

DC Feedthrough Filter



- | IEC/EN 60939 approval
- | Rated currents from 10 to 200 A
- | 2.5 kV pulse test capability
- | Class Y4 capacitor



Approvals



Feedthrough filters offer a high insertion loss across a broad band of frequencies from a few tens of kHz up to the GHz region. In general, feedthrough filters offer a higher level of EMI suppression than feedthrough capacitors of the same current rating. This is particularly relevant to applications where source impedance is smaller than 50 Ω. Different versions are available offering a wide selection on operating currents and performance levels. DC feedthrough filters are designed and approved for 130 VDC/130 VAC 50/60 Hz operation.

Technical specifications

| | |
|---------------------------------------------------------------------|-------------------------------------------------------------------------|
| Maximum continuous operating voltage | 130 VDC (UL, ENEC) 130 VAC, 50/60 Hz (UL, ENEC) 650 VDC max. |
| Rated currents | 10 to 200 A @ 60 °C max. |
| Capacitor class | Y4 |
| High potential test voltage | 1700 VDC for 2 sec |
| Insulation resistance (100VDC after 60 sec) | < 0.33 μF, R > 15,000 MΩ > 0.33 μF, τ > 5000 s |
| Temperature range (operation and storage) | -40 °C to +100 °C (40/100/21) |
| Flammability corresponding to MTBF @ 60°C/130V (Mil-HB-217F) | UL 94 V-2 or better < 200 A: 680,000 hours ≥ 200 A: 356,000 hours |

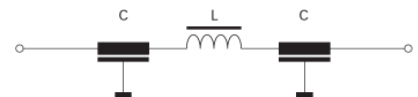
Features and benefits

- | Very low internal series inductance
- | Very high self-resonant frequency
- | Self-healing dielectric
- | High quality and reliability
- | Through-bulkhead mounting
- | Anti-twist protection
- | Custom-specific or dual-versions on request

Typical applications

- | Power line filter for 48 VDC battery power
- | Increasing system and information security
- | Telecom base stations
- | Switching and cellular equipment
- | Computer servers
- | UPS power supplies
- | Medical equipment

Typical electrical schematic



Feedthrough selector table

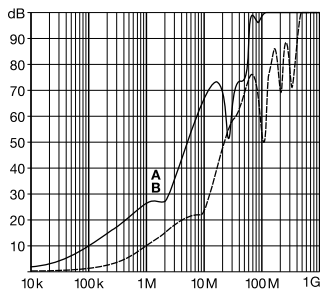
| Feedthrough | Rated current @ 60 °C [A] | Leakage current* @ 130 VAC/50 Hz [mA] | Capacitance** C [nF] | Inductance L @ 10 kHz [nH] | DC resistance*** R @ 25 °C [mΩ] | Weight [g] |
|-----------------|---------------------------------|---------------------------------------------|----------------------------|----------------------------------|---------------------------------------|---------------|
| FN 7660-10-M3 | 10 | 0.98 | 10 | 58 | 1.06 | 48 |
| FN 7661-10-M3 | 10 | 9.8 | 100 | 70 | 1.2 | 55 |
| FN 7661-16-M4 | 16 | 9.8 | 100 | 70 | 0.7 | 58 |
| FN 7660-32-M4 | 32 | 0.98 | 10 | 70 | 0.65 | 58 |
| FN 7661-32-M4 | 32 | 9.8 | 100 | 70 | 0.7 | 58 |
| FN 7660-63-M6 | 63 | 9.8 | 100 | 70 | 0.42 | 120 |
| FN 7661-63-M6 | 63 | 46 | 470 | 186 | 0.47 | 250 |
| FN 7660-100-M8 | 100 | 46 | 470 | 124 | 0.25 | 280 |
| FN 7661-100-M8 | 100 | 98 | 1000 | 186 | 0.28 | 320 |
| FN 7660-200-M10 | 200 | 46 | 470 | 124 | 0.24 | 410 |
| FN 7661-200-M10 | 200 | 460.7 | 4700 | 124 | 0.24 | 655 |

* Tolerance +20%
 ** Tolerance ±20%
 *** Tolerance +15%

Typical filter attenuation

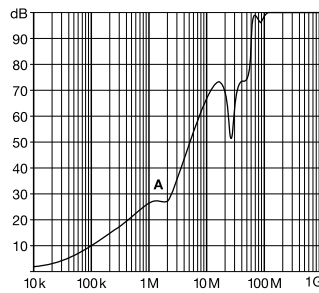
Full load, 50 Ω system

10 A types



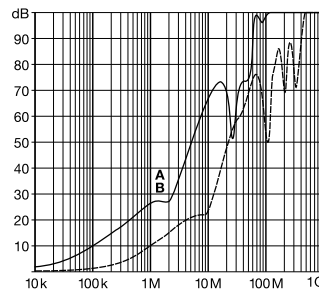
A = FN 7661-10-M3
 B = FN 7660-10-M3

16 A types



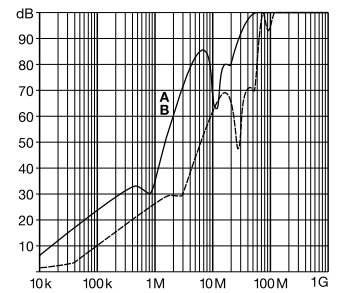
A = FN 7661-16-M4

32 A types



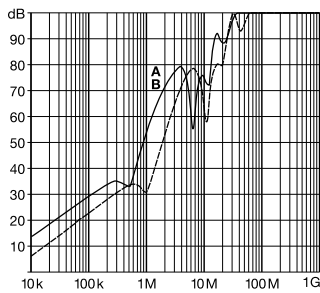
A = FN 7661-32-M4
 B = FN 7660-32-M4

63 A types



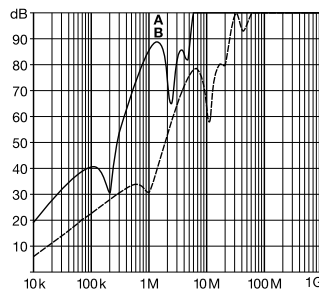
A = FN 7661-63-M6
 B = FN 7660-63-M6

100 A types



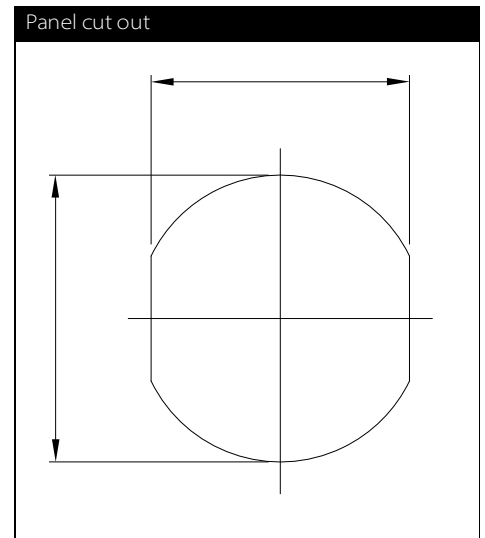
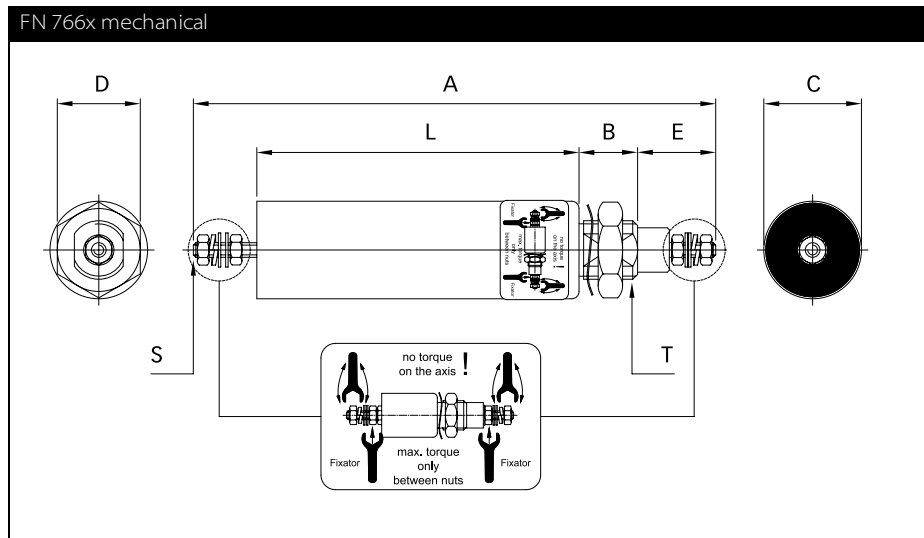
A = FN 7661-100-M8
 B = FN 7660-100-M8

200 A types



A = FN 7661-200-M10
 B = FN 7660-200-M10

Mechanical data



Dimensions

| | A | B | C | D | E | L | M | N | S | T |
|-------------------|-----|----|----|----|----|-----|------|-------|-----|---------|
| FN 7660-10-M3 | 90 | 12 | 20 | 17 | 16 | 49 | 10.3 | Ø12.3 | M3 | M12x1 |
| FN 7661-10-M3 | 107 | 12 | 20 | 17 | 16 | 66 | 10.3 | Ø12.3 | M3 | M12x1 |
| FN 7661-16-M4 | 106 | 12 | 20 | 17 | 18 | 61 | 10.3 | Ø12.3 | M4 | M12x1 |
| FN 7660-32-M4 | 98 | 12 | 20 | 17 | 18 | 53 | 10.3 | Ø12.3 | M4 | M12x1 |
| FN 7661-32-M4 | 106 | 12 | 20 | 17 | 18 | 61 | 10.3 | Ø12.3 | M4 | M12x1 |
| FN 7660-63-M6 | 160 | 14 | 25 | 22 | 26 | 94 | 14.3 | Ø16.3 | M6 | M16x1 |
| FN 7661-63-M6 | 173 | 16 | 32 | 27 | 26 | 105 | 18.3 | Ø20.3 | M6 | M20x1 |
| FN 7660-100-M8 | 184 | 16 | 32 | 27 | 32 | 104 | 18.3 | Ø20.3 | M8 | M20x1 |
| FN 7661-100-M8 | 200 | 16 | 32 | 27 | 32 | 120 | 18.3 | Ø20.3 | M8 | M20x1 |
| FN 7660-200-M10 | 209 | 19 | 38 | 27 | 40 | 112 | 22.3 | Ø24.3 | M10 | M24x1 |
| FN 7661-200-M10 | 209 | 19 | 54 | 41 | 40 | 112 | 24.3 | Ø27.3 | M10 | M27x1.5 |
| Tolerances | | | | | ±2 | | ±0.2 | | | |

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m / EN 22768-m

Recommended torque

| | M3 | M4 | M6 | M8 | M10 | M12x1 | M16x1 | M20x1 | M24x1 | M27x1.5 |
|------------------------|--------|--------|--------|------|------|-------|-------|-------|-------|---------|
| Terminal thread | 0.5 Nm | 1.2 Nm | 2.5 Nm | 5 Nm | 8 Nm | | | | | |
| Mounting thread | | | | | | 3 Nm | 4 Nm | 7 Nm | 8 Nm | 12 Nm |



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