



HPR Series - High Current Filter Selection Guide



High Current Feedthrough Filtering - The HPR Series

The HPR series of extremely high current filters is ruggedly designed to operate at current levels up to 400 amperes and voltages up to 500 Vdc and beyond. A large range of available capacitance provides significant insertion loss at frequencies as low as 1 KHz, and provides over 60 db insertion loss to above 1 GHz. The unique ability to remove high frequency noise from very high current lines makes our patented HPR a proven and economical solution to your high current filter application.

Why NexTek?:

- Very Wide Temperature Range (At Full Current)
- Most Compact Filters Available, Especially For DC
- Shock And Vibration Resistant
- High Frequency Filtering, To 1GHz And Beyond
- High Torque Capable Electrodes (Physically Robust)
- Constant Filtering, Even As Current Changes

Markets and Applications:

- Medical and Industrial Lasers
- Intelligent Power Supplies or Controllers
- Telecom or Wireless Power Supply Filtering
- Medical Imaging Devices
- Mobile (Land, Sea, Aerospace) Power Filtering
- Emissions and Susceptibility Compliance

HPR400

Selection Guide

Questions to determine appropriate Filter and P/N

1. Current Level in Amps?
 - a. *HPRs available from <50Amps to 400Amps+ Rated, customs possible*
2. Voltage Level and Type of Power (i.e. DC or AC)?
 - a. *DC Voltages up to 500Vdc and 120Vac use any model, for Higher Voltages use Metric HPR family (HPR055, 140, and 400)*
3. Desired Cut-Off Frequency (Fco)/Filtering Performance OR Capacitor Value
 - a. *Fco Determined by Capacitance Value - See Chart Pg. 2*
4. Extreme Reliability Required? (E-Series)
 - a. *For details on E-series see Pg. 3*
5. Capacitance Value Tolerance?
 - a. *Default is "Z" code, for +80/-20%, others available*

Available Capacitance and Voltage Ranges for Each Current Level

See individual unit datasheets for more information on available ranges. In general, a Higher Voltage Rating means a lower available Maximum Capacitance Value. 440Vac + Other Ratings Available Upon Special Request

Inch Thread Series - Rugged, Compact Filtering to >1GHz

Amps (RMS)	Model	Voltage Rating Range	Capacitance Rating Range	Length x Diameter (Inches)	Product Link (.PDF)
50	HPR050	100Vdc-500Vdc	.01- 6.8 μ F*	2.17 x 0.94	HPR050
100	HPR100	100Vdc-500Vdc	.01- 6.8 μ F*	2.56 x 1.00	HPR100
175	HPR175	100Vdc-500Vdc	.01- 6.8 μ F*	3.35 x 1.13	HPR175
250	HPR250	100Vdc-500Vdc	.01 - 10 μ F*	4.00 x 1.25	HPR250

* - Maximum Cap. Value available in 100Vdc rating only.

Metric Thread Series - Available with Higher Voltage Ratings (including AC) available compared to SAE/Inch units, more robust for Harsh Shock and Vibration Environments

Amps (RMS)	Model	Voltage Rating Range	Capacitance Rating Range	Length x Diameter (Inches)	Product Link (.PDF)
55	HPR055	100Vdc - 1kVdc/250Vac	.01 - 10 μ F*	2.09 x 0.88	HPR055
140	HPR140	100Vdc - 1kVdc/250Vac	.01 - 10 μ F*	2.63 x 1.00	HPR140
400	HPR400	100Vdc - 1kVdc/250Vac	.01 - 22 μ F*	3.70 x 1.31	HPR400

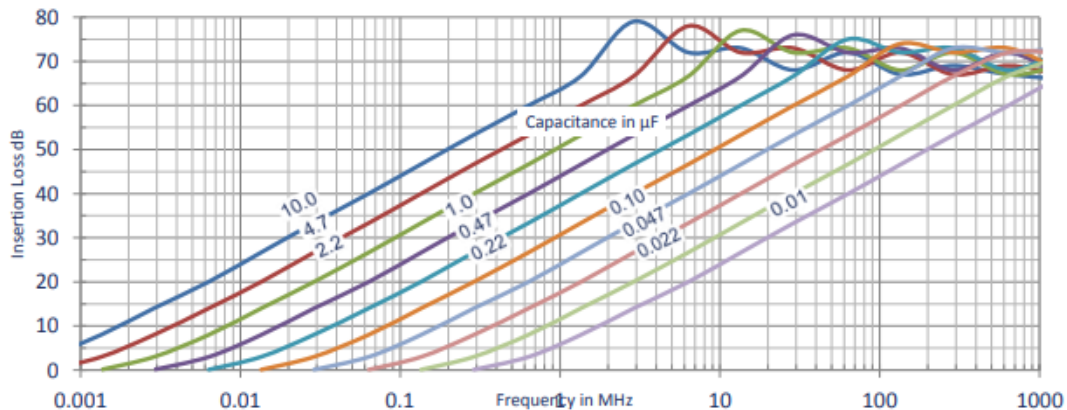
* - Maximum Cap. Value available in 100Vdc rating only.

Next Generation Series — Ultra-Compact, Aluminum Main Body, Bulkhead O-Ring, Latest Construction

Amps (RMS)	Model	Voltage Rating Range	Capacitance Rating Range	Length x Diameter (Inches)	Product Link (.PDF)
300	HPR300	100Vdc - 1kVdc/250Vac	.01 - 22 μ F*	1.34 x 1.38	HPR300

* - Maximum Cap. Value available in 100Vdc rating only.

Cut-Off Frequency (Fco) vs. Capacitance Level



The graph above shows various capacitance values (in μ F) and their corresponding Insertion Loss/Filtering Performance
 For example: a 10 μ F filter (dark blue, the left-most curve) provides full filtering (60+dB of Loss) by 0.6MHz or 600kHz

HPR Extreme Series

NexTek's HPR E-Series of High Current Filters are ideal for Applications with Harsh Shock and Vibration or High Availability Requirements. The E-Series version has been **Tested and Qualified** to military standard MIL-C-49467 Group A ratings. Specialized custom units to MIL-PRF-55681, MIL-PRF-123, or customer SCD are also available.

The Extreme series of HPR filters undergo a **96-Hr Burn-In Cycle & Screening** to ensure High Reliability out in the field.

If you require the security of knowledge that comes with using parts that undergo High-Rel Screening, then specify NexTek's HPR Extreme Series.

Extreme Series devices are specified by adding the character "E" as a P/N suffix.

Example: HPR1401004Z10E



Note: Available Capacitance and Voltage ranges vary between Standard and Extreme Series units, see table below for detail and individual datasheets for more information.

HPR E Model	Voltage Rating Range	Capacitance Rating Range	Product Link (.PDF)
HPR175E	100Vdc - 500Vdc	.01 - 4.7 μ F*	HPR175E
HPR055E	100Vdc - 1kVdc/250Vac	.01 - 4.7 μ F*	HPR055E
HPR140E	100Vdc - 1kVdc/250Vac	.01 - 4.7 μ F*	HPR140E
HPR400E	100Vdc - 1kVdc/250Vac	.01 - 10 μ F*	HPR400E

* - Maximum Cap. Value available in 100Vdc rating only.

Part Number Selection

Device	Current	Capacitance	Tolerance	Voltage	Series
HPR	XXX	XXXX	X	XX	X

Device	HPR High Current Feedthrough Filter
Current	Current rating in amperes (050, 055, 100, 140, 175, 250, 300, or 400)
Capacitance	in pF, first two digits are significant, last two digits are number of zeros e.g. 2203 = 22,000pF / 4704 = .47 μ F
Tolerance	Capacitor Code Z= +80%/-20%, M= +/-20%, K= +/-10%
Voltage	Voltage Rating Code(10=100V, 20=200V, 50=500V, 1K=1000V, 1A=125Vac, 2A=250Vac)
Series	Optional series designator, E = Extreme Environment/High Rel units

Example:

HPR1401004Z10E = Feedthrough Filter / 140A / 0.10uF / +80%/-20% / 100Vdc / E-Series

Custom Filters or Special Requests

Don't see something you are looking for? Have a question about a special rating, configuration, or application? Please do not hesitate to get in touch with NexTek!

Whether it is standard product or a special request just get in touch with NexTek or any of its partners. You can find all the relevant contact information on our website, with direct links below!

Learn More & Contact Us

Find Out More about NexTek's Range of High Current Filters: <http://nextek.com/product/high-current-filters>

Typical Installation Example, Mounting, & Safety Tips

- a. Mounting Panel
- b. Lug / Wire
- c. Mounting Nut
- d. Lock Washer
- e. Electrode Lug Nut(s)

* Single Outside Nut on HPR400

Thread	Amps (RMS)	Model	Length x Diameter Inches (mm)	Torque Rating for Electrode Lug Nuts (e)	Torque Rating for Mounting Panel Nut (c)
SAE (Inch)	50	HPR050	2.17" x 0.94" (58.1 x 23.9)	14 in-lbs (1.6 N·m)	60 in-lbs (6.7 N·m)
	100	HPR100	2.56" x 1.00" (65.0 x 25.4)	45 in-lbs (5 N·m)	100 in-lbs (11 N·m)
	175	HPR175	3.35" x 1.13" (85.1 x 28.7)	120 in-lbs (13 N·m)	200 in-lbs (22 N·m)
	250	HPR250	4.00" x 1.25" (101.6 x 31.8)	250 in-lbs (28 N·m)	300 in-lbs (34 N·m)
Metric	55	HPR055	2.09" x 0.88" (53.0 x 22.3)	14 in-lbs (1.6 N·m)	60 in-lbs (6.7 N·m)
	140	HPR140	2.63" x 1.00" (66.7 x 25.3)	70 in-lbs (8 N·m)	100 in-lbs (11 N·m)
	400	HPR400	3.70" x 1.31" (93.0 x 33.3)	200 in-lbs (22 N·m)	300 in-lbs (34 N·m)
Next Generation	300	HPR300	1.34" x 1.38" (34.0 x 35.0)	144 in-lbs (16 N·m)	300 in-lbs (34 N·m)

Safety Tips

- ✓ Never install, adjust, or touch a filter while circuit is active!
- ✓ Disable power system before attempting service
- ✓ Observe safe handling techniques appropriate for the voltage & current levels
- ✓ Cover exposed electrode nuts
- ✓ Avoid accidental contact with metal, including jewelry

Installation Tips

- ✓ Tighten the electrode nuts to the torque specified with the two wrench method
- ✓ Put Lug/Wire/Bus Bar against inner nut (or flange for HPR400)
- ✓ Put lockwasher on "last", closest to outside nut
- ✓ Use Lugs with minimum size holes to increase current flow area
- ✓ Do Not Use thread locker

Application Tips

- ✓ The filter should be mounted in a grounded shielding panel
- ✓ Observe temperature, current, & voltage limits
- ✓ For applications requiring repeated installation, use belleville spring washers - Current Handling may be slightly reduced for two-nut units
- ✓ Use adequately sized wires, lugs, or bus bars for current level