

E-Beam Power Supplies "Cheetah Series"



ST-4, ST-6, ST-8, ST-10

- Maximum power 4/6/8/10 kW
- ST-10 offers simultaneous operation of up to 3 e-beam sources
- All Solid State switch mode design
- Rugged well overrated IGBT inverter for superior reliability
- Extensive arc management for outstanding performance, fastest arc recovery, arc counter and arc duration sensor
- Adjustable voltage 0 to -10 kV (0 to -8kV for ST-4) with precise regulation ($\pm 0.25\%$) for stable beam position, ultra low ripple for minimum beam size
- Constant emission current regulation $\pm 0.5\%$
- Full remote operation from PLC or optional Handheld for both High Voltage and Source
- 19 Inch rack mountable, ultra compact
ST-4/6/8: 8.75" (5U) high
ST-10: 10.5" (6U) high + 5.25" (3U) per Source Filament Output;
Controller: 1.75" (1U) high
- "Cheetah" Digital Programmable Sweep standard 3.50" (2U)
- Air cooled



TT-3, TT-6, TT-8

- Maximum power 3.5/6/8 kW
- Tetrode tube for superior instantaneous arc-down recovery
- Adjustable voltage (see overleaf) with precise regulation ($\pm 0.25\%$) for stable beam position, very low ripple for minimum beam size
- Constant emission current regulation $\pm 0.5\%$
- Full remote operation from PLC or optional Handheld for both High Voltage and Source
- 19 Inch rack mountable TT-3: 10.50" (6U) high
- TT-6: 14.00" (8U) high
- TT-8: 15.75" (9U) high
- Controller: 1.75" (1U) high
- Analog Sweep standard 5.25" (3U),
- Digital Programmable Sweep optional
- Air cooled



TT-10, TT-15, TT-20

- Maximum power 10/15/20 kW
- Simultaneous operation of up to 3 e-beam sources
- Robust overrated tetrode tube for superior instantaneous arc-down recovery
- Adjustable voltage -4 to -10 kV with precise regulation ($\pm 0.25\%$) for stable beam position, very low ripple for minimum beam size
- Constant emission current regulation $\pm 0.5\%$
- Full remote operation from PLC or optional Handheld for both High Voltage and Source
- 19 Inch Controller 1.75" (1U) high
- Analog Sweep standard 5.25" (3U), Programmable Sweep optional
- Air cooled



Analog Sweep With Remote/Memory Module

XY beam sweep control with selectable triangle or oscillating circle patterns. Includes hand held joy stick remote control and four pattern storage module, either of which can be operated from a 10 foot cable.

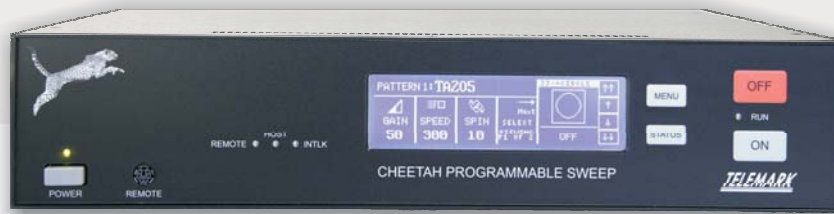
Sweep Frequency Range is 3-90Hz.
Sweep output is +/- 1.5amp

Specifications – Tetrode Tube Power Supplies

	TT-3 3.5kW	TT-6 6kW single source	TT-8 8kW	TT-10 10kW	TT-15 15kW up to three sources	TT-20 20kW
Maximum Power	500mA @ 7kV	750mA @ 8.0kV	800mA @ 10kV	1.0A @ 10kV	1.5A @ 10kV	1.7A @ 12kV
HV (usable range)	- 5 to -7kV	-6 to -8kV	-6 to -10kV	-4 to -10kV	-4 to -10kV	-4 to -12kV
Response time	<100 microseconds					
Source Filament	40A max@ 8VAC			50A max @ 8Vac		
Process Control Voltage	+10VDC					

Specifications – "Cheetah" Solid State Power Supplies

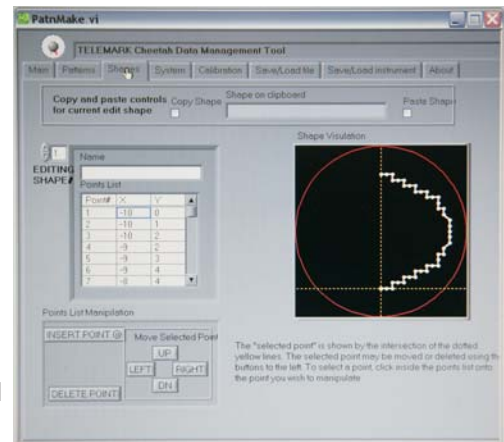
	ST-4 4kW	ST-6 6kW Single source	ST8 8kW	ST-10 10kW up to three sources
Maximum Power	500mA @ 8kV	600mA @ 10 kV	800mA @10kV	1A@ 10kV
HV (adjustable)	0 to -8kV	0 to -10kV		
Response time	<50 microseconds			
Source Filament	40A max @8VAC			
Process Control Voltage	+10VDC			



“Cheetah” Digital Programmable Sweep

Standard with ST-6/8/10,
Optional with ST-4 and TT Supplies

The Digital Programmable Sweep controls the pinpoint location of the EB Source beam spot. Patterns are viewable from the LCD screen and can be edited on the fly to change size, frequency, rotation, profile and location.



Backlit Touch Screen for editing and selection of shapes and patterns

Stores 32 shapes and 32 patterns

Compatible with all transverse beam sources, featuring offset and an interlock for sources requiring coil bias for pocket center

User may edit any step in a shape without rewriting the program

All pattern parameters may be edited and shapes may be changed on the fly even when sweep is in operation

Preprogrammed with sample shapes

Unit adjusts output to match deflection characteristics and magnetic distortion of each source, so displayed shape mirrors actual shape in the chamber

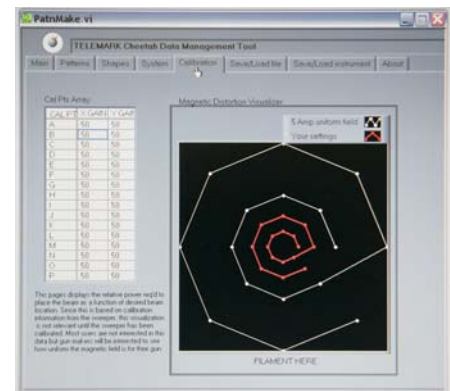
Class D output drivers with programmable current limits up to +/- 5 amp for both directions

Output polarity switching for ease of installation

Frequency range 0 to 500Hz depending on pattern structure and coil inductance

Handheld trackball controls programming, shape and pattern modifications, and selection or temporary repositioning of pattern center

Included LabView based software allows user to create or edit shapes and patterns on their PC using a mouse, upload, download or save to disk. The number of files is only limited by the disk space on the PC.



TELEMARK

Model 880 Deposition Rate Controller



The Model 880 Controller is based on a multi-microprocessor design, which enables rapid measurement updates with superior resolution. It features an LCD touch screen for programming and displaying process data and graphs, as well as modular architecture. The unit has four slots for I/O cards; each slot can house either an input card (8 opto-isolated inputs) or an output card (8 SPDT relays). The sensor-head/source-control modules provide two channels each for crystal frequency measurement and two separate, isolated analog 0-10 VDC (+ and – polarity) outputs for source control or recorders. The 880 can house four such modules, supporting up to eight channels of sensor input and 8 analog outputs, and enabling averaging between several sensor crystals.

Features

- Advanced measurement technique provides high accuracy at a constant 100ms measurement period
- Versatile film sequencing and process control
- Extremely flexible programmable Input/Output structure (including pulsed signals, counters and timers) for versatile system control
- Multi-film and multi-process storage with up to 99 materials
- Multi-processor design allows module expansion while maintaining high performance in all configurations
- Two sensor inputs standard (6 additional sensor inputs – optional), 2 source analog outputs (6 additional configurable analog outputs – optional)
- RS-232C standard (Telemark protocol or ASCII)
- Weighted averaging of up to eight sensors for precise large area depositions
- Large format numeric and graphic display with touch panel user interface
- Optional removable memory module for process parameter storage and transfer
- Expandable I/O up to 32 inputs or outputs (in groups of 8 each) with programmable logic I/O structure
- Four user definable front panel buttons and indicators for use with programmable logic I/O structure

Specifications

Sensor Crystal Frequency	6MHz
Frequency resolution	+/-0.02Hz (0.009 Ang for Aluminum)
Accuracy	+/-0.5% thickness
Measurement Range	500kAng Aluminum equivalent
Thickness Display	0.000 to 999.9kAng
Rate Display	0.0 to 999Ang/s
Measurement Update	10/s at all settings
Inputs (programmable)	8 opto-isolated, 5-24VDC or contact closure
Outputs (programmable)	8 SPDT relays, 1A @ 24VDC max.
Analog Outputs	12 bit resolution As Source Outputs: +/-2.5, 5 or 10VDC @ 10mA As Recorder Outputs: 0-10VDC, function user programmable
Computer Interface	RS-232C (Telemark protocol or ASCII)
Line Voltage	90-264VAC, 50-60Hz