

TELMEC was founded in Florence in 1976 as a company operating in the high precision mechanical and electromechanical sector.

Its main mission since then has been the design of filtering and combining products for radio signals in the different communication sites.

TELMEC therefore develops and manufactures autonomously systems and components in the radio frequency field which are needed to operate an interference free service from frequency crowded radio sites. Our know how is the result of a forty year long research and development activity in the field of Ground to Air Radio Communications both in the civilian and the military market.



TELMEC focus is on some specific areas of activity:

- Development of the most cost effective radio frequency system solution based on customer's requirements;
- Achievement of optimum electrical performance and thermal stability through a careful material selection and thoughtful construction;
- Standard high quality production of filters, combiners, couplers for the radio site. We constantly make use of customer's feedback from the field to improve our quality level;
- Utilization of state of art electronics for the control of the automatic tuning of the filters;
- Capability of developing customized solutions;
- Punctual delivery of products which are tuned in factory according to the configuration supplied by the customer;

The strength of our organization is therefore based on the quality of our products and our constant support to the customer.

The quality concept comes easy to our company as our high standards for the manufacturing process must include stringent control of the dimensions and surface finish of the components used.

TELMEC is certified according to the ISO 9001:2008 Quality Control standard.

FILTERS AND COMBINERS FOR ATC APPLICATIONS



Groups of transmitters and receivers at a base station are coupled to a single antenna with a multicoupling network thus greatly improving station efficiency.

By providing appropriate filters we achieve a high degree of isolation between transmitter and receiver thus obtaining the required selectivity with low insertion loss.

We provide a wide range of products built with mechanical cavities. The products include band reject, band pass, notch filters and combiners both in the VHF and UHF frequency range.

The combiners are implemented assembling cavities of different sizes. Different configurations are used such as starpoint, manifold and double bridge.



TELMEC Soc. Coop a r.l. Via A. Meucci, 8 – 50015 Grassina, Florence, ITALY

Tel. +39 055 644071/644087 Fax +39 055 641485 E-mail: info@telmec.net - www.telmec.net



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FILTERS AND COMBINERS FOR ATC APPLICATIONS

Telmec designs and develops different kinds of cavity resonators, with different size and different shape, both in VHF and UHF bands.

These cavities are the basic modules used to realize bandpass filters, combiners and band reject filters.

The cavities used in the VHF range are:

VHF 085	Rectangular 085 Cavity	85x216 mm (double)	AST-1506
VHF 120	Rectangular 120 Cavity	108 x 122 mm	AST-1034
VHF 165	Rectangular 165 Cavity	165 x 210 mm	AST-1360
VHF 180	Rectangular 180 Cavity	180 x 165 mm	AST-1023
VHF 210	Square 210 Cavity	210 x 210 mm	AST-0610
VHF 280	Rectangular 280 Cavity	280 x 210 mm	AST-1003
VHF 100	Round 100 Cavity	120 mm diameter	AST-0108
VHF 200	Round 200 Cavity	200 mm diameter	AST-0152

The cavities used in the UHF range are:

UHF 120	Rectangular 120 Cavity	108 x 122 mm	AST-1052
UHF 210	Square 210 Cavity	210 x 210 mm	AST-1193
UHF 280	Rectangular 280 Cavity	280 x 210 mm	AST-1111
UHF 100	Round 100 Cavity	120 mm diameter	AST-0149

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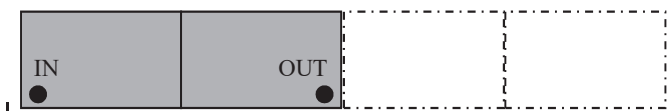
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BANDPASS FILTER

085 VHF cavity

Double cavity bandpass filter the VHF range can be allocated in one half 2 unit 19" cabinet. Frequency tuning is manually regulated through mechanical knobs.



FPB085-V/2

Electrical Specifications

Frequency band:	112 - 156 MHz
Impedance:	50 Ω
Max Power	50W CW
Insertion loss:	2 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	½ 19" rack, 2HU, depth 560 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knobs, telescopic movement

Bandpass Filters	Channels	Cabinet 2HU	Attenuation
FPB085-V/2	1	½	20dB \pm 0.4% from f_0 35 dB \pm 1% from f_0

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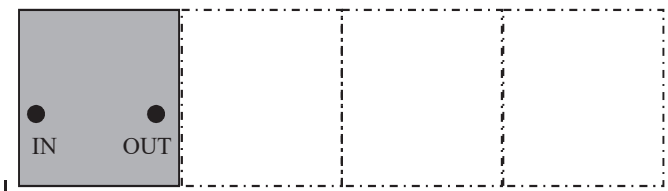


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BANDPASS FILTER

120 VHF cavity

Single or double cavity bandpass filters up to 4 channels in the VHF range can be allocated in one 3 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



FPB120-V/1

Electrical Specifications

Frequency band:	112 - 156 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	Adjustable, rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 3HU	Attenuation
FPB120-V/1	1	1	11dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB120-V/1-1 (double cavity)	1	1	25dB \pm 500 kHz 2dB I.L. at 127.5 MHz
FPB120-V/2	2	1	11dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB120-V/3	3	1	11dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB120-V/4	4	1	11dB \pm 500 kHz 1dB I.L. at 127.5 MHz

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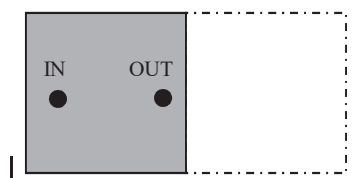


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BANDPASS FILTER

165 VHF cavity

Single or double cavity bandpass filters up to 2 channels in the VHF range can be allocated in one 4 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



FPB165-V/1

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	Adjustable, rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 4HU, depth 670 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 4HU	Attenuation
FPB165-V/1	1	1	15dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB165-V/1-1 (double cavity)	1	1	30dB \pm 500 kHz 2dB I.L. at 127.5 MHz
FPB165-V/1D	2	1	15dB \pm 500 kHz 1dB I.L. at 127.5 MHz

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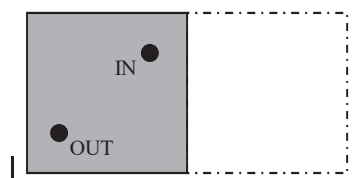


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BANDPASS FILTER

180 VHF cavity

Single or double cavity bandpass filters up to 2 channels in the VHF range can be allocated in one 4 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



FPB180-V/1

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	Adjustable, rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 4HU, depth 700 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 4HU	Attenuation
FPB180-V/1	1	1	13dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB180-V/1-1 (double cavity)	1	1	28dB \pm 500 kHz 2dB I.L. at 127.5 MHz
FPB180-V/1D	2	1	13dB \pm 500 kHz 1dB I.L. at 127.5 MHz

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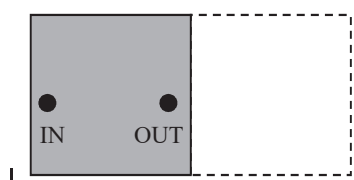


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BANDPASS FILTER

210 VHF cavity

Single or double cavity bandpass filters up to 2 channels in the VHF range can be allocated in one 5 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



FPB210-V/1

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Max Power	200W CW
Insertion loss:	Adjustable, rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 5HU	Attenuation
FPB210-V/1	1	1	15dB \pm 500 kHz 1dB I.L. at 127.5 MHz
FPB210-V/1-1 (double cavity)	1	1	32dB \pm 500 kHz 2dB I.L. at 127.5 MHz
FPB210-V/1D	2	1	15dB \pm 500 kHz 1dB I.L. at 127.5 MHz

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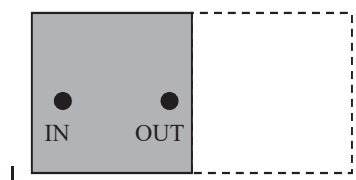
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BAND REJECT FILTER

210 VHF cavity

One or two band reject filters in the VHF range can be allocated in one 5 unit 19" cabinet. Frequency tuning and attenuation can be regulated through adjustable mechanical knobs.



FPB210-V/1BR

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	≤ 1.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Band Reject Filters	Channels	Cabinet 5HU	Attenuation (each single cavity)
FPB210-V/1BR	1	1	≥ 22 dB, @ +200kHz or –200kHz notch ≥ 40 dB, @ +500kHz or –500kHz notch
FPB210-V/1-1BR	2	1	≥ 22 dB, @ +200kHz or –200kHz notch ≥ 40 dB, @ +500kHz or –500kHz notch

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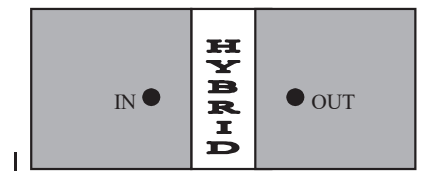
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NOTCH FILTER

210 VHF cavity

The Notch Filter is used when high attenuation is required for narrow spacing between the working and the rejected frequency in the VHF range. Attenuation and Insertion Loss can be adjusted by the rotating loops of the cavity. It is used for frequency spacing of 300 kHz or less. It is installed in a single 5 unit 19" cabinet.



Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Max Power	200W CW
Insertion loss:	Adjustable 0.5 ÷ 2.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 684 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Notch Filters	Channels	Cabinet 5HU	Frequency Spacing (kHz)	Attenuation dB
MCP210-V/2 TI	1	1	50	≥ 25
			100	≥ 30
			200	≥ 40
			300	≥ 40

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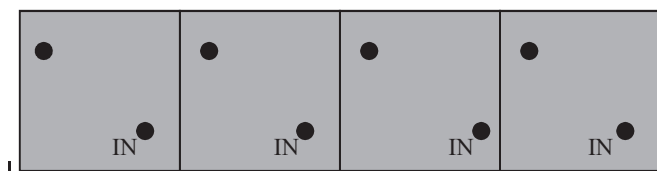


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STAR COMBINER

120 VHF single cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 120 V Star Combiners are composed by 120mm cavities and a star connection combining from 2 to 8 channels in the VHF range. The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss. Four cavities can be placed in a standard 3 unit 19" cabinet.



MCPS120-V/4

Electrical Specifications

Frequency band:	112- 156 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic inner movement

Combiners	Channels	Cabinet 3HU	Total height HU	Attenuation dB ±500 kHz at 127.5 MHz
MCPS120-V/2	2	1	3	≥ 11
MCPS120-V/3	3	1	3	≥ 11
MCPS120-V/4	4	1	3	≥ 11
MCPS120-V/5	5	2	6	≥ 11
MCPS120-V/6	6	2	6	≥ 11
MCPS120-V/7	7	2	6	≥ 11
MCPS120-V/8	8	2	6	≥ 11

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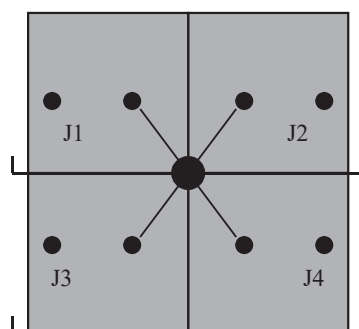


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STAR COMBINER

165 VHF single cavity

Combiners are a vital system component for improving the quality of ATC radio communications. They are used to allow several radio channels to operate at the same site using a common antenna thus saving installation space. Their high power rating make them ideal for working with AM transmitters with high peak power. The combiner can be adjusted to obtain the optimum combination of selectivity and insertion loss. The combiners can be supplied with or without external isolators. The Star Combiners are installed in one or more 4 units 19" standard cabinets.



MCPS165-V/4

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 4HU, depth 670 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 4HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCPS165-V/2	2	1	4	≥ 15
MCPS165-V/3	3	2	8	≥ 15
MCPS165-V/4	4	2	8	≥ 15
MCPS165-V/5	5	3	12	≥ 15
MCPS165-V/6	6	3	12	≥ 15
MCPS165-V/7	7	4	16	≥ 15
MCPS165-V/8	8	4	16	≥ 15

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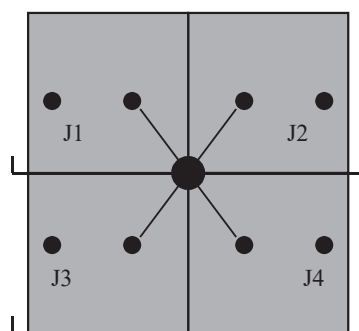
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STAR COMBINER

210 VHF single cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 210 V Star Combiners are composed by 210mm cavities and a star connection combining from 2 to 8 channels in the VHF range. Their high power rating make them ideal for working with AM transmitters with high peak power. The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss. The combiners can be supplied with or without external isolators.



MCPS210-V/4

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	200W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 5HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCPS210-V/2	2	1	5	≥ 15
MCPS210-V/3	3	2	10	≥ 15
MCPS210-V/4	4	2	10	≥ 15
MCPS210-V/5	5	3	15	≥ 15
MCPS210-V/6	6	3	15	≥ 15
MCPS210-V/7	7	4	20	≥ 15
MCPS210-V/8	8	4	20	≥ 15

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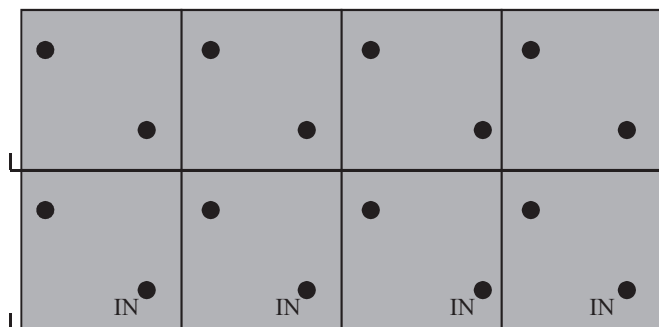


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STAR COMBINER

120 VHF double cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 120 V double cavity star combiners are composed by two 120mm cavities and a star connection combining from 2 to 8 channels in the VHF range. Two cavities are connected in series to improve selectivity. The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss. Four cavities can be placed in a standard 3 unit 19" cabinet.



MCPS120-V/4-4

Electrical Specifications

Frequency band:	112 - 156 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 2 ÷ 4.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 3HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCPS120-V/2-2	2	1	3	≥ 25
MCPS120-V/3-3	3	2	6	≥ 25
MCPS120-V/4-4	4	2	6	≥ 25
MCPS120-V/5-5	5	3	9	≥ 25
MCPS120-V/6-6	6	3	9	≥ 25
MCPS120-V/7-7	7	4	12	≥ 25
MCPS120-V/8-8	8	4	12	≥ 25

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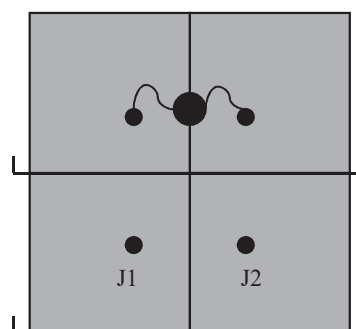


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STAR COMBINER

165 VHF double cavity

Combiners are a vital system component for improving the quality of ATC radio communications. They are used to allow several radio channels to operate at the same site using a common antenna thus saving installation space. Each channel consists of two cavities connected in series. Their high power rating make them ideal for working with AM transmitters with high peak power. The combiner can be adjusted to obtain the optimum combination of selectivity and insertion loss. The combiners can be supplied with or without external isolators. The Star Combiners are installed in more 4 units 19" standard cabinets.



MCPS165-V/2-2

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1.5 ÷ 4 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 4HU, depth 670 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 4HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCPS165-V/2-2	2	2	8	≥ 30
MCPS165-V/3-3	3	3	12	≥ 30
MCPS165-V/4-4	4	4	16	≥ 30
MCPS165-V/6-6	6	6	24	≥ 30

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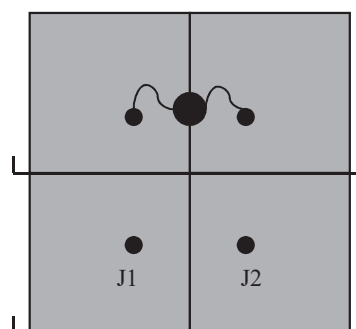


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STAR COMBINER

210 VHF double cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 210 V double cavity star combiners are composed by 210mm cavities and a star connection combining from 2 to 8 channels in the VHF range. Two cavities are connected in series to improve selectivity. Their high power rating make them ideal for working with AM transmitters with high peak power. The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss. The combiners can be supplied with or without external isolators.



MCPS210-V/2-2

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	200W CW
Insertion loss:	Adjustable 1.5 ÷ 4 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 5HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCPS210-V/2-2	2	2	10	≥ 32
MCPS210-V/3-3	3	3	15	≥ 32
MCPS210-V/4-4	4	4	20	≥ 32
MCPS210-V/6-6	6	6	30	≥ 32

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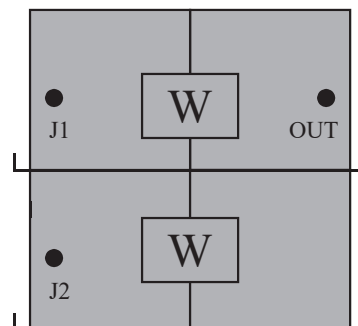
MANIFOLD COMBINER

210 VHF double cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCP 210 V manifold combiner uses an alternative method for combining up to 4 channels in the VHF range.

The number of channels can be increased or decreased upon request.

A double bandpass filter with adjustable window coupling is used for each channel. Each channel is allocated in a single 5 unit 19" cabinet.



MCP210-V/2-2

Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	200W CW
Insertion loss:	Adjustable 1.5 ÷ 4 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 728 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 5HU	Total height HU	Attenuation dB ± 500 kHz at 127.5 MHz
MCP210-V/2-2	2	2	10	≥ 32
MCP210-V/3-3	3	3	15	≥ 32
MCP210-V/4-4	4	4	20	≥ 32

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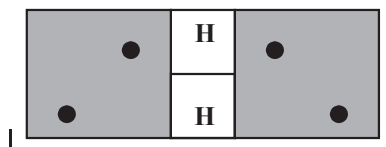
DOUBLE BRIDGE COMBINER

180 VHF cavity

Combiners allow several radio channels to operate at one site using a common antenna.

The MCPD 180 V double bridge combiners guarantee isolation between channels with respect to manifold or starpoint combiners. They are composed by two 180mm VHF cavities and two hybrid devices. Expansion of channels is done easily in the field without need of instrumentation or cavity retuning.

Each channel is allocated in a single 4 unit 19" cabinet. Up to 10 channels in the VHF range can be installed in a 42 units, 19" standard rack.



Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions for each channel:	19" rack, 4HU, depth 700 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 4HU	Attenuation
MCPD180-V#	2 ÷ 10	2 ÷ 10	13dB \pm 500 kHz at 127.5 MHz

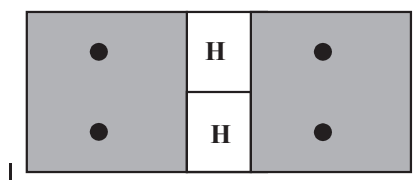
DOUBLE BRIDGE COMBINER

280 VHF cavity

Combiners allow several radio channels to operate at one site using a common antenna.

The MCPD 280 V double bridge combiners guarantee isolation between channels with respect to manifold or starpoint combiners. They are composed by two 280mm VHF cavities and two hybrid devices. Expansion of channels is done easily in the field without need of instrumentation or cavity retuning.

Each channel is allocated in a single 5 unit cabinet. Up to 8 channels in the VHF range can be installed in a 42 units, 25" standard rack. Additional channels (up to 16) can be added.



Electrical Specifications

Frequency band:	118 - 144 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female or 7/16
Dimensions for each channel:	25" rack, 5HU, depth 700 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 5HU	Attenuation
MCPD280-V#	2 ÷ 16	2 ÷ 16	14dB \pm 200 kHz at 127.5 MHz

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BANDPASS FILTER

120 UHF cavity

Single cavity bandpass filters up to 4 channels in the UHF range can be allocated in one 3 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



FPB120-U/1S

Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	Adjustable , rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3HU, depth 560 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 3HU	Attenuation
FPB120-U/1S	1	1	13dB \pm 0.4% 1dB I.L. at 312 MHz
FPB120-U/2S	2	1	13dB \pm 0.4% 1dB I.L. at 312 MHz
FPB120-U/3S	3	1	13dB \pm 0.4% 1dB I.L. at 312 MHz
FPB120-U/4S	4	1	13dB \pm 0.4% 1dB I.L. at 312 MHz

BANDPASS FILTER

210 UHF cavity

Double cavity bandpass filters single channel in the UHF range can be allocated in one 5 unit 19" cabinet. Frequency tuning and insertion loss can be regulated through adjustable loops and mechanical knobs.



Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	200W CW
Insertion loss:	Adjustable , rotating loops

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 600 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Bandpass Filters	Channels	Cabinet 5HU	Attenuation
FPB210-U/2	1	1	32dB \pm 0.4% from f_0

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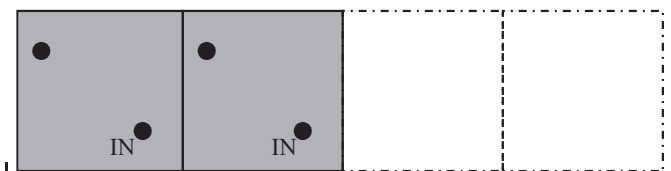
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STAR COMBINER

120 UHF single cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 120 U/2 star combiner is composed by 120 mm cavities and a star connection which combines two channels in the UHF range.

The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss.



Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3/6 HU
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiner	Channels	Cabinet 3HU	Total height HU	Attenuation
MCPS120-U/2	2	1	3 - depth 560 mm	$\geq 13 \text{ dB} \pm 0.4\%$ at 312 MHz

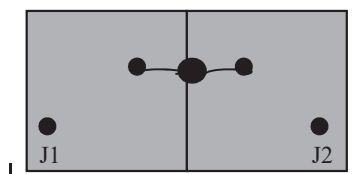
Combiner	Channels	Cabinet 6HU	Total height HU	Attenuation
MCPS120-U/4	4	$\frac{1}{2}$	6 - depth 685 mm	$\geq 16 \text{ dB}$ at $\pm 1\%$ from f_0

STAR COMBINER

210 UHF single cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 210 U/2 star combiner is composed by two 210 mm cavities and a star connection which combines two channels in the UHF range.

The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss.



Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	200W CW
Insertion loss:	Adjustable 1 ÷ 3 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 5HU, depth 600 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiner	Channels	Cabinet 5HU	Total height HU	Attenuation
MCPS210-U/2	2	1	5	$\geq 17 \text{ dB} \pm 0.4\%$
MCPS210-U/4	4	2	10	$\geq 17 \text{ dB} \pm 0.4\%$

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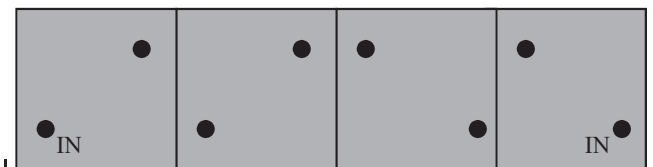
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STAR COMBINER

120 UHF double cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPS 120 U2-2 star combiner is composed by 120 mm cavities and a star connection which combines two channels in the UHF range.

Cavities are connected in series to improve selectivity. The input and output loops can be adjusted for the optimum combination of selectivity and insertion loss.



Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	100W CW
Insertion loss:	2 ÷ 4 dB

Mechanical Specifications

Connector Type:	N Female
Dimensions:	19" rack, 3HU, depth 560 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiner	Channels	Cabinet 3HU	Total height HU	Attenuation
MCPS120-U/2-2	2	1	3	≥ 25 dB $\pm 0.4\%$ at 312 MHz

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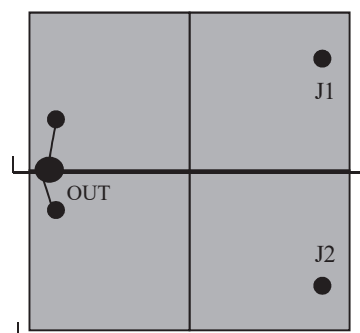
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STAR COMBINER

210 UHF double cavity

Combiners are a vital system component for improving the quality of ATC radio communications. They are used to allow several radio channels to operate at the same site using a common antenna thus saving installation space. Each channel consists of two cavities connected in series. Their high power rating make them ideal for working with AM transmitters with high peak power. The combiner can be adjusted to obtain the optimum combination of selectivity and insertion loss. The combiners can be supplied with or without external isolators.



Electrical Specifications

Frequency band:	225 – 400 MHz
Impedance:	50 Ω
Max Power	200W CW
Insertion loss:	$\leq 2,0$ dB

Mechanical Specifications

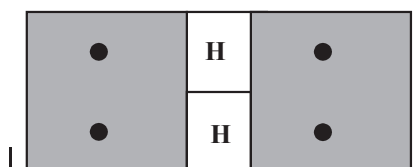
Connector Type:	N Female
Dimensions:	19" rack, 10HU, depth 600 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiner	Channels	Cabinet 5HU	Total height HU	Attenuation
MCPS210-U/2-2	2	2	10	≥ 32 dB @ ± 1.2 MHz
MCPS210-U/4-4	4	4	20	≥ 32 dB @ ± 1.2 MHz

DOUBLE BRIDGE COMBINER

280 UHF cavity

Combiners allow several radio channels to operate at one site using a common antenna. The MCPD 280 U double bridge combiner guarantees isolation between channels with respect to manifold or starpoint combiners. It is composed by two 280mm UHF cavities and two hybrid devices. Expansion of channels is done easily in the field without need of instrumentation or filter retuning. Each channel is allocated in a single 5 unit cabinet. Up to 8 channels can be installed in a 42 units, 25" standard rack.



Electrical Specifications

Frequency band:	225 - 400 MHz
Impedance:	50 Ω
Input Power	100W CW
Insertion loss:	Adjustable 1 ÷ 3.5 dB

Mechanical Specifications

Connector Type:	N Female or 7/16
Dimensions for each channel:	25" rack, 5HU, depth 600 mm
Operating temp.:	-10°C to +55°C
Tuning method:	Rotary knob, telescopic movement

Combiners	Channels	Cabinet 5HU	Attenuation
MCPD280-U#	2 ÷ 8	2 ÷ 8	13dB \pm 500 kHz at 312 MHz

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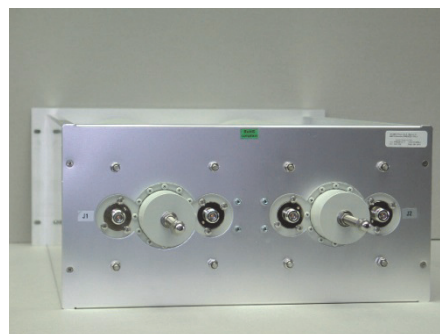


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FILTERS AND COMBINERS

100 – 200 VHF round cavity

Single cavity filters and combiners are implemented using 120 mm and 200 mm round cavities in the 118 – 137 MHz VHF range. Optimum performance is achieved through a rugged construction.



FPB200-V/1-1

	Cavity	Model	Attenuation	Spacing (%Fo)	Thermal Stability (ppm°C)	Input Power (CW)
FILTERS	100	FPB100-V/1	12dB $\pm 0.75\%F_o$ 1dB I.L.	-	3	100W
		FPB100-V/1-1	12dB $\pm 0.75\%F_o$ 1dB I.L.	-	3	100W
		FPB100-V/2	24dB $\pm 0.75\%F_o$ 2dB I.L.	-	3	100W
	200	FPB200-V/1	15dB ± 500 KHz 1dB I.L.	-	3	200W
		FPB200-V/1-1	15dB ± 500 KHz 1dB I.L.	-	3	200W
		FPB200-V/2	30dB ± 500 KHz 2dB I.L.	-	3	200W
COMBINERS	100	MCP100-V/2	12dB $\pm 0.75\%F_o$ 1dB I.L.	0.33	3	100W
		MCP100-V/3	12dB $\pm 0.75\%F_o$ 1dB I.L.	0.33	3	100W
		MCP100-V/4	12dB $\pm 0.75\%F_o$ 1dB I.L.	0.33	3	100W

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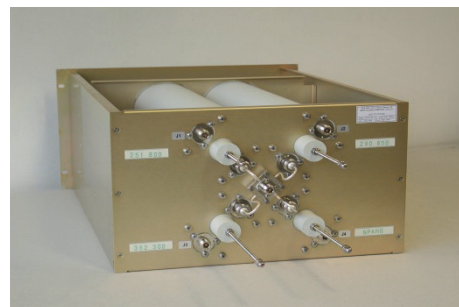


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FILTERS AND COMBINERS

100 UHF round cavity

Single cavity filters and combiners are implemented using 120 mm round cavities in the 225 – 400 MHz UHF range. Optimum performance is achieved through a rugged construction.



MCP100-U/4

	Cavity	Model	Attenuation	Spacing (%Fo)	Thermal Stability (ppm°C)	Input Power (CW)
FILTERS	100	FPB100-U/1	12dB $\pm 0.75\%F_o$ 1dB I.L.	-	5	100W
		FPB100-U/1-1	12dB $\pm 0.75\%F_o$ 1dB I.L.	-	5	100W
		FPB100-U/2	24dB $\pm 0.75\%F_o$ 2dB I.L.	-	5	100W
COMBINERS	100	MCP100-U/2	12dB $\pm 0.75\%F_o$ 1dB I.L.	0.33	5	100W
		MCP100-U/3	12dB $\pm 0.75\%F_o$ 1dB I.L.	0.33	5	100W
		MCP100-U/4	24dB $\pm 0.75\%F_o$ 2dB I.L.	0.33	5	100W

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VHF AUTOMATIC TUNING BAND PASS FILTERS

085 VHF double cavity

2 units height, double coupled cavities automatic tuning filters are a key factor when space is limited. High selectivity, extended frequency range and fast tuning time allow for easy operation on the field.

The independent tuning capability and accuracy offer optimum software controlled matching performance.

Customized data interfaces available.



FPBA085-V/2

Electrical Specifications

Frequency bands:	112 - 156 MHz
Impedance:	50 Ω
Max Power	50W CW
Interfaces :	ETHERNET, RS232, RS485 or RS422.

Mechanical Specifications

Connector Type	N Female
Dimensions (VHF)	½ 19" rack, 2HU depth. 580 mm
Operating Temp. :	-10°C to +55°C
Tuning method:	Automatic, telescopic movement

Automatic Bandpass Filter	Return Loss	Tuning time	Insertion Loss	Selectivity
FPBA085-V/2	> 14 dB	Typ. 4 Sec.	< 2dB	> 20 dB @ +/- 0.4% f_0
				> 35 dB @ +/- 1 % f_0

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VHF AUTOMATIC TUNING BAND PASS FILTERS

VHF 210 double cavity

5 units double coupled cavities automatic tuning are a key factor in emergency sites. High selectivity, extended frequency range and fast tuning time allow for easy operation on the field. The independent tuning capability and accuracy offer optimum software controlled matching performance. Customized data interfaces available.



FPBA210-V/2

Electrical Specifications

Frequency bands:	112 - 156 MHz
Impedance:	50 Ω
Max Power	200W CW
Interfaces :	ETHERNET, RS232, RS485 or RS422.

Mechanical Specifications

Connector Type	N Female
Dimensions	19" rack, 5HU, depth. 690 mm
Operating Temp. :	-10°C to +55°C
Tuning method:	Automatic, telescopic movement

Automatic Bandpass Filter	VSWR	Tuning time	Insertion Loss	Selectivity
FPBA210-V/2 (double cavity)	$\leq 1.6:1$	Typ. 6 Sec.	< 2dB	> 30 dB @ +/- 0.4%

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UHF AUTOMATIC TUNING BAND PASS FILTERS

UHF 210 double cavity

5 units double coupled cavities automatic tuning are a key factor in emergency sites. High selectivity, extended frequency range and fast tuning time allow for easy operation on the field. The independent tuning capability and accuracy offer optimum software controlled matching performance. Customized data interfaces available.



FPBA210-U/2

Electrical Specifications

Frequency bands:	225 - 400 MHz
Impedance:	50 Ω
Max Power	200W CW
Interfaces :	ETHERNET, RS232, RS485 or RS422.

Mechanical Specifications

Connector Type	N Female
Dimensions	19" rack, 5HU, depth. 623 mm
Operating Temp. :	-10°C to +55°C
Tuning method:	Automatic, telescopic movement

Automatic Bandpass Filter	VSWR	Tuning time	Insertion Loss	Selectivity
FPBA210-U/2 (double cavity)	$\leq 1.6:1$	Typ. 10 Sec.	< 2dB	> 30 dB @ +/- 0.4%

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NOTES

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

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