

SYSTEM 8500

Model 859

Magnet Power Supply



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The System 8500 Power Supply program offers Model 859 which is available up to 1,500 kW output power and where high efficiency, very low AC line distortion and a high power factor are key features.

Model 859 is available as unipolar, 2-quadrant and bipolar operation. For 2-quadrant and bipolar configuration energy recovery circuit can be provided as option.

The modular design concept has been maintained, making service easy and fast.

The MPS 859 offers you advanced power circuit technology, using the latest components combined with the normal high quality standards expected with a Danfysik power supply.

System 8500

The System 8500 is a generation of high performance power supplies.

The System 8500 power supply family is current regulated power supplies. The output current is programmable and can be ramped or constant. The power supply is designed for applications that requires very high stability and low noise combined with reliability and ease of use.

The system 8500 is available as a range of power, control and interface modules, and configured to meet specific application requirements, with guaranteed performance.

Precision ULTRASTAB® current transducer to achieve new performance levels for stability and linearity over a wide current range.

The menu-driven graphical display gives access to commands and information.

Arbitrary waveform generation of the output current, pre-programming of start-up sequences, time log of interlock functions, extended read back and diagnostics.

The current and voltage loops in System 8500 are designed to obtain greater stability and higher bandwidth. A code module is used to obtain specific load matching.

The power supply features

- Power range from 80 kW to 1,500 kW
- Current range from 300 A to 10,000 A
- Full 2-quadrant operation as option
- Short-circuit & open-circuit protected
- 10ppm stability class
- Very high efficiency – typical >90%
- Very low EMI on AC line and current output
- Very low AC line distortion (<10%)
- High power factor >0.95

Applications

- High stability spectrometer magnets
- Superconducting magnets
- Superconducting wire testing
- Calibration of high current shunts

Performance

All drift and regulation data are given for max. current output.

Warm up time (cold start) : 60 min.
Warm up time (from stand-by) : 15 min

Drift

Short term 3 min. (fwhm) : <±10ppm
Long term 8 hours (fwhm) : <±10ppm

Line regulation

±10% slow, T >1 min. : <0.5ppm (fwhm)
±1% fast, T >3 m sec. : <0.5ppm (fwhm)

Load regulation

±10% resistance change : < 0.5ppm

Current ripple

(depending on requirement):
Obtainable with RC network : <20ppm
Obtainable with active filter : <1ppm

Temperature coefficient

Ambient : 0.2ppm/°C
Cooling water : 0.05ppm/°C

DC output isolation resistance : >50 Mohm

Output polarity – Optional : Remote controllable

Current setting resolution

Standard : 18 bit (4ppm)

Absolute calibration of current : 0, +200ppm

Current readback resolution

Standard : 8 bit (3906ppm)
Optional : 16 bit (15ppm)

Efficiency (current-voltage dependent)
Total harmonic distortion on AC input : <10%
Power factor : <0.95

Control panel

Alphanumeric LCD display:

Pre-set output current	: 6 digits [ppm or A]
Actual output current	: 5 digits [ppm or A]
Output voltage	: 2 digits [ppm or V]
Interlock status	: text string
Menu system	: local control

Push buttons and status Indicators

OFF	: [Button] / [LED]
Reset (interlock)	: [Button] / [LED]
ON	: [Button] / [LED]
Menu	: [Button]
Ready (in regulation)	: [LED]

Remote control interface

RS-422/RS-485 as standard (RS-232 are available on request)
Ethernet interface are optional

Interlock status

Over voltage
Over current
Over temperature
Fan fault
Earth leakage
AC fault
External interlock (ext. 1 – 4)

Ramp profile digitally

- Arbitrary ramp profile
- Equal time slot
- Auto ramp

Operator Control Panel

Dimensions (W x H x D)	: 19 inch rack mount x 88 x 75 mm
Removable via cable	: 100 m (Cable optional)

Function Status	Command	Read-back
ON/OFF	Yes	Yes
RESET	Yes	
REMOTE STATUS	Yes	Yes
OUTPUT CURRENT	Yes (Current set value)	Yes
OUTPUT VOLTAGE	Yes (Voltage set value)	Yes
AMBIENT TEMPERATURE		Yes
RAMP PROFILE CONTROL (OPTIONAL)	Yes	

Analog Control Interface (Optional)

Analog inputs signals: 0-10 V (± 10 V for bipolar)

Function Status	Command	Read-back
OUTPUT CURRENT	Yes (Current set value)	Yes
OUTPUT VOLTAGE	Yes (Voltage set value)	Yes
EXTERNAL TRIGGER RAMP PROFILE CONTROL (OPTIONAL)	Yes	

Technical specifications

AC Input

Control Voltage

Single phase, 50-60 Hz, standard : Europe 230 V ($\pm 5\%$)
: USA 115 V ($\pm 5\%$)

Available on request : 110 V
: 240 V

Main voltage

3 phase, 4 or 5 wire, 50-60 Hz, standard : Europe 400 V ($\pm 5\%$)
: USA 480 V ($\pm 5\%$)

Available on request : 208 V
: 415 V
: 565 V

DC Output ratings

Power range : 80-1,500 kW
Standard current range : 300-2,000 A
Optional current voltage : 300-10,000 A
Voltage range : 0-2,000 V

Cabinet

Material : Steel cabinet with aluminum front plate

Temperature ratings

Operating

Ambient : 15 to 35 °C
Water : 5 to 35 °C

Storage

: -20 to 50 °C

Main cooling

: Water

Cooling requirements

Main cooling : Water
Differential pressure : 3-12 bar
Max. absolute : 12 bar
Test pressure : 20 bar
Flow, ltr/min : approx. 0.08 x kW



Company Address

Danfysik A/S
Gregersensvej 8
DK-2630 Taastrup
Denmark

Phone +45 7220 2400
Fax +45 7220 2410
Email sales@danfysik.dk
www.danfysik.dk

Production facilities

Gregersensvej 7-8
DK-2630 Taastrup

Auditors
KPMG, Copenhagen

