



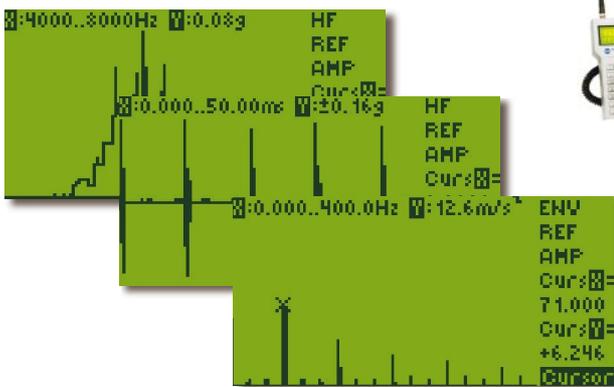
ADASH 4000 series

Portable data-collector and analyser for vibration diagnostics, bearing condition measurement and balancing.



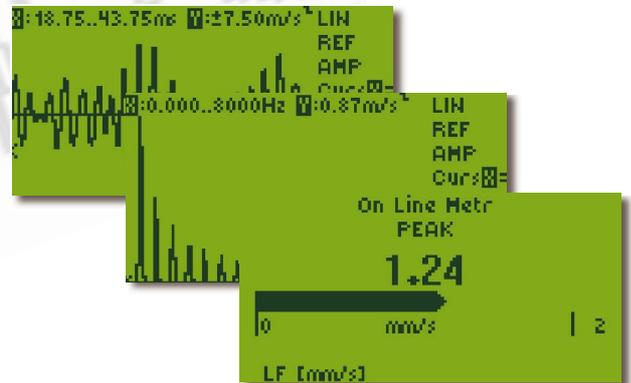
- Vibration FFT analysis • Order analysis • Time signal analysis •
- Bearing condition evaluation • Lubrication diagnostics •
- Data collector • Route measurements •
- Field balancing of machines •
- DDS software for data acquisition •

• The Adash 4000 is a series of portable, digital data-collectors and vibration analysers, with memory to enable route measurement when used with DDS4.00 software. It is designed for the evaluation of bearing condition and such mechanical defects as imbalance, misalignment, resonance, looseness and cavitation. The instrument measures spectra, time signals, and overall vibration. The 4101 can be used to perform in situ balancing, to make order analysis and to evaluate operating deflection shapes of machines. Our DDS4.00 software and database has been specially designed to work with our complete range of portable instruments such as the 4000 series, our on-line instruments and instruments designed by other companies. This software system is suitable for beginners and skilled users alike, and uniquely provides support for an expanding system for the future. To operate this instrument is extremely simple. The Adash 4000 is also available in an intrinsically safe version (Classification Eex ib IIB T3).



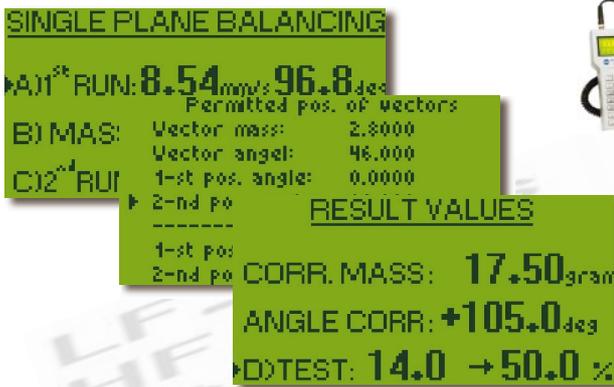
Bearing condition and lubrication

The 4101 offers several methods for this type of diagnostics. The basic method of measurement is a measurement of high frequency vibration, which is emitted by defects in bearings. This method is also suitable for lubrication diagnostics. The next method is wide-band envelope measurement, which is very sensitive for any damage in the bearing. Envelope analysis with FFT spectrum will determine which bearing part is damaged. In addition the 4101 also uses the Crest factor and Kurtosis factor evaluation methods.



In-situ balancing

This is the most effective method of balancing. In situ balancing takes account of real life conditions which cannot be allowed for in the workshop. The 4101 enables single and two plane balancing. The balancing module also includes a routine for mass splitting e.g. when attaching balance weight to fan blades. Balancing results may be transferred to DDS software for report printing.



FFT analysis and Envelope analysis.

The 4101 enables measurement of spectrum in several frequency spans. There is wide span up to 16 kHz in m/s², ISO span up to 1000 Hz and envelope analysis frequency span up to 400 Hz (envelope filter is 5 - 16 kHz).



Order analysis

Order analysis is used to find the amplitude and phase of rotational speed related frequencies. It uses an external trigger signal from a tachometer to give precise speed and phase information. This procedure is also used to obtain the data needed for operating deflection shape analysis.



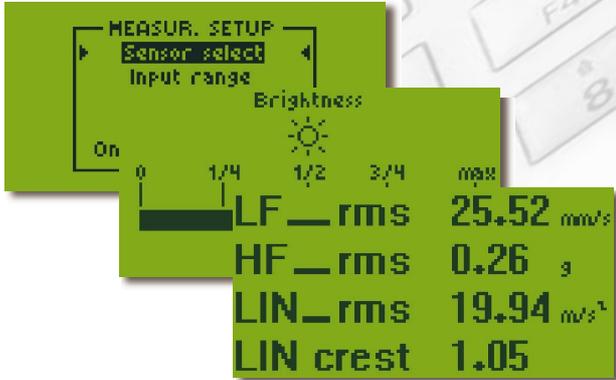
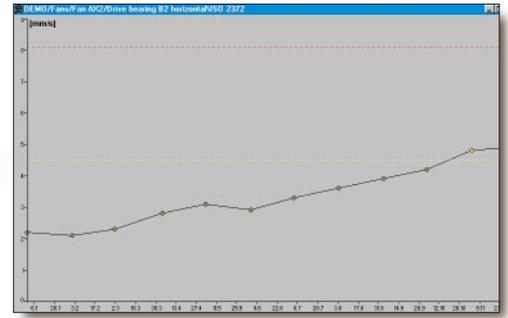
Route measurements.

The 4101 is designed for route measurement. With each measurement there is displayed the name of the machine and the measurement point. It is also possible to enter process parameters via the keyboard. Reference values can be included in the route memory allowing the user to compare today's reading with the reference immediately. A route can be either constructed in DDS and loaded to the 4101 or the user can create a route in the 4101 directly and then unload the stored data into DDS. At any time you can switch between route mode and analyser mode.



Imbalance, misalignment, looseness...

The 4101 employs all the diagnostic methods needed for mechanical problem detection. Problems such as imbalance, misalignment, looseness, cavitation and resonance can be identified. Such defects coupled with bearing problems represent the most common rotating machine failures.



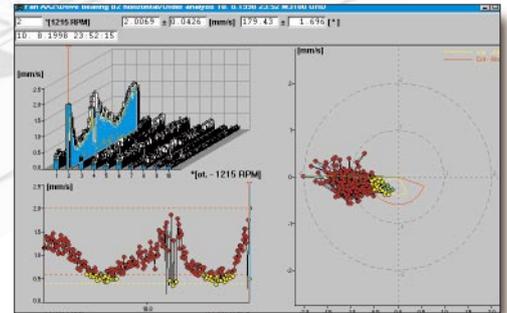
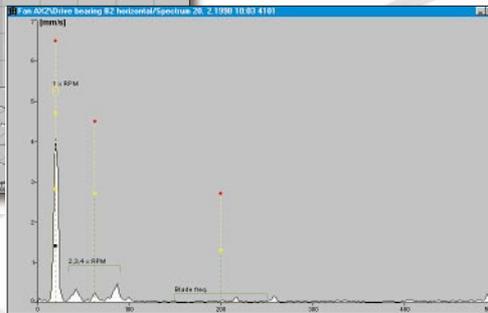
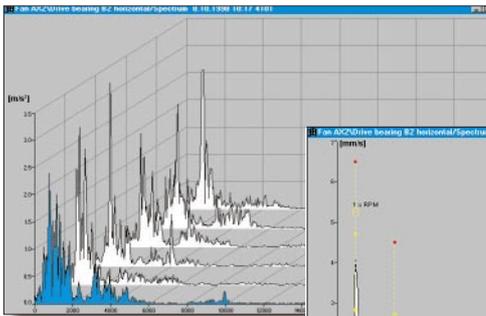
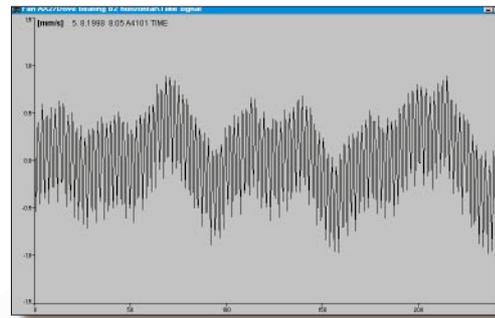
Operating (machine) deflection shapes.

This is a powerful tool for identifying certain failure modes. Using the 4101 in a simple route mode and our special software making the measurements is very simple. This simplification provides quick and efficient analysis.



Modularity of 4000 series.

The 4000 series is built as modular system. There is possible to buy base version only and then to add selected options.



DDS software system is designed to work with Windows 95/98 or Windows NT 4.0.

- Communication between the software and the instrument is by standard RS 232.
- DDS includes all methods and features which are needed for vibration diagnostics.
- DDS has been designed to comply with standard Windows methods of operation providing an intuitive user interface.
- DDS has a measurement tree on which an unlimited number of levels can be created.
- Data can be attached to any tree item.
- Well presented reports can be printed out from the system using templates provided.
- Include any schemes or pictures which may be useful to simplify the report.
- DDS Software can be operated on a network.
- Spectrum alarm bands can be created which will automate the analysis and diagnosis of stored spectral measurements.
- Year 2000 compliant.



Technical specification of Adash 4101:

Input channels:	- 1 for vibration (ICP powered and AC) - 1 for external trigger (e.g. tacho)
Construction type:	- standard or Eex ib IIB T3
Measurement types:	- data collector or analyser (it is possible to switch from one to the other at any time)
Sensors:	- piezoelectric accelerometers with integrated ICP supplied preamplifier or any AC signal
Input ranges:	- 0.01-300 m/s ² (sensor 10mV/ m/s ²) - 0.1-3000 m/s ² (sensor 1mV/ m/s ²) - AC +/- 3V peak
Data acquisition:	- measurement of TRUE RMS and TRUE PEAK values of vibration in LF, HF, LIN *1 paths - wide-band, high frequency vibration, and envelope analysis of bearing condition (measurement of impact pulses in 5-16kHz band) - Crest factor in LF, HF, LIN*1 paths - Kurtosis factor in LF, HF, LIN*1 paths - FFT analysis - time domain analysis - order analysis - single and two plane balancing - rotation speed measurement
Trigger:	- manual or external (tacho probe)
External trigger:	- TTL signal or impulses (0,7V)
FFT:	- frequency ranges 400Hz, 1000Hz, 16kHz - line number - 401
FFT window:	- Hanning
Averaging:	- max 64
Time signal:	- 2048 samples
Signal conditioning:	- integration - envelope modulation (ENV)
Filters:	- LF, LIN, HF *1
Memory size:	- 512 kB (370 of FFT or 2048 of static measurement)
Display:	- LCD with backlight
Interface:	- RS232
Mechanical construction:	- IP55
Temperature range:	- -20 °C to +70 °C
Power Supply:	- 4 x AA 1.5V
Dimensions:	- 223 x 105 x 40 mm
Weight:	- approx. 500 g
Software:	- DDS 4.00 - MDS 5.00
Accessories:	- accelerometers, magnets and cables from catalogue - optical or laser tacho probe - aluminium carrying case - leather cover - battery charger

*1 LF - velocity signal in 10Hz-1kHz band [mm/s]
LIN - acceleration signal in 0,3Hz-16kHz band [m/s²]
HF - acceleration signal in 5kHz-16kHz band [g]



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