



EPS - Datasheet

Series EPS/BT 20000 3U/4U

The battery tester with regenerative energy recovery in the »EPS/BT 20000 3U/4U« series from EPS Electronic Power Supplies are two quadrant devices which can perform the function of a charger as well as that of an electronic load (discharging). This allows applications, e.g. tests, simulation or recycling of batteries, for battery characterization and capacitance measurement in production or research & development. In discharging mode the device is regenerative and feeds the energy back into the local grid with an efficiency of up to over 96%.

The EPS/BT 20000 series includes three phase units which, together with the wide input range, allows use with practically all global mains voltages. The DC voltages and currents are determined by the application and the spectrum ranges from 0 - 10 V to 0 - 2000 V and from 0 - 20 A up to 0 - 1000 A in a single device. The DC source/sink operates as a flexible output stage with a constant power characteristic (autoranging) with a wide voltage and current range. To achieve higher power and current all units are equipped with a Master-Slave-Bus. This enables up to 32 parallel connected devices to be combined into one system which can provide up to 1920 kW and 32000 A. Such a system works as a single unit and can use as a battery module tester or as a battery pack tester. In this way as an example a user can construct a 150 kW battery pack tester system from five 30 kW 4U units EPS/BT 20000.

As standard, the device has built-in interfaces such as Ethernet, USB, EtherCAT, CAN FD, USB Host Front, 3 digital inputs, 3 relay contacts as well as 3 temperature sensor inputs. Furthermore typical battery tester alarm and warning management, software solutions and many more functions are available.

Optional water cooling system, pre-assembled cabinet systems, calibration with protocol and extended warranty are available.

The devices are CE, UL as well as CSA certified.

Energy efficiency: Energy recovery, high efficiency, temperature controlled fans, water cooling system

Scope of delivery:

- Battery tester
- Test report
- AC connector plug (clamp type)
- Set for AC cable strain relief
- Set DC terminal cover
- 2x Plug for Remote Sense
- Terminal cover sense
- USB cable 1,8m
- USB-Stick with documentation and Software

EPS/BT 20200-420 4U Regenerative Battery Tester



EPS/BT_20000_4U

General data

| | |
|--------------------------------|--|
| Behavior | Bidirectional |
| Technology | Switching |
| Operation modes | CV. CC. CP. CR |
| Mains | 380V-480V AC 3ph.(208V-240V derating 18kW) +-10% |
| Input frequency | 45-65Hz |
| Power factor | >0,99 |
| Power feed back | Standard |
| Voltage resolution | 0,01V 4d |
| Voltage accuracy | <=0,05% fs |
| Voltage Stability Load | <0,05% (0-100%) |
| Voltage Stability Mains | <0,01% (+-10%) |
| Response time Voltage | <2 ms (10-100%) |
| Rise time Voltage | <=10 ms (10-90%) |
| Current Resolution | 0,1A 5d |
| Current Accuracy | 0,1% fs |
| Current Stability Load | <0,1% (0-100%) |
| Current Stability Mains | <0,01% (+-10%) |
| Rise time Current | <=2ms (10-90%) |
| Output Current Limitation | Standard |
| Internal Resistance Regulation | Standard |
| Overvoltage category | 2 |
| Overheat protection | Standard |
| Isolation In-/Output | 3750VDCmax |
| Isolation Output/Enclosure | neg.+1000V DC, pos.+1000V DC max. |
| Protection class | 1 |

Series EPS/BT 20000 3U/4U

| | |
|-----------------------|--|
| Parallel operation | Master-Slave |
| Current sharing | Standard (BNC) |
| Cooling | Fan |
| Operation temperature | 0-50°C |
| Storage temperature | -20...70°C |
| Humidity | <=80% n.c |
| Attitude | <=2000m |
| Design | 19 inch |
| Standards | EN/UL/CSA-C22.2 61010-1,EN55011 cl.B,EN61326-1 |
| Power fail | Standard |
| Alarmmanagement | Standard |
| Output Preset | Standard |
| Capacity | 5400µF |

Interfaces

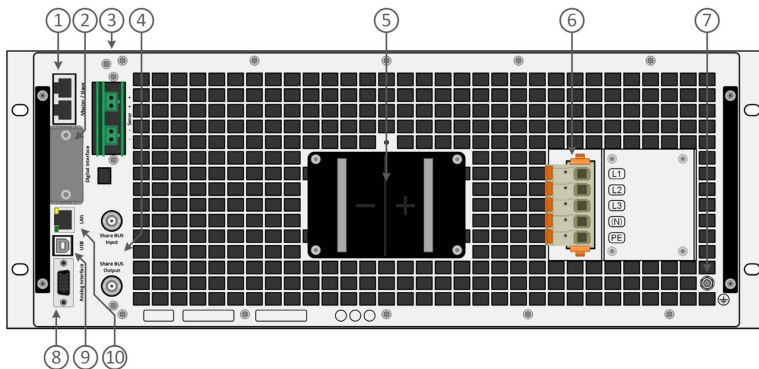
| | |
|--------------------|---|
| Input Signal | 3x digital, 3x relay contacts, 3x temp.sensor |
| USB Interface | Standard |
| CAN Interface | Standard FD |
| Ethernet Interface | Standard 1Gbit/s |
| Ethercat Interface | Standard |
| Software | Standard EPS/PC, EPS/BS |

Technical data

| | |
|-------------------------------|--------------------------------|
| Output Voltage | 0-200 VDC |
| Output Current | 0-420 A |
| Output Power | 0-30000 W |
| Input Current | <=56A@400V |
| Efficiency | 95,3% |
| Ripple U | 300 mVpp(20Mhz)/40 mVrms(300k) |
| Ripple I | <=50mArms (E-Last/load) |
| Resistance Adjustment Range 1 | 0,0165-25 Ohm |
| Resistance Resolution Range 1 | 0,001 5d |
| Remote Sensing | Standard |
| Dimensions in mm (WxHxD) | 483 x 178 x 668 |
| Weight | 50 kg |
| Order code | 700023 |

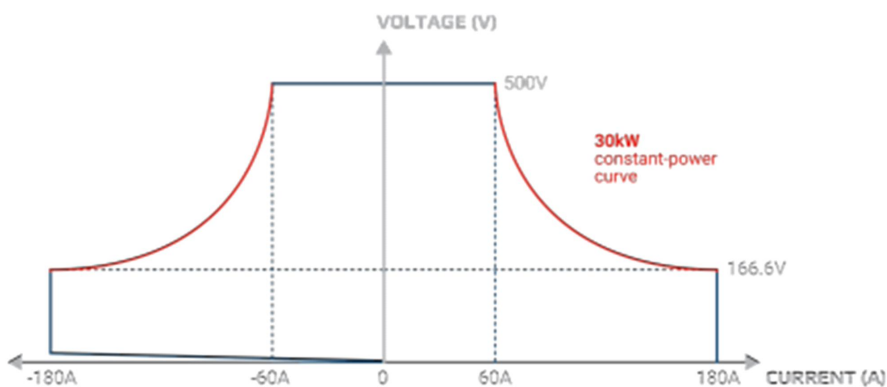
Options

| | |
|----------|--|
| Option 1 | Calibration with protocoll EPS/BT 20000 CAL |
| Option 2 | Extended Warranty 2 / 3 / 5 years EPS/G2/3/5 |
| Option 3 | Water cooling EPS/BT 20000-WC-30kW |
| Option 4 | EPS/BNC Cable Share-Bus connection cable |
| Option 5 | EPS/SL 4x 2x AWG Master-Slave patch cable |
| Option 6 | 19" Rack incl. installation |

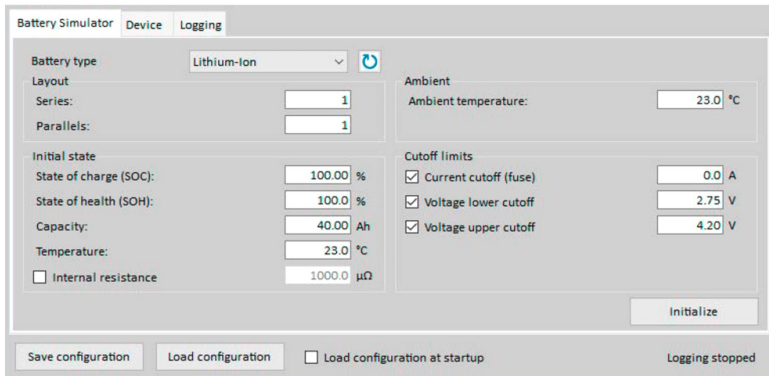


EPS/BT_20000_4U_30kw_rear

1. EtherCAT Slave
2. Input / Output 16 pol connector
3. Remote sense connectors
4. Share bus connectors to set up a system for parallel connection
5. DC output connector (copper blades)
6. AC input connector
7. Grounding connection screw (PE)
8. CAN FD interface
9. USB interface
10. Ethernet interface



Autoranging 2 Quadrant



The screenshot shows the Battery Simulator GUI with the following configuration:

| Section | Parameter | Value |
|---------------|---|------------------------------------|
| Layout | Series | 1 |
| | Parallels | 1 |
| Initial state | State of charge (SOC) | 100.00 % |
| | State of health (SOH) | 100.0 % |
| | Capacity | 40.00 Ah |
| | Temperature | 23.0 °C |
| Cutoff limits | <input checked="" type="checkbox"/> Current cutoff (fuse) | 0.0 A |
| | <input checked="" type="checkbox"/> Voltage lower cutoff | 2.75 V |
| | <input checked="" type="checkbox"/> Voltage upper cutoff | 4.20 V |
| Ambient | Ambient temperature | 23.0 °C |
| | Internal resistance | <input type="checkbox"/> 1000.0 µΩ |

Buttons: Save configuration, Load configuration, Load configuration at startup, Initialize, Logging stopped

EPS/Battery Simulator GUI

Subject to modification without notice, errors and omissions excepted

EPS Stromversorgung GmbH
Electronic Power Supplies
Alter Postweg 101, 86159 Augsburg/Germany
Tel.: +49 (0) 821 570451-0
E-mail: sales@eps-germany.de
www.eps-germany.de