

2P, 3P Series

RFS bandpass filters are primarily used as part of multi-channel combiner facilities but can also be used to eliminate spurious emissions and increase isolation between co-sited services.

- Natural convection cooling for all power levels
- Fixed aperture coupling for high reliability and easy re-tuning
- Vertical entry and exit
- Invar temperature compensation
- 2 and 3 pole versions standard



Bandpass Filters

The filters are designed with all bolted connections and any sliding contacts are at low current density points to ensure maximum reliability and ideal power ratings for a given physical size. Each filter comprises several 2 or 3 coaxial resonators which are aperture coupled. The fixed aperture coupling design is engineered for a constant passband wherever the pass band is tuned in the 87.5 - 108MHz band. This design ensures standard insertion loss and rejection for each filter model, although custom filter performance (modified aperture coupling) is available on request.

SPECIFICATIONS (ALL MODELS)

Frequency Range, MHz	87.5 - 108
Impedance, ohms	50 unbalanced
Input Return Loss, dB	> 26 to +/- 200kHz
Input Group Delay variation over Channel Bandwidth, nsec	< 25 to +/- 100kHz
Amplitude Variation, dB	< 0.2 to +/- 200kHz

SPECIFICATIONS	2P150B	2P200B	2P400B	2P600B
Input Connector	N type	7/8" EIA	3-1/8" EIA	3-1/8" EIA
Insertion Loss at Channel Center Frequency, dB	0.7	0.35	0.25	0.2
Filter Rejection, dB	14 at 0.8MHz, 26 at 1.6MHz	14 at 0.8MHz, 26 at 1.6MHz	14 at 0.8MHz, 26 at 1.6MHz	14 at 0.8MHz, 26 at 1.6MHz
Weight, kg (lb)	10 (22)	35 (77)	60 (132)	95 (209)
Dimensions (Height or Length), cm (in)	120.0 (47-1/4)	140.0 (55-1/8)	150.0 (59)	160.0 (63)
Dimensions (Width), cm (in)	20.0 (7-7/8)	30.0 (11-3/4)	50.0 (19-5/8)	70.0 (27-1/2)
Dimensions (Depth), cm (in)	40.0 (15-3/4)	60.0 (23-5/8)	90.0 (35-3/8)	130.0 (51-1/8)

SPECIFICATIONS	3P150B	3P200B	3P400B	3P600B
Input Connector	N type	7/8" EIA	3-1/8" EIA	3-1/8" EIA
Insertion Loss at Channel Center Frequency, dB	1	0.5	0.3	0.25
Filter Rejection, dB	20 at 0.8MHz, 38 at 1.6MHz	20 at 0.8MHz, 38 at 1.6MHz	20 at 0.8MHz, 38 at 1.6MHz	20 at 0.8MHz, 38 at 1.6MHz
Weight, kg (lb)	12 (26)	45 (99)	80 (176)	125 (276)
Dimensions (Height or Length), cm (in)	120.0 (47-1/4)	140.0 (55-1/8)	150.0 (59)	160.0 (63)
Dimensions (Width), cm (in)	20.0 (7-7/8)	30.0 (11-3/4)	50.0 (19-5/8)	70.0 (27-1/2)
Dimensions (Depth), cm (in)	60.0 (23-5/8)	80.0 (31-1/2)	130.0 (51-1/8)	190.0 (74-3/4)

Note 1

Alternative connectors available on request.

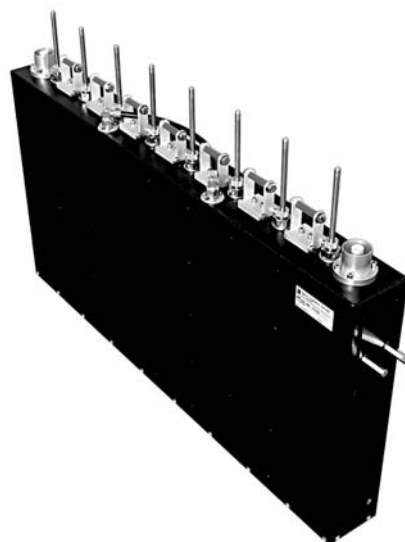
PX Series

This series of DAB filters are tuneable over the entire VHF Band III. The filters offer a compact and flexible solution for both transmitter mask filtering and digital RF channel combining. The DAB filter range is founded on RFS' world-leading RF combining technology and utilizes a similar platform of components to the company's VHF Band III digital television combiners.

- Compact design
- 6 and 8 pole versions are available
- Available in 3 cavity sizes 100 mm, 180 mm and 270 mm
- Can be used for transmitter powers of 500 W, 1500 W and 2500 W
- Natural convection cooling for all power levels
- Low loss for all cavity sizes
- RFS R series connectors provide "mix and match" interface to common standards

The eight-pole DAB filters can be incorporated within transmitters to provide critical mask filtering of the digital RF signal, in keeping with global DAB standards. When used as the key components of a balanced DAB combiner, the eight-pole filters can achieve both critical transmitter masking and adjacent channel combining

simultaneously, eliminating the need for additional filters within the transmitter. The 100-mm models can be installed within a standard 19-inch rack. The nominal bandwidth of all models is 1.54 MHz, as specified by the global "Eureka 147" DAB standard.



8PX100DAB filter

SPECIFICATIONS	6PX100DAB	6PX180DAB	6PX270DAB	8PX100DAB
Frequency Range, MHz	174 - 240	174 - 240	174 - 240	174 - 240
Input Connector	16R Note#1	31R Note#1	31R Note#1	16R Note#1
Filter Type	6 Pole	6 Pole	6 Pole	8 Pole
Input Power (maximum), kW Average	0.5	1.5	2.5	0.5
Input Return Loss, dB	>23	>23	>23	>23
Filter Selectivity, dB	<1.0 +/- 768kHz, >15 +/- 970kHz, >30 +/- 1.7MHz, >50 +/- 3MHz	<1.0 +/- 768kHz, >15 +/- 970kHz, >30 +/- 1.7MHz, >50 +/- 3MHz	<1.0 +/- 768kHz, >15 +/- 970kHz, >30 +/- 1.7MHz, >50 +/- 3MHz	<0.8 +/- 768kHz, >20 +/- 970kHz, >50 +/- 1.7MHz, >75 +/- 3MHz
Operating Temperature Range, degrees C	0 to 45	0 to 45	0 to 45	0 to 45
Weight, kg (lb)		46 (101)		21.5 (47)
Dimensions (Height or Length), cm (in)	65 (25-39/64)	65 (25-39/64)	65 (25-39/64)	65 (25-39/64)
Dimensions (Width), cm (in)	110 (43-19/64)	375 (147-39/64)	560 (220-15/32)	110 (43-19/64)
Dimensions (Depth), cm (in)	740 (291-21/64)	775 (305-7/64)	980 (385-53/64)	1055 (415-11/32)

SPECIFICATIONS	8PX180DAB	8PX270DAB
Frequency Range, MHz	174 - 240	174 - 240
Input Connector	31R Note#1	31R Note#1
Filter Type	8 Pole	8 Pole
Input Power (maximum), kW Average	1.5	2.5
Input Return Loss, dB	>23	>23
Filter Selectivity, dB	<0.8 +/- 768kHz, >20 +/- 970kHz, >50 +/- 1.7MHz, >75 +/- 3MHz	<0.8 +/- 768kHz, >20 +/- 970kHz, >50 +/- 1.7MHz, >75 +/- 3MHz
Operating Temperature Range, degrees C	0 to 45	0 to 45
Dimensions (Height or Length), cm (in)	65 (25-39/64)	65 (25-39/64)
Dimensions (Width), cm (in)	375 (147-39/64)	560 (220-15/32)
Dimensions (Depth), cm (in)	1015 (399-39/64)	1270 (500)

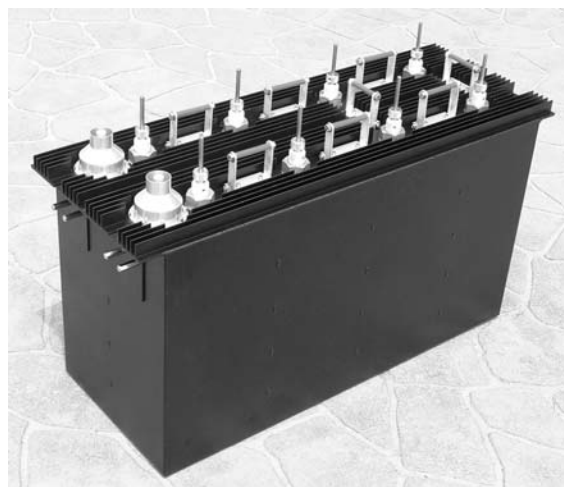
Note 1

The RFS R series provides a "mix and match" interface to 50 ohm EIA/IEC standard connectors.

C Series

RFS bandpass filters are primarily used as part of multi-channel combiner facilities but can also be used to eliminate spurious emissions and increase isolation between co-sited services.

- Natural convection cooling for all power levels
- Can be retuned to any channel
- Vertical entry and exit
- Invar temperature compensation
- 4 and 6 pole versions standard



SPECIFICATIONS	4PX270C	6PX180C	6PX270C
Frequency Range, MHz	174 - 230	174 - 230	174 - 230
Input Connector	31R Note#2	31R Note#2	31R Note#2
Impedance, ohms	50 unbalanced	50 unbalanced	50 unbalanced
Input Power (maximum), kW Average	15	6	12
Input Channel Bandwidth, MHz	6 to 8 adjustable. Note#1	6 to 8 adjustable. Note#1	6 to 8 adjustable. Note#1
Insertion Loss at Channel Center Frequency, dB	0.1	0.2	0.15
Input Return Loss, dB	> 30 Note#1	> 25 Note#1	> 25 Note#1
Filter Selectivity, dB	< 0.1 at +/- 3.8 MHz, > 33 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 25 at +/- 5 MHz, > 49 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 25 at +/- 5 MHz, > 49 at +/- 12 MHz
Operating Temperature Range, degrees C	0 to 40	0 to 40	0 to 40

Note 1

8MHz wide channel data shown, can be adjusted for other bandwidths.

Note 2

The RFS R series provides a "mix and match" interface to 50 ohm EIA/IEC standard connectors.

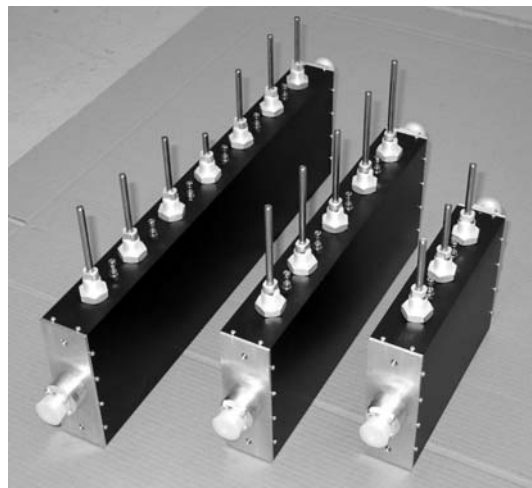
E Series

The UHF coaxial filter range utilizes four different cavity sizes and has been designed for bandpass filtering in transmitter power ranges up to 6 kW. For higher powers the RFS waveguide filters are available. Primary applications include filtering of transmitter outputs, filtering translator input signals and as building blocks for the RFS range of channel combiners. An alternative to a single filter is use a pair of filters and 3 dB couplers together with loads to form a balanced filter. This arrangement doubles the power rating and also provides a constant input impedance, both within and outside the filter passband. The constant impedance property means that signals outside the passband are dissipated into the loads rather than reflected back into the transmitter. (see the CA UHF series balanced modules).

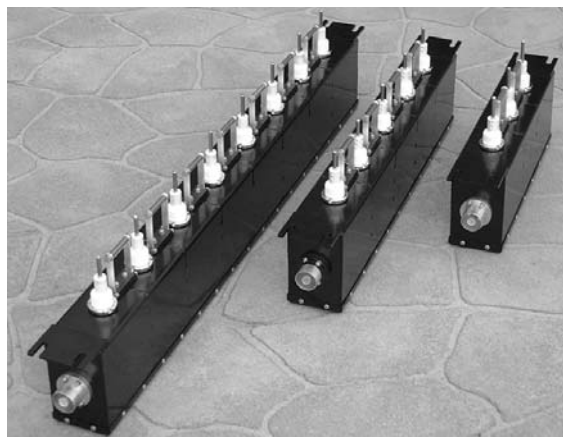
The design, construction and materials used ensure that benchmark performance is achieved for the given cavity sizes. Low loss, variable bandwidth and full band tuneability are the primary electrical features while vertical mounting and operation over a wide ambient temperature range detail the mechanical characteristics.

RFS R series connectors are a mix and match interface to various standards and sizes. For example, EIA/IEC flanged/ unflanged connections of line sizes larger and smaller are widely available, this makes interfacing to other equipment simple.

- Four cavity sizes available
- 3, 5 and 6 pole versions available for wide channel, semi adjacent and adjacent channel applications
- Designed for vertical mounting to minimize floor space requirements
- Very compact, with low losses for given filter sizes
- Tuneable over full UHF band 470 to 860 MHz
- Adjustable bandwidth for 6, 7 or 8 MHz channels
- Can be used for DTV critical and non-critical masking applications
- RFS R series connectors provide "mix and match" interface to common standards
- Double Temperature compensation for stability



3, 5 and 7 pole versions of 50E size filters.



3, 5 and 8 pole versions of 100E size filters.



3 pole filters showing some of the available R series connectors.

Band IV/V (UHF) TV Bandpass Filter

470 - 860 MHz

E Series

SPECIFICATIONS (ALL MODELS)

Frequency Range, MHz	470 - 860
Impedance, ohms	50 unbalanced
Input Channel Bandwidth, MHz	6 to 8 adjustable. Note#1
Operating Temperature Range, degrees C	0 to 40

SPECIFICATIONS	3P50E	5P50E	7P50E	8PX50E
Input Connector	7-16 DIN Note#2	7-16 DIN Note#2	7-16 DIN Note#2	7-16 DIN Note#2
Input Power (maximum), kW Average	0.4 Note#1	0.3 Note#1	0.2 Note#1	0.2 Note#1
Insertion Loss at Channel Center Frequency, dB	0.25 @ 470MHz, 0.35 @ 860MHz Note#1	0.50 @ 470MHz, 0.65 @ 860MHz Note#1	0.85 @ 470MHz, 1.15 @ 860MHz Note#1	1.0 @ 470MHz, 1.3 @ 860MHz Note#1
Input Return Loss, dB	> 25 Note#1	> 25 Note#1	> 25 Note#1	> 20 Note#1
Filter Selectivity, dB	< 0.1 at +/- 3.8 MHz, > 23 at +/- 20 MHz	< 0.2 at +/- 3.8 MHz, > 40 at +/- 12 MHz	< 2.0 at +/- 3.8 MHz, > 14 at +/- 5 MHz, > 70 at +/- 12 MHz	< 2.0 at +/- 3.8 MHz, > 8 at +/- 4.2 MHz, > 40 at +/- 6 MHz, > 60 at +/- 12 MHz
Weight, kg (lb)	3.0 (6.6)	4.2 (9.2)	5.5 (12.1)	6.1 (13.4)
Dimensions (Height or Length), cm (in)	35.4 (14)	53.2 (21)	70.8 (28)	79.5 (31-5/16)
Dimensions (Width), cm (in)	6.0 (2-3/8)	6.0 (2-3/8)	6.0 (2-3/8)	6.0 (2-3/8)
Dimensions (Depth), cm (in)	30.0 (11-13/16)	30.0 (11-13/16)	30.0 (11-13/16)	30.0 (11-13/16)

SPECIFICATIONS	3P100E	5P100E	6PX100E	8PX100E
Input Connector	16R Note#2	16R Note#2	16R Note#2	16R Note#2
Input Power (maximum), kW Average	1.5 Note#1	1 Note#1	0.75 Note#1	0.75 Note#1
Insertion Loss at Channel Center Frequency, dB	0.15 @ 470MHz, 0.20 @ 860MHz Note#1	0.25 @ 470MHz, 0.35 @ 860MHz Note#1	0.50 @ 470MHz, 0.60 @ 860MHz Note#1	0.60 @ 470MHz, 0.80 @ 860MHz Note#1
Input Return Loss, dB	> 25 Note#1	> 25 Note#1	> 25 Note#1	> 20 Note#1
Filter Selectivity, dB	< 0.1 at +/- 3.8 MHz, > 23 at +/- 20 MHz	< 0.2 at +/- 3.8 MHz, > 40 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 20 at +/- 5 MHz, > 45 at +/- 12 MHz	< 1.3 at +/- 3.8 MHz, > 8 at +/- 4.2 MHz, > 40 at +/- 6 MHz, > 60 at +/- 12 MHz
Weight, kg (lb)	5.4 (12)	8.4 (18.5)	10.6 (23.4)	12.9 (28.5)
Dimensions (Height or Length), cm (in)	57.3 (22-5/8)	87.3 (34-3/8)	102.3 (40-9/32)	132.3 (52-5/64)
Dimensions (Width), cm (in)	11.0 (4-11/32)	11.0 (4-11/32)	11.0 (4-11/32)	11.0 (4 11/32)
Dimensions (Depth), cm (in)	30.0 (11-13/16)	30.0 (11-13/16)	35.0 (13-13/16)	30.0 (11-13/16)

Note 1

8MHz wide channel data shown, can be adjusted for other bandwidths.

Note 2

The RFS R series provides a "mix and match" interface to 50 ohm EIA/IEC standard connectors.

E Series

SPECIFICATIONS	3P150E	5P150E	6PX150E	3P200E
Input Connector	31R Note#2	31R Note#2	31R Note#2	31R Note#2
Input Power (maximum), kW Average	3.5 Note#1	2.5 Note#1	1.5 Note#1	6.0 Note#1
Insertion Loss at Channel Center Frequency, dB	0.10 @ 470MHz, 0.15 @ 860MHz Note#1	0.20 @ 470MHz, 0.25 @ 860MHz Note#1	0.20 @ 470MHz, 0.40 @ 860MHz Note#1	0.10 @ 470MHz, 0.15 @ 860MHz Note#1
Input Return Loss, dB	> 25 Note#1	> 25 Note#1	> 25 Note#1	> 25 Note#1
Filter Selectivity, dB	< 0.1 at +/- 3.8 MHz, > 23 at +/- 20 MHz	< 0.2 at +/- 3.8 MHz, > 40 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 20 at +/- 5 MHz, > 45 at +/- 12 MHz	< 0.1 at +/- 3.8 MHz, > 23 at +/- 20 MHz
Weight, kg (lb)	9.8 (21.5)	14.7 (32.5)	19.5 (43)	23 (50.7)
Dimensions (Height or Length), cm (in)	68.4 (27)	108.4 (42-11/16)	128.4 (50-1/2)	70.4 (27-3/4)
Dimensions (Width), cm (in)	16.0 (6-5/16)	16.0 (6-5/16)	16.0 (6-5/16)	21.0 (8-1/4)
Dimensions (Depth), cm (in)	30.0 (11-13/16)	30.0 (11-13/16)	35.0 (13-13/16)	30.0 (11-13/16)

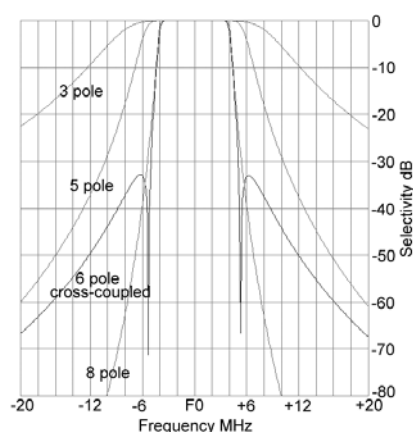
SPECIFICATIONS	4PX200E	5P200E	6PX200E	8PX200E
Input Connector	31R Note#2	31R Note#2	31R Note#2	31R Note#2
Input Power (maximum), kW Average	3.5 Note#1	4.5 Note#1	2.5 Note#1	2.5 Note#1
Insertion Loss at Channel Center Frequency, dB	0.15 @470MHz, 0.2 @ 860MHz	0.20 @ 470MHz, 0.25 @ 860MHz Note#1	0.30 @ 470MHz, 0.40 @ 860MHz Note#1	0.40 @ 470MHz, 0.60 @ 860MHz Note#1
Input Return Loss, dB	> 25 Note#1	> 25 Note#1	> 25 Note#1	> 20 Note#1
Filter Selectivity, dB	>30 at +/- 12MHz	< 0.2 at +/- 3.8 MHz, > 40 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 20 at +/- 5 MHz, > 45 at +/- 12 MHz	< 1.0 at +/- 3.8 MHz, > 9 at +/- 4.2 MHz, > 40 at +/- 6 MHz, > 60 at +/- 12 MHz
Weight, kg (lb)		35 (77.2)	40 (88.2)	45 (99)
Dimensions (Height or Length), cm (in)	54 (21-5/16)	108.4 (42-5/8)	128.4 (50-9/16)	90 (35-7/16)
Dimensions (Width), cm (in)	40.9 (16-7/64)	21.0 (8-1/4)	21.0 (8-1/4)	40.9 (16-7/64)
Dimensions (Depth), cm (in)	42.9 (16-57/64)	30.0 (11-13/16)	35 (13-13/16)	42.9 (16-57/64)

Note 1

8MHz wide channel data shown, can be adjusted for other bandwidths.

Note 2

The RFS R series provides a "mix and match" interface to 50 ohm EIA/IEC standard connectors.



Typical Filter Response

EW Series

This range of UHF filters are now 3rd generation products designed for global combining and filtering applications associated with DTV and analog television transmissions.

- 4, 6 and 8 pole versions for wide channel, semi adjacent and adjacent channel applications
- Designed for vertical mounting to minimize footprint
- Adjustable 6 to 8MHz bandwidth for global applications
- Designed for high peak voltage DTV signals
- Advanced design and manufacturing techniques for optimum performance



Waveguide Filter 6PXW

SPECIFICATIONS (ALL MODELS)	
Frequency Range, MHz	470 - 860
Filter Type	Dual Mode Waveguide with Cross Coupling
Input Channel Bandwidth, MHz	6;7;8
Insertion Loss at Channel Center Frequency, dB	0.2
Input Return Loss, dB	> 26 (typically 30)
Operating Temperature Range, degrees C	10 to 40

SPECIFICATIONS	6PXW	4PXW
Channel Spacing	1	>1
Input Group Delay variation over Channel Bandwidth, nsec	360	25
Narrowband Input Connector	31R Note#1	31R Note#1
Filter Selectivity, dB	> 30 adjacent vision carrier	> 30 semi adjacent channel
Weight, kg (lb)	95 (209)	70 (154)
Dimensions (Height or Length), cm (in)	148.0 (58-5/16)	110.0 (43-5/16)
Dimensions (Width), cm (in)	65 (25-5/8)	65 (25-5/8)
Dimensions (Depth), cm (in)	82 (32-5/16)	82 (32-5/16)

Note 1

The RFS R series provides a "mix and match" interface to 50 ohm EIA/IEC standard connectors.