



The A4300 VA3 Pro is the newest addition to our range of portable devices for vibration diagnostics. The signal inputs allow user to connect two individual acceleration sensors or one triaxial sensor. Input for speed probe is always ready to trigger your all three channel measurements simultaneously!

IR temperature sensor (for bearing temperature measurement) and a LED stroboscope/torch are built-in and ready to go by one button press. The A4300 VA3 Pro is designed for one-handed operation. With a weight of just 780g and a battery life of more than 10 hours of continuous operation, the unit is suitable for long route measurements.

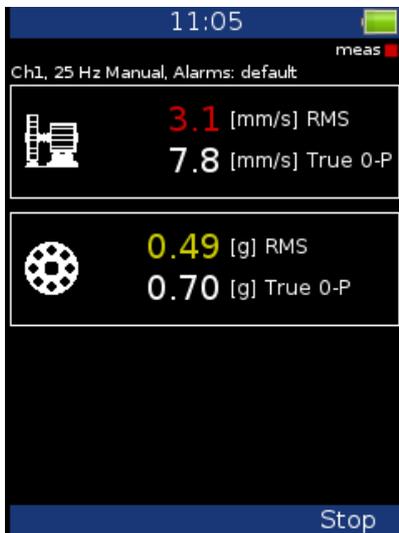
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### Main menu

The A4300 VA3 Pro instrument can be configured according to your requirements by choosing measuring modules. There are three free modules included in every VA3: Meter, Fasit and Strobo.

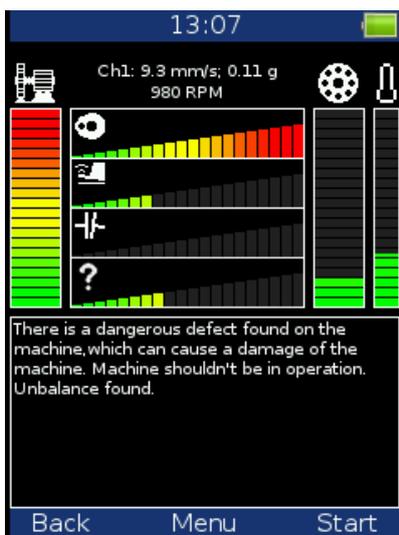
The optional modules are: Analyzer, Route, Balancer, Recorder, Run Up or Ultrasound.



### Meter - Free Module!

The Meter module includes basic vibration measurement screens that enables the user to perform basic vibrodiagnostics measurements:

- Overall Vibration Values (RMS, 0-PEAK)
- FFT Spectrum
- Time Signal
- Frequency Bands
- Displacement
- Temperature



### FASIT - Free Module!

FASIT (Fault Source Identification Tool) is an expert system for automatic detection of possible machine faults:

- Unbalance
- Misalignment
- Looseness
- Bearing faults

The FASIT means the **FA**ult **S**ource **I**dentification **T**ool. This mode should help beginners to determine the machine condition.

#### Attention!

The FASIT correctly analyses only machines with speed over 10Hz (600 RPM). The velocity measurements is in the 10-1000Hz range.

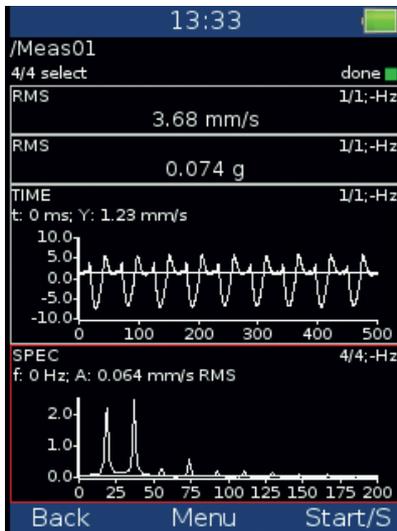


### Strobe - Free Module!

Switch on the stroboscope to visually “freeze” the machine movement and check its rotating parts. Speed of the machine can be detected.

You can use the instrument as a stroboscope in this mode. White LEDs on the top panel start to flash regularly with the frequency set up on the screen. When we have to study or to visually inspect machinery which has cyclically moving parts, then the stroboscope enables us to visually slow down or freeze this movement (rotation, cyclic movement, oscillation and vibrations).

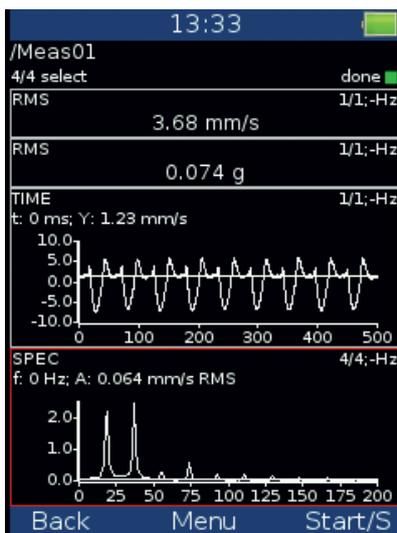
Imagine a rotating disc with one hole. When the flashes of light are synchronized with the disc rotation speed, then there is just one flash made during one rotation. It means that the disc is lit up when the hole is always in the same position. It is the principle of the illusion of frozen movement.



### Analyzer Module

Select the type of the measurement (from simple overall values through FFTs and time signals to more advanced measurements with Proximity probes such as Orbits), set up the measurement settings according to your requirements (frequency range, sampling, units etc.) and take all the predefined measurements simultaneously.

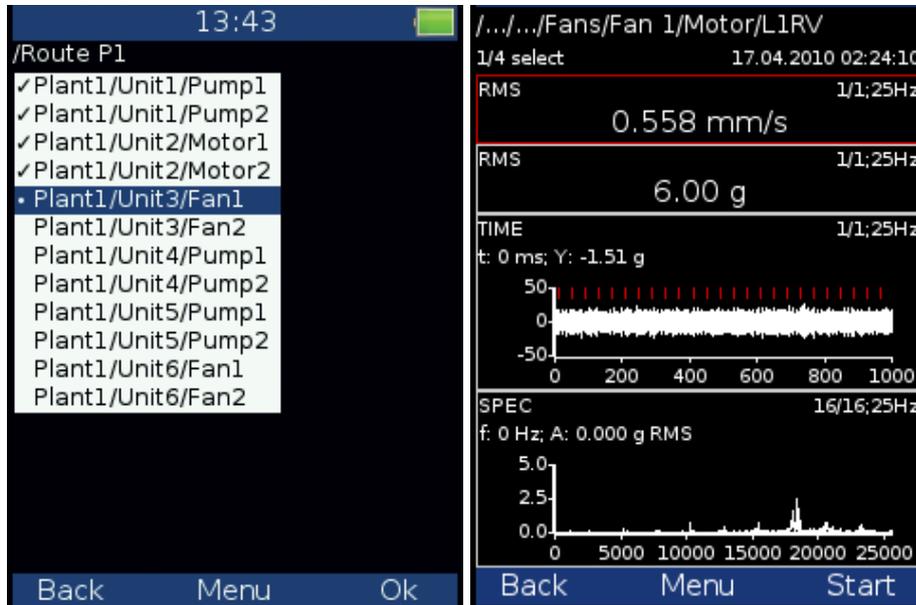
The Analyser mode is the basic mode for signal analysis. If you have not prepared the Route readings, then you use the Analyser mode for analysis. All required parameters must be set manually or you can use the predefined parameters from memory.



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## Route Module

Route module is used for day to day data collection of your factory machinery. Simply create your route tree with measurement points location in DDS software (possible also in free DDS version) and take the measurements regularly. Transfer collected data to DDS software to watch the trends and analyze the data.

The DDS software is required for the route measurement. See also the DDS user manual for more details. We do not describe all details about the DDS function in this guide.

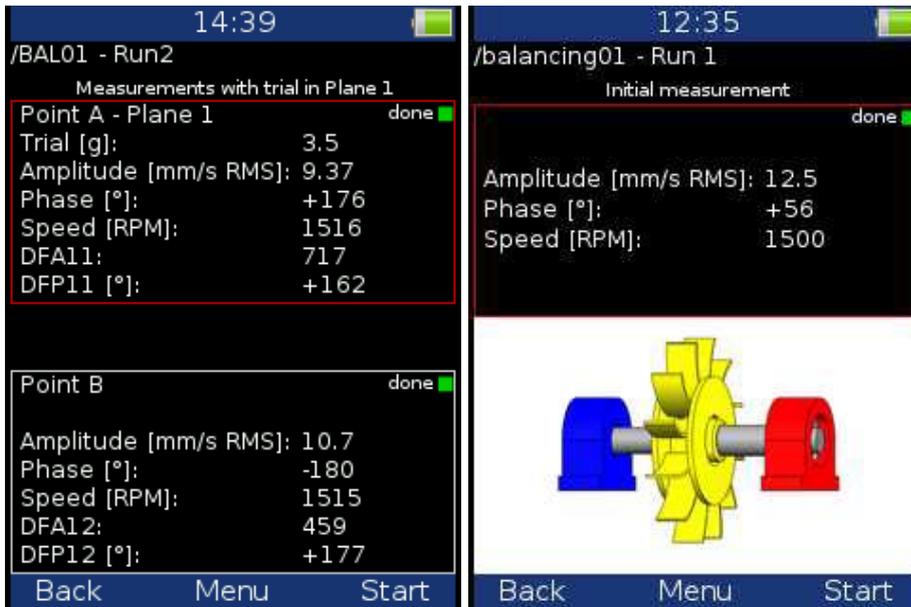
Open the database in the DDS which you want to create the route from. Open the instrument window (Route/A4300\_VA3). The route window appears. Connect the instrument with a USB cable.

Press the Connect button, the message window with connection process description should appear. The list of data saved in the instrument appears.

Move the required points from the DDS tree to the route window (use mouse Drag'n'Drop).

You can see that the structure of the tree has changed. This is because the VA3 Pro strictly requires a tree with the following structure Tree\_Name - Machine - Measuring Point - Data Cell. If there are more items in the DDS tree in a path between these items, the names of such items are combined together (like in this example "Turbo Generator/Fans/Fan 1" or "Motor/L1RV" etc.). If the item name in a route tree is longer than 45 characters the DDS tries to shorten such names. To avoid this we recommend using shortcuts in the tree items (in this case "Turbo Generator" should be "TG").

Press the Send button. The route data will be loaded from the computer to the instrument.



### Balancer Module

Balancer allows you to perform one or two plane balancing job of rotating parts such as industrial fans, blowers, spindles etc.

The balancing process is based on standard measurements of amplitude and phase on the speed frequency.

The VA3 balancer includes many special internal functions, which remove the influence of noise and speed changes etc. If you are not familiar with on-site balancing method, we recommend reading professional literature before you proceed.



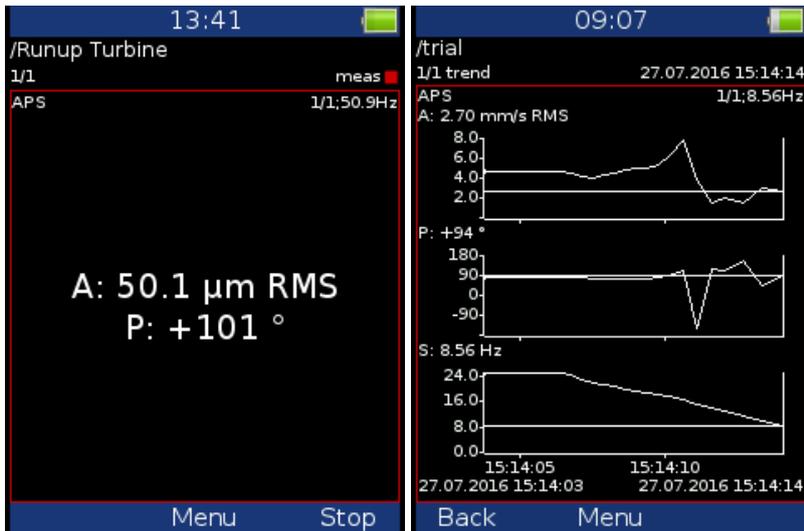
## Recorder Module

Unique measurement mode with unappreciated value. Recorder “records” the raw signal from the sensor, means raw signal from the machine. This allows user to make a post processing of the signal later on your PC. You can play this record again and again and apply any measurement setting to it.

Some of you maybe remember that in the past a signal was recorded to a tape-recorder and afterwards it was processed (analysed) in an analyzer. This method had a huge advantage; the signal could be analyzed repeatedly over and over. If you wish to make all the requested analyses in real time, you are under time pressure. For example the runup of the machine can be run only once, you are under extreme pressure. The tape-recorder was an excellent solution for those cases. It is a simple unit with a simple operation and no danger of losing the data.

The recorder mode offers the same solution. The recorder mode enables you to record the raw signal from the sensor without any post-processing or filtering.

It enables you to record all the channels (3 AC channels, 3 DC channels and a tacho channel) to the memory of the VA3 unit simultaneously. The sampling frequency is from 64 Hz to 65536 Hz. The record is saved in the memory and you can analyze it later according to your requirements.



### Run up Module

Similar to the Analyzer module where you can set up any measurement that you need. RunUp allows you to control the saving of data for example as soon as possible, or by speed change, time change etc. enables the same measurements as in **Analyser** mode, but controlled by speed, time or uncontrolled.

What does it mean "controlled"? In Analyser mode you can measure the Set and then you have to save measurements manually.

The **Runup** is different. The measurements are saved automatically and additionally the measurements are regularly repeated under the control. The trigger function is used for that control. The menu item **Menu/Trigger/Runup mode** is used for setting.

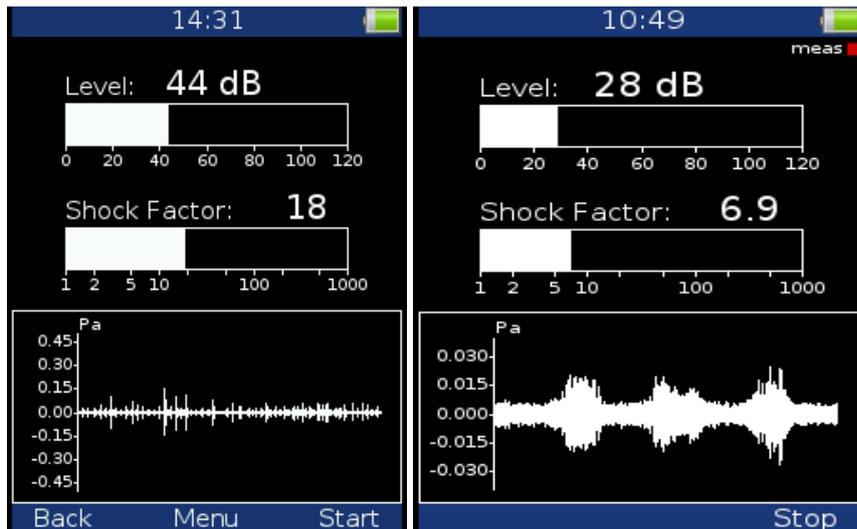
Usually the **speed** is used for that control and new measurement is made, when the speed changes from previous measurement of defined value (e.g.10 RPM).

Also the **time** can be used to control that procedure. Then you can take the measurement in defined time interval ( e.g. each 60 sec ).

The **asap** is the next choice. It means no delay between measurements - **As Soon As Possible**. Be careful for such mode. You can use all memory quickly.

The last choice is the **Manual** mode. You can press the **Ok** button at any suitable moment to make a new measurement.

Available interval is displayed on the status bar before the start of measuring. The instrument enables save up to 1GB of data on each measurement (if enough memory available), but the limit of 1 million values per set cannot be exceeded.



### Ultrasound Module

Ultrasound measurement is the measurement of sound not possible to be heard by human ear. Typical applications are air leak detection, electrical arcing or early bearing fault detection.

Higher frequency energy above 20 kHz is best detected with an ultrasonic sensor. Most useful information is found between 30 and 50 kHz. The Adash ultrasonic module enables monitoring ultrasonic energy.

Ultrasound utilizes a solid, liquid or gas to transmit (will not exist in a vacuum), and is a very directional and short waveform. It has several things in common with the vibration, for instance the ability to detect the ultrasound energy requires the sensor to be focused in the direction of the waveforms.

Field applications for airborne ultrasound detection:

- Consider the wave energy is easily reflected and attenuated.
- When looking to detect airborne ultrasound energy a rule of half distance twice amplitude is a good thing to consider, this is called the "inverse rule".
- Remember airborne ultrasound is easily reflected, when detecting a leak, you should turn in the other direction to determine if the sound is coming from behind you.
- Use shields such as cardboard to isolate the potential defect from other sources.

For airborne ultrasound the instrument microphone attachment will detect:

- Air leaks
- Vacuum leaks
- Electrical Arcing
- Electrical Corona
- Tightness testing where a signal generator is located within a sealed unit, then by scanning the sealed areas from the outside leaks can be detected.

The probe attachment that enables direct transmission ultrasound will detect:

- Early signs of poor lubrication in anti-friction roller bearings
- Impacting noise from defects in roller bearings including bearings with shaft speeds under 100 rpm.
- Steam trap leakage and failures
- Gearbox defects
- Valve leakage
- Actuator malfunctions