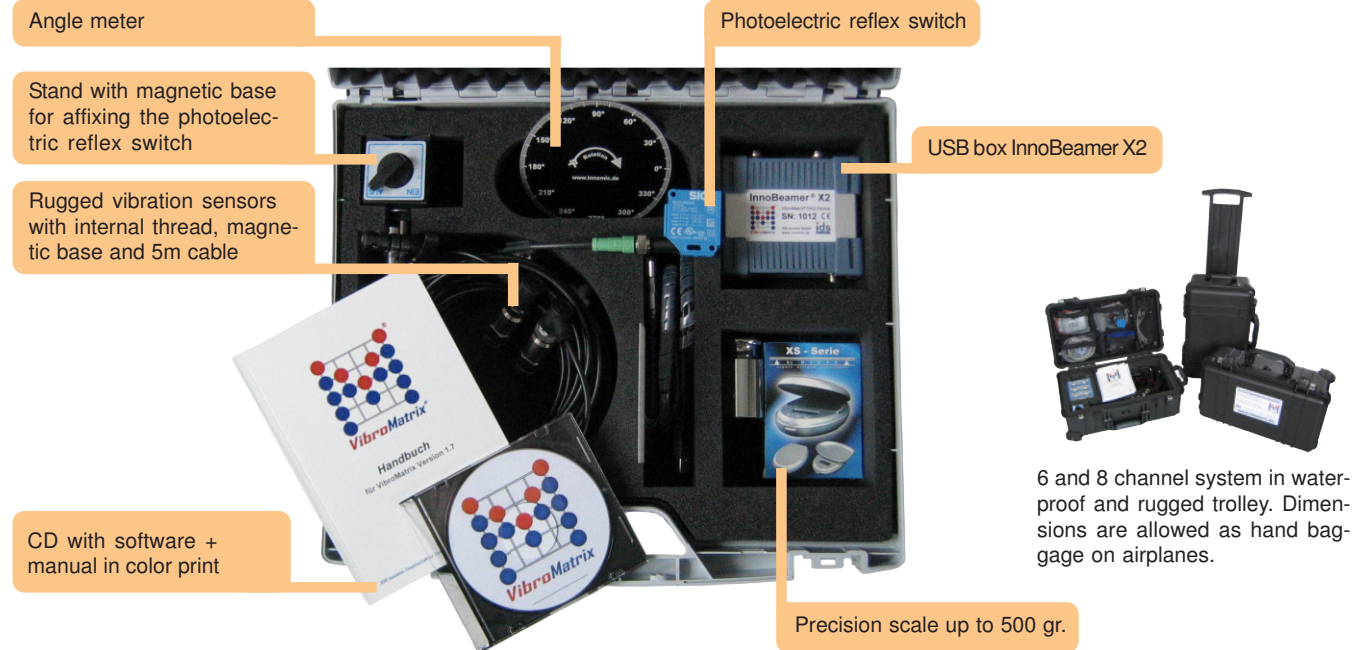




VibroMatrix® Kit

Machine Diagnosis and Balancing

VibroMatrix®



The VMSet-03 and VMSet-04 come in a handy case and provide you with everything you need for the diagnosis of vibration problems and their elimination. The VMSets are applied on e.g. fans, pumps, electric motors / generators and components like roller bearings and gearboxes.

With these kits you answer, amongst others,:

Which are rotational speed and vibration level in a selected frequency range, vibration level at rotational speed or its multiples?

How is the allocation of the vibration levels in the complete frequency range, at which rotation speeds is the machine getting resonant, how high are the vibration levels then? What are the natural frequencies? Are the measurement points vibrating synchronously or oppositely?

How high is the unbalance and how can it be balanced?

Thanks to the high flexibility of the VibroMatrix-System, you are prepared for the measurement of vibration parameters acc. to different standards.

The system works on a PC or notebook and is suitable for both, mobile field work and stationary applications,

e.g. in research and development or quality control. Extra mains adapters are not required, VibroMatrix is supplied by the USB data cable.

High-quality piezoelectric accelerometers provide precise measurement signals. A photoelectric reflex switch permits, amongst others, the synchronization of measurements with the rotation speed.

The instruments are combined on the screen acc. to your needs. A suitable configuration can be saved and loaded again within seconds when required.

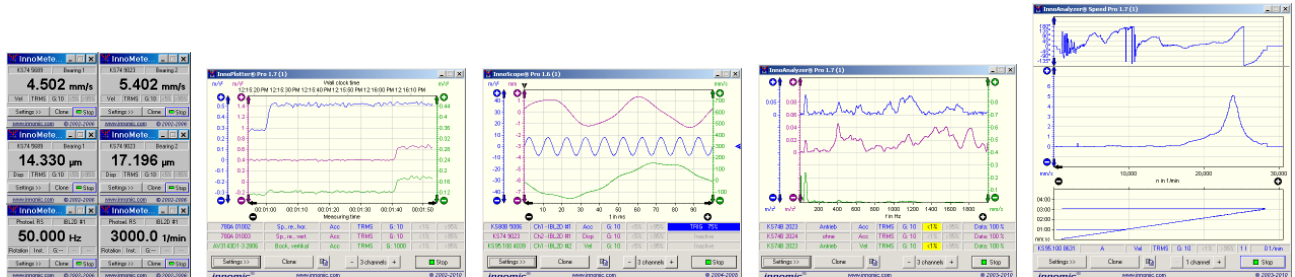
You export measurement data and graphics fast as lightning into files or your word processing. Thus you have compiled a conclusive documentation quickly.

Simultaneously with real-time measurement, you can record the raw data stream. If you need more details of your measurement later or want to present interesting processes to your colleagues in the office, you can replay the data like a live measurement. The configuration of the software instruments can even be different from the one during the original measurement.

More channels? No Problem, several measurement kits can be combined to a multichannel systems.

	VMSet-03	VMSet-04	VMSet-05	VMSet-06	VMSet-07
	1 Channel	2 Channels	4 Channels	6 Channels	8 Channels
Hardware					
Sensor for Vibration Measurement	- Type: Piezoelectric accelerometer, shear design - Sensitivity: 100 mV/g, linear frequency range: 0.13 .. 22000 Hz - Operating temperature: -20 .. 120 °C - Protection grade: IP67 / Insulated case avoiding ground loop problems - Accessories: Screwable clamping magnet, 5m cable				
Amount	1	2	4	6	8
Sensor for Reference Position	- 1 piece opto-electronic sensor - Scanning range: Maximum 7m, response time: < 330 µs - Protection grade: IP67, operating temperature: -40 .. 60 °C - Accessories: Stand with switchable magnetic base, 2m cable, reflection foil				
Additional accessories	- Angle meter specialized for balancing, precision scale incl. test weight				
USB Box for Digitization	- InnoBeamer X2 - Inputs: 2x analog for vibration sensor(s), 1x digital for photoelectric reflex switch - Signal frequency: 0.1 .. 40000 Hz - Supply current: < 500 mA with supply of all sensors - no mains adapter required - Operating temperature: -20 .. 50 °C, weight: 350 gr. - Accessories: Synchronisation cable and 1.8m USB cable				
Amount	1	1	2	3	4
Software Licenses					
InnoMeter Pro	1x	2x	4x	6x	8x
InnoPlotter Pro	= up to 4 measurement windows for each instrument simultaneously	= up to 8 measurement windows for each instrument simultaneously	= up to 16 measurement windows for each instrument simultaneously	= up to 24 measurement windows for each instrument simultaneously	= up to 32 measurement windows for each instrument simultaneously
InnoScope Pro					
InnoAnalyzer Pro					
InnoAnalyzer Speed Pro					
InnoBalancer Pro			2x	2x	2x
Free Replay	1x	1x	1x	1x	1x

This rich software equipment allows an extensive analysis of the vibrational behavior of your machines/plants. Without further ado, it is possible to the take down or extend equipment purposefully. We are at your disposal for advice.



InnoMeter Pro: Parameters at a glance

InnoPlotter Pro: Monitor parameters in time domain

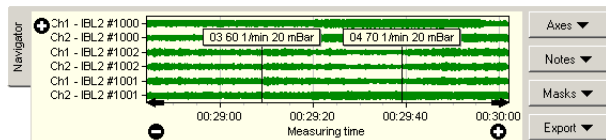
InnoScope Pro: Display vibrations in time domain

InnoAnalyzer Pro: There are vibrations at which frequencies?

InnoAnalyzer Speed Pro: Resonances occur at which rotation speeds?



InnoBalancer Pro: Precise elimination of unbalances



InnoMaster Replay
Always inclusive: Recording raw data during the measurement. Replay live data with the InnoMaster Replay. By means of **FreeReplay** option, third parties can download VibroMatrix without costs and then analyse the raw data transmitted by you.

Changes without prior notice

March 2012

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— I n t e r n a t i o n a l —

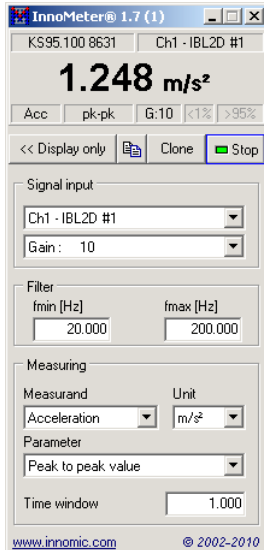
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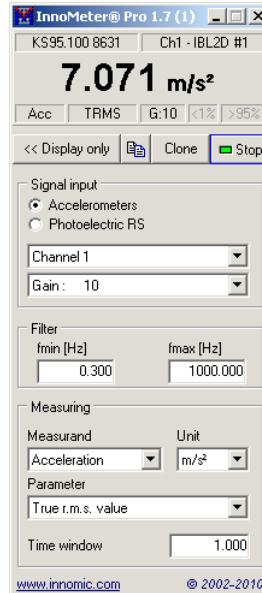


InnoMeter® 1.7

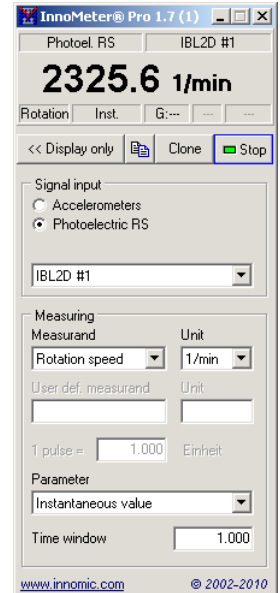
Vibration Meters

VibroMatrix®


InnoMeter: Numerous possibilities for signal conditioning



Optional evaluation of vibration or r.m.p. sensors with InnoMeter Pro



Direct rotation speed measurement or conversion to your own Measurands with InnoMeter Pro

Application

When vibrations have to be measured as significant parameters, InnoMeters are applied.

Rotating parts in drives, gears, pumps, fans and many other technical products cause perturbing vibrations. Impulse-like loads, e.g. from a vibratory pile driver in the construction field, generate problems as well.

In numerous vibration standards, for instance DIN 10816, significant vibration parameters are defined for a reliable evaluation of the vibration situation.

These vibration parameters are precisely measured by InnoMeters and thus allow a safe assessment of the vibration state. InnoMeters are applied during the complete product cycle – development, manufacturing, final inspection. Weak spots are discovered, the success of counter measures is proven and the compliance with limits is controlled.

Properties

The InnoMeters are highly universal measuring instruments for vibration parameters. They can be adapted to parameters from numerous vibration standards. This can be achieved by means of the following settings:

- Measurands: acceleration, velocity, displacement
- Free filter adjustment 0.1 .. 40000 Hz
- Up to 32 units, metric and imperial
- Up to 8 vibration parameters

The operation, also of several instruments at the same time, is supported by the following indicators:

- Connected sensor
- Measuring point
- Overload and underload

The clone function makes it possible to operate several InnoMeters at the same time, for example to measure several parameters simultaneously.

The InnoMeter Pro is able not only to process signals from vibration sensors, but also from rpm sensors. Additionally, a conversion to other units is possible, for instance in order to measure length' speeds.

Technical Data

	InnoMeter Pro	InnoMeter
Signal Processing		
Signal Source	Vibration sensors Rpm sensors	Vibration sensors
Filter	Freely adjustable 0.1..40000 Hz **	
Time Window	Freely adjustable 0.1..10 s	
Measurands	AC voltage Vibration acceleration Vibration velocity Vibration displacement Rotation speed	AC voltage Vibration acceleration Vibration velocity Vibration displacement
Units	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB 1/min, 1/s, Hz (Rotation speed) Hz, kHz (Main frequency) % (Harmonic distortion)	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB
Parameters	Instantaneous value Peak value absolute Peak value positive Peak value negative Peak-to-peak value True r.m.s. Harmonic distortion Main frequency	Instantaneous value Peak value absolute Peak value positive Peak value negative Peak-to-peak value True r.m.s.
Graphical Presentation		
Display	5 digits 0,001 .. 99999	
Refresh	1 .. 4 times per second *	
Indicators	Sensor, measuring channel, measurand, parameter, gain, overload, underload	
Recommended Screen Resolution	From 800 x 600 pixels on	
Miscellaneous		
Available in a Kit	Yes, see VMSet-03..07	-
General Functions	Measured value is held after switch off, instrument is cloneable	

* Centrally managed in the InnoMaster

** 0.3 .. 2000 Hz when working with InnoBeamer L2, 0.1 .. 3200 Hz when working with the InnoBeamer LX2

Changes without prior notice

March 2012

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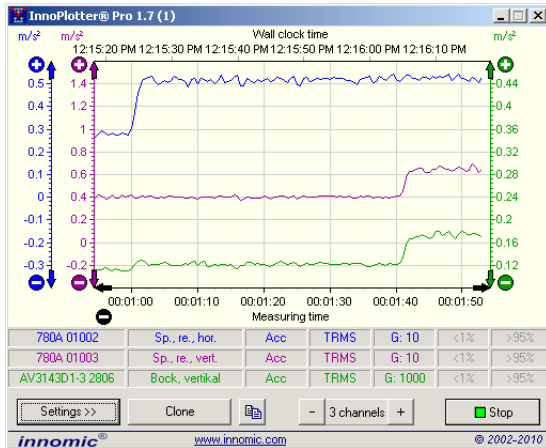
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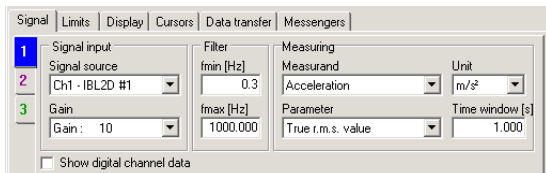
InnoPlotter® 1.7

Digital Strip Chart Recorders

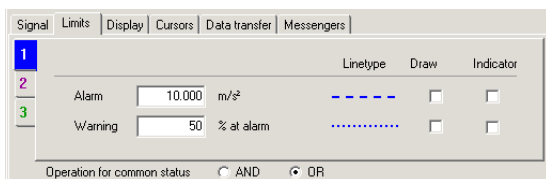
VibroMatrix®



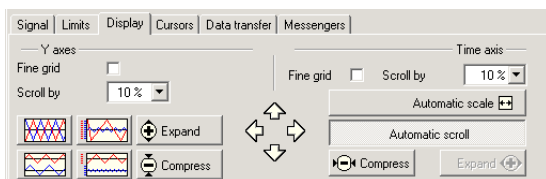
Simultaneous display of up to 4 graphs and digital mark



Numerous settings for signal conditioning



Monitor parameters with warning and alarm value

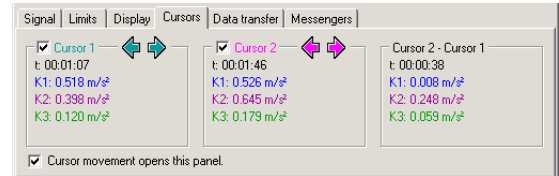


Arrange, zoom, compress graphs acc. to your demands

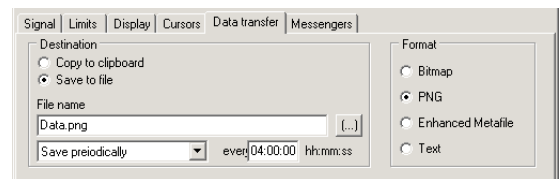
Application

Vibrations are caused by rotating parts or impulse-like loads, e.g. by a vibratory pile driver in the construction-field. In numerous vibration standards significant vibration parameters are defined for a reliable evaluation of the vibration situation.

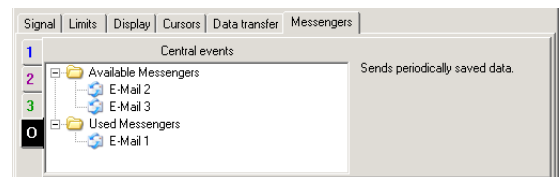
The InnoPlotters measure these vibration parameters, display their trend graphically and monitor them when required. Thus, they are especially convenient for longer test sequences. Weak spots in the continuous operation become obvious, the success of counter measures is proven and the compliance with limits is controlled.



2 cursors, display data under cursor and difference



Data export by mouse click or automated



Signal measured data and events outward

Properties

The InnoPlotter is a universal digital strip chart recorder for up to four vibration parameters. It features a memory for 24 hours continuous recording and various display modes. 2 time axes are available for the absolute time and the past time since the start of measuring.

Additionally to vibration acceleration, the Pro Version is also able to process vibration velocity and displacement. Furthermore, it offers optional monitoring of parameters.

The following settings are available for signal conditioning:

- Free filter adjustment 0.1 .. 40000 Hz
- Up to 26 units, metric and imperial
- 6 parameters

2 cursors allow the exact measurement of the data. Measurement graphs can be moved and spread manually or be arranged automatically. Time bar can be moved depending on the progress of the measurement.

The export of data into other applications as graphic or text is possible without any problems. Saving measured data can be carried out manually or triggered. By means of the messenger function, the InnoPlotter can automatically forward measured data or events, e.g. by e-mail.

Technical Data

	InnoPlotter Pro	InnoPlotter
Signal Processing		
Filter	Freely adjustable 0.1 .. 40000 Hz **	
Time Window	Freely adjustable 0.1 .. 10 s	
Measurands	AC voltage Vibration acceleration Vibration velocity Vibration displacement	AC voltage Vibration acceleration
Units	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB
Parameters	Instantaneous value, peak value absolute, peak value positive, peak value negative, peak-to-peak value, true r.m.s.	
Monitoring	Alarm value freely adjustable, warning value 0 .. 100% of alarm value	
Graphical Presentation		
Number of Measurement Graphs	1 .. 4 per window	
Number of Limit Value Graphs	0 .. 8 per window	
Interval Y-axis	0.01 .. 10000	
Interval t-axis	1 min..24 h	
Digital Channel	Display of the variation in time of the trigger status (switchable, one measuring channel)	
Refresh	1 .. 4 times per second *	
Indicators	Sensor, measuring channel, measurand, parameter, gain, overload, underload	
Recommended Screen Resolution	From 800 x 600 pixels on	
Cursors		
Presentation	2 lines, optionally freely adjustable by mouse or button	
Numeric cursor data	For each cursor as well as difference cursor 2 - cursor 1	
Numeric cursor refresh	1.. 4 times per second *	
Data Export		
Control	Manually, time-triggered, level-triggered	Manually, time-triggered
Formats	Bitmap, PNG, Enhanced Meta File (EMF), Text	
Destination	In clipboard or file	
Event Notification		
Extra Display	Single channel: Currently measured value Single channel: Current alarm state Instrument: Current alarm state	Single channel: Currently measured value
Radio Switch	Single channel: Current alarm state Instrument: Current alarm state	-
Digital Output	Single channel: Current alarm state Instrument: Current alarm state	-
E-Mail	Time-triggered transfer of measurement data Level-triggered transfer of measurement data	Time-triggered transfer of measurement data
Miscellaneous		
General Functions	Measured value is held after switch off, instrument is cloneable	

* Centrally managed in the InnoMaster

** 0.3 .. 2000 Hz when working with InnoBeamer L2, 0.1 .. 3200 Hz when working with the InnoBeamer LX2

Changes without prior notice

March 2012

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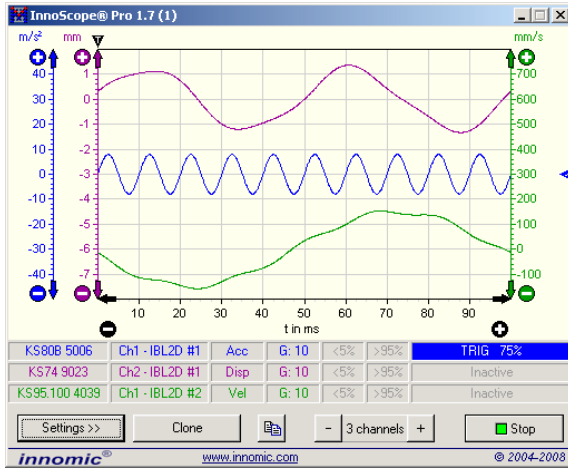
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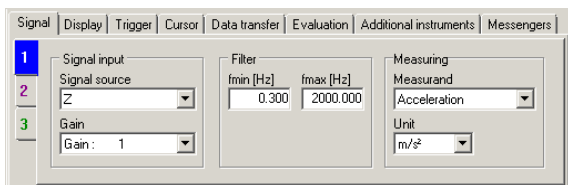
InnoScope® 1.7

Digital Oscilloscopes

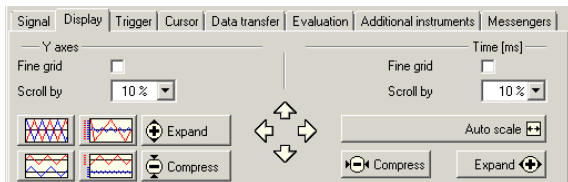
VibroMatrix®



Simultaneous display of up to 4 graphs



Numerous settings for signal conditioning



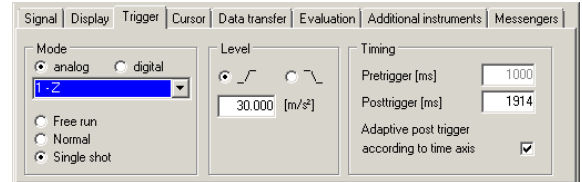
Arrange, zoom, compress graphs acc. to your demands

Application

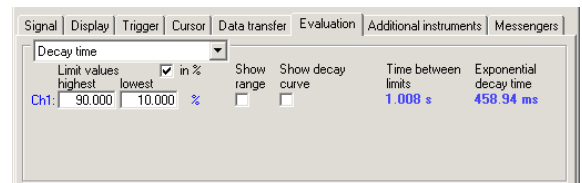
The InnoScopes allow the signals' shape analysis of fast vibration and shock processes in time domain. These processes can be displayed in detail, measured and exported for documentation or post-processing.

Thus, e.g. construction parts which are exposed to impulse-like loads can be optimized. Automated evaluations determine e.g. the HIC (Head Injury Criterion) directly after the measurement, but also parameters of decay processes. Combined with the InnoAnalyzer, natural frequencies can be determined.

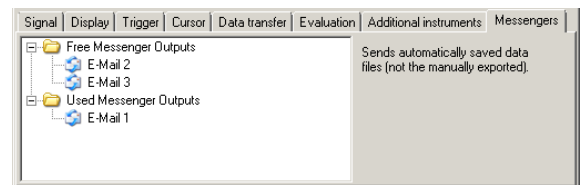
Likewise, InnoScopes reliably display sporadically or periodically occurring events.



Analog and external digital trigger source



Automated signal evaluations



Signal measured data and events outward

Properties

The InnoScopes are universal digital oscilloscopes. The Pro Version is able to process not only vibration acceleration, but also vibration velocity and displacement. Furthermore, the Pro Version allows the automated evaluation of measured data.

Up to 4 curves can be displayed in one InnoScope. They can represent both, signals of different sensors and signals of the same sensor but measured with different parameters.

The InnoScopes have a high memory depth. The acquired signal can be recorded with full resolution 1 second before and until up to 110 seconds after the trigger event with full resolution of 10 μ s.

For evaluation, 2 cursors are available. Time and measured values as well as differences at the cursor position are presented numerically.

The export of data as graphic or text provides additional fields of application. The InnoScope can even carry out this export automated when triggering and then send this file via e-mail by means of the messenger function.

Technical Data

	InnoScope Pro	InnoScope
Signal Processing		
Filter	Freely adjustable 0.1 .. 40000 Hz **	
Measurands	AC voltage Vibration acceleration Vibration velocity Vibration displacement	AC voltage Vibration acceleration
Units	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB
Trigger		
Modes	Free run, normal, single shot	
Source	Analog or digital channel	
Edges	Falling, rising	
Level	Freely adjustable \pm 10000	
Pretrigger	1 s	
Posttrigger	0.001 .. 110 s	
Graphical Presentation		
Number of Graphs	1 .. 4 per window	
Interval Y-axis	0.01 .. 10000	
Interval X-axis (Time)	1 ms .. 11000 ms / Resolution 0.1 ms ***	
Refresh	1.. 16 times per second *	
Indicators	Sensor, measuring channel, measurand, gain, underload, overload, trigger status	
Recommended Screen Resolution	From 800 x 600 pixels on	
Cursors		
Presentation	2 lines, optionally freely adjustable by mouse or button	
Numeric Cursor Data	For each cursor as well as difference cursor 2 - cursor 1	
Numeric Cursor Refresh	1.. 4 times per second *	
Data Export		
Control	Manual or automatic after trigger	
Formats	Bitmap, PNG, Enhanced Meta File (EMF), Text	
Destination	In clipboard or file	
Event Notification		
E-Mail	Trigger initiates transfer of exported measurement data	
Miscellaneous		
Coupling	Yes, with the InnoAnalyzer	
Available in a Kit	VMSet-03..07	-
General Functions	Measured value is held after switch off, instrument is cloneable	

* Centrally managed in the InnoMaster

** 0.3 .. 2000 Hz when working with InnoBeamer L2, 0.1 .. 3200 Hz when working with the InnoBeamer LX2

*** 0.1 ms when working with InnoBeamer L2, 0.125 ms when working with the InnoBeamer LX2

Changes without prior notice

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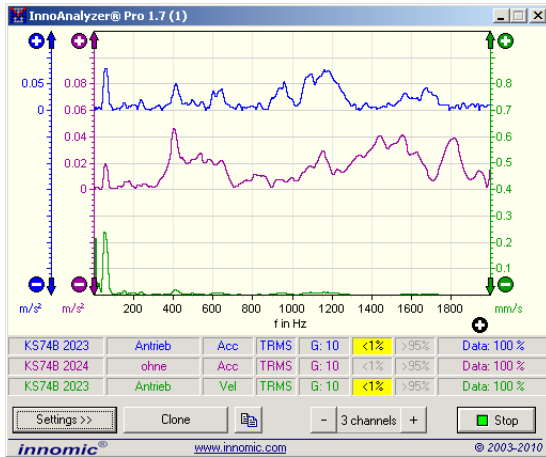
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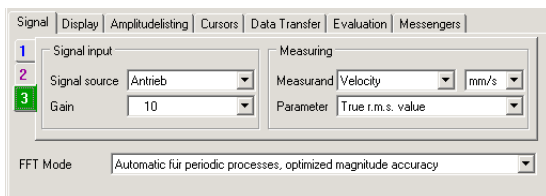
InnoAnalyzer® 1.7

FFT Vibration Analyzers

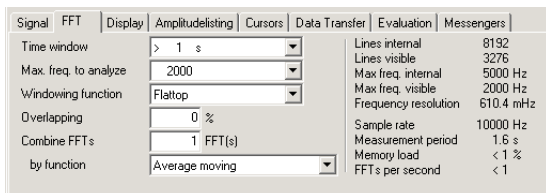
VibroMatrix®



Simultaneous analysis of up to 4 signals, phase display switchable



Simple signal conditioning and automatic mode

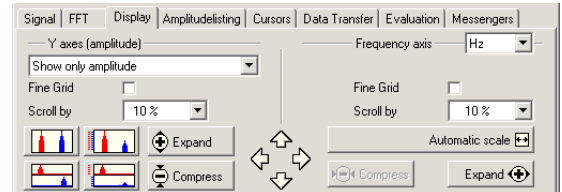


Manual mode for purposeful FFT setting

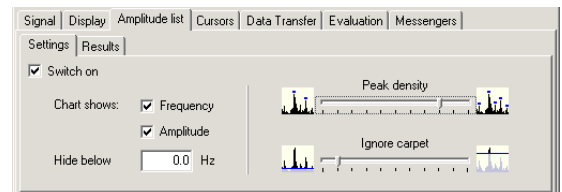
Application

For the frequency analysis of vibrations, the InnoAnalyzers are applied. Rotating parts in drives, gears, pumps, fans and many other technical products cause perturbing vibrations. Often, numerous parts with different rotation speed cause mechanical vibrations so that a superposition of frequencies is generated.

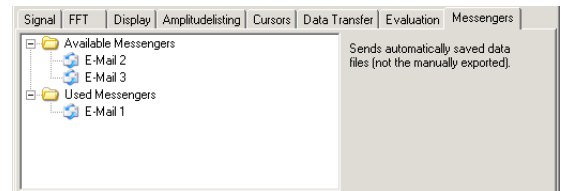
InnoAnalyzers decompose this superposition into the different frequency components again by Fourier-transformation. So you can detect the parts which are primarily responsible for the vibrations. As a consequence, mechanical malfunctions are precisely and quickly tracked down in development, quality control or service. The success of measures to reduce vibrations is proven measurably.



Arrange, zoom, compress graphs acc. to your demands



Configure automatic amplitude detection



Signal measured data and events outward

Properties

The InnoAnalyzers are universal vibration analyzers for vibration acceleration respectively also vibration velocity and displacement (Pro version).

In the automatic mode, you just define the required frequency range and select optimization for either magnitude or frequency – that's all. On the other hand, many more parameters are available for experienced users so that they can configure the analysis according to their specific demands.

The high number of lines of more than 500 000 FFT lines allows a frequency resolution of up to 0.01 Hz. Switching the frequency axis from Hz to 1/min simplifies the allocation to rotating parts.

Amplitudes are detected and listed up automatically, values are also displayed in the graphic when required.

Additionally, two differently colored cursors with value display support you during the analysis. The export of the curves into other applications as graphic or as pairs of values in text format is easily possible.

Frequency analyses can be carried out continuously as well as - e.g. for bump tests - in response to a triggered time signal. In this case, the InnoAnalyzer is working together with the InnoScope.

During unattended operation, analyses can be saved periodically or be sent via e-mail.

Technical Data

	InnoAnalyzer Pro	InnoAnalyzer
Signal Processing		
Measurands Y-axis	AC voltage Vibration acceleration Vibration velocity Vibration displacement	AC voltage Vibration acceleration
Units Y-axis	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB
Parameters Y-axis	Peak value, true r.m.s., phase	
Variables X-axis	Frequency / rotation speed	
Units X-axis	Hz / min ⁻¹	
Frequency Range	Freely adjustable 0 .. 40000 Hz **	
Frequency Resolution	< 0.01 Hz	
Windowing	Rectangle, Bartlett, Blackman, Hamming, Hann, Flatop	
Overlapping	0 .. 99.9%	
Combining FFTs	Peak value from start on (peakhold), peak value moving, average from start on, average moving	
Number of lines	2 .. 524288	
Graphical Presentation		
Number of Graphs	1 .. 4 for amplitude and 1 .. 4 for phase per window	
Refresh	1 .. 16 times per second *	
Interval Y-axis (amplitude)	0.1 .. 10000	
Interval Y-axis (phase)	0 .. 360 °, 180 ° .. + 180 °	
Interval X-axis (Frequency)	10 .. 40000 Hz **	
Interval X-axis (Rotation Speed)	600 .. 2 400 000 min ⁻¹ **	
Indicators	Sensor, measuring channel, measurand, parameter, gain, underload, overload, data fill level	
Recommended Screen Resolution	From 800 x 600 pixels on	
Cursors		
Presentation	2 lines, optionally freely adjustable by mouse or button	
Numeric Cursor Data	For each cursor as well as for difference cursor 2 - cursor 1	
Numeric Cursor Refresh	1.. 4 times per second *	
Data Export		
Control	Manual or time triggered	
Formats	Bitmap, PNG, Enhanced Meta File (EMF), Text	
Destination	In clipboard or file	
Event Notification		
E-Mail	Trigger initiates transfer of exported measurement data	
Miscellaneous		
Amplitude List	1 .. 20 amplitudes (search sensitivity adjustable), sorting acc. to magnitude or frequency	
Available in a Kit	VMSet-03..07	-
General Functions	Measured value is held after switch off, instrument is cloneable	

* Centrally managed in the InnoMaster

** When working with InnoBeamer L2: Upper frequency limit 2000 Hz = 120 000 min⁻¹
when working with InnoBeamer LX2: Upper frequency limit 3200 Hz = 192 000 min⁻¹

Changes without prior notice

March 2012

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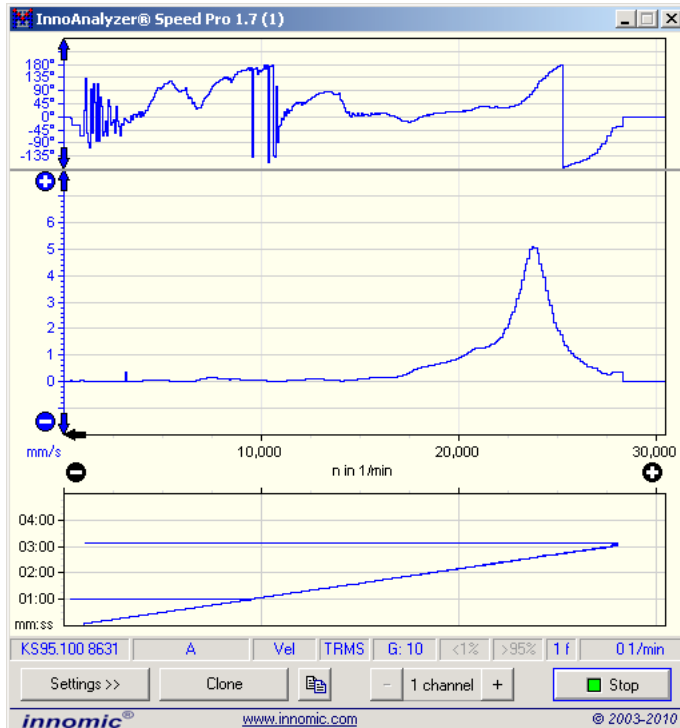
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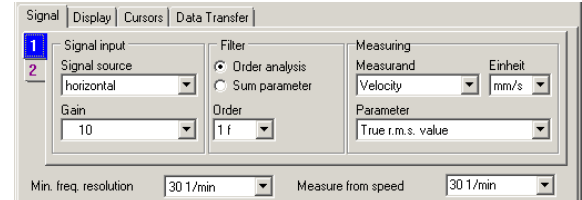
InnoAnalyzer® Speed 1.7

Run-up/Coast-down Tracking Analyzers

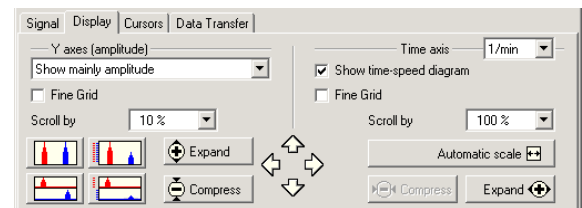
VibroMatrix®



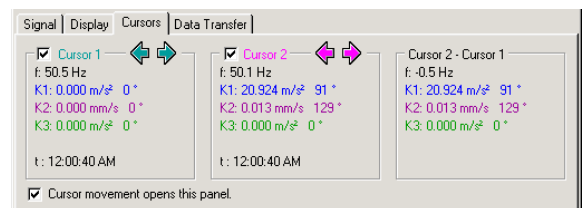
Magnitude and phase visible as well as progression of rotational speed



Simple signal conditioning



Arrange, zoom, compress graphs acc. to your demands



2 cursors, display data under cursor and difference

Application

Rotating parts in drives, gears, pumps, fans and many other technical products cause perturbing vibrations. Different rotation speeds cause different vibrations since the measurement objects develop or do not develop resonant behaviour at certain rotation speeds.

These differences become obviously in run-up or coast-down measurements. A rotor changes its rotation speed when run up or coast down and excites the whole system at different frequencies.

The InnoAnalyzers Speed measure the vibration level and phase angle at the rotation speed or a multiple and graphically display them at the respective rotation speed. This way, for instance resonant rotation speed levels are detected. The progression of the rotation speed is displayed graphically as well.

For rotation speed detection, different photoelectric reflex switches and contrast scanners are directly supplied by the InnoBeamer and their signal is read. Optionally, an existing rotation speed signal can be fed as pulse/revolution.

Properties

The InnoAnalyzers Speed in Standard and in Pro Version not only master order-tracked filtering but also band-pass filtering of the vibration signal and display result as overall value in dependence on rotational speed. In addition to vibration acceleration, the Pro version is also able to analyze vibration velocity and vibration displacement.

Two cursors are available for evaluation. They can be moved freely or positioned precisely by button. Measured data at the cursor position is presented numerically.

The clone function makes it possible to operate several InnoAnalyzers at the same time. For example vibrations can be analyzed at the rotation speed and at a multiple of the rotation speed at the same time.

The export of data into other applications as bitmap/PNG file for documentation or as text for further examination provides additional fields of application.

Technical Data

	InnoAnalyzer Speed Pro	InnoAnalyzer Speed
Signal Processing		
Measurands Y-axis	AC voltage Vibration acceleration Vibration velocity Vibration displacement	AC voltage Vibration acceleration
Units Y-axis	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB m/s, mm/s, μ m/s, nm/s, pm/s, in/s, dB m, mm, μ m, nm, pm, in, dB	V, mV, μ V, nV, pV m/s ² , mm/s ² , μ m/s ² , nm/s ² , pm/s ² , g, mg, μ g, dB
Parameters X-axis	Peak value, true r.m.s.	
Rotation Speed Multiples	0.5 as well as 1 .. 12	
Measurands X-axis	Frequency / Rotational speed	
Units X-axis	Hz / min ⁻¹	
Frequency Range	Freely adjustable 0.1 .. 40 000 Hz **	
Frequency Resolution	From 0.1 Hz on = 6 min ⁻¹	
Graphical Presentation		
Number of Graphs	1 .. 4 per window	
Refresh	1 .. 16 times per second *	
Interval Y-axis	0.01 .. 10000	
Interval Phase-axis	0 .. 360 ° / -180 .. +180 ° / 0 .. 3600 ° (switchable)	
Interval Time-axis	1 min .. 14 days	
X-axis (Frequency)	0 .. 40 000 Hz **	
X-axis (Rotation Speed)	0 .. 2 400 000 min ⁻¹ **	
Indicators	Sensor, measuring channel, measurand, parameter, gain, underload, overload	
Recommended Screen Resolution	From 1024 x 768 pixels on	
Cursors		
Presentation	2 lines, optionally freely adjustable by mouse or button	
Numeric Cursor Data	For each cursor as well es for difference cursor 2 - cursor 1	
Numeric Cursor Refresh	1.. 4 times per second *	
Data Export		
Control	Manual or time triggered	
Formats	Bitmap, PNG, Enhanced Meta File (EMF), Text	
Destination	In clipboard or file	
Miscellaneous		
Available in a Kit	VMSet-03..07	-
General Functions	Measured data is held after switch off, instrument is cloneable	

* Centrally managed in the InnoMaster

** When working with InnoBeamer L2: Maximum frequency 2000 Hz, maximum rotation speed 120 000 min⁻¹,
when working with InnoBeamer LX2: Maximum frequency 3200 Hz, maximum rotation speed 192 000 min⁻¹

Changes without prior notice

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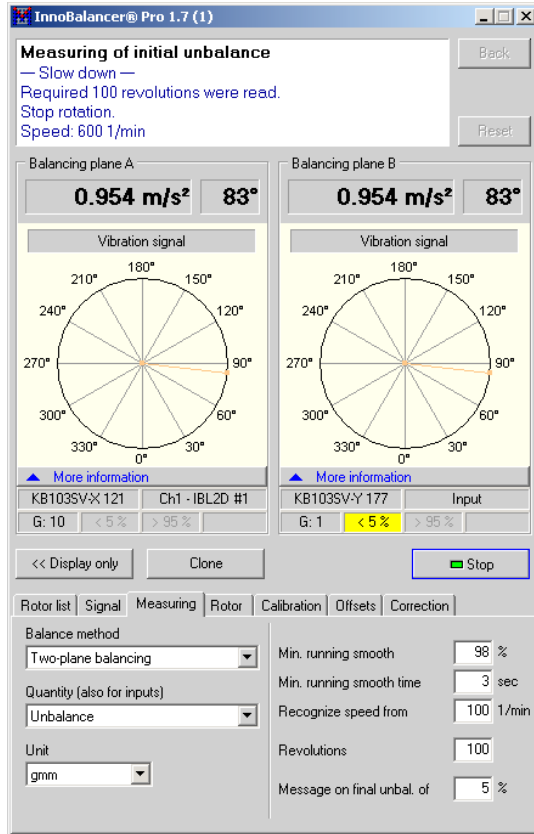
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InnoBalancer® 1.7

Balancing Instruments

VibroMatrix®



InnoBalancer during measurement

Application

The InnoBalancers are designed for the reduction of vibrations.

Rotating parts in drives, gears, pumps, fans and many other technical products cause perturbing vibrations. These vibrations often have to be reduced in order to increase product quality and durability by smooth run.

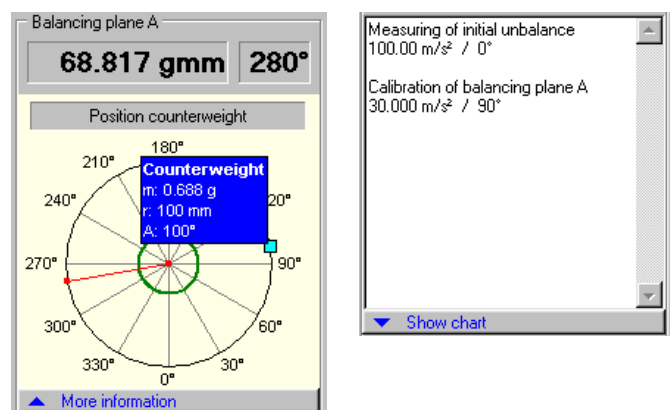
The InnoBalancers allow a purposeful vibration reduction by balancing. Both discoidal and longish rotors can be balanced systematically and fast.

The InnoBalancers support field balancing. Ideally, the rotor is balanced directly in installed state. So you save the complex dismantling and the transport of the rotor to a balancing machine. Moreover, in many cases, an acceptable performance can only be achieved by balancing the installed rotor with all attached parts.

Measuring of initial unbalance

— Slow down —
Required 100 revolutions were read.
Stop rotation.
Speed: 600 1/min

A clear user guide supports the customer.



More balancing information, graphically and in plaintext.

Properties

3 InnoBalancer versions are offered. The Light Version already allows Single-Plane-Balancing or Two-Plane-Balancing as well as balancing by adding/removing weight, drilling, milling and balancing rings. The Standard Version additionally offers balancing with fixed positions and balancing with setscrews. In the Pro Version, the fixed positions can be configured with different correction modes or parameters. Additionally, it offers a rotor list, in which the intermediate runs can be saved as well. They can be reloaded again to continue the measurement.

The user is guided through the balancing process in plaintext. Thanks to the auto recognition of rotation speed, he or she does not need to start a measurement manually.

Results are displayed numerically as well as in a polar chart, which is allocated to each balancing plane. For further information a window can be opened when required.

A powerful report-function generates balancing-reports acc. to individual requirements. After having configured it once, you generate balancing reports at the push of a button.

Technical Data

	InnoBalancer Pro	InnoBalancer	InnoBalancer Light
Methods			
Balancing	Single-Plane-Balancing Two-Plane-Balancing Unbalance adjustment	Single-Plane-Balancing Two-Plane-Balancing	Single-Plane-Balancing Two-Plane-Balancing
Correction	Add weight Remove weight Drilling Milling Balancing rings Setscrews Counterweight list	Add weight Remove weight Drilling Milling Balancing rings Setscrews	Add weight Remove weight Drilling Milling Balancing rings
Fixed Positions	3 .. 99, individually adjustable	3 .. 99, uniformly adjustable	-
Signal Processing			
Vibration Measurands	Acceleration in m/s ² , mm/s ² , µm/s ² , nm/s ² , pm/s ² , g, mg Velocity in m/s, mm/s, µm/s, nm/s, pm/s, in/s Displacement in m, mm, µm, nm, pm, in		
Unbalance Measurands	Unbalance in mgmm, gmm or gm Mass based on radius in mg, g or kg		
Rotation Speed	6 .. 600 000 min ⁻¹ *		
Speed Recognition	Automatic recognition of run-up, constant rotational speed and slow -down		
Graphical Presentation			
User Guide	Four-line textual instructions for measuring the initial unbalance, calibration and verification runs		
Vector Indications	Numeric, in polar chart and in text list		
Balancing Indications	Numeric and in polar chart		
Correction Indications	Positioned numerically in polar chart and extended in description field		
Polar Chart	Indication of vibration signal with value and angle, unbalance with value and angle, tolerance zone for pass-/fail-recognition, fixed positions, correction measures		
Recommended Screen Resolution	From 1024 x 768 pixels on		
Miscellaneous			
Rotor List	Yes	-	
Save Intermediate Measurements	Yes	-	
Available in a Kit	VMSet-01..07	VMSet-01S VMSet-02S	VMSet-01L VMSet-02L
General Functions	Measured data is held after switch off, instrument is cloneable		

* When working with InnoBeamer L2 or LX2: 6 .. 20 000 min⁻¹

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