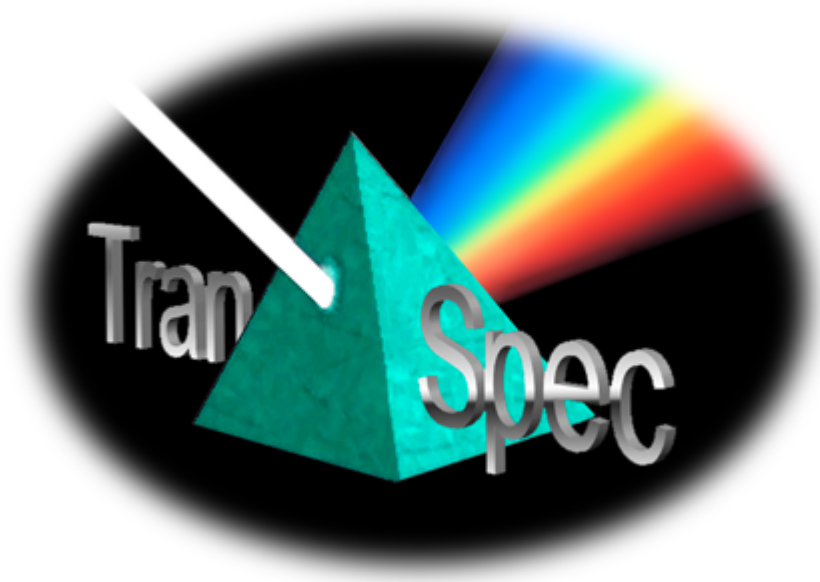


# **TranSpec DMSVIS-H100-5MM**

**Spectrometer with integrated  
Halogen Spectral Lamp**

**Hardware User's Manual**





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## **Chapter 1    Disclaimer and Support**

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## **Chapter 2 Foreword and Package Contents**

Your new **TranSpec DMSVIS-H100-5MM** double-beam (dual channel) spectrometer is a modern and state-of-the-art instrument, which combines innovative optoelectronic with high performance digital electronics. Due to the connection of flexible optical fibers, you can use the instrument for various measurement tasks.

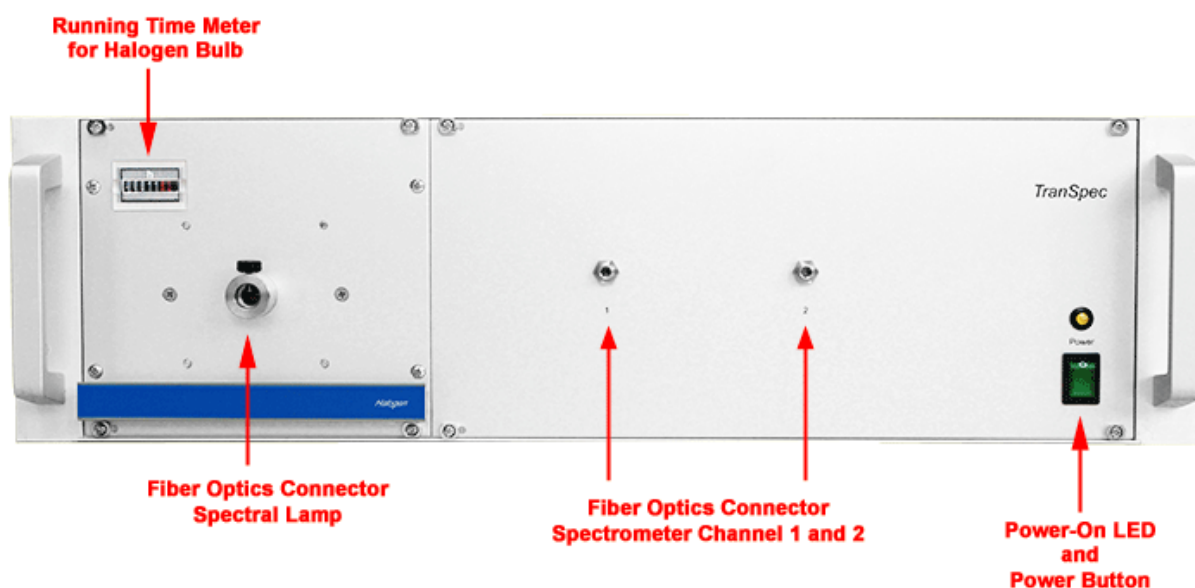
Before you are going to work with your TranSpec spectrometer, please read this manual carefully. Please keep in mind that your system is a highly sensitive gauge, which can only supply reasonable measurement results if you treat the instrument carefully.

The TranSpec DMSVIS-H100-5MM spectrometer delivery contains the following items:

- One TranSpec spectrometer with two assembled MS-VIS modules
- One integrated halogen spectral lamp cassette
- One USB 2.0 cable and power cord
- Optionally one USB-3110 external I/O module with setup CD (third-party)
- One setup CD with the USB 2.0 system driver and application software
- The **TranSpec DMSVIS-H100-5MM Spectrometer Test Certificate** as printed document
- This **TranSpec DMSVIS-H100-5MM Hardware User's Manual** as printed document

## Chapter 3 Front and Back Panel

The pictures below show front and back panel of the TranSpec DMSVIS-H100-5MM spectrometer:



Front Panel of TranSpec DMSVIS-H100-5MM Spectrometer

The TranSpec spectrometer provides an integrated halogen spectral lamp designed as removable plug-in cassette. This lamp cassette is assembled with a running time meter for the halogen bulb, which might be useful to log the average operation time of the bulb before it needs to be replaced. The halogen lamp cassette offers a special 5 mm adapter for liquid light guides.



Back Panel of TranSpec DMSVIS-H100-5MM Spectrometer



Note that an external HSL-2 halogen spectral must not be connected to the Shutter socket when the internal halogen lamp of TranSpec is plugged in! This may damage the shutter control circuits of both lamps!

## Chapter 4 Setup and Installation

To setup and install the TranSpec spectrometer, please proceed as follows:



Do not place the TranSpec spectrometer next or on top of devices with a high heat build-up or close to devices with high electromagnetic radiations! Also make sure there is enough room on top and bottom of TranSpec in order to facilitate a proper ventilation for the halogen bulb!



**Caution! Do not look into the fiber optics connector of the spectral lamp when the shutter is opened!**



**Caution! The top panel area above the halogen lamp cassette gets hot during operation!**

- **Step 1**

Insert the TranSpec application setup CD into your CD-ROM drive and start the **Setup.exe** installation program. Setup will install the USB driver required to connect the TranSpec spectrometer to an USB port of your computer, possibly certain commonly used Microsoft runtime libraries (so far not already installed by other applications) and finally the TranSpec application software. After that you will need to install the external USB-3110 module, which is not in scope of delivery (see next chapter).

- **Step 2**

At last, make sure the USB 2.0 cable between TranSpec and your computer is connected and power-up the spectrometer.

## Chapter 5 External I/O-Module USB-3110

The TranSpec application software supports an external **USB-3110 Digital/Analog Module** (D/A module) of Measurement Computing Corp. in Norton, MA, USA, as an hardware option. Such a multi-i/o module can be used to report certain application measurement or TranSpec hardware status information to digital (TTL) out-ports.

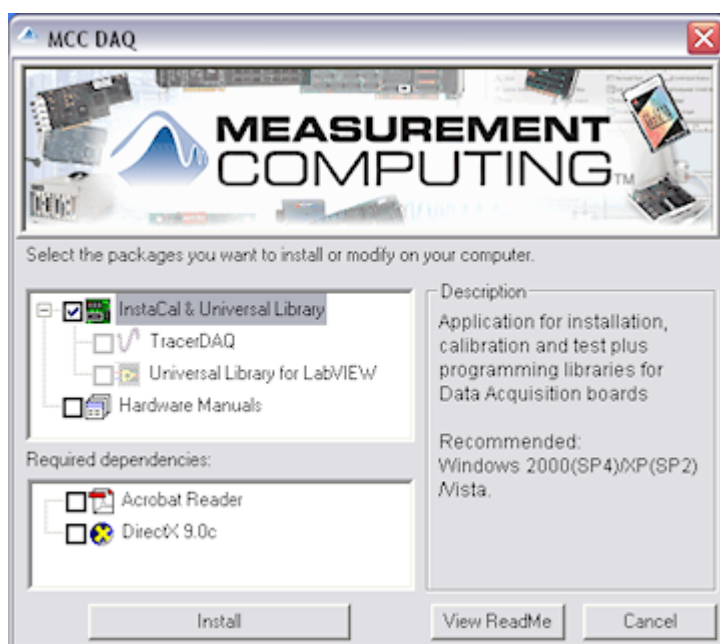
Before you can work with the USB-3110 module and TranSpec, you need to install certain drivers and libraries, which come on a setup CD delivered with the USB-3110 module. For more information on the hardware and software setup of USB-3110, please also read the **Quick Start Guide** of Measurement Computing Corporation, which comes with your USB-3110 module.

- **Step 1**

Connect the USB-3110 module to your computer using an available USB 2.0 port. The Windows operating system will recognize the USB-3110 as "USB Human Interface Device" and installs some internal drivers, which, however, is not sufficient to operate the USB-3110.

- **Step 2**

Insert the **MCC DAQ Software** setup CD of Measurement Computing Corp. and start the installation there. You need to install only the **InstaCal & Universal Library**, as shown in the following figure:



USB-3110 module setup dialog

There is also no need to install the **Universal Library Examples** as offered by the setup afterwards. Please finish the installation of USB-3110 as recommended and reboot your computer.

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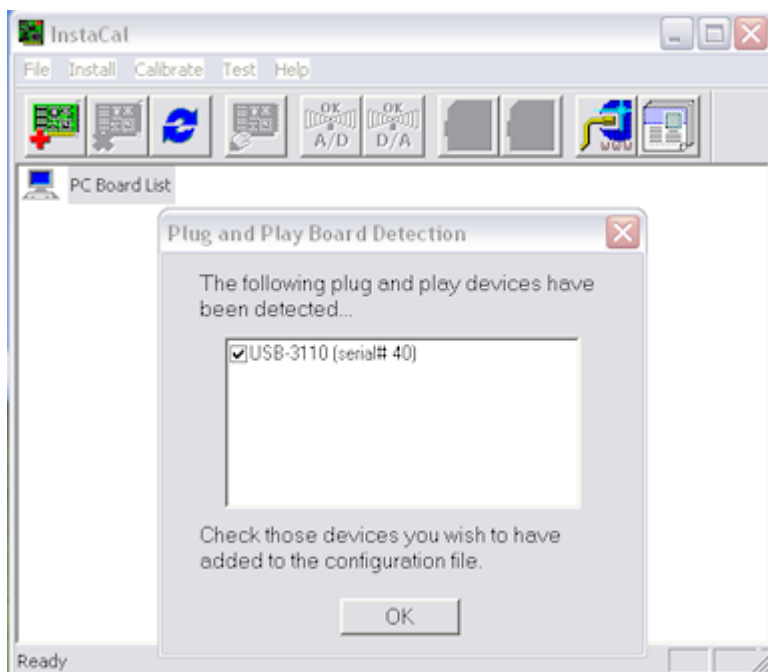


- **Step 3**

Make sure the USB-3110 connected and powered-up and start the **InstaCal** application of Measurement Computing Corp., which can be found in the application path usually at

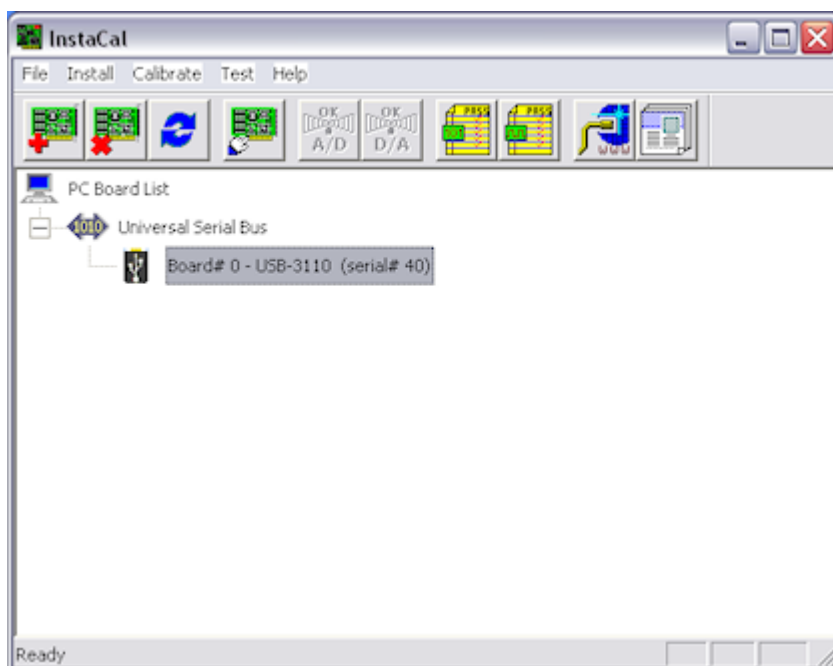
"C:\Program Files\Measurement Computing\DAQ\inscal32.exe"

or from Windows at "Start->Programs->Measurement Computing->InstaCal". The software will recognize your USB-3110 module, as shown below. Note that the displayed "(serial# 40)" might be a different number in your case:



USB-3110 module InstaCal application dialog, part 1

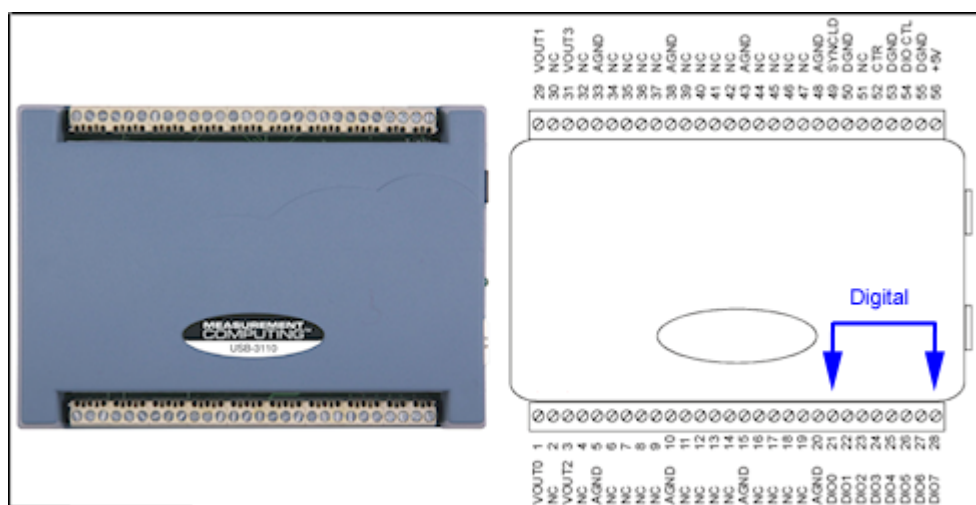
Click OK and then highlight "Board# 0 - USB-3110 (serial# xx)", as shown below. After that you may exit the InstaCal application or run one of the internal circuit test loops provided by the software.



USB-3110 module InstaCal application dialog, part 2

( continued on next page )

The picture below shows the digital I/O connections used by the TranSpec application software. For more information on the wiring and physical connection of the input and output channels, please also refer to the hardware user's manual of the USB 3110 module.



The external digital/analog module USB-3110

The USB 3110 module provides 8 digital ports labeled DIO0...DIO7, as shown above. The TranSpec application software logically configures the first 4 ports DIO0...DIO3 as output and the remaining 4 ports DIO4...DIO7 as input channels.

## Chapter 6 Replacement of the Halogen Bulb



**Caution! Make sure the halogen light bulb and the entire lamp cassette has cooled down enough before replacing the bulb!**

- Only use the following type of halogen bulb for replacement:

Linus (Qioptiq Inc.) EL 1100 halogen bulb, item code G405018000, 100W, 12V  
average operation time ~ 2000 hours, color temperature ~ 3200 Kelvin

You can purchase the spare bulbs from our company or directly from the manufacturer in the USA:

Qioptiq Inc. (Formerly Qioptiq LINOS)  
78 Schuyler Baldwin Drive  
Fairport, NY 14450, U.S.A.  
Web: [www.qioptiq.com](http://www.qioptiq.com)

As an alternative, you may also use Osram Halostar Eco low pressure 60W bulb for GY 6.35 socket or similar bulbs for a GY 6.35 socket, but in any case not more as 100W !

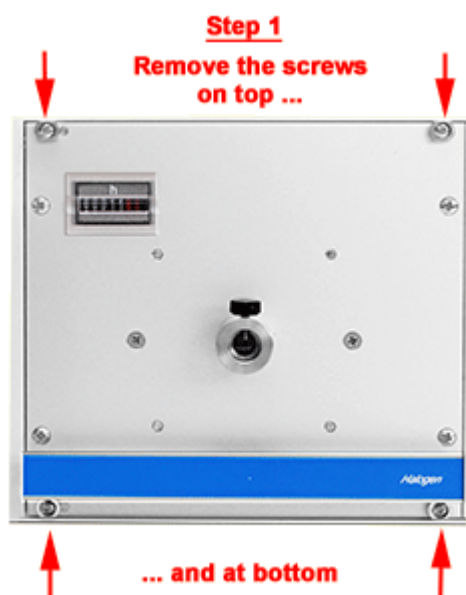
To replace the halogen light bulb, please proceed as follows:

- Step 1**

Turn off the TranSpec spectrometer and remove all cables. Wait at least for 30 minutes until the spectrometer and halogen lamp cassette has cooled down enough. Now remove all 4 screws at the front panel of the lamp cassette.

- Step 2**

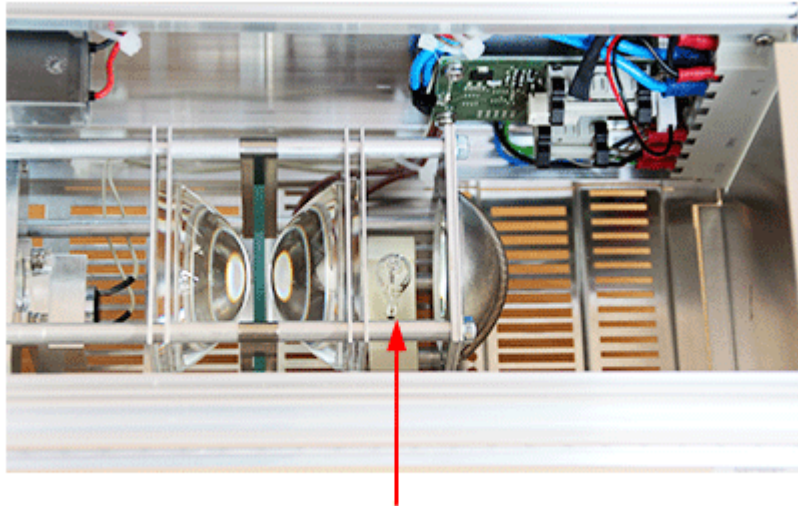
Carefully remove the lamp cassette out of the 19-inch case. Make sure again that the lamp cassette has cooled down enough!



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- **Step 3**

Ensure again that the entire aluminum case and optic lenses have cooled down enough! The halogen light bulb is accessible between a lens and a mirror. Remove the burned-out bulb from its socket and plug the new bulb in. Do not directly touch the halogen bulb, always use the package foil or some fabric gloves!



**Step 3**

**Unplug the halogen bulb  
out of the white socket**

## **Chapter 7 Technical Specifications**

Dated 2012, according to the specifications of the manufacturers, subject to changes

### **TranSpec Spectrometer** (general specs)

- Desktop chassis with CE certificate
- Dimensions: approximately 132 x 435 x 370 mm (H x W x D)
- Weight: approximately 8kg
- Power consumption: approximately 150 watt
- Ambient operating environment:  
+10 °C ... +40 °C ( +50 °F ... +104 °F )  
20-80% atmospheric humidity, without any condensation

### **TranSpec MS-VIS Spectrometer Modules**

- Monolithic spectrometer body made of UBK7 and flat-field corrected grating
- Fiber cross section converter as optical entrance
- Photodiode array with 256 pixel
- Spectral range: approximately 300...1100 nm
- Spectral pixel interval: approximately 3.3 nm
- Pair-wise selected dual channel modules

Note: The following is valid for the spectral range of 300 to 900 nm:

- Absolute wavelength accuracy: < 0.3 nm
- Relative wavelength accuracy: < 0.1 nm
- Spectral resolution according to Rayleigh criterion: 10 nm
- Stray light: 0.01% to 0.07% , blocked with OG570 and KG3 filter, Xenon lamp

### **TranSpec Halogen Spectral Lamp**

- Optical body designed for long-term operation
- High stable 100 watt low-voltage halogen bulb
- Spectral emission range: approximately 350...2500 nm
- Optical noise: typically < 0.1 %
- Lifetime of the bulb: typically 2000 hours

## Chapter 8 EU-Declaration of Conformity (CE Marking)



The **TranSpec DMSVIS-H100-5MM** spectrometer complies with the following EU directives:

- **93/68/EWG**      **Directive for CE Marking**
  - **2006/95/EG**      **Directive of the European Parliament and of the Council of 12 December 2006 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits**
  - **2004/108/EG**      **Directive of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC**
- 
- |                   |                                                                                                                                                                                                                                 |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DIN EN 60950-1    | Information technology equipment - Safety - Part 1: General requirements; German version EN 60950-1:2006/FprAB:2008                                                                                                             |
| DIN EN 61010-1    | Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements (IEC 61010-1:2001); German version EN 61010-1:2001                                                      |
| DIN EN 61326-1    | Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements (IEC 61326-1:2005); German version EN 61326-1:2006DIN EN 61000-4-2                                           |
| DIN EN 61000-4-2  | Electromagnetic compatibility (EMC) - Part 4-2 : Testing and measurement techniques - Electrostatic discharge immunity test (IEC 77B/563/CDV:2007); German version prEN 61000-4-2:2007                                          |
| DIN EN 61000-4-3  | Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006 + A1:2007); German version EN 61000-4-3:2006 + A1:2008 |
| DIN EN 61000-4-4  | Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4:2004); German version EN 61000-4-4:2004                                       |
| DIN EN 61000-4-5  | Electromagnetic Compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test (IEC 61000-4-5:2005); German version EN 61000-4-5:2006                                                                 |
| DIN EN 61000-4-6  | Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (IEC 77B/571/FDIS:2008); German version FprEN 61000-4-6:2008         |
| DIN EN 61000-4-11 | Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11:2004); German version EN 61000-4-11:2004          |

This declaration is valid for the areas of the European Union.

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