ETPS
ELECTRONIC TEST & POWER SYSTEMS

LAB-MOBI

MULTIPLE OUTPUT BIDIRECTIONAL PSU

POSITIVE PROBLEM SOLVING

The LAB-MOBI is a series of multi channel High Power Bidirectional PSUs. Each system is able to operate as either a DC Source or a DC Electronic Load.

This integrated approach features high dynamics enabling the user to switch seamlessly between quadrants. When sinking energy from the unit under test the LAB-MOBI automatically inverts the DC to AC and synchronises this output to the grid. Dedicated application modes are available for battery cycling and emulation, which can be used to implement specific test routines.

- Dedicated Battery Testing / Emulation Modes
- Seamless Transition Between Source / Sink
- Nominal Outputs from 75kW to 500kW
- Currents up to ±600A per channel
- High Efficiencies up to 95%

FURTHER DETAILS

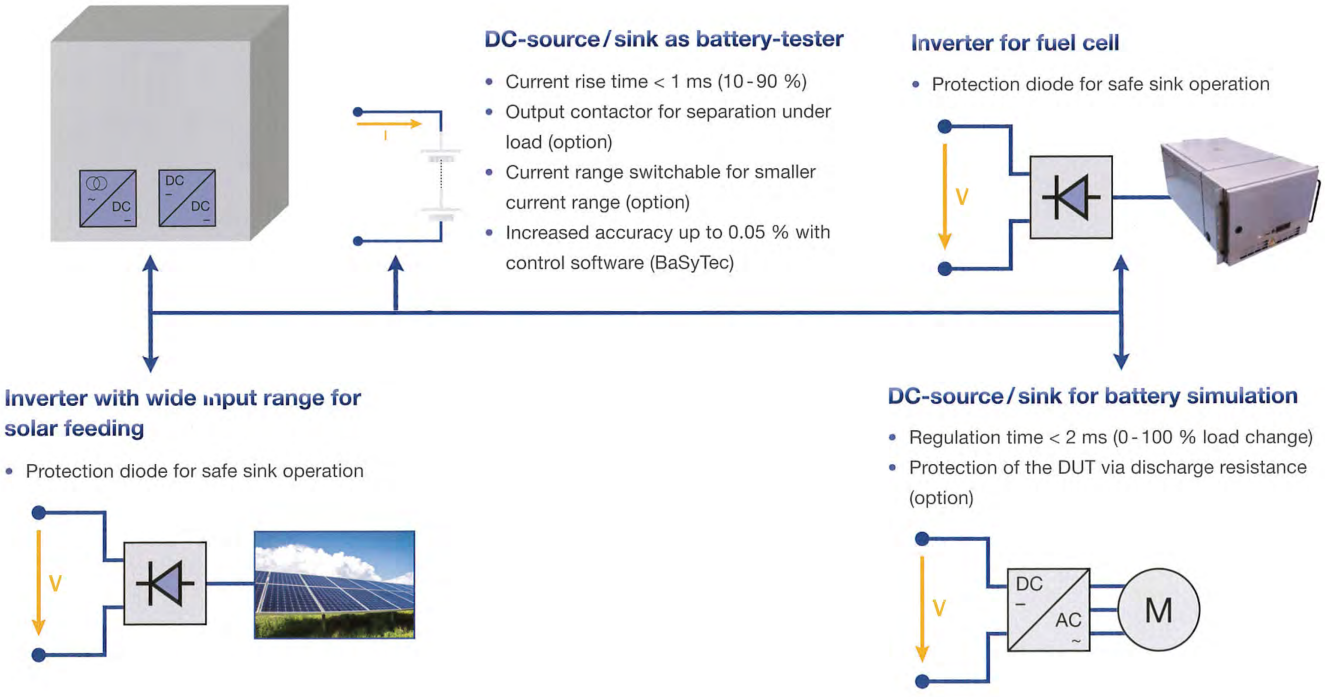
Common applications the LAB-MOBI is used for include testing electric motors, fuel cells, super capacitors and solar panels.

As standard each system is built with a CAN bus interface, which has a maximum sampling frequency of 100Hz. An analogue interface is also provided as standard, while others are optionally available.

An extensive feature set includes voltage/current ripple below 0.1%, wide V/I operating ranges, sense terminals for connection and a range of protection features.

Outputs up to 2MW can be achieved when combining multiple systems in parallel. Besides the standard range, special voltage and current levels can be specified on request.

TYPICAL APPLICATIONS



DC-source / sink as battery-tester

- Current rise time < 1 ms (10 - 90 %)
- Output contactor for separation under load (option)
- Current range switchable for smaller current range (option)
- Increased accuracy up to 0.05 % with control software (BaSyTec)

Inverter for fuel cell

- Protection diode for safe sink operation

Inverter with wide input range for solar feeding

- Protection diode for safe sink operation

DC-source / sink for battery simulation

- Regulation time < 2 ms (0 - 100 % load change)
- Protection of the DUT via discharge resistance (option)

TECHNICAL DATA

	75kW	100kW	160kW	250kW	320kW	400kW	500kW
Rectifier Type	IGBT, PWM, galvanically isolated						
Power Factor	>0.99 (at nominal power)						
AC Input Voltage/Frequency	400V[1] ± 10%, 3-phase, (N), PE, 50 / 60Hz ± 6%						
Maximum Output Voltage	See selection table						
Minimum Output Voltage	5V (typical) to sink full current within the maximum power capability						
Measuring Accuracy and Resolution	Voltage: 0.1% F.S. / 16 bit ADC, current: 0.1% F.S. / 16 bit ADC						
Control Accuracy[2,3]	Voltage: 0.1% F.S. , current: 0.1% F.S.						
Voltage Tolerance Dynamic	<3% F.S. (0 - 100% I_{NOM} in 5ms)						
Voltage Ripple[4]	≤0.1% rms F.S. (V > 10)						
Current Ripple[5]	≤0.1% rms F.S. (V > 10)						
Current Rise Time[6]	Typically <1ms for 10 - 90% load step						
Short Circuit Behaviour	Short circuit proof (I_k <5kA)						
Interface	Analogue 0 - 10V, CAN-Bus[7]						
4 Channel Operating Modes	1. CH1, CH2, CH3 & CH4 in single operation; 2. CH1 & CH2 in parallel operation, CH3 & CH4 in single operation; 3. CH1 & CH2 in parallel operation, CH3 & CH4 in parallel operation; 4. CH1, CH2, CH3 & CH4 in parallel operation						
Overall Efficiency	94%	94%	95%	95%	95%	95%	95%
Permissible Ambient Temperature	0 - 40°C						
Climate Class	3K3 EN60721 (85% relative humidity non condensing, with cabinet heating up to 95% relative humidity without condensing)						
Cooling	Forced air cooling / air-water heat exchanger						
Minimum Distance from Wall	200mm (standard)						
Minimum Distance from Ceiling	300mm (standard)						
Installation	Operating area with restricted access						
Protection Class	IP20 (IP53[12]) IEC 60529						
Safety Features	Over voltage protection, under voltage protection, over temperature protection, over current protection						
Maximum Altitude	1000m above sea level with nominal load						
Acoustic Level at IP20	71dB (A)	71dB (A)	73dB (A)	76dB (A)	78dB (A)	78dB (A)	78dB (A)
Safety	EN ISO 13849-1						
Basic Standard	EN 62040						
EMC	EN 61000-2-4 grid distrubances, EN 61000-6-2 interference immunity, EN 61000-6-4 interference emission, EN 61800-3 cat C2 (A1) variable - speed electrical drives						

[1] 380V, 415V,420V,440 and 480V inputs are available on request.

[2] Via 16 bit digital controller.

[3] Digital controller (± 600A = 15 bit + sign).

[4] Resistance as load, operation mode simulator (in constant voltage mode).

[5] 48/96V battery (constant voltage mode).

[6] Measured at half nominal voltage with max. 5% overshoot (in constant current mode).

[7] CAN-Bus with maximum sampling frequency of 100Hz.

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OPTIONS

CODE	DESCRIPTION
/B-CAP-M-800	Capacitor box metal 800V (13200+280µF)
/B-CAP-P-800	Capacitor box plastic 800V (13200µF)
/O-CAP-800	Switchable output capacitors 800V
/O-CAP-1000	Switchable output capacitors 1000V
/DC-1000A-1000V	2 DC contactors for cut off under load, performance level D
/DCU-1-60	Discharge unit 1Ω 60kW sec
/DCU-1-120	Discharge unit 1Ω 120kW sec
/DCU-2-500	Discharge unit 2Ω 500kW sec
/SIM	Simulator operation
/SIM-TEST	Simulator/tester switchable
/PARALLEL	Parallel connection of systems
/PDSB-1E-2A-600	Power distribution switch box with 1 input and 2 outputs 1000V, 600A
/PDSB-2E-1A-1200	Power distribution switch box with 2 inputs and 1 output 1000V, 1200A
/PDU-TEST-600	Power distribution unit tester 600A
/PDU-TEST-1200	Power distribution unit tester 1200A
/PDU-SIM-600	Power distribution unit simulator 600A
/PDU-SIM-1200	Power distribution unit simulator 1200A
/MODBUS-TCPIP	Modbus interface
/IP21-IP22	Protection class IP21/IP22 per cabinet
/IP23	Protection class IP23 per cabinet
/IP53	Protection class IP53 (air-water cooling system)
/SENSE-M	Sense cable 800 + 1000V per metre, please specify
/CONTROL-M	Control cable 800 + 1000V per metre, please specify
/DIODE-800A	Protection diode for external unit under test
/LABVIEW	Labview drivers (dbc file)
/E-STOP	Emergency stop at door only
/TFT	TFT touchscreen display
/CAB-HALOGEN-FREE	Cabinet fitted with halogen free cables
/CAB-GLAND-PLATES	Cabinet fitted with gland plates
/CAB-LIFTING-LUGS	Cabinet fitted with lifting lugs
/CAB-L-DS-PLUG	Cabinet lamp with door switch and plug
/CAB-HEATING-SEP	Cabinet heating with separate input
/CAB-WHEELS	Cabinet fitted with wheels (only for single cabinets)

SELECTION TABLE

Part Number	Max. Power	Q1 Source Voltage Range	Q4 Sink Voltage Range*	Current Range per Channel**	Number of Channels
LAB-MOBI 800-75-400-2	75kW	0 - 800V	5 - 800V	0 ± 200A	2
LAB-MOBI 800-75-600-4	75kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-75-600-2	75kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-75-600-2-2	75kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-75-400-2	75kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-75-600-4	75kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-75-600-2	75kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-75-600-2-2	75kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-100-400-2	100kW	0 - 800V	5 - 800V	0 ± 200A	2
LAB-MOBI 800-100-600-4	100kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-100-600-2	100kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-100-600-2-2	100kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-100-400-2	100kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-100-600-4	100kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-100-600-2	100kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-100-600-2-2	100kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-160-400-2	160kW	0 - 800V	5 - 800V	0 ± 200A	2
LAB-MOBI 800-160-600-4	160kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-160-600-2	160kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-160-600-2-2	160kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-160-400-2	160kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-160-600-4	160kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-160-600-2	160kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-160-600-2-2	160kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-250-400-2	250kW	0 - 800V	5 - 800V	0 ± 200A	2
LAB-MOBI 800-250-600-4	250kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-250-600-2	250kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-250-600-2-2	250kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-250-400-2	250kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-250-600-4	250kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-250-600-2	250kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-250-600-2-2	250kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-320-400-2	320kW	0 - 800V	5 - 800V	0 ± 200A	2
LAB-MOBI 800-320-600-4	320kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-320-600-2	320kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-320-600-2-2	320kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-320-400-2	320kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-320-600-4	320kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-320-600-2	320kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-320-600-2-2	320kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-400-600-4	400kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-400-600-2	400kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-400-600-2-2	400kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-400-400-2	400kW	0 - 1000V	5 - 1000V	0 ± 200A	2
LAB-MOBI 1000-400-600-4	400kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-400-600-2	400kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-400-600-2-2	400kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***
LAB-MOBI 800-500-600-4	500kW	0 - 800V	5 - 800V	0 ± 200A	4
LAB-MOBI 800-500-600-2	500kW	0 - 800V	5 - 800V	0 ± 600A	2
LAB-MOBI 800-500-600-2-2	500kW	0 - 800V	5 - 800V	0 ± 600A	2 + 2***
LAB-MOBI 1000-500-600-4	500kW	0 - 1000V	5 - 1000V	0 ± 200A	4
LAB-MOBI 1000-500-600-2	500kW	0 - 1000V	5 - 1000V	0 ± 600A	2
LAB-MOBI 1000-500-600-2-2	500kW	0 - 1000V	5 - 1000V	0 ± 600A	2 + 2***

* The max. current that can be sunk derates as the voltage reduces below 5V. ** The sum total power provided by each channel can't exceed the total system power.

*** The system is comprised of 2 separate cabinets, each with 2 independent output channels.

“WE ARE POSITIVE PEOPLE”

ETPS engineer electronic power supply and testing systems. Our problem solving skills provide the spark of innovation to some of the world’s leading technology brands.

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