnet) 590 g (including cable, sensor and magnet)
Accessories:	vibration sensor, coiled cable to connect vibration sensor, magnetic base for vibration sensor, headphones with 3.5 mm jack, USB cable, measuring tip for manual pressure on the sensor, transport case, USB flash disc with the manual

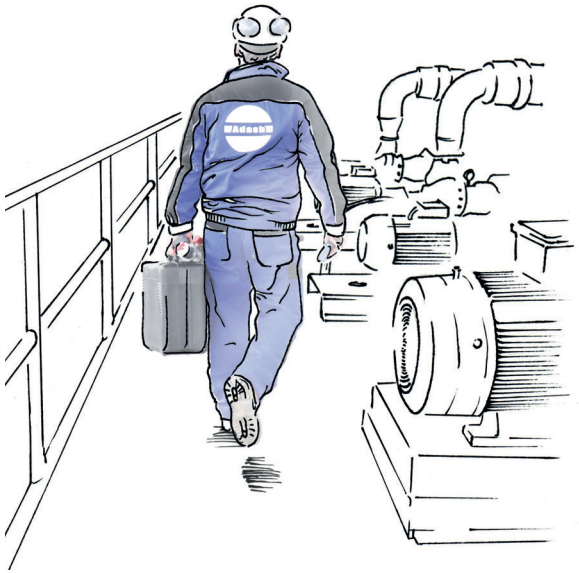
*available in DDS software for Vibrio M

Vibration Velocity Measurement Frequency Response (10 mm/s)



Vibration Acceleration Measurement Frequency Response (1 g)





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MASTER THE LANGUAGE OF YOUR MACHINERY