

Calibration Verification 2016

Today's Presenter: Will Kooiker
We will begin shortly!



Meet VR



Will Kooiker
Laboratory Supervisor



Confidence In Measurement

VR9500 Calibration Verification

- **Factory Calibration**
- **Automated Verification**
- **On-site Calibration**
- **A2LA Accreditation– ISO17025/ANSI Z540.1**



Factory Calibration

- **Hardware Testing**
- **Software Testing**
- **Calibration**
- **Verification**

Factory Calibration

- **Visual Inspection**
- **Hardware Diagnostics**
- **Software Diagnostics**
- **Verification (1-year Tolerance)**
- **Calibration (if necessary)**
- **Verification (24-hour Tolerance)**

Automated Verification

- Requires Hardware
 - 1 Agilent 34410A or 34401A DMM
 - 4 BNC T's
 - 5 1ft. BNC cables
 - 1 Differential Cable



What is a differential cable?

Build your own differential cable: <https://www.youtube.com/watch?v=f3AiOINmObM>



Automated Verification

The screenshot displays the VibrationVIEW software interface. The 'Configuration' menu is open, and the 'Verification' option is highlighted. A tooltip points to this option with the text: "Perform an automatic verification process on an I/O unit".

The interface includes a menu bar with options: File, Edit, Configuration, Test, Recorder, Graph, Cursor, View, Window, Help. Below the menu bar is a toolbar with icons for Inputs, Verification, New Test, Open Test, Edit Test, Open Data, and Save Data. The main window shows a graph titled "Live Sine Test Data" with a sub-window "View 1 (Acceleration Profile)". The graph plots acceleration (pk peak) on the y-axis (0.100 to 3.000) against an unlabeled x-axis. The graph contains several diagonal lines in red, green, and yellow, representing test profiles.

On the left side of the interface, there are several control panels:

- Main Toolbar:** Includes a Navigator icon.
- Test Control:** Includes a Stop Code field, a Frequency (Hz) field set to 1, and a Demand field set to 0.00.
- Units:** Radio buttons for Accel. (G), Vel. (in/s), and Disp. (in pk-pk).

The Configuration menu lists the following options:

- Hardware
- Inputs (Ctrl+I)
- Outputs
- Units
- System Limits
- Remote Inputs
- Email Notification
- Web Server
- Parameters
- Directories
- Users
- Verification** (highlighted)
- Graph Defaults
- Auto Zero (Ctrl+Z)
- Language

Automated Verification

VibrationVIEW Configuration

Hardware Inputs Outputs Units Limits Remote Inputs E-Mail Notification Web Server
Parameters Directories Users Verification Graph Defaults

Select Serial Port connected to the Agilent Digital Multimeter
Agilent 34401A must be set up for RS232 at 9600 Baud
Agilent 34410A may be set up with 'Agilent IO Libraries Suite'
Select Manual Entry to use other DMM.

Then press the 'Next>' button to continue

Select Device Agilent 34401A on Comm 1

Select Configuration Calibration Verification 9500

Temperature: 41.4 degrees C

	Level Vrms	Offset mV
Ch1:	0.000005	-2.82
Ch2:	0.000007	-2.68
Ch3:	0.000006	-1.48
Ch4:	0.000006	-2.35

< Back Next > Abort

OK Cancel Apply Help

Automated Verification

VibrationVIEW Configuration

Hardware Inputs Outputs Units Limits Remote Inputs E-Mail Notification Web Server
Parameters Directories Users Verification Graph Defaults

Connect the Drive and Cola outputs simultaneously to Channel 1 and the Agilent DMM through the differential adapter cable.

Then press the 'Next>' button to continue

	Level Vrms	Offset mV
Ch1:	0.005006	-2.53
Ch2:	0.005005	-2.49
Ch3:	0.005003	-1.19
Ch4:	0.005001	-1.93

Temperature: 27.3 degrees C

< Back Next > Abort

OK Cancel Apply Help

Automated Verification



- LAN Connection
 - Agilent IO Library
 - Connection Expert
- Serial Connection
 - DB9 Connection
 - Null Modem Cable
- USB Connection
 - USB to Serial Converter
 - B&B Smartworx: 232USB9M
 - USB to USB
- GPIB

Automated Verification

- **Verification FAILED!**
 - Check the temperature range
 - Outlier?
 - Cable Issue
 - Correct DMM?
 - Correct Controller?

Automated Verification

- **Verification PASSED!**
- **Save and print the Verification Document**
- **Review the document**
- **Save and print the Calibration Certificate**
- **HTML page will be saved to the controller**

On-Site Calibration

- We bring the meter
- We bring the PC
- We bring the cables
- You provide your controller

Expedited Calibration

- Send your controller to us Next Day Air Early AM
- We will receive the controller before 10 AM
- We will Calibrate your controller
- We can have it back to you the next day

Accredited Calibration

- **Conforms to ISO 17025:2005**
- **Conforms to ANSI/NCSL Z540-1-1995**
- **Includes Uncertainties of Measurement**
- **Traceable to NIST**
- **Accredited by A2LA**

Confidence In Measurement

- Accuracy is key.
- Thanks for your time!
- Questions?

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