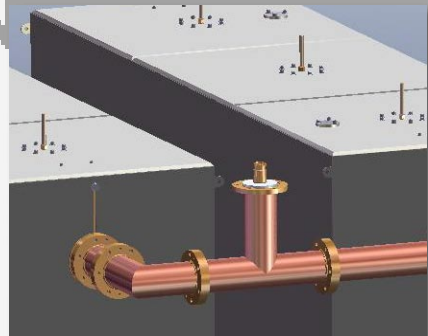
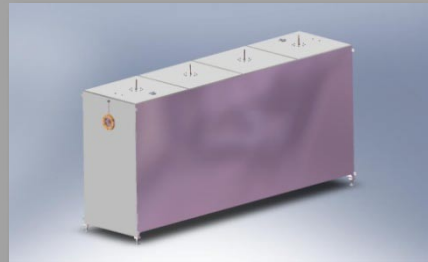


**MEGA** RF Solutions  
INDUSTRIES, LLC

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# HDR

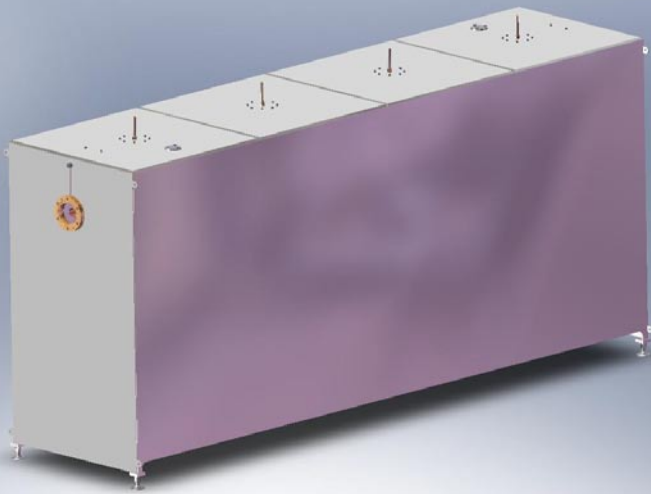
FM Broadcast Catalog



MEGA Industries offers a full range of Band Pass Filters for the FM marketplace.

The design uses *Mega-Temp*<sup>™</sup> temperature compensated cavities and advanced fabrication techniques that result in filters with exceptionally stable performance in any ambient temperature conditions.

- Low Loss
- Temperature Stable
- Easily Maneuverable
- Field Tunable
- 800 KHz Spacing using Cross coupling

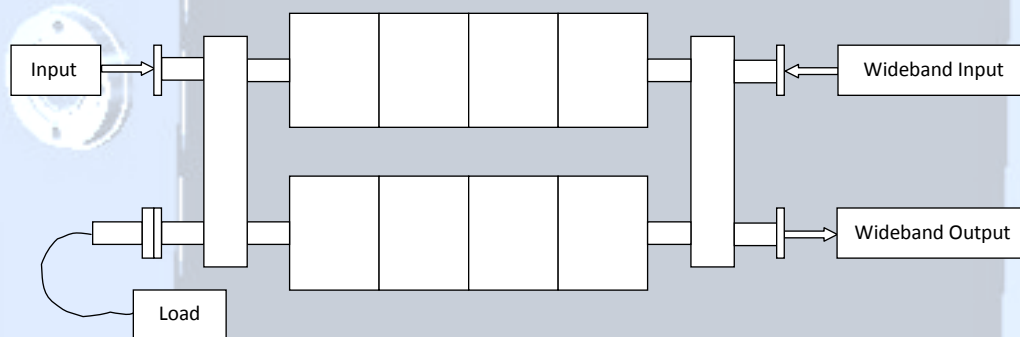


Each unit is factory tuned but may be readily re-tuned in the field for optimum performance or to allow it to be used for any other FM frequency desired.

The *Mega-Temp* temperature compensated filter design allows for convection cooling without any requirement for supplemental blowers.

Model Number	No. of Cavities	Insertion Loss dB	Rejection @ 800 kHz	Power Handling	VSWR Fc +/- 200 kHz	Size (in.) LxWxH
MBPF-24-3-33	3	< 0.15	> 13 dB	35 kW	1.05 : 1 Max	72 x 25 x 48
MBPF-24-4-33	4	< 0.22	> 20 dB	35 kW	1.05 : 1 Max	96 x 25 x 48
MBPF-12-3-11	3	< 0.22	> 13 dB	12 kW	1.05 : 1 Max	36 x 15 x 45
MBPF-12-4-11	4	< 0.26	> 20 dB	12 kW	1.05 : 1 Max	48 x 15 x 45
MBPF-H6-3-11	3	< 0.45	> 13 dB	5 kW	1.05 : 1 Max	18 x 7 x 45
MBPF-H6-4-11	4	< 0.70	> 20 dB	5 kW	1.05 : 1 Max	24 x 7 x 45
MBPF-06-3-11	3	< 0.45	> 13 dB	3 kW	1.05 : 1 Max	18 x 7 x 45
MBPF-06-4-11	4	< 0.70	> 20 dB	3 kW	1.05 : 1 Max	24 x 7 x 45

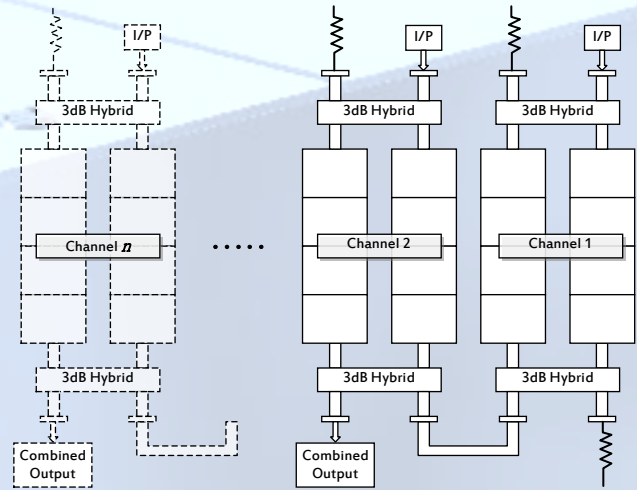
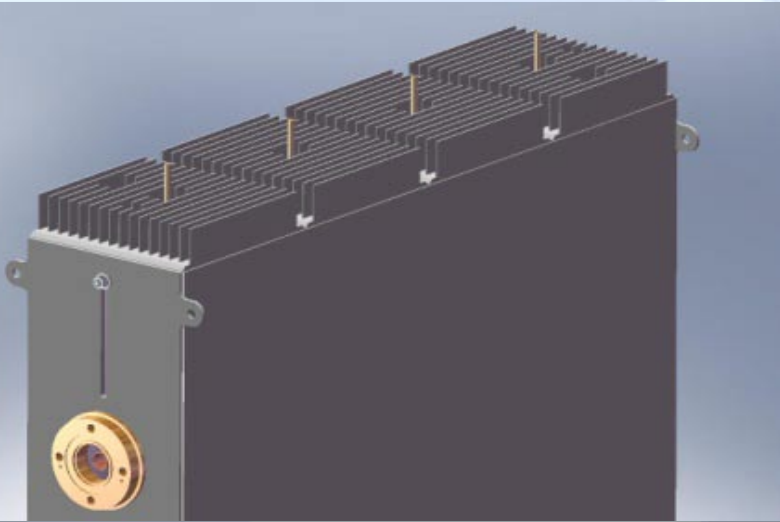
Mega Industries uses a combination of highly stable Bandpass filters and wideband hybrids as basic building blocks in the construction of their Constant Impedance Filter line. A full range of CIF models is offered at all power levels within the FM Band. The excellent temperature compensated cavity designs result in exceptionally stable filter performance in any ambient temperature conditions. In addition, all of the Mega Industries filter products have been designed with HD Radio in mind, the optimized passband covering the complete FM channel (+/- 200 kHz).



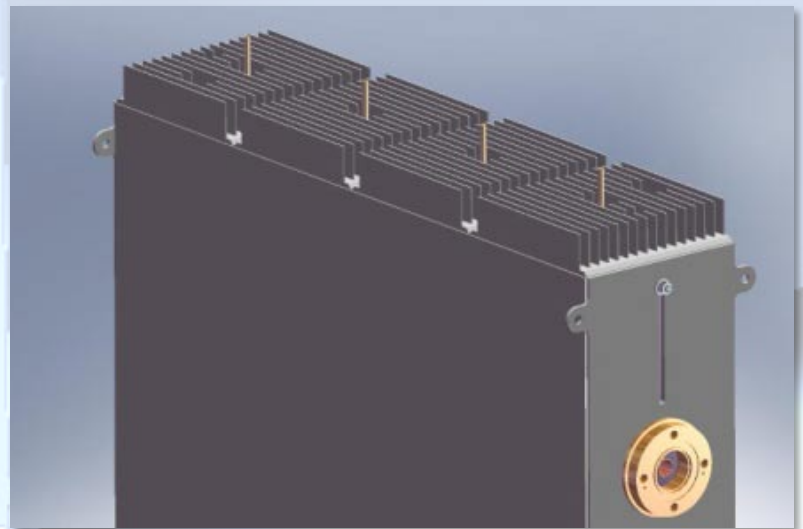
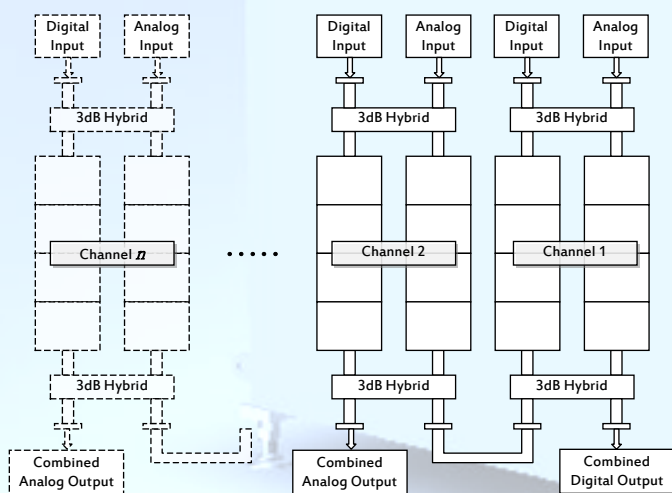
Each unit is factory tuned for optimum performance but may be readily re-tuned in the field to any other FM frequency desired. Mega’s temperature compensated filter design allows for convection cooling without any requirement for supplemental blowers. These filters form the basic building blocks for many multi-station combiner systems.

Model Number	No. of Cavities	Insertion Loss (dB)	VSWR Fc +/- 200 kHz	Isolation Injection Port to Broadband Port	Isolation Injection Port to Injection Port "n"	Power Handling
MCIF-24-3-33	3	< 0.15	1.05 : 1	> 35 dB	> 55 dB	45kW
MCIF-24-4-33	4	< 0.22	1.05 : 1	> 35 dB	> 55 dB	45 kW
MCIF-12-3-33	3	< 0.22	1.05:1	> 35 dB	> 55 dB	22 kW
MCIF-12-4-33	4	< 0.26	1.05 : 1	> 35 dB	> 55 dB	22 kW
MCIF-H6-3-13	3	< 0.45	1.05 : 1	> 35 dB	> 55 dB	8 kW
MCIF-H6-4-13	4	< 0.70	1.05 : 1	> 35 dB	> 55 dB	8 kW
MCIF-06-3-11	3	< 0.45	1.05 : 1	> 35 dB	> 55 dB	5 kW
MCIF-06-3-11	4	< 0.70	1.05 : 1	> 35 dB	> 55 dB	5 kW

Mega Industries Constant Impedance Filter (CIF) combiner systems are used to combine up to 10 FM Channels into a single master antenna. These combiners use Mega's highly stable bandpass filters as basic building blocks to produce a robust system for the broadcaster. All Mega filters have been designed with HD Radio in mind with the optimized passband covering the complete FM channel (+/- 200 kHz).



- With HD Radio in mind, these combiners may be set up as traditional single input devices as shown above or as dual input devices to facilitate High Level HD combining.



Mega Industries FM Branch Combiner systems are used to combine up to 3 FM Channels into a single master antenna. These combiners use Mega's highly stable bandpass filters as basic building blocks to produce a robust system for the broadcaster. All Mega filters have been designed with HD Radio in mind, the optimized passband covering the complete FM channel (+/- 200 kHz). In addition to a flat "in band" response, all Mega Branch combiners provide a minimum of 50 dB isolation between transmitters to ensure conformance to all regulatory requirements. The addition of a cross coupling mechanism to the filters allows a channel spacing of 800 kHz to be readily achievable.

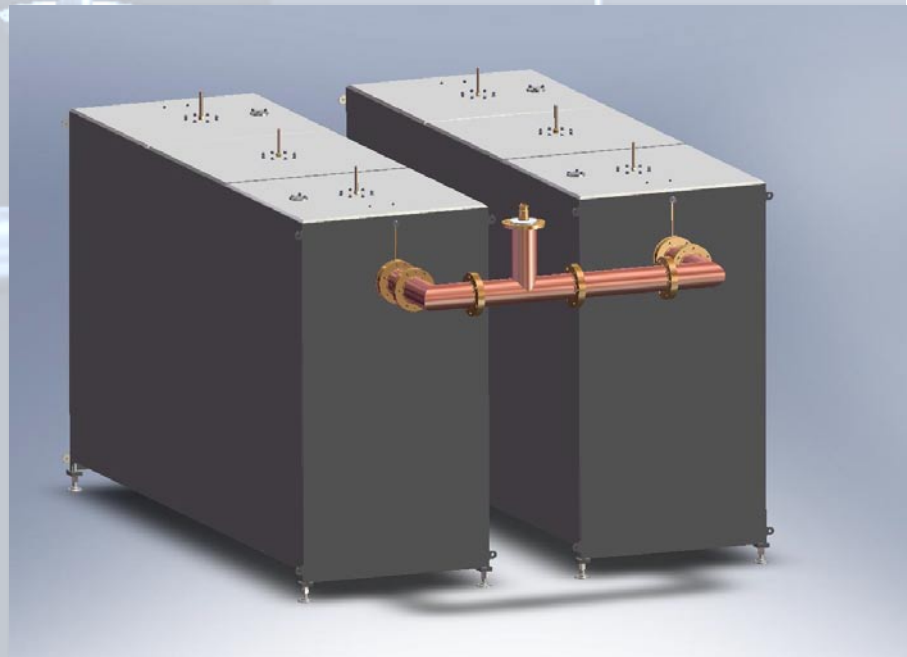
**Typical Electrical Performance**

VSWR ( $\pm$  200 kHz) 1.05:1

Insertion Loss ( $\pm$  200 kHz) 0.25 dB Nominal

Isolation > 50 dB

Group Delay <  $\pm$ 45 ns



Model Number	Stations	Min Freq Spacing	Cavities per Filter	Power per Input
MBR2-H6-3-11	2	2.8 MHz	3	5 kW
MBR2-H6-4-11	2	1.8 MHz	4	5 kW
MBR3-H6-3-13	3	2.8 MHz	3	5 kW
MBR3-H6-4-13	3	1.8 MHz	4	5 kW
MBR2-06-3-11	2	2.8 MHz	3	3 kW
MBR2-06-4-11	2	1.8 MHz	4	3 kW
MBR3-06-3-11	3	2.8 MHz	3	3 kW
MBR3-06-4-11	3	1.8 MHz	4	3 kW

Model Number	Stations	Min Freq Spacing	Cavities per Filter	Power per Input
MBR2-24-3-36	2	2.8 MHz	3	35 kW
MBR2-24-4-36	2	1.8 MHz	4	35 kW
MBR3-24-3-33	3	2.8 MHz	3	35 kW
MBR3-24-4-33	3	1.8 MHz	4	35 kW
MBR2-12-3-13	2	2.8 MHz	3	12 kW
MBR2-12-4-13	2	1.8 MHz	4	12 kW
MBR3-12-3-13	3	2.8 MHz	3	12 kW
MBR3-12-4-13	3	1.8 MHz	4	12 kW

Mega industries High Level HD Radio Combiner/Injector is designed to allow minimal down time during installation. It's straight through *DigitalCombinerLine™* construction allows for installation in place of a straight section of transmission line. Ruggedized yet lightweight aluminum construction results in a combiner which is comparable in weight to the copper line section being replaced.



Frequency Range	88 – 108 MHz
Impedance	50 Ohms
I/O Ports	EIA Flanged or Type N as required for installation.
VSWR	1.05:1 Max (All ports terminated in Matched loads)
Insertion Loss	< 0.1 dB
Isolation	> 45 dB when terminated in a matched load
Group delay	< 10ns Variation over any 400 kHz band
Coupling Ratio	10 dB
Mounting	Any Position
Finish	Mega Gray

## Hybrid Couplers

Mega Industries Hybrid Couplers are designed with maximum isolation between inputs in mind. All designs have been optimized to operate over the full FM band and specialized optimization is available for any specified channel.

Frequency Range	88 – 108 MHz
Impedance	50 Ohms
I/O Ports	EIA Flanged or Type N as required for installation.
VSWR	1.05:1 Max (All ports terminated in Matched loads)
Insertion Loss	< 0.1 dB
Isolation	> 36 dB when terminated in a matched load
Group delay	< 10ns Variation over any 400 kHz band
Coupling Ratio	3.0, 4.77, 6.0, 10dB
Mounting	Any Position
Finish	Mega Gray

Mega Industries FM Switchless Combiner systems utilize the latest state of the art drive systems to provide precision control and seamless operation. With this system, the broadcaster is assured of an uninterrupted signal and smooth operational changes that can be made under full power conditions.

The Mega Switchless Combiner design allows balancing and switching between transmitters in infinitely variable ratios that can be finely adjusted in the field to attain the signal power levels necessary for even the most complex signal mixing scenarios.

Every system is tuned and optimized during manufacture to provide the absolute maximum isolation possible while also reducing out of band spurious signals.

Mode control and signal feedback is provided via dry contact switch closures.

Coupling ratios of between 3dB and 12dB deliver a broader array of tools to employ when designing the complex systems demanded in today's ever more tightly constrained applications.

Catalog #	Rated Power Level	Digital Input	Analog Input	Combined Output
MISC-40-3-3-3	40 kW	3 1/8	3 1/8	3 1/8
MISC-20-1-1-3	20 kW	1 5/8	1 5/8	3 1/8
MISC-12-1-1-1	12 kW	1 5/8	1 5/8	1 5/8

Mega Industries utilizes an intelligent model numbering system to help simplify the ordering process.

## Mxxx - SP - CD - Con1 Con2

### Model

MBPF = Band Pass Filter  
 MCIF = Constant Impedance Filter  
 MBR2 = 2 Station Branch Combiner  
 MBR3 = 3 Station Branch Combiner  
 MISC = Mega IBOC Switchless Combiner  
 MDHC = Mega Digital Hybrid Combiner  
 MDCL = Mega Digital Combiner Line

### Connectors

7 = 7/8" EIA  
 1 = 1-5/8" EIA  
 3 = 3-1/8" EIA  
 4 = 4-3/16" EIA  
 6 = 6-1/8" EIA  
 9 = 9-3/8" EIA  
 N = Type N (Male)  
 D = 7/16" DIN

### Size

MBPF, MCIF, MBR2, MBR3

06 = 6"  
 H6 = 6" w/ Heat Sink  
 12 = 12"  
 24 = 24"  
 Other by request

### Power

MDCL	MHDC	MISC
05 = 5kW	05 = 5kW	01 = 12kW
01 = 12kW	01 = 12kW	02 = 20kW
04 = 40kW	35 = 35kW	04 = 40kW
07 = 70kW	45 = 45kW	
12 = 125kW	08 = 80kW	

### # of Cavities

MBPF, MCIF, MBR2, MBR3

3

4

Other by request

### Digital Input Connector

MDCL, MISC

(use Connectors key)

### Coupling

MDHC  
 3 = 3dB  
 4 = 4.77dB  
 6 = 6dB  
 1 = 10 dB

### Example

A 3 station Branch Combiner with 4 cavities per filter and capable of handling up to 12 kW per channel would be a:

**MBR3 - 12 - 4 - 13**

3 Sta. Combiner	12" Cavity 12 kW Capacity	4 Cavities per Filter	1-5/8 EIA Inputs (1) 3-1/8" EIA Output (3)
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