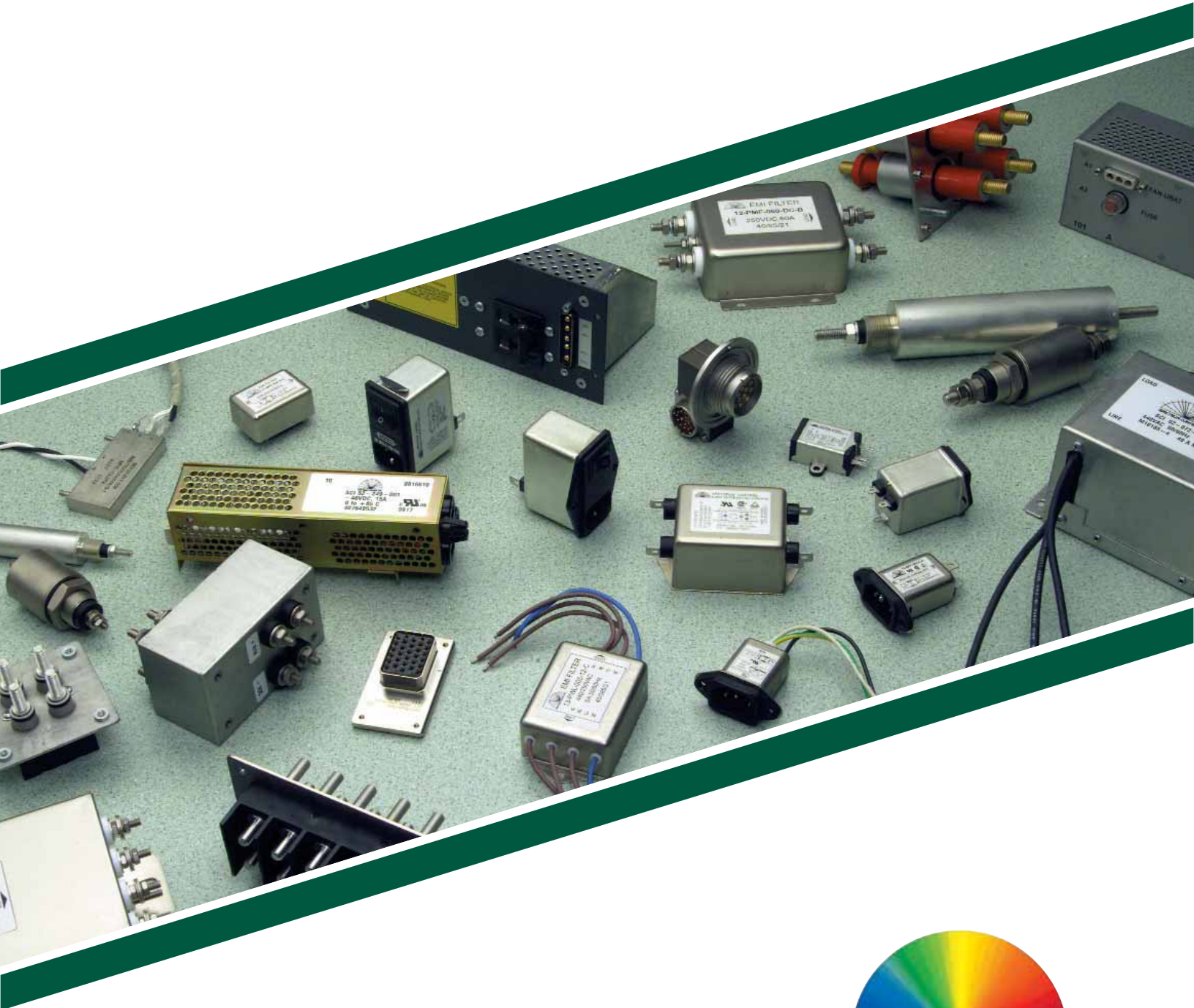


EMI Power Filters Selection Guide



SPECTRUM CONTROL INC.
A Control Products and Systems Company

ISO 9001
CERTIFIED

Spectrum Control's Expertise

If you're looking for an ideal way to filter and condition power before it enters your system, we've got the answer. Our complete line of EMI/RFI filtering products includes single line filters, filtered terminal blocks, power entry modules, power line filters, military/aerospace multi-section filters and custom filter assemblies. In addition, we'll work with your design and manufacturing teams to develop power distribution systems that incorporate multiple power conditioning functions in a single package.

Spectrum Control is unique in providing an integrated approach to EMC problem solving by offering customer consulting, diagnostic testing, design and manufacturing services. As a fully integrated manufacturer, we are able to respond to short lead times and develop cost-effective solutions to satisfy your performance and budgetary needs.



Test

- Spectrum Control's Test Facility provides a total solution for your compliance issues
- In-house anechoic chamber and shielding room
- NARTE certified engineering staff
- Tests available for:
 - European emission and immunity regulations (CE Mark)
 - FCC Part 15
 - MIL standard testing



Design

- In-house EMI and power conditioning specialists
- Comprehensive computer modeling
- Designs are "in-house" compliance verified
- Custom Assemblies:
 - Incorporate EMI filtering, circuit breaker protection, transient suppression, voltage cut-off, power factor correction, harmonic suppression, remote sensing and other options to meet your specific requirements
 - Plug-and-play designs
 - Reduce your time to market
 - Lower your inventory needs



Manufacture

- Flexible factories
- Custom designs
- Spectrum Control, Inc. ISO 9001 certified
- Schedule sharing programs available
- Vertically integrated supplier



SPECTRUM CONTROL INC.

A Control Products and Systems Company

www.spectrumcontrol.com

ISO 9001
CERTIFIED

Power Products

High Current Feed-thru Filters

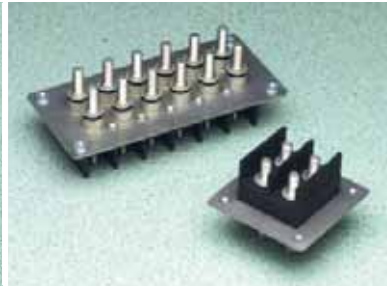
High Current Terminal Blocks

Power Entry Modules

Applications



Cellular base stations, telephone racks, high current switch mode power supplies, power amplifiers and servers



Cellular base stations, telecommunication switching networks, hi-reliability radar & transmission systems, industrial controls, power supplies, UPS, instrumentation and power distribution



Digital equipment, personal computers and peripherals, measuring instruments, home appliances, monitor and display units

Features/Benefits

- **Easy installation** - Bolt-in style, surface mount
- **Design flexibility** - Available with single, dual, triple and quad configurations, different stud lengths, mounting brackets hardware and EMI gasketing available.
- **Performance** - Ideally suited to help meet NEBS, GR1089, and EN55022
- **Agency approvals** - Designed to meet agency approvals, some selected filters UL 1950 recognized, CSA C22.2 certified and TÜV or SEMKO approved
- **Custom options** - Custom interfacing, contact pins, wire leads, multiple outputs
- **Environmental** - Can be used in both indoor and outdoor applications

- **Rugged construction** - Provides protection to filtering element; especially useful for repeated in-field wiring changes
- **Design flexibility** - 2 x 2 to 2 x 6 position blocks
Terminal Blocks available with either metric or US threaded studs
- **Performance** - Filter elements provide high insertion loss for EMI filtering of DC power lines to help meet NEBS, GR1089, and EN55022
- **Agency approvals** - Designed to meet agency approvals
UL and CSA approved

- **Rugged construction** - Designed to perform in industrial environments
- **Design flexibility** - Available in PCB mount, fast-on tab, solder lug or flying leads
- **Performance** - Ideally suited for products that must conform to FCC part 15 regulations
Meets over-voltage of IEC 664 category II and complies with IEC 950
Metal case provides maximum isolation that optimizes performance
- **Agency approvals** - UL recognized, CSA certified, TÜV approved (tested and found to be in accordance with VDE 0565 Part 3)
- **Custom options** - Value added connectors, wire leads, ring terminals

Performance Characteristics

- **Current ratings (max.)** - To 500 Amps
- **Voltage ratings (max.)** - To 1000 VDC and to 240 VAC
- **Insertion loss range** - AC: 1 MHz to 1 GHz
DC: 150 KHz to 10 GHz
- **Temperature range** - -55°C to +125°C
- **Capacitance** - To 4.7 μ F
Class Y2 and Y4 available

- **Current ratings (max.)** - Barrier strip: 60 Amps
- **Voltage ratings (max.)** - From 100 VDC to 250 VAC, 60 Hz
- **Insertion loss range** - Effective insertion loss from 1 MHz to 200 MHz
- **Temperature range** - -55°C to +105°C
- **Capacitance** - .015 μ F per line or .030 μ F per pair

- **Current ratings (max.)** - Up to 15 Amps
- **Voltage ratings (max.)** - From DC to 250 VAC, 60 Hz
- **Insertion loss range** - Effective filtering from 100 KHz to 30 MHz
- **Temperature range** - -25°C to +85°C
- **Leakage current range** - 0.35 mA to 0.50 mA max



For data sheets on the product you're looking for, enter the dedicated URL

www.spectrumcontrol.com/slfilter

www.spectrumcontrol.com/terblk

www.spectrumcontrol.com/pem

Power Entry Modules Fused/Switched and Fused



Digital equipment, personal computers and peripherals, measuring instruments, home appliances, monitor and display units

- **Rugged construction** -
Designed to perform in industrial environments
- **Design flexibility** -
Bolt-in or snap-in mounting
Available in fused or switched and fused versions
- **Performance** -
Ideally suited for products that must conform to FCC part 15 regulations
Meets over-voltage of IEC 664 category II and complies with IEC 950
Low leakage versions available for medical applications
- **Agency approvals** -
UL recognized, CSA certified, TÜV approved (tested and found to be in accordance with VDE 0565 Part 3)

- **Current ratings (max)** -
2, 4 and 6 Amps
- **Voltage ratings (max.)** -
125 VAC and 250 VAC
- **Insertion loss range** -
Effective filtering from 100 KHz to 30 MHz
- **Temperature range** -
-25°C to +85°C
- **Leakage current range** -
0.35 mA to 0.50 mA max for general purpose filters
0.005 mA to 0.10 mA max for medical filters

www.spectrumcontrol.com/pemfsf

Power Line Filters



Digital equipment, personal computers and peripherals, measuring instruments, medical, industrial, telecommunications equipment, factory automation, UPS, vending machines, elevators, and switch mode power supplies

- **Rugged construction** -
Designed to perform in industrial environments
- **Design flexibility** -
Available with fast-on, bolt-in terminals or wire leads
Single stage and dual stage
- **Performance** -
Ideally suited for products that must conform to FCC part 15 regulations
High performance in both metal and plastic cases
Excellent attenuation for high voltage impulse
- **Agency approvals** -
Several styles are UL recognized, CSA certified, TÜV approved (tested and found to be in accordance with VDE 0565 Part 3)

- **Current ratings (max)** -
To 260 Amps
- **Voltage ratings (max.)** -
From DC to 250 VAC, 60 Hz
- **Insertion loss range** -
Effective filtering from 100 KHz to 30 MHz
- **Temperature range** -
-25°C to +85°C
- **Leakage current range** -
0.35 mA to 3.0 mA max

www.spectrumcontrol.com/pline

Three-Phase Power Line Filters



Digital equipment, industrial equipment, UPS, inverters, converters, automation equipment, computerized industrial washing machines, and switching power supplies

- **Rugged construction** -
Designed to perform in industrial environments
- **Design flexibility** -
Available with fast-on or bolt-in terminals
Single and dual stage
Delta and Wye configurations
- **Performance** -
Ideally suited for products that must conform to FCC part 15 regulations
Both metal and plastic cases provide high performance
Excellent attenuation for high voltage impulse
- **Agency approvals** -
Agency approvals pending

- **Current ratings (max)** -
3 Amp to 200 Amps
- **Voltage ratings (max.)** -
250 VAC to 440 VAC
- **Insertion loss range** -
Effective filtering from 100 KHz to 30 MHz
- **Temperature range** -
-40°C to +85°C
- **Leakage current range** -
Standard and low leakage designs available

www.spectrumcontrol.com/3phline

Military/Aerospace Multisection Filters



Commercial & military avionics, satellites, secured communications, ruggedized computers, radar, electronic warfare, and ground/air weapon systems

- **Rugged construction** -
Metal enclosures built to withstand MIL-STD environmental conditions
- **Design flexibility** -
Standard catalog parts available
Parts designed to meet customers' requirements
- **Performance** -
EMI designs provide excellent isolation and high frequency performance
- **Military approvals** -
Available to meet MIL-F-15733 and MIL-STD-461
Military testing IAW MIL-STD-202, MIL-STD-105
- **EMI design verification** -
Equipment verification can be accomplished through Spectrum Control's EMI test lab

- **Current ratings (max.)** -
Up to 100 Amps
- **Voltage ratings (max.)** -
400 VDC and 240 VAC standard; custom voltage ratings available
- **Insertion loss range** -
Effective filtering from 10 KHz to 10 GHz
- **Temperature range** -
-55°C to +125°C

www.spectrumcontrol.com/multi

Commercial Custom Assemblies



Telecommunications, cellular base stations, medical equipment, telephone switching, traffic control systems, industrial work stations, servers, power supplies, UPS, industrial controls and welders

- **Rugged construction** - Designed to perform in industrial environments
- **Design flexibility** - Filters designed to meet customer's circuit requirements
Transient protection
Circuit breakers
Voltage cut-off
Other options available
Provides quick and economical solutions to meet customers' specific requirements
Increases speed-to-market and decreases development time
Designs optimized through EMC verification
- **Agency approvals** - Designed to meet NEBS and safety agency approvals

- **Current ratings (max.)** - Up to 250 Amps
- **Voltage ratings (max.)** - 400 VDC and 240 VAC standard; custom voltage ratings available
- **Insertion loss range** - Effective filtering from 10 KHz to 10 GHz
- **Temperature range** - -55°C to +125°C
- **Leakage current range** - Standard and low leakage designs available

www.spectrumcontrol.com/comcus

AC Power Strips and Distribution Systems



Telecommunications, peripheral devices, industrial equipment, PC work stations, servers, networks, simulator systems and medical equipment

- **Rugged construction** - Designed to perform in industrial and high reliability environments
- **Design flexibility** - Standard and intelligent versions
Single phase and 3-phase options
Circuit breaker protection
Transient protection
EMI filtering
Power factor correction
Harmonic suppression
Remote on/off control
Programmable options available
19" rack mountable units
Multiple outlets available
Indicator lights
High temperature sensing
- **Performance** - Incorporates multiple power conditioning functions in a single package

- **Agency approvals** - Designed to meet agency approvals
- **Current ratings (max.)** - Up to 40 Amps
- **Voltage ratings** - 85 VAC to 400 VAC
- **Temperature range** - -0°C to +45°C
- **Operating frequency** - 50/60 Hz

www.specpower.com

Remote/Local AC/DC Power Management



AC/DC SMARTstart power distribution units control and monitor up to eight AC loads at up to 15 Amp total current or DC loads up to 30 Amp total current. Operate manually or via several remote control options.

- **Features** - Sequentially powers on or off any or all of up to eight loads over a wide range of time intervals
Remote control capability (LAN connection, RS-232 console port, optional modem, or RS-485 differential data line interface)
Monitor line voltage, total current, line frequency and internal temperature
Slim 1.75" tall, 19" wide rack mount cabinet with optional front or center mounting brackets
Overcurrent protection to 15 amps with front panel-mounted circuit breaker and menu-driven diagnostics (test load situations, measurement inputs, alarm-status outputs and communication ports).
- **Agency approvals** - UL, CSA and TÜV approval pending, Meets NEBS requirements

- **Communication options** - LAN: 10baseT, or 10/100Ethernet
RS-232
RS-485
Modem: optional
- **Input - AC** - Nominal input voltage 120/240 VAC, VDC
- **Input frequency** - 60Hz
- **Input current (max.)** - 15A
- **Total load current (max.)** - 15A per AC input group
- **Input - DC** - -36 to -72 VDC

www.specpower.com

DC Breaker and Fuse Interface Panels



DC breaker and fuse interface panels can operate at -48 VDC with a maximum current of 800 Amps. (20% overload for maximum of 5 minutes), 24 VDC designs also available.

- **Rugged construction** - Compact design minimizes rack space dedicated for system protection
- **Standard functions** - Up to 16 circuit breakers or 20 GMT fuses total
Breakers or fuse trip alarm, power-on indication light, (2) 4-position non-rotational input terminal blocks and screw terminal block output connections.
- **Additional options** - A wide range of circuit protection, EMI filtering, monitoring, and alarm functions available.
- **Agency approvals** - UL and CSA approval pending, Meets NEBS requirements

- **Current ratings (max.)** - Maximum continuous load current: 400 Amps DC
- **Voltage ratings (max.)** - -36 to -72 VDC
+24 and -48 VDC
- **Temperature range** - 0°C to -50°C without forced air cooling

www.specpower.com



SPECTRUM CONTROL INC.

A Control Products & Systems Company

Signal & Power Integrity Products

Ferrite beads & inductors
Surface mount filters
Discrete EMI filters
Filter plates
Filter connectors
Gaskets & shielding
Ceramic capacitors
Single line filters
Filtered terminal blocks
Power entry & power line filters
Military/multisection filters

EMC testing
www.spectrumcontrol.com

Corporate Headquarters

8031 Avonia Road
Fairview, Pennsylvania 16415
Phone: 814-474-2207
Fax: 814-474-2208

NEW

Signal & Power Integrity

8061 Avonia Road
Fairview, Pennsylvania 16415
Phone: 814-474-1571
Fax: 814-474-3110

Sales Offices

NORTH AMERICA
6798 Oak Hall Lane
Columbia, Maryland 21045
Phone: 443-259-3491
Fax: 443-259-8672

NEW

EUROPE
Spectrum Control GmbH
Hansastraße 6
91126 Schwabach, Germany
Phone: (49)-9122-795-0
Fax: (49)-9122-795-58

CHINA
Spectrum Control Limited
Room 73-78 - 2nd Floor
Sino Industrial Plaza
9 Kai Cheung Road
Kowloon Bay
Kowloon, Hong Kong
Phone: (011)-852-2197-9912
Fax: (011)-852-2750-9663

NEW

For additional information regarding
Spectrum Control, our full line of
EMI filtering and power products
and our many new products,
call us or contact our Website at
<http://www.spectrumcontrol.com>

Spectrum Control, Inc. reserves
the right to alter the specifications
provided in this publication.
Consult factory for current
specifications.

Frequency Control Products

Lumped element filters
Cavity filters
Bandpass filters & duplexers
Tubular & waveguide filters
Tower mount amplifiers
Coaxial resonators
Patch antennas & assemblies
Switchable filter bank assemblies
Low noise amplifiers
Local oscillator doublers
Microwave synthesizers
Couplers
Integrated microwave sub-assemblies
www.specwave.com

Power Management Systems

AC/DC power distribution units
& remote reboot power management systems
Circuit protection
Custom assemblies
Power strips
www.specpower.com

Represented or Distributed by:



Nortelco AS • Ryensvingen 3 • P.O. Box 116 Manglerud • 0612 Oslo, Norway
Telephone: +47 22 57 61 00 • Telefax: +47 22 57 61 30

ISO 9001
CERTIFIED