

Appendix: Transient Analyser

The Transient Analyser firmware offers measurements of a machine run-up. Such measurement result consists of the four data arrays:

- array of amplitudes at machine speed frequency
- array of phases at machine speed frequency
- array of machine speed values
- array of measurement times.

This measurement is covered in **Main menu -> Analyser -> RunUp measurement** item.

RunUp measurement

This function enables to measure a machine run-up process and view two graphs on the same screen:
- graph of amplitudes at the machine speed frequency
- graph of phases at the machine speed frequency.

The setting screen of the run-up measurement is identical with the setting screen of the Amplitude & phase measurement – see /1/, **Ampl. & phase measur. Item** chapter. Only two following items have been added for the run-up measurement:

- **CONTROL** Item
- **TRIGGER** Item.

Ampl. & phase measur.	
CHANNEL	CH1
AmEv format	RMS
AMPL-UNIT	g
VIEW-UNIT	mm/s
PHASE-UNIT	deg
SPEED-UNIT	RPM
RESOL	±2Hz
CONTROL	by time with tacho
TRIGGER	every 10.0 s

CONTROL Item

It enables to select a desired measurement control as:

- by speed** Next measurement starts after the machine speed change exceeds a choice step.
- by time with tacho** Next measurement starts after the choice time step is elapsed.
- by time without tacho** The choice is not allowed for this measurement. The tacho-probe has to be used. It will be used for other measurement types.

TRIGGER Item

It enables to set a desired value of the speed or time step – see parameter CONTROL above. Zero step means to measure continuously.

CHANNEL Item

It enables to assign a measurement either to the CHAN1 input or to the CHAN2 input.

AmEv format Item

Select a desired amplitude evaluation format as one of the following:

- RMS
- 0-PEAK
- PEAK-PEAK.

AMPL-UNIT Item

We recommend setting of the same unit as the sensor unit. Set either g or m/s² unit for an accelerometer.

VIEW-UNIT Item

Set required unit for the y-axis of the amplitude graph.

PHASE-UNIT Item

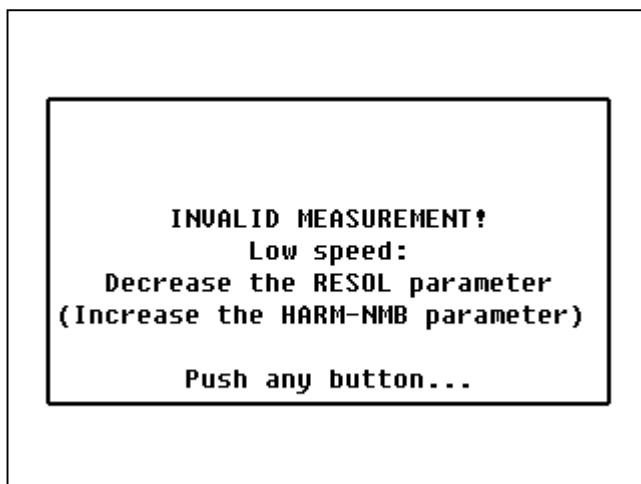
Set required unit for the y-axis of the phase graph.

SPEED-UNIT Item

Set required unit for the speed value representation.

RESOL Item

Set required frequency resolution for the spectrum from which the amplitude and phase are evaluated. This parameter has effect upon the measurable machine speed range.



This screen appears if the actual machine speed is out of range within the Amplitude & phase measurement and the measurement is aborted.

This standard screen *is not* applied within a run-up measurement. Run-up measurements cannot be aborted if such error is detected.

```

Low speed: 598.1RPM
Min = 600.0RPM Max = 31920.0RPM
CH1: Step 4.00 Hz
Amplitude      7.80
               mm/s RMS
Phase          151      Waiting
               deg      ...
Speed          602
               RPM
    
```

These measured values have been returned from the **last correct** run-up measurement: Amplitude = 7.80 mm/s, Phase=151 deg, **Speed = 602 RPM.**

Actual speed = 598 RPM

Acceptable speed range is from **600 RPM** to 31920 RPM for Step = 4 Hz (i.e. ±2 Hz) – see table below.

The measuring cycle is suspended but not aborted while the actual speed is out of range!

Resol Hz	Speed min.		Speed max.	
	CPS	RPM	CPS	RPM
±0.5	2.7	160	133	7980
±1	5	300	266	15960
±2	10	600	532	31920
±5	25	1500	1330	79800
±10	50	3000	2660	159600

If machine speed is under 5Hz (300RPM) a velocity sensor should be used!

Measured data storage

If the measurement is started the measured data are automatically stored so long as the measuring cycle is interrupted by **ESC** button. Each stored measurement is labelled by its start date and time. The amount of data in one run-up measurement is limited only by available instrument memory.

Measurements are stored in the **RUNUP** directory. **Maximum of 32** run-up measurements can be stored in any directory. Then delete any measurement item to free a space for your new measurement.

```

All items of the selected
measurement are already used.
It is impossible to create
a new one.

Push any button...
    
```

Use the **Delete** button on the instrument keypad or use the **Delete** button in the DDS software to delete any old measurement - see below.

Displaying on-line data

Press **START** button to start the measuring cycle.
Press **ESC** button to interrupt the measuring cycle.

Within the measurement cycle the measured data are displaying. Besides result values any additional useful information and data are displaying:

- elapsed time from measurement start
- measurement index
- actual time or actual speed
- time or speed limits for the next measurement start.

```

00:00:34 No.1
1222.5RPM Next <1140.7RPM >1260.7RPM
CH1: Step 4.00 Hz

Amplitude      10.2
                mm/s RMS

Phase          150      Waiting
                deg      ...

Speed          1201
                RPM
  
```

This measurement is controlled "by speed". Parameter TRIGGER is set as "every 60 RPM". The measurement cycle has been started 34 s before.

Results of the first measurement (No.0):
Amplitude = 10.2 mm/s
Phase = 150 deg
Speed = 1201 RPM

Measurement No.1 is waiting for the accomplishment of "speed value is less then 1140.7 RPM or greater then 1260.7 RPM" condition. Actual speed value = 1222.5 RPM.

```

00:00:07 No.1
Time 15:02:41 Next 15:02:44
CH1: Step 4.00 Hz

Amplitude      3.94
                mm/s RMS

Phase          150      Waiting
                deg      ...

Speed          1201
                RPM
  
```

This measurement is controlled "by time with tach". Parameter TRIGGER is set as "every 10 s". The measurement cycle has been started 7 s before (i.e. 15:02:34).

Results of the first measurement (No.0):
Amplitude = 3.94 mm/s
Phase = 150 deg
Speed = 1201 RPM

Measurement No.1 is waiting for the accomplishment of "time is greater then 15:02:44" condition. Actual time is 15:02:41.

Displaying of measured data

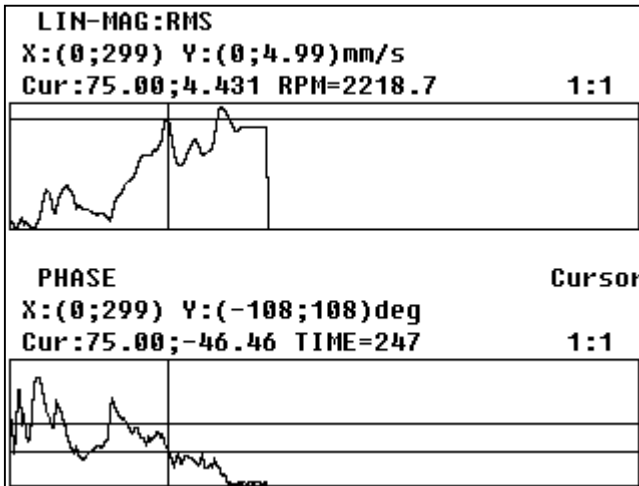
This capability is covered in **Main menu -> Analyser -> Measurements memory** item.

The measured data are stored in the standard levels
ROUTE – MACHINE - MEASUREMENT POIT – MEASUREMENT,
see /1/, **List of Routes** chapter.

Level	Displaying name
Directory	RUNUP
ROUTE	measurement date and time
MACHINE	Offr.Machine
MEASUREMENT POINT	Sensor 01
MEASUREMENT	RunUp-RUNUP

This path is shorted because only a single machine, measurement point and measurement are stored in each route level.

TRANSIENT	
25.04.2005	13:00:05
25.04.2005	13:10:35
25.04.2005	13:11:18
25.04.2005	13:16:01
25.04.2005	13:39:26
25.04.2005	13:48:57
25.04.2005	14:22:43
26.04.2005	11:38:18
28.04.2005	10:06:18
28.04.2005	10:06:23



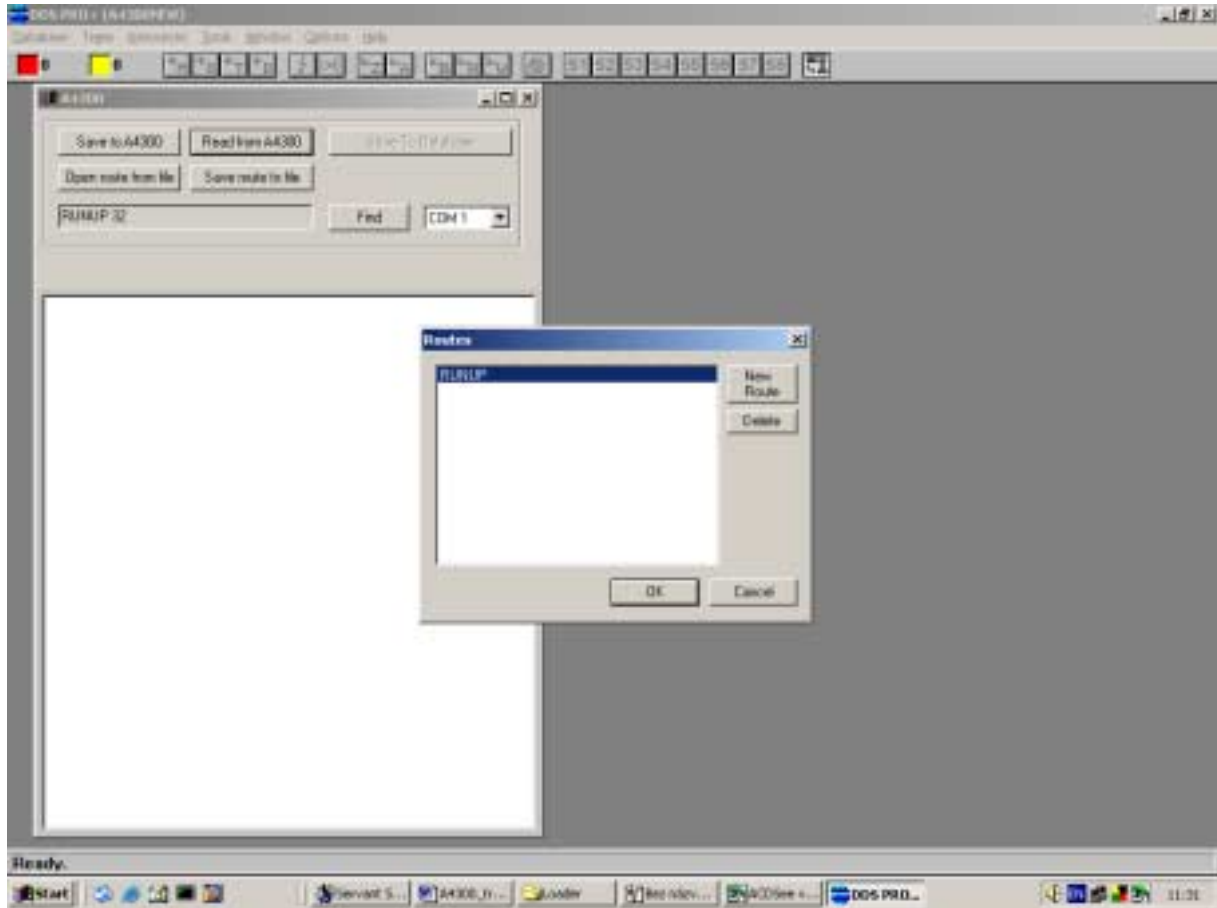
Only the first 300 (from 0 to 299) points of a long measurement can be displayed for this FW version. When more data points are taken, then DDS has to be used for next evaluation.

Measured data transfer to the DDS software

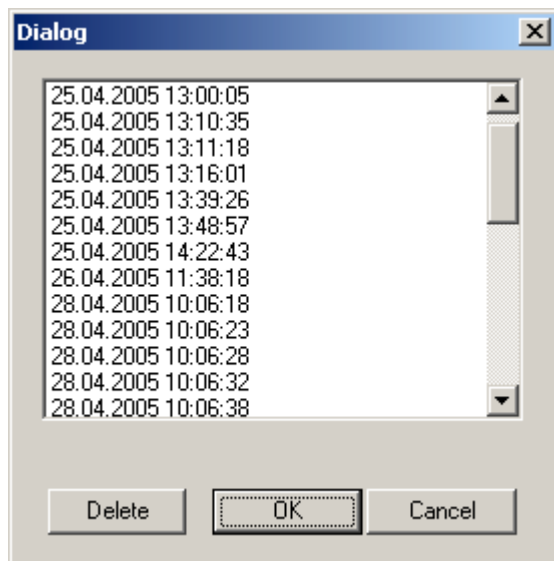
Use DDS 2.70.0 version or later.

Use the standard process to transfer stored data from the instrument memory to the DDS software. Only one exception is implemented for this process: Each measurement has to be transferred individually because such measurement can contain a big amount of data.

Use **Find** and **Read from A4300** buttons to transfer all the list of measurements from the instrument RUNUP directory.



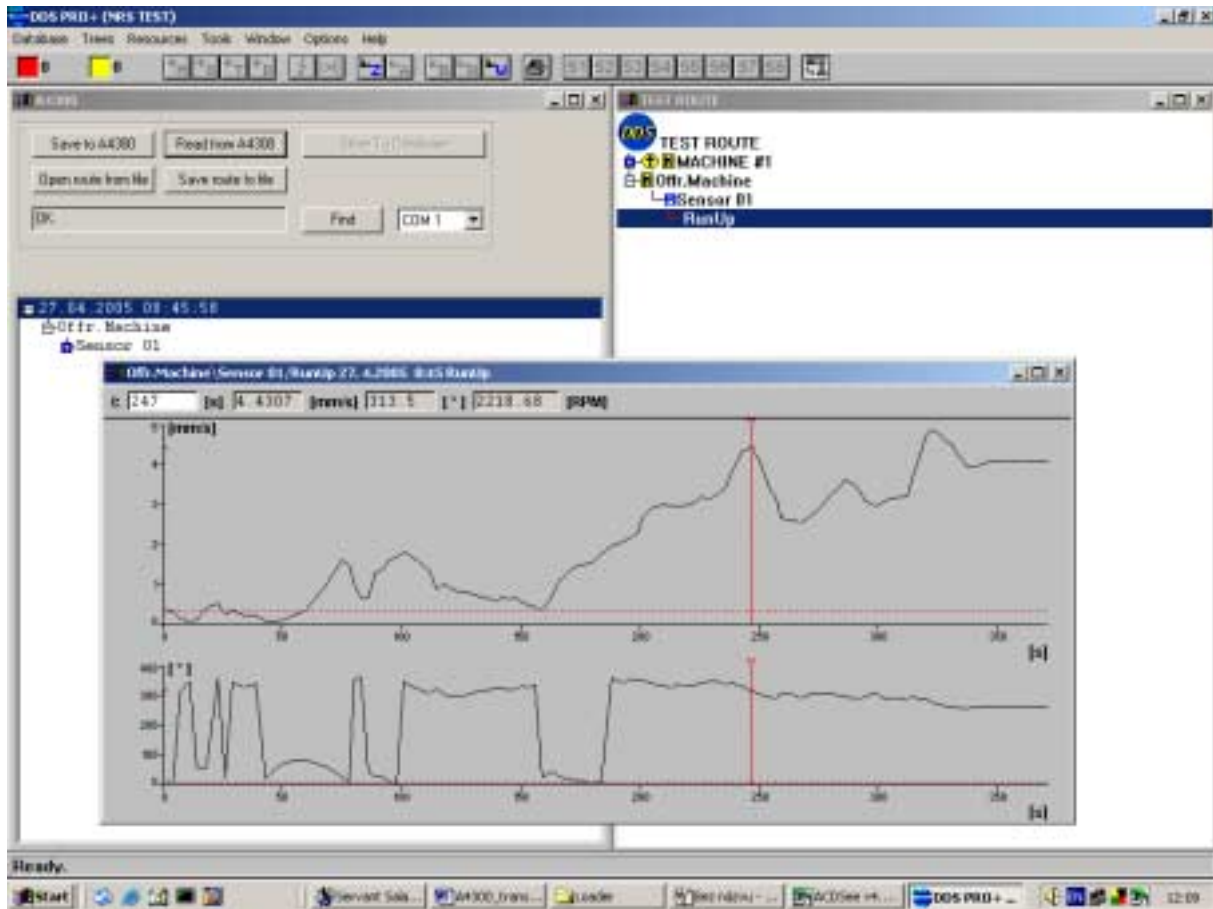
Click on the **OK** button to unpack the list.



Each of the measurements is labelled by its start date and time. Select the desired measurement and click on the **OK** button. The selected measurement will be transferred to the A4300 window.

Use the **Delete** button to delete the selected item. It is the alternative way to free an occupied space for a new measurement in this FW version.

Use the standard process (Drag & Drop) to transfer measured data from the A4300 window to any tree of an opened DDS database.



References

This list of references is established for documentation set of Adash A4300-VA3 instruments:

- [1] Vibration Analyser Adash 4300-VA3; User manual
- [2] Vibration Analyser Adash 4300-VA3; Quick Start, User manual
- [3] Vibration Analyser Adash 4300-VA3; Multi FW upload, User manual
- [4] Vibration Analyser Adash 4300-Ex; User manual
- [5] Vibration Analyser Adash 4300-VA3; Balancing, User manual
- [6] Vibration Analyser Adash 4300-VA3; Cross Channel, User manual