

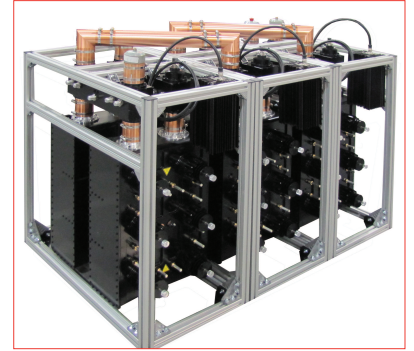
UHF Television Combiners, ETSI/DVB-T & T2, 6MHz channels

Product Description

These series of constant impedance UHF combiner modules are designed for multichannel digital and analogue TV applications. These balanced UHF TV combiners are ideal when optimum performance specifications are required. They are all very compact for their ratings, as well as temperature stable and suitable for a wide range of applications. RFS combiners are usable for all known standards and applications, however this guide focuses on the standard indicated above.

Each balanced combiner module consists of two 3dB couplers, separated by bandpass filters, whether they be coaxial or waveguide depends upon the series, where CA is coaxial, and CW waveguide. A separate data sheet detailing the directional waveguide operation of our CW series is also available.

The narrowband input corresponds to the bandpass resonant frequency, whereas the wideband input can be any other channels in the applicable UHF band. Modules are connected together to provide a multi-channel combiner. The order (number of poles) of the filters will determine the channel spacing required for given channels, and also the mask, if any that may be provided.



Features/Benefits

- Compact design, small footprint
- Modular design with integrated frames
- Rack mountable (smaller systems wall and ceiling mountable also)
- Wideband, high performance couplers for plug and play style expandability and flexibility
- Highest power rating for size/class
- Lowest loss for size/class in all sizes
- Temperature stabilized
- All global standards/applications available
- Tunable over full frequency range
- Integrated mask filtering
- Multiple stage 3dB couplers for unsurpassed wideband responses.
- PeakPower™ technology
- Three mask variants depending upon transmitter intermodulation.

Options:

- Various input connector sizes
- Monitoring or test ports via directional couplers
- Monitoring systems
- By-pass patching systems

Specifications

ETSI Critical (TXIM 36, 36 & 37dB & Filter >14, 30, 50dB at fc±3.15, 4.5 & 9MHz) eg CA8PPXX271E

UHF Filter size (mm)	8PX50E	6PPXX80E	6PPXX110E	8PPXX160E	8PPXX161E Liquid Cooled	8PPXX200E	8PPXX201E Liquid Cooled	8PPXX271E Liquid Cooled	CW7PX
<b>Combined Output Rating, kW</b>									
50E Series	1.4								
With 1&5/8" coupler		5.6	5.6						
With 3&1/8" coupler		12	12	15	15	18			
With 4&7/8" coupler				35	35	35	35	42	
With 6&1/8" coupler						80	80	100	
With waveguide output									240
<b>NB Input Power Rating, kW</b>									
at fc = 473MHz (≤40° rise)	0.48	1.46	3.20	6.50	12.20	17.50	25.00	44.0	60.0
at fc = 641MHz (≤40° rise)	0.46	1.35	2.80	6.10	11.30	15.80	20.20	42.0	50.0
at fc = 803MHz (≤40° rise)	0.44	1.24	2.40	5.70	10.40	14.20	15.40	≤701MHz	30.0
at fc = 473MHz (≤30° rise)	0.36	1.09	2.40	4.90	12.20	13.10	25.00	44.0	45.0
at fc = 641MHz (≤30° rise)	0.34	1.01	2.10	4.60	11.30	11.90	20.20	42.0	38.8
at fc = 803MHz (≤30° rise)	0.32	0.93	1.80	4.30	10.40	10.70	15.40	≤701MHz	23.0
<b>NB Input Power Rating with single adjacent of equal power in WB input, kW</b>									
at fc = 473MHz (≤30° rise)	0.26	0.90	2.00	4.50	6.80	7.50	14.00	44.0	45.0*
at fc = 641MHz (≤30° rise)	0.24	0.83	1.75	5.20	6.30	6.80	11.40	42.0	40.0*
at fc = 803MHz (≤30° rise)	0.22	0.76	1.50	4.40	5.80	6.00	8.70	≤701MHz	20.0*
* Parts near the combined path have ≤40° rise									
<b>a) NB Insertion Loss for a single module, dB</b>									
at fc = 473MHz	1.44	0.83	0.55	0.54	0.54	0.49	0.49	0.47	0.24
at fc = 641MHz	1.57	0.89	0.62	0.60	0.60	0.55	0.55	0.53	0.27
at fc = 803MHz	1.70	0.96	0.69	0.65	0.65	0.59	0.59	≤701MHz	0.30
<b>NB Insertion Loss Variation wrt fc, dB</b>									
DVB-T at fc±2.85MHz adjacent & non adjacent =641MHz	3.5	3.30	2.90	2.70	2.70	2.70	2.70	2.2	1.9
DVB-T at fc±2.85MHz adjacent & non adjacent =803MHz	4.2	3.90	3.50	3.20	3.20	3.20	3.20	3.2	2.2
DVB-T2 at fc±2.915MHz adjacent & non adjacent =641MHz	5.5	5.30	4.90	4.70	4.70	4.70	4.70	3.4	3.9
DVB-T2 at fc±2.915MHz adjacent & non adjacent =803MHz	6.2	5.90	5.50	5.30	5.30	5.30	5.30	≤701MHz	4.4
<b>Attenuation wrt fc, dB</b>									
at fc±3.15MHz	14	14	14	14	14	14	14	14	14
at fc±4.5MHz	30	30	30	30	30	30	30	30	30
at fc±9MHz	50	50	50	50	50	50	50	50	50
<b>Group Delay wrt fc (adjacent and non-adjacent), ns</b>									
DVB-T at fc±2.85MHz nonadjacent edge	995	1095	1095	1295	1295	1295	1295	1295	1295
DVB-T2 at fc±2.915MHz adjacent edge	1095	1195	1195	1795	1795	1795	1795	1795	1795
<b>b) WB Input IL at fc for a single module (non adjacent), dB</b>	0.13	0.10	0.10	0.09	0.09	0.09	0.09	0.080	0.080
<b>c) Additional NB IL at fc per adjacent channel on its output, dB</b>	0.08	0.05	0.04	0.04	0.04	0.03	0.03	0.010	0.010
<b>d) Insertion loss per additional module, dB</b>	0.08	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.025
<b>WB Input insertion loss at N<sup>th</sup> module (where 1st module is at output)</b>	= b + d x (N-1), non adjacent								
	= b + d x (N-1) + c per adjacent channel								
	= a + d x (N-1) + c per adjacent channel on its output only								
<b>NB Insertion loss at N<sup>th</sup> Module, for N &gt;=2</b>									
<b>Return Loss, dB:</b>									
NB, across fc +/- 2.8MHz	>26								
WB, for adjacent channels	>26, depending upon configuration								
WB, for non-adjacent channels	>30, depending upon configuration, otherwise >26								
<b>Isolation, dB ; across fc +/- 2.8MHz</b>									
NB to NB for adjacent channels	>35+/-5								
NB to NB for non-adjacent channels	>70+/-10								
NB to WB for adjacent channels	>35+/-5								

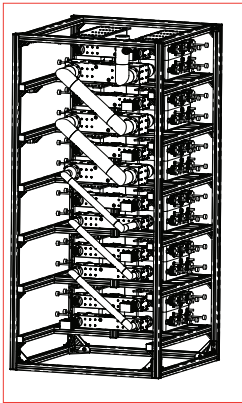
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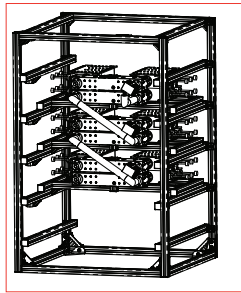
**Combiner module**

Combiner module stacked	CA6PPXX80E	CA6PPXX110E	
		DC318EU	DC158EU
WB Coupler	DC318EU	DC318EU	DC158EU
NB Coupler	DC158EU	DC158EU	DC158EU
Frame width, (mm)	950	950	950
Frame height, (mm)	1430*	1430*	1430*
Frame depth, (mm)	950	1070	1070
Weight per module, (kg)	40	69	64

\* max height dependent on transport @1430mm 4x110E & 5x80E units (within frame)



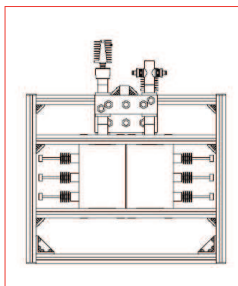
CA6PPXX80E-6



CA6PPXX80E-3

**Combiner module**

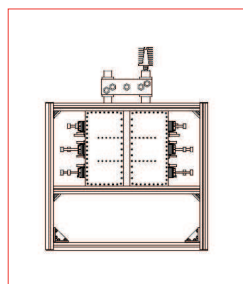
Combiner module	CA6PPXX80E	
	DC158EU	DC158EU
WB Coupler	DC158EU	DC158EU
NB Coupler	DC158EU	DC158EU
Frame width, (mm)	385	245
Frame height, (mm)	787	577
Frame depth, (mm)	890	890
Weight, (kg)	44	41



CA6PPXX80E-158

**Combiner module**

Combiner module	CA6PPXX110E			
	DC318EU	DC158EU	DC318EU	DC158EU
WB Coupler	DC318EU	DC158EU	DC318EU	DC158EU
NB Coupler	DC158EU	DC158EU	DC158EU	DC158EU
Frame width, (mm)	450	385	322	322
Frame height, (mm)	865	767	865	577
Frame depth, (mm)	890	890	890	890
Weight, (kg)	69	63	66	60



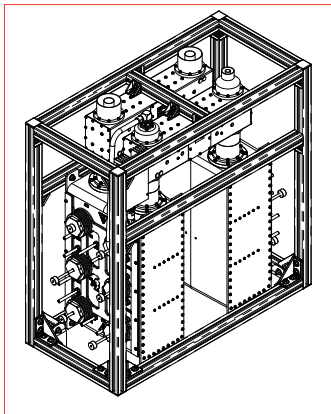
CA6PPXX110E-158

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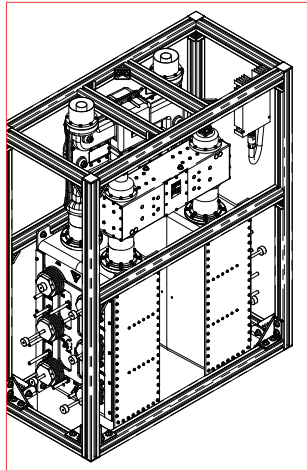
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**Combiner module**

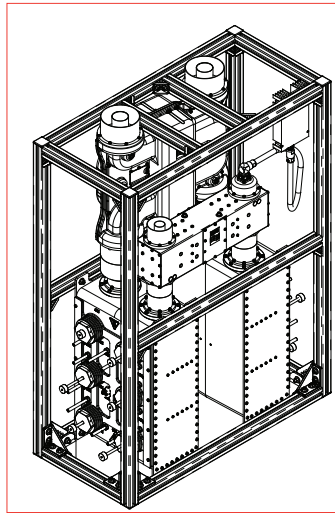
Combiner module	CA8PPXX160E				CA6PPXX160E					
	DC478EU-HP	DC318EU-HP	DC318EU	DC478EU-HP	DC318EU-HP	DC318EU	DC478EU-HP	DC318EU-HP	DC318EU	
WB Coupler	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	
NB Coupler	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	
Frame width, (mm)	500	450	450	414	414	500	450	450	426	
Frame height, (mm)	2160	1235	1050	2160	1235	1050	1190	1065	880	
Frame depth, (mm)	890	890	890	890	890	890	890	890	890	
Weight, (kg)	146	135	129	143	132	126	125	114	107	
<b>Patch panel module</b>										
PP158-4 (height+385mm)	✓	✓	✓	-	-	✓	✓	✓	-	-
PP318-4 (height+425mm)	-	✓	✓	-	-	-	✓	✓	-	-
PP478-4 (height+760mm)	✓	-	-	-	-	✓	-	-	-	-



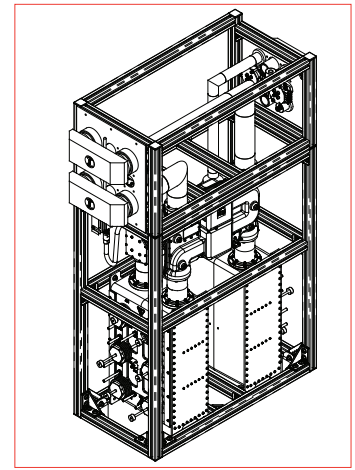
CA6PPXX160E-318



CA6PPXX160E-318HP



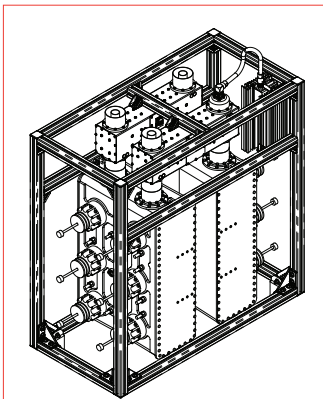
CA6PPXX160E-478HP



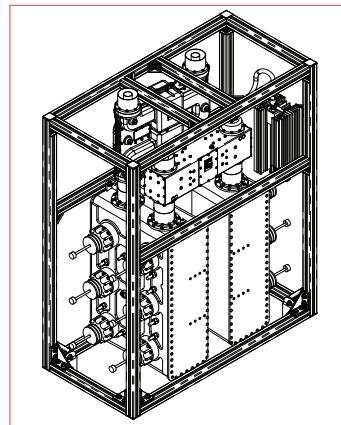
CA6PPXX160E-318HP / PP318-4 / PP158-4

**Combiner module**

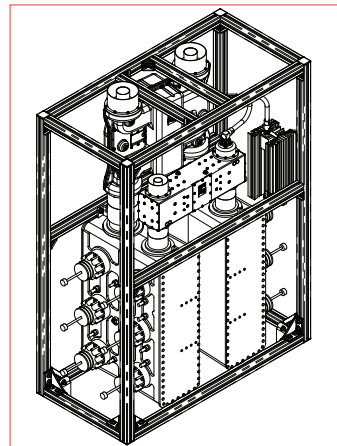
Combiner module	CA8PPXX201E		CA8PPXX200E		CA6PPXX201E		CA6PPXX200E		
	DC478EU-HP	DC318EU	DC478EU-HP	DC318EU	DC478EU-HP	DC318EU	DC478EU-HP	DC318EU	
WB Coupler	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	
NB Coupler	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	DC318EU	
Frame width, (mm)	500	500	500	500	500	500	500	500	
Frame height, (mm)	1546	1546	1416	1226	1330	1330	1200	1010	
Frame depth, (mm)	1014	1014	1014	1014	1014	1014	1014	1014	
Weight, (kg)	222	217	206	199	183	177	165	159	
<b>Patch panel module</b>									
PP158-4 (height + 385mm)	✓	✓	✓	✓	✓	✓	✓	✓	
PP318-4 (height + 425mm)	✓	✓	✓	✓	✓	✓	✓	✓	
PP478-4 (height + 760mm)	✓	-	-	✓	✓	-	-	-	



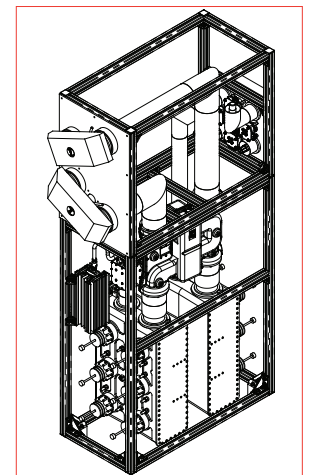
CA6PPXX200E-318



CA6PPXX200E-318HP



CA6PPXX200E-478HP



CA6PPXX200E-478HP / PP478-4 / PP318-4

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