



# Triple Power

## EA-BT 20000 Battery Tester Series

Available with single or triple outputs

High current and high voltage

High precision for measuring voltage and current

High speed with maximized throughput



## EA-BT 20000 Series

### Most powerful battery tester

With the new EA-BT 20000 Battery Testers, EA Elektro-Automatik (EA) presents the only device series with three channels and the highest output voltage or current for a wider range of cell, module and pack tests.

### High current

With up to 3 channels of 600 A each in one device, EA offers a high-performance test device that meets even the highest demands in the test of EV batteries.

In addition, the channels can be easily connected in parallel to achieve even higher currents. With the triple, a maximum of 1800 A per device is possible. With up to 64 devices connected in parallel and a maximum of 64000 A, the series offers almost unlimited possibilities.

### High precision

With their high precision, the EA-BT 20000 Battery Testers are ideal for use in basic research and industry, including automotive and aerospace, and energy storage for renewable energies. Voltage and current are measured with high accuracy. In addition, the devices have a high level of control accuracy.

### High speed

The EA-BT 20000 Battery Tester processes and reads commands with a transmission speed of 1 ms. Used together with the latest interface versions EtherCAT, CAN FD and Gbit Ethernet further optimize the devices throughput.

## The triple high performance application

### Testing and simulating batteries

The scope covers the entire life cycle of a battery. As a complete solution the EA-BT 20000 models are suitable for testing, simulating and recycling processes for current and future battery technologies and battery capacities. The battery testers can be used flexibly – from material research to battery development and production to incoming inspection and recycling.

### Performance up to 1.92 MW for large systems

The EA-BT 20000 series is easily scalable to test large battery systems. Up to 64 EA-BT 20000 Battery Testers can be connected in parallel up to a maximum output of 1.92 MW.

# Highlight: EA-BT 20000 Triple

The highlight of the EA-BT 20000 series are the 4U TRIPLE models with triple output: This Battery Tester has three channels to test three batteries at the same time. This is highly efficient, reduces test and investment costs and maximizes throughput.



## EA-BT 20000 devices

### 28 models: Triple 4U, 4U, 3U

The EA-BT 20000 series consists of 28 powerful models with a particularly wide range of voltage and current. In contrast to conventional battery test devices, all users with the triple version have three channels with 600 A or one single channel with 1800 A available.

### EA-BT 20000 TRIPLE 4U

Model	Voltage	Current	Power
BT 20010-400 Triple	0 – 10 V	400 A per channel	4000 W per channel
BT 20010-600 Triple	0 – 10 V	600 A per channel	6000 W per channel
BT 20060-340 Triple	0 – 60 V	340 A per channel	10000 W per channel
BT 20080-340 Triple	0 – 80 V	340 A per channel	10000 W per channel
BT 20200-140 Triple	0 – 200 V	140 A per channel	10000 W per channel
BT 20360-80 Triple	0 – 360 V	80 A per channel	10000 W per channel
BT 20500-60 Triple	0 – 500 V	60 A per channel	10000 W per channel
BT 20920-40 Triple	0 – 920 V	40 A per channel	10000 W per channel

### EA-BT 20000 4U

Model	Voltage	Current	Power
BT 20010-1000	0 – 10 V	1000 A	10000 W
BT 20060-1000	0 – 60 V	1000 A	30000 W
BT 20080-1000	0 – 80 V	1000 A	30000 W
BT 20200-420	0 – 200 V	420 A	30000 W
BT 20360-240	0 – 360 V	240 A	30000 W
BT 20500-180	0 – 500 V	180 A	30000 W
BT 20920-120	0 – 920 V	120 A	30000 W
BT 21000-80	0 – 1000 V	80 A	30000 W
BT 21500-60	0 – 1500 V	60 A	30000 W
BT 22000-40	0 – 2000 V	40 A	30000 W

### EA-BT 20000 3U

Model	Voltage	Current	Power
BT 20010-600	0 – 10 V	0 – 600 A	0 – 6000 W
BT 20060-500	0 – 60 V	0 – 500 A	0 – 15000 W
BT 20080-500	0 – 80 V	0 – 500 A	0 – 15000 W
BT 20200-210	0 – 200 V	0 – 210 A	0 – 15000 W
BT 20360-120	0 – 360 V	0 – 120 A	0 – 15000 W
BT 20500-90	0 – 500 V	0 – 90 A	0 – 15000 W
BT 20920-60	0 – 920 V	0 – 60 A	0 – 15000 W
BT 21000-40	0 – 1000 V	0 – 40 A	0 – 15000 W
BT 21500-30	0 – 1500 V	0 – 30 A	0 – 15000 W
BT 22000-20	0 – 2000 V	0 – 20 A	0 – 15000 W



## The added values



### **Regenerative: Save energy costs**

- Energy recovery with an efficiency of up to 96%
- Minimal waste heat, no cost-intensive air conditioning required
- Rapid amortization of the EA-BT 20000 models



### **Autoranging: Flexible output levels**

- Wide range of voltage, current and power
- For an extended range of applications compared to conventional devices



### **Interface & control flexibility: For automated tests**

- Software EA-Power Control and EA-Battery Simulator
- For configuration and test procedures without programming language
- Via connection to the PC or the programmable logic controller (PLC)
- Two modes of operation: SCPI commands for program control from PC or ModBus Commands for program control from the PLC
- Flexible communication interfaces: Gbit Ethernet, ProfiNet, CAN-FD or EtherCAT™
- 1 ms communication speed



### **Reverse Polarity Detection: Test with confidence**

- 2nd Sense input for
  - incorrect battery polarity detection
  - or for detection of accidentally interchanged cell trays
- Automatic pre-charge to
  - avoid sparks and inrush currents
  - extend lifetime of the contactors
- Dynamic Sense Regulation for
  - detecting cable overload
  - detecting creeping wiring faults





3U



4U



4U TRIPLE

## The features at a glance:

- Wide range of supply voltages: 208 V - 480 V, +10%, 3ph AC
- Active power factor correction, typical 0.99
- Battery tester, 2-quadrant for charging and discharging
- In discharge mode regenerative with energy recovery back to the grid
- Very high efficiency of up to 96%
- Voltage from 0 – 10 V to 0 – 2000 V
- Voltage from 0 – 10 V to 0 – 920 V (Triple)
- Current up to 1000 A
- Current up to 600 A per channel or 1800 A connected in parallel (Triple)
- Power up to 30 kW
- Full output power over a wide range of current and voltage (autoranging)
- Control modes CV, CC, CP, CR with fast transition  
Digital control, high resolution with 18bit
- Control speed selection: Normal, Fast, Slow
- Galvanically isolated share bus for parallel operation
- Master-Auxiliary bus for parallel operation
- Built-in interfaces with 1 ms communication speed
- Typical battery tester functionality integrated
- Battery test mode and battery simulation via EA Power Control Software
- Command languages and drivers: SCPI and ModBus, LabVIEW, IVI

# Leading-edge power electronics made by EA

Wide application spectrum. Technological excellence.  
Global customer reach.

The EA Elektro-Automatik Group is Europe's leading supplier in the area of power electronics for R & D and industrial applications. At the headquarters in Germany in the industrial center of North Rhine-Westphalia, 450 qualified associates, in a facility of 19000 m<sup>2</sup>, research, develop and manufacture high-tech devices such as programmable power supplies, high-power supplies and electronic loads with and without mains feedback.

## Development partner in forward looking sectors

With high performance criteria and a broad application spectrum, EA has established itself as the development partner in forward looking industries. Thus, EA equipment is being used in battery and fuel cell technology. It is used in wind and solar energy, electrochemicals, process technology, telecommunications, automobile industry and many more future orientated sectors.

## Automated quality assurance

Results and experience from decades of R & D flow continually into new solutions. Automatic test systems with specially developed soft- and hardware assure consistently high product quality. Flexible production processes support fast reaction to changing customer requirements.

## Global customer reach, value sharing

As a globally active company, EA maintains close contact with national and international customers and partners. The sales network includes branches in China, USA and Singapore, a sales office in Spain and an extensive service and partner network. EA continues to expand and, as a mid-size employer, takes full responsibility for development and production in Germany. Value based joint working is characterised by mutual respect and open communication.

## Technological excellence is driving innovation of tomorrow

The foundation of the company in 1974 was based on innovation, a tradition which is maintained today. What started with the development of simple mains adaptors is continued today in the overall concept of technology leadership. With highly specialised power supply systems for a multitude of applications, EA is driving the future of power electronics – technologically excellent for high performance and designed for resource protection and energy saving.

