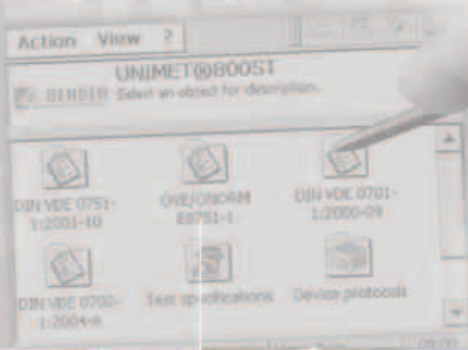


# UNIMET® 800ST

Universal Testing System for Medical  
Electrical Devices and General  
Electrical Equipment



# UNIMET® 800ST

The increasing use of electrical equipment in the medical sector and in industry means reliable operation is extremely important. Any equipment faults and malfunctions create high risks for people and equipment. It pays to guard against these risks by testing electrical safety on a regular basis. The UNIMET® 800ST is a compact, lightweight testing system for conducting tests in accordance with the upcoming IEC 62353 and the present DIN VDE 0751, ÖVE 8751, DIN VDE 0701 and DIN VDE 0702.

## Practice-oriented operation and application

- ▶ Quick, user-friendly control via touch screen
- ▶ Large, illuminated graphic display
- ▶ Graphic user interface
- ▶ Specification-oriented classification
- ▶ Language switchover
- ▶ Compact and convenient to carry

## Contribution to cost reduction

- ▶ Time saving due to automatic test procedures
- ▶ Test specifications created by the user
- ▶ Stored device protocols allow fast periodic testing
- ▶ Easy PC connection via RS-232
- ▶ PS/2 keyboard port, USB printer port

## Easy and fast protocol generation

- ▶ Printout via existing printer
- ▶ PC software for modern equipment management (optional)

## Standard compliance

- ▶ Periodic testing and pre-commissioning testing of medical electrical equipment or systems in accordance with the upcoming IEC 62353 and the present DIN VDE 0751-1:2001-10
- ▶ Electrical Equipment, "Repair, Modification and Testing of Electrical Equipment"  
DIN VDE 0701-1 Part 1:2000-09,  
"Periodic Testing on Electrical Devices"  
DIN VDE 0702-2 Part 1:1995-11



# – the universal testing system

## Easy handling

The basis of time and cost-saving testing with the UNIMET® 800ST are the integrated test specifications and device protocols files.

## Classification

In a dialogue between the test engineer and the UNIMET®800ST, the necessary test steps and the associated limit values for DUTs (device under test) not saved in the “Test specifications” folder are determined quickly and reliably. Saved in the “Test specifications” folder, this classification procedure is available for all other DUTs of the same type of construction.

## Test specifications

This folder contains a list of classification features of devices under type designations, e.g. AFX infusion pump.

For testing a new device, check the test specifications whether the device has already been listed.

Once the test has passed, the DUT (device under test) is stored in the “Device protocols” folder under its ID number. This saves an enormous amount of time in case of testing newly purchased equipment.

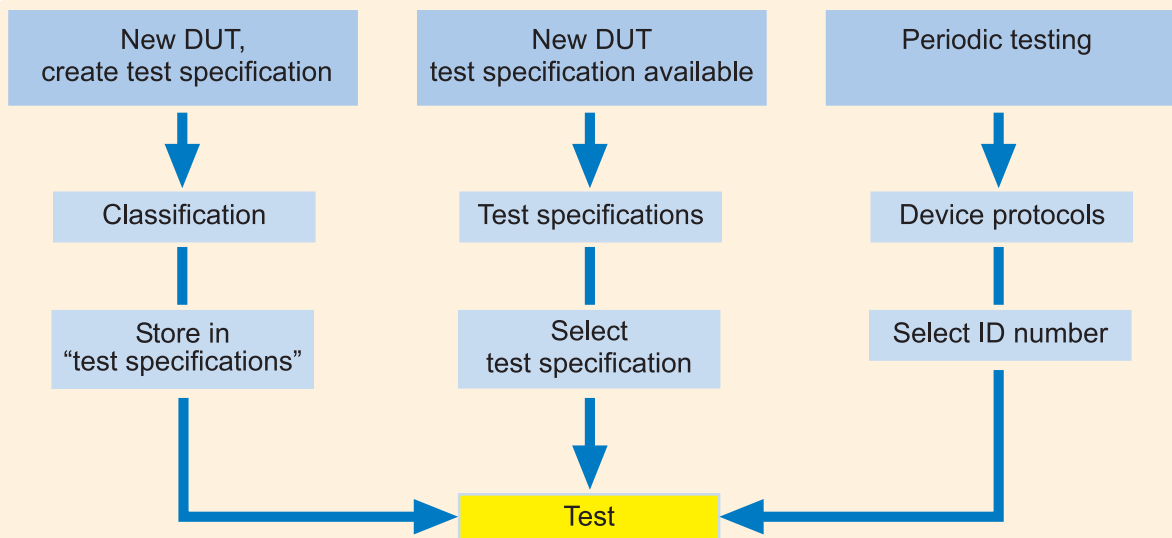
Another advantage is that all devices of the same type will be tested under the same conditions.

## Device protocols

The “Device protocols” folder contains measurements of the individual devices under their ID numbers.

For periodic testing, call up the ID number (on the keyboard) connect the DUT and perform the test – that’s all.

This is a real time saver for periodic testing. With this procedure and a clear “passed/failed” verdict reliable tests can even be performed by less experienced personnel who have merely received testing instruction.



# Application

The touch screen constitutes the main operator control of the UNIMET® 800ST. This proven man-machine interface allows user-friendly control and is a fast and reliable input medium. With the UNIMET® 800ST it is now possible to implement demands for cost and time-saving testing – with maximum reliability.

## Standard compliance

- ▶ Medical electrical equipment "Periodic testing" in accordance with the upcoming IEC 62353 and the current DIN VDE 0751-1:2001-10
- ▶ Electrical Equipment "Repair, Modification and Testing of Electrical Devices" DIN VDE 0701-1 Part 1:2000-09, "Periodic Tests on Electrical Devices" DIN VDE 0702-2 Part 1:1995-11

## Perfect customer service

- ▶ Calibration interval 36 months
- ▶ Hotline
- ▶ Software update

## Perfect device testing

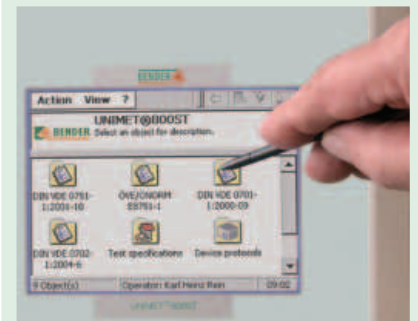
Here are the steps to take in order to ensure reliable test results:

- ▶ Select test specification from the "Device protocol" folder
- ▶ Connect the DUT
- ▶ Start the test. Visual inspection and functional test are integrated into test procedure.
- ▶ Read off result. Clear passed/failed verdict
- ▶ Print result
- ▶ Save result

## Documentation immediately or later

- ▶ No troublesome paperwork
- ▶ Test results can be documented immediately by printout or can be stored.
- ▶ Data memory for 3000 data records
- ▶ Results can be transferred to optional management software, or to Bender "Test data management software".

Touchscreen for operator control and display



Applied part socket    Test probe socket    Test socket



ON/OFF switch    Multi-functional interfaces PS/2, USB, RS-232, RS-485    Ethernet



# Measurements • Accessories

## Single measurements and regulations

Single measurement	IEC 62353	VDE 0751	VDE 0701	VDE 0702	Direct measurement.	Residual current measurement	TRMS	AC	DC
Protective conductor resistance (permanently installed and mobile equipment)	X	X	X	X				X	
Insulation resistance (protection classes I and II)	X	X	X	X					X
Insulation resistance (applied part – PE)	X	X							X
Substitute device leakage current (protection classes I and II)	X	X	X	X				X	
Substitute patient leakage current	X	X						X	
Device leakage current (protection classes I and II)	X	X			X	X	X		
Protective conductor current			X	X	X	X	X		
Touch current			X	X	X	X	X		
Patient leakage current	X	X						X	X
Patient leakage current with mains voltage on applied part	X	X						X	
Mains voltage	X	X	X	X				X	
Current input	X	X	X	X			X		
Apparent power	X	X	X	X			X		
Lead test	X	X	X	X					
<b>Application</b>									
Maintenance repair of electrical equipment			X						
Periodic testing of electrical equipment				X					
Periodic testing of medical electrical equipment	X	X							

## Standard accessories



Sturdy carrying bag



Test clip



Operating instructions in PDF format and test data management software



VK701-7



Passive test probe



Interface cable (Null modem)



Measuring cable

# Operation

## Connection of DUT

Via the test socket directly or via an adaptor for various mains connections.

Connection of 10 applied parts which can be grouped to suit requirements.

Maximum load 3600 VA

## Mains plug reversal

The reversal is conducted internally and automatically for the relevant test step.

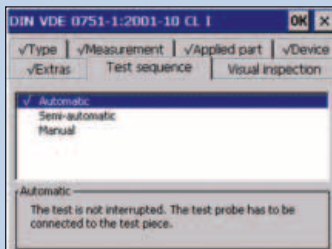
## Touch screen

Operator control via a Colour-touch screen graphic display. The display shows menus, possible settings, test results, information, error messages, help texts and connection configurations.



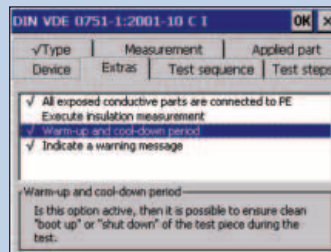
## Test procedure

Either fully automatic, semi-automatic or manual.

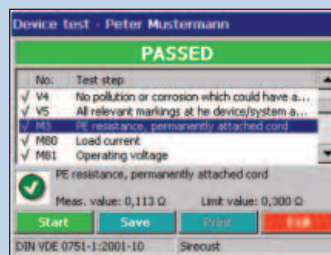


## Warm-up and cold-running phase

Manual starting and termination of the test for computerized DUTs.

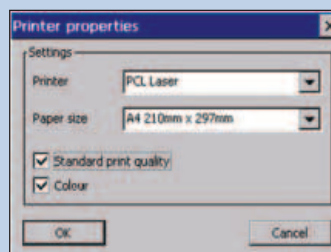


## Test result



## Protocols

All values required for an acceptance protocol or device log book are measured by the test device. The complete test protocol can be printed out on an external printer directly or saved in the data memory and printed out later. The protocol serves the user as evidence of regular maintenance and testing.



## Data memory

The flash memory can hold up to 3000 data records. The contents of the data memory can be transferred via an RS-232 interface in both directions.

## Functional test with performance analysis

Via the integrated test socket the DUT can be subjected to a functional test at mains voltage. The following parameters are measured or calculated automatically:

- mains voltage
- current input
- apparent power

## Interfaces

USB port for interfacing conventional PC printers

RS-232 interface for two-way data communication between device management programs, update operating software, remote function

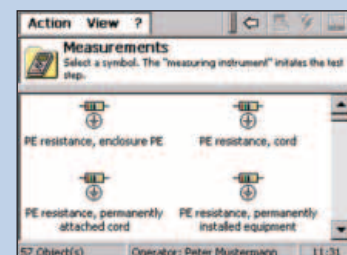
RS-485 interface (service)

PS/2 (keyboard port), barcode scanner

Ethernet (in preparation)

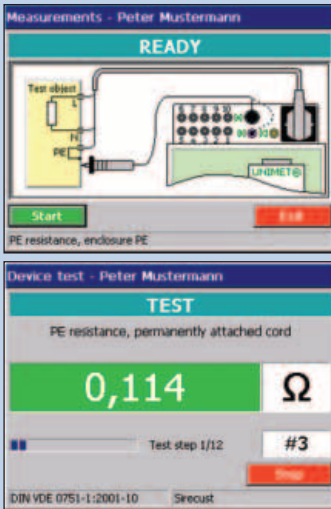
## Single measurements

All the measurements can be called up individually and implemented.



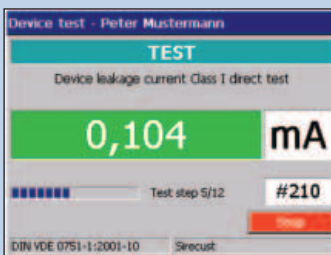
## Protective conductor test

Measurement of protective conductor resistance for portable and permanently installed devices.



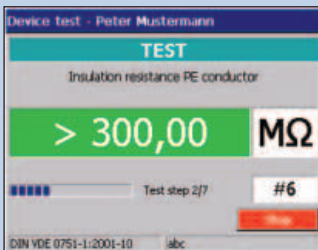
## Leakage current test

Measurement of device leakage current, residual current or device leakage current.



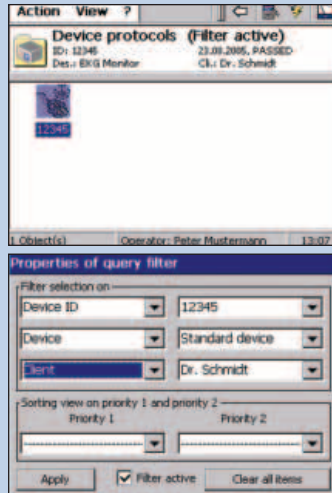
## Insulation test

Insulation resistance measurement.



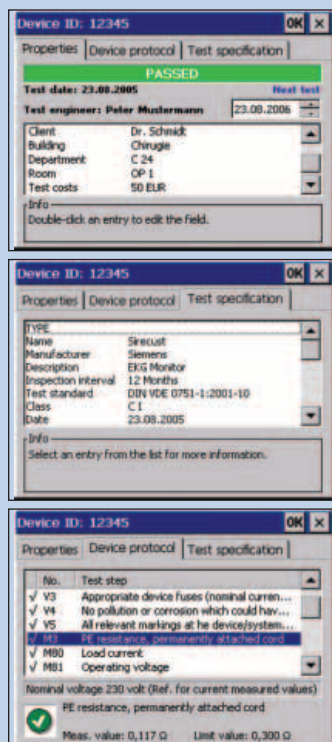
## Filter function

The integrated filter function can be used to select according to ID number, clients etc.



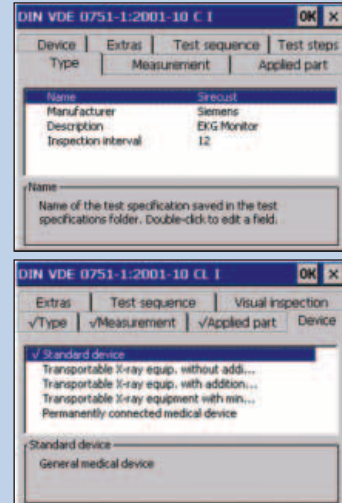
## Device protocols

Definition of limit values by classification and "Test specifications" folder. Retrieving of previously measured values.



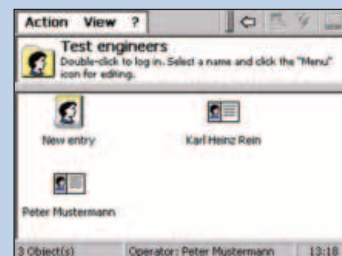
## Standard compliance

In the classification mode determination of standard-compliant limits through dialogue between test engineer and UNIMET®.



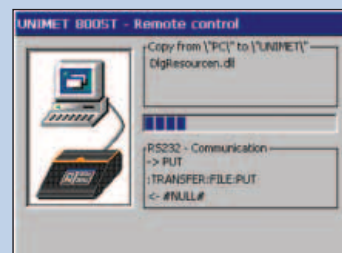
## Test engineer identification/test date

Real time clock for automatic recording of test date. Storage of the test engineer's name.



## Software update

Easy updates via RS-232 interface.



# Technical Data

## General data

Supply voltage	90...264 V AC
Frequency range	50...60 Hz
Power consumption	max. 80 VA
Ambient temperature in operation	0°C...+50 °C
Ambient temperature in storage	-10 °C...+70 °C
Dimensions (without bag)	approx. 168 x 272 x 124 mm (W x D x H)
Weight (without accessories and bag)	approx. 3.5 kg
Calibration interval	36 months

## Protective conductor resistance

Measuring range	0.001 Ω...29.999 Ω
Short-circuit current	> 5 A
Voltage	max. 8 V
Measuring accuracy	
0.001 Ω...1.0 Ω	± 2.5% of reading ± 2 digits
1.001 Ω...29.999 Ω	± 5% of reading ± 2 digits

## Insulation resistance

Measuring range	0.01...299.9 MΩ
Test voltage	DC max. 550 V
Test current	max. 2.5 mA
Measuring accuracy	± 5% of reading ± 2 digits

## Substitute leakage current

Measuring range	0.001...19.99 mA
Test voltage	AC max. 250 V
Test current	max. 2.5 mA
Measuring accuracy	± 5% of reading ± 5 digits

## Leakage current (residual current method)

Measuring range	0.02...19.999 mA
Measuring accuracy	± 5% ± 2 digits

## Voltage measurement

Measuring range	90...264 V
Frequency range	50...60 Hz
Measuring accuracy	± 2.5% ± 2 digits

## Load current measurement

Measuring range	0.01...16 A
Frequency range	50...60 Hz
Measuring accuracy	± 2.5% ± 3 digits

## Apparent power measurement

Measuring range	5...3600 VA
Frequency range	50...60 Hz
Measuring accuracy	± 2.5% ± 2 digits

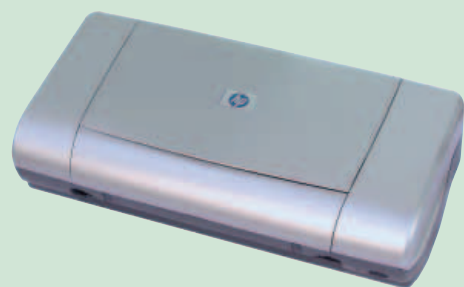
## Optional accessories

active testprobe – TP800



Art. No. B 9602 0080

Printer HP 460 CBI



Art. No. B 9602 0081



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