

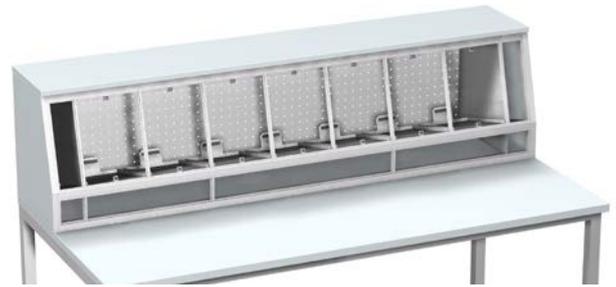


## CHAPTER 12: LS2000 INSTRUMENT RACKS & MODULES

- |            |                                                   |            |                                                    |
|------------|---------------------------------------------------|------------|----------------------------------------------------|
| <b>400</b> | LS2000 Standard Bench Rack                        | <b>418</b> | Variable AC Sources 1phase                         |
| <b>403</b> | LS2000 Bridge Bench Rack and Upper Attachment     | <b>420</b> | Variable AC Sources 3phase                         |
| <b>405</b> | Carrying Case, Power Cords and Sockets with Flap  | <b>422</b> | Motor Tester with Variacs                          |
| <b>406</b> | Blank Panels and Blank Plug-In Units              | <b>424</b> | Sinus Frequency Converter                          |
| <b>408</b> | Mains Panels and Emergency Stop Modules           | <b>425</b> | Fixed DC Supply and DC High Current Sources        |
| <b>409</b> | Socket Panels                                     | <b>426</b> | Lab Power Supply ICOM (Extended-Range and Linear)  |
| <b>410</b> | Socket Panels with Isolating Transformer          | <b>427</b> | Function Generator                                 |
| <b>411</b> | Socket Panels with Emergency Stop or Safety Jacks | <b>429</b> | Multimeter, Calibrator and LCR-Meter               |
| <b>412</b> | Socket Panels with CEE Outlet and Safety Jacks    | <b>430</b> | Digital Multimeter ICOM and Oscilloscope           |
| <b>413</b> | Measuring Unit with Analog - and Digital Reading  | <b>431</b> | Appliance Tester VDE 0701/0702                     |
| <b>414</b> | Continuity Tester                                 | <b>432</b> | Pressured Air Supply / Pressure Calibrator         |
| <b>415</b> | Soldering Station and Soldering Fume Extraction   | <b>433</b> | Pressure Calibrator with Electric Standard Signals |
| <b>416</b> | Soldering - / Desoldering Station UNIVERSAL       | <b>434</b> | Load Resistance and Test Speaker                   |
| <b>417</b> | R-Decade or L- and C-Decade                       |            |                                                    |

## LS2000 STANDARD BENCH RACK

- Light grey body made of 19mm melamine resin covered chipboard with tilted front.
- Aluminium frame for the integration of LS2000 plug-in units (LE) and 2x vertical modules (NE). The plug-in units directly contact the central wire harness when slid in. The plug-in units and modules are fixed with comfortable quick fasteners. LE divider can be removed to give room for double LE units.
- Lower section with aluminium frame for the acceptance of horizontal socket modules (WE) in size 1, 2, 3 and 4.
- Three-phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (durable powder coated) with 2 cable glands.
- Depth: 300mm / 385mm, height: 468mm.



LS2000 Standard Bench Rack 211. **BBB**. 500

### BBB Width

<b>036</b>	360mm / 1x NE + 1x LE + WE (size 2)	<b>126</b>	1260mm / 1x NE + 5x LE + 2x WE (size 3 + 4)
<b>058</b>	580mm / 1x NE + 2x LE + WE (size 3)	<b>148</b>	1485mm / 1x NE + 6x LE + 3x WE (size 1 + 2x size 4)
<b>081</b>	810mm / 1x NE + 3x LE + 2x WE (size 1 + 4)	<b>180</b>	1800mm / 2x NE + 7x LE + 3x WE (2x size 3 + size 4)
<b>103</b>	1030mm / 1x NE + 4x LE + 2x WE (size 2 + 4)	<b>200</b>	2000mm / 1x NE + 8x LE + 3x WE (3x size 1 + 2x size 4)

### Corner Solution:

**212.100. 500** Corner 1000 x 1000mm / 2x NE + 3x LE + 2x WE (size 2 + 4)



## LS2000 BENCH RACK WITH WE BOARD

- Equipment WE Board: 2x WE size 3 + 1x WE size 4.
- Width: 1800mm; depth: 300/385mm; height: 134/468mm.

LS2000 Bench Rack with WE Board 221.0**BB**.500

**BB Width**

58	1x NE + 2x LE left
59	1x NE + 2x LE right
81	1x NE + 3x LE left
82	1x NE + 3x LE right



1x NE + 2x LE left



1x NE + 2x LE right



▶ see LS2000 Standard Rack for details



1x NE + 3x LE left



1x NE + 3x LE right

## LS2000 BENCH RACK WITH SHELF

- Equipment WE Board: 2x WE size 3 + 1x WE size 4.
- Width: 1800mm; depth: 300mm/385mm; height: 468mm.

LS2000 Bench Rack with Shelf 222.**BBB**.500

**BBB Width**

058	1x NE + 2x LE left
059	1x NE + 2x LE right
081	1x NE + 3x LE left
082	1x NE + 3x LE right
126	1x NE + 5x LE left
127	1x NE + 5x LE right



1x NE + 2x LE left



1x NE + 2x LE right



1x NE + 3x LE left



1x NE + 3x LE right



1x NE + 5x LE left



1x NE + 5x LE right



▶ see LS2000 Standard Rack for details



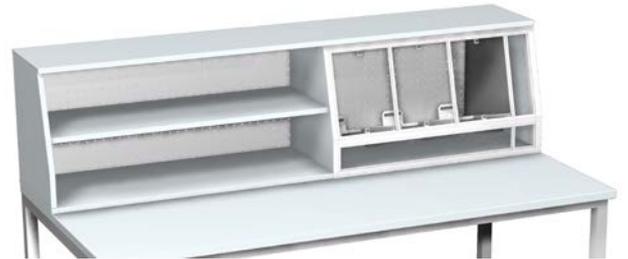
## LS2000 BENCH RACK WITH END SHELF

- Width: 1800mm; depth: 300/385mm; height: 468mm.

LS2000 Bench Rack with End Shelf 223. **BBB**.500

**BBB Breite**

058	1x NE + 2x LE + 1x WE (size 3 left)
059	1x NE + 2x LE + 1x WE (size 3 right)
081	1x NE + 3x LE + 1x WE (size 4 left)
082	1x NE + 3x LE + 1x WE (size 4 right)
126	1x NE + 5x LE + 2x WE (size 3 + 4 left)
127	1x NE + 5x LE + 2x WE (size 3 + 4 right)



▶ see LS2000 Standard Rack for details



## LS2000 BENCH RACK WITH MIDDLE SHELF

- Width: 1800mm; depth: 300/385mm; height: 468mm.

LS2000 Bench Rack with Middle Shelf 224.0 **BB**. 500

**BB Width**

36	2x NE + 2x LE + 2x WE (2x size 2)
58	2x NE + 4x LE + 2x WE (2x size 3)

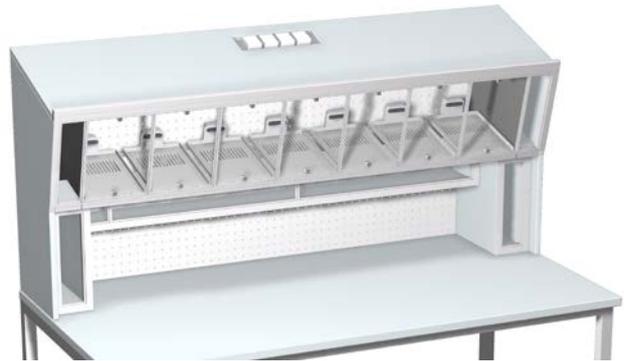


▶ see LS2000 Standard Rack for details



## LS2000 BRIDGE BENCH RACK

- Body with tilted front made of light grey 19mm melamine resin covered chipboard.
- The top is tilted by 15° and can be used as instrument shelf. It is equipped with stop edge and 4 incorporated sockets with flap.
- Aluminium frame for the integration of LS2000 plug-in units (LE) and vertical modules (NE). The plug-in units directly contact the central wire harness when slid in. The plug-in units and modules are fixed with comfortable quick fasteners.
- Three-phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (durable powder coated) with 2 cable glands.



LS2000 Bridge Bench Rack 229.BBB.5 E 0

### BB Width

126	1260mm / 3x NE + 5x LE
148	1485mm / 3x NE + 6x LE
180	1800mm / 4x NE + 7x LE

### E Version

0	with WE Board (only 1485mm and 1800mm)
1	no WE Board

### Corner:

500	Eck 1000 x 1000 / 3x LE
-----	-------------------------



3x NE + 5x LE



3x NE + 6x LE  
+ WE 2x size 3



4x NE + 7x LE



4x NE + 7x LE  
+ WE 1x size 1 + 2x size 4

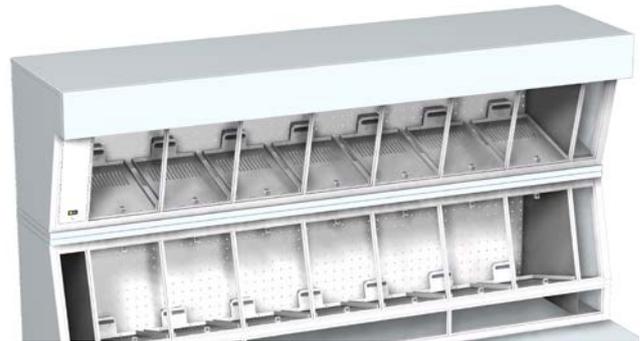


3x LE



## LS2000 UPPER ATTACHMENT UNIT WITH LAMP

- Body with tilted front made of light grey 19mm melamine resin covered chipboard.
- The attachment unit is equipped with a fluorescent lamp (36W) behind the top panel, switchable with integrated illuminated 2poles switch.
- Aluminium frame for the integration of LS2000 plug-in units (LE) and vertical modules (NE). The plug-in units directly contact the central wire harness when slid in. The plug-in units and modules are fixed with comfortable quick fasteners.
- Three-phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (durable powder coated) with 2 cable glands.
- Depth: 500/ 385/ 300mm; height: 470mm.



LS2000 Upper Attachment Unit with Lamp

228. **BBB**. 500

### **BBB** Width

**126** 1260mm / 5x LE

**148** 1485mm / 6x LE

**180** 1800mm / 1x NE + 7x LE

**200** 2000mm / 8x LE



5x LE



6x LE



1x NE + 7x LE



8x LE



## CARRYING CASES FOR LS2000

- Sheet steel housing, durable light grey powder coated with carrying handle.
- With LS2000 quick fasteners, guiding rails and rear sided terminal block. Power cable with earth protected 1phase - or 3phase plug.
- Dimension: 340 x 340mm (HxD).



Carrying Case for LS2000	
294.001.100	LE (W: 248mm)
294.001.200	Double-LE (W: 473mm)

## CONNECTING CABLES

Connecting Cables	
291.001.100	5m (3x1,5mm <sup>2</sup> ) with open end
291.001.150	5m (5x2,5mm <sup>2</sup> ) with open end
291.001.200	3m (3x1,5mm <sup>2</sup> ) with Type F plug
291.001.250	5m (3x1,5mm <sup>2</sup> ) with Type F plug
291.001.256	5m (3x1,5mm <sup>2</sup> ) with Type G plug (British)
291.001.258	5m (3x1,5mm <sup>2</sup> ) with NEMA 15 plug (British)
291.001.300	5m (5x2,5mm <sup>2</sup> ) with CEE plug 16A, red
291.001.350	5m (5x6mm <sup>2</sup> ) with CEE plug 32A, red
291.001.400	5m (3x1,5mm <sup>2</sup> ) with CEE plug, 3poles, blue
291.001.500	5m Emergency Stop Cable (2x1,5mm <sup>2</sup> ), open end
291.001.550	3m Emergency Stop Cable (2x1,5mm <sup>2</sup> ), open end
291.001.603	3m Patch Cable, grey with 2x RJ45 Plug CAT 6
291.001.605	5m Patch Cable, grey with 2x RJ45 Plug CAT 6
291.001.610	10m Patch Cable, grey with 2x RJ45 Plug CAT 6



flexible cables with / without plug completely connected to bench rack

► international plugs available

## TOPMOUNT SOCKET UNIT WITH FLAPS

- PE socket module with flaps, recessed mounted into the wooden body of the bench rack and connected to the central rack supply.

Topmount Socket Unit with Flaps	
291.006.401	4x PE Sockets
291.006.201	2x PE Sockets



## LAMP ADAPTER

- Durable plastic adapter for armed lamps, flush integrated into the wooden bench rack.
- Diameter: 13mm.

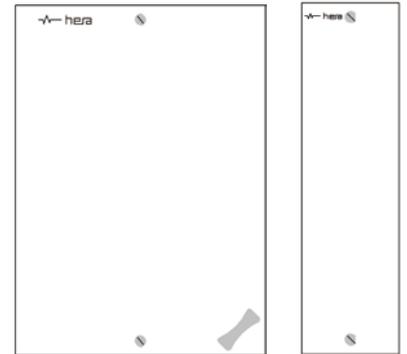
Lamp Adapter	
291.003.100	for LS2000 Standard Bench Rack
291.003.150	for LS2000 Bridge Bench Rack



### LS2000 BLANK PANELS

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silkscreen printing and fixing bolts.
- NE = vertical module H: 85 x 310mm (WxH).
- WE = horizontal module H: 85mm
  - size 1 = W: 85mm
  - size 2 = W: 310mm
  - size 3 = W: 535mm
  - size 4 = W: 670mm
- LE = LS2000 panel 219 x 310mm (WxH) or Double-LE panel 444 x 310mm (WxH).

Blank Panel	
233.100.100	WE size 1
233.200.100	WE size 2
233.300.100	WE size 3
233.400.100	WE size 4
231.000.100	NE
241.000.100	LE
241.000.300	Double-LE



### LS2000 EMPTY PLUG-IN UNIT

- Aluminium front panel, creme white powder coated, with abrasion and chemical resistant silkscreen printing, metal handle and fixing bolts.
- Chassis with side and bottom.
- Rear side with 12poles connector.
- Depth: 260mm.

Empty Plug-In Unit	
241.000.200	LE
241.000.400	Double-LE



# THE CLASSIC - FOR A MAXIMUM OF TECHNOLOGY

LS2000 is the classic laboratory system. It was the first modular system with integrated instruments and still it is No. 1 in many fields. All our modules are available in LS2000 technology. The system is characterized by bench top mounted racks with hardwearing technology in spacious A4 or A3 module size.

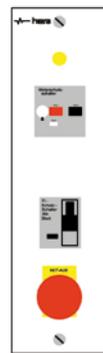


## LS2000 MAINS PANEL

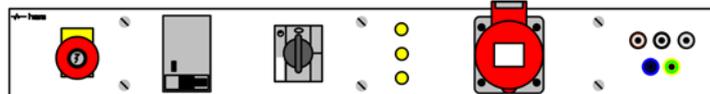
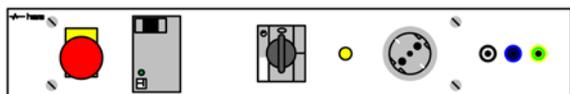
- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- Voltage control lamps.
- Motor circuit breaker 16A with undervoltage release.
- RCD 25A / 30mA.
- Type A or Type B (recommended for educational institutions according to VDE 0100-723).
- Mushroom-type buttons with NCC, either rotation release or key-release.
- Other rated currents or voltages available!



LS2000 Mains Panel NE	
231.062.100	1phase, RCD Type A, Emergency Stop, Key Release
231.062.102	1phase, RCD Type A, Emergency Stop, Rotation Rel.
231.062.103	1phase, RCD Type B, Emergency Stop, Rotation Rel.
231.062.104	1phase, RCD Type B, Emergency Stop, Key Release
231.072.100	3phase, RCD Type A, Emergency Stop, Key Release
231.072.102	3phase, RCD Type A, Emergency Stop, Rotation Rel.
231.072.103	3phase, RCD Type B, Emergency Stop, Rotation Rel.
231.072.104	3phase, RCD Type B, Emergency Stop, Key Release



LS2000 Mains Panel WE	size 3, 1phase	size 3, 3phase	size 4, 1phase	size 4, 3phase
RCD, Type A, Emergency Stop, Key Release	232.362.101	232.312.400	232.462.101	232.412.400
RCD, Type A, Emergency Stop, Rotation Release	232.362.102	232.312.402	232.462.102	232.412.402
RCD, Type B, Emergency Stop, Key Release	232.362.103	232.312.403	232.462.103	232.412.403
RCD, Type B, Emergency Stop, Rotation Release	232.362.104	232.312.404	232.462.104	232.412.404

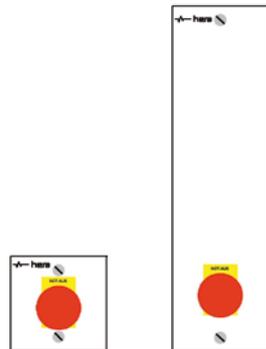


▶ other rated currents or voltages available!

## LS2000 MODULE WITH EMERGENCY STOP BUTTON

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- Mushroom-type button with NCC, unwired.

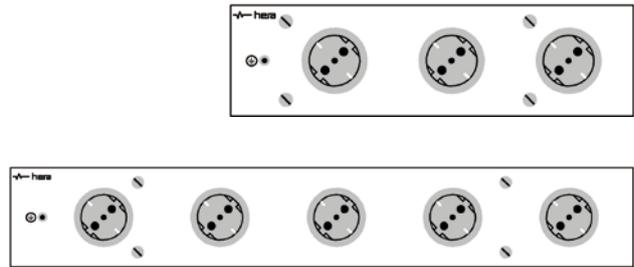
Module with Emergency Stop Button	
231.006.300	NE
233.106.300	WE size 1



## LS2000 SOCKET PANEL

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- 1phase PE sockets, type F, 45° positioned (other international standard available).

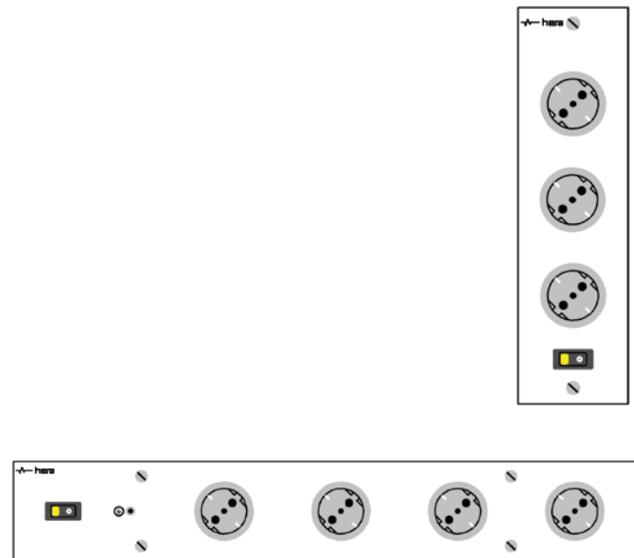
Socket Panel WE	
233.220.101	size 2 / 3x PE sockets
233.320.101	size 3 / 5x PE sockets
233.420.101	size 4 / 6x PE sockets



## LS2000 SOCKET PANEL WITH SWITCH

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Illuminated 2poles switch.

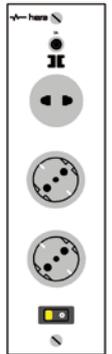
Socket Panel with Switch	
231.221.101	NE / 3x PE sockets
233.221.101	WE size 2 / 2x PE sockets
233.321.101	WE size 3 / 4x PE sockets
233.421.101	WE size 4 / 5x PE sockets



► international sockets available!

## LS2000 SOCKET PANEL WITH ISOLATING TRANSFORMER

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- Toroidal core transformer 700VA for the supply of floating AC voltage 230V/3A. Protected by front side operated thermomagnetic fuse.
- Output at universal socket (Type F, Franco-American) without protective earth.
- PE socket type F, 45° positioned (other international standards available).
- Illuminate 2poles switch.

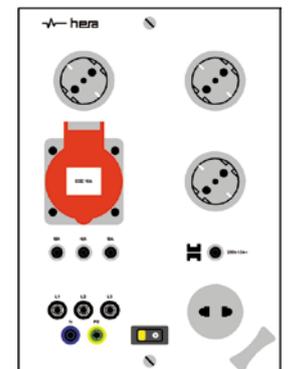
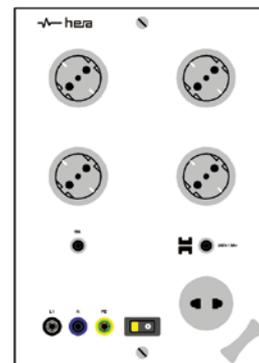


Socket Panel with Isolating Transformer	
231.221.301	NE / 1x Universal Socket + 2x PE sockets
233.321.301	WE size 3 1x Universal Socket + 3x PE sockets
233.421.301	WE size 4 1x Universal Socket + 4x PE sockets



## LS2000 SOCKET MODULE AND ISOLATING TRANSFORMER

- Plug-in unit with aluminium front panel creme white powder coated; abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- Toroidal core transformer 700VA for the supply of floating AC voltage 230V/3A. Protected by front side operated thermomagnetic fuses.
- Output at universal socket (Type F, Franco-American) without protective earth.
- 1 phase PE socket type F, 45° positioned (other international standards available), optionally with 3phase CEE socket.
- 4mm safety jacks.
- Illuminated 2poles switch.



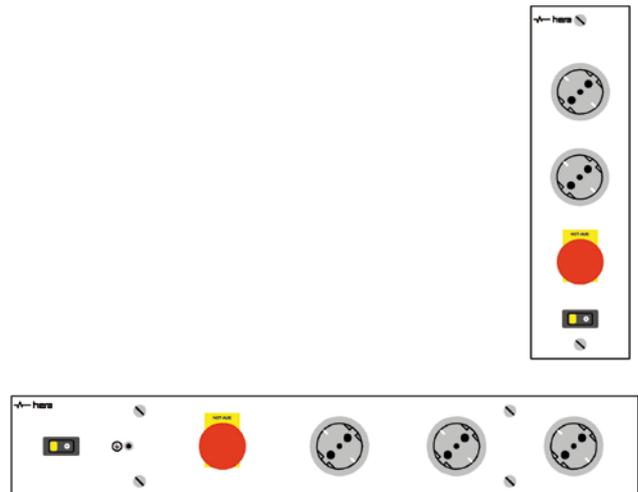
Socket Module and Isolating Transformer	
241.229.101	LE 1 phase, 1x Universal, 4x PE sockets
241.389.301	LE / 3phase 1x Universal, 1x CEE, 3x PE sockets



## LS2000 SOCKET PANEL AND EMERGENCY STOP BUTTON

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- Emergency Stop button with NCC, unwired.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Illuminated 2poles switch.

Socket Panel with Emergency Stop	
231.221.401	NE / 2x PE sockets; Emergency Stop
233.321.401	WE size 3 / 3x PE sockets; Emergency Stop
233.421.401	WE size 4 / 4x PE sockets; Emergency Stop



## LS2000 SOCKET PANEL WITH SAFETY JACKS

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- 3x 4mm safety jacks (L, N and PE).
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Illuminated 2poles switch.

Sockets with Safety Jacks	
233.321.501	WE size 3 / 3x PE sockets and Safety Jacks
233.421.501	WE size 4 / 4x PE sockets and Safety Jacks



## LS2000 SOCKET PANEL WITH CEE SOCKET AND SWITCH

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- CEE socket, straight 400V /16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Illuminated 2poles switch.

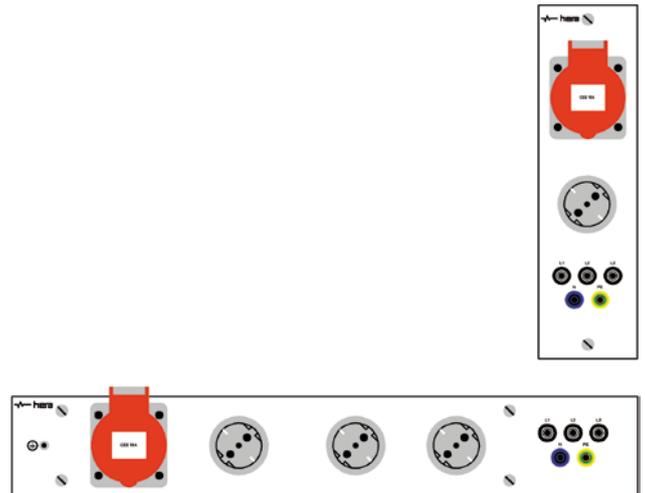
Socket Panel with CEE Socket and Switch	
233.341.401	WE size 3 / 2x PE sockets
233.441.401	WE size 4 / 3x PE sockets



## LS2000 SOCKET PANEL WITH 3 PHASE CEE SOCKET AND SAFETY JACKS

- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- 1phase PE sockets, type F, 45° positioned (other international standard available).

Socket Panel with 3phase CEE Socket and Safety Jacks	
231.240.401	NE / 1x PE socket
233.340.401	WE size. 3 / 3x PE sockets
233.440.401	WE size 4 / 4x PE sockets



## LS2000 SOCKET PANEL WITH 3PHASE CEE SOCKET AND SWITCH

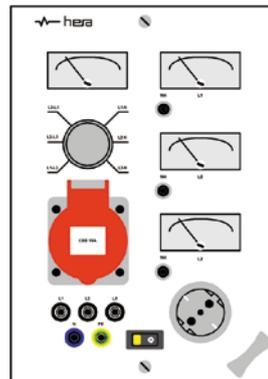
- Aluminium front panel creme white powder coated with abrasion proofed and chemical resistant silkscreen printing and fixing bolts.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Illuminated 2poles switch with contactor.

Socket Panel with 3phase CEE Socket and Switch	
233.341.201	WE size 3 / 3x PE sockets
233.441.201	WE size 4 / 4x PE sockets



## LS2000 ANALOG MEASURING MODULE

- Analog voltage reading (moving iron class 1,5) with measuring point selector.
- 3x analog current readings (moving iron class 1,5) for L1,L2, L3.
- 3x front side operated thermomagnetic fuses 10A.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- Illuminated 2poles switch with contactor.

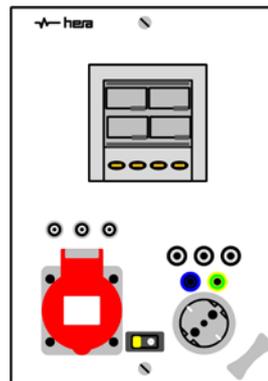


241.389.401

Analog Measuring Module LE

## LS2000 MULTIFUNCTIONAL MEASURING MODULE

- Multifunctional unit with graphic-LCD, consisting of variably programmable readings and four buttons.
- Optionally with USB interface.
- 3x front side operated thermomagnetic fuses 10A.
- 1phase PE socket, type F, 45° positioned (other international standard available).
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- Illuminated 2poles switch with contactor.



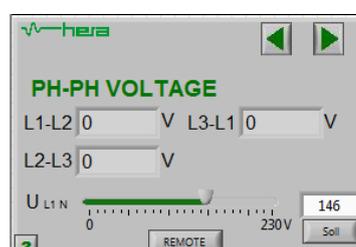
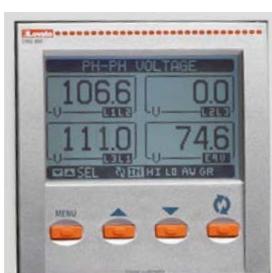
### Multifunctional Measuring Module

241.389.502 LE / with USB Interface

241.389.602 LE / no USB Interface

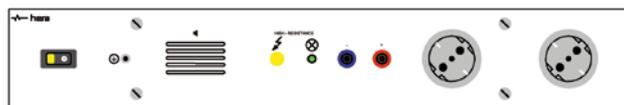
### Technical Data to Multifunctional Display:

- Display 96 x 96mm with graphic-LCD 128 x 80 Pixel and 4x control buttons.
- Voltage TRMS (phases -, system - and phase-to-phase voltages); accuracy:  $\pm 0,2\%$ .
- Phase current TRMS (calculated current of neutral); accuracy:  $\pm 0,2\%$ .
- Power (active -, reactive -, apparent power each phase and in total); accuracy:  $\pm 0,5\%$  of active values.
- Power factor (each phase and in total); accuracy:  $\pm 0,5\%$ .
- Frequency (frequency measurement of measured voltage); accuracy:  $\pm 0,05\%$ .
- High - and Low value of the actual measured voltage, current, power, power factor and frequency.
- Total harmonic distortion (THD) of voltages and currents.
- Harmonic analyse of current and voltage up to 31rd harmonic wave.
- Counter for active , reactive and apparant power (part and total counter) with programmed tariff fucitons.
- Hour counter (total and service hours, programmable).



## LS2000 ELECTRONIC CONTINUITY TESTER

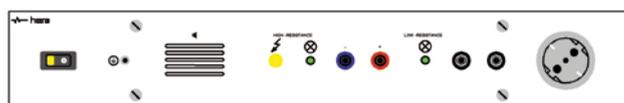
- High ohmic, electronic continuity tester, poled.
- Resistance range: 0...200kΩ with acoustic signal (sound alternation at resistance change) and optic signaling.
- External voltage protected and lamp indication.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Output at 4mm safety jacks.
- Illuminated 2poles switch.



Electronic Continuity Tester	
234.321.501	WE size 3 / 2x PE socket
234.421.501	WE size 4 / 3x PE socket
277.205.000	LE

## LS2000 ELECTRONIC / ELECTRIC CONTINUITY TESTER

- High ohmic, electronic continuity tester, poled.
- Resistance range: 0...200kΩ with acoustic signal (sound alternation at resistance change) and optic signaling.
- External voltage protected and lamp indication.
- Electric continuity tester for low ohmic tests with 24V<sub>AC</sub>.
- Indicated with lamp.
- 1phase PE sockets, type F, 45° positioned (other international standard available).
- Output at 4mm safety jacks.
- Illuminated 2poles switch.

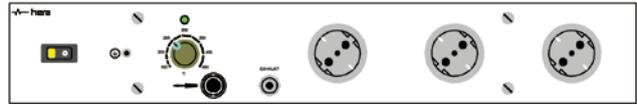


Electric / Electronic Continuity Tester	
234.321.601	WE size 3 / 1x PE socket
234.421.601	WE size 4 / 2x PE socket
277.205.100	LE



## LS2000 ANALOG SOLDERING STATION

- Professional Weller soldering station 24V/ 80W with electrical temperature control.
- Stepless adjustable temperature control via potentiometer between 150°C and 450°C with temperature control LED.
- Antistatic soldering tool WSP of Weller and stand with sponge.
- Connector for soldering fume extractor.
- Version with 120V available!

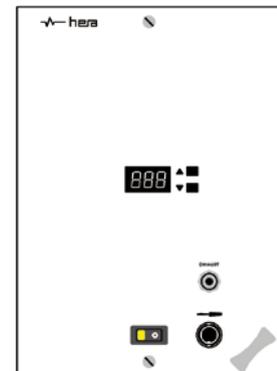


Analog Soldering Station	
234.352.501	WE size 3 / 3x PE sockets
234.452.101	WE size 4 / 3x PE sockets
280.004.101	LE

## LS2000 DIGITAL SOLDERING STATION

- Microprocessor controlled Weller soldering station (24V/ 80W) with automatic soldering tool identification.
- Stepless adjustable temperature control with up/ down button, adjustable between 50°C and 450°C.
- 3digit LED display for nominal and actual temperature.
- Antistatic soldering tool WSP80 of Weller with stand and sponge.
- Connector for soldering fume extractor.
- Version with 120V available!

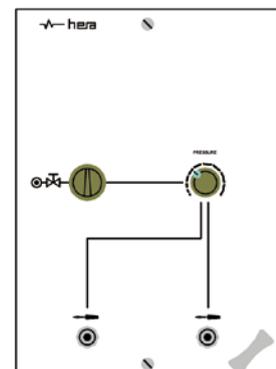
280.005.101	Digital Soldering Station LE
-------------	------------------------------



## LS2000 PNEUMATIC SOLDERING FUME EXTRACTION

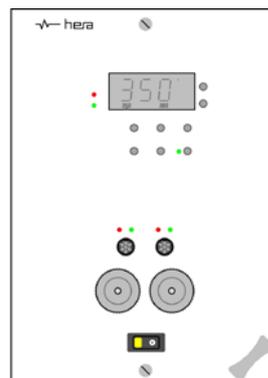
- Integrated soldering fume extraction pump with filter.
- Rear side with pneumatic connector.
- Control valve for suction adjustment and closing valve.
- 2x Air extraction connectors for soldering tools.

280.005.900	Soldering Fume Extraction LE
-------------	------------------------------



## LS2000 UNIVERSAL SOLDERING / DESOLDERING STATION

- Universal repair station for professional work with electronic modules in industrial manufacturing and repair.
- The station has two individual tool-specific channels with automatic tool identification and activation of the respective control parameters. Soldering and desoldering or soldering with hot air is possible at the same time.
- Integrated rotary vane pump for suction or flow (max. vacuum 0,7 bar; max. flow qty 18 l/min).
- Freely programmable buttons for repeating functions.
- LC display.
- EGB safe.
- ECO-button.
- Temperature control: 50°C – 550°C.
- For a variety of Weller soldering tools up to 200W.
- Version with 120V available!



Accessory	
380.000.100	Soldering Set 80W (lead free soldering) (Soldering Tool WP80, Safety Stand)
380.000.200	Soldering Set 120W (Soldering Tool WP120, Safety Stand)
380.000.300	Desoldering Set 80W (lead free soldering) (Desoldering Tool, Safety Stand, Cleaning Kit)
380.000.400	Desoldering Set 120W (lead free soldering) (Desoldering Tool, Safety Stand, Cleaning Kit)
380.000.500	Hot Air Set 100W (Hot Air Tool, Safety Stand, Nut Driver for Nuzzle Changing)

**280.001.501 Universal Soldering / Desoldering Station LE**



Soldering Set



Desoldering Set



Hot Air Set



## LS2000 R-DECADE

- 8x decade switches with precision resistors in the range of 1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V<sub>AC</sub>; max. current: 0,5A.
- 9x 4mm safety jacks for resistance taps.
- 1phase PE sockets, type F, 45° positioned (other international standard available).

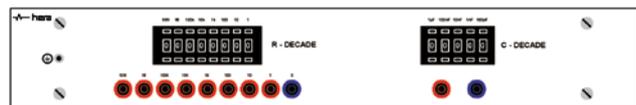


R-Decade	
234.341.100	WE size 3 / 2x PE sockets
234.441.100	WE size 4 / 3x PE sockets
277.003.300	LE

## LS2000 R- AND C-DECADE

### R-Decade:

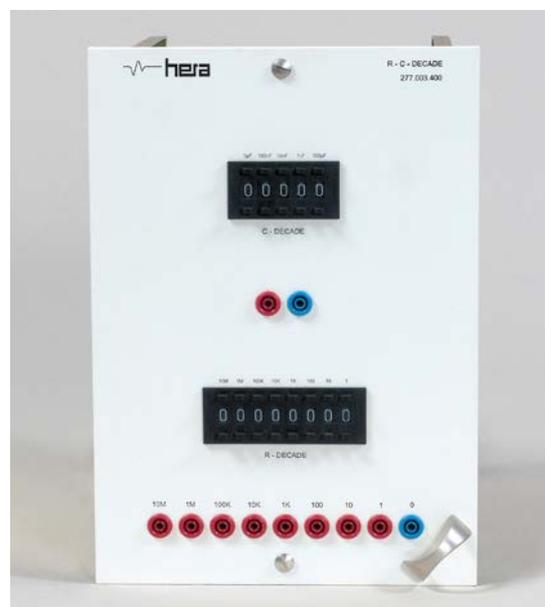
- 8x decade switches with precision resistors in the range of 1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V AC; max. current: 0,5A.
- 9x 4mm safety jacks for resistance taps.



### C-Decade:

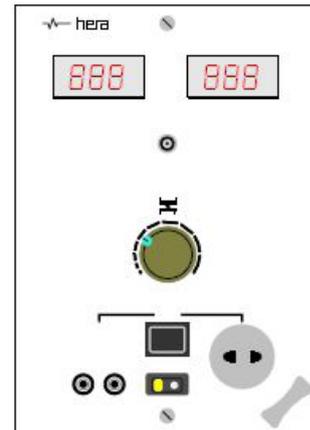
- 5x decade switches for precision capacitors in the range of 100pF, 1nF, 10nF, 100nF, 1μF
- Accuracy: 5% +75 pF.
- Max. voltage: 200V AC; max. current: 0,5A.
- 2x 4mm safety jacks for capacity taps.

R- and C-Decade	
234.341.200	WE size 3
234.441.200	WE size 4
277.003.400	LE



## LS2000 MODULE WITH FLOATING AC SOURCE, 1PHASE

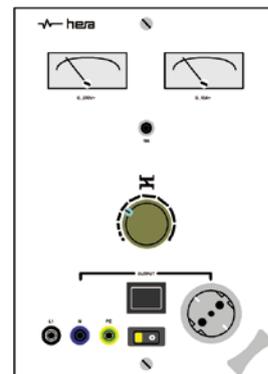
- Variac with downstream connected isolating transformer for a floating output voltage of 0...100%. Protected by a front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks or universal socket (Type F, Franco-American) without protective earth.
- Current - and voltage reading
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS  
accuracy: 0,5% +/- 1 digit.
- Illuminated 2poles switch.



Floating AC Source 1phase		242.2 <b>SS</b> <b>A</b> 01	
<b>SS</b> Type		<b>A</b> Version	
53	0-270V / 3A LE	1	analog
56	0-270V / 5A LE	5	digital
76	0-270V / 16A Double-LE (3phase required)		

## LS2000 MODULE WITH AC SOURCE, 1PHASE

- Variac for an output voltage of 0...100%. Protected by front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks or socket with protective earth (different international standards available).
- Current - and voltage reading
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS  
accuracy: 0,5% +/- 1 digit.
- Illuminated 2poles switch.

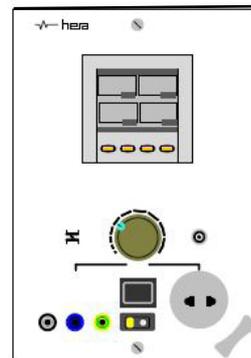


AC Source, 1phase	LE
242.259.101	LE / 0-270V / 10A analog
242.259.501	LE / 0-270V / 10A digital



## LS2000 AC SOURCE, 1PHASE, FLOATING WITH MULTIFUNCTIONAL DISPLAY

- Variac and isolating transformer for an output voltage of 0...100%. Protected by front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks or universal socket (Type F, Franco-American) without protective earth.
- Multifunctional unit with graphic-LCD, consisting of variably programmable readings and four buttons. For measurement of current, voltage, active -, reactive -, apparent power, mains frequency and energy.
- Optionally with USB interface .
- Illuminated 2poles switch.



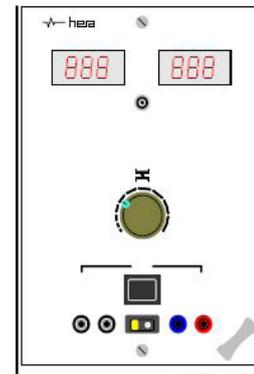
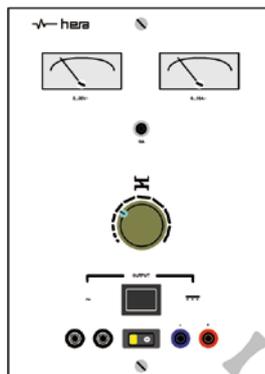
AC Source, 1phase with Multifunctional Display

242.253.602	LE / 0-270V / 3A
242.256.602	LE / 0-270V / 5A
242.276.602	Double-LE / 0-270V / 16A
242.276.702	Double-LE / 0-270V / 16A with USB Interface

► **Note: Article No. 242.276.601 and 242.276.701 need 3phase supply!**

## LS2000 AC/ DC SOURCE, 1PHASE

- Variac for an output voltage of 0...100%. Floating type with isolating transformer. Protected by a front side operated thermomagnetic fuse.
- Switchable bridge rectifier for a pulsating DC voltage with 48% ripple.
- AC - and DC output at 4mm safety jacks.
- Current - and voltage reading
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS
  - accuracy: 0,5% +/- 1 digit.
- Illuminated 2poles switch.



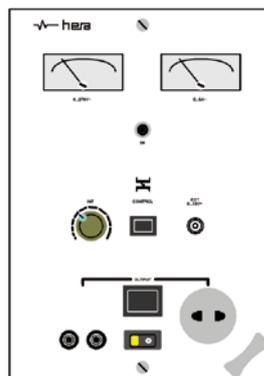
AC/DC Source, 1phase LE

246.039.101	LE / floating 0-30V / 10A analog
246.253.101	LE / floating 0-270V / 3A analog
246.253.201	LE / floating 0-270V / 3A + 0-60V / 10A analog
246.253.401	LE / floating 0-270V / 3A + 0-60V / 10A digital
246.256.101	LE / floating 0-270V / 5A analog
246.256.501	LE / floating 0-270V / 5A digital
246.259.101	LE / non-floating 0-270V / 10A analog



## LS2000 STABILIZED AC SOURCE, 1PHASE

- Motor driven variac with isolated windings (set time: approx. 10sec. over the full range) for a floating output voltage between 0...100%. Protected by front side operated thermomagnetic fuse.
- Electronic voltage stabilization, accuracy: 1,5% of final value.
- Control input 0...10V<sub>DC</sub> for the external adjustment of the output voltage.
- Selector switch for output at 4mm safety jacks and universal socket (Type F / Franco-American) without protective earth.
- Current - and voltage reading
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS accuracy: 0,5% +/- 1 digit.
- Illuminated 2poles switch.



Stabilized AC Source, 1phase	LE
252.256.101	LE / 0-270V / 5A analog
252.256.401	LE / 0-270V / 5A digital

## LS2000 VARIABLE AC SOURCE, 3PHASES

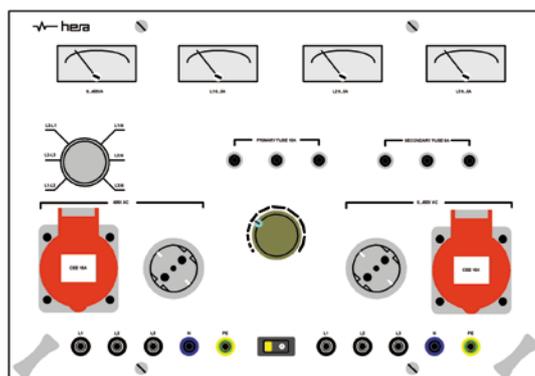
- Star-connected 3phase variac for an output voltage between 0...100%. Protected by front side operated thermomagnetic fuses.

Fixed Outputs:

- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x PE socket type F (other standards available).

Variable Outputs:

- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x PE socket type F (other standards available).
- 3x current display L1, L2, L3 and 1x voltage reading with measuring point selector
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS accuracy: 0,5% +/- 1 digit.
- Illuminated 2poles switch with contactor.

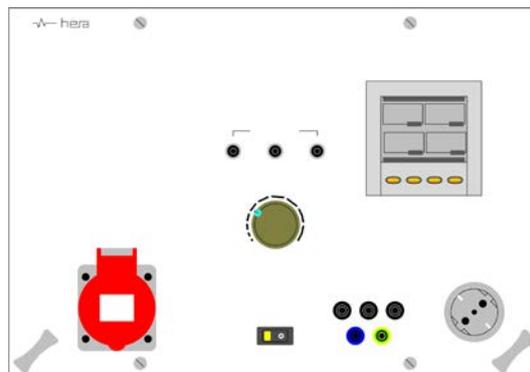


Variable AC Source, 3phases	Double-LE
243.385.301	0-450V / 5A
243.389.301	0-400V / 10A
243.385.501	0-450V / 5A
243.389.501	0-400V / 10A



## LS2000 AC SOURCE, 3PHASES WITH MULTIFUNCTIONAL DISPLAY

- Star-connected 3phase variac for an output voltage between 0..100%. Protected by front side operated thermomagnetic fuse.
- 1x CEE- socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x PE socket type F (other standards available).
- Multifunctional unit with graphic-LCD, consisting of variably programmable readings and four buttons. For the measurement of current, voltage, active -, reactive - and apparent power, mains frequency and energy.
- Optionally with USB interface.
- Illuminated 2poles switch with contactor.

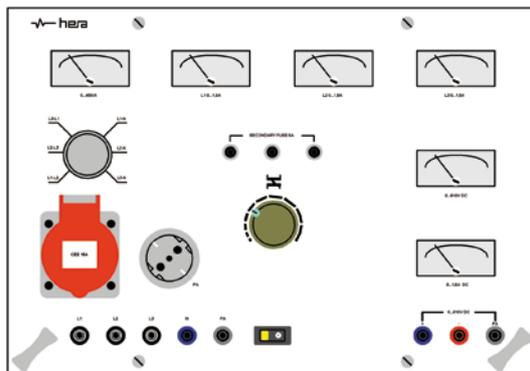


Variable AC Source, 3phase with Multifunctional Display

243.385.602	0-450V / 5A no Interface
243.385.702	0-450V / 5A with USB-Interface
243.389.602	0-400V / 10A no Interface
243.389.702	0-400V / 10A with USB-Interface

## LS2000 AC/DC SOURCE, 3PHASES

- Star-connected 3phase variac for an output voltage between 0...100%. Protected by front side operated thermomagnetic fuse.
- 1x CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x PE socket type F (other standards available).
- 3x current readings L1, L2, L3 and voltage reading with measuring point selector
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS accuracy: 0,5% +/- 1 digit.
- 6-point-rectifier (ripple 4,3 %).
- DC voltage - and DC current display.
- 4mm safety jacks for variable DC output (factor 1,35 of AC voltage).
- Illuminated 2poles switch with contactor.



AC/DC Source, 3phases

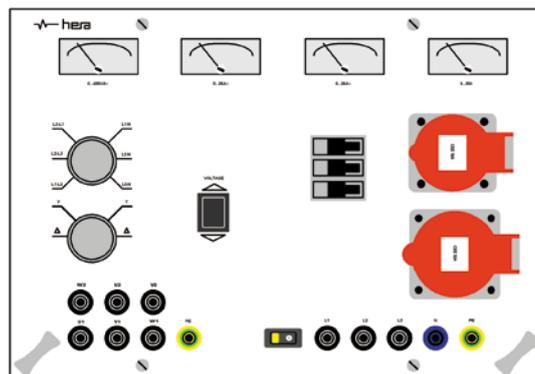
Double-LE

247.381.301	0-450V / 1,5A; floating, analog
247.385.301	0-450V / 5A analog
247.389.301	0-400V / 10A analog
247.385.501	0-450V / 5A digital
247.389.501	0-400V / 10A digital



### LS2000 MOTOR TESTER, ANALOG

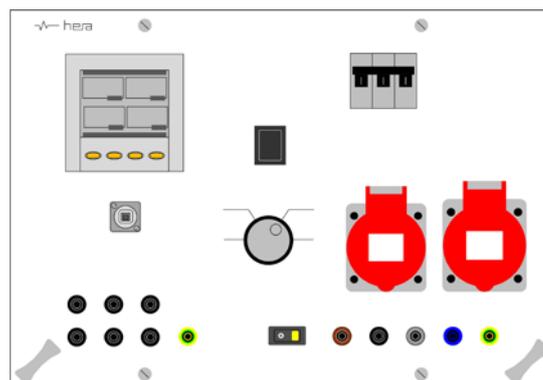
- Rocker switch for the stepless adjustment of the external variac (variac not included!).
- 7x high voltage jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and rotation direction selector switch.
- More output via high voltage jacks (L1, L2, L3, N, PE) and CEE socket.
- 3x analogue current reading L1, L2, L3 and voltage reading with measuring point selector (moving iron class 1,5).
- Illuminated switch with contactor.



Motortester analog		Double-LE	
285.381.101	16A	285.386.101	60A
285.382.101	25A	285.399.101	100A
285.384.101	40A		

### LS2000 MOTOR TESTER WITH MULTIFUNCTIONAL DISPLAY

- Rocker switch for the stepless adjustment of the external variac (variac not included!).
- 7x high voltage jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and rotation direction selector switch.
- More output via high voltage jacks (L1, L2, L3, N, PE) and CEE socket.
- Multifunctional unit with graphic-LCD, consisting of variably programmable readings and four buttons. For the measurement of current, voltage, active -, reactive - and apparent power, mains frequency and energy.
- Optionally with USB interface.
- Illuminated switch with contactor.



Motor Tester with Multifunctional Display		Double-LE	
285.381.701	16A	285.386.701	60A
285.382.701	25A	285.399.701	100A
285.384.701	40A		



## EXTERNAL VARIAC FOR MOTOR TESTER

- Sheet steel housing with swivel casters, two with brakes.
- Integrated motor driven 3phase variac with inrush current limiter.
- Input terminal and primary fuse.
- Terminal for motor tester with RCD.



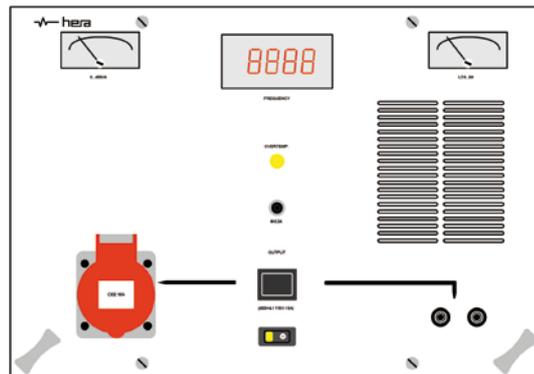
Variac for Motor Tester	
285.516.100	0-400V / 16A
285.525.100	0-400V / 25A
285.540.100	0-400V / 40A
285.550.100	0-400V / 50A
285.560.100	0-400V / 60A
285.599.100	0-400V / 100A



## LS2000 SINE FREQUENCY CONVERTER, 1PHASE

- In-phase controlled precision sine frequency converter (harmonic distortion <3%) for floating and stabilized output voltage ( +/- 2%).
- Selector switch for output on 4mm safety jacks or 3poles CEE socket.
- Analog voltage - and current display.
- Digital frequency - and status indication.
- Illuminated 2poles switch.

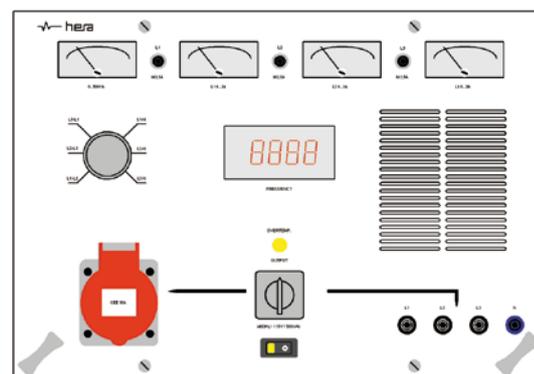
Sine Frequency Converter, 1phase	Double-LE
255.064.100	60Hz / 115V / 4A
255.406.100	400Hz / 115V / 6A



## LS2000 SINE FREQUENCY CONVERTER, 3PHASES

- 400Hz / 115V / 500VA.
- In-phase controlled 3phase precision frequency converter (harmonic distortion < 3%) for floating and stabilized output voltage ( +/- 2%).
- Selector switch for output on 4mm safety jacks or 5poles CEE socket.
- 3x analogue current reading L1, L2 and L3 and analogue voltage reading.
- Digital frequency - and status display.
- Illuminated switch with contactor.

256.402.100	Sine Frequency Converter Double-LE
-------------	------------------------------------



## LS2000 SINE FREQUENCY CONVERTER, 1PHASE

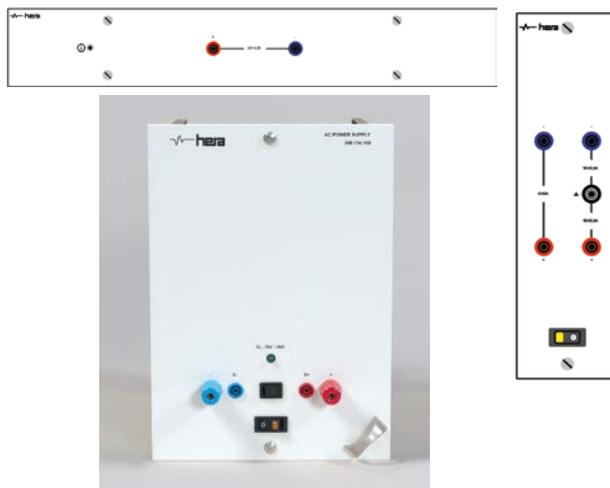
- Test socket for 115V and 230V, max. 1,8kVA.
- Selector switch for 50Hz and 60Hz.
- Overvoltage -, undervoltage -, overload -, overtemperature protection and LED indication.
- The device is used to convert the existing mains voltage into other mains voltage and Hz. In combination with other international standard sockets and the suitable current limiters, appliances for different country standards can be tested.



920.114.302	Sine Frequency Converter Double-LE
-------------	------------------------------------

### LS2000 FIXED DC SUPPLY

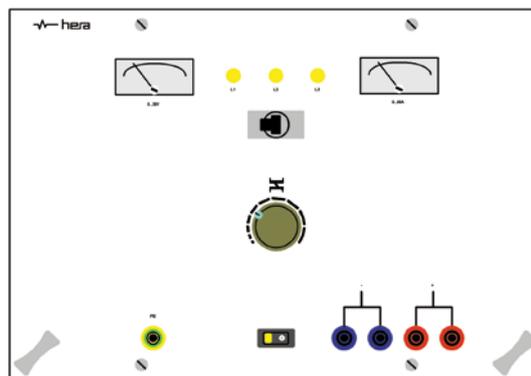
- Stabilized and short circuit proofed fixed DC supply, galvanically isolated.
- Overload -, overvoltage - and overtemperature protected.
- Offset: < 2%.
- Ripple: < 120mV p-p.
- Output on 4mm safety jacks.
- Illuminated 2poles switch.



Fixed DC Supply		23 <b>S</b> . <b>LLL</b> . <b>LLL</b>	
<b>S</b> Type	<b>LLL.LLL</b> Voltage / Current		
0 LE	<b>105.032</b> 5V / 3A	<b>113.112</b> 13,5V / 11,2A	<b>148.022</b> 48V / 2,3A
1 NE	<b>105.052</b> 5V / 5A	<b>113.142</b> 13,5V / 14,9A	<b>148.042</b> 48V / 4,2A
3 WE size 3	<b>105.102</b> 5V / 10A	<b>124.012</b> 24V / 1,5A	<b>212.032</b> + 12V / 3A + 5V / 6A
	<b>112.032</b> 12V / 3A	<b>124.032</b> 24V / 3,2A	<b>224.022</b> + 24V / 2A + 5V / 6A
	<b>112.062</b> 12V / 6A	<b>124.062</b> 24V / 6,5A	<b>312.012</b> +/- 12V / 1A + 5V / 5A
	<b>112.122</b> 12V / 12,5A	<b>124.082</b> 24V / 8,4A	<b>315.012</b> +/- 15V / 0,8A + 5V / 5A

### LS2000 HIGH CURRENT DC SUPPLY

- 3phase variac with two downstream connected isolating transformers and a 6-point rectifier with load-independant ripple of < 1,5%.
- Phase control lamps (L1, L2, L3).
- Output at 2x 2 high current jacks.
- Current - and voltage reading
  - analog: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS accuracy: 0,5% +/- 1 digit.
- Illuminated switch with contactor.



High Current DC Supply 244 <b>SSS</b> . <b>A</b> 01		Double-LE	
<b>SSS</b> Voltage / Current	<b>A</b> Version		
<b>160</b> 0-15V / 0-60A	<b>1</b> analog		
<b>325</b> 0-30V / 0-25A	<b>4</b> digital		
<b>360</b> 0-30V / 0-60A			



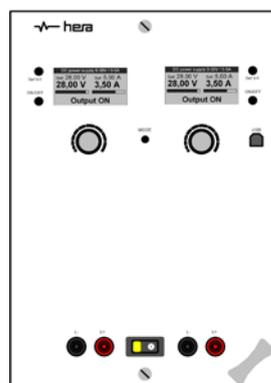
## LS2000 LABORATORY POWER SUPPLY ICOM

- Background illuminated graphic-LCD display 60x30mm (128x64) for the indication of all important values and modes at once.
- Rotary switch with pushbutton function for a fast and precise setting of voltage and current.
- Extra buttons for fast and intuitive operation.
- Output ON-/ OFF button with status indication in the display.
- Double power supplies with easy switching between 2-channel -, tracking -, series - or parallel operation.
- Output at 4mm safety jacks.
- Illuminated 2poles switch.
- Front side with USB - and rear side with LAN interface.
- LabView driver and compatible with softwares IMODdesktop and IMODmobile.



### Technical Data Lab Power Supply EXTENDED RANGE:

- Switchmode lab power supply; up to 160W fanless.
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Set time 10-100% load: <1ms.
- Overvoltage protection: 0...46,2V.
- Accuracy: <0,2%.
- Nominal values for current and voltage adjust one another so the max. power is not exceeded.



### Technical Data Lab Power Supply LINEAR:

- In-phase controlled laboratory power supply with transformer switching.
- Silent operating fan with temperature controlled speed at 150W and 300W (60W-fanless).
- Resolution of nominal and actual values: 14bit (16384 dots).
- Resolution of measurements: 16bit (65536 dots).
- Ripple (at Ia = 50%): <1mVrms.
- Set time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protected: 100V / 50V (60W).

Lab Power Supply ICOM EXTENDED RANGE		26 A LLL 803	
A Channels	LLL Voltage / Current		
1 Single	406 100W / 0 - 42V / 0 - 6A	803 100W / 0 - 84V / 0 - 3A	
2 Double	410 160W / 0-42V / 0 - 10A	805 160W / 0 - 84V / 0 - 5A	
	420 320W / 0 - 40V / 0 - 20A		

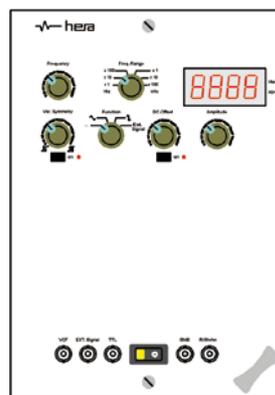
Lab Power Supply ICOM LINEAR		26 A LLL 403	
A Channels	LLL Voltage / Current		
1 Single	302 0 - 30V / 0 - 2A	310 0 - 30V / 0 - 10A	
2 Double	305 0 - 30V / 0 - 5A		

## LS2000 FUNCTION GENERATOR, 1MHZ

- Exact and user-friendly frequency setting with multi-turn potentiometer.
- Frequency distortion: < 2% for whole bandwidth; frequency stability: < 0,3%/K.
- Function setting of sinus, triangle, square and external signal with rotary switch.
- Harmonic distortion: < 0,5% (max. 50Hz); < 1% (50kHz - 100kHz); < 3% (100kHz - 1MHz).
- Linearity error: < 1% (max. 100kHz); < 5% (100kHz - 1MHz).
- Symmetric error: < 1% (max. 100kHz); < 5% (100kHz - 1MHz).
- Rise - and fall time: < 80ns at 50Ω load.
- Variable symmetry between 20%...80% adjustable with potentiometer. 1:1 symmetry adjustable with illuminated button.
- DC-Offset (zero point displacement) adjustable between -10V...+10V.
- Frequency adjustment via external voltage input (VCF).
- Frequency indication with 4digit LED display.
- 5x BNC socket with VCF, external signal input; TTL-output, -30dB input, 50Ω output.

### Option Power Amplifier:

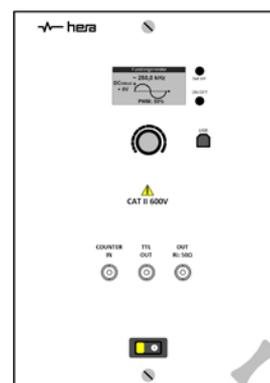
- Switchable in the range of 0,1Hz...100kHz.
- 40W<sub>eff</sub> continuous power with sinus at 5W.
- Short circuit proofed due to retracted current curve.
- Max. output voltage 40V<sub>SS</sub>.



Function Generator 1MHz	
271.653.101	no Power Amplifier
271.653.201	with Power Amplifier

## LS2000 FUNCTION GENERATOR ICOM

- Background illuminated graphic LC display 60x30mm.
- Navigation via rotary switch with pushbutton function and 2 buttons.
- Illuminated 2poles switch for central on /off.
- Front side with USB - and rear side with LAN interface.
- LabView-driver and the compatible software IMODdesk top and IMODmobile for remote control.
- 3x BNC sockets.  
(COUNTER IN, TTL OUT and OUT Ri: 50Ω).
- Basic functions: sinus, triangle, rectangular, saw tooth, pulse, trapezium.
- Frequency range: 50mHz – 10MHz (sinus), 50mHz – 1MHz (other signals).
- Arbitrary with value table (comfortable uploading with IMODdesktop).
- Other functions: PWM, TTL-output.
- Amplitude: 30V<sub>SS</sub> (max. 1MHz), max. 3V<sub>SS</sub> at 10MHz.
- Resolution: 12 Bit.
- Duty cycle: 0,1% ... 99,9%.
- DC Offset: ± 7,5V.
- Frequency measurement: max. 50MHz.



272.830.102 Function Generator ICOM (LE)

## OPEN SYSTEM FOR THE INTEGRATION OF OTHER BRANDS

The modular character of our system is prepared for the integration of our broad range of modules and instruments, but it also allows the integration of other brands. So if you do not find your preferred brand in our catalogue, this does not mean it cannot be a part of your workstation.



## LS2000 DIGITAL MULTIMETER, LCR METER AND CALIBRATOR

### TRMS Multimeter DM62:

- Digital multimeter flush integrated into aluminium front panel, light grey powder coated with abrasion proofed silkscreen printing and fixing bolts for the LS2000 system.
- Resolution: 6600 dots (3 6/7 digits) and analog bargraph (66 dots).
- Background illuminated dual digital display.  
Accuracy:  $0,4\% V_{DC}$ .
- Bandwidth:  $V_{AC}$  TRMS 2kHz.
- Voltage:  $V_{DC}$  100 $\mu$ V ..1000V.  
and  $V_{AC}$  TRMS 100 $\mu$ V ..1000V.
- Current:  $A_{DC}$  10 $\mu$ A ...10A and  $A_{AC}$  TRMS 10 $\mu$ A ...10A.
- Resistance: 100m $\Omega$  ...60M $\Omega$ .
- Temperature: -50...+1.300°C, thermocouple type K.
- Frequency measurement: 0,01Hz ...10,00MHz.
- Duty cycle: 1% ..98,9% (1kHz).
- Capacity: 1pF ...40,00mF.
- Continuity - and diode test.
- Hold / peak / MIN / MAX / relative (zero).
- Autoranging or manual range selection.
- Automatic blocking sockets ABS.

### Precision Multimeter TECH 4½ digit TRMS:

- 3 sockets with automatic blocking ABS.
- Autoranging or manual range selection.
- Automatic data logging DATA/ MIN/ MAX.
- Background illuminated display with large figures and bargraph.
- Voltage AC TRMS - DC - AC+DC.
- Current AC TRMS - Current DC - Current AC+DC TRMS.
- Frequency (Hz via voltage and current).
- Temperature measurement with thermocouples type K.
- Capacity measurements, diode - and continuity test.
- DKD calibration certificate within scope of delivery.

### Calibrator and Multimeter for Electric Parameter CAL:

- 0 - 24mA source and 0 - 300mA measurement.  
0 - 20mA and 4 - 20mA adjustable range.
- Output voltage 0 - 300mV, 3, 10 and 15V.
- Resistance with 2 and 4 wire, max. 0,01m $\Omega$  simulation.
- Resolution of high resistance measurement max. 30m $\Omega$ .
- Simulation of RTD temperature sensors.  
°C/ °F, Pt100/ 1000, Ni100/ 1000.
- Simulation of thermocouples J, L, T, U, K, E, S, R, B, N with internal or external compensation of cold joints.
- Frequency generator with square pulse (1Hz ...1000Hz).
- Ramp -, step - and dwell function.
- DKD calibration certificate within scope of delivery.

### Multifunctional Meter (DMM + LCR):

- 3 ½ digit background illuminated LCD display.
- MAX and HOLD function.
- $V_{DC}$  200mV / 2 / 20 / 200 / 600V; 100 $\mu$ V; +/- 0,5% + 1 dgt.
- $V_{AC}$  200mV / 2 / 20 / 200 / 600V; 100 $\mu$ V; +/- 0,8% + 3 dgt.
- $A_{DC}$  20 $\mu$ A / 2 / 200mA / 10A; 10nA; +/- 0,8% + 1 dgt.
- $A_{AC}$  20 $\mu$ A / 2 / 200mA / 10A; 10nA; +/- 1,0% + 3 dgt.
- Frequency range: 40 - 400Hz
- Ohm 200W / 2 / 20 / 200kW / 2 / 20 / 2000MW; 0,1W; +/- 0,8% 1 dgt.
- Capacity 20 / 200nF / 2 / 100 $\mu$ F; 10pF; +/- 2,5% + 5 dgt.
- Inductivity 2 / 20 / 200mH / 20H; 1 $\mu$ H; +/- 2,0% + 10 dgt.
- Frequency 2 / 20 / 200kHz / 2 / 10MHz; 1Hz; +/- 0,1% + 3 dgt.
- Temperature -40 ... +1000°C; +/- 1,0% + 3 dgt.
- Transistor test, diodes - and continuity test with buzzer.
- Incl. lab cords, multifunctional adapter, temperature probes.

### LCR Meter:

- 4½ digit background illuminated 27mm LCD display.
- Resistance: 110 $\Omega$  / 1,1 / 11 / 110k $\Omega$  / 1,1 / 11 / 110M $\Omega$ ,  
 $\pm 1,2\% + 8$  dgt., 10m $\Omega$
- Capacity: 11 / 110nF / 1,1 / 11 / 110 $\mu$ F / 1,1 / 11 / 110mF,  
 $\pm 3,0\% + 10$  dgt., 1pF
- Inductivity: 11 / 110mH / 11 / 20 H,  $\pm 2,0\% + 0,2$ mH, 1nH
- Measuring cycle: 3 - 4x per sec.
- MIN / MAX and HOLD function.
- Relative value measurement.
- Diode - and continuity test function.



DM62



TECH



CAL



DMM+LCR



LCR Meter

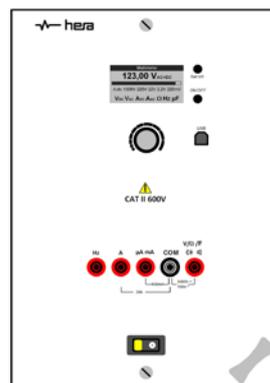
### Digital Meter, LCR Meter and Calibrator

272.708.302	TRMS Multimeter DM62, incl. power supply
272.708.402	Precision Multimeter TECH 4½ digit TRMS, incl. power supply
272.708.602	Calibrator and Multimeter for Electrical Parameter CAL, incl. power supply
272.708.702	Multifunctional Meter (DMM + LCR), incl. power supply
272.708.802	LCR Meter, incl. power supply

## LS2000 DIGITAL MULTIMETER ICOM

- Background illuminated graphic LC display 6x30mm.
- Navigation via rotary switch with pushbutton function and 2 buttons.
- Illuminated 2poles switch for central on / off.
- Front side with USB - and rear side with LAN interface.
- LabView-driver and the compatible software IMODdesk top and IMODmobile for remote control.
- 5x 4mm safety jacks (Hz, A,  $\mu$ A/mA, COM, V/ $\Omega$ /F/diode/continuity test/temperature).
- Resolution: 4 3/4 digit (50.000 counts).
- Voltage DC: 10 $\mu$ V – 1000V.
- Voltage AC TrueRMS: 10 $\mu$ V – 700V.
- Current DC: 10nA – 20A .
- Current AC TrueRMS: 10nA – 20A.
- Current inputs protected by fuse.
- Resistance: max. 50M $\Omega$ .
- Frequency: 100 $\mu$ Hz – 50MHz.
- Capacity: max. 5mF.
- Other functions: diode test, continuity test and temperature measurement.
- Range selection: manual or autoranging.
- CAT II 600V.

272.710.602 Digital Multimeter ICOM (LE)



Temperature Sensors to Digital Multimeter ICOM	
604.000.100	Option Immersion Sensor
604.000.200	Option Surface Sensor
604.000.300	Option Kapton Sensor

## LS2000 OSCILLOSCOPE GW INSTEK

Digital storage oscilloscope with many functions. Flush integrated into a LS2000 aluminium front panel. The oscilloscope comes with freely available software for networks integration or data logging on PC.

- 2 or 4 channels.
- 8" TFT display.
- 2 GSa/s real time sampling rate.
- 2MPts memory depth.
- 36 automatic measurements.
- FFT analysis.
- 6 digit frequency counter.
- USB interface and front side USB connector for memory stick.



▶ other brands and types available

Oscilloscope	Double-LE
273.119.207	2-channel / 70MHz
273.119.407	4-channel / 70MHz
273.119.220	2-channel / 200MHz
273.119.420	4-channel / 200MHz

## LS2000 APPLIANCE TESTER VDE 0701/0702

- Device for appliance testing according to DIN VDE 0701 – 0702 tests, repeat test BGV A3 and DIN EN 62353.
- Direct selection of the individual measurement types with function buttons.
- Automatic adaption of limiting value (protective conductor, insulation).
- 2 poles measurement (low ohmic, insulation, equivalent leakage current, voltage)
- Clear text operation with schematic diagram and green / red LED indication for OK / failure.
- Large display, rich in contrast.
- Mains connection is checked for PE contact and automatic switch off in case of dangerous leakage current of test item.
- Bluetooth and USB interface.
- Fast procedure of all activated tests inclusive funtion test with real-effective-power indication in only one step.
- Instantaneous pole reversal.



Appliance Tester VDE 0701/0702

### Measurements (usage failure 5% v.M. + 1% v.B.)

- Protective conductor: 0,000Ω...4,000Ω  
test current: 200mA DC / open-circuit voltage 10V.
- Insulation resistance: 0,00MΩ...20,00MΩ,  
no-load voltage: 50V, 250V, 500V  
short circuit current: 1mA.
- Integrated leakage current switch-off,  
difference current > approx. 20 mA
- Leakage current: 0,00mA...20,00mA,  
open circuit voltage: approx. 200V AC (max. 2,5 mA).
- Difference current: 0,00mA...20,00mA AC  
according DIN EN 61557-14 for correct evaluation of the  
harmonic waves.
- Touch protection: 0,000mA...4,000mA.
- Mains voltage measurement: 200V...250V AC.



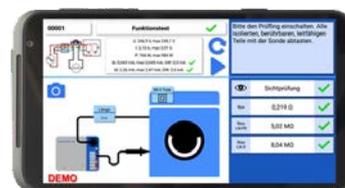
Windows Software Safety-Remote

### Incl. Accessory:

- Interface Bluetooth and USB C.
- Measuring leads 2m, 1x red + 1x black.
- Report Master and Report-Master-App for 1 year.
- Inhouse calibration certificate.

### Optional Test Software:

- Windows Software Safety-Remote:  
Software for report generation and remote access, as  
well as data base functionality.
- Android data base app Test Master:  
menu-guided app with camera documentation, report  
generation and SQLITE data base.



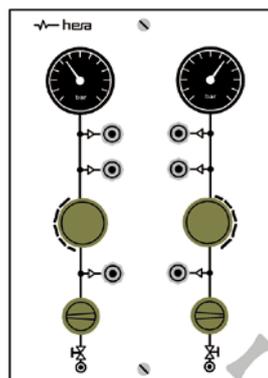
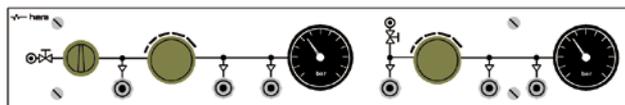
Android Data Base App Test-Master

#### Device Tester and Test Software

277.002.903	Device Tester VDE 0701/0702 2MP
338.700.309	Windows Software Safety-Remote
338.701.308	Android Data Base App Test-Master

### LS2000 PRESSURED AIR SUPPLY

- 2x self-closing, unregulated outlets (hose 6/4).
- Adjustable pressure regulator 0-3bar with analog pressure gauge 4bar.
- 2x self-closing, regulated 3bar outlets (hose 6/4).
- Adjustable pressure regulator 0-10bar with analog pressure gauge 10bar.
- 2x self-closing, regulated 10bar outlets (hose 6/4).
- Completely hosed with open end 4/6.

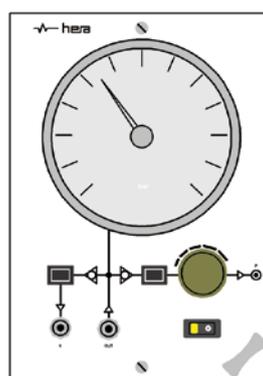


Pressured Air Supply	
288.121.100	3 / 10bar / LE
288.321.100	3 / 10bar / WE size 3
288.421.100	3 / 10bar / WE size 4



### LS2000 ANALOG PRESSURE CALIBRATOR

- Precision pressure regulator.
- 2x 2/3 magnetic valves with switches. LEDs for status indication.
- Analogue pressure gauge class 0,6 (diameter: 160mm) or class 1,0 (diameter: 100mm).
- 2x self-closing connectors (inlet and outlet / hose 6/4).
- Completely hosed with open end 4/6.
- Illuminated 2poles switch for central on/ off.



Analog Pressure Calibrator		LE
289.001.100	Vacuum Class 0,6	
289.001.101	Vacuum Class 1,0	
289.102.100	2,5bar Class 0,6	
289.102.101	2,5bar Class 1,0	
289.106.100	6bar Class 0,6	
289.106.101	6bar Class 1,0	
289.110.100	10bar Class 0,6	
289.110.101	10bar Class 1,0	

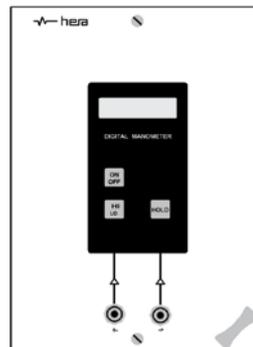


## LS2000 DIGITAL PRESSURE CALIBRATOR

- Digital meter with pressure sensor for the measurement of difference -, relative - or absolute pressure.
- 3½ digit LCD display.
- Piezo-resistive pressure sensor.
- Measuring range HI, class 0.1% over full range.
- Measuring range LO, class 0.2% over full range.
- Inlet and outlet with self-closing valves 4/6mm.
- Other pressure ranges on demand.

### Calibrator features:

- Selector switch for internal or external supply with two 3/2 magnetic valves and LED for status indication.
- Digital pressure measurement with integrated pressure sensor for the measurement of difference -, relative - and absolute pressure.
- Completely hosed with open end 4/6.
- Other pressure ranges on demand.



Digital Pressure Calibrator		LE
282.001.000	Digital Pressure Meter 0 - 1000mbar	
282.010.000	Digital Pressure Meter 0 - 10bar	
282.001.100	Pressure Calibrator 0 - 1000mbar	
282.010.100	Digital Pressure Calibrator 0 - 10bar	

## LS2000 PRESSURE CALIBRATOR WITH ELECTRIC STANDARD SIGNALS

- Precision pressure regulator.
- Selector switch for internal or external supply with two 3/2 magnetic valves.
- Measurement of pressure -, vacuum, differential pressure and absolute pressure.
- Resolution: 1/1000 of measuring range.
- Max. load of range (4bar / 27bar).
- Tolerance: 0,1% over full range +/- 1 Digit.
- DC current measurement: 0...24mA (resolution 1µA).
- DC current supply: 0...24mA (resolution 1µA).
- DC voltage measurement: 0...30V (resolution 1mV).
- DC voltage supply: 0...1V (resolution 0,1mV).
- Illuminated two-line display with membran buttons for data logging, leakage rate, recording, ramp, deviation, simulation and triggering.
- Incl. RS232 interface with software.
- Completely hosed with open end 4/6.
- Illuminated 2poles switch for central on/ off.

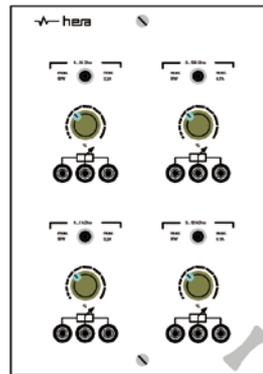


Pressure Calibrator with Electrical Standard Signals		LE
284.001.000	0 - 2000mbar	
284.010.000	0 - 10bar	

### LS2000 LOAD RESISTANCE 50W

- Panel with four stepless adjustable load resistors 50W (test voltage: 2,5kV).  
 0-10Ω / 50W; 2,2A  
 0-100Ω / 50W; 0,7A  
 0-1kΩ / 50W; 0,2A  
 0-10kΩ / 50W; 0,1A
- Thermal circuit breaker for overload protection.
- Each resistor has two jacks for end taps and one jack for middle tap.

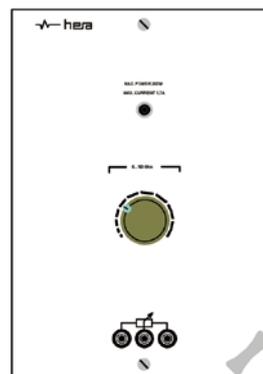
277.201.200 Load Resistance 50W LE



### LS2000 LOAD RESISTANCE 300W

- Panel with stepless adjustable load resistor 300W (test voltage: 2,5kV).
- Thermal circuit breaker for overload protection.
- Two jacks for end taps and one jack for middle tap.

Load Resistance 300W		LE
277.202.100	0 - 100hm / 5,4A	
277.202.200	0 - 100Ohm / 1,7A	
277.202.300	0 - 1kOhm / 0,5A	
277.202.400	0- 10kOhm / 0,2A	



### LS2000 TEST SPEAKER

- Test speaker 10Watt / 8Ω. (transmission range: 130 - 20.000Hz).
- Upstream connected transmitter for impedance matching (transmission range: 40 - 20.000Hz);  
 primary winding: 2kΩ / 4kΩ / 8kΩ / 16kΩ,  
 secondary winding: 4Ω / 8Ω / 16Ω.
- 4mm safety jacks for connection.

277.205.200 Test Speaker LE

