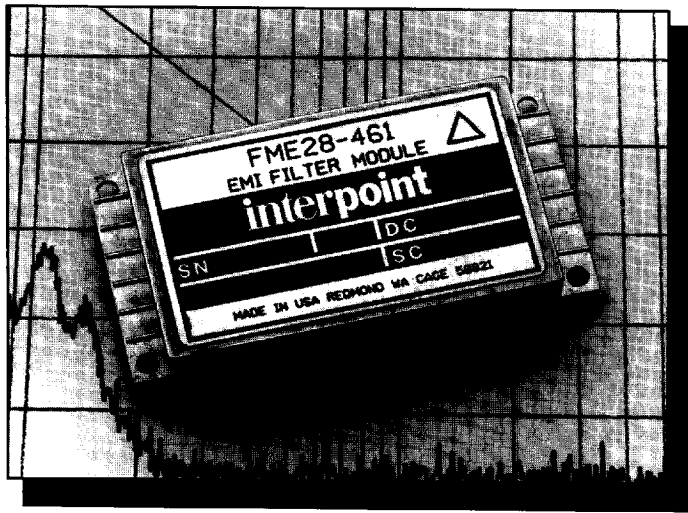


FMD/FME-461

Series

EMI

Filters



interpoint

FMD/FME-461

SERIES

EMI

FILTERS

**GENERAL DESCRIPTION.** The FMD/FME-461 Series™ EMI filter modules have been specifically designed to reduce the input line reflected ripple current of Interpoint's high frequency DC/DC converters (MHF, MHF+, MHV, MHD, MTR, MFL, MHP, MFLHP and MK200<sup>1</sup> series). They are intended for use in 28 or 270 volt applications which must meet MIL-STD-461 levels of conducted emissions.

**ATTENUATION.** When used in conjunction with Interpoint converters, FMD/FME filters typically reduce input ripple current by 40 dB at 500 kHz and by 50 dB from 1 to 50 MHz.

**TRANSIENTS.** The transients listed below will not damage the filters but will be passed on to the converters:

- All filters:  $\pm 600$  volts (50 ohm source impedance) for up to 10  $\mu$ sec.
- 28 volt filter:  $\pm 100$  volts (0.5 ohm source impedance) for up to 100 msec.
- 270 volt filter:  $\pm 500$  volts (independent of source impedance) for up to 100 msec.

#### OPERATION OVER TEMPERATURE.

All FMD/FME-461 series filters are rated for full power operation from -55°C to 125°C with derated operation to 135°C.

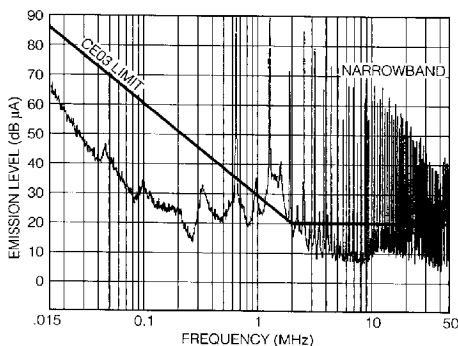
**INSERTION LOSS.** The maximum dc insertion loss at full load and nominal input voltage represents a power loss of less than 4%.

**PACKAGE.** All FMD/FME filters are available in metal hermetic side-leaded packages. The FMD28-461 filter is also available in a metal hermetic down-leaded package.

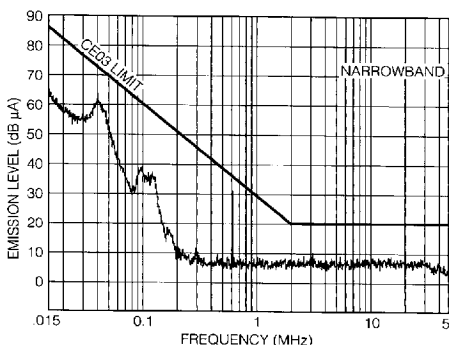
#### ENVIRONMENTAL SCREENING.

All of the FMD/FME-461 filters are available in the standard screening level or the "ES" screening level which adds a 96-hour burn-in, constant acceleration, 10 temperature cycles, and fine and gross leak testing. The FME28-461 filter is also available as a Standard Military Drawings (SMD), fully compliant to MIL-STD-883.

SMD model number	Interpoint Part Number
5915-9401001HXC	FME28-461/883



Three paralleled and synchronized  
MFL2815D converters without filtering.  
Figure 1



Three paralleled and synchronized  
MFL2815D converters with FME28-461 filtering.  
Figure 2

Note: 1. The FMD/FME filters can be used with the MK200 Series up to the filter's maximum current.

4863872 0000754 1T5

- 30 dB minimum attenuation at 200 kHz.
- -55°C to +125°C at full current
- Meets MIL-STD-461 standards for Interpoint high frequency converters
- MIL-STD-704D DC power bus compatibility
- Up to 15 amps output current

To order, call  
**1-800-822-8782**

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10301 Willows Road  
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Redmond, WA 98073-9705  
TEL: (800) 822-8782  
(206) 882-3100  
FAX: (206) 882-1990  
Internet: power@intp.com

**CHARACTERISTICS (ALL MODELS):  $T_c = 25^\circ$**

<b>Operating Temperature Range (Case)</b>	•Full Current: -55°C to +125°C •Absolute: -55°C to +135°C
<b>Storage Temperature Range (Case)</b>	•-65°C to +135°C

<b>Isolation</b>	•100 M ohms any pin to case except down leaded case pin
<b>Weight</b>	•Side-leaded: 77 grams •Down-leaded: 55 grams

PARAMETER	CONDITION	FMD28-461			FMD270-461			FME28-461			FME270-461			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
INPUT VOLTAGE	STEADY STATE	0	28	40	0	270	400	0	28	40	0	270	400	VDC
	TRANSIENT	-100	—	100	-500	—	500	-100	—	100	-500	—	500	
OUTPUT VOLTAGE	STEADY STATE	V OUT = V IN - I IN(RDC)											VDC	
OUTPUT CURRENT <sup>1</sup>	STEADY STATE	—	—	7	—	—	0.7	—	—	15	—	—	1.5	Amps
DC RESISTANCE (RDC)	MAX. CURRENT	—	—	—	—	—	—	—	—	—	—	—	—	Ohms
	T=25°C	—	—	0.13	—	—	5.0	—	—	0.07	—	—	2.0	
	T=125°C	—	—	0.15	—	—	6.3	—	—	0.07	—	—	3.2	
POWER DISSIPATION	MAX. CURRENT	—	—	—	—	—	—	—	—	—	—	—	—	Watts
	T=25°C	—	—	6.0	—	—	2.5	—	—	15.75	—	—	4.5	
	t=125°C	—	—	7.4	—	—	3.1	—	—	15.75	—	—	7.2	
NOISE REDUCTION	500 kHz	30	40	—	20	30	—	20	40	—	20	30	—	dB
	1 MHz	50	70	—	30	45	—	30	70	—	30	45	—	
	50 MHz	45	80	—	40	50	—	40	80	—	40	50	—	
CAPACITANCE	ANY PIN TO CASE	—	20,000	—	—	30,000	—	—	60,000	—	—	30,000	—	pF

<sup>1</sup> Derate output current linearly from 100% at 125°C to 0 at 135°C.

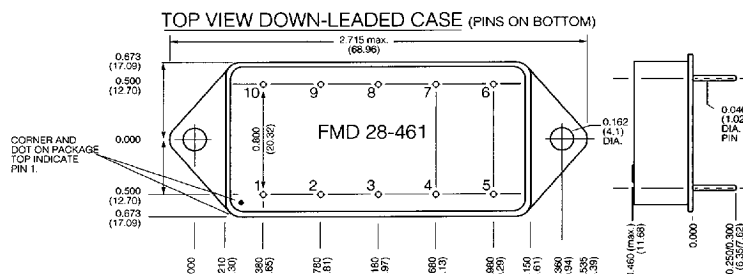
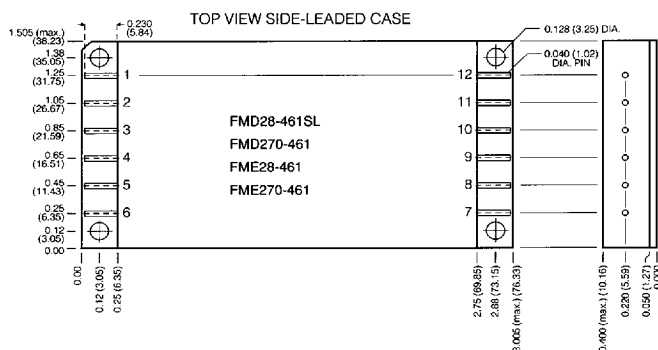
## OPTIONAL ENVIRONMENTAL SCREENING

Environmental screening consists of the following procedures (Methods and Conditions refer to MIL-STD-883):

- Pre-cap internal visual inspection per method 2017
- Temp. cycle: 10 times, -55°C to +125°C per method 1010
- Constant acceleration: 500 g per method 2001
- 96 hours of burn-in at 125°C case
- Fine leak per method 1014, cond. A
- Gross leak per method 1014, cond. C
- Final electrical test (25°C)
- Final external visual inspection per method 2009

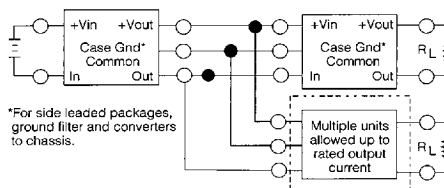
To order optional screening, add suffix -/ES to model number. Example: FME28-461/ES. On unscreened parts, the screening code block is blank or marked with "01." On screened parts, the block is marked "ES" or "02."

## METAL HERMETIC PACKAGE



**FMD/FME-461 SERIES CASE**  
NOMINAL CASE DIMENSIONS IN INCHES (MM)  
TOLERANCE +0.005 (+0.13)

Designation	Pins	
	Side-Leaded* Cases	Down-Leaded Cases FMD28-461
Positive V in	1, 2, 3	1
Positive V out	10, 11, 12	2
Case Ground	—	4
Output Common	7, 8, 9	3
Input Common	4, 5, 6	5



\*For side leaded packages,  
ground filter and converters  
to chassis.

**CAUTION:** Heat from reflow or wave soldering may damage this part. Solder pins individually with heat application NOT exceeding 300°C for 10 seconds per pin

FMD/FME-461 Series is a trademark of Interpoint Corporation.

All technical information in this data sheet has been carefully checked and is believed to be accurate, but no responsibility is assumed for errors or omissions. Interpoint reserves the right to make changes without notice in products or specifications.

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