



## 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 21500-60 4U Regenerative Battery Tester

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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.+1500V DC, pos.+2000V 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	75µF

**Interfaces**

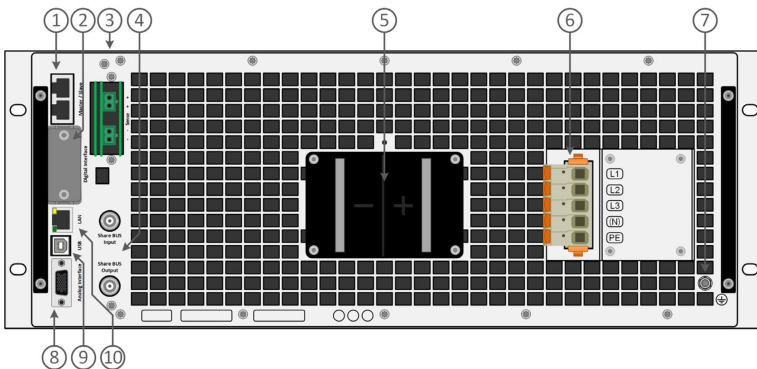
Input Signal	3x digital, 3x relay contacts, 3x temp.sensor
USB Interface	Standard
CAN Interface	Standard FD
Ethernet Interface	Standard 1Gbit/s
Ethercat Interface	Standard
Software	Standard EPS/PC, EPS/BS

**Technical data**

Output Voltage	0-1500 VDC
Output Current	0-60 A
Output Power	0-30000 W
Input Current	<=56A@400V
Efficiency	96,5%
Ripple U	2400mVpp(20Mhz)/400mVrms(300k)
Ripple I	<=50mArms (E-Last/load)
Resistance Adjustment Range 1	0,8-1500 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	700028

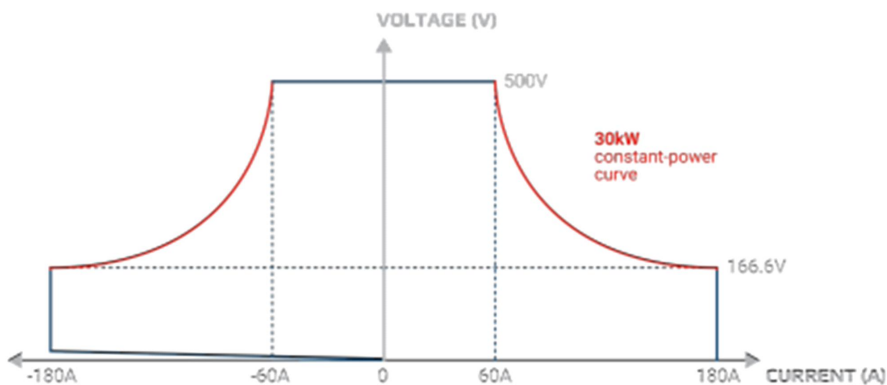
**Options**

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

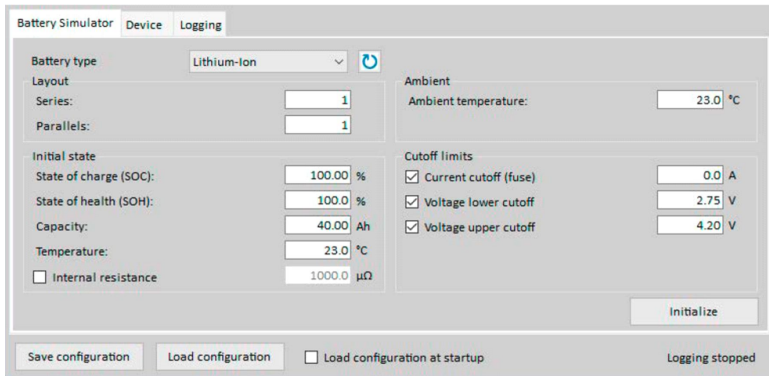


EPS/BT\_20000\_4U\_30kw\_rear

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:

Category	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

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Subject to modification without notice, errors and omissions excepted

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