

## Warnings



The "MEphisto Scope" has a **maximum input voltage of  $\pm 10$  VDC**. Measuring higher voltages than this directly may damage the instrument and invalidate the warranty.

The "MEphisto Scope" is not galvanically isolated, i.e. in online operation the ground of the device connects directly to the ground of the PC via the USB cable. If you are using a standard desktop PC the ground of the device connects to earth by the power cable (with earthing contact). However, this reference to earth potential is missing in case of connection with a laptop or in offline operation. **Therefore a good earthing via the earth contact at the rear of the housing and special caution are strictly necessary for your own safety!**

To measure high voltages such as mains supplies use a high voltage differential probe for your personal safety and to prevent damage to the instrument. Please follow the appropriate standards, installation instructions and national safety standards. Meilhaus Electronic GmbH assumes no responsibility for damage in case of faulty installation, operation or handling.

## What's in the Box?

Please make sure, that your "MEphisto Scope" box includes the following items:

- 1 x USB scope "MEphisto Scope" (UM202, UM203) hardware.
- SD memory card (UM203 only).
- CD with driver and DAQ software "MEphistoLab".
- USB cable (type A - type B)
- Getting Started Guide.

## Accessories (optional)

### "ME-Probe LF Pair"

2 passive modular probes (1:1/1:10 selectable) with accessories. Bandwidth: 15/150 MHz, 47/15.5 pF, 1/10 M $\Omega$ , 600 V<sub>p</sub> CAT I.



### "ME-UB" series

Connect up to 3 "ME-UB" boxes to the 26pin D-sub with a triple break-out cable "ME AK-DUB/UM202".

Available models: terminal block, opto-isolated inputs, opto-isolated outputs, relays

## Support

Should you experience problems with the device or software, please send an **E-Mail** to [support@meilhaus.com](mailto:support@meilhaus.com).

Newest infos and software updates on our web site: [www.meilhaus.com](http://www.meilhaus.com).



Earth contact

## 2 Channel USB Scope "MEphisto Scope"

(UM202, UM203)

Quick Start Guide



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## “MEphisto Scope” - Features

“MEphisto Scope” is a mobile multi-functional device in a compact sheet steel box. The module is powered from the PC via the USB interface; no external power supply is necessary.

Both analog inputs have BNC connectors for standard oscilloscope probes. Each channel has its individual 16 Bit A/D converter which gives you simultaneous sampling rates of 1 MS/s on both channels. The input range is  $\pm 10$  V. Depending on the operation mode multiple trigger options can be selected. The 24 digital I/O channels (CMOS) can be configured as input or output individually.

The “MEphistoLab” software which is included with the device, is a virtual instrument panel, that gives you easy and quick access to all functions of the device under Windows 98SE, Me, 2000 and XP. The following operation modes are provided:

- **„Oscilloscope“** 2 channels, 1 MS/s max. per channel, voltage range 200 mV...20V
- **„Logic Analyser“** 16 channels (D0...15), 100 kS/s max. per channel, 5V CMOS level
- **„Data Logger Analog“** 2 analog channels, 100 kS/s max., range: 200 mV...20V
- **„Data Logger Digital“** 16 channels (D0...15), 100 kS/s max., 5V CMOS level
- **„Volt Meter“** 2 channels, ranges:  $\pm 100$  mV,  $\pm 1$  V,  $\pm 10$  V ( $AC_{RMS}/DC$ )
- **„Digital I/O“** 24 digital I/Os, each bit configured individually, 5V CMOS level

You find a detailed description of the operation modes with the single functional modules of the software. If you don't have a MEphisto Scope available you can use the demo version which is installed automatically.

## Hardware Specifications

### Analog Inputs

|                          |  |
|--------------------------|--|
| Number, resolution       | 2 x 16 bit   |
| Total sampling rate      | 2 MS/s (2 channels)                                  |
| Simultaneous channels    | 2  |
| Input voltage range      | $\pm 100$ mV ... $\pm 10$ V                          |
| Analog bandwidth (-3 dB) | 2,5 MHz (no anti aliasing filter)                    |
| Sample memory            | 256 kS   |
| Trigger types            | Level, window, edge, slope (dU/dt), external, manual |

### Digital Inputs/Outputs

|                       |   |
|-----------------------|---|
| Number                | 24 I/Os   |
| Configuration         | each bit programmable as input or output (outputs can be read back) |
| Output current (25°C) | sink: 10 mA, source: 5 mA   |
| Signal level          | +5V (CMOS)  |

### General Data

|                       |  |
|-----------------------|--|
| PC interface          | USB 2.0 full-speed (USB 1.1 compatible)  |
| Power supply          | +5V / 0,85 W via USB interface   |
| Reference ground      | PC ground (PC_GND)   |
| Connectors            | Analog channels: 2 x BNC connectors (front panel)<br>Digital channels: 26-pin D-sub female (rear panel),<br>USB connector: Type B (rear panel) |
| Size (WxHxD)          | 110 mm x 35 mm x 136 mm (incl. connectors)   |
| Operating temperature | 0...70 °C  |
| Weight                | 420 g  |

## Installation

1. Connect the “MEphisto Scope” to a USB port of your PC using the USB cable included with the device.  $\Rightarrow$  The hardware wizard will automatically detect the new USB device and will display the message “New hardware found”. The following description is to be orientated towards Windows XP but applies analogously to other Windows versions. However the dialogs may differ slightly depending on your Windows version.
2. Insert the installation CD-ROM included with the package into the CD drive of your computer.
3. In the hardware wizard select the option “Search for a suitable driver for my device [recommended]” and click “Next”. If Windows displays a message, telling you the driver is not Microsoft certified, just skip this window.  
 $\Rightarrow$  The system driver will be installed and the entry “MEphisto Scope” will be added in the device manager under the device class “Meilhaus DAQ Boards”.
4. End the installation of the system driver by „Finish“ and continue with the installation of the “MEphistoLab” software as follows:
5. With the CD still inserted in your drive, navigate to the directory [CD drive]:  
`\software\MEphistoLab\disk1` and start the installation of the “MEphistoLab” software by double-clicking the file “setup.exe”.

! MEphistoLab requires the installation of the Agilent VEE runtime software in the last valid version. If required, it will be installed automatically (included on CD-ROM).

$\Rightarrow$  After the installation has finished you will find the “MEphistoLab” software in your Windows “Start” menu under “Programs - Meilhaus MEphistoLab”.

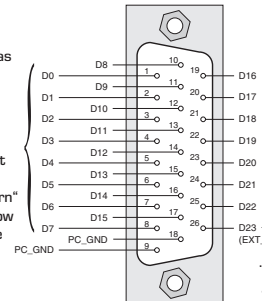
## The 26-pin D-sub female connector:

### „Digital I/O“:

D0...23 can be configured as input or output individually.

### „Logic Analyser“ & „Data Logger Digital“:

D0...15 are used to be input channels in that operation mode. On demand a „Pattern“ (rising/falling edge, high/low level) can be defined as the trigger event.



### Attention!

D16...22 are reserved in the operation modes „Logic Analyser“ and „Data Logger Digital“ and may not be connected!

External Trigger Input (EXT\_TRIG)

... optional for the operation modes:

- „Oscilloscope“
- „Logic Analyser“,
- „Data Logger Digital“
- „Data Logger Analog“