Seven USB Devices in one...

The MEphisto Scope is a dual-channel multifunctional instrument: It includes a 16-bit digital storage oscilloscope, a spectrum analyser with FFT, a voltmeter, a logic analyser, a data logger and a digital switchbox with 24 I/O lines. The instrument has a very robust metal housing. It is a device you can rely on - even in rough, mobile applications, as for example in maintenance, field service and training. With its low power consumption, the MEphisto Scope is the ideal solution for mobile applications with notebooks. Lots of DAQ know-how is integrated directly into the software's online help. The offline version offers an additional data logger functionality that can acquire data independently from the PC. Measurement data will in this case be stored to a standard SD memory card.

MEphisto Scope - the intelligent USB multifunctional solution

Front side, both versions:

Robust, solid metal housing

16-bit resolution

110 x 35 x 136, (WxHxD, mm, incl. BNCs/pads), 420 g only

Inputs protected up to ±300 VDC

Status LEDs for self test and diagnosis

7 devices in one: Scope, spectrum analyser, voltmeter, data logger analog, logic analyser, digital I/O, data logger digital
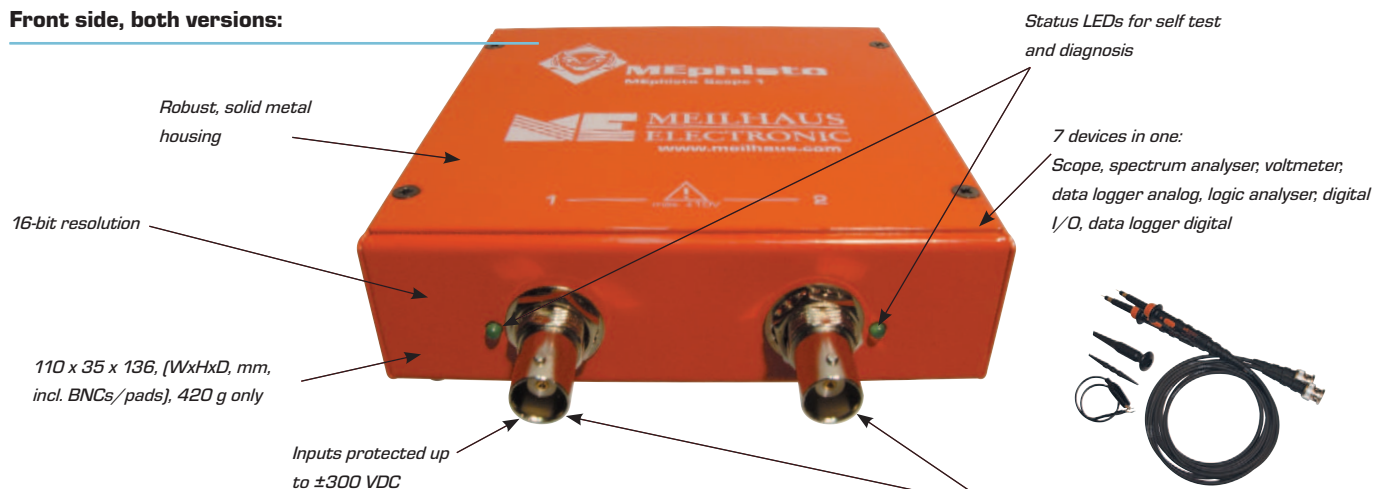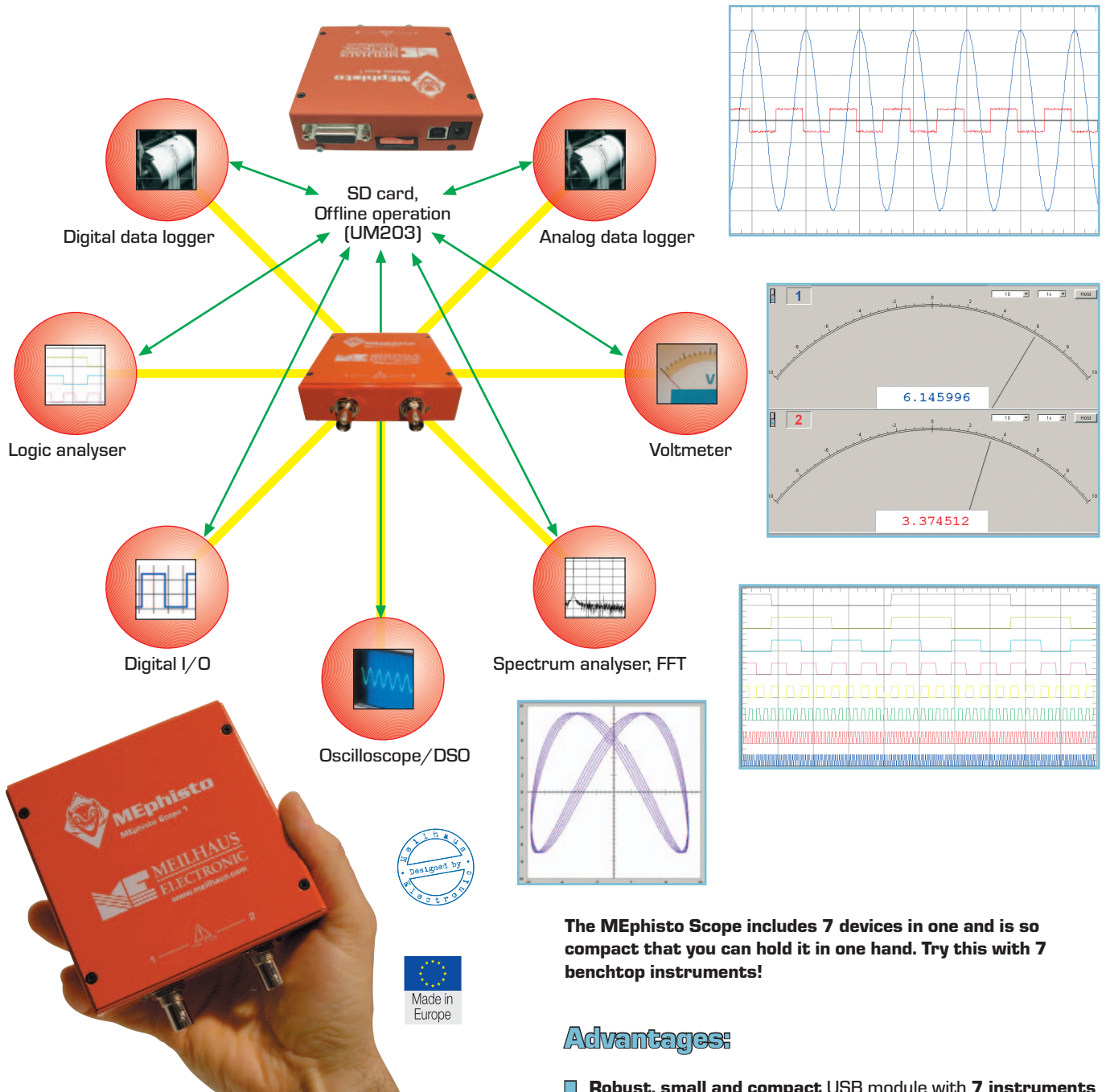
2x BNCs for the analog signals: Scope channels 1 and 2 or voltmeter inputs or analog data logger inputs

Back side, UM202 version:

26-pin D-sub female for the digital signals: Logic analyser or digital channels and external trigger

Option: Expansions with ME-UB series: Relays or opto-isolation for the digital channels

No power supply required - completely powered from the PC via USB. 0.85 W only!

USB type B connector, USB 2.0 full-speed. USB cable with USB-A-B included

Back side, UM203 version:

26-pin D-sub female for the digital signals: Logic analyser or digital channels and external trigger

Option: Expansions with ME-UB series: Relays or opto-isolation for the digital channels

Logging of analog as well as digital data to SD card. 256 MB SD memory card included in the delivery package. Up to 100 kS/s (depending on SD card). Uses the final settings from online operation after power supply is connected. Measurement/logging is started by inserting the SD card.

Do you really still need stacks of unwieldy benchtop instruments?

Digital data logger

SD card, Offline operation (UM203)

Analog data logger

Logic analyser

Voltmeter

Digital I/O

Oscilloscope/DSO

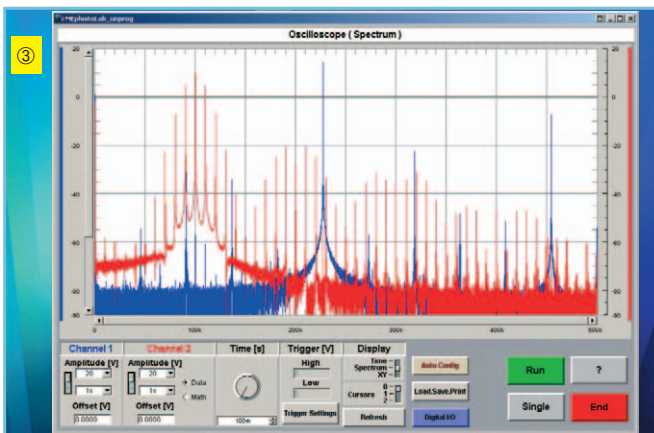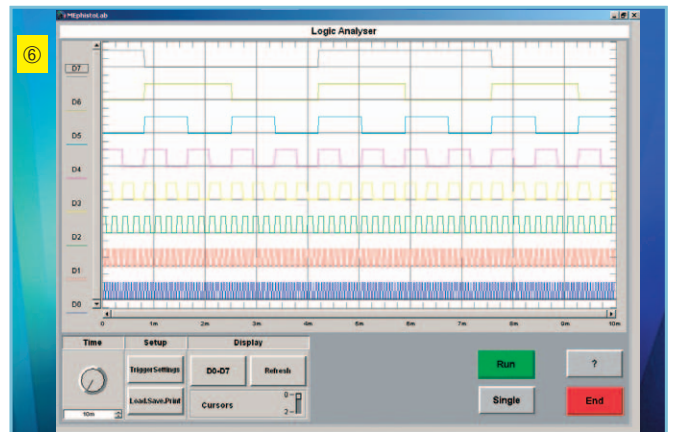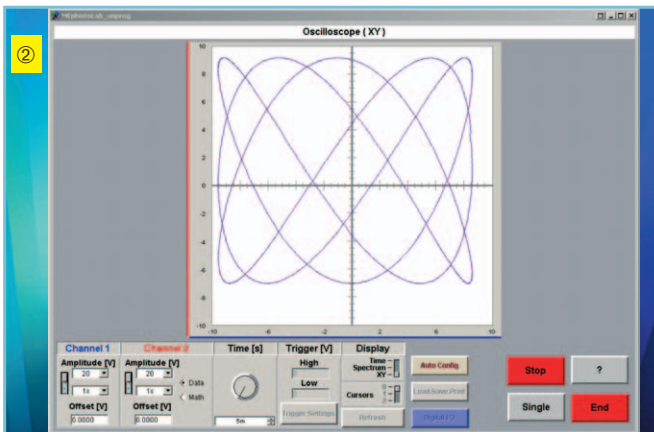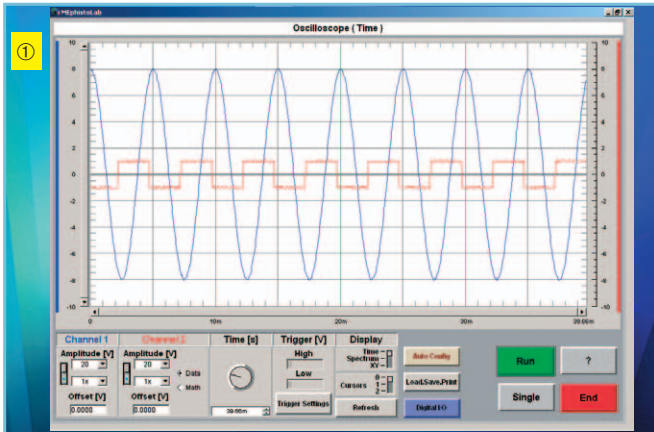Spectrum analyser, FFT

6.145996

3.374512

The MEphisto Scope includes 7 devices in one and is so compact that you can hold it in one hand. Try this with 7 benchtop instruments!

Made in Europe

The MEphisto Scope includes the following instruments:

Instrument	Basic specs
Oscilloscope, spectrum analyser	2 channels, 1 MS/s per channel, 16 bit, up to 500 kHz, range 200 mV...20 V. Time, spectrum and XY mode.
Voltmeter	2 channels, input range ±100 mV, ±1 V, ±10V. 16 bit. Pointer display (software). DC, AC true RMS.
Data logger	Analog and digital up to 100 kHz.
Logic analyser	16 channels, up to 100 kHz, CMOS level.
Digital I/O switchbox	24 TTL lines, each line programmable as input/output. Expandable with optional accessory ME-UB with relays or opto-isolation.
Model UM203 stand-alone data logger	Logging of analog as well as digital data to SD card. 256 MB SD memory card included. Up to 100 kS/s (depending on SD card model). Uses the final settings from online operation after power supply is connected. Measurement/logging is started by inserting the SD card.

Advantages:

- **Robust, small and compact** USB module with **7 instruments all in one**.
- UM203 with additional offline/stand-alone logging functionality: **Data logging to SD memory card**, independently from PC (incl. 256 MB SD card).
- UM202 works without external power supply and **requires only very low power** - ideal solution with battery-powered notebooks: Powered via USB - **ultra-low-power 0.85 W**. UM203 offline: Powered by external power adaptor (included).
- **16-bit resolution. 1 MS/s total sample rate**, up to 2x 1 MS/s simultaneous sampling. Analog bandwidth 1 MHz. Value memory 256 kS.
- Robust, reliable **professional metal housing**.
- **BNC connectors** for reliable connectivity of standard probes.
- **±300 VDC overvoltage protection.**
- **Multiple trigger functions:** Trigger modes threshold, windows, edge, slope (dV/dt), external, manual.
- **USB 2.0 full-speed** (USB 1.1 compatible). USB cable incl.
- Windows software included with soft-panels for all 7 instruments. **Easy programming - also with VEE Pro and other development environments.**

①

②

③

④

⑤

⑥

⑦

⑧

Windows software MEphisto Lab instrument soft-panels: ① *Digital storage oscilloscope, time mode.* ② *Digital storage oscilloscope, XY mode.* ③ *Spectrum analyser.* ④ *Analog data logger.* ⑤ *Voltmeter.* ⑥ *Logic analyser.* ⑦ *Digital switchbox.* ⑧ *Digital data logger.*

Software MEphisto Lab + Hardware MEphisto Scope = 7 Instruments in miniature

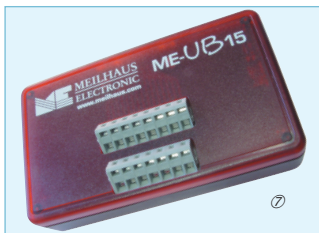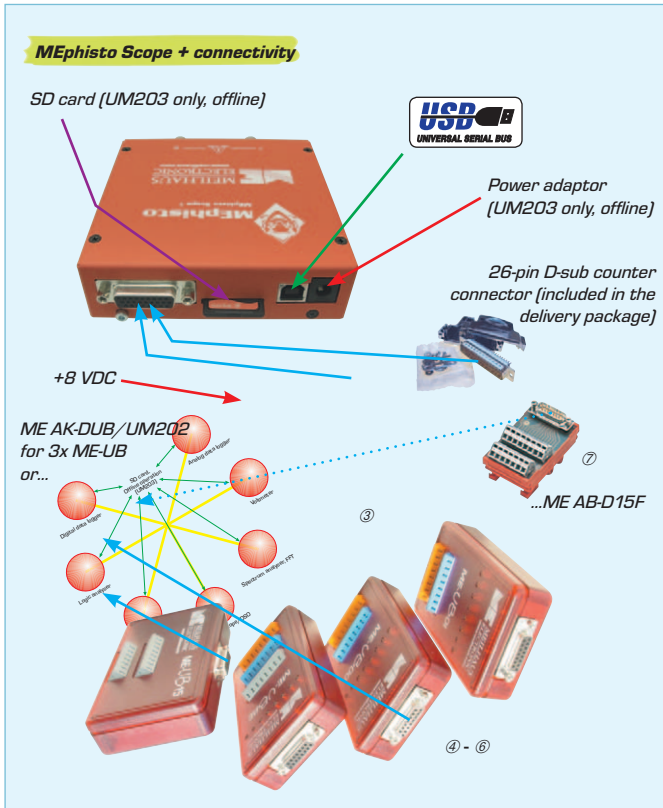| » Technical specifications	MEphisto Scope UM202 and UM203
Analog inputs	
Number, connectors	2 (simultaneous), BNC
A/D resolution	16 bit, max. 500 kHz
Input range	±100 mV...±10 V max.
Protection	±300 VDC
Input impedance	850 kΩ (input capacity 14 pF)
Accuracy (25°C)	Voltage: 0.1% or 1 mV. Time: 100 ppm
Value memory	256 kS
Functions	Oscilloscope incl. spectrum analyser/FFT, volt meter, analog data logger
Used as oscilloscope/DSO and spectrum analyser	
Sample rate	1 MS/s (2 channels), 2x 1 MS/s (per 1 channel, simultaneous sampling)
Operating modes	Time, XY, spectrum analyser/FFT (Fast Fourier Transformation)
Input range	±100 mV...±10 V
Analog bandwidth	(-3 dB) 1 MHz (no anti-aliasing filter)
Time base	1 µs...2.5 s
Trigger modes	Threshold, window, edge, slope (dU/dt), external (on 26-pin D-sub female), manual, delay
Used as voltmeter (pointer display through software)	
Sample rate	2x 1 MS/s
Input range	±100 mV...±10 V
Analog bandwidth	(-3 dB) DC 40 kHz, true RMS 2.3 kHz
Used as analog data logger	
Sample rate, analog bandwidth, input range, trigger modes see oscilloscope (see above)	
Time base	10 µs...2.5 s
Digital channels	
Number, connectors	24, 26-pin D-sub female
Level	+5 V (CMOS). Output current (25°C) sink 10 mA/source 5 mA[1]
Used as logic analyser	
Channels	16: 8+8 simultaneous channels, 8 of them simultaneous trigger channels
Sample rate	100 kS/s
Protection	+5.5 VDC/-0.5 VDC
Time base	10 µs...2.5 s
Trigger modes	Pattern (low/high, rising/falling edge, ignore) in any combination simultaneously for 8 bit, manual, external, delay
Used as digital inputs/outputs	
Channels	24 discrete inputs/outputs. Each bit programmable as input or output. Outputs with read-back.
Expandability	Relays or opto-isolation with ME-UB series (see accessory)
Used as digital data logger	
See logic analyser, see above	
Offline/stand-alone data logger	
Storage	SD card (slot on devices backside) up to max. 2 GB. 256 MB SD card included in the delivery package. Read out data with an optional card reader
Start measurement	Configuration via USB. Uses the final settings from online operation after power supply is connected. Measurement/logging is started by inserting the SD card.
Rate	Up to 100 kS/s (depending on SD card model)
General data	
PC interface	USB 2.0 full-speed (USB 1.1 compatible)
Power supply	UM202: +5 V/0.85 W from PC via USB interface[2]. UM203 during offline operation: External power supply, included in the delivery package
Connectors	2x BNC female (front side), 26-pin D-sub female (back side), type B USB connector (back side). UM203: SD slot
Display	2 LEDs for status and self-diagnosis
Size	110 x 35 x 136, (WxHxD, mm, incl. connectors and pads), 420 g
Temperature	0...70°C (operation), -20...85°C (storage)

1) Logic analyser: 1.8 V/3.3V CMOS, 12 V/24 V with optional converter.

2) To guarantee reliable operation even with high loads on the digital port, the device signales the computer the max. power consumption of 2.5 W. This means that it is not possible to use the device with a passive/non-powered USB hub.

MEphisto Scope + probes

ME-Probe LF Pair ①

MEphisto Scope + connectivity

SD card (UM203 only, offline)

USB
UNIVERSAL SERIAL BUS

Power adaptor (UM203 only, offline)

26-pin D-sub counter connector (included in the delivery package)

+8 VDC

ME AK-DUB/UM202 for 3x ME-UB or...

...ME AB-D15F ⑦

③

④ - ⑥

④

⑤

⑥

②

⑦

⑧

» Ordering codes and accessories MEphisto Scope UM202 & UM203		
Model	**Description**	**Price**
MEphisto Scope (UM202)	16 bit, 7-in-1 multifunctional instrument for USB: Dual-channel scope/spectrum analyser, voltmeter, analog/digital data logger, 16-channel logic analyser, 24 discrete (each bit programmable) TTL digital inputs/outputs.	€348
MEphisto Scope (UM203)	See UM202, but offline logger versions with SD memory card.	€548
Included in the delivery package: MEphisto Scope in metal housing, CD with software, 26-pin D-sub counter connector, USB cable; UM203 additional: Power adaptor, 256 MB SD memory card.		
Bundle	**Description**	**Price**
MEphisto Scope bag UM202-T	UM202 complete bundle in a carrying bag.	€398
MEphisto Scope bag UM203-T	UM203 complete bundle in a carrying bag.	€598
Included in the delivery package: UM202 or 203, CD with software, 26-pin D-sub counter connector, USB cable, pair of probes ME-Probe LF Pair, carrying bag; UM203 additional: Power adaptor, 256 MB SD memory card, SD card reader.		
Accessory	**Description**	**Price**
① ME-Probe LF Pair	Pair of modular probes x1/x10, 15/150 MHz.	€47.50
ME-LP/UM202	Flat ribbon cable, 26-pin D-sub male to logic probes.	on request
ME-LC/UM202	Flat ribbon cable, 26-pin D-sub male to optional ME-Probe Logic micro IC clips.	on request
② ME-Probe Logic Set 10	Set of 10 micro IC clips, 2x red, 2x yellow, 2x green, 2x blue, 1x white, 1x black.	€80
② ME-Probe Logic Set COLOR	Set of 10 micro IC clips; whole set in one color, choose red, yellow, green, blue, white or black.	€80
③ ME AK-DUB/UM202	Cable, connects 3 ME-UB boxes to a MEphisto Scope: 26-pin D-sub (HD) female to 3x 15-pin D-sub male + low-voltage connector for external power supply of the ME-UB boxes.	€59
④ ME-UBRE	8 relays type C (change-over, max. 5 A at 30 VDC/250 VAC). 3x 8 spring terminals.	€99
⑤ ME-UBOI	8 opto-inputs (2.5...60 V, 12 kHz, isolation up to 2500 VAC$_{eff}$). 3x 8 spring terminals.	€79
⑥ ME-UBOO	8 opto-outputs (0.6...60 V, 5 kHz, 300 mA (continuous)/400 mA (peak), isolation up to 2500 VAC$_{eff}$). 3x 8 spring terminals.	€79
⑦ ME-UB15	15 spring terminals.	€49
⑧ ME AB-D15F	Standard connector block. 15-pin D-sub female to spring terminals. Incl. DIN rail mountable card carrier. For all products with 15-pin D-sub male.	€45
MW17-GS/6	12 V/500 mA power adaptor for ME-UBRE, ME-UBOO, ME-UBOI.	€25

More MEphisto models coming soon!

The digital all-round box: MEphisto Switch

25-pin D-sub female:
- *16 TTL digital I/O channels, in groups/ports of 2x 8 bit. Each port programmable as input or output.*

USB type B connector, USB 1.1 full-speed. USB cable with USB-A-B included

78-pin D-sub female:
- *8 or 16 relay channels.*
- *8 TTL digital inputs.*
- *8 opto coupler inputs.*

Robust metal housing

Power supply, power LED

Expandable with ME-UB series:
- *ME-UBRE: 8 relays.*
- *ME-UBOI: 8 opto-inputs.*
- *ME-UBOO: 8 opto-outputs.*
- *ME-UB15 (or ME AB-D15F) connector blocks*

The Meilhaus Electronic MEphisto Switch offers **USB digital control** to professional users: It has a **robust, reliable** housing made of metal rather than plastic, and it offers **professional expandability** instead of limited functionality. At the heart of the MEphisto Digital boxes are our **tried and trusted ME series PCI DAQ/digital boards**. They are made to industrial standards and are well-known for the high quality of their **hardware and driver software**. Now you can switch higher loads or monitor digital status with a single board or a USB box! Up to 48 relay, digital and opto channels for USB, PCI or PXI/CompactPCI.

- ☐ **16 or 8 relays** type C (change-over). For **currents up to 2 A/30 V**, short time current for a single relays up to 3.5 A.
- ☐ 8 TTL digital inputs. 16 TTL digital I/O channels, expandable with relays or opto-isolation.
- ☐ 8 **opto-isolated** inputs (24 V level).
- ☐ USB 1.1 full-speed. Robust metal housing. Power supply from external power adaptor.
- ☐ Also as board version for PCI or PXI/CompactPCI.

» Ordering codes and functions   MEphisto Switch

Model		Relays	24 V opto-inputs	TTL digital inputs	TTL digital I/O	Bus	Price
ME-630 USB	MEphisto Switch 8	8 type C	8	8	16 (2x 8 bit)	USB 1.1	**€248**
(MEphisto Switch)	MEphisto Switch 16	16 type C	8	8	16 (2x 8 bit)	full-speed	**€298**
Standard equipment	USB box, ME-Power-CD, 78- and 25-pin D-sub mating connectors. USB cable, power adapter.						

» Recommended accessory for MEphisto Switch/ME-630...	» Detailed information see www.meilhaus.com
For higher current over 0.35 A per line:	
ME AK-D78/HQ/x	x = 0.25, 1 or 2 m **high-quality cable**. 78-pin D-sub male-female, 1:1 contacted. With metal housing and 2 lines of cable, wire diameter 40x 0.25 mm². Current load max. 1.4 A per wire; load on 20 wires: 2 A.
ME AK-D25/x	x = 1 or 2 m **cable**. 25-pin D-sub male-female, 1:1 contacted. Connects on-board digital ports and connector block ME AB-D78M/S(-H)
ME AB-D78M/S	**Deluxe connector block**. 78-pin D-sub male to pluggable spring terminals as well as 25-pin D-sub male to pluggable spring
ME AB-D78M/S-H	terminals. In a robust metal box or in a DIN rail mountable card carrier (-H).
ME AK-D78/HQ-OE/1	In case you don't want to use a connector block: 1 m **high-quality cable**. 78-pin D-sub male to open ends. Data see above.
For small signals up to 0.35 A per line:	
ME AK-D78/x	x = 0.25, 1 or 2 m **cable**. 78-pin D-sub male-female, 1:1 contacted. Standard cable.
ME AK-D25/x	see above. Connects on-board digital ports and connector block ME AB-D25M.
ME AB-D78M	**Standard connector block**. 78-pin D-sub male to spring terminals. In a DIN rail mountable card carrier.
ME AB-D25M	**Standard connector block**. 25-pin D-sub male to spring terminals. For the on-board digital ports.
Expanding the on-board digital ports:	
ME AK-D2578/4000	1 m **special cable.** 25-pin D-sub male to 78-pin D-sub female, connects 1x ME-63Xtend.
ME AK-D2515/4000	1 m **cable**. 25-pin D-sub male to 2x 15-pin D-sub male, connects 2x ME-UB.
ME-UB, ME-63Xtend	Expansion boxes and boards/modules for TTL digital channels with 8/16 relay or opto couplers (inputs/outputs).

▶ MEphisto Scope complete bundle

Do you travel a lot with your notebook and are you looking for a multifunctional USB instrument? Then you should consider the MEphisto Scope complete bundle in a carrying bag. Probes are included, and in the UM203 version the power supply and USB card reader are also supplied. The ideal solution for mobile service and maintenance or just a safe way to store all your parts without the danger of losing any!

Included:

- ☐ Handy **carrying bag** for the MEphisto Scope and accessory.
- ☐ Robust **USB module** MEphisto Scope UM202 or UM203.
- ☐ CD with MEphistoLab **software, instructions for use**.
- ☐ 26-pin **D-sub counter connector**.
- ☐ **USB cable**.
- ☐ **Pair of probes:** ME-Probe LF Pair.
- ☐ UM203 additional: **Power adaptor, 256 MB SD memory card**.

USB cable

Side pocket, eg. for the probes

UM203 256 MB SD memory card and card reader for USB

UM203 power supply

CD with instruction for use and software MEphisto Lab

only €398
UM202 bundle

only €598
UM203 bundle

Pair of probes ME-Probe LF

26-pin D-sub counter connector

*Bundles with ME-UB boxes on request - **expand the digital channels with relays or opto-isolation***

USB module MEphisto Scope UM202 or UM203

(Product details may vary)

MEasurement starts with ME.

MEILHAUS ELECTRONIC