

VM110/16U-4P-4R

Automatic Vibration Data Collector

General information

VM110 is a 16 channels automatic data collector with an additional 4 rpm inputs and 4 independent relays, dedicated mainly for continuous monitoring of rotating machines.

Up to fifteen VM110 units can be connected to a single PC using a RS485 multi-drop serial communication link.

The VM110 units operate only as slaves. A serial converter RS-485 to RS-232 must be used on the computer side.

Measurements

A wide range of measurement can be done, because the VM110 unit is hardware/software configurable and accepts a large range of transducers.



- ◆ SpectraLive monitoring software is included with each VM110 system delivery. SpectraLive includes both OPC Server and Client applications.
- ◆ The VM110 unit is placed close to the measuring points. This saves installation and cable costs.
- ◆ The VM110 units are connected in series with using a 4 wire cable. This will further save installation and cable costs.

What is VM110?

- It is an automatic vibration and process data-collector
- It is a full hardware and software configurable instrument to accept a wide range of vibration and process transducers.
- It is a simple to install and a low cost instrument.
- It is an instrument with the capability of measuring vibration total level, envelope spectra, vibration spectra, orbit, waveform, orders and also absolute and relative thermal grow and axial displacement. The instrument can also measure process parameters such as temperature, flow, pressure, etc.

What isn't VM110?

- It is not a real-time vibration analyzer, because the channels within the same unit are measured one by one and not all simultaneously.
- It is not a machinery protection system, because the alarm levels are compared in the computer software and the response time for an alarm update is longer than 100ms (according to API 670, a protection device for rotating machinery must have a response time below 100msec).

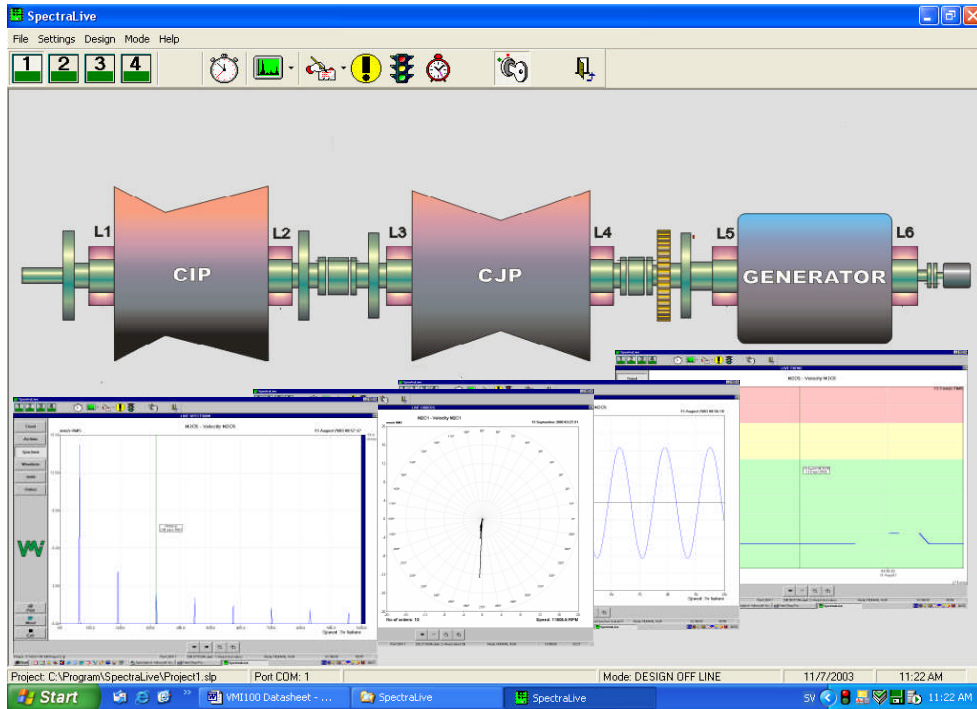
The SpectraLive software

The **SpectraLive** software is dedicated to show measurements coming from the VM110 units. **SpectraLive** is license-free and included with each VM110 unit.

The software has two operation modes:

- **Design mode**, in which up to 4 pages (maximum 64 channels) can be configured to show measurements from any VM110 unit.
- **Normal run mode** in which the measurements are shown.

Using this software a complete application can be made in a very short time.

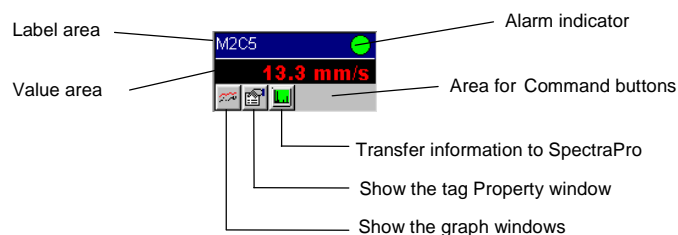


The software has the following facilities:

- Easy page configuration includes an automatic project design
- Each page can have a background image (any Windows file format)
- Each measurement is shown as a “tag”
- Each “tag” can be automatically created by information from the VM110
- Short term trend (last 8 hours) and archive trend (last 5 days) are available for each “tag”
- A large number of plots can be activated (spectrum, orbit, polar orders or waveform) in a separate window.
- Printed reports are available by pressing a single button.
- Measurements can be stored directly in a *SpectraPro* machinery database. (Optional software)
- Alarms are shown in a suggestive graphical view.
- 4 software configurable relays for each VM110 unit.
- SpectraLive can be configured as SpectraLive Server and Client. The Client application can run simultaneously on many computers and receive measurements using the OPC protocol.

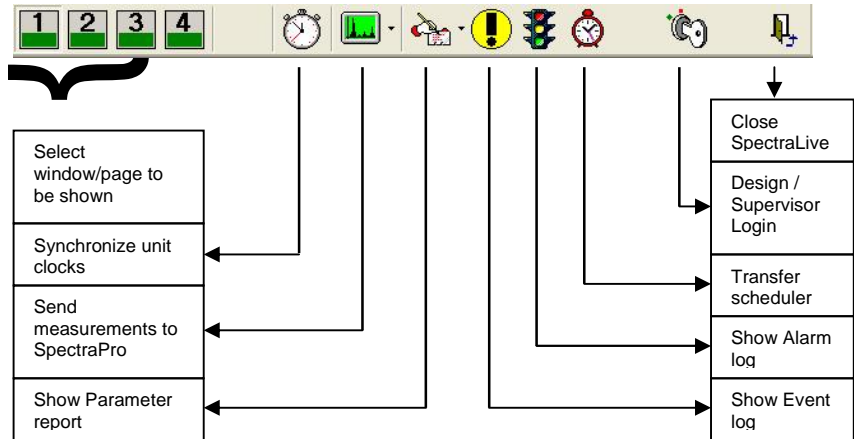
If you need more than 64 vibration channel just add one computer more.

“Tag” information.

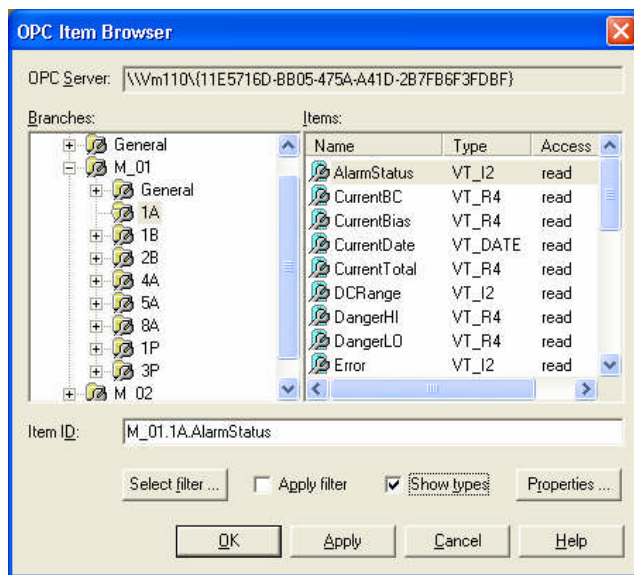


SpectraLive tool bar

Button functions



Each VM110 unit delivery includes the **SpectraLive** software. This software can handle up to 15 VM110 units.



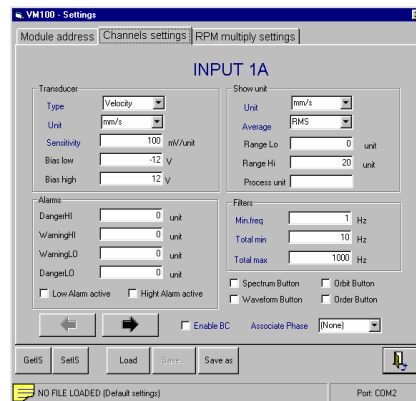
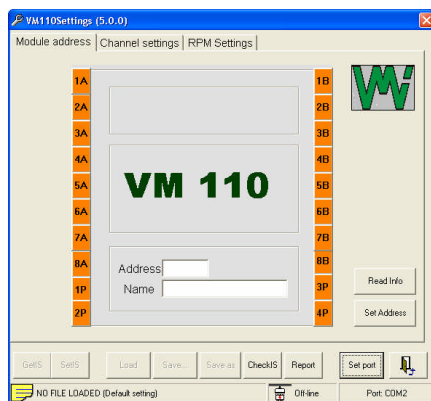
If the user wants to make his own software or connect the VM110 unit to some other software, the user can easily request data from the SpectraLive Server using the OPC interface.

OPC publish all tags on the network. For each tag all properties and latest measurements are available.

During normal running each unit is independent. This means that each unit performs the measurements and sends the information to the computer on request.

Unit configuration

The **VM110-SETTINGS** program is also included to simplify the software configuration of each VM110 unit.



Configuration of the VM110 unit is done from a computer using the RS232 serial communication port. **VM110-SETTINGS** is license-free and included to each VM110 unit.

Measurement details

Measurement type	Description	Notes
Vibration total level	Total vibration level is calculated from the vibration waveform and can be used as a qualitative indication of rotating machinery status.	Frequency range: Any between 1 and 3200 Hz. Digital high pass and low pass filter available.
Envelope value and envelope spectrum	A special measurement used to determine roll bearing defects.	This measurement can be performed only with accelerometers.
Vibration Spectrum	An amplitude-frequency plot used for fault diagnoses. The Spectrum plot is calculated using Fast Fourier Transformer	Spectrum range, line number and resolution can be software adjusted.
Waveform	A plot presenting the vibration time signal	The acquisition time can be software configured
Orbit	An X-Y plot using the waveforms from two perpendicular transducers placed on the same bearing house. Useful to show the motion of the shaft centre.	Number of revolutions collected are software configurable
Orders	A polar plot representing the amplitude versus phase for several multiples of the shaft speed.	1 up 10 order vectors can be shown. A phase reference transducer is required.
Thrust Axial displacement Relative thermal grow Absolute thermal grow	These measurements are relative motions and are used to monitor turbines, compressors, power generators, etc.	Range is fully software configurable. Adjustable "Live" zero point.
Speed /Phase	The phase reference inputs can be software assigned to any of the 8 input pair.	Speed signal frequency can be software divided with a factor between 1 to 9999.9.

Technical specification

Power supply:	220V/50Hz Max 30W
Input	16 channels (8 twin channels) software/hardware configurable. 4 phase reference / tachometer inputs. (Supply voltage, $\pm 24V/80mA$ for RPM and proximity probes provided, $20V/4mA$ for accelerometers provided)
Serial ports	RS-485 – multi-drop serial port (4-wire). Up to 15 VM110 modules can be daisy-chained. RS-232 – Standard serial port. Used only for set-up programming purposes
Frequency Range	1 to 3200 Hz for ac signals
Amplitude Range	$\pm 24 V$ DC or AC Max. $\pm 30V$ DC or AC
Relay	4 independent relays, braking capacity 220-240VAC/5Amp Each relay is software configurable.

For more information please visit www.vmiab.com

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