EXPLANATION OF THE MULTI CHANNEL COMBINER SPECIFICATIONS

Calculation of the maximum permissible output voltage

Various signals are added up within the combiner.
The peak voltages of the individual signal must be calculated and added up. The peak voltage must not be calculated from the combined power because this will result in a too low figure.
This sum must be less than the noted maximum output voltage. SPINNER recommends to keep a safety margin of 20%.

Calculation of the maximum permissible power at the narrow band inputs of starpoint, manifold or CIB combiner

The power is limited by the filters. The power ratings in the catalogue are always RMS figures. If the RMS figure of a signal is different from the nominal figure a correction factors must be applied (e.g. an analogue TX with 10/1 kW nominal power produces only 7 kW RMS power).
The RMS power specified in the data sheet can be applied. Only for adjacent channel operation a reduction may be necessary as explained below.

Calculation of the maximum permissible power at the wide band input of CIB combiners

The power ratings in the catalogue are always RMS figures. If the RMS figure of a signal is different from the nominal figure then correction factors must be applied (e.g. an analogue TX with 10/1 kW nominal power produces only 7 kW RMS power).

Typically the powers fed into the combiner inputs are different:

- only one transmitter is fed into the narrow band input
- the combined power of several transmitters is fed into the wide band input

In order to check if a CIB combiner model is suitable you must subtract 50% of the narrow band power from the maximum wide band power noted in the data sheet.
If the remainder is too small you must select a bigger combiner model.

Example:

Power at narrow band input in kW: ≤ 4.0
Power at wide band input in kW: ≤ 7.0

Possible combinations:

Narrow band input in kW:	*0*	*1.0*	*2.0*	*3.0*	*4.0*
Wide band input in kW:	*7.0*	*6.5*	*6.0*	*5.5*	*5.0*

SPINNER recommends to keep a safety margin of 20%.

Adjacent channel operation with CIB-Combiners

Only CIB combiners are suitable to combine adjacent channels or blocks.
The slope of the adjacent channel fed into the wide band input is not completely reflected by the band pass filters. A small part of the signal enters the filter and is converted to heat. This effect is called adjacent channel loss.
This load onto the band pass filters must be taken into account. For compensation the maximum permissible narrow band power must be reduced by 10 % - 30 % of the adjacent channel power fed into the wide band input.

Matching of CIB combiners outside the operating channels

To achieve best matching for the operating channels, non-used channels are handicapped. Therefore, please specify in the order all planned operating frequencies. The VSWR noted in the data sheet is guaranteed only for one channel per input.

Tuning specifications for filters and combiners

The filters must be tuned to the proper channel bandwidth (6, 7 or 8 MHz) and to satisfy the mask requirements.
The necessary information is defined in the tuning specifications (e.g. AS6148) which must be indicated with every order.
In the catalogue you can find filter data for the most common applications. However, alternative filter tunings can be made for other mask requirements, applications and bandwidths. Please do not hesitate to contact us.

BAND 3 COMBINERS

BAND 3 STRETCH LINE COMBINERS

Part number	Inputs	Channel spacing	Filters	Power per Input	Mask filtering
BN 57 46 81	2	≥ 2	–	≤ 2 kW	–

BAND 3 CIB COMBINERS WITHOUT MASK FILTERING

Part number	Channel spacing	Filters	NB power	WB power [1]	Mask filtering
BN 57 46 84 **BN 57 46 85**	≥ 2 ≥ 2	3/150 3/150	≤ 12 kW ≤ 12 kW	≤ 12 kW ≤ 30 kW	- -
BN 57 49 45 **BN 57 49 46**	≥ 1 ≥ 1	4/150 4/150	≤ 12 kW ≤ 12 kW	≤ 12 kW ≤ 30 kW	- -

BAND 3 DAB STARPOINT COMBINERS (1.54 MHZ BLOCK WIDTH)

Part number	Block spacing	Filters	NB power	Mask filtering
BN 57 49 04	≥ 1	6/100	≤ 0.5 kW	DAB or T-DMB
BN 57 46 17	≥ 1	6/150	≤ 1.5 kW	DAB or T-DMB
BN 57 46 80	≥ 1	6/150	≤ 1.6 kW	DAB or T-DMB

BAND 3 DAB CIB COMBINERS (1.54 MHZ BLOCK WIDTH)

Part number	Block spacing	Filters	NB power	WB power [1]	Mask filtering
BN 57 49 29 **BN 57 49 69**	≥ 0 ≥ 0	6/100 6/100	≤ 1 kW ≤ 1 kW	≤ 3 kW ≤ 3 kW	DAB or T-DMB DAB or T-DMB
BN 57 49 94 **BN 57 49 96**	≥ 0 ≥ 0	6/150 6/150	≤ 3 kW ≤ 3 kW	≤ 14 kW ≤ 30 kW	DAB or T-DMB DAB or T-DMB
BN 57 49 18 **BN 57 49 16**	≥ 0 ≥ 0	6/150 6/150	≤ 3.2 kW ≤ 3.2 kW	≤ 14 kW ≤ 30 kW	DAB or T-DMB DAB or T-DMB
BN 57 49 19 **BN 57 49 25**	≥ 0 ≥ 0	8/150 8/150	≤ 3.2 kW ≤ 3.2 kW	≤ 14 kW ≤ 30 kW	DAB or T-DMB DAB or T-DMB
BN 57 49 90	≥ 0	6/200	≤ 6 kW	≤ 30 kW	DAB or T-DMB
BN 57 49 92 **BN 57 46 91** **BN 57 46 90**	≥ 0 ≥ 0 ≥ 0	6/200 6/200LC 6/200	≤ 6.0 kW ≤ 10.2 kW ≤ 6.0 kW	≤ 14 kW ≤ 14 kW ≤ 30 kW	DAB or T-DMB DAB or T-DMB DAB or T-DMB
BN 57 49 07 **BN 57 46 97** **BN 57 46 48**	≥ 0 ≥ 0 ≥ 0	8/200 8/200LC 8/200	≤ 6.2 kW ≤ 10.2 kW ≤ 6.2 kW	≤ 14 kW ≤ 14 kW ≤ 30 kW	DAB or T-DMB DAB or T-DMB DAB or T-DMB

BAND 3 DTV STARPOINT COMBINERS

Part number	Block spacing	Filters	NB power	Mask filtering
BN 57 46 69	≥ 1	6/100	≤ 1.1 kW	DTV

BAND 3 DTV CIB COMBINERS

Part number	Block spacing	Filters	NB power	WB power[1]	Mask filtering
BN 57 46 68	≥ 0	6/100	≤ 2.2 kW	≤ 3 kW	DTV
BN 57 49 36 **BN 57 49 38**	≥ 0 ≥ 0	6/150 6/150	≤ 8 kW ≤ 8 kW	≤ 14 kW ≤ 30 kW	DTV DTV
BN 57 46 86 **BN 57 46 87**	≥ 0 ≥ 0	8/150 8/150	≤ 7 kW ≤ 7 kW	≤ 14 kW ≤ 30 kW	DTV DTV

[1] Attention: The power at the **W**ide **B**and input must be reduced by 50 % of the power fed into the **N**arrow **B**and input
[2] Attention: The output power must not be exceeded

UHF COMBINERS

UHF STRETCH LINE COMBINERS

Part number	Inputs	Channel spacing	Filters	Power per input	Mask filtering
BN 57 49 31	2	≥ 3	-	≤ 800W	-
BN 57 46 34	2	≥ 3	-	≤ 7 kW	-
BN 57 46 35	2	≥ 3	-	≤ 17.5 kW	-
BN 57 46 36	2	≥ 3	-	≤ 23 kW	-
BN 57 46 37	2	≥ 3	-	≤ 37 kW	-

UHF STARPOINT COMBINERS

Part number	Inputs	Channel spacing	Filters	NB power	Mask filtering
BN 57 46 55	2	≥ 1	6/38	≤ 100 W	DTV
BN 57 46 10	2	≥ 1	6/150	≤ 2.5 kW	DTV
BN 57 46 11	3	≥ 1	6/150	≤ 2.5 kW	DTV
BN 57 46 12	2	≥ 1	8/150	≤ 2 kW	DTV
BN 57 46 13	3	≥ 1	8/150	≤ 2 kW	DTV

UHF MANIFOLD LOW POWER COMBINERS

Part number	Inputs	Channel spacing	Filters	NB power	Output power [2]	Mask filtering
BN 57 45 82	2	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 83	3	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 84	4	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 85	5	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 86	6	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 87	7	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 88	8	≥ 2	4/34	≤ 50 W	-	-
BN 57 45 89	9	≥ 2	4/34	≤ 50 W	-	-
BN 57 55 62	2	≥ 1	6/60	≤ 130 W	-	DTV
BN 57 55 63	3	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 55 64	4	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 55 65	5	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 55 66	6	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 55 67	7	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 55 68	8	≥ 1	6/60	≤ 130 W	≤ 600 W	DTV
BN 57 49 12	2	≥ 1	6/84	≤ 750 W	-	DTV
BN 57 49 13	3	≥ 1	6/84	≤ 750 W	-	DTV
BN 57 49 14	4	≥ 1	6/84	≤ 750 W	-	DTV
BN 57 49 11	5	≥ 1	6/84	≤ 750 W	-	DTV
BN 57 49 22	2	≥ 1	8/84	≤ 750 W	-	DTV
BN 57 49 23	3	≥ 1	8/84	≤ 750 W	-	DTV
BN 57 49 24	4	≥ 1	8/84	≤ 750 W	-	DTV
BN 57 49 21	5	≥ 1	8/84	≤ 750 W	-	DTV

[1] Attention: The power at the **W**ide **B**and input must be reduced by 50 % of the power fed into the **N**arrow **B**and input
[2] Attention: The output power must not be exceeded

UHF COMBINERS

UHF CIB COMBINERS IN 19" DESIGN AND MINI CCS

Part number	Channel spacing	Filters	NB power	WB power [1]	Mask filtering
BN 57 46 05	≥ 1	4/34	≤ 100 W	≤ 600 W	-
BN 57 46 06 **BN 57 49 06**	≥ 0 ≥ 0	6/38 6/38	≤ 150 W ≤ 200 W	≤ 1 kW ≤ 1 kW	DTV DTV
BN 57 55 01	≥ 0	6/40	≤ 260 W	≤ 1 kW	DTV
BN 57 55 06	≥ 0	8/40	≤ 240 W	≤ 1 kW	DTV
BN 57 49 48 **BN 57 49 49**	≥ 0 ≥ 0	6/60 6/60	≤ 750 W ≤ 750 W	≤ 1 kW ≤ 4 kW	DTV DTV
BN 57 49 50 **BN 57 49 51**	≥ 0 ≥ 0	8/60 8/60	≤ 750 W ≤ 750 W	≤ 1 kW ≤ 4 kW	DTV DTV
BN 57 46 03 **BN 57 49 01** **BN 57 46 73** **BN 57 46 74**	≥ 1 ≥ 1 ≥ 1 ≥ 1	4/84 4/84 4/84 4/84	≤ 1.5 kW ≤ 1.5 kW ≤ 1.5 kW ≤ 2.5 kW	≤ 1 kW ≤ 7 kW ≤ 7 kW ≤ 7 kW	- - - -
BN 57 46 41 **BN 57 49 42** **BN 57 46 75** **BN 57 46 76**	≥ 0 ≥ 0 ≥ 0 ≥ 0	6/84 6/84 6/84 6/84	≤ 1.5 kW ≤ 1.5 kW ≤ 1.5 kW ≤ 1.5 kW	≤ 1 kW ≤ 7 kW ≤ 7 kW ≤ 7 kW	DTV DTV DTV DTV
BN 57 46 43 **BN 57 49 44** **BN 57 46 77** **BN 57 46 78**	≥ 0 ≥ 0 ≥ 0 ≥ 0	8/84 8/84 8/84 8/84	≤ 1.5 kW ≤ 1.5 kW ≤ 1.5 kW ≤ 1.5 kW	≤ 1 kW ≤ 7 kW ≤ 7 kW ≤ 7 kW	DTV DTV DTV DTV

UHF HIGH POWER CIB COMBINERS

Part number	Channel spacing	Filters	NB power	WB power [1]	Mask filtering
BN 57 55 11 **BN 57 55 12** **BN 57 55 13**	≥ 0 ≥ 0 ≥ 0	6/120 6/120 6/120	≤ 3.2 kW ≤ 3.2 kW ≤ 3.2 kW	≤ 7.0 kW ≤ 7.0 kW ≤ 17.5 kW	DTV DTV DTV
BN 57 55 15 **BN 57 55 16** **BN 57 55 17**	≥ 0 ≥ 0 ≥ 0	8/120 8/120 8/120	≤ 3.2 kW ≤ 3.2 kW ≤ 3.2 kW	≤ 7.0 kW ≤ 7.0 kW ≤ 17.5 kW	DTV DTV DTV
BN 57 49 02 **BN 57 49 32** **BN 57 49 33**	≥ 1 ≥ 1 ≥ 1	4/150 4/150 4/150	≤ 7 kW ≤ 7 kW ≤ 7 kW	≤ 7.0 kW ≤ 17.5 kW ≤ 33.0 kW	- - -
BN 57 46 72 **BN 57 46 62**	≥ 0 ≥ 0	6/150 6/150	≤ 4 kW ≤ 4 kW	≤ 7.0 kW ≤ 17.5 kW	ATSC ATSC
BN 57 49 47 **BN 57 49 34** **BN 57 49 35**	≥ 0 ≥ 0 ≥ 0	6/150 6/150 6/150	≤ 5 kW ≤ 5 kW ≤ 5 kW	≤ 7.0 kW ≤ 17.5 kW ≤ 33.0 kW	DTV DTV DTV
BN 57 49 62 **BN 57 49 61** **BN 57 49 63**	≥ 0 ≥ 0 ≥ 0	8/150 8/150 8/150	≤ 4 kW ≤ 4 kW ≤ 4 kW	≤ 7.0 kW ≤ 17.5 kW ≤ 33.0 kW	DTV DTV DTV

[1] Attention: The power at the **W**ide **B**and input must be reduced by 50 % of the power fed into the **N**arrow **B**and input
[2] Attention: The output power must not be exceeded

UHF COMBINERS

UHF HIGH POWER CIB COMBINERS

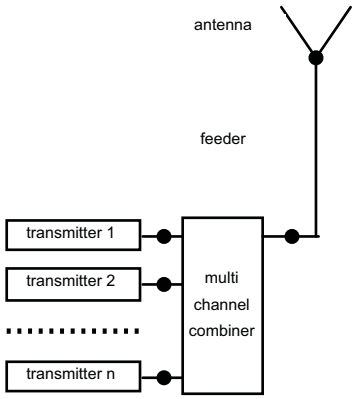
Part number	Channel spacing	Filters	NB power	WB power [1]	Mask filtering
BN 57 55 20	≥ 0	6/170	≤ 7 kW	≤ 7 kW	DTV
BN 57 55 21	≥ 0	6/170	≤ 7 kW	≤ 17.5 kW	DTV
BN 57 55 22	≥ 0	6/170	≤ 7 kW	≤ 33 kW	DTV
BN 57 55 23	≥ 0	6/170	≤ 7 kW	≤ 60 kW	DTV
BN 57 55 25	≥ 0	8/170	≤ 7 kW	≤ 7 kW	DTV
BN 57 55 26	≥ 0	8/170	≤ 7 kW	≤ 17.5 kW	DTV
BN 57 55 27	≥ 0	8/170	≤ 7 kW	≤ 33 kW	DTV
BN 57 55 28	≥ 0	8/170	≤ 7 kW	≤ 60 kW	DTV
BN 57 42 30	≥ 2	3/200	≤ 7 kW	≤ 7 kW	-
BN 57 42 29	≥ 2	3/200	≤ 7 kW	≤ 17,5 kW	-
BN 57 42 26	≥ 2	3/200	≤ 7 kW	≤ 33 kW	-
BN 57 42 83	≥ 2	3/200	≤ 20 kW	≤ 17.5 kW	-
BN 57 42 81	≥ 2	3/200	≤ 20 kW	≤ 33 kW	-
BN 57 42 86	≥ 2	3/200	≤ 20 kW	≤ 60 kW	-
BN 57 49 76	≥ 1	4/200	≤ 7 kW	≤ 33 kW	-
BN 57 49 73	≥ 1	4/200	≤ 15 kW	≤ 17.5 kW	-
BN 57 49 75	≥ 1	4/200	≤ 15 kW	≤ 33 kW	-
BN 57 49 85	≥ 1	4/200	≤ 15 kW	≤ 60 kW	-
BN 57 49 70	≥ 1	6/200	≤ 7 kW	≤ 17.5 kW	ATSC
BN 57 46 71	≥ 1	6/200	≤ 9 kW	≤ 17.5 kW	ATSC
BN 57 46 70	≥ 1	6/200LC	≤ 20 kW	≤ 17.5 kW	ATSC
BN 57 46 93	≥ 0	6/200	≤ 7 kW	≤ 7 kW	DTV
BN 57 46 94	≥ 0	6/200	≤ 7 kW	≤ 17.5 kW	DTV
BN 57 46 95	≥ 0	6/200	≤ 7 kW	≤ 33 kW	DTV
BN 57 46 96	≥ 0	6/200	≤ 7 kW	≤ 60 kW	DTV
BN 57 49 28	≥ 0	6/200	≤ 10 kW	≤ 17.5 kW	DTV
BN 57 49 67	≥ 0	6/200	≤ 10 kW	≤ 33 kW	DTV
BN 57 49 00	≥ 0	6/200	≤ 10 kW	≤ 60 kW	DTV
BN 57 46 98	≥ 0	6/200LC	≤ 23 kW	≤ 17.5 kW	DTV
BN 57 49 71	≥ 0	6/200LC	≤ 23 kW	≤ 33 kW	DTV
BN 57 49 74	≥ 0	6/200LC	≤ 23 kW	≤ 60 kW	DTV
BN 57 49 40	≥ 0	8/200	≤ 7 kW	≤ 7 kW	DTV
BN 57 49 39	≥ 0	8/200	≤ 7 kW	≤ 17.5 kW	DTV
BN 57 49 37	≥ 0	8/200	≤ 7 kW	≤ 33 kW	DTV
BN 57 49 88	≥ 0	8/200	≤ 7 kW	≤ 60 kW	DTV
BN 57 49 65	≥ 0	8/200	≤ 8 kW	≤ 17.5 kW	DTV
BN 57 49 66	≥ 0	8/200	≤ 8 kW	≤ 33 kW	DTV
BN 57 49 91	≥ 0	8/200	≤ 8 kW	≤ 60 kW	DTV
BN 57 49 64	≥ 0	8/200LC	≤ 23 kW	≤ 17.5 kW	DTV
BN 57 49 89	≥ 0	8/200LC	≤ 23 kW	≤ 33 kW	DTV
BN 57 49 79	≥ 0	8/200LC	≤ 23 kW	≤ 50 kW	DTV
BN 57 55 30	≥ 0	6/230	≤ 17 kW	≤ 17.5 kW	DTV
BN 57 55 31	≥ 0	6/230	≤ 17 kW	≤ 33 kW	DTV
BN 57 55 32	≥ 0	6/230	≤ 17 kW	≤ 60 kW	DTV
BN 57 55 33	≥ 0	6/230	≤ 17 kW	≤ 60 kW	DTV
BN 57 55 40	≥ 0	6/230LC	≤ 23 kW	≤ 17.5 kW	DTV
BN 57 55 41	≥ 0	6/230LC	≤ 23 kW	≤ 33 kW	DTV
BN 57 55 42	≥ 0	6/230LC	≤ 23 kW	≤ 60 kW	DTV
BN 57 55 43	≥ 0	6/230LC	≤ 23 kW	≤ 80 kW	DTV
BN 57 55 35	≥ 0	8/230	≤ 17 kW	≤ 17.5 kW	DTV
BN 57 55 36	≥ 0	8/230	≤ 17 kW	≤ 33 kW	DTV
BN 57 55 37	≥ 0	8/230	≤ 17 kW	≤ 60 kW	DTV
BN 57 55 38	≥ 0	8/230	≤ 17 kW	≤ 60 kW	DTV
BN 57 55 45	≥ 0	8/230LC	≤ 23 kW	≤ 17.5 kW	DTV
BN 57 55 46	≥ 0	8/230LC	≤ 23 kW	≤ 33 kW	DTV
BN 57 55 47	≥ 0	8/230LC	≤ 23 kW	≤ 60 kW	DTV
BN 57 55 48	≥ 0	8/230LC	≤ 23 kW	≤ 80 kW	DTV

[1] Attention: The power at the **W**ide **B**and input must be reduced by 50 % of the power fed into the **N**arrow **B**and input
[2] Attention: The output power must not be exceeded

CHANNEL COMBINERS

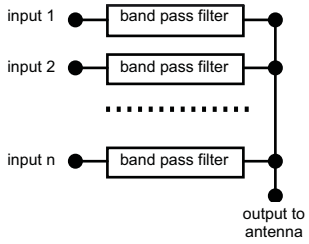
Multi channel combiners

In order to broadcast more transmitters via a common antenna it is necessary to connect the transmitter outputs via a combiner in such a way that they do not interfere (isolation) and to guide the whole RF power to the antenna (insertion loss). Band pass filters or phase adjusted transmission lines are used in the combiners as frequency determining devices.
The band pass filters can additionally be used to suppress spurious emissions (integrated mask filtering for DTV, DAB, T-DMB, ...).



Starpoint or manifold combiners

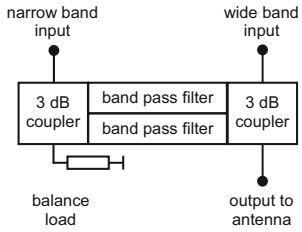
The transmitters can be isolated from each other by connecting a band pass filter to every output. The outputs of these filters must be connected via a proper matching network to achieve good matching for the operating channels.
This system will show total mismatch outside the operating channels because of the total reflection at the band pass filters.
Frequency changes or extensions are difficult with such combiners, because the matching networks must be optimized to the new frequencies.



Constant Impedance Broadband (CIB) combiners

Good isolation, broadband matching and ease of modifications are achieved in the CIB combiner by a tricky combination of band pass filters and 3 dB couplers.

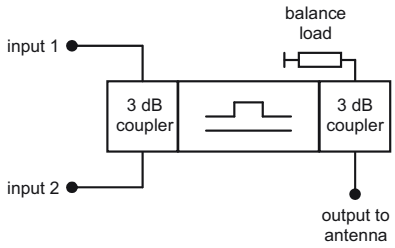
The signal applied to the narrow band input is fed via the narrow band 3 dB coupler into the two band pass filters and is combined afterwards in the wide band 3 dB coupler and routed to the antenna output.
The signals fed into the wide band input go to the filter ports via the wide band 3 dB coupler where they are totally reflected back to the wide band coupler and routed to the antenna output.
All ports are broadband matched (Constant Impedance Broadband).
Any transmitter signal can be fed into the wide band input as long as the frequency spacing to the pass band range of the filters is big enough to get total reflection. Even adjacent channels can be combined if the slopes of the filter curves are steep enough.
The CIB combiners are preferred components for the design of multi channel combiners because they offer most flexibility for any configuration of channels and powers.



CHANNEL COMBINERS

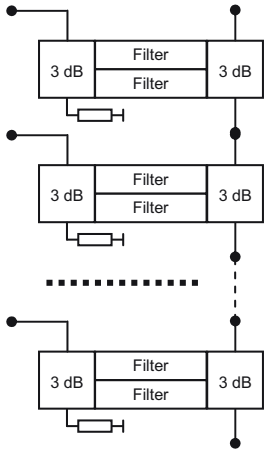
Stretch line combiners

The difference in wave length of the transmitter frequencies is used with the stretch line combiner. The signals are split by the first 3 dB coupler to two transmission lines. The phases at the input of the second 3 dB coupler are modified by careful adjustment of the line lengths in such a way that all signals are routed to the antenna output.
The stretch line combiner has very low insertion loss and high power rating but can combine only channels with more than 3 channels spacing.

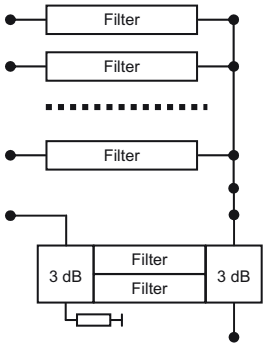


Combination of several combiners

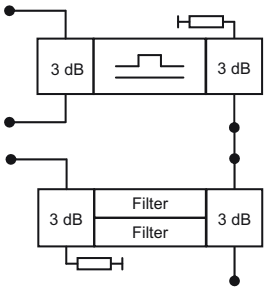
CIB combiners may be cascaded nearly arbitrarily. Additional units can be connected to the wide band input or the output. Starpoint, manifold or stretch line combiners may be connected to the wide band input of CIB combiners to add further channels.



chain of CIB combiners



manifold and CIB combiner



stretch line and CIB combiner

How to select the proper combiner?

Start by making a list of channels, powers and mask requirements:

Channel	Power	Mask requirement
23	2 kW	DVB
27	2 kW	DVB
28	10 kW	no
57	1 kW	DVB

If the list contains adjacent channels they must be combined using CIB combiners.
If mask filters are necessary it is preferable to integrate them into the starpoint or manifold or CIB combiners because this gives the benefit of minimum overall insertion loss and maximum freedom for channel combinations.
Stretch line combiners and the wide band input of CIB combiners do not provide mask filtering. Therefore, proper band pass filters must be connected to the inputs to satisfy the mask requirements.
After selecting the combiner design (CIB or star point or manifold or stretch line) you must select a model with sufficient power rating.

The combiner engineers from SPINNER will be pleased to support you with the selection and planning of combiner systems. Please send the table with channels and specifications to: info@spinner-group.com

SOLUTIONS FOR LOW AND MEDIUM POWER COMBINERS

SPINNER offers a complete range of low and medium power combiners:
- 1 W up to 5 kW
- Band 3, UHF and Band L
- ATV, DAB and DTV

All designs are available:
- stretch line combiners without mask filtering
- starpoint combiners made of DAB and DTV mask filters
- manifold combiners with and without DTV mask filtering
- CIB combiners with and without DAB or DTV mask filtering

The compact combiners can be installed:
- inside 19" racks
- wall mount
- floor mount

Multiple combiner units can be stacked vertically inside a 19" rack or self supporting or be fixed with wall mounts to minimize foot print.

The 19" slide-in combiners are available in three versions:
- BN 57____ without front plate
- BN 57____C0001 with front plate, RF ports at the front side
- BN 57____C0002 with front plate, RF ports at the rear side

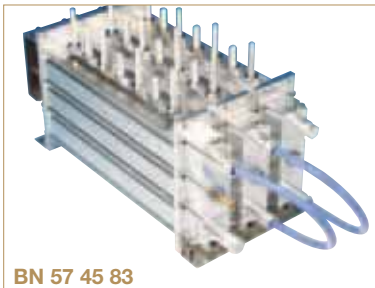
All SPINNER combiner systems consisting of multiple units are assembled, tuned and measured in the factory before shipping. SPINNER is shipping complete systems which can be easily installed by any skilled installer.
Thus the customer gets complete test results of insertion loss, mask filtering and matching which can be checked before starting the installation and compared afterwards with the on site results.

BN 57 46 05 C0001
UHF CIB combiner with 4 cavity filters

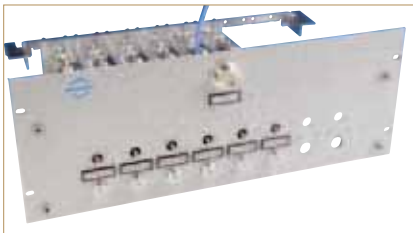
BN 57 46 06 C0001
UHF CIB combiner with DTV mask filter

BN 57 49 48 C0002
UHF CIB combiner with DTV mask filters

BN 57 49 42 C0001
UHF CIB combiner with DTV mask filters



BN 57 45 83
UHF 3-way manifold combiner



BN 57 45 86
UHF 6-way manifold combiner

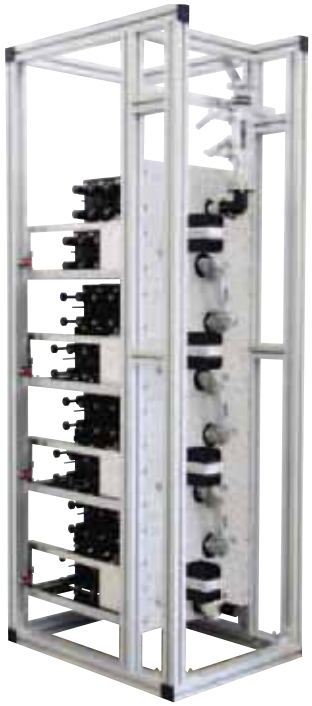
BN 57 48 39
UHF 3-way combiner with integrated DTV mask filters and monitoring

SOLUTIONS FOR LOW AND MEDIUM POWER COMBINERS

BN 57 45 90
UHF 4-way CIB combiner
in wall mount

BN 57 48 78
UHF 6-way combiner
with integrated DTV mask filters

BN 57 54 81
Band 3 4-way combiner
with integrated DAB mask filters



BN 57 52 72
5-way combiner
with integrated DTV mask filters

BN 57 56 23 C1000
Double UHF 6-way combiner
with integrated DTV mask filters
and N+1 switching system

BN 57 45 98
Double UHF 6-way combiner
with integrated DVB mask filters

SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW

Modular system of combiners and patch panels to implement all functions with minimum foot print

SPINNER has standardized and minimized the combiners and patch panels so much that a half square meter footprint per channel is sufficient to realize the combination, mask filtering and many switching functions. This design is called **CCS** and has many advantages:

- The combiner planning is very simple because only 0.5 m^2 are sufficient per channel.
- The DTV mask filtering (uncritical or critical) can be integrated into the **CCS** combiner module without increasing the foot print.
- **CCS** combiner modules are available for up to 80 kW combined power in one output. For higher powers parallel, phase equalized combiner chains can be made.
- **CCS** systems can be equipped with monitoring couplers, trimming lines and other accessories.
- The installation is very simple because the **CCS** modules are delivered as individual units which can be handled easily. On site the combiner modules only need to be fixed to the bottom frame and connected with the prefabricated rigid lines to be ready for operation. Thus, even complicated combiner systems can be installed within one day.
- The installation of the interconnection lines to the transmitters and the antenna is simple, quick and cheap because all RF ports are free upwards. So one vertical piece of rigid line is sufficient per port.
- The optional **CCS** patch panels allow reserve operation facilities, bypassing of individual combiner modules, switching to a common dummy load and precise measurement of the combiner performance without dismantling rigid lines.
- The off-air periods for frequency changes and other modifications can be reduced to minutes if **CCS** patch panels are used.
- The standardization even allows the replacement of combiner modules for later changes to adjacent channel operation or increases of transmitter power.

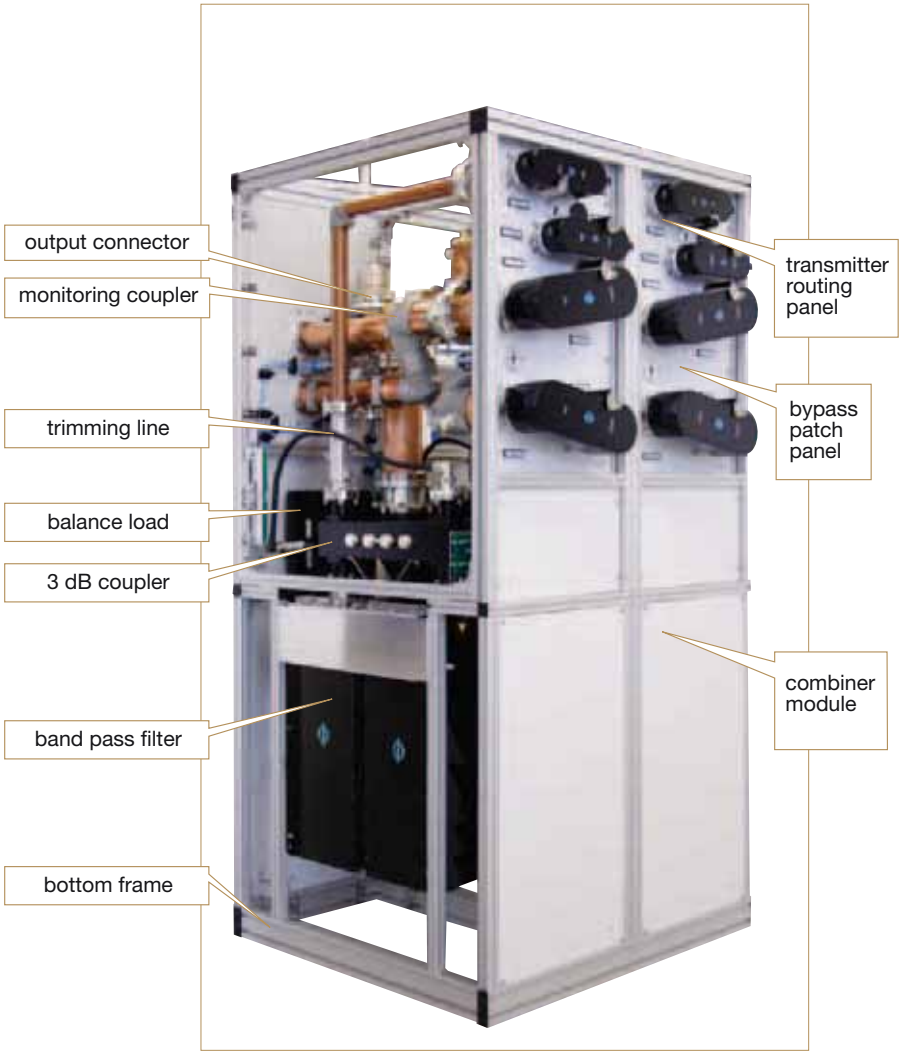
The SPINNER **CCS** systems offers the network operator enormous advantages in planning, installation, operation and future expansion which should be taken into account in comparison with the competition.

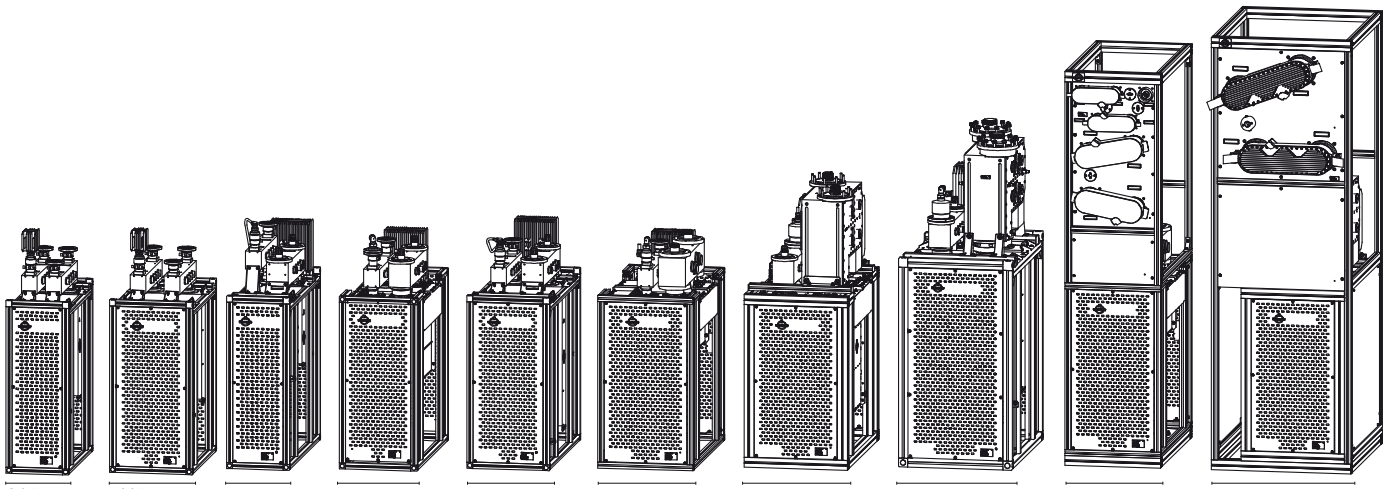
testing in the factory

transportation

ready for operation on site

SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW

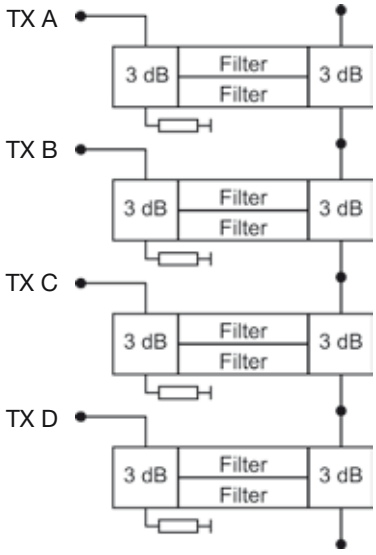




SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW

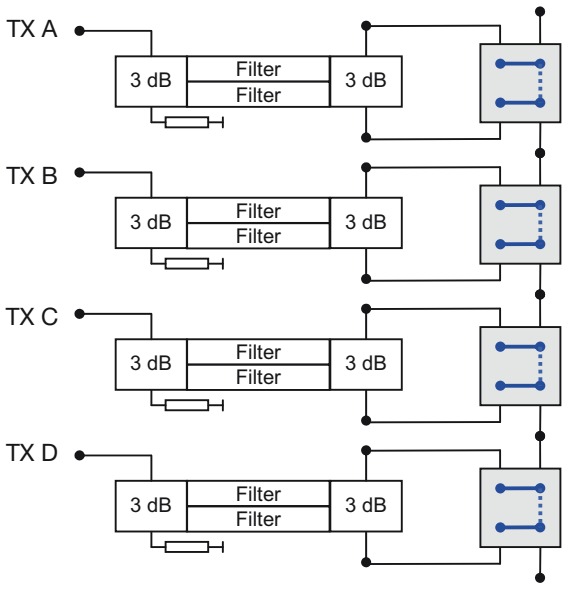
CCS combiner system without patch panels - minimum configuration

For a straightforward system the combiner modules can be connected via simple rigid lines. Such a system is very efficient but any measurements or modification will require interruption of transmission.



CCS combiner system with combiner bypass patch panels for increased availability

To increase the availability of the combiner system every combiner module is equipped with a 4 port patch panel in such a way that any combiner can be bypassed within minutes to be free for measurements or frequency changes.
The transmission of the remaining channels can continue within minutes and even the bypassed channel can be transmitted by feeding it into the free wide band input.



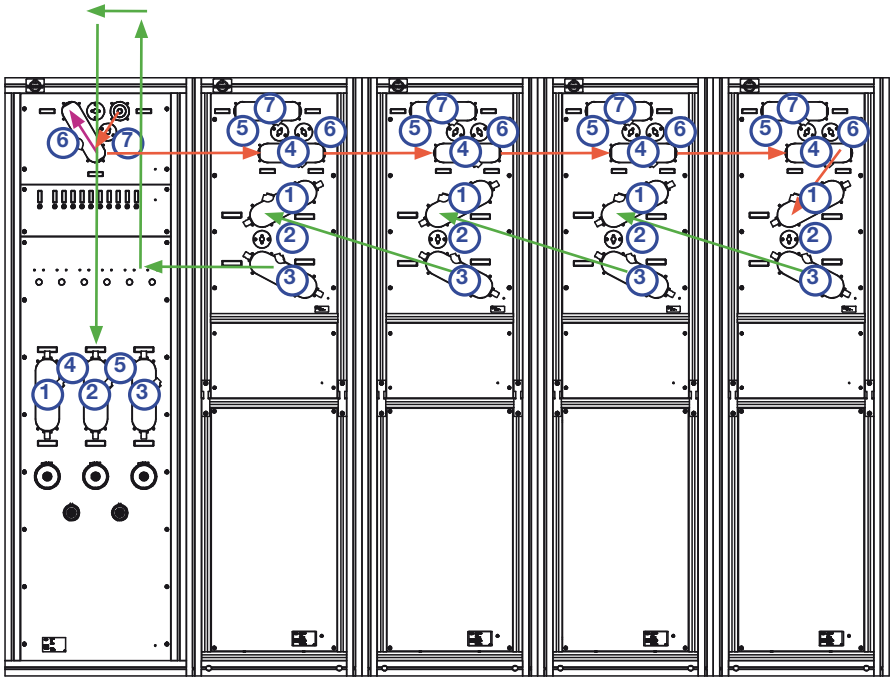
SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW

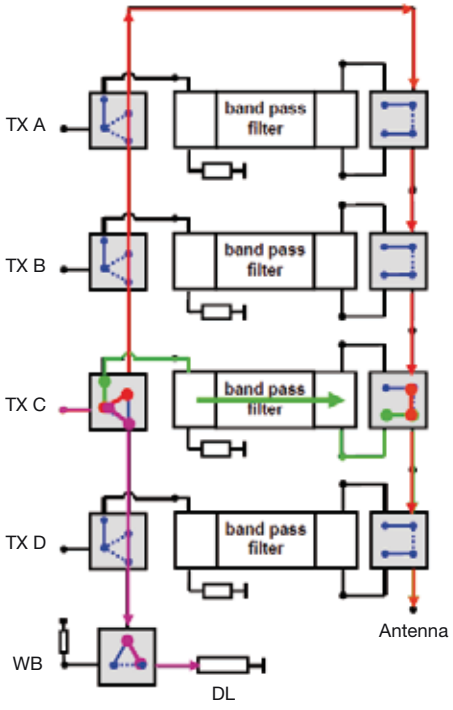
CCS combiner system with transmitter routing and combiner bypassing patch panels for maximum flexibility

For maximum flexibility the combiner module can be equipped with 4 port patch panels at the input and the output side:

Transmitter routing at the input side:
- For normal operation the transmitter is directly connected to the combiner input.
- For measurements the transmitter signal can be switched to a common dummy load.
- For frequency changes the transmitter can be switched to the wide band input of the combiner system to continue operation while the combiner unit is retuned.

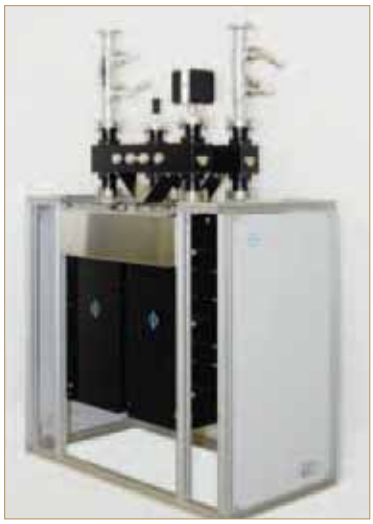
Combiner bypassing at the output side:
- For normal operation the module is in the combiner chain.
- For measurements or frequency changes the combiner module is bypassed and isolated.





—	Standard operation:	Transmitter via combiner to antenna
—	Measurement of transmitter:	Transmitter routed to common dummy load
—	Combiner measurement or retuning:	Operation is continued via the wide band input of the system while the combiner module is bypassed

SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW



Single UHF CIB combiner unit

BN 57 54 02 Rennes, France
UHF combiner for 8 x 5.6 kW DVB
with integrated mask filters and monitoring couplers

BN 57 53 06 Turkmenistan
UHF combiner for 8 x 4 kW DVB with integrated mask filters, combiner bypass
and antenne patch panel with bent front for installation in circular transmitter hall

BN 57 52 65 Argentina
UHF combiner for 4 x 2 kW ISDB-T
(expandable to 8 x 2 kW) with integrated
8 cavity mask filter and N+1 switching
and dummy load for testing

SOLUTIONS FOR COMPACT COMBINING & SWITCHING SYSTEM 1 KW - 80 KW

BN 57 54 96 Russia
UHF Combiner for 5 kW DVB with integrated mask filters and 20 kW ATV, combiner bypass and antenna patch panel and 10 kW dummy load

BN 57 56 26 Pfänder, Austria
Band 3 combiner for 5 x 2.5 kW DAB (expandable to 10 x 2.5 kW DAB) with integrated mask filters and antenna patch panel

BN 57 56 37 South Africa
UHF combiner for 3 x 3 kW DVB with integrated liquid cooled filters

BN 57 50 84 Pontop Pike, England
UHF combiner for 3 x 15 kW DVB with integrated liquid cooled filters, input isolation U-links and pump unit

BN 57 44 72 Knockmore, Scotland
Double UHF combiner for 6 x 1.7 kW DVB with integrated 8 MHz DVB mask filters 2 port input isolation patch panel

DESIGN AND OFFERS

A lot of knowledge and experience is necessary to design multichannel combiner systems with good technical and economical performance. The following aspects must be taken into account:

- power of the individual signals
- voltage of the individual signals
- frequency spacings (adjacent channels)
- requirements for mask filtering
- patch panels for emergency operation
- space consumption
- future frequency changes or extensions
- performance of combiners, patch panels, etc.

For the design of a complete transmitting station the specifications of the combiner system (insertion losses, matching) must be fixed in the planning stage.

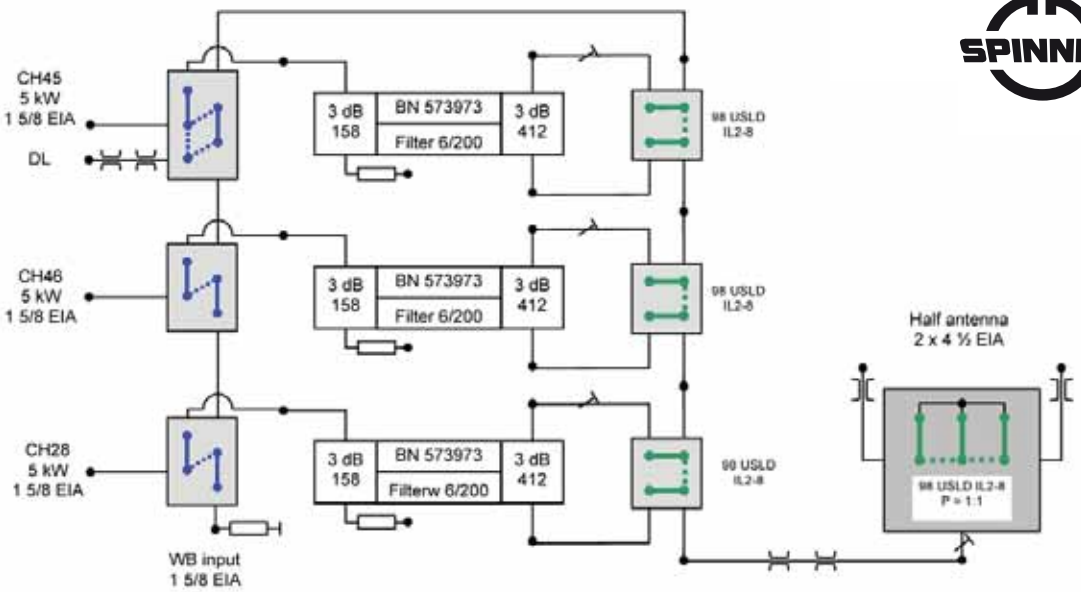
SPINNER has a team of experienced RF engineers to design combiner systems.
Please send us your requirements. We will prepare an offer with detailed technical and mechanical specifications similar to the data sheet at the right page.

The complete combiners system is shown in the picture below.

Example:

UHF-Combiner for 3 x 5 kW DVB
for adjacent channel operation
with integrated 8 MHz DVB mask filters
4 port combiner bypass patch panels
4 port TX rerouting patch panels
6 port half antenna patch panel

DESIGN AND OFFERS



monitoring couplers NB inputs:

reference frequency	center of channel
coupling forward	54 dB
coupling reflected	54 dB

(54 dB ≙ 13 dBm @ 5kW)

monitoring couplers outputs:

reference frequency	666 MHz
coupling forward	54 dB
coupling reflected	54 dB

(54 dB ≙ 13 dBm @ 5kW)

Mechanical Data							
Size (height x width x depth)	1,98 m x 2,29 m x 0,9 m						
Weight	appr. 1000 kg						
RF connectors inputs	1 5/8" EIA free upwards						
RF connectors antenna outputs	4 1/2" EIA free upwards						
Electrical Data of Antenna Patch Panel							
Frequency range	470 – 860 MHz						
Input Power	≤ 35 kW						
Peak voltage	19 kV						
Power splitter	P = 1:1, in phase						
Interlock loops	6 loops wired						
Electrical Data of Combiner							
channel	frequency in MHz	max. power in kW	filter tuning specification	insertion loss in dB (tolerance ± 0,05 dB)			max VSWR
				$f_{0-3,8\ MHz}$	f_0	$f_{0+3,8\ MHz}$	
28D	526 - 534	5	AS6006	0,90	0,40	0,90	1,06
45D	662- 670	5	AS6006	1,10	0,60	2,60	1,08
46D	670 - 678	5	AS6007	1,50	0,50	1,50	1,08
WB input		3 x 5			0,30 - 0,50		
Minimum channel spacing					≥ 0		
Isolation between inputs					> 40 ± 5 dB		
DVB Mask filtering					$f_{0\pm4,2\ MHz}$	$f_{0\pm6\ MHz}$	$f_{0\pm12\ MHz}$
		attenuation in dB			≥ 4	≥ 20	≥ 40

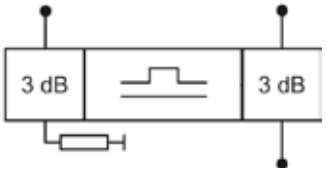
Scope of Supply

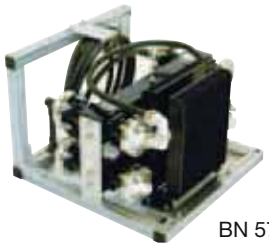
1	6 port antenna patch panel P=1:1
2	4+4 port combiner switching panel
1	4+5 port combiner switching panel
3	UHF CIB combiner 158-412 6/200
6	monitoring couplers
1	set of rigid lines

SB – Go	**UHF Combiner Mt. Grünten for 3 x 5 kW (expandable to 6 x 5 kW)** with uncritical DVB mask filtering of the narrow band inputs	**BN 574156** Version 1

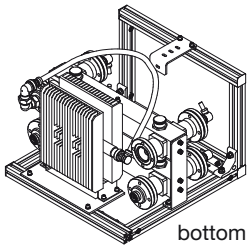
CCS BAND 3 STRETCHLINE COMBINERS

- compact design
- suitable for ATV and DTV
- for 6 and 7 MHz channel bandwidth

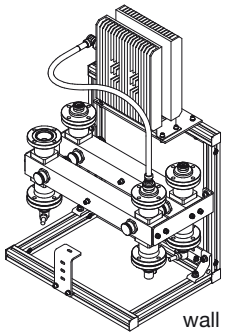




BN 57 46 81



bottom mounting

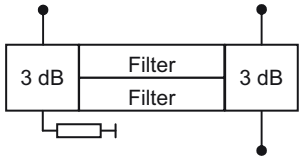


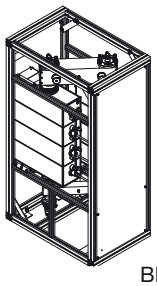
wall mounting

Part number	**BN 57 46 81**
Frequency range	174 - 240 MHz
Channel spacing	≥ 2
Narrow band inputs	7-16 female
Average input power	**≤ 2 kW**
Mask filtering	no
Insertion loss	typically ≤ 0,5 dB
Output	1 5/8“ EIA
Peak output voltage	≤ 3,5 kV
Isolation between inputs	≥ 32 dB
VSWR	≤ 1,06
Dimensions (L x W x H) mm	≈ 486 x 460 x 350
Weight	≈ 26 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products “

CCS BAND 3 CIB COMBINERS

- compact design
- suitable for ATV and DTV
- for 6 and 7 MHz channel bandwidth
- tuneable within the whole band 3 range
- temperature compensated



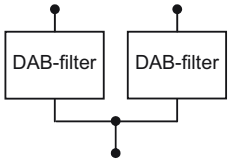


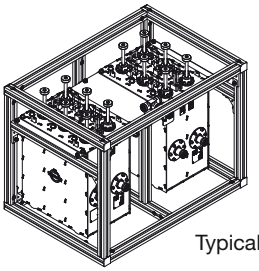
BN 57 49 46

Part number	**BN 57 46 84**	**BN 57 46 85**	**BN 57 49 45**	**BN 57 49 46**
Frequency range	174 - 230 MHz			
Channel spacing	≥ 2		≥ 1	
Narrow band input	1 5/8" EIA			
Filter type integrated	**3/150 ≡ BN617118**		**4/150 ≡ BN617119**	
Average input power	**≤ 12 kW**			
Mask filtering	no			
Insertion loss	AS3003 ≤ 0.15 dB		AS4004 ≤ 0.25 dB	
Wide band input	1 5/8" EIA	3 1/8" EIA male	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 12 kW	≤ 30 kW	≤ 12 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
Mask filtering	no			
Insertion loss	≤ 0.05 dB			
Output	1 5/8" EIA	3 1/8" EIA male	1 5/8" EIA	3 1/8" EIA male
Peak output voltage	≤ 3.5 kV	≤ 12.7 kV	≤ 3.5 kV	≤ 12.7 kV
Isolation between inputs	≥ 35 dB			
VSWR	≤ 1.06			
Dimensions (L x W x H) mm	≈ 800 x 520 x 1420		≈ 800 x 520 x 1420	
Weight	≈ 115 kg		≈ 130 kg	
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products"			

BAND 3 DAB STARPOINT COMBINERS

- compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- temperature compensated



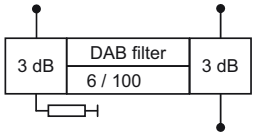


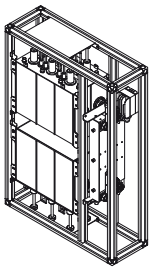
Typical design

Part number	**BN 57 49 04 with cross coupling**	**BN 57 46 17 without cross coupling**	**BN 57 46 80 with cross coupling**	
Frequency range	174 - 240 MHz	170 - 240 MHz		
Block spacing	≥ 1			
Narrow band inputs	7-16 female			
Filter type integrated cavities/size	**6/100 ≡ BN 617116**	**6/150 ≡ BN 617171**	**6/150 ≡ BN 617144**	
Temperature stability	≤ 1 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz			
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)			
Average input power	**≤ 600 W**	**≤ 1.5 kW**	**≤ 1.6 kW**	
Tuning instruction	AS6033	AS6010	AS6137	AS6149
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 1.0 dB f_0 ± 0.77 MHz ≤ 2.3 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.2 MHz ≥ 53 dB f_0 ± 3.0 MHz ≥ 53 dB	f_0 ≤ 1.0 dB f_0 ± 0.77 MHz ≤ 1.6 dB f_0 ± 0.97 MHz ≥ 8 dB f_0 ± 1.75 MHz ≥ 43 dB f_0 ± 2.2 MHz ≥ 53 dB f_0 ± 3.0 MHz ≥ 73 dB	f_0 ≤ 0.75 dB f_0 ± 0.77 MHz ≤ 1.6 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.2 MHz ≥ 58 dB f_0 ± 3.0 MHz ≥ 52 dB	≤ 0.65 dB ≤ 0.90 dB n.d. ≥ 15 dB ≥ 40 dB ≥ 50 dB
Group delay variation	Δτ ≤ 1200 ns	Δτ ≤ 700 ns	Δτ ≤ 1000 ns	Δτ ≤ 400 ns
Output	7-16 female	1 5/8" EIA		
Isolation between inputs	≥ 35 dB			
VSWR	≤ 1.2			
Dimensions (L x W x H) mm	550 x 448 x 500	750 x 550 x 750		
Weight	≈ 55 kg	≈ 90 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

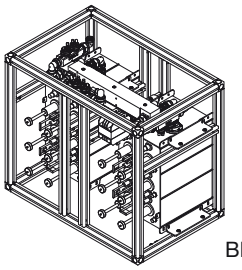
BAND 3 DAB CIB COMBINERS

- compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters with cross coupling (notch function)





BN 57 49 69

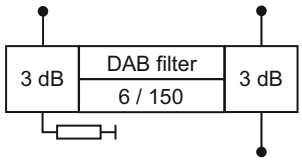


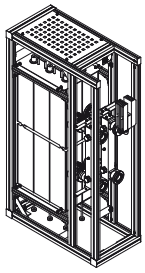
BN 57 49 29

Part number	**BN 57 49 69 CCS design**	**BN 57 49 29 19" design**
Frequency range	174 - 240 MHz	
Block spacing	≥ 0	
Narrow band input	7-16 female	
Filter type integrated cavities/size	**6/100 ≡ BN 617116**	
Temperature stability	≤ 1 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz	
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 1.2 kW**	
Tuning instruction	AS6033	
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 1.0 dB f_0 ± 0.77 MHz ≤ 2.3 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.2 MHz ≥ 53 dB f_0 ± 3.0 MHz ≥ 53 dB	
Group delay variation	Δτ ≤ 1200 ns	
Wide band input	7-16 female	
Average input power	≤ 3 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	7-16 female ≤ 3.2 kV	
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	≈ 660 x 220 x 950	≈ 680 x 448 x 600
Weight	≈ 70 kg	
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

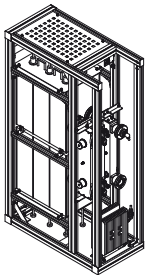
BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters without cross coupling (notch function)





BN 57 49 94

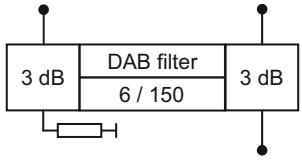


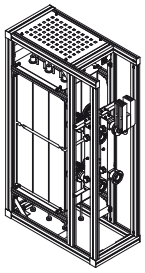
BN 57 49 96

Part number	**BN 57 49 94**	**BN 57 49 96**
Frequency range	170 - 240 MHz	
Block spacing	≥ 0	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**6/150 ≡ BN 61 71 71**	
Temperature stability	≤ 1 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz	
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 3 kW**	
Tuning instruction	AS6010	
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 1.0 dB f_0 ± 0.77 MHz ≤ 1.6 dB f_0 ± 0.97 MHz ≥ 8 dB f_0 ± 1.75 MHz ≥ 43 dB f_0 ± 2.2 MHz ≥ 53 dB f_0 ± 3.0 MHz ≥ 73 dB	
Group delay variation	Δτ ≤ 700 ns	
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 14 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	800 x 390 x 1420	
Weight	≈ 120 kg	≈ 130 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

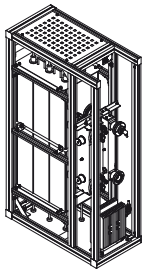
BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters with cross coupling (notch function)





BN 57 49 18

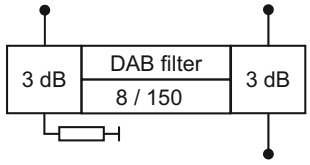


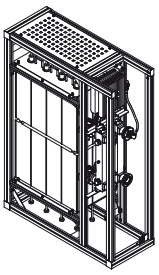
BN 57 49 16

Part number	**BN 57 49 18**	**BN 57 49 16**
Frequency range	170 - 240 MHz	
Block spacing	≥ 0	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**6/150 ≡ BN 61 71 44**	
Temperature stability	≤ 1 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz	
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 3.2 kW**	
Tuning instruction	AS6137	AS6149
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.75 dB f_0 ± 0.77 MHz ≤ 1.6 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.2 MHz ≥ 58 dB f_0 ± 3.0 MHz ≥ 52 dB	f_0 ≤ 0.65 dB f_0 ± 0.77 MHz ≤ 0.90 dB f_0 ± 0.97 MHz n.d. f_0 ± 1.75 MHz ≥ 15 dB f_0 ± 2.2 MHz ≥ 40 dB f_0 ± 3.0 MHz ≥ 50 dB
Group delay variation	Δτ ≤ 1000 ns	Δτ ≤ 400 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 14 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	800 x 390 x 1420	
Weight	≈ 120 kg	≈ 130 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

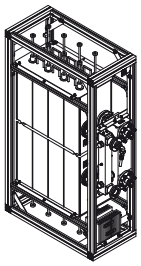
BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters with cross coupling (notch function)





BN 57 49 19

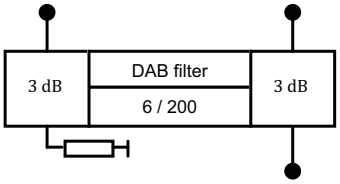


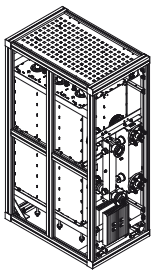
BN 57 49 25

Part number	**BN 57 49 19**	**BN 57 49 25**
Frequency range	170 - 240 MHz	
Block spacing	≥ 0	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**8/150 ≡ BN 61 71 83**	
Temperature stability	≤ 1 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz	
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 3.2 kW**	
Tuning instruction	AS8027	
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 1.3 dB f_0 ± 0.77 MHz ≤ 2.2 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.2 MHz ≥ 65 dB f_0 ± 3.0 MHz ≥ 80 dB	
Group delay variation	Δτ ≤ 1000 ns	
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 14 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	1000 x 390 x 1420	
Weight	≈ 150 kg	≈ 170 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters without cross coupling (notch function)

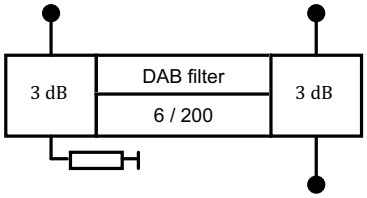


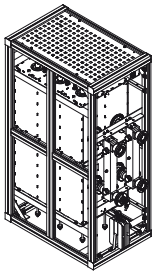


Part number	**BN 57 49 90**
Frequency range	170 - 240 MHz
Block spacing	≥ 0
Narrow band input	1 5/8" EIA
Filter type integrated cavities/size	**6/200 ≡ BN 61 71 11**
Temperature stability	≤ 2 kHz / K
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 6 kW**
Tuning instruction	AS6029
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.75 dB f_0 ± 0.77 MHz ≤ 1.20 dB f_0 ± 0.97 MHz ≥ 8 dB f_0 ± 1.15 MHz ≥ 16 dB f_0 ± 1.75 MHz ≥ 43 dB f_0 ± 2.2 MHz ≥ 53 dB f_0 ± 3.0 MHz ≥ 73 dB
Group delay variation	Δτ ≤ 800 ns
Wide band input	3 1/8" EIA male
Average input power	≤ 30 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input
Mask filtering	no
Insertion loss	≤ 0.1 dB (non adjacent)
Output Peak output voltage	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB
VSWR	≤ 1.1
Dimensions (L x W x H) mm	925 x 520 x 1420
Weight	≈ 200 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“

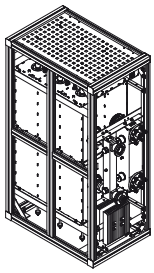
BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters with cross coupling (notch function)
- liquid cooled filter





BN 57 49 92

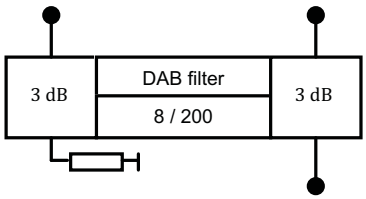


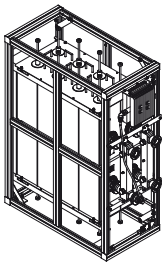
BN 57 46 90

Part number	**BN 57 49 92 natural cooling**	**BN 57 46 91 liquid cooling**	**BN 57 46 90 natural cooling**
Frequency range	170 - 240 MHz		
Block spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**6/200 ≡ BN 617108**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz		
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)		
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 6 kW**	**≤ 10.2 kW** @ 0 - 500 m **≤ 9.0 kW** @ 1400 m **≤ 8.0 kW** @ 2100 m **≤ 7.0 kW** @ 2800 m **≤ 6.0 kW** @ 3600 m	**≤ 6 kW**
Tuning instruction	AS6019		AS6087
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.65 dB f_0 ± 0.77 MHz ≤ 1.30 dB f_0 ± 0.97 MHz ≥ 12 dB f_0 ± 1.15 MHz ≥ 30 dB f_0 ± 1.75 MHz ≥ 40 dB f_0 ± 2.20 MHz ≥ 55 dB f_0 ± 3.00 MHz ≥ 55 dB		f_0 ≤ 0.6 dB f_0 ± 0.77 MHz ≤ 1.4 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.15 MHz n.d. f_0 ± 1.75 MHz ≥ 45 dB f_0 ± 2.20 MHz ≥ 50 dB f_0 ± 3.00 MHz ≥ 50 dB
Group delay variation	Δτ ≤ 1000 ns		Δτ ≤ 1200 ns
Wide band input	1 5/8" EIA		3 1/8" EIA male
Average input power	≤ 14 kW		≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV		3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.1		
Dimensions (L x W x H) mm	≈ 925 x 520 x 1420		
Weight	≈ 200 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

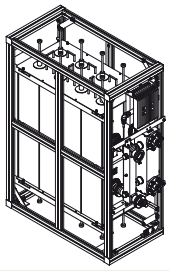
BAND 3 DAB CIB COMBINERS

- **CCS** compact design
- for 1.54 MHz block width
- integrated mask filters for DAB and T-DMB
- adjacent block operation
- temperature compensated
- filters with cross coupling (notch function)
- liquid cooled filter





BN 57 49 07

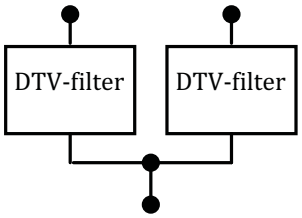


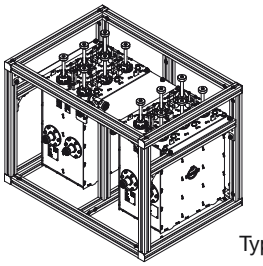
BN 57 46 48

Part number	**BN 57 49 07 natural cooling**	**BN 57 46 97 liquid cooling**	**BN 57 46 48 natural cooling**
Frequency range	170 - 240 MHz		
Block spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**8/200 ≡ BN 617113**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz		
DAB and T-DMB Mask filtering	DAB / T-DMB @ 1.54 MHz ($\hat{U}/U_{rms}$=13 dB)		
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 6 kW**	**≤ 10.2 kW** @ 0 - 500 m **≤ 9.0 kW** @ 1400 m **≤ 8.0 kW** @ 2100 m **≤ 7.0 kW** @ 2800 m **≤ 6.0 kW** @ 3600 m	**≤ 6 kW**
Tuning instruction	AS8042		AS8075
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.7 dB f_0 ± 0.77 MHz ≤ 1.3 dB f_0 ± 0.97 MHz ≥ 15 dB f_0 ± 1.15 MHz ≥ 30 dB f_0 ± 1.75 MHz ≥ 50 dB f_0 ± 2.20 MHz ≥ 65 dB f_0 ± 3.00 MHz ≥ 65 dB		f_0 ≤ 0.75 dB f_0 ± 0.77 MHz ≤ 1.55 dB f_0 ± 0.97 MHz ≥ 28 dB f_0 ± 1.15 MHz n.d. f_0 ± 1.75 MHz ≥ 61 dB f_0 ± 2.20 MHz ≥ 67 dB f_0 ± 3.00 MHz ≥ 70 dB
Group delay variation	Δτ ≤ 1200 ns		Δτ ≤ 1300 ns
Wide band input	1 5/8" EIA		3 1/8" EIA male
Average input power	≤ 14 kW		≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV		3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.1		
Dimensions (L x W x H) mm	≈ 1200 x 520 x 1420		
Weight	≈ 240 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

BAND 3 DTV STARPOINT COMBINERS

- compact design as 19" slide-in unit
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- temperature compensated
- filters with cross coupling (notch function)
- tuneable within the whole band 3



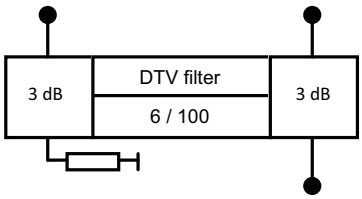


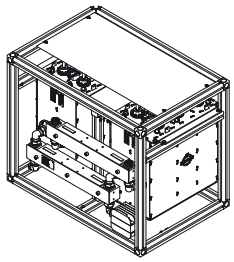
Typical design

Part number	**BN 57 46 69**		
Frequency range	174 - 230 MHz		
Block spacing	≥ 1		
Narrow band inputs	7-16 female		
Filter type integrated cavities/size	**6/100 ≡ BN 61 71 90**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz		
Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 1.1 kW**	**≤ 1.0 kW**	**≤ 900 W**
Tuning instruction	AS6164	AS6162	AS6161
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.35 dB $f_0 \pm 3.805$ ≤ 0.75 dB $f_0 \pm 4.200$ ≥ 4.0 dB $f_0 \pm 6.000$ ≥ 20 dB $f_0 \pm 12.00$ ≥ 55 dB	f_0 ≤ 0.35 dB $f_0 \pm 3.35$ ≤ 0.80 dB $f_0 \pm 3.50$ ≥ 1.2 dB $f_0 \pm 3.65$ ≥ 4.0 dB $f_0 \pm 5.00$ ≥ 20 dB $f_0 \pm 12.0$ ≥ 55 dB	f_0 ≤ 0.40 dB $f_0 \pm 2.69$ ≤ 0.60 dB $f_0 \pm 3.00$ ≥ 1.2 dB $f_0 \pm 3.50$ ≥ 8.0 dB $f_0 \pm 4.00$ ≥ 15 dB $f_0 \pm 6.00$ ≥ 30 dB $f_0 \pm 9.00$ ≥ 64 dB
Group delay variation	$\Delta\tau \leq 350$ ns	$\Delta\tau \leq 350$ ns	$\Delta\tau \leq 220$ ns
Output	7-16 female		
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.2		
Dimensions (L x W x H) mm	689 x 448 x 510		
Weight	≈ 55 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

BAND 3 DTV CIB COMBINERS

- compact design
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- filters with cross coupling (notch function)
- tuneable within the whole band 3

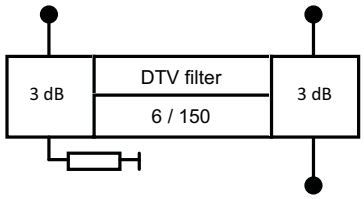


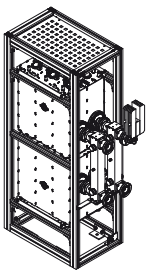


Part number	**BN 57 46 68**		
Frequency range	174 - 230 MHz		
Block spacing	≥ 0		
Narrow band input	7-16 female		
Filter type integrated cavities/size	**6/100 ≡ BN 61 71 90**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 500 MHz		
Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 2.2 kW**	**≤ 2.0 kW**	**≤ 1.8 kW**
Tuning instruction	AS6164	AS6162	AS6161
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.35 dB $f_0 \pm 3.805$ ≤ 0.75 dB $f_0 \pm 4.200$ ≥ 4.0 dB $f_0 \pm 6.000$ ≥ 20 dB $f_0 \pm 12.00$ ≥ 55 dB	f_0 ≤ 0.35 dB $f_0 \pm 3.35$ ≤ 0.80 dB $f_0 \pm 3.50$ ≥ 1.3 dB $f_0 \pm 3.65$ ≥ 4.0 dB $f_0 \pm 5.00$ ≥ 20 dB $f_0 \pm 12.0$ ≥ 55 dB	f_0 ≤ 0.40 dB $f_0 \pm 2.69$ ≤ 0.60 dB $f_0 \pm 3.00$ ≥ 1.2 dB $f_0 \pm 3.50$ ≥ 8.0 dB $f_0 \pm 4.00$ ≥ 15 dB $f_0 \pm 6.00$ ≥ 30 dB $f_0 \pm 9.00$ ≥ 64 dB
Group delay variation	$\Delta\tau \leq 350$ ns	$\Delta\tau \leq 350$ ns	$\Delta\tau \leq 220$ ns
Wide band input	7-16 female		
Average input power	≤ 3 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage	7-16 female ≤ 3.2 kV		
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.1		
Dimensions (L x W x H) mm	≈ 690 x 460 x 560		
Weight	≈ 64 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

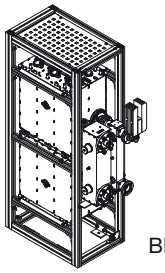
BAND 3 DTV CIB COMBINERS

- compact design
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- filters with cross coupling (notch function)
- tuneable within the whole band 3





BN 57 49 36

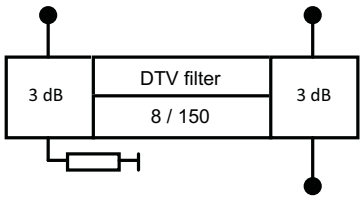


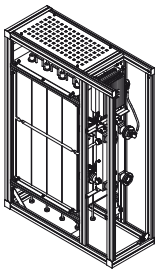
BN 57 49 38

Part number	**BN 57 49 36**	**BN 57 49 38**
Frequency range	174 - 230 MHz	
Block spacing	≥ 0	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**6/150 ≡ BN 617126**	
Temperature stability	≤ 2 kHz / K	
Mask filtering	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 8 kW**	**≤ 7.2 kW**
Tuning instruction	AS6044	AS6079
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.40 dB f_0 ± 3.35 MHz ≤ 0.70 dB f_0 ± 3.50 MHz ≥ 0.80 dB f_0 ± 3.65 MHz ≥ 2.0 dB f_0 ± 5.00 MHz ≥ 35 dB f_0 ± 12.0 MHz ≥ 55 dB	f_0 ≤ 0.45 dB f_0 ± 2.69 MHz ≤ 0.70 dB f_0 ± 3.00 MHz ≥ 1.4 dB f_0 ± 3.50 MHz ≥ 5.0 dB f_0 ± 4.00 MHz ≥ 11 dB f_0 ± 6.00 MHz ≥ 30 dB f_0 ± 9.00 MHz ≥ 65 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 200 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 14 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	≈ 852 x 390 x 1420	≈ 852 x 390 x 1420
Weight	≈ 120 kg	≈ 130 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

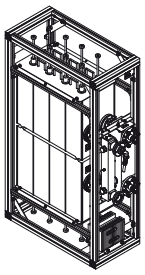
BAND 3 DTV CIB COMBINERS

- compact design
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- filters with cross coupling (notch function)
- tuneable within the whole band 3





BN 57 46 86

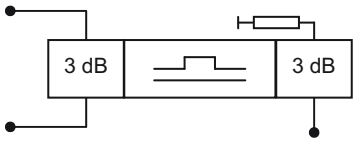


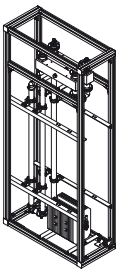
BN 57 46 87

Part number	**BN 57 46 86**	**BN 57 46 87**
Frequency range	174 - 230 MHz	
Block spacing	≥ 0	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**8/150 ≡ BN 617191**	
Temperature stability	≤ 2 kHz / K	
Mask filtering	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 7 kW**	
Tuning instruction	AS8049	
Insertion loss & Mask filtering (alternative tuning on request)	f_0 ≤ 0.45 dB f_0 ± 3.35 MHz ≤ 0.95 dB f_0 ± 3.70 MHz ≥ 15 dB f_0 ± 5.25 MHz ≥ 30 dB f_0 ± 10.50 MHz ≥ 50 dB f_0 ± 11.75 MHz ≥ 55 dB	
Group delay variation	Δτ ≤ 600 ns	
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 14 kW	≤ 30 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage	1 5/8" EIA ≤ 7.7 kV	3 1/8" EIA male ≤ 12.7 kV
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.1	
Dimensions (L x W x H) mm	≈ 1000 x 390 x 1420	
Weight	≈ 155 kg	≈ 160 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

CCS UHF STRETCH LINE COMBINERS

- **CCS** compact design
- suitable for analogue and digital TV
- for 6, 7 and 8 MHz channel bandwidth



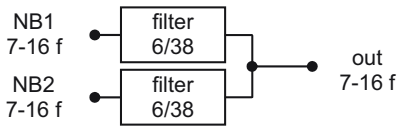


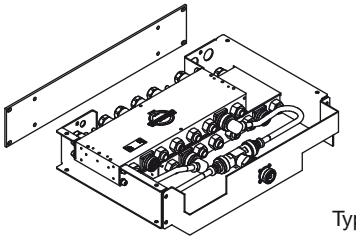
Typical design

Part number	**BN 57 49 31**	**BN 57 46 34**	**BN 57 46 35**	**BN 57 46 36**	**BN 57 46 37**
Frequency range	470 - 860 MHz				
Channel spacing	≥ 3				
Narrow band inputs	7-16 female	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	4 1/2" EIA
Average input power	**≤ 0.8 kW**	**≤ 7 kW**	**≤ 17.5 kW**	**≤ 23 kW**	**≤ 37 kW**
DTV Mask filtering	no				
Insertion loss Channel spacing ≥ 3	typ. ≤ 0.7dB	typ. ≤ 0.5 dB			
Insertion loss Channel spacing ≥ 5	typ. ≤ 0.3 dB	typ. ≤ 0.1 dB			
Output Peak output voltage	7-16 female ≤ 2 kV	3 1/8" EIA male ≤ 12.5 kV	4 1/2" EIA ≤ 18 kV	6 1/8" EIA ≤ 22 kV	6 1/8" EIA ≤ 34 kV
Isolation between inputs	≥ 34 dB				
VSWR	≤ 1.06				
Dimensions (L x W x H) mm	600 x 483 x 90	900 x 390 x 1980		900 x 480 x 1980	
Weight	≈ 12 kg	≈ 62 kg	≈ 115 kg	≈ 170 kg	≈ 200 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“				

UHF STARPOINT COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- wall mount available



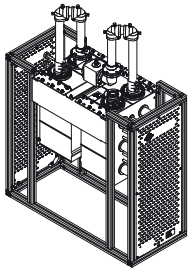


Typical design

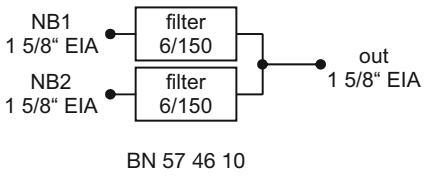
Part number **Front plate design**	**BN 57 46 55 C0002** **ports at rear side**		
Frequency range	470 - 860 MHz		
Channel spacing	≥ 1		
Narrow band inputs	7-16 female		
Filter type integrated cavities/size	**6/38 ≡ BN 616501**		
Temperature stability	≤ 3 kHz / K		
Harmonics attenuation	≥ 60 dB for f ≤ 1340 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 100 W**	**≤ 100 W**	**≤ 100 W**
Tuning instruction	AS6214	AS6180	AS6074
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.8 dB ≤ 1.0 dB f_0 ± 3.805 ≤ 1.8 dB ≤ 2.3 dB f_0 ± 3.885 ≤ 2.1 dB ≤ 2.6 dB f_0 ± 4.2 ≥ 5 dB f_0 ± 6.0 ≥ 17 dB f_0 ± 12.0 ≥ 38 dB	470 MHz 803 MHz f_0 ≤ 0.9 dB ≤ 1.4 dB f_0 ± 2.79 ≤ 1.8 dB ≤ 3.5 dB f_0 ± 3.00 ≥ 2 dB f_0 ± 3.15 ≥ 5 dB f_0 ± 4.5 ≥ 17 dB f_0 ± 9.0 ≥ 38 dB f_0 ± 15.0 ≥ 48 dB	470 MHz 803 MHz f_0 ≤ 1.0 dB ≤ 1.2 dB f_0 ± 2.69 ≤ 1.7 dB ≤ 2.0 dB f_0 ± 3.0 ≤ 2.9 dB ≤ 3.1 dB f_0 ± 3.5 ≥ 10 dB f_0 ± 4.0 ≥ 15 dB f_0 ± 6.0 ≥ 26 dB f_0 ± 9.0 ≥ 38 dB
Group delay variation	Δτ ≤ 300 ns	Δτ ≤ 500 ns	Δτ ≤ 200 ns
Output	7-16 female		
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.2		
Dimensions (L x W x H) mm	400 x 483 x 90 (2RU)		
Weight	≈ 9 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

CCS UHF STARPOINT COMBINERS

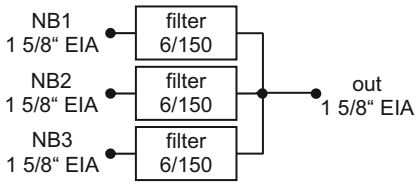
- **CCS** compact design
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



Typical design



BN 57 46 10

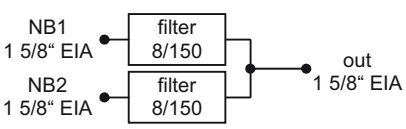


BN 57 46 11

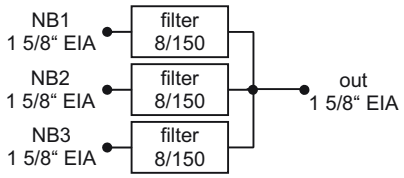
Part number **Number of inputs**	**BN 57 46 10** **2-way**	**BN 57 46 11** **3-way**
Frequency range	470 - 860 MHz	
Channel spacing	≥ 1	
Narrow band inputs	1 5/8“ EIA	
Filter type integrated cavities/size	**6/150 ≡ BN 616518**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB) / DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 2.5 kW**	**≤ 2.0 kW** / **≤ 2.25 kW**
Tuning instruction	AS6193	AS6184 / AS6289
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.55 dB $f_0 \pm 3.805$ ≤ 0.85 dB ≤ 1.3 dB $f_0 \pm 3.885$ ≤ 1.05 dB ≤ 1.5 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6.0$ ≥ 20 dB $f_0 \pm 12.0$ ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.5 dB ≤ 0.7 dB $f_0 \pm 2.79$ ≤ 1.2 dB ≤ 1.6 dB $f_0 \pm 3.00$ ≥ 3.5 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9.0$ ≥ 48 dB $f_0 \pm 15.0$ ≥ 50 dB 470 MHz 820 MHz f_0 ≤ 0.45 dB ≤ 0.60 dB $f_0 \pm 3.2$ ≤ 0.65 dB ≤ 0.95 dB $f_0 \pm 4.2$ ≥ 13 dB $f_0 \pm 10.5$ ≥ 38 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns / Δτ ≤ 150 ns
Output	1 5/8" EIA male	
Isolation between inputs	≥ 35 dB	
VSWR	≤ 1.2	
Dimensions (L x W x H) mm	900 x 390 x 1200	900 x 780 x 1200
Weight	≈ 80 kg	≈ 130 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

CCS UHF STARPOINT COMBINERS

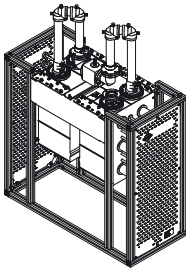
- **CCS** compact design
- for 6, 7 and 8 MHz channel bandwidth
- applicable within the whole UHF range
- integrated mask filters for DTV
- temperature compensated



BN 57 46 12



BN 57 46 13

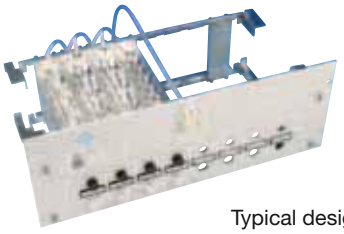


Typical design

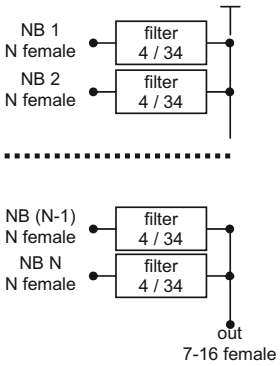
Part number **Number of inputs**	**BN 57 46 12** **2-way**		**BN 57 46 13** **3-way**			
Frequency range	470 - 860 MHz					
Channel spacing	≥ 1					
Narrow band inputs	1 5/8“ EIA					
Filter type integrated cavities/size	**8/150 ≡ BN 616542**					
Temperature stability	≤ 2 kHz / K					
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz					
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)		ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 2.0 kW**		**≤ 1.6 kW**		**≤ 1.6 kW**	
Tuning instruction	AS8071		AS8096		AS8094	
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz	860 MHz	470 MHz	803 MHz	470 MHz	803 MHz
	f_0	≤ 0.5 dB	≤ 0.75 dB	f_0	≤ 0.6 dB	≤ 0.80 dB	f_0	≤ 0.8 dB	≤ 1.0 dB
	f_0 ± 3.805	≤ 1.6 dB	≤ 2.2 dB	f_0 ± 2.79	≤ 1.4 dB	≤ 1.85 dB	f_0 ± 2.69	≤ 1.6 dB	≤ 1.7 dB
	f_0 ± 3.885	≤ 1.8 dB	≤ 2.5 dB	f_0 ± 3.15	≥ 15 dB		f_0 ± 3.00	≤ 4.0 dB	
	f_0 ± 4.2	≥ 15 dB		f_0 ± 4.5	≥ 30 dB		f_0 ± 3.25	≥ 18 dB	
	f_0 ± 6.0	≥ 40 dB		f_0 ± 9.0	≥ 55 dB		f_0 ± 9.00	≥ 64 dB	
	f_0 ± 12.0	≥ 55 dB							
Group delay variation	Δτ ≤ 700 ns		Δτ ≤ 500 ns		Δτ ≤ 400 ns	
Output	1 5/8" EIA male					
Isolation between inputs	≥ 35 dB					
VSWR	≤ 1.2					
Dimensions (L x W x H) mm	900 x 390 x 1200		900 x 780 x 1200			
Weight	≈ 120 kg		≈ 175 kg			
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“					

UHF LOW POWER MANIFOLD COMBINERS

- 4 RU compact design as 19" slide-in unit
- suitable for analogue and digital TV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



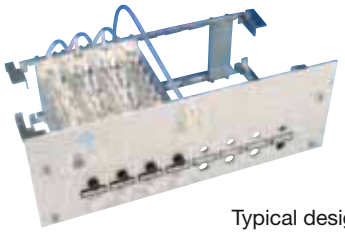
Typical design



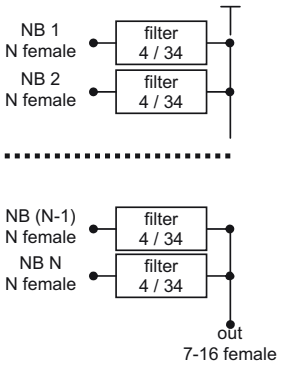
Part number	BN 57 45 82	BN 57 45 83	BN 57 45 84	BN 57 45 89
Frequency range	470 - 860 MHz			
Channel spacing	≥ 2 (1 channel available on request)			
Narrow band inputs	N female			
Filter type integrated cavities/size	**4/34 ≡ BN 616507**			
Temperature stability	≤ 10 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 1500 MHz			
DTV Mask filtering	no			
Average input power / channel width	**50 W** per input / 8 MHz **45 W** per input / 7 MHz **40 W** per input / 6 MHz			
Number of inputs	2	3	4	5
Insertion loss (varying with sequence) AS4054 for 8 MHz ($\hat{U}/U_{rms}$=13 dB)	f_0 0.7 - 0.85 dB $f_0 \pm 3.885$ 0.8 - 0.95 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 0.9 dB $f_0 \pm 3.885$ 0.8 - 1.0 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 1.0 dB $f_0 \pm 3.885$ 0.8 - 1.1 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 1.1 dB $f_0 \pm 3.885$ 0.8 - 1.2 dB $f_0 \pm 12.0$ ≥ 17 dB
Group delay variation	Δτ ≤ 100 ns			
Insertion loss (varying with sequence) AS4046 for 7 MHz ($\hat{U}/U_{rms}$=13 dB)	f_0 0.75 - 0.9 dB $f_0 \pm 3.325$ 0.85 - 1.0 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 0.95 dB $f_0 \pm 3.325$ 0.85 - 1.05 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 1.05 dB $f_0 \pm 3.325$ 0.85 - 1.15 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 1.15 dB $f_0 \pm 3.325$ 0.85 - 1.25 dB $f_0 \pm 10.5$ ≥ 20 dB
Group delay variation	Δτ ≤ 65 ns			
Insertion loss (varying with sequence) AS4029 for 6 MHz ($\hat{U}/U_{rms}$=11 dB)	f_0 0.8 - 0.95 dB $f_0 \pm 2.885$ 0.9 - 1.05 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.0 dB $f_0 \pm 2.885$ 0.9 - 1.1 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.1 dB $f_0 \pm 2.885$ 0.9 - 1.2 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.2 dB $f_0 \pm 2.885$ 0.9 - 1.3 dB $f_0 \pm 9.0$ ≥ 25 dB
Group delay variation	Δτ ≤ 30 ns			
Output Peak output voltage	7-16 female ≤ 2 kV			
Isolation between inputs	≥ 25 dB			
VSWR (one WB channel)	≤ 1.2			
Dimensions (L x W x H) mm	340 x 483 x 177 (4RU)			
Weight	≈ 5 kg	≈ 8 kg	≈ 9 kg	≈ 10 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

UHF LOW POWER MANIFOLD COMBINERS

- 4 RU compact design as 19" slide-in unit
- suitable for analogue and digital TV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



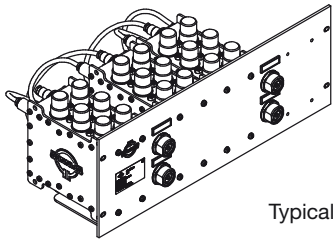
Typical design



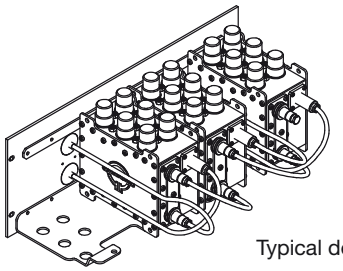
Part number	BN 57 45 86	BN 57 45 87	BN 57 45 88	BN 57 45 89
Frequency range	470 - 860 MHz			
Channel spacing	≥ 2 (1 channel available on request)			
Narrow band inputs	N female			
Filter type integrated cavities/size	**4/34 ≡ BN 616507**			
Temperature stability	≤ 10 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 1500 MHz			
DTV Mask filtering	no			
Average input power / channel width	**50 W** per input / 8 MHz **45 W** per input / 7 MHz **40 W** per input / 6 MHz			
Number of inputs	6	7	8	9
Insertion loss (varying with sequence) AS4054 for 8 MHz ($\hat{U}/U_{rms}$=13 dB)	f_0 0.7 - 1.15 dB $f_0 \pm 3.885$ 0.8 - 1.25 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 1.2 dB $f_0 \pm 3.885$ 0.8 - 1.3 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 1.3 dB $f_0 \pm 3.885$ 0.8 - 1.4 dB $f_0 \pm 12.0$ ≥ 17 dB	f_0 0.7 - 1.4 dB $f_0 \pm 3.885$ 0.8 - 1.5 dB $f_0 \pm 12.0$ ≥ 17 dB
Group delay variation	Δτ ≤ 100 ns			
Insertion loss (varying with sequence) AS4046 for 7 MHz ($\hat{U}/U_{rms}$=13 dB)	f_0 0.75 - 1.2 dB $f_0 \pm 3.325$ 0.85 - 1.3 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 1.25 dB $f_0 \pm 3.325$ 0.85 - 1.35 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 1.35 dB $f_0 \pm 3.325$ 0.85 - 1.45 dB $f_0 \pm 10.5$ ≥ 20 dB	f_0 0.75 - 1.45 dB $f_0 \pm 3.325$ 0.85 - 1.45 dB $f_0 \pm 10.5$ ≥ 20 dB
Group delay variation	Δτ ≤ 65 ns			
Insertion loss (varying with sequence) AS4029 for 6 MHz ($\hat{U}/U_{rms}$=11 dB)	f_0 0.8 - 1.25 dB $f_0 \pm 2.885$ 0.9 - 1.35 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.3 dB $f_0 \pm 2.885$ 0.9 - 1.4 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.4 dB $f_0 \pm 2.885$ 0.9 - 1.5 dB $f_0 \pm 9.0$ ≥ 25 dB	f_0 0.8 - 1.5 dB $f_0 \pm 2.885$ 0.9 - 1.6 dB $f_0 \pm 9.0$ ≥ 25 dB
Group delay variation	Δτ ≤ 30 ns			
Output	7-16 female			
Average output power	≤ 450 W			
Peak output voltage	≤ 2 kV			
Isolation between inputs	≥ 25 dB			
VSWR (one WB channel)	≤ 1.2			
Dimensions (L x W x H) mm	340 x 483 x 177 (4RU)			
Weight	≈ 12 kg	≈ 13 kg	≈ 15 kg	≈ 18 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

UHF MANIFOLD COMBINERS

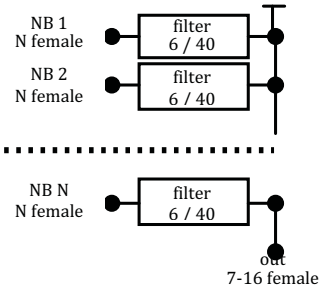
- compact design as 19" slide-in unit
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



Typical design



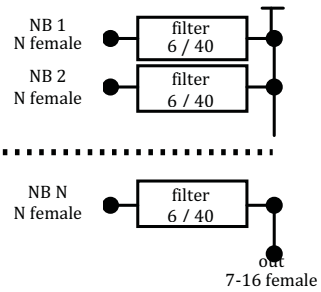
Typical design

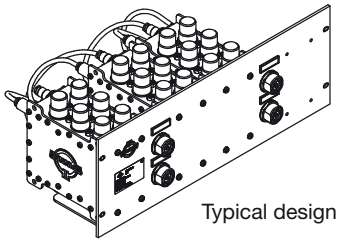


Part number	BN 57 55 62		BN 57 55 63		BN 57 55 64		BN 57 55 65	
Frequency range	470 - 860 MHz							
Channel spacing	≥ 1							
Narrow band inputs	N female							
Filter type integrated cavities/size	**6/40 ≡ BN 616660**							
Temperature stability	≤ 2 kHz / K							
Harmonics attenuation	≥ 50 dB for f ≤ 1400 MHz							
Average input power / channel width	**130 W per input / 8 MHz** **100 W per input / 6 MHz**							
Number of inputs	2		3		4		5	
DVB-T @ 8 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS6361 Insertion loss & Mask filtering	f_0 $f_0 \pm 3.805$ $f_0 \pm 3.885$ $f_0 \pm 4.2$ $f_0 \pm 6$ $f_0 \pm 12$	0.8 - 1.0 dB 2.0 - 2.5 dB 2.3 - 2.8 dB ≥ 4 dB ≥ 20 dB ≥ 40 dB	f_0 $f_0 \pm 3.805$ $f_0 \pm 3.885$ $f_0 \pm 4.2$ $f_0 \pm 6$ $f_0 \pm 12$	0.9 - 1.1 dB 2.0 - 2.6 dB 2.3 - 2.9 dB ≥ 4 dB ≥ 20 dB ≥ 40 dB	f_0 $f_0 \pm 3.805$ $f_0 \pm 3.885$ $f_0 \pm 4.2$ $f_0 \pm 6$ $f_0 \pm 12$	0.9 - 1.2 dB 2.0 - 2.7 dB 2.3 - 3.0 dB ≥ 4 dB ≥ 20 dB ≥ 40 dB	f_0 $f_0 \pm 3.805$ $f_0 \pm 3.885$ $f_0 \pm 4.2$ $f_0 \pm 6$ $f_0 \pm 12$	0.9 - 1.3 dB 2.0 - 2.8 dB 2.3 - 3.1 dB ≥ 4 dB ≥ 20 dB ≥ 40 dB
Group delay variation	$\Delta\tau \leq 350$ ns							
ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS6368 Insertion loss & Mask filtering	f_0 $f_0 \pm 2.79$ $f_0 \pm 3$ $f_0 \pm 3.15$ $f_0 \pm 4.5$ $f_0 \pm 9$ $f_0 \pm 15$	1.1 - 1.4 dB 2.7 - 3.3 dB ≥ 4 dB ≥ 8 dB ≥ 22 dB ≥ 50 dB ≥ 50 dB	f_0 $f_0 \pm 2.79$ $f_0 \pm 3$ $f_0 \pm 3.15$ $f_0 \pm 4.5$ $f_0 \pm 9$ $f_0 \pm 15$	1.1 - 1.5 dB 2.7 - 3.4 dB ≥ 4 dB ≥ 8 dB ≥ 22 dB ≥ 50 dB ≥ 50 dB	f_0 $f_0 \pm 2.79$ $f_0 \pm 3$ $f_0 \pm 3.15$ $f_0 \pm 4.5$ $f_0 \pm 9$ $f_0 \pm 15$	1.1 - 1.6 dB 2.7 - 3.5 dB ≥ 4 dB ≥ 8 dB ≥ 22 dB ≥ 50 dB ≥ 50 dB	f_0 $f_0 \pm 2.79$ $f_0 \pm 3$ $f_0 \pm 3.15$ $f_0 \pm 4.5$ $f_0 \pm 9$ $f_0 \pm 15$	1.1 - 1.7 dB 2.7 - 3.6 dB ≥ 4 dB ≥ 8 dB ≥ 22 dB ≥ 50 dB ≥ 50 dB
Group delay variation	$\Delta\tau \leq 350$ ns							
ATSC @ 6 MHz ($\hat{U}/U_{rms}$ = 11 dB) AS6362 Insertion loss & Mask filtering	f_0 $f_0 \pm 2.69$ $f_0 \pm 3.25$ $f_0 \pm 3.5$ $f_0 \pm 4$ $f_0 \pm 6$ $f_0 \pm 9$	1.3 - 1.8 dB 2.3 - 2.7 dB ≥ 4 dB ≥ 8 dB ≥ 15 dB ≥ 40 dB ≥ 65 dB	f_0 $f_0 \pm 2.69$ $f_0 \pm 3.25$ $f_0 \pm 3.5$ $f_0 \pm 4$ $f_0 \pm 6$ $f_0 \pm 9$	1.3 - 1.9 dB 2.3 - 2.8 dB ≥ 4 dB ≥ 8 dB ≥ 15 dB ≥ 40 dB ≥ 65 dB	f_0 $f_0 \pm 2.69$ $f_0 \pm 3.25$ $f_0 \pm 3.5$ $f_0 \pm 4$ $f_0 \pm 6$ $f_0 \pm 9$	1.3 - 2.0 dB 2.3 - 2.9 dB ≥ 4 dB ≥ 8 dB ≥ 15 dB ≥ 40 dB ≥ 65 dB	f_0 $f_0 \pm 2.69$ $f_0 \pm 3.25$ $f_0 \pm 3.5$ $f_0 \pm 4$ $f_0 \pm 6$ $f_0 \pm 9$	1.3 - 2.1 dB 2.3 - 3.0 dB ≥ 4 dB ≥ 8 dB ≥ 15 dB ≥ 40 dB ≥ 65 dB
Group delay variation	$\Delta\tau \leq 200$ ns							
Output Average output power Peak output voltage	7-16 female ≤ 600 W ≤ 2 kV							
Isolation between inputs	≥ 35 dB							
VSWR	≤ 1.2							
Dimensions (L x W x H) mm	300 x 483 x 177 (4RU)						300 x 483 x 355 (8RU)	
Weight	≈ 9 kg		≈ 13 kg		≈ 17 kg		≈ 21 kg	
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“							

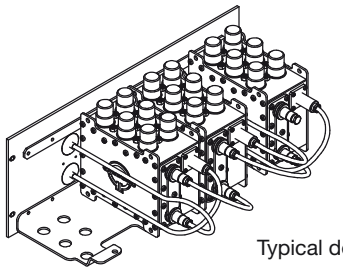
UHF MANIFOLD COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated





Typical design

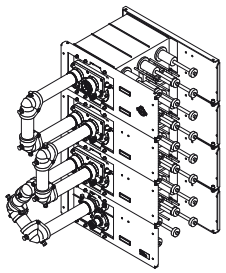


Typical design

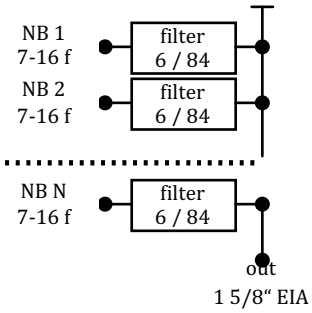
Part number	**BN 57 55 66**	**BN 57 55 67**	**BN 57 55 68**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 1		
Narrow band inputs	N female		
Filter type integrated cavities/size	**6/40 ≡ BN 616660**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 1400 MHz		
Average input power / channel width	**130 W per input / 8 MHz** **100 W per input / 6 MHz**		
Number of inputs	6	7	8
DVB-T @ 8 MHz (Û/U_{rms} = 13 dB) AS6361 Insertion loss & Mask filtering	f_0 0.8 - 1.3 dB $f_0 \pm 3.805$ 2.0 - 2.8 dB $f_0 \pm 3.885$ 2.3 - 3.1 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	f_0 0.9 - 1.4 dB $f_0 \pm 3.805$ 2.0 - 2.9 dB $f_0 \pm 3.885$ 2.3 - 3.2 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	f_0 0.9 - 1.5 dB $f_0 \pm 3.805$ 2.0 - 3.0 dB $f_0 \pm 3.885$ 2.3 - 3.3 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB
Group delay variation	Δτ ≤ 350 ns		
ISDB-T @ 6 MHz (Û/U_{rms} = 13 dB) AS6368 Insertion loss & Mask filtering	f_0 1.1 - 1.7 dB $f_0 \pm 2.79$ 2.7 - 3.6 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 22 dB $f_0 \pm 9$ ≥ 50 dB $f_0 \pm 15$ ≥ 50 dB	f_0 1.1 - 1.8 dB $f_0 \pm 2.79$ 2.7 - 3.7 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 22 dB $f_0 \pm 9$ ≥ 50 dB $f_0 \pm 15$ ≥ 50 dB	f_0 1.1 - 1.9 dB $f_0 \pm 2.79$ 2.7 - 3.8 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 22 dB $f_0 \pm 9$ ≥ 50 dB $f_0 \pm 15$ ≥ 50 dB
Group delay variation	Δτ ≤ 350 ns		
ATSC @ 6 MHz (Û/U_{rms} = 11 dB) AS6362 Insertion loss & Mask filtering	f_0 1.3 - 2.1 dB $f_0 \pm 2.69$ 2.3 - 3.0 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB	f_0 1.3 - 2.2 dB $f_0 \pm 2.69$ 2.3 - 3.1 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB	f_0 1.3 - 2.3 dB $f_0 \pm 2.69$ 2.3 - 3.2 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 200 ns		
Output Average output power Peak output voltage	7-16 female ≤ 600 W ≤ 2 kV		
Isolation between inputs	≥ 35 dB		
VSWR	≤ 1.2		
Dimensions (L x W x H) mm	300 x 483 x 355 (8RU)		
Weight	≈ 25 kg	≈ 29 kg	≈ 32 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

UHF MANIFOLD COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



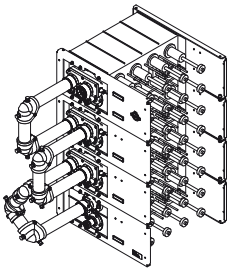
Typical design



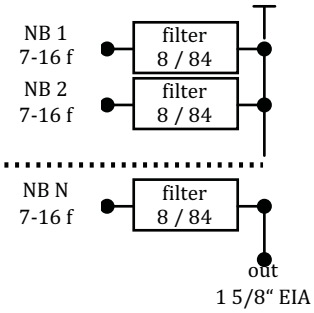
Part number	BN 57 49 12 C0003	BN 57 49 13 C0003	BN 57 49 14 C0003	BN 57 49 11 C0003
Frequency range	470 - 860 MHz			
Channel spacing	≥ 1			
Narrow band inputs	7-16 female			
Filter type integrated cavities/size	**6/84 ≡ BN 616402**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz			
Average input power / channel width	**750 W** per input / 8 MHz **675 W** per input / 7 MHz **600 W** per input / 6 MHz			
Number of inputs	2	3	4	5
DVB-T @ 8 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS6186 Insertion loss & Mask filtering	f_0 ≤ 0.5 - 0.6 dB $f_0 \pm 3.805$ ≤ 1.2 - 1.5 dB $f_0 \pm 3.885$ ≤ 1.3 - 1.6 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	f_0 0.5 - 0.8 dB $f_0 \pm 3.805$ 1.3 - 1.6 dB $f_0 \pm 3.885$ 1.4 - 1.7 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	f_0 0.5 - 1.0 dB $f_0 \pm 3.805$ 1.3 - 1.9 dB $f_0 \pm 3.885$ 1.4 - 2.0 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	f_0 0.5 - 1.1 dB $f_0 \pm 3.805$ 1.3 - 2.0 dB $f_0 \pm 3.885$ 1.4 - 2.1 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB
Group delay variation	Δτ ≤ 300 ns			
ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS6182 Insertion loss & Mask filtering	f_0 0.6 - 0.8 dB $f_0 \pm 2.79$ 1.6 - 2.2 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB	f_0 0.6 - 0.9 dB $f_0 \pm 2.79$ 1.7 - 2.3 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB	f_0 0.6 - 1.1 dB $f_0 \pm 2.79$ 1.7 - 2.5 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB	f_0 0.6 - 1.2 dB $f_0 \pm 2.79$ 1.7 - 2.6 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB
Group delay variation	Δτ ≤ 500 ns			
ATSC @ 6 MHz ($\hat{U}/U_{rms}$ = 11 dB) AS6156 Insertion loss & Mask filtering	f_0 ≤ 0.7 - 0.9 dB $f_0 \pm 2.69$ ≤ 1.1 - 1.55 dB $f_0 \pm 3$ ≤ 1.9 - 2.45 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB	f_0 ≤ 0.7 - 1.0 dB $f_0 \pm 2.69$ ≤ 1.2 - 1.7 dB $f_0 \pm 3$ ≤ 1.9 - 2.6 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB	f_0 ≤ 0.7 - 1.2 dB $f_0 \pm 2.69$ ≤ 1.2 - 1.8 dB $f_0 \pm 3$ ≤ 1.9 - 2.7 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB	f_0 ≤ 0.7 - 1.3 dB $f_0 \pm 2.69$ ≤ 1.2 - 1.9 dB $f_0 \pm 3$ ≤ 1.9 - 2.8 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 200 ns			
Output	1 5/8" EIA			
Isolation between inputs	≥ 35 dB			
VSWR	≤ 1.17			
Dimensions (L x W x H) mm	640 x 483 x 354 (8RU)	640 x 483 x 532 (12RU)	640 x 483 x 809 (16RU)	640 x 483 x 888 (20RU)
Weight	≈ 26 kg	≈ 38 kg	≈ 51 kg	≈ 64 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

UHF MANIFOLD COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- applicable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated



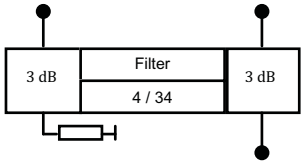
Typical design

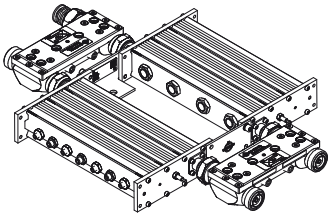


Part number	BN 57 49 22 C0003	BN 57 49 23 C0003	BN 57 49 24 C0003	BN 57 49 21 C0003
Frequency range	470 - 860 MHz			
Channel spacing	≥ 1			
Narrow band inputs	7-16 female			
Filter type integrated cavities/size	**8/84 ≡ BN 616403**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz			
Average input power / channel width	**750 W** per input / 8 MHz **675 W** per input / 7 MHz **600 W** per input / 6 MHz			
Number of inputs	2	3	4	5
DVB-T @ 8 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS8068 Insertion loss & Mask filtering	f_0 ≤ 0.6 - 0.75 dB $f_0 \pm 3.805$ ≤ 1.8 - 2.2 dB $f_0 \pm 3.885$ ≤ 2.1 - 2.6 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	f_0 ≤ 0.6 - 0.9 dB $f_0 \pm 3.805$ ≤ 1.8 - 2.3 dB $f_0 \pm 3.885$ ≤ 2.1 - 2.7 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	f_0 ≤ 0.6 - 1.0 dB $f_0 \pm 3.805$ ≤ 1.8 - 2.4 dB $f_0 \pm 3.885$ ≤ 2.1 - 2.8 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	f_0 ≤ 0.6 - 1.1 dB $f_0 \pm 3.805$ ≤ 1.8 - 2.5 dB $f_0 \pm 3.885$ ≤ 2.1 - 2.9 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB
Group delay variation	Δτ ≤ 600 ns			
ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$ = 13 dB) AS8091 Insertion loss & Mask filtering	f_0 0.7 - 1.3 dB $f_0 \pm 2.79$ 1.8 - 3.1 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	f_0 0.7 - 1.4 dB $f_0 \pm 2.79$ 1.8 - 3.2 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	f_0 0.7 - 1.5 dB $f_0 \pm 2.79$ 1.8 - 3.3 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	f_0 0.7 - 1.6 dB $f_0 \pm 2.79$ 1.8 - 3.4 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB
Group delay variation	Δτ ≤ 500 ns			
ATSC @ 6 MHz ($\hat{U}/U_{rms}$ = 11 dB) AS8051 Insertion loss & Mask filtering	f_0 ≤ 0.9 - 1.3 dB $f_0 \pm 2.69$ ≤ 1.9 - 2.7 dB $f_0 \pm 3$ ≥ 3 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB	f_0 ≤ 0.9 - 1.4 dB $f_0 \pm 2.69$ ≤ 1.9 - 2.8 dB $f_0 \pm 3$ ≥ 3 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB	f_0 ≤ 0.9 - 1.5 dB $f_0 \pm 2.69$ ≤ 1.9 - 2.9 dB $f_0 \pm 3$ ≥ 3 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB	f_0 ≤ 0.9 - 1.6 dB $f_0 \pm 2.69$ ≤ 1.9 - 3.0 dB $f_0 \pm 3$ ≥ 3 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 400 ns			
Output	1 5/8" EIA			
Isolation between inputs	≥ 35 dB			
VSWR	≤ 1.17			
Dimensions (L x W x H) mm	720 x 483 x 354 (8RU)	720 x 483 x 532 (12RU)	720 x 483 x 809 (16RU)	720 x 483 x 888 (20RU)
Weight	≈ 34 kg	≈ 51 kg	≈ 68 kg	≈ 85 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

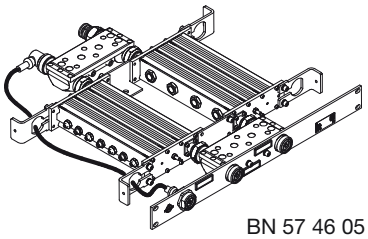
UHF CIB COMBINERS

- 1 RU compact design as 19” slide-in unit
- suitable for analogue and digital TV
- tuneable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- wall mount available

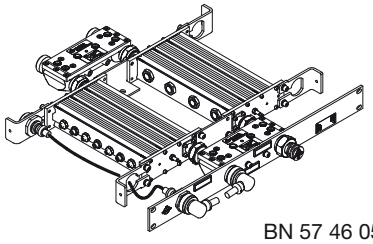




BN 57 46 05



BN 57 46 05 C0001

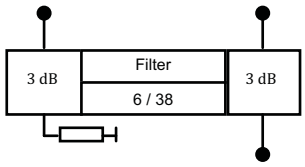


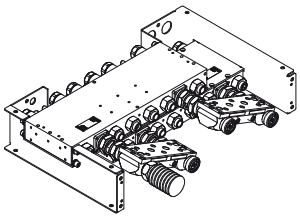
BN 57 46 05 C0002

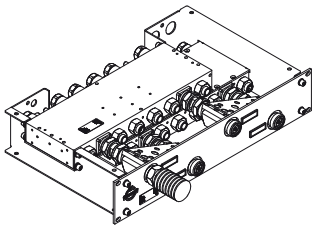
Part number Front plate design	**BN 57 46 05** without front plate	**BN 57 46 05 C0001** ports at front side	**BN 57 46 05 C0002** ports at rear side
Frequency range	470 - 860 MHz		
Channel spacing	≥ 1		
Narrow band input	7-16 female		
Filter type integrated cavities/size	**4/34 ≡ BN 616507**		
Temperature stability	≤ 10 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 1500 MHz		
DTV mask filtering	no		
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)	7 MHz ($\hat{U}/U_{rms}$=13 dB)	6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 100 W**	**≤ 90 W**	**≤ 80 W**
Tuning instruction	AS4054	AS4046	AS4029
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.8 dB / ≤ 0.7 dB $f_0 \pm 3.805$ ≤ 0.9 dB / ≤ 0.8 dB $f_0 \pm 3.885$ ≤ 0.9 dB / ≤ 0.8 dB $f_0 \pm 12$ ≥ 17 dB	470 MHz / 803 MHz f_0 ≤ 0.85 dB / ≤ 0.75 dB $f_0 \pm 3.2$ ≤ 0.95 dB / ≤ 0.85 dB $f_0 \pm 10.5$ ≥ 20 dB	470 MHz / 803 MHz f_0 ≤ 0.9dB / ≤ 0.8 dB $f_0 \pm 2.885$ ≤ 1.0 dB / ≤ 0.9 dB $f_0 \pm 9$ ≤ 25 dB
Group delay variation	Δτ ≤ 100 ns	Δτ ≤ 65 ns	Δτ ≤ 30 ns
Wide band input	7-16 female		
Average input power	600 W Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering Insertion loss	no ≤ 0.1 dB (non adjacent)		
Output	7-16 female		
Peak output voltage	1.6 kV		
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.1		
Dimensions (L x W x H) mm	471 x 483 x 45 (1RU)		
Weight	≈ 5.5 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

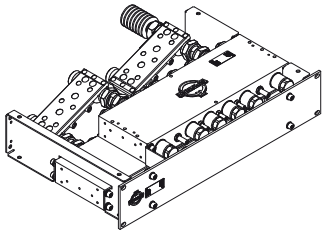
UHF CIB COMBINERS

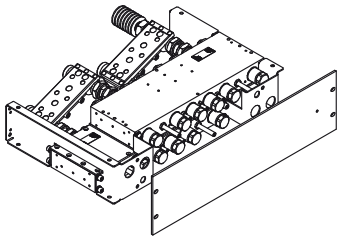
- 2-3 RU compact design as 19" slide-in unit
- adjacent channel operation
- integrated mask filters for DTV
- tuneable within the whole UHF range
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- wall mount available




BN 57 46 06


BN 57 46 06 C0001

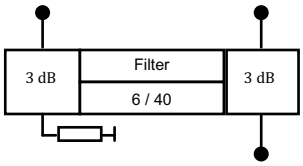

BN 57 46 06 C0002

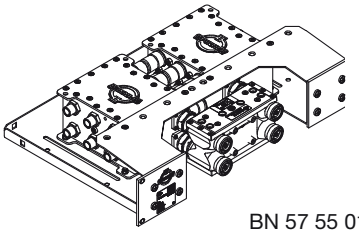

BN 57 49 06 C0002

Part number height / Front plate design	**BN 57 46 06** 2 RU without front plate **BN 57 49 06** 3 RU without front plate	**BN 57 46 06 C0001** 2 RU with ports at front side **BN 57 49 06 C0001** 3 RU with ports at front side	**BN 57 46 06 C0002** 2 RU ports at rear side **BN 57 49 06 C0002** 3 RU ports at rear side
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	7-16 female		
Filter type integrated cavities/size	**6/38 ≡ BN616501**		
Temperature stability	≤ 3 kHz / K		
Harmonics attenuation	≥ 60 dB for f ≤ 1340 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 150 W** BN 574606 **≤ 200 W** BN 574906	**≤ 150 W** BN 574606 **≤ 200 W** BN 574906	**≤ 150 W** BN 574606 **≤ 200 W** BN 574906
Tuning instruction	AS6214	AS6180	AS6074
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.8 dB / ≤ 1.0 dB $f_0 \pm 3.805$ ≤ 1.8 dB / ≤ 2.3 dB $f_0 \pm 3.885$ ≤ 2.1 dB / ≤ 2.6 dB $f_0 \pm 4.2$ ≥ 5 dB $f_0 \pm 6$ ≥ 17 dB $f_0 \pm 12$ ≥ 38 dB	470 MHz / 803 MHz f_0 ≤ 0.9 dB / ≤ 1.4 dB $f_0 \pm 2.79$ ≤ 1.8 dB / ≤ 3.5 dB $f_0 \pm 3.0$ ≥ 2 dB $f_0 \pm 3.15$ ≥ 5 dB $f_0 \pm 4.5$ ≥ 17 dB $f_0 \pm 9$ ≥ 38 dB $f_0 \pm 15$ ≥ 48 dB	470 MHz / 803 MHz f_0 ≤ 1.0 dB / ≤ 1.2 dB $f_0 \pm 2.69$ ≤ 1.7 dB / ≤ 2.0 dB $f_0 \pm 3$ ≤ 2.9 dB / ≤ 3.1 dB $f_0 \pm 3.5$ ≥ 10 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 26 dB $f_0 \pm 9$ ≥ 38 dB
Group delay variation	Δτ ≤ 300 ns	Δτ ≤ 500 ns	Δτ ≤ 200 ns
Wide band input	7-16 female		
Average input power	1 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	7-16 female		
Peak output voltage	≤ 1.6 kV		
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.1		
Dimensions (L x W x H) mm	363 x 483 x 90 (2RU) BN 57 46 06 363 x 483 x 133 (3RU) BN 57 49 06		
Weight	≈ 10 kg		
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

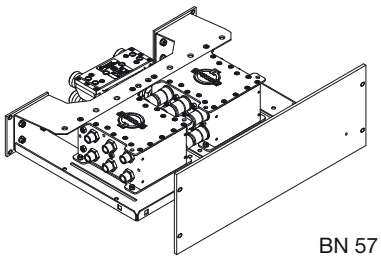
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- tuneable within the whole UHF range





BN 57 55 01

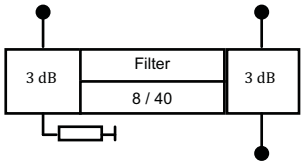


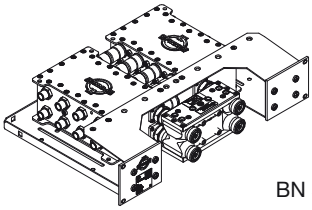
BN 57 55 01 C0002

Part number Front plate design	**BN 57 55 01** **without front plate**			**BN 57 55 01 C0002** **with front plate and rear side ports**				
Frequency range	470 - 860 MHz							
Channel spacing	≥ 0							
Narrow band input	7-16 female							
Filter type integrated cavities/size	**6/40 ≡ BN616660**							
Temperature stability	≤ 2 kHz / K							
Harmonics attenuation	≥ 50 dB for f ≤ 1300 MHz							
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)			ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)			ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)	
Average input power	**≤ 260 W**			**≤ 200 W**			**≤ 200 W**	
Tuning instruction	AS6361			AS6368			AS6362	
Insertion loss & Mask filtering (alternative tuning on request)		470 MHz	860 MHz		470 MHz	803 MHz		470 MHz	803 MHz
	f_0	≤ 0.8 dB	≤ 1.0 dB	f_0	≤ 1.1 dB	≤ 1.4 dB	f_0	≤ 1.3 dB	≤ 1.8 dB
	$f_0 \pm 3.805$	≤ 2.0 dB	≤ 2.5 dB	$f_0 \pm 2.79$	≤ 2.7 dB	≤ 3.3 dB	$f_0 \pm 2.69$	≤ 2.3 dB	≤ 2.7 dB
	$f_0 \pm 3.885$	≤ 2.3 dB	≤ 2.8 dB	$f_0 \pm 3.0$	≥ 4 dB		$f_0 \pm 3.25$	≥ 4 dB	
	$f_0 \pm 4.2$	≥ 4 dB		$f_0 \pm 3.15$	≥ 8 dB		$f_0 \pm 3.5$	≥ 8 dB	
	$f_0 \pm 6$	≥ 20 dB		$f_0 \pm 4.5$	≥ 22 dB		$f_0 \pm 4$	≥ 15 dB	
	$f_0 \pm 12$	≥ 40 dB		$f_0 \pm 9$	≥ 50 dB		$f_0 \pm 6$	≥ 40 dB	
				$f_0 \pm 15$	≥ 50 dB		$f_0 \pm 9$	≥ 65 dB	
Group delay variation	Δτ ≤ 350 ns			Δτ ≤ 350 ns			Δτ ≤ 200 ns	
Wide band input	7-16 female							
Average input power	1 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input							
DTV Mask filtering	no							
Insertion loss	≤ 0.1 dB (non adjacent)							
Output	7-16 female							
Peak output voltage	≤ 2.8 kV							
Isolation between inputs	≥ 35 dB							
VSWR (one WB channel)	≤ 1.06							
Dimensions (L x W x H) mm	355 x 483 x 133 (3RU)							
Weight	≈ 12 kg							
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“							

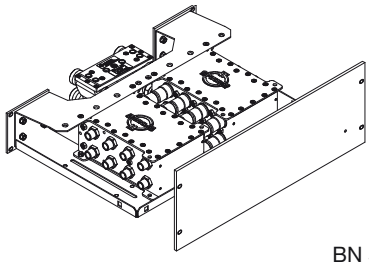
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- tuneable within the whole UHF range





BN 57 55 06

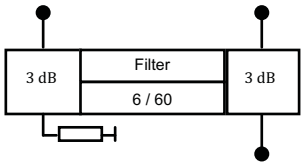


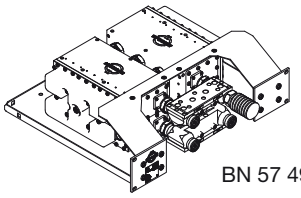
BN 57 55 06 C0002

Part number Front plate design	**BN 57 55 06** **without front plate**		**BN 57 55 06 C0002** **with front plate and rear side ports**	
Frequency range	470 - 860 MHz			
Channel spacing	≥ 0			
Narrow band input	7-16 female			
Filter type integrated cavities/size	**8/40 ≡ BN616661**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 60 dB for f ≤ 1340 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)		ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 240 W**		**≤ 200 W**	**≤ 200 W**
Tuning instruction	AS8131		AS8133	AS8132
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz	860 MHz	470 MHz / 803 MHz	470 MHz / 803 MHz
	f_0	≤ 1.2 dB	≤ 1.6 dB	f_0 ≤ 1.5 dB / ≤ 1.85 dB	f_0 ≤ 1.6 dB / ≤ 2.0 dB
	$f_0 \pm 3.805$	≤ 3.7 dB	≤ 5.3 dB	$f_0 \pm 2.79$ ≤ 4.5 dB / ≤ 5.1 dB	$f_0 \pm 2.69$ ≤ 3.9 dB / ≤ 4.5 dB
	$f_0 \pm 3.885$	≤ 4.5 dB	≤ 5.9 dB	$f_0 \pm 3.15$ ≥ 15 dB	$f_0 \pm 3$ ≥ 5 dB
	$f_0 \pm 4.2$	≥ 15 dB		$f_0 \pm 4.5$ ≥ 30 dB	$f_0 \pm 3.25$ ≥ 18 dB
	$f_0 \pm 6$	≥ 40 dB		$f_0 \pm 9$ ≥ 55 dB	$f_0 \pm 9$ ≥ 64 dB
	$f_0 \pm 12$	≥ 55 dB		$f_0 \pm 15$ ≥ 65 dB	
Group delay variation	Δτ ≤ 600 ns		Δτ ≤ 500 ns	Δτ ≤ 400 ns
Wide band input	7-16 female			
Average input power	1 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	7-16 female			
Peak output voltage	≤ 2.8 kV			
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	355 x 483 x 133 (3RU)			
Weight	≈ 14 kg			
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

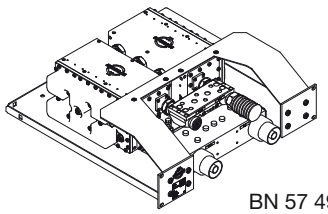
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- tuneable within the whole UHF range

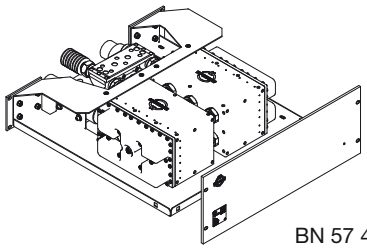




BN 57 49 48



BN 57 49 49

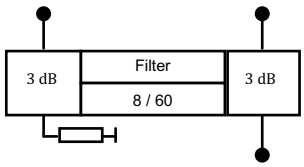


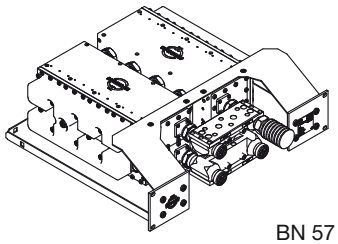
BN 57 49 49 C0002

Part number Front plate design	**BN 57 49 48** without front plate **BN 57 49 48 C0002** with front plate and rear side ports	**BN 57 49 49** without front plate **BN 57 49 49 C0002** with front plate and rear side ports
Frequency range	470 - 860 MHz	
Channel spacing	≥ 0	
Narrow band input	7-16 female	
Filter type integrated cavities/size	**6/60 ≡ BN616566**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 1200 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB) / ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 750 W**	**≤ 600 W** / **≤ 600 W**
Tuning instruction	AS6201	AS6192 / AS6257
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.55 dB / ≤ 0.65 dB $f_0 \pm 3.805$ ≤ 1.35 dB / ≤ 1.85 dB $f_0 \pm 3.885$ ≤ 1.55 dB / ≤ 2.1 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz / 803 MHz f_0 ≤ 0.7 dB / ≤ 0.85 dB $f_0 \pm 2.79$ ≤ 1.7 dB / ≤ 2.30 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB
		470 MHz / 803 MHz f_0 ≤ 0.8 dB / ≤ 1.1 dB $f_0 \pm 2.69$ ≤ 1.5 dB / ≤ 1.8 dB $f_0 \pm 3.0$ ≤ 2.7 dB / ≤ 2.8 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 350 ns / Δτ ≤ 200 ns
Wide band input	7-16 female	1 5/8" SMS unflanged
Average input power	≤ 1 kW	≤ 4 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	7-16 female	1 5/8" SMS unflanged
Peak output voltage	≤ 1.6 kV	≤ 6 kV
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	482 x 483 x 177 (4RU)	510 x 483 x 177 (4RU)
Weight	≈ 17 kg	≈ 20 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

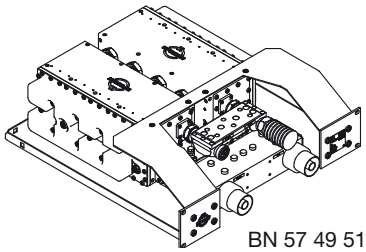
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- for 6, 7 and 8 MHz channel bandwidth
- integrated mask filters for DTV
- adjacent channel operation
- temperature compensated
- tuneable within the whole UHF range

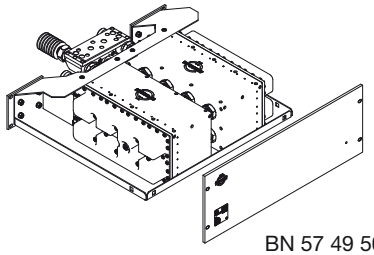




BN 57 49 50



BN 57 49 51



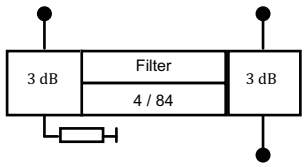
BN 57 49 50 C0002

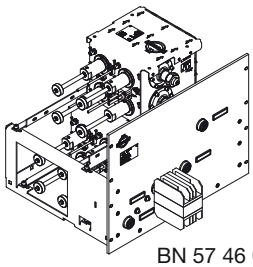
Part number Front plate design	**BN 57 49 50** without front plate **BN 57 49 50 C0002** with front plate and rear side ports	**BN 57 49 51** without front plate **BN 57 49 51 C0002** with front plate and rear side ports
Frequency range	470 - 860 MHz	
Channel spacing	≥ 0	
Narrow band input	7-16 female	
Filter type integrated cavities/size	**8/60 ≡ BN 616568**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 1200 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 750 W**	**≤ 600 W**
Tuning instruction	AS8087	AS8095
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.75 dB ≤ 1.00 dB $f_0 \pm 3.805$ ≤ 2.35 dB ≤ 3.15 dB $f_0 \pm 3.885$ ≤ 3.05 dB ≤ 3.85 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.85 dB ≤ 1.15 dB $f_0 \pm 2.79$ ≤ 2.25 dB ≤ 3.10 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB
Group delay variation	Δτ ≤ 660 ns	Δτ ≤ 500 ns
Wide band input	7-16 female	1 5/8" SMS unflanged
Average input power	≤ 1 kW	≤ 4 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	7-16 female	1 5/8" SMS unflanged
Peak output voltage	≤ 1.6 kV	≤ 6 kV
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	482 x 483 x 177 (4RU)	510 x 483 x 177 (4RU)
Weight	≈ 20 kg	≈ 22 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 600 W**
Tuning instruction	AS8084
Insertion loss & Mask filtering	470 MHz 803 MHz f_0 ≤ 1.10 dB ≤ 1.30 dB $f_0 \pm 2.69$ ≤ 2.35 dB ≤ 2.85 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 420 ns

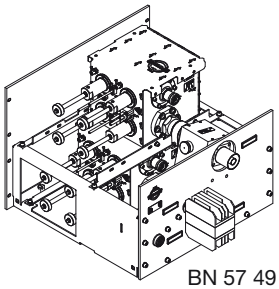
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- suitable for analogue and digital TV
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 03 C0001

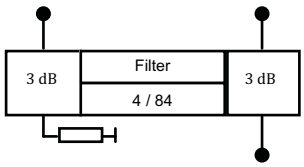


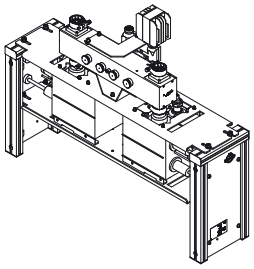
BN 57 49 01 C0002

Part number Front plate design	**BN 57 46 03 C0001** with ports at front plate **BN 57 46 03 C0002** with ports at rear side	**BN 57 49 01 C0001** with ports at front plate **BN 57 49 01 C0002** with ports at rear side
Frequency range	470 - 860 MHz	
Channel spacing	≥ 1	
Narrow band input	7-16 female	
Filter type integrated cavities/size	**4/84 ≡ BN616400**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 45 dB for f ≤ 950 MHz	
DTV Mask filtering	no	
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)	6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 1.5 kW**	**≤ 1.5 kW**
Tuning instruction	AS4055	AS4038
Insertion loss (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.45 dB $f_0 \pm 3.805$ ≤ 0.5 dB ≤ 0.6 dB $f_0 \pm 3.885$ ≤ 0.5 dB ≤ 0.6 dB $f_0 \pm 12$ ≥ 28 dB	470 MHz 860 MHz f_0 ≤ 0.45 dB ≤ 0.55 dB $f_0 \pm 3$ ≤ 0.60 dB ≤ 0.75 dB $f_0 \pm 9$ ≥ 30 dB
Group delay variation	Δτ ≤ 90 ns	Δτ ≤ 100 ns
Wide band input	7-16 female	1 5/8" SMS unflanged
Average input power	≤ 1 kW	≤ 7 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	7-16 female	1 5/8" SMS unflanged
Average output power	–	≤ 7 kW
Peak output voltage	≤ 1.6 kV	≤ 8.5 kV
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	503 x 483 x 355 (8RU)	560 x 483 x 355 (8RU)
Weight	≈ 25 kg	≈ 28 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

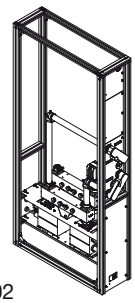
CCS UHF CIB COMBINERS

- **CCS** compact design
- suitable for analogue and digital TV
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 73 C0002

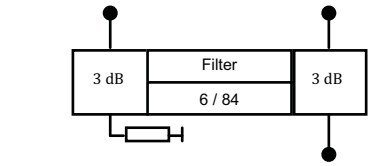


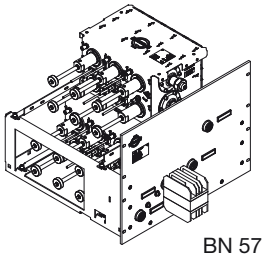
BN 57 46 74 inside switching rack

Part number	**BN 57 46 73 C0002**	**BN 57 46 74 C0002**
Frequency range	470 - 860 MHz	
Channel spacing	≥ 1	
Narrow band input	7-16 female	1 5/8" SMS unflanged
Filter type integrated cavities/size	**4/84 ≡ BN616400**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 45 dB for f ≤ 950 MHz	
DTV Mask filtering	no	
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)	6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 1.5 kW** BN 5746 73 C0002 **≤ 2.5 kW** BN 5746 74 C0002	**≤ 1.5 kW** BN 5746 73 C0002 **≤ 2.5 kW** BN 5746 74 C0002
Tuning instruction	AS4055	AS4038
Insertion loss (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.45 dB f_0 ± 3.805 ≤ 0.5 dB ≤ 0.6 dB f_0 ± 3.885 ≤ 0.5 dB ≤ 0.6 dB f_0 ± 12 ≥ 28 dB	470 MHz 860 MHz f_0 ≤ 0.45 dB ≤ 0.55 dB f_0 ± 3 ≤ 0.60 dB ≤ 0.75 dB f_0 ± 9 ≥ 30 dB
Group delay variation	Δτ ≤ 90 ns	Δτ ≤ 100 ns
Wide band input	1 5/8" SMS unflanged	
Average input power	≤ 7 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	1 5/8" SMS unflanged	
Average output power	≤ 7 kW	
Peak output voltage	≤ 8.5 kV	
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	900 x 226 x 660	900 x 226 x 965
Weight	≈ 30 kg	≈ 40 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

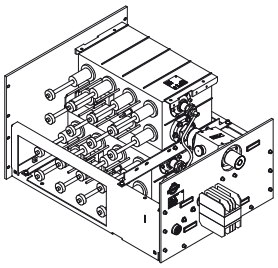
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 41 C0001

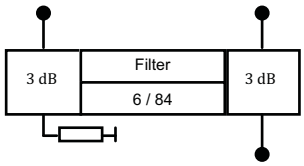


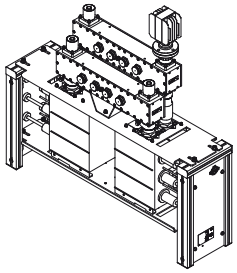
BN 57 49 42 C0001

Part number Front plate design	**BN 57 46 41 C0001** with ports at front plate **BN 57 46 41 C0002** with ports at rear side	**BN 57 49 42 C0001** with ports at front plate **BN 57 49 42 C0002** with ports at rear side
Frequency range	470 - 860 MHz	
Channel spacing	≥ 0	
Narrow band input	7-16 female	
Filter type integrated cavities/size	**6/84 ≡ BN616402**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB) / ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 1.5 kW**	**≤ 1.2 kW** / **≤ 1.2 kW**
Tuning instruction	AS6186	AS6182 / AS6156
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.5 dB / ≤ 0.6 dB $f_0 \pm 3.805$ ≤ 1.2 dB / ≤ 1.5 dB $f_0 \pm 3.885$ ≤ 1.3 dB / ≤ 1.6 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz / 803 MHz f_0 ≤ 0.6 dB / ≤ 0.8 dB $f_0 \pm 2.79$ ≤ 1.6 dB / ≤ 2.2 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB / 470 MHz / 803 MHz f_0 ≤ 0.7 dB / ≤ 0.9 dB $f_0 \pm 2.69$ ≤ 1.1 dB / ≤ 1.55 dB $f_0 \pm 3.0$ ≤ 1.9 dB / ≤ 2.45 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 330 ns	Δτ ≤ 500 ns / Δτ ≤ 200 ns
Wide band input	7-16 female	1 5/8" SMS unflanged
Average input power	≤ 1 kW	≤ 7 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	7-16 female	1 5/8" SMS unflanged
Average output power	–	≤ 7 kW
Peak output voltage	≤ 1.6 kV	≤ 8.5 kV
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	586 x 483 x 355 (8RU)	643 x 483 x 355 (8RU)
Weight	≈ 30 kg	≈ 32 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

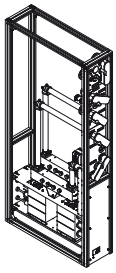
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 76 C0002

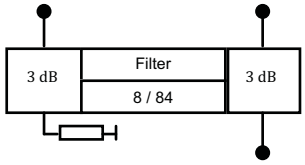


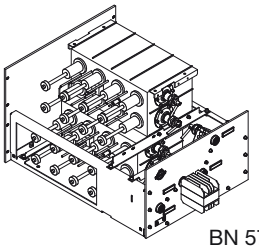
BN 57 46 76 inside switching rack

Part number	**BN 57 46 75 C0005**	**BN 57 46 76 C0002**
Frequency range	470 - 860 MHz	
Channel spacing	≥ 0	
Narrow band input	7-16 female	1 5/8" SMS unflanged
Filter type integrated cavities/size	**6/84 ≡ BN616402**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB) / ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 1.5 kW**	**≤ 1.2 kW** / **≤ 1.2 kW**
Tuning instruction	AS6186	AS6182 / AS6156
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.5 dB / ≤ 0.6 dB $f_0 \pm 3.805$ ≤ 1.2 dB / ≤ 1.5 dB $f_0 \pm 3.885$ ≤ 1.3 dB / ≤ 1.6 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz / 803 MHz f_0 ≤ 0.6 dB / ≤ 0.8 dB $f_0 \pm 2.79$ ≤ 1.6 dB / ≤ 2.2 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB 470 MHz / 803 MHz f_0 ≤ 0.7 dB / ≤ 0.9 dB $f_0 \pm 2.69$ ≤ 1.1 dB / ≤ 1.55 dB $f_0 \pm 3.0$ ≤ 1.9 dB / ≤ 2.45 dB $f_0 \pm 3.25$ ≥ 4 dB $f_0 \pm 3.5$ ≥ 8 dB $f_0 \pm 4$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 330 ns	Δτ ≤ 500 ns / Δτ ≤ 200 ns
Wide band input	1 5/8" SMS unflanged	
Average input power	≤ 7 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	1 5/8" SMS unflanged	
Average output power	≤ 7 kW	
Peak output voltage	≤ 8.5 kV	
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	900 x 226 x 665	900 x 226 x 965
Weight	≈ 30 kg	≈ 40 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

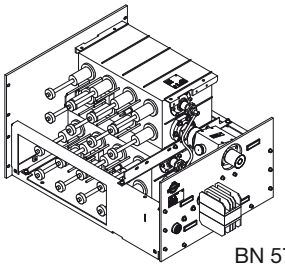
UHF CIB COMBINERS

- compact design as 19" slide-in unit
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 43 C0002

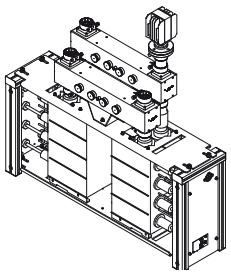


BN 57 49 44 C0002

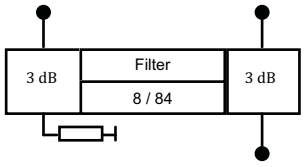
Part number Front plate design	**BN 57 46 43 C0001** with ports at front plate **BN 57 46 43 C0002** with ports at rear side		**BN 57 49 44 C0001** with ports at front plate **BN 57 49 44 C0002** with ports at rear side
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	7-16 female		
Filter type integrated cavities/size	**8/84 ≡ BN616403**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz		
DTV Mask filtering	DVB-T @ 8 MHz (Û/U_{rms}=13 dB)	ISDB-T @ 6 MHz (Û/U_{rms}=13 dB)	ATSC @ 6 MHz (Û/U_{rms}=11 dB)
Average input power	**≤ 1.5 kW**	**≤ 1.2 kW**	**≤ 1.2 kW**
Tuning instruction	AS8068	AS8091	AS8051
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.6 dB / ≤ 0.75 dB f_0 ± 3.805 ≤ 1.8 dB / ≤ 2.2 dB f_0 ± 3.885 ≤ 2.1 dB / ≤ 2.6 dB f_0 ± 4.2 ≥ 15 dB f_0 ± 6 ≥ 40 dB f_0 ± 12 ≥ 55 dB	470 MHz / 803 MHz f_0 ≤ 0.7 dB / ≤ 1.3 dB f_0 ± 2.79 ≤ 1.8 dB / ≤ 3.1 dB f_0 ± 3.15 ≥ 15 dB f_0 ± 4.5 ≥ 30 dB f_0 ± 9 ≥ 55 dB	470 MHz / 803 MHz f_0 ≤ 0.9 dB / ≤ 1.3 dB f_0 ± 2.69 ≤ 1.9 dB / ≤ 2.7 dB f_0 ± 3.0 ≤ 3 dB f_0 ± 3.25 ≥ 18 dB f_0 ± 9 ≥ 64 dB
Group delay variation	Δτ ≤ 600 ns	Δτ ≤ 500 ns	Δτ ≤ 400 ns
Wide band input	7-16 female		1 5/8" SMS unflanged
Average input power	≤ 1 kW		≤ 7 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	7-16 female		1 5/8" SMS unflanged
Average output power	–		≤ 7 kW
Peak output voltage	≤ 1.6 kV		≤ 8.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	726 x 483 x 355 (8RU)		
Weight	≈ 35 kg		≈ 38 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

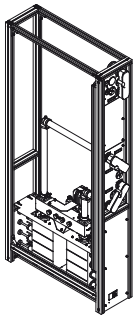
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range



BN 57 46 78 C0002



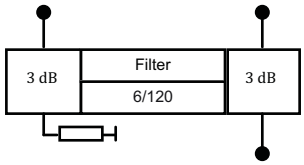


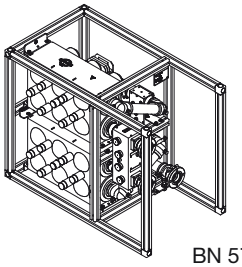
BN 57 46 77 inside switching rack

Part number	**BN 57 46 77 C0005**	**BN 57 46 78 C0002**
Frequency range	470 - 860 MHz	
Channel spacing	≥ 0	
Narrow band input	7-16 female	1 5/8" SMS unflanged
Filter type integrated cavities/size	**8/84 ≡ BN616403**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 950 MHz	
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB) / ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 1.5 kW**	**≤ 1.2 kW** / **≤ 1.2 kW**
Tuning instruction	AS8068	AS8091 / AS8051
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.6 dB / ≤ 0.75 dB $f_0 \pm 3.805$ ≤ 1.8 dB / ≤ 2.2 dB $f_0 \pm 3.885$ ≤ 2.1 dB / ≤ 2.6 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz / 803 MHz f_0 ≤ 0.7 dB / ≤ 1.3 dB $f_0 \pm 2.79$ ≤ 1.8 dB / ≤ 3.1 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB 470 MHz / 803 MHz f_0 ≤ 0.9 dB / ≤ 1.3 dB $f_0 \pm 2.69$ ≤ 1.9 dB / ≤ 2.7 dB $f_0 \pm 3.0$ ≤ 3 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 600 ns	Δτ ≤ 500 ns / Δτ ≤ 400 ns
Wide band input	1 5/8" SMS unflanged	
Average input power	≤ 7 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output	1 5/8" SMS unflanged	
Average output power	≤ 7 kW	
Peak output voltage	≤ 8.5 kV	
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	900 x 226 x 665	900 x 226 x 965
Weight	≈ 35 kg	≈ 45 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

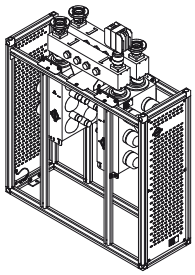
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

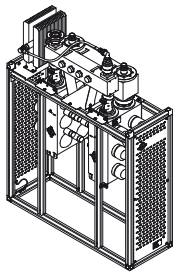




BN 57 55 11 A0070



BN 57 55 12 A0040

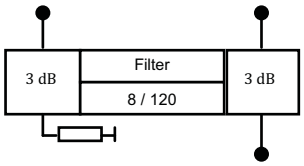


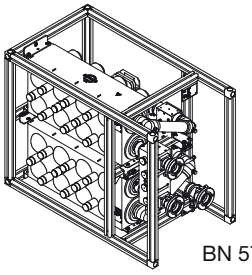
BN 57 55 13 A0040

Part number / Size	**BN 57 55 11 A0070** 448	**BN 57 55 12 A0030** 700 **BN 57 55 12 A0040** 900	**BN 57 55 13 A0030** 700 **BN 57 55 13 A0040** 900
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**6/120 ≡ BN 616663**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 1100 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 3.2 kW**	**≤ 2.6 kW**	**≤ 2.6 kW**
Tuning instruction	AS6224	AS6229	AS6228
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.5 dB $f_0 \pm 3.805$ ≤ 0.9 dB ≤ 1.2 dB $f_0 \pm 3.885$ ≤ 1.0 dB ≤ 1.4 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.45 dB ≤ 0.6 dB $f_0 \pm 2.79$ ≤ 1.20 dB ≤ 1.5 dB $f_0 \pm 3.0$ ≥ 3 dB $f_0 \pm 3.15$ ≥ 5 dB $f_0 \pm 4.5$ ≥ 17 dB $f_0 \pm 9$ ≥ 38 dB $f_0 \pm 15$ ≥ 48 dB	470 MHz 803 MHz f_0 ≤ 0.50 dB ≤ 0.65 dB $f_0 \pm 2.69$ ≤ 0.65 dB ≤ 1.40 dB $f_0 \pm 3.5$ ≥ 3 dB $f_0 \pm 4$ ≥ 8 dB $f_0 \pm 6$ ≥ 30 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 450 ns	Δτ ≤ 250 ns
Wide band input	1 5/8" EIA		3 1/8" EIA male
Average input power	≤ 7 kW		≤ 17.5 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	1 5/8" EIA		3 1/8" EIA male
Peak output voltage	≤ 8.5 kV		≤ 12.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	800 x 448 x 617	700 x 315 x 1200 BN 57 55 12 A0030 900 x 315 x 1200 BN 57 55 12 A0040	700 x 315 x 1200 BN 57 55 13 A0030 900 x 315 x 1200 BN 57 55 13 A0040
Weight	≈ 70 kg		≈ 80 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

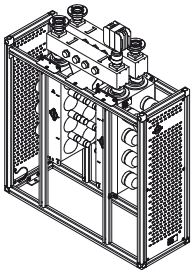
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

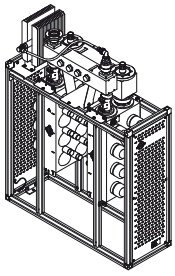




BN 57 55 15 A0070



BN 57 55 16 A0040

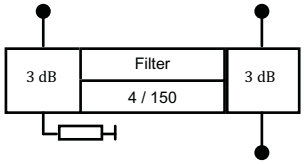


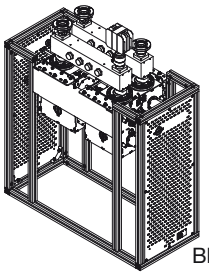
BN 57 55 17 A0040

Part number / Size	**BN 57 55 15 A0070** 448	**BN 57 55 16 A0030** 700 **BN 57 55 16 A0040** 900	**BN 57 55 17 A0030** 700 **BN 57 55 17 A0040** 900
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**8/120 ≡ BN 616664**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 1100 MHz		
DTV Mask filtering	DVB-T @ 8 MHz (Û/U_{rms}=13 dB)	ISDB-T @ 6 MHz (Û/U_{rms}=13 dB)	ATSC @ 6 MHz (Û/U_{rms}=11 dB)
Average input power	**≤ 3.2 kW**	**≤ 2.6 kW**	**≤ 2.6 kW**
Tuning instruction	AS8112	AS8117	AS8115
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.5 dB ≤ 0.6 dB f_0 ± 3.805 ≤ 1.5 dB ≤ 1.8 dB f_0 ± 3.885 ≤ 1.6 dB ≤ 2.0 dB f_0 ± 4.2 ≥ 15 dB f_0 ± 6 ≥ 40 dB f_0 ± 12 ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.55 dB ≤ 0.7 dB f_0 ± 2.79 ≤ 1.30 dB ≤ 1.8 dB f_0 ± 3.15 ≥ 15 dB f_0 ± 4.5 ≥ 30 dB f_0 ± 9 ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.6 dB ≤ 0.7 dB f_0 ± 2.69 ≤ 1.3 dB ≤ 1.6 dB f_0 ± 3 ≥ 4 dB f_0 ± 3.25 ≥ 18 dB f_0 ± 9 ≥ 64 dB
Group delay variation	Δτ ≤ 550 ns	Δτ ≤ 600 ns	Δτ ≤ 400 ns
Wide band input	1 5/8" EIA		3 1/8" EIA male
Average input power	≤ 7 kW		≤ 17.5 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	1 5/8" EIA		3 1/8" EIA male
Peak output voltage	≤ 8.5 kV		≤ 12.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	800 x 448 x 617	700 x 315 x 1200 BN 57 55 16 A0030 900 x 315 x 1200 BN 57 55 16 A0040	700 x 315 x 1200 BN 57 55 17 A0030 900 x 315 x 1200 BN 57 55 17 A0040
Weight	≈ 75 kg	≈ 80 kg	≈ 90 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

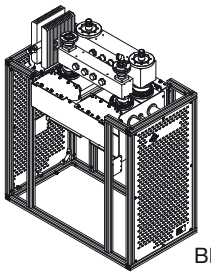
CCS UHF CIB COMBINERS

- **CCS** compact design
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

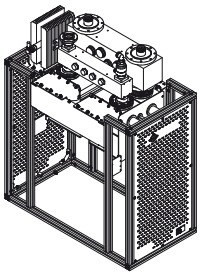




BN 57 49 02 A0000



BN 57 49 32 A0010

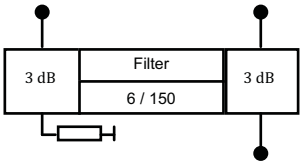


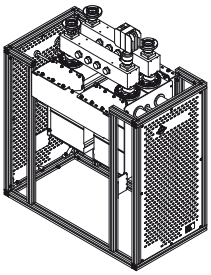
BN 57 49 33 A0010

Part number	**BN 57 49 02 A0000**	**BN 57 49 32 A0010**	**BN 57 49 33 A0010**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 1		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**4/150 ≡ BN 6164 04**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 40 dB for f ≤ 860 MHz		
DTV mask filtering	no		
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)		6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 7 kW ATV ≤ 5 kW DTV**		**≤ 7 kW ATV ≤ 5 kW DTV**
Tuning instruction	AS4005		AS4034
Insertion loss (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.30 dB ≤ 0.35 dB $f_0 \pm 3.885$ ≤ 0.35 dB ≤ 0.40 dB $f_0 \pm 12$ ≥ 12 dB		470 MHz 803 MHz f_0 ≤ 0.35 dB ≤ 0.45 dB $f_0 \pm 3.0$ ≤ 0.45 dB ≤ 0.50 dB
Group delay variation	Δτ ≤ 30 ns		Δτ ≤ 40 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage Average output power	1 5/8" EIA ≤ 8.5 kV ≤ 7 kW	3 1/8" EIA male ≤ 12.5 kV –	4 1/2" EIA male ≤ 15.5 kV –
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 390 x 1200	900 x 480 x 1200	900 x 480 x 1200
Weight	≈ 80 kg	≈ 90 kg	≈ 100 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

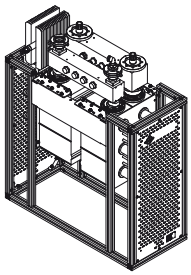
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for ATSC
- for 6 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 46 72 A0070



BN 57 46 62 A0000

Part number	**BN 57 46 72 A0010**	**BN 57 46 62 A0000**
Frequency range	470 - 860 MHz	
Channel spacing	≥ 1	
Narrow band input	1 5/8" EIA	
Filter type integrated cavities/size	**6/150 ≡ BN 616572**	
Temperature stability	≤ 2 kHz / K	
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz	
DTV mask filtering	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)	
Average input power	**≤ 4.5 kW**	
Tuning instruction	AS6081	
Insertion loss & Mask filtering (alternative tuning on request)	470 / 860 f_0 ≤ 0.5 dB / ≤ 0.6dB $f_0 \pm 3.805$ ≤ 1.5 dB / ≤ 1.8 dB $f_0 \pm 3.885$ ≤ 1.6 dB / ≤ 2.0 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	
Group delay variation	Δτ ≤ 200 ns	
Wide band input	1 5/8" EIA	3 1/8" EIA male
Average input power	≤ 7 kW	≤ 17.5 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input	
DTV Mask filtering	no	
Insertion loss	≤ 0.1 dB (non adjacent)	
Output Peak output voltage Average output power	1 5/8" EIA ≤ 8.5 kV ≤ 7 kW	3 1/8" EIA male ≤ 12.5 kV –
Isolation between inputs	≥ 35 dB	
VSWR (one WB channel)	≤ 1.06	
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 390 x 1200
Weight	≈ 95 kg	≈ 105 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“	

CCS UHF CIB COMBINERS

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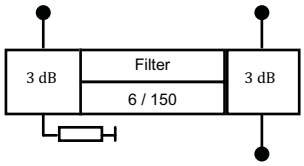
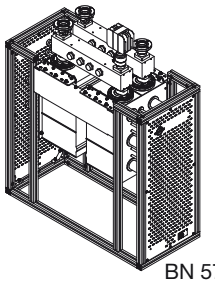
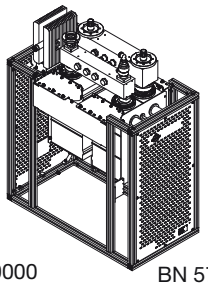



BN 57 49 47 A0000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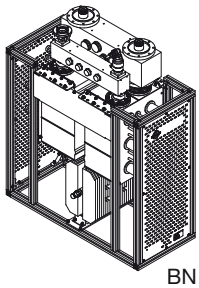
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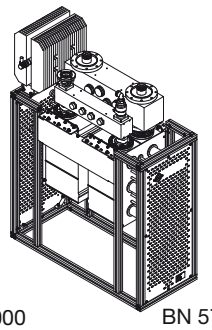
BN 57 49 35 A0010

Part number / Width	**BN 57 49 47 A0000** 390 **BN 57 49 47 A0010** 480	**BN 57 49 34 A0000** 390 **BN 57 49 34 A0010** 480	**BN 57 49 35 A0000** 390 **BN 57 49 35 A0010** 480
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**6/150 ≡ BN 616518**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz (Û/U_{rms}=13 dB)	ISDB-T @ 6 MHz (Û/U_{rms}=13 dB)	DVB-T @ 7 MHz (Û/U_{rms}=13 dB)
Average input power	**≤ 5 kW**	**≤ 4 kW**	**≤ 4.5 kW**
Tuning instruction	AS6193	AS6184	AS6289
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.40 dB ≤ 0.55 dB f_0 ± 3.805 ≤ 0.85 dB ≤ 1.3 dB f_0 ± 3.885 ≤ 1.05 dB ≤ 1.5 dB f_0 ± 4.2 ≥ 4 dB f_0 ± 6 ≥ 20 dB f_0 ± 12 ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.5 dB ≤ 0.7 dB f_0 ± 2.79 ≤ 1.2 dB ≤ 1.6 dB f_0 ± 3.0 ≥ 3.5 dB f_0 ± 3.15 ≥ 8 dB f_0 ± 4.5 ≥ 23 dB f_0 ± 9 ≥ 48 dB f_0 ± 15 ≥ 50 dB	470 MHz 820 MHz f_0 ≤ 0.45 dB ≤ 0.6 dB f_0 ± 3.2 ≤ 0.65 dB ≤ 0.95 dB f_0 ± 4.2 ≥ 13 dB f_0 ± 10.5 ≥ 38 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns	Δτ ≤ 150 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Peak output voltage	≤ 8.5 kV	≤ 12.5 kV	≤ 15.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 390 x 1200 BN 57 49 47 A0000 900 x 480 x 1200 BN 57 49 47 A0010	900 x 390 x 1200 BN 57 49 34 A0000 900 x 480 x 1200 BN 57 49 34 A0010	900 x 390 x 1200 BN 57 49 35 A0000 900 x 480 x 1200 BN 57 49 35 A0010
Weight	≈ 90 kg	≈ 100 kg	≈ 115 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

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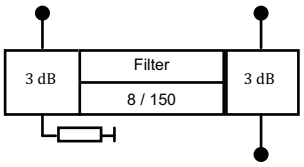

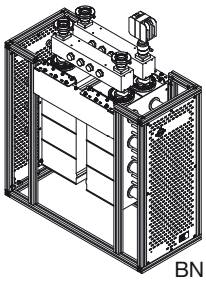
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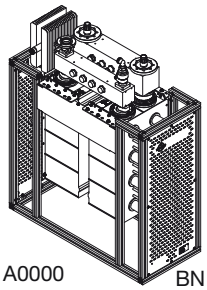
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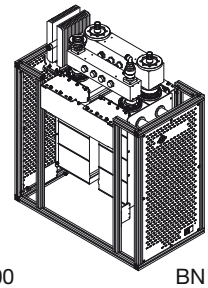
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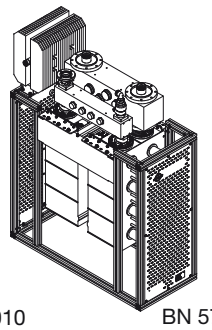
BN 57 49 63 A0000

Part number / Width	**BN 57 49 62 A0000** 390 **BN 57 49 62 A0010** 480	**BN 57 49 61 A0000** 390 **BN 57 49 61 A0010** 480	**BN 57 49 63 A0000** 390 **BN 57 49 63 A0010** 480
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**8/150 ≡ BN 616542**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 4 kW**	**≤ 3.2 kW**	**≤ 3.2 kW**
Tuning instruction	AS8071	AS8096	AS8094
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.5 dB ≤ 0.75 dB $f_0 \pm 3.805$ ≤ 1.6 dB ≤ 2.2 dB $f_0 \pm 3.885$ ≤ 1.8 dB ≤ 2.5 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.6 dB ≤ 0.80 dB $f_0 \pm 2.79$ ≤ 1.4 dB ≤ 1.85 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	470 MHz 806 MHz f_0 ≤ 0.8 dB ≤ 1.0 dB $f_0 \pm 2.69$ ≤ 1.6 dB ≤ 1.7 dB $f_0 \pm 3.00$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 500 ns	Δτ ≤ 400 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Peak output voltage	≤ 8.5 kV	≤ 12.5 kV	≤ 15.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 390 x 1200 BN 57 49 62 A0000 900 x 480 x 1200 BN 57 49 62 A0010	900 x 390 x 1200 BN 57 49 61 A0000 900 x 480 x 1200 BN 57 49 61 A0010	900 x 390 x 1200 BN 57 49 63 A0000 900 x 480 x 1200 BN 57 49 63 A0010
Weight	≈ 105 kg	≈ 120 kg	≈ 135kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

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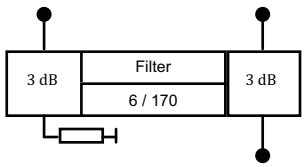
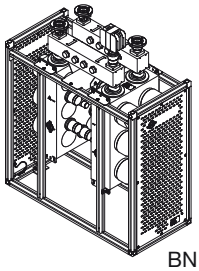
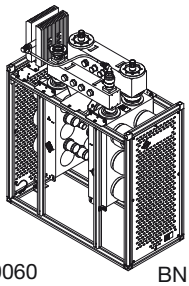




BN 57 55 20 A0060



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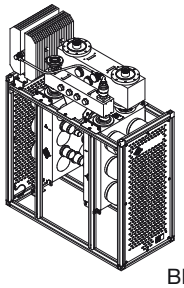
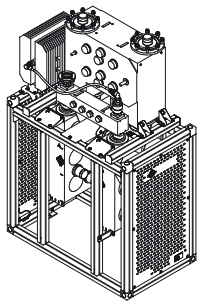


BN 57 55 22 A0060



BN 57 55 23 A0020

Part number / Width	**BN 57 55 20 A0010** 480 **BN 57 55 20 A0060** 415	**BN 57 55 21 A0010** 480 **BN 57 55 21 A0060** 415	**BN 57 55 22 A0010** 480 **BN 57 55 22 A0060** 415	**BN 57 55 23 A0020** 520
Frequency range	470 - 860 MHz			
Channel spacing	≥ 0			
Narrow band input	1 5/8" EIA			
Filter type integrated cavities/size	**6/170 ≡ BN 616665**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 1000 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 7 kW**	**≤ 6 kW**		**≤ 6 kW**
Tuning instruction	AS6217	AS6222		AS6221
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.35 dB ≤ 0.45 dB $f_0 \pm 3.805$ ≤ 0.85 dB ≤ 1.0 dB $f_0 \pm 3.885$ ≤ 1.00 dB ≤ 1.1 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.50 dB ≤ 0.60 dB $f_0 \pm 2.79$ ≤ 1.15 dB ≤ 1.35 dB $f_0 \pm 3.0$ ≥ 3 dB $f_0 \pm 3.15$ ≥ 5 dB $f_0 \pm 4.5$ ≥ 17 dB $f_0 \pm 9$ ≥ 38 dB $f_0 \pm 15$ ≥ 48 dB		470 MHz 803 MHz f_0 ≤ 0.45 dB ≤ 0.6 dB $f_0 \pm 2.69$ ≤ 0.65 dB ≤ 0.8 dB $f_0 \pm 3.5$ ≥ 3 dB $f_0 \pm 4$ ≥ 8 dB $f_0 \pm 6$ ≥ 30 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 400 ns		Δτ ≤ 150 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 8.5 kV	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 480 x 1200 BN 57 55 20 A0010, BN 57 55 21 A0010, BN 57 55 22 A0010 900 x 415 x 1200 BN 57 55 20 A0060, BN 57 55 21 A0060, BN 57 55 22 A0060			900 x 520 x 1400
Weight	≈ 105 kg	≈ 115 kg	≈ 135 kg	≈ 180 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

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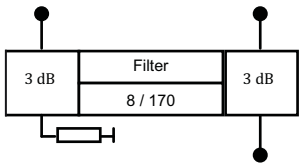
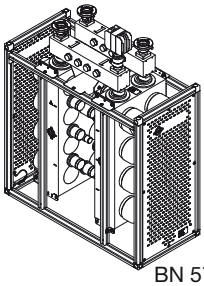
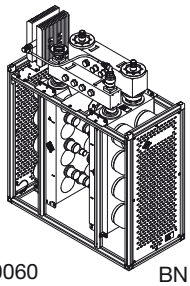




BN 57 55 25 A0060



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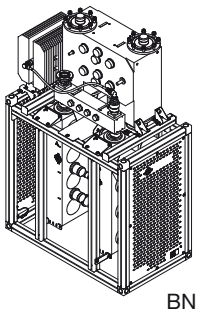

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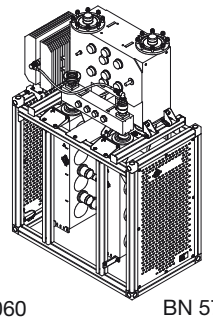

BN 57 55 28 A0020

Part number / Width	**BN 57 55 25 A0010** 480 **BN 57 55 25 A0060** 415	**BN 57 55 26 A0010** 480 **BN 57 55 26 A0060** 415	**BN 57 55 27 A0010** 480 **BN 57 55 27 A0060** 415	**BN 57 55 28 A0020** 520
Frequency range	470 - 860 MHz			
Channel spacing	≥ 0			
Narrow band input	1 5/8" EIA			
Filter type integrated cavities/size	**8/170 ≡ BN 616666**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 1000 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 7 kW**	**≤ 6 kW**		**≤ 6 kW**
Tuning instruction	AS8100	AS8104		AS8103
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.45 dB ≤ 0.55 dB $f_0 \pm 3.805$ ≤ 1.20 dB ≤ 1.9 dB $f_0 \pm 3.885$ ≤ 1.50 dB ≤ 2.1 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.50 dB ≤ 0.6 dB $f_0 \pm 2.79$ ≤ 1.40 dB ≤ 1.8 dB $f_0 \pm 3.15$ ≥ 12 dB $f_0 \pm 4.5$ ≥ 28 dB $f_0 \pm 9$ ≥ 54 dB	470 MHz 803 MHz f_0 ≤ 0.55 dB ≤ 0.65 dB $f_0 \pm 2.69$ ≤ 1.15 dB ≤ 1.50 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB	
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 650 ns		Δτ ≤ 500 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 8.5 kV	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 480 x 1200 BN 57 55 25 A0010, BN 57 55 26 A0010, BN 57 55 27 A0010 900 x 415 x 1200 BN 57 55 25 A0060, BN 57 55 26 A0060, BN 57 55 27 A0060			900 x 520 x 1400
Weight	≈ 125 kg	≈ 135 kg	≈ 150 kg	≈ 195 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

CCS UHF CIB COMBINERS

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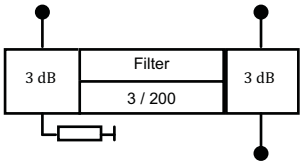
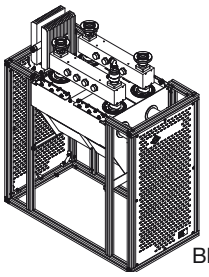
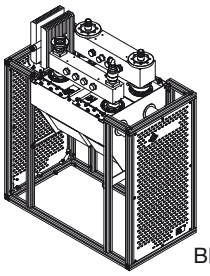
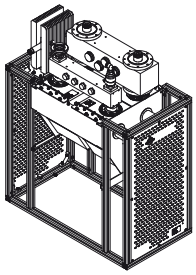




BN 57 42 30 A0010



BN 57 42 29 A0010

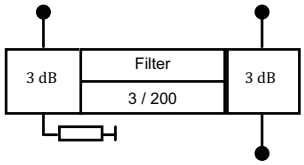


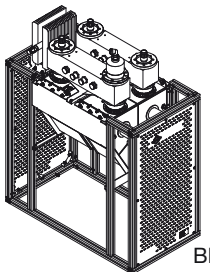
BN 57 42 26 A0010

Part number	**BN 57 42 30 A0010**	**BN 57 42 29 A0010**	**BN 57 42 26 A0010**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 2		
Narrow band input	1 5/8" EIA		
Filter type integrated cavities/size	**3/200 ≡ BN 616434**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 25 dB for f ≤ 860 MHz		
DTV mask filtering	no		
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)		6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 7 kW**		**≤ 7 kW**
Tuning instruction	AS3002		AS3004
Insertion loss (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.15 dB ≤ 0.20 dB $f_0 \pm 3.885$ ≤ 0.20 dB ≤ 0.25 dB $f_0 \pm 20$ ≥ 17 dB		470 MHz 803 MHz f_0 ≤ 0.20 dB ≤ 0.25 dB $f_0 \pm 3.0$ ≤ 0.20 dB ≤ 0.25 dB $f_0 \pm 15$ ≥ 17 dB
Group delay variation	Δτ ≤ 10 ns		Δτ ≤ 10 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW
DTV Mask filtering	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage	1 5/8" EIA ≤ 8.5 kV	3 1/8" EIA male ≤ 12.5 kV	4 1/2" EIA male ≤ 15.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200
Weight	≈ 80 kg	≈ 90 kg	≈ 100 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

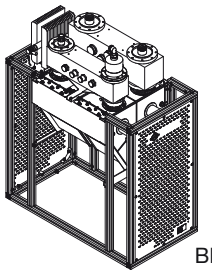
CCS UHF CIB COMBINERS

- **CCS** compact design
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 42 83 A0010



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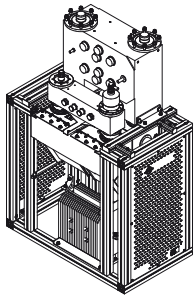
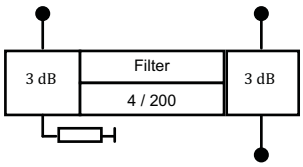


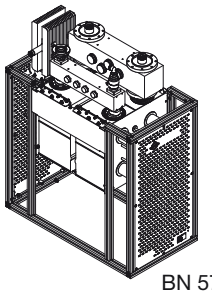
BN 57 42 86 A0020

Part number	**BN 57 42 83 A0010**	**BN 57 42 81 A0010**	**BN 57 42 86 A0020**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 2		
Narrow band input	3 1/8" EIA male		
Filter type integrated cavities/size	**3/200 ≡ BN 616434**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 25 dB for f ≤ 860 MHz		
DTV mask filtering	no		
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)		6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 20 kW**		**≤ 20 kW**
Tuning instruction	AS3002		AS3004
Insertion loss (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.15 dB / ≤ 0.20 dB $f_0 \pm 3.885$ ≤ 0.20 dB / ≤ 0.25 dB $f_0 \pm 20$ ≥ 17 dB		470 MHz / 803 MHz f_0 ≤ 0.20 dB / ≤ 0.25 dB $f_0 \pm 3.0$ ≤ 0.20 dB / ≤ 0.25 dB $f_0 \pm 15$ ≥ 17 dB
Group delay variation	Δτ ≤ 10 ns		Δτ ≤ 10 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 17 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage	3 1/8" EIA male ≤ 12.5 kV	4 1/2" EIA male ≤ 15.5 kV	52-120 BT male ≤ 19.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200
Weight	≈ 95 kg	≈ 115 kg	≈ 155 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

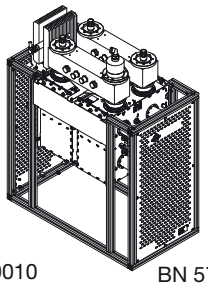
CCS UHF CIB COMBINERS

- **CCS** compact design
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 49 76 A0010



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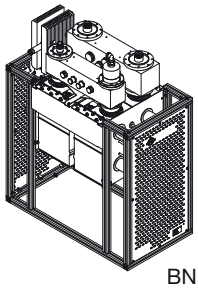
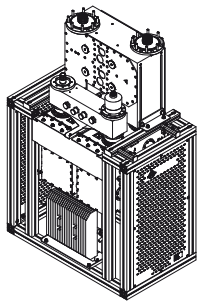


BN 57 49 75 A0010

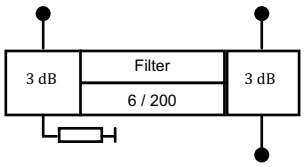


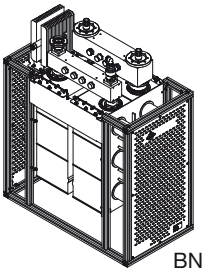
BN 57 49 85 A0020

Part number	**BN 57 49 76 A0010**	**BN 57 49 73 A0010**	**BN 57 49 75 A0010**	**BN 57 49 85 A0020**
Frequency range	470 - 860 MHz			
Channel spacing	≥ 1			
Narrow band input	1 5/8" EIA	3 1/8" EIA male		
Filter type integrated cavities/size	**4/200 ≡ BN 616409**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 40 dB for f ≤ 800 MHz			
DTV Mask filtering	no			
Channel width	8 MHz ($\hat{U}/U_{rms}$=13 dB)		6 MHz ($\hat{U}/U_{rms}$=13 dB)	
Average input power	**≤ 7 kW** BN 57 49 76 A0010 **≤ 15 kW** BN 57 49 73 A0010 **≤ 15 kW** BN 57 49 75 A0010 **≤ 15 kW** BN 57 49 85 A0020		**≤ 7 kW** BN 57 49 76 A0010 **≤ 15 kW** BN 57 49 73 A0010 **≤ 15 kW** BN 57 49 75 A0010 **≤ 15 kW** BN 57 49 85 A0020	
Tuning instruction	AS4056		AS4057	
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.25 dB ≤ 0.3 dB $f_0 \pm 3.885$ ≤ 0.25 dB ≤ 0.3 dB $f_0 \pm 12$ ≥ 30 dB		470 MHz 803 MHz f_0 ≤ 0.3 dB ≤ 0.35 dB $f_0 \pm 2.79$ ≤ 0.3 dB ≤ 0.35 dB $f_0 \pm 9$ ≥ 30 dB	
Group delay variation	Δτ ≤ 40 ns		Δτ ≤ 40 ns	
Wide band input	4 1/2" EIA male	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 33 kW	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	4 1/2" EIA male	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 15.5 kV	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Average output power	–	≤ 23.0 kW	–	–
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 120 kg	≈ 115 kg	≈ 125 kg	≈ 180 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

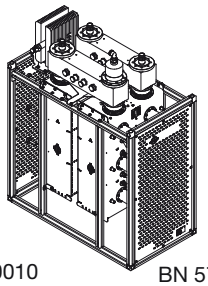
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for ATSC
- for 6 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range
- liquid cooled filter

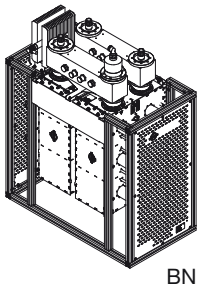




BN 57 49 70 A0010



BN 57 46 71 A0010

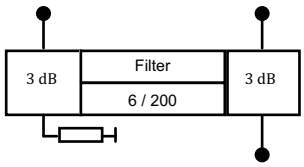


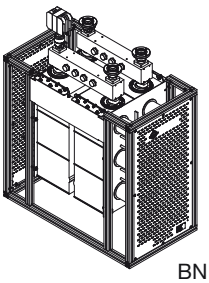
BN 57 46 70 A0010

Part number **Cooling**	**BN 57 49 70 A0010** **natural cooling**	**BN 57 46 71 A0010** **natural cooling**	**BN 57 46 70 A0010** **liquid cooling**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 1		
Narrow band input	1 5/8" EIA	3 1/8" EIA male	3 1/8" EIA male
Filter type integrated cavities/size	**6/200 ≡ BN 616571**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 7 kW**	**≤ 9 kW**	**≤ 20 kW** @ 0 - 600m **≤ 18 kW** @ 1200 m **≤ 16 kW** @ 2000 m **≤ 14 kW** @ 2800 m **≤ 12 kW** @ 3400 m **≤ 10 kW** @ 4000 m
Tuning instruction	AS6082		
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0: ≤ 0.5 dB / ≤ 0.70 dB $f_0 \pm 2.69$: ≤ 0.7 dB / ≤ 0.90 dB $f_0 \pm 3$: ≤ 1.5 dB / ≤ 1.85 dB $f_0 \pm 4$: ≥ 15 dB $f_0 \pm 6$: ≥ 40 dB $f_0 \pm 9$: ≥ 65 dB		
Group delay variation	Δτ ≤ 200 ns		
Wide band input	3 1/8" EIA male		
Average input power	≤ 17.5 kW Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage Average output power	3 1/8" EIA male ≤ 12.5 kV ≤ 23.0 kW		
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200
Weight	≈ 135 kg	≈ 150 kg	≈ 150 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

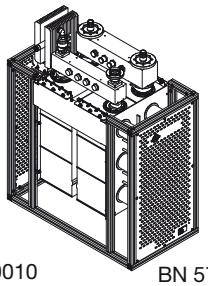
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

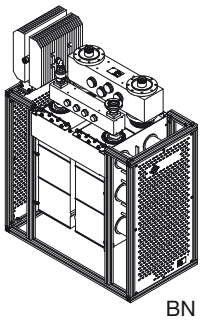




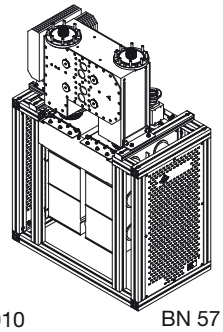
BN 57 46 93 A0010



BN 57 46 94 A0010



BN 57 46 95 A0010

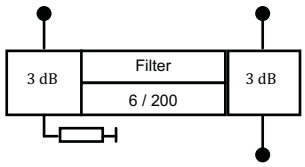


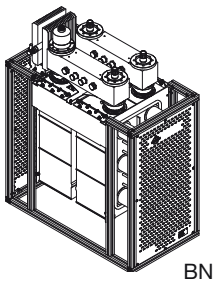
BN 57 46 96 A0020

Part number	**BN 57 46 93 A0010**	**BN 57 46 94 A0010**	**BN 57 46 95 A0010**	**BN 57 46 96 A0020**
Frequency range	470 - 860 MHz			
Channel spacing	≥ 0			
Narrow band input	1 5/8" EIA			
Filter type integrated cavities/size	**6/200 ≡ BN 616540**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 7 kW**	**≤ 7 kW**		**≤ 7 kW**
Tuning instruction	AS6194	AS6185		AS6290
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 860 MHz f_0 ≤ 0.30 dB / ≤ 0.45 dB $f_0 \pm 3.805$ ≤ 0.70 dB / ≤ 1.00 dB $f_0 \pm 3.885$ ≤ 0.85 dB / ≤ 1.15 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz / 803 MHz f_0 ≤ 0.4 dB / ≤ 0.55 dB $f_0 \pm 2.79$ ≤ 1.0 dB / ≤ 1.40 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB		470 MHz / 820 MHz f_0 ≤ 0.30 dB / ≤ 0.40 dB $f_0 \pm 3.2$ ≤ 0.45 dB / ≤ 0.55 dB $f_0 \pm 4.2$ ≥ 13 dB $f_0 \pm 10.5$ ≥ 38 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns		Δτ ≤ 150 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage Average output power	≤ 8.5 kV ≤ 7 kW	≤ 12.5 kV –	≤ 15.5 kV –	≤ 19.5 kV –
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 130 kg	≈ 140 kg	≈ 155 kg	≈ 200 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

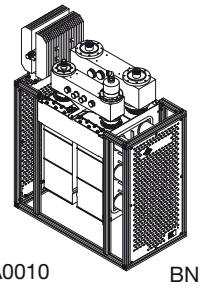
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

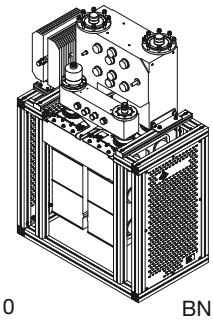




BN 57 49 28 A0010



BN 57 49 67 A0010

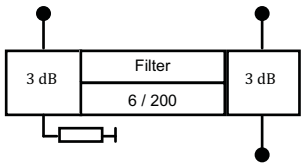


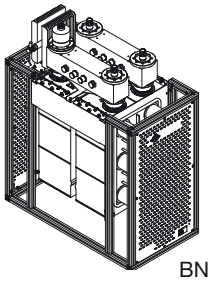
BN 57 49 00 A0020

Part number	**BN 57 49 28 A0010**	**BN 57 49 67 A0010**	**BN 57 49 00 A0020**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	3 1/8" EIA male		
Filter type integrated cavities/size	**6/200 ≡ BN 616540**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 10 kW**	**≤ 8 kW**	**≤ 9 kW**
Tuning instruction	AS6194	AS6185	AS6290
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.30 dB ≤ 0.45 dB f_0 ± 3.805 ≤ 0.70 dB ≤ 1.00 dB f_0 ± 3.885 ≤ 0.85 dB ≤ 1.15 dB f_0 ± 4.2 ≥ 4 dB f_0 ± 6 ≥ 20 dB f_0 ± 12 ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.4 dB ≤ 0.55 dB f_0 ± 2.79 ≤ 1.0 dB ≤ 1.40 dB f_0 ± 3.0 ≥ 4 dB f_0 ± 3.15 ≥ 8 dB f_0 ± 4.5 ≥ 23 dB f_0 ± 9 ≥ 48 dB f_0 ± 15 ≥ 50 dB	470 MHz 820 MHz f_0 ≤ 0.30 dB ≤ 0.40 dB f_0 ± 3.2 ≤ 0.45 dB ≤ 0.55 dB f_0 ± 4.2 ≥ 13 dB f_0 ± 10.5 ≥ 38 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns	Δτ ≤ 150 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 140 kg	≈ 160 kg	≈ 205 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

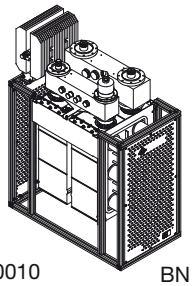
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range
- liquid cooled filter

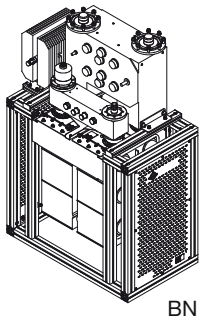




BN 57 46 98 A0010



BN 57 49 71 A0010

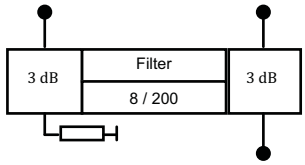


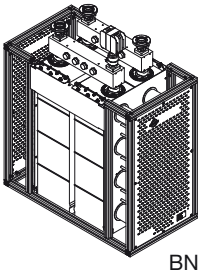
BN 57 49 74 A0020

Part number **Cooling**	**BN 57 46 98 A0010** **liquid cooling**	**BN 57 49 71 A0010** **liquid cooling**	**BN 57 49 74 A0020** **liquid cooling**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	3 1/8" EIA male		
Filter type integrated cavities/size	**6/200 ≡ BN 616540**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	DVB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 23 kW** @ 0 - 1000 m **≤ 20 kW** @ 2000 m **≤ 18 kW** @ 2600 m **≤ 16 kW** @ 3200 m **≤ 14 kW** @ 3800 m **≤ 12 kW** @ 4400 m	**≤ 20 kW** @ 0 - 500 m **≤ 18 kW** @ 1200 m **≤ 16 kW** @ 2000 m **≤ 14 kW** @ 2800 m **≤ 12 kW** @ 3400 m **≤ 10 kW** @ 4200 m	**≤ 22 kW** @ 0 - 600 m **≤ 20 kW** @ 1400 m **≤ 18 kW** @ 2000 m **≤ 16 kW** @ 2600 m **≤ 14 kW** @ 3300 m **≤ 12 kW** @ 4000 m
Tuning instruction	AS6194	AS6185	AS6290
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.30 dB ≤ 0.45 dB $f_0 \pm 3.805$ ≤ 0.70 dB ≤ 1.00 dB $f_0 \pm 3.885$ ≤ 0.85 dB ≤ 1.15 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz 803 MHz f_0 ≤ 0.4 dB ≤ 0.55 dB $f_0 \pm 2.79$ ≤ 1.0 dB ≤ 1.40 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB	470 MHz 820 MHz f_0 ≤ 0.30 dB ≤ 0.40 dB $f_0 \pm 3.2$ ≤ 0.45 dB ≤ 0.55 dB $f_0 \pm 4.2$ ≥ 13 dB $f_0 \pm 10.5$ ≥ 38 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns	Δτ ≤ 150 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output Peak output voltage Average output power	3 1/8" EIA male ≤ 12.5 kV ≤ 23.0 kW	4 1/2" EIA male ≤ 15.5 kV –	52-120 BT male ≤ 19.5 kV –
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 145 kg	≈ 165 kg	≈ 210 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

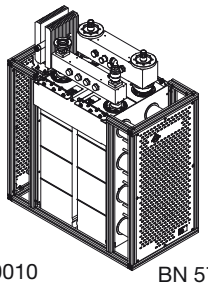
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 49 40 A0010



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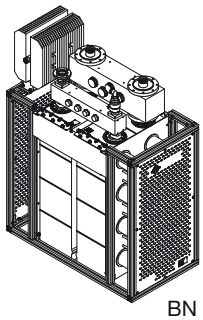

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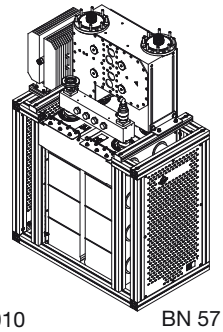
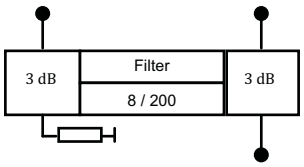


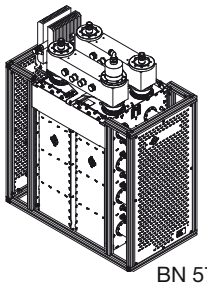
BN 57 49 88 A0020

Part number	**BN 57 49 40 A0010**	**BN 57 49 39 A0010**	**BN 57 49 37 A0010**	**BN 57 49 88 A0020**
Frequency range	470 - 860 MHz			
Channel spacing	≥ 0			
Narrow band input	1 5/8" EIA			
Filter type integrated cavities/size	**8/200 ≡ BN 616544**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 7 kW**	**≤ 6.4 kW**		**≤ 6.4 kW**
Tuning instruction	AS8067	AS8074		AS8066
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.5 dB f_0 ± 3.805 ≤ 1.0 dB ≤ 1.4 dB f_0 ± 3.885 ≤ 1.5 dB ≤ 1.7 dB f_0 ± 4.2 ≥ 15 dB f_0 ± 6 ≥ 40 dB f_0 ± 12 ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB f_0 ± 2.79 ≤ 1.20 dB ≤ 1.5 dB f_0 ± 3.15 ≥ 15 dB f_0 ± 4.5 ≥ 30 dB f_0 ± 9 ≥ 55 dB	470 MHz 820 MHz f_0 ≤ 0.5 dB ≤ 0.55 dB f_0 ± 2.69 ≤ 1.0 dB ≤ 1.30 dB f_0 ± 3.0 ≥ 4 dB f_0 ± 3.25 ≥ 18 dB f_0 ± 9 ≥ 64 dB	
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 500 ns		Δτ ≤ 400 ns
Wide band input	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 7 kW	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	1 5/8" EIA	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage Average output power	≤ 8.5 kV ≤ 7 kW	≤ 12.5 kV –	≤ 15.5 kV –	≤ 19.5 kV –
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 160 kg	≈ 170 kg	≈ 185 kg	≈ 230 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

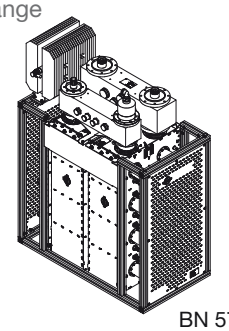
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range

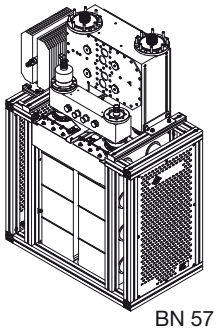




BN 57 49 65 A0010



BN 57 49 66 A0010

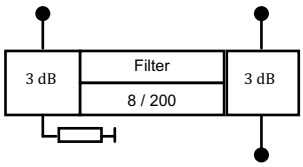


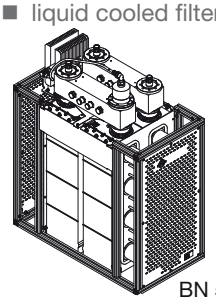
BN 57 49 91 A0020

Part number	**BN 57 49 65 A0010**	**BN 57 49 66 A0010**	**BN 57 49 91 A0020**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	3 1/8“ EIA male		
Filter type integrated cavities/size	**8/200 ≡ BN 616544**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 7 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power	**≤ 8 kW**	**≤ 6.4 kW**	**≤ 6.4 kW**
Tuning instruction	AS8067	AS8074	AS8066
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.5 dB $f_0 \pm 3.805$ ≤ 1.0 dB ≤ 1.4 dB $f_0 \pm 3.885$ ≤ 1.5 dB ≤ 1.7 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB $f_0 \pm 2.79$ ≤ 1.20 dB ≤ 1.5 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	470 MHz 820 MHz f_0 ≤ 0.5 dB ≤ 0.55 dB $f_0 \pm 2.69$ ≤ 1.0 dB ≤ 1.30 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 500 ns	Δτ ≤ 400 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 175 kg	≈ 190 kg	≈ 240 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

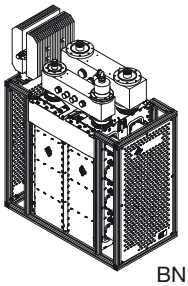
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range
- liquid cooled filter

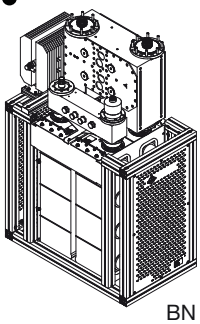




BN 57 49 64 A0010



BN 57 49 89 A0010

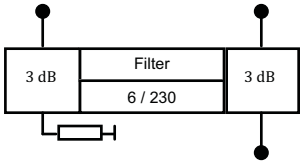


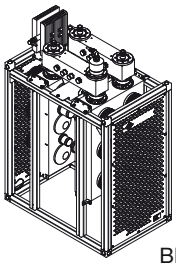
BN 57 49 79 A0020

Part number **Cooling**	**BN 57 49 64 A0010** **liquid cooling**	**BN 57 49 89 A0010** **liquid cooling**	**BN 57 49 79 A0020** **liquid cooling**
Frequency range	470 - 860 MHz		
Channel spacing	≥ 0		
Narrow band input	3 1/8" EIA male		
Filter type integrated cavities/size	**8/200 ≡ BN 616544**		
Temperature stability	≤ 2 kHz / K		
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz		
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)	ATSC @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 23 kW** @ 0 - 1000 m **≤ 20 kW** @ 2000 m **≤ 18 kW** @ 2600 m **≤ 16 kW** @ 3200 m **≤ 14 kW** @ 3800 m **≤ 12 kW** @ 4400 m	**≤ 20 kW** @ 0 - 500 m **≤ 18 kW** @ 1200 m **≤ 16 kW** @ 2000 m **≤ 14 kW** @ 2800 m **≤ 12 kW** @ 3400 m **≤ 10 kW** @ 4200 m	**≤ 22 kW** @ 0 - 600 m **≤ 20 kW** @ 1400 m **≤ 18 kW** @ 2000 m **≤ 16 kW** @ 2600 m **≤ 14 kW** @ 3300 m **≤ 12 kW** @ 4000 m
Tuning instruction	AS8067	AS8074	AS8066
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 860 MHz f_0 ≤ 0.4 dB ≤ 0.5 dB $f_0 \pm 3.805$ ≤ 1.0 dB ≤ 1.4 dB $f_0 \pm 3.885$ ≤ 1.5 dB ≤ 1.7 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz 803 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB $f_0 \pm 2.79$ ≤ 1.20 dB ≤ 1.5 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB	470 MHz 820 MHz f_0 ≤ 0.5 dB ≤ 0.55 dB $f_0 \pm 2.69$ ≤ 1.0 dB ≤ 1.30 dB $f_0 \pm 3.0$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 500 ns	Δτ ≤ 400 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input		
DTV Mask filtering	no		
Insertion loss	≤ 0.1 dB (non adjacent)		
Output	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male
Peak output voltage	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV
Isolation between inputs	≥ 35 dB		
VSWR (one WB channel)	≤ 1.06		
Dimensions (L x W x H) mm	900 x 480 x 1200	900 x 480 x 1200	900 x 520 x 1400
Weight	≈ 170 kg	≈ 180 kg	≈ 235 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“		

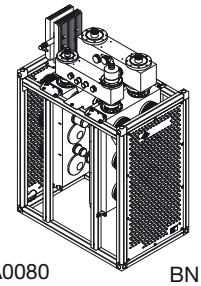
CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range





BN 57 55 30 A0080



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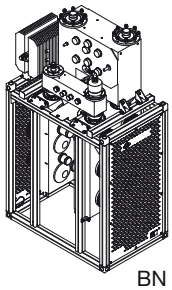

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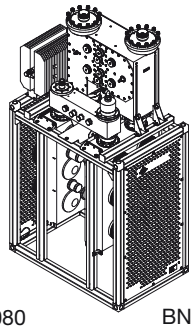

BN 57 55 33 A0080

Part number	**BN 57 55 30 A0080**	**BN 57 55 31 A0080**	**BN 57 55 32 A0080**	**BN 57 55 33 A0080**
Frequency range	470 - 800 MHz			
Channel spacing	≥ 0			
Narrow band input	3 1/8" EIA male			
Filter type integrated cavities/size	**6/230 ≡ BN 616669**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 800 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 17 kW**	**≤ 13.5 kW**		**≤ 13.5 kW**
Tuning instruction	AS6303	AS6365		AS6308
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 786 MHz f_0 ≤ 0.30 dB / ≤ 0.4 dB $f_0 \pm 3.805$ ≤ 0.75 dB / ≤ 0.9 dB $f_0 \pm 3.885$ ≤ 0.85 dB / ≤ 1.0 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz / 785 MHz f_0 ≤ 0.4 dB / ≤ 0.55 dB $f_0 \pm 2.79$ ≤ 0.85 dB / ≤ 1.0 dB $f_0 \pm 3.0$ ≥ 2 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB		470 MHz / 785 MHz f_0 ≤ 0.45 dB / ≤ 0.5 dB $f_0 \pm 2.69$ ≤ 0.80 dB / ≤ 0.8 dB $f_0 \pm 3.5$ ≥ 3 dB $f_0 \pm 4$ ≥ 8 dB $f_0 \pm 6$ ≥ 30 dB $f_0 \pm 9$ ≥ 65 dB
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns		Δτ ≤ 200 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Peak output voltage	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV	≤ 24 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 570 x 1400	900 x 570 x 1400	900 x 570 x 1600	900 x 570 x 1650
Weight	≈ 160 kg	≈ 170 kg	≈ 220 kg	≈ 245 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

CCS UHF CIB COMBINERS

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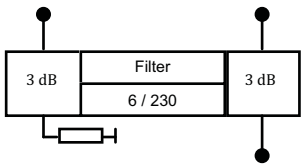
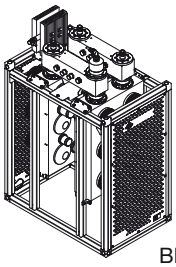
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range
- liquid cooled filters and couplers

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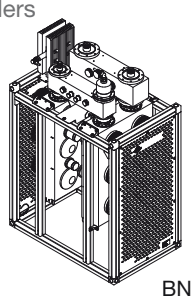
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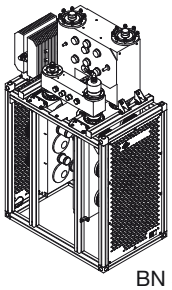
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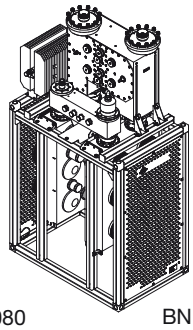
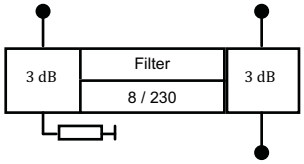
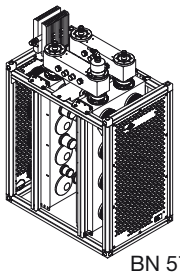

BN 57 55 43 A0080

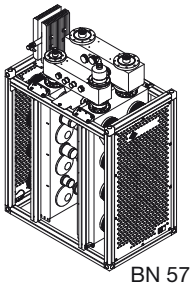
Part number **Cooling**	**BN 57 55 40 A0080** **liquid cooling**	**BN 57 55 41 A0080** **liquid cooling**	**BN 57 55 42 A0080** **liquid cooling**	**BN 57 55 43 A0080** **liquid cooling**
Frequency range	470 - 800 MHz			
Channel spacing	≥ 0			
Narrow band input	3 1/8" EIA male			
Filter type integrated cavities/size	**6/230 ≡ BN 616669**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 800 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 23 kW** @ 0 - 3200 m **≤ 20 kW** @ 3800 m **≤ 18 kW** @ 4200 m	**≤ 23 kW** @ 0 - 2200 m **≤ 20 kW** @ 3000 m **≤ 18 kW** @ 3400 m **≤ 16 kW** @ 4000 m		**≤ 23 kW** @ 0 - 3200 m **≤ 20 kW** @ 3800 m **≤ 18 kW** @ 4200 m
Tuning instruction	AS6303	AS6365		AS6308
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 786 MHz f_0 ≤ 0.30 dB ≤ 0.4 dB $f_0 \pm 3.805$ ≤ 0.75 dB ≤ 0.9 dB $f_0 \pm 3.885$ ≤ 0.85 dB ≤ 1.0 dB $f_0 \pm 4.2$ ≥ 4 dB $f_0 \pm 6$ ≥ 20 dB $f_0 \pm 12$ ≥ 40 dB	470 MHz 785 MHz f_0 ≤ 0.4 dB ≤ 0.45 dB $f_0 \pm 2.79$ ≤0.85 dB ≤ 1.00 dB $f_0 \pm 3.0$ ≥ 2 dB $f_0 \pm 3.15$ ≥ 8 dB $f_0 \pm 4.5$ ≥ 23 dB $f_0 \pm 9$ ≥ 48 dB $f_0 \pm 15$ ≥ 50 dB	470 MHz 785 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB $f_0 \pm 2.69$ ≤ 0.80 dB ≤ 0.8 dB $f_0 \pm 3.5$ ≥ 3 dB $f_0 \pm 4$ ≥ 8 dB $f_0 \pm 6$ ≥ 30 dB $f_0 \pm 9$ ≥ 65 dB	
Group delay variation	Δτ ≤ 350 ns	Δτ ≤ 500 ns		Δτ ≤ 200 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW	≤ 80 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output Peak output voltage	3 1/8" EIA male ≤ 12.5 kV	4 1/2" EIA male ≤ 15.5 kV	52-120 BT male ≤ 19.5 kV	6 1/8" EIA male ≤ 24 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 570 x 1400	900 x 570 x 1400	900 x 570 x 1600	900 x 570 x 1650
Weight	≈ 160 kg	≈ 170 kg	≈ 220 kg	≈ 245 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range




BN 57 55 35 A0080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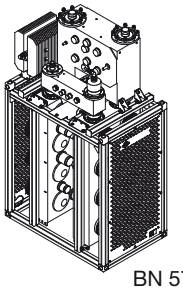
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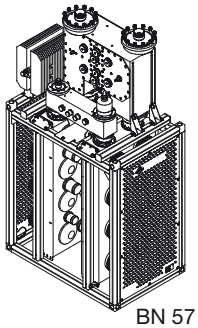
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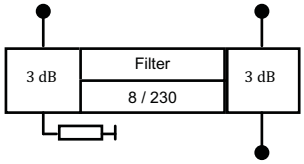
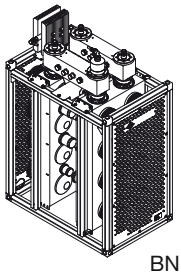
Part number	**BN 57 55 35 A0080**	**BN 57 55 36 A0080**	**BN 57 55 37 A0080**	**BN 57 55 38 A0080**
Frequency range	470 - 800 MHz			
Channel spacing	≥ 0			
Narrow band input	3 1/8" EIA male			
Filter type integrated cavities/size	**8/230 ≡ BN 616670**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power	**≤ 17 kW**	**≤ 13.5 kW**		**≤ 13.5 kW**
Tuning instruction	AS8124	AS8128		AS8127
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz / 790 MHz f_0 ≤ 0.4 dB / ≤ 0.45 dB $f_0 \pm 3.805$ ≤ 1.05 dB / ≤ 1.10 dB $f_0 \pm 3.885$ ≤ 1.25 dB / ≤ 1.35 dB $f_0 \pm 4.2$ ≥ 15 dB $f_0 \pm 6$ ≥ 40 dB $f_0 \pm 12$ ≥ 55 dB	470 MHz / 790 MHz f_0 ≤ 0.45 dB / ≤ 0.50 dB $f_0 \pm 2.79$ ≤ 1.15 dB / ≤ 1.20 dB $f_0 \pm 3.15$ ≥ 15 dB $f_0 \pm 4.5$ ≥ 30 dB $f_0 \pm 9$ ≥ 55 dB $f_0 \pm 15$ ≥ 65 dB		470 MHz / 790 MHz f_0 ≤ 0.45 dB / ≤ 0.50 dB $f_0 \pm 2.69$ ≤ 1.00 dB / ≤ 1.10 dB $f_0 \pm 3$ ≥ 4 dB $f_0 \pm 3.25$ ≥ 18 dB $f_0 \pm 9$ ≥ 64 dB
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 550 ns		Δτ ≤ 450 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW	≤ 60 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Peak output voltage	≤ 12.5 kV	≤ 15.5 kV	≤ 19.5 kV	≤ 24 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 570 x 1400	900 x 570 x 1400	900 x 570 x 1600	900 x 570 x 1650
Weight	≈ 200 kg	≈ 210 kg	≈ 260 kg	≈ 285 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			

CCS UHF CIB COMBINERS

- **CCS** compact design
- integrated mask filters for DTV
- adjacent channel operation
- for 6, 7 and 8 MHz channel bandwidth
- temperature compensated
- tuneable within the whole UHF range
- liquid cooled filters and couplers

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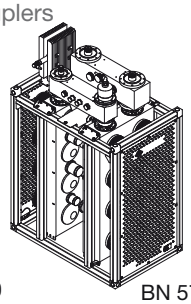
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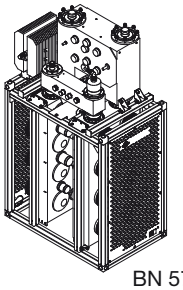
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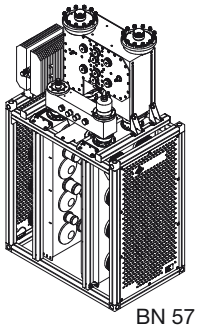
BN 57 55 48 A0080

Part number **Cooling**	**BN 57 55 45 A0080** **liquid cooling**	**BN 57 55 46 A0080** **liquid cooling**	**BN 57 55 47 A0080** **liquid cooling**	**BN 57 55 48 A0080** **liquid cooling**
Frequency range	470 - 800 MHz			
Channel spacing	≥ 0			
Narrow band input	3 1/8" EIA male			
Filter type integrated cavities/size	**8/230 ≡ BN 616670**			
Temperature stability	≤ 2 kHz / K			
Harmonics attenuation	≥ 50 dB for f ≤ 860 MHz			
DTV Mask filtering	DVB-T @ 8 MHz ($\hat{U}/U_{rms}$=13 dB)	ISDB-T @ 6 MHz ($\hat{U}/U_{rms}$=13 dB)		ATSC @ 6 MHz ($\hat{U}/U_{rms}$=11 dB)
Average input power The input power of liquid cooled filters must be reduced if installed more than 500 m above sea level.	**≤ 23 kW** @ 0 -2700 m **≤ 22 kW** @ 3000 m **≤ 20 kW** @ 3400 m **≤ 18 kW** @ 3800 m **≤ 16 kW** @ 4200 m	**≤ 23 kW** @ 0 - 1600 m **≤ 22 kW** @ 1800 m **≤ 20 kW** @ 2400 m **≤ 18 kW** @ 3000 m **≤ 16 kW** @ 3400 m **≤ 14 kW** @ 4000 m		**≤ 23 kW** @ 0 - 1600 m **≤ 22 kW** @ 1800 m **≤ 20 kW** @ 2400 m **≤ 18 kW** @ 3000 m **≤ 16 kW** @ 3400 m **≤ 14 kW** @ 4000 m
Tuning instruction	AS8124	AS8128		AS8127
Insertion loss & Mask filtering (alternative tuning on request)	470 MHz 790 MHz f_0 ≤ 0.4 dB ≤ 0.45 dB f_0 ± 3.805 ≤ 1.05 dB ≤ 1.10 dB f_0 ± 3.885 ≤ 1.25 dB ≤ 1.35 dB f_0 ± 4.2 ≥ 15 dB f_0 ± 6 ≥ 40 dB f_0 ± 12 ≥ 55 dB	470 MHz 790 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB f_0 ± 2.79 ≤ 1.15 dB ≤ 1.20 dB f_0 ± 3.15 ≥ 15 dB f_0 ± 4.5 ≥ 30 dB f_0 ± 9 ≥ 55 dB f_0 ± 15 ≥ 65 dB		470 MHz 790 MHz f_0 ≤ 0.45 dB ≤ 0.5 dB f_0 ± 2.69 ≤ 1.00 dB ≤ 1.1 dB f_0 ± 3.0 ≥ 4 dB f_0 ± 3.25 ≥ 18 dB f_0 ± 9 ≥ 64 dB
Group delay variation	Δτ ≤ 700 ns	Δτ ≤ 550 ns		Δτ ≤ 450 ns
Wide band input	3 1/8" EIA male	4 1/2" EIA male	52-120 BT male	6 1/8" EIA male
Average input power	≤ 17.5 kW	≤ 33 kW	≤ 60 kW	≤ 80 kW
	Attention: The power at the wide band input must be reduced by 50 % of the power fed into the narrow band input			
DTV Mask filtering	no			
Insertion loss	≤ 0.1 dB (non adjacent)			
Output Peak output voltage	3 1/8" EIA male ≤ 12.5 kV	4 1/2" EIA male ≤ 15.5 kV	52-120 BT male ≤ 19.5 kV	6 1/8" EIA male ≤ 24 kV
Isolation between inputs	≥ 35 dB			
VSWR (one WB channel)	≤ 1.06			
Dimensions (L x W x H) mm	900 x 570 x 1400	900 x 570 x 1400	900 x 570 x 1600	900 x 570 x 1650
Weight	≈ 200 kg	≈ 210 kg	≈ 260 kg	≈ 285 kg
Environmental conditions	for limitations see „Environmental Conditions for Broadcast Products“			