

SYSTEM 8500 Power Converter Family

With the SYSTEM 8500 DANFYSIK introduces a new high performance Power Converter generation.

The SYSTEM 8500 Power Converter Family is regulated, programmable, ramped or constant current output power converters. It is designed for applications requiring very high stability and low noise combined with reliability and ease of operation.

The SYSTEM 8500 is a result of intensive development and a careful planned evolution of our well known SYSTEM 8000 which is powering thousands of magnets in particle accelerator laboratories world wide, with ultra stable currents and very high reliability records.



SYSTEM 8500 Control Panel (M-Panel)

MAIN FEATURES:

The SYSTEM 8500 is available as a range of power, control and interface modules, which can be configured to meet specific application requirements, with guaranteed performance and short delivery (see the table on the page).

- Power range from 1 to 1000 kW
- Current range up to 5000 A
- Voltage range up to 600 V
- 0.1 to 100 ppm current stability class
- Precision ULTRASTAB[®] current transducer to achieve new performance levels for stability and linearity over a very wide current range.
- Optically isolated digital control to eliminate ground loops and conducted noise.
- Commands and information are accessed with a menu-driven graphical interface ("M-Panel")
- Arbitrary waveform generation of the output current, pre-programming of start-up sequences, time log of interlock functions, extended read back and diagnostics.
- Very high efficiency - typical 93%
- The SYSTEM 8500 "M-Panel" is backward compatible to all SYSTEM 8000 power supplies.
- Design for future functions via software up grading
- Direct configuration programming via PC connection.

APPLICATIONS:

The SYSTEM 8500 program is especially aimed at:

- Synchrotron accelerators
- Precision spectrometers
- Ion beam transport applications for both resistive and superconducting loads

FEATURING:

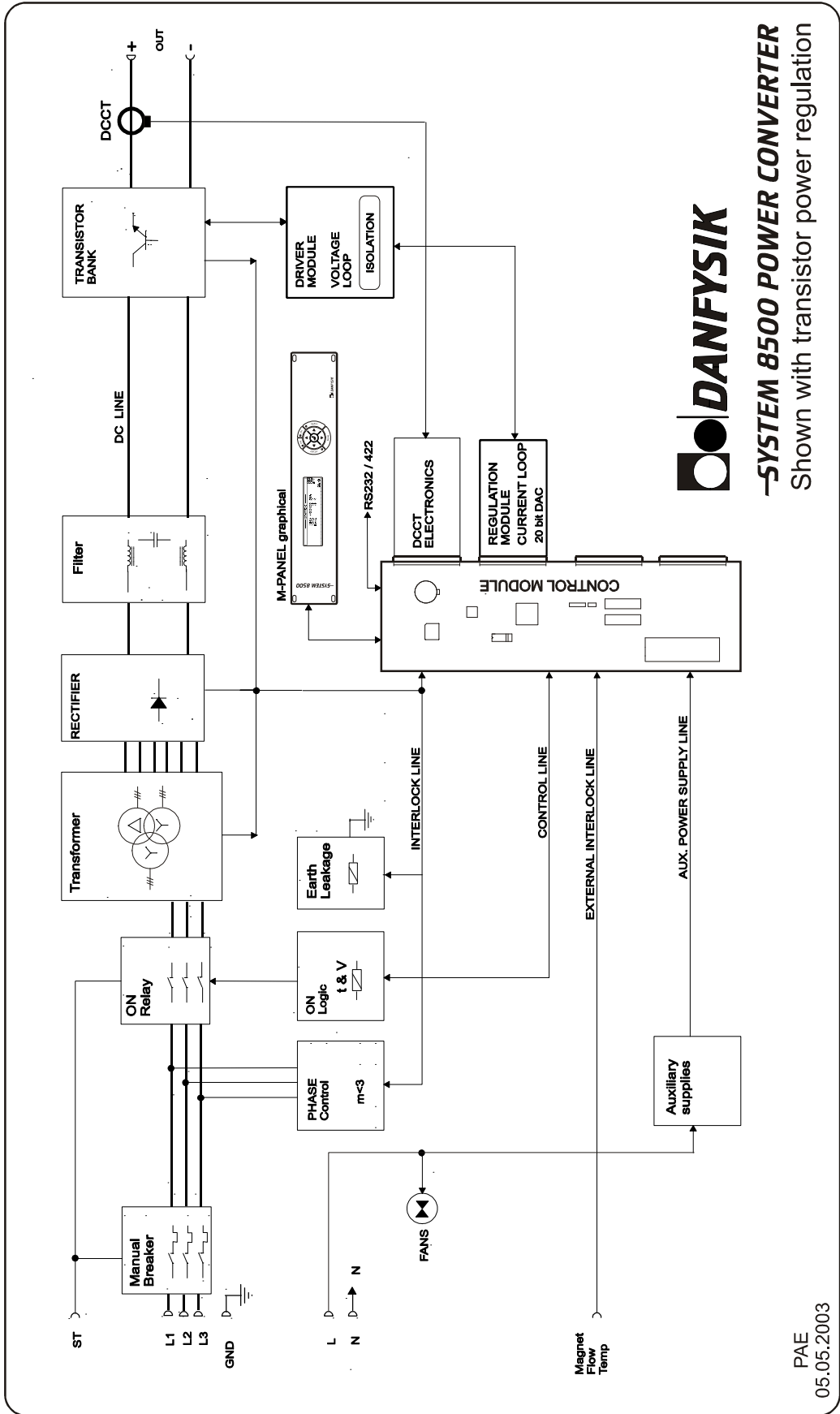
A new main controller module incorporate advanced features like arbitrary waveform generation of the output current, pre programming of start up sequences, time log of interlock functions, extended read back and diagnostics etc..

Current and voltage loops have been redesigned in **SYSTEM 8500** to obtain greater stability and higher bandwidth. A code module is introduced as a personality module for individual adoption to specific load matching. A feature which keeps all key modules as standards with a positive reflection back

The new control panel is featured as self-configuring to any of the older models of the **SYSTEM 8000**, displaying the data available on that specific version.

The block diagram on next page shows the key components and control module in the **SYSTEM 8500** power converters.

- **Main Controller module.**
 - Extended read back and diagnostics
 - Standard delivery covers setting and reading of current and voltage in % or in I and U
 - Arbitrary waveform generation of output current
 - Pre programming of start up sequences
 - Time log of interlock functions
 - Standard bipolar
 - Extra interlock features
- **Regulation module.**
 - Standard regulation module for both resistive and superconducting loads
 - DAC as “add-on” module in two versions, with or without Peltier module
 - Designed for bipolar operation
 - Hardware clip-on module for load matching
- **Driver module.**
 - Full galvanic isolation from Regulation module up to +-600V
 - Designed for resistive and superconducting loads
 - Two quadrant control function
 - Real emitter follower design
- **New high efficient water cooled transistor bank.**
 - Compact water cooled heat sink design for high power density
 - All copper material in the water circuit.
 - Easy serviceable
- **New cabinet design.**
 - Very rigid steel cabinet in a light friendly colour
 - Thermal isolation between control module and power components
 - Conforms to the latest EMC regulations



—SYSTEM 8500 POWER CONVERTER
 Shown with transistor power regulation

CONFIGURATIONS:

The SYSTEM 8500 is available in different configurations dependant on the output ratings (**MPS853**, **MPS854**, **MPS855**, **MPS857**, **MPS858** & **MPS859**), see the table below:

Output Range(A)	Output Range (V)						
	5	10	50	100	200	300	600
25		857	857				
50	854	854 857 858	854 857 858	854	854		
100	854	854 857 858	854 857 858	854	854		
120	854	853 854 858	853 854 858	853 854 855	853 854 855	853 855	855
160	854	853 854 858	853 854 858	853 854 855	853 854 855	853 855	855
300	854	853 854 859	853 854 859	853 854 855 859	853 854 855 859	853 855 859	855
1500	854	853 854 859	853 854 859	853 854 855 859	853 854 855 859	853 855 859	855
2000	854	853 854	853 854	853 854 855	853 854 855	853 855	855
5000				855	855	855	855

For further details please see the Specification Overview below and the corresponding datasheets.

SPECIFICATIONS – Overview (SYSTEM 8500 Family members)

SPECIFICATIONS		MPS 853	MPS 854	MPS 855	MPS 858	MPS 859
DC OUTPUT RATINGS:						
• Power range	kW	5-300	5-50	10-1000	1-6	80-500
• Standard current range	A	120-2000	50-2000	120-5000	50-160	300-1500
• Standard voltage range	V	10-300	5-200	100-600	10-50	10-300
REGULATION TOPOLOGY		Series transistor	Series transistor	6 or 12 pulse SCR	Series transistor	Switch mode conv. with IGBT
PERFORMANCE:						
• Warm up time (cold)	min.	30	60	30	30	30
• Warm up time (stand-by)	min.	15	15	15	15	15
• Drift:						
Short term 30 min. (fwhm)						
Standard	ppm	< ±3	< 0.3	< 30	< ±3	±3
Optional	ppm	< ±1	0.1		< ±1	±1
Long term 8 hours (fwhm)						
Standard	ppm	< ±10	< 2.0	< 100	< ±10	< ±10
Optional	ppm	< ±3			< ±3	< ±3
• Line regulation:						
±10% slow, T > 1 min.		ppm	< 0.1	< 5	< 0.5	< 0.5
± 1% fast, T > 3 m sec.		ppm	< 0.1	< 50	< 0.5	< 0.5
• Load regulation:						
±10% resistance change		ppm	< 0.5	< 5	< 0.5	< 0.5
• Ripple and noise						
V _{pp}	mV + % of V _{out}	5 mV + 0.01%	< 0.5 mV	5 mV + 0.5%	5 mV + 0.01%	2.5% at 10kHz
Current						
With RC network (rms)	ppm					20
With active filter (rms)	ppm					1
• Temperature coefficient:						
Ambient						
Standard	ppm/°C	1	0.2	1	1	1
Optional	ppm/°C	0.2		0.2	0.2	0.2
Cooling water	ppm/°C	0.05		0.05	0.05	0.05
• DC output isolation						
Resistance	Mohm	> 1	> 1	> 1	> 1	> 1
• Current readback resolution						
Standard	ppm	3906	15	3905	3906	3906
Optional	ppm	15		15	15	15

SPECIFICATIONS	MPS 853	MPS 854	MPS 855	MPS 858	MPS 859
INPUT/OUTPUT INTERFACES:					
• Operator control panel M with knob setting and LCD display	Standard	Standard	Standard	Standard	Standard
• Computer interface Standard Optional (IEEE 488 (GPIB)) Optional (customer defined)	RS232C/RS422	RS232C/RS422	RS232C/RS422	RS232C/RS422	RS232C/RS422
TEMPERATURE RATINGS:					
• Operating temperature: Ambient °C	15 to 35	15 to 35	15 to 35	15 to 35	15 to 35
Water °C	15 to 35	15 to 35	15 to 35	15 to 35	5 to 35
• Storage temperature °C	-20 to 50	-20 to 50	-20 to 50	-20 to 50	-20 to 50
• Main cooling	Water	Water	Water	Water	Water
• Cooling water pressure: Minimum diff. bar	3	3	3	3	3
Max. absolute bar	12	12	12	12	12
Test pressure bar	20	20	20	20	20
AC INPUT:					
• Control voltage, 1 phase, 50-60Hz, standard					
Europe V	230	230	230	230	230
USA V	115	115	115	115	115
(can be derived from 3 phase mains)					
• Mains voltage, 3 phase, 3 or 4 wire, 50-60Hz, standard					
Europe V	400	400	400	400	400
USA V	480	480	480	480	480
CABINET					
• Material	Steel	Steel	Steel	Steel	Steel
OPERATOR CONTROL PANEL					
• Dimensions W x H x D mm	483 x 88 x 75	483 x 88 x 75	483 x 88 x 75	483 x 88 x 75	483 x 88 x 75

For further details, please see specifications for respective type of MPS. Specifications are subject to change without notice.