

DC Sources VP/MS

3 – 10 kW

Active parallel mode up to 90kW

 19" x 2 U x 440 – 600 mm



OVERVIEW

- Efficiency up to 94%
- Compact design 10 kW in 2 U
- Active parallel mode up to 90kW
- User comfort via front panel operation
- CC, CV, CR and CP mode standard
- Storable space for freely programmable U/I Curves, playable over an external SD card
- Storable U/I curves (e.g. for PV-Simulation and sequential control)
- UI, UIP, UIR mode, simulation of PV graphs
- Script control: graph and process programming, booting from memory card
- Creation of user-defined output graphs via memory card or digital interface
- Data log function: current operating values are saved to the memory card within an adjustable interval
- Graphic Display
- Digital interfaces RS232 standard. IEEE 488, RS485, USB and LAN (optional)
- Galvanic isolated analog interface: 0..5 V or 0..10 V (user selectable)
- Line i/p available for world wide using
- Script control combined with the data log function enables the build-up of an independent „stand alone“ testing position
- User adjustable values for U_{max} and I_{max} enables limitation of output voltage/output current
- Special versions on request

PRODUCT EXAMPLES LAB/SMS

Type	Power W	Voltage V	Current A	Dimensions
VP/MS 315	3,000	0 – 15	0 – 200	19" x 2 U x 440 mm
VP/MS 335	3,000	0 – 35	0 – 90	19" x 2 U x 440 mm
VP/MS 345	3,000	0 – 45	0 – 70	19" x 2 U x 440 mm
VP/MS 370	3,000	0 – 70	0 – 45	19" x 2 U x 440 mm
VP/MS 3100	3,000	0 – 100	0 – 30	19" x 2 U x 440 mm
VP/MS 3150	3,000	0 – 150	0 – 20	19" x 2 U x 440 mm
VP/MS 3300	3,000	0 – 300	0 – 10	19" x 2 U x 440 mm
VP/MS 3600	3,000	0 – 600	0 – 5	19" x 2 U x 440 mm
VP/MS 3800	3,000	0 – 800	0 – 4	19" x 2 U x 440 mm
VP/MS 31000	3,000	0 – 1,000	0 – 3	19" x 2 U x 440 mm
VP/MS 31200	3,000	0 – 1,200	0 – 2.6	19" x 2 U x 440 mm
VP/MS 31500	3,000	0 – 1,500	0 – 2	19" x 2 U x 440 mm
VP/MS 420	4,000	0 – 20	0 – 200	19" x 2 U x 440 mm
VP/MS 435	4,000	0 – 35	0 – 115	19" x 2 U x 440 mm
VP/MS 445	4,000	0 – 45	0 – 90	19" x 2 U x 440 mm
VP/MS 470	4,000	0 – 70	0 – 60	19" x 2 U x 440 mm
VP/MS 4100	4,000	0 – 100	0 – 40	19" x 2 U x 440 mm
VP/MS 4150	4,000	0 – 150	0 – 30	19" x 2 U x 440 mm
VP/MS 4300	4,000	0 – 300	0 – 15	19" x 2 U x 440 mm
VP/MS 4600	4,000	0 – 600	0 – 7	19" x 2 U x 440 mm
VP/MS 4800	4,000	0 – 800	0 – 5	19" x 2 U x 440 mm
VP/MS 41000	4,000	0 – 1,000	0 – 4	19" x 2 U x 440 mm
VP/MS 41200	4,000	0 – 1,200	0 – 3.4	19" x 2 U x 440 mm
VP/MS 41500	4,000	0 – 1,500	0 – 2.7	19" x 2 U x 440 mm
VP/MS 525	5,000	0 – 25	0 – 200	19" x 2 U x 440 mm
VP/MS 535	5,000	0 – 35	0 – 150	19" x 2 U x 440 mm
VP/MS 545	5,000	0 – 45	0 – 120	19" x 2 U x 440 mm
VP/MS 570	5,000	0 – 70	0 – 75	19" x 2 U x 440 mm
VP/MS 5100	5,000	0 – 100	0 – 50	19" x 2 U x 440 mm
VP/MS 5150	5,000	0 – 150	0 – 35	19" x 2 U x 440 mm
VP/MS 5300	5,000	0 – 300	0 – 17	19" x 2 U x 440 mm
VP/MS 5600	5,000	0 – 600	0 – 8,5	19" x 2 U x 440 mm
VP/MS 5800	5,000	0 – 800	0 – 6.25	19" x 2 U x 440 mm
VP/MS 51000	5,000	0 – 1,000	0 – 5	19" x 2 U x 440 mm
VP/MS 51200	5,000	0 – 1,200	0 – 4.2	19" x 2 U x 440 mm
VP/MS 51500	5,000	0 – 1,500	0 – 3.4	19" x 2 U x 440 mm
VP/MS 615	6,000	0 – 15	0 – 400	19" x 2 U x 600 mm
VP/MS 620	6,000	0 – 20	0 – 300	19" x 2 U x 600 mm
VP/MS 635	6,000	0 – 35	0 – 175	19" x 2 U x 600 mm
VP/MS 645	6,000	0 – 45	0 – 140	19" x 2 U x 600 mm
VP/MS 670	6,000	0 – 70	0 – 90	19" x 2 U x 600 mm
VP/MS 6100	6,000	0 – 100	0 – 60	19" x 2 U x 600 mm
VP/MS 6150	6,000	0 – 150	0 – 40	19" x 2 U x 600 mm
VP/MS 6300	6,000	0 – 300	0 – 20	19" x 2 U x 600 mm
VP/MS 6600	6,000	0 – 600	0 – 10	19" x 2 U x 600 mm
VP/MS 6800	6,000	0 – 800	0 – 7.5	19" x 2 U x 600 mm
VP/MS 61000	6,000	0 – 1,000	0 – 6	19" x 2 U x 600 mm
VP/MS 61200	6,000	0 – 1,200	0 – 5	19" x 2 U x 600 mm
VP/MS 61500	6,000	0 – 1,500	0 – 4	19" x 2 U x 600 mm

PRODUCT EXAMPLES VP/MS

Type	Power W	Voltage V	Current A	Dimensions
VP/MS 820	8,000	0 – 20	0 – 440	19" x 2 U x 600 mm
VP/MS 825	8,000	0 – 25	0 – 320	19" x 2 U x 600 mm
VP/MS 835	8,000	0 – 35	0 – 230	19" x 2 U x 600 mm
VP/MS 845	8,000	0 – 45	0 – 180	19" x 2 U x 600 mm
VP/MS 870	8,000	0 – 70	0 – 115	19" x 2 U x 600 mm
VP/MS 8100	8,000	0 – 100	0 – 80	19" x 2 U x 600 mm
VP/MS 8150	8,000	0 – 150	0 – 55	19" x 2 U x 600 mm
VP/MS 8300	8,000	0 – 300	0 – 30	19" x 2 U x 600 mm
VP/MS 8600	8,000	0 – 600	0 – 15	19" x 2 U x 600 mm
VP/MS 8800	8,000	0 – 800	0 – 10	19" x 2 U x 600 mm
VP/MS 81000	8,000	0 – 1,000	0 – 8	19" x 2 U x 600 mm
VP/MS 81200	8,000	0 – 1,200	0 – 6.7	19" x 2 U x 600 mm
VP/MS 81500	8,000	0 – 1,500	0 – 5.4	19" x 2 U x 600 mm
VP/MS1020	10,000	0 – 20	0 – 500	19" x 2 U x 600 mm
VP/MS1035	10,000	0 – 35	0 – 350	19" x 2 U x 600 mm
VP/MS1045	10,000	0 – 45	0 – 250	19" x 2 U x 600 mm
VP/MS1070	10,000	0 – 70	0 – 175	19" x 2 U x 600 mm
VP/MS10100	10,000	0 – 100	0 – 100	19" x 2 U x 600 mm
VP/MS10150	10,000	0 – 150	0 – 75	19" x 2 U x 600 mm
VP/MS10300	10,000	0 – 300	0 – 40	19" x 2 U x 600 mm
VP/MS10600	10,000	0 – 600	0 – 17	19" x 2 U x 600 mm
VP/MS10800	10,000	0 – 800	0 – 13	19" x 2 U x 600 mm
VP/MS101000	10,000	0 – 1,000	0 – 10	19" x 2 U x 600 mm
VP/MS101200	10,000	0 – 1,200	0 – 8.4	19" x 2 U x 600 mm

Other versions on request

OPTIONS

Appendix	Description
../230	207 – 253 VAC Input only for 3 and 4 kW
../3P208	3 x 208 / 187 – 229 VAC Input
../3P400	3 x 400 / 360 – 440 VAC Input
../3P440	3 x 440 / 396 – 484 VAC Input
../3P480	3 x 480 / 432 – 528 VAC Input
../400Hz	400 Hz Input
../DC	250...750 VDC Input
../ATE	Without Manual Operation
../AT15/10	Galvanically isolated Analogue Interface 0 – 5 VDC / 0 – 10 VDC (STANDARD)
../LT IEEE	488 Interface
../LTRS485	RS 485 Interface
../LTRS232	RS 232 Interface (STANDARD)
../LAN	LAN Interface
../USB	USB Interface
../KFZ12	Preselected Start-up Curve 12 V
../KFZ24	Preselected Start-up Curve 24 V
../OPT	Predefined Output characteristic
../SD	SD Card Slot
../M-S	Master/Slave (STANDARD)

TECHNICAL DATAS

Input Voltage Specification

Voltage Range	230 VAC/3x208 VAC/3x400VAC/3x480VAC +/-10%
Frequency	47 - 63 Hz

EMC and Safety Standards

IT Equipment - Safety	EN 60950
Emission standard for industrial environments	EN 61000-6-4
Immunity for industrial environments	EN 61000-6-2

Programming & Controls

Static Voltage Regulation	+/- 0.05% + 2mV
Static Current Regulation	+/- 0.1% + 2mA
Dynamic Load Regulation	< 2ms (typ.)
Ripple	< 0.2% (typ.)
Stability	+/-0.05%
Programming Accuracy (Vout)	+/- 0.05% +2mV
Isolation	3000 V
Over Voltage Protection	0 - 120% Vmax
Circuit Protection	OC/OV/OT/OP
Line Regulation	< +/- 0.1% + 2mV
Static Load Regulation	< +/- 0.1% + 2mV

Output Specifications

Output Control & Monitoring	Front panel and/or optional Analog 0 to +5V/+10V Standard & isolated / Digital 12 bit: RS232, RS485, IEE-488, LAN, USB, SD card
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Environmental

Operation Temperature Range	0 - 50°C
Humidity	0 - 90% (non-condensing)
Power Reduction	50 - 70°C - 2%/°C
Storage Humidity	0 - 95% (non-condensing)
Storage Temperature Range	-45°C - 85°C
Vibration	10 - 55Hz / 1min / 2G XYZ
Shock	< 20G
Weight	3 - 5 kW 18 kg, 6 - 10 kW 25 kg

INTERFACE

Analog Interface

Digital outputs (CV, Standby, Error)	Output type: Open collector with pull-up resistor 10 k Ω after +5 V Isinkmax: 50 mA
Digital inputs (Ext. Control, Standby)	Input resistance: 47 k Ω Maximum input voltage: 50 V High level: $U_{in} > 2$ V Low level: $U_{in} < 0.8$ V
Analog outputs (Xmon)	Output resistance: 100 Ω Minimum permissible load resistance: 2 k Ω Minimum load resistance for 0.1 % accuracy: 100 k Ω
Analog inputs (Xset)	Input resistance: 1 M Ω Maximum permissible input voltage: 25 V
Reference voltage	Reference voltage U_{ref} : 10 V \pm 10 mV Output resistance: < 10 Ω Maximum output current: 10 mA (not short-circuit-proof)
5 V – supply voltage	Output voltage: 5 V \pm 300 mV Maximum output current: 50 mA (not short-circuit-proof)

RS 232

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

RS 485

Maximum input voltage	\pm 5 V
Input resistance	> 12 k Ω
Output current	\pm 60 mA Max
High level	$U_d > 0,2$ V
Low level	$U_d < -0,2$ V

EMC AND SAFETY STANDARDS

Safety standard	EN 60950
Emission	EN 61000-6-4:2007
Immunity	EN 61000-6-2:2005
Measurement, control- and laboratory equipment	EN 61010-1:2006

AMBIENT CONDITIONS

Cooling	Fans
Operating temperature	0 – 50°C
Storage temperature	-20°C – 70°C
Humidity	< 80 %
Operating height	< 2000 m
Vibration	10 – 55 Hz / 1 min / 2G XYZ
Shock	< 20 G
Weight VP/MS	3 – 5 kW, 18 kg, 6 – 10 kW, 25 kg