

LAB-SMS

5kW DC SOURCE WITH SINGLE PHASE INPUT



POSITIVE PROBLEM SOLVING **+ =**

The LAB-SMS is a programmable DC source with a variety of interfaces for remote control. Each unit can be operated in constant voltage and constant current modes.

Adjustable power limit and resistance modes are also provided. The unit has an RS-232 and isolated analogue interface, which allows the user to select the analogue voltage range to be 0-5Vdc or 0-10Vdc. Front panel control is also provided. A soft interlock circuit allows users to connect the unit to an external safety device such as an emergency stop. This feature requires a high signal (+10V) to be present between two pins, otherwise the output will be shutdown.

- + Compact Design with up to 10kW in Only 2U**
- + 5 Operating Modes: CC, CV, CP, CR, & PVsim**
- + Single Phase Input Option up to 5kW**
- + SD Card Slot with Datalogging**
- + Master / Slave Operation**

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FURTHER DETAILS

An SD card slot provides a very convenient and low cost method of implementing complex DC waveforms. The set up can be done via simple text script or graphically using freely available WAV software. The memory card slot can also be used for data logging of actual output values. The sampling time can be adjusted by the user from 1 second to 71 minutes.

The PV mode allows basic simulation of a solar cell array via adjustable IMPP an VMPP values. An extraordinary power density of up to 10kW is provided in just a 2U high rackmounting case. The unit is built with a systems interface as standard for master/slave operation. This enables setting values to be equally shared amongst units that are configured in parallel.

SELECTION TABLE

Part Number	Max Power	Output Voltage	Output Current
LAB-SMS 5800	5kW	0 - 800V	0 - 6.25A

TECHNICAL DATA

INPUT

Connection	3 wire (1P+N+E)
Maximum Allowed Non-Symmetry (3P-Systems)	<3%
Input Voltage	230VAC ± 10%
Input Frequency	47 - 63Hz
Standard Input Current ^{1,2}	33A _{eff}
Inrush Transient Current ²	<25A
Leakage Current	<35mA
Cos Phi	>0.7
Harmonic Content ³	50Hz = 72 % 100Hz = 2 % 150Hz = 0.9 % 200Hz = 0.1 % 250Hz = 11 % 350Hz = 0.6 %
Efficiency	Up to 94%

¹ For nominal current and nominal voltage

² For nominal input voltage

³ Total harmonic distortion input current ([%]/lin)

DISPLAY

Resolution Voltage Display	10V – 69.99V	70V – 99.9V	100V – 999V	1000V – 1500V
Voltage Setting Resolution	00.00	00.0	000	0000
Resolution Current Display	2A – 69.99A	70A – 99.9A	100A – 999A	1000A – 2000A
Current Setting Resolution	00,00	00,0	000	0000

EMC AND SAFETY STANDARDS

Safety	EN60950
Emissions	EN61000-6-4:2007
Immunity	EN61000-6-2:2005
Measurement, Control and Laboratory Equipment	EN61000-1:2010

TECHNICAL DATA

OUTPUT

Static Regulation	± 0.1 % of F.S.
Line Regulation Voltage	± 0.02 % F.S.
Line Regulation Current	± 0.02 % F.S.
Load Regulation	± 0.05 % F.S. ± 2mV
Load Regulation Current	± 0.05 % F.S. ± 20mA
Dynamic Response (10%-90%)	Typically <3ms assuming an ohmic load
Typical Voltage Ripple (p-p) 20MHz	1000mV
Typical Voltage Ripple (p-p) 300kHz	700mV
Typical Voltage Ripple (rms) 20MHz	400mV
Typical Voltage Ripple (rms) 300kHz	300mV
Current Ripple (p-p)	<0.5 % of F.S.
Current Ripple (rms)	<0.4 % of F.S.
Isolation	3000VAC (Between Primary and Secondary)
Isolation	2000VDC (Between DC-Output and Earth)
Isolation	2150VDC (Between Primary and Earth)
Rise Time (Full Load)	40ms
Rise Time (No Load)	10ms
Fall Time (Full Load)	60ms
Fall Time (No Load)	5s ≤50V
Relative Voltage Accuracy	± 0.25% V _{MAX}
Relative Current Accuracy	± 0.4% I _{MAX}
Maximum Sense Voltage	No sense function provided
Maximum Sense Voltage	No sense function provided
Relative Voltage Sense Accuracy	± 0.5% V _{MAX} [relative accuracy for worst case sense operation]
Over Voltage Protection	Adjustable between 0 % and 120 % of full voltage range
Over Current Protection	Limited by the current setpoint
Over Temperature Protection	If the internal heat sink temperature rises above 90°C the device will automatically shut down
Under Voltage Lock Out	If the set limit is reached then the device will automatically shut down
Slope Function	Adjustable slope for current and voltage: Range-Minimum 1 A/s resp. 1 V/s Range-Maximum is 30ms to V _{MAX} resp. I _{MAX}
AI Filter	Adjustable filter function for analogue interface set values. Average time is adjustable between 0s to 80s. 0=0s; 2=15ms; 3=30ms; 4=60ms; 5=125ms; 6=250ms; 7=500ms; 8=1s; 9=2s; 10=3s; 11=5s; 12=10s; 13=20s; 14=40s; 15=80s
t-Enable	Adjustable on time for the device after press the start button (standby). Time is adjustable between 1s and 65000s

AMBIENT CONDITIONS

Cooling	Forced air, front to back
Operating Temperature	0 to 50°C
Storage Temperature	-20°C to 70°C
Humidity	<80%
Operating Altitude	<2000m
Weight	18kg
Dimensions	19" × 2U × 440mm
Fan Noise	42 – 43 dB

Every effort is made to ensure that the information provided within this technical summary is accurate. However, ETPS Ltd must reserve the right to make changes to the published specifications without prior notice. Where certain operating parameters are critical for your application we advise that they be confirmed at the time of order. ETPS Ltd specialises in modifying its proven platforms to suit your needs. Please contact our office if your requirement is non-standard. Please note that your actual unit may differ from those shown.

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OUTPUT OPERATING MODES

GENERAL	
VI Mode	Voltage and current operation mode: voltage and current limit are programmable
VIP Mode	Power limit mode: a powerlimit is programmable
VIR Mode	Output resistor mode: an output resistor is programmable between $[R_{MAX} = V_{OUTMAX} / I_{OUTMAX}]$ and $[R_{MIN} = R_{MAX} \times 0.1]$
PVSim Mode	Photovoltaic Simulation Mode: simulates a PV generator's MPP tracking in both voltage and current modes

MASTER SLAVE INFORMATION

GENERAL	
Number of Devices Connectable in Master Slave	Up to 8
Maximum Voltage in Series	600V
Maximum Power Using Standard Devices	80kW
Set-Value Accuracy (V/A) Using Internal Reference	± 0.5 %
Absolute Voltage Accuracy in Parallel	± 0.25% of V_{NOM}
Absolute Current Accuracy in Parallel	± 0.4% of I_{NOM} × number of devices connected in parallel
Absolute Voltage Accuracy in Series	± 0.25% of V_{NOM} × number of devices connected in series
Absolute Current Accuracy in Series	± 0.4% of I_{NOM}



INTERFACE INFORMATION

ANALOGUE INTERFACE

Digital Outputs (CV, Standby, Error)	Output type: Open collector with pull-up resistor 10k Ω after +5 V $I_{SINKMAX}$: 50 mA
Digital Inputs (Ext. Control, Standby)	Input resistance: 47k Ω Maximum input voltage: 50V High level: $V_{IN} > 2V$ Low level: $V_{IN} < 0.8V$
Analog Outputs (Xmon)	Output resistance: 100 Ω Minimum permissible load resistance: 2k Ω Minimum load resistance for 0.1 % accuracy: 100k Ω
Analog Inputs (Xset)	Input resistance: 1M Ω Maximum permissible input voltage: 25V
Reference Voltage	Reference voltage V_{REF} : 10V \pm 10 mV Output resistance: <10 Ω Maximum output current: 10 mA (not short-circuit-proof)
5 V – Supply Voltage	Output voltage: 5V \pm 300mV Maximum output current: 50 mA (not short-circuit-proof)
Programming Response Time	<10ms

RS-232

Signal Inputs (RxD, CTS)	Maximum input voltage: \pm 25V Input resistance: 5 k Ω [Type] Switching thresholds: $V_H < -3V$, $V_L > +3V$
Signal outputs (TxD, RTS)	Output voltage (at $R_L > 3k\Omega$): min \pm 5V, Type \pm 9V, max \pm 10V Output resistance: <300 Ω ; Short circuit current: Type \pm 10mA

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**WE ARE
POSITIVE
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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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