

SPINNER PMR / TETRA Portfolio



Reliable Components
for Critical Communication

HIGH FREQUENCY PERFORMANCE WORLDWIDE
www.spinner-group.com





Reliable Components for Critical Communications

Worldwide there is a growing need for essential services like police forces, fire departments, and disaster and emergency management teams. Communication within and between these organizations needs to be reliable and free of glitches, especially when they go into action. The technology involved also has to meet demanding requirements, because lives can be at stake.

Professional Mobile Radio (PMR) or Terrestrial Trunked Radio (TETRA) networks are subject to the laws and regulations of individual countries and can therefore be implemented in different ways. Some networks are completely separate from commercial mobile networks, while in other cases the two types are combined.

Especially in the case of in-building networks, PMR services may be delivered together with other mobile communication services via the same Distributed Antenna System (DAS). Here it's especially important to use high-quality components, because issues like passive inter-

modulation can cause considerable problems in voice and data communications. All SPINNER combining solutions are passive, which eliminate most potential sources of errors. This is an important prerequisite for ensuring highly reliable operation.

At SPINNER we have been setting standards with our RF technology products for more than 70 years, helping to drive progress in the information age. We are dedicated to consistently providing top-quality products and outstanding service, which are crucial for ensuring satisfied customers.

PMR / TETRA Portfolio

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Our Standard Products are Suitable for PMR / TETRA

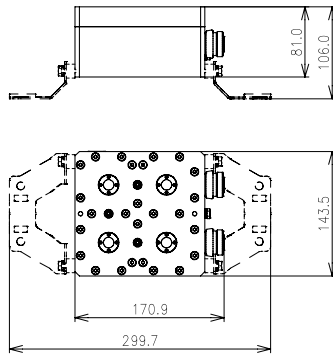


Most of our products shown above – comprising connectors, adaptors, jumpers, loads and attenuators – can be used for PMR/TETRA, since they are compatible with frequencies between 0 and 4 GHz, and some even up to 6 GHz. However, we have decided to make a clear distinction and only present dedicated PMR/TETRA products in this catalogue.

Filters



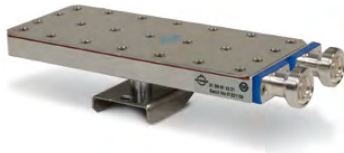
BN 616431 / BN 616430



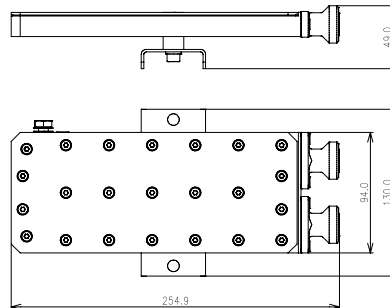
Band-Pass Filters

Part Number	BN 616431	BN 616430
Pass-band	380 - 385 MHz	390 - 395 MHz
Pass-band loss	≤ 0.50 dB	
Stop-band	390 - 395 MHz 890 - 960 MHz	380 - 385 MHz 890 - 960 MHz
Stop-band loss	≥ 30 dB @ 390 - 395 MHz ≥ 50 dB @ 890 - 960 MHz	≥ 30 dB @ 380 - 385 MHz ≥ 50 dB @ 890 - 960 MHz
Passive intermodulation (IM3) @ 2 x 20 W	≤ -150 dBc; typ. ≤ -160 dBc	
VSWR	≤ 1.25	
Power rating	≤ 200 W	
Connectors	7-16 female	
Temperature range	-5 °C ... $+60$ °C	
Degree of protection (mated)	IP 54	
Weight	~ 1.7 kg	
Mounting brackets	BN B07787	

Filters



BN 616331 / BN 616439



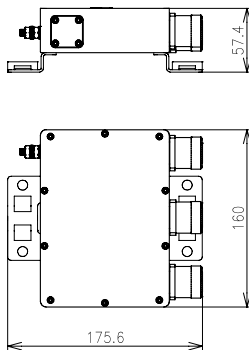
Low-Pass Filters

Part Number	BN 616331	BN 616439
Pass-band	0 - 500 MHz	0 - 614 MHz
Pass-band loss	≤ 0.20 dB	
Stop-band	380 - 2200 MHz	800 - 2170 MHz
Stop-band loss	≥ 45 dB @ 800 - 876 MHz ≥ 55 dB @ 876 - 2200 MHz	≥ 30 dB @ 800 - 860 MHz ≥ 40 dB @ 860 - 960 MHz ≥ 70 dB @ 1710 - 2170 MHz
Passive intermodulation (IM3) @ 2 x 20 W	≤ -150 dBc; typ. ≤ -160 dBc	
VSWR	≤ 1.25 @ 0 - 380 MHz ≤ 1.14 @ 380 - 500 MHz	≤ 1.40 @ 0 - 380 MHz ≤ 1.15 @ 380 - 614 MHz
Power rating	≤ 150 W	
Connectors	7-16 female	
Temperature range	-40 °C ... $+65$ °C	
Degree of protection (mated)	IP 65	
Weight	~ 1.4 kg	
Mounting brackets	Included	

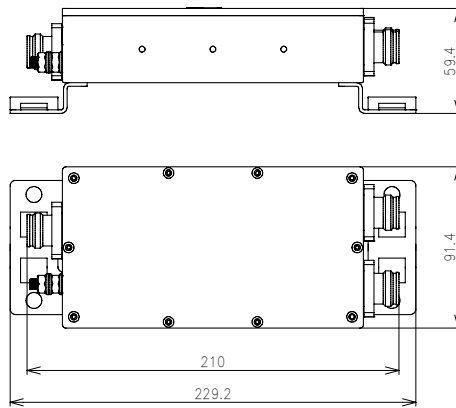
Combining



BN 572674



BN 570732



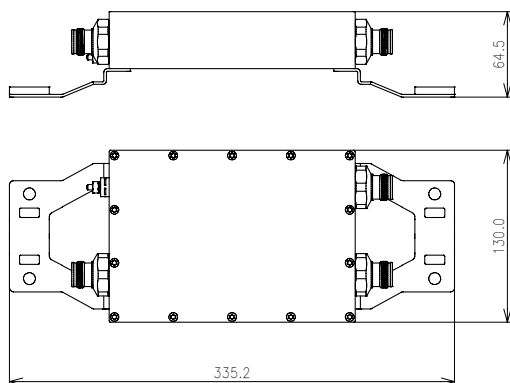
Multiband Combiners - Diplexers

Part Number	BN 572674	BN 572677	BN 572668	BN 572669	BN 570732	BN 570756
Version	Single	Double	Single	Double	Single	Double
Frequency range Port 1 Port 2 Port 3	DC - 2170 MHz 2496 - 2690 MHz Common				DC - 2700 MHz 3300 - 3800 MHz Common	
Insertion loss Port 1 -> port 3	≤ 0.30 dB				≤ 0.50 dB	
Isolation	≥ 50 dB					
Passive intermodulation (IM3) @ 2 x 20 W	≤ -160 dBc				≤ -155 dBc	
VSWR	≤ 1.25					
Power rating Port 1 Port 2	≤ 600 W ≤ 100 W		≤ 500 W ≤ 100 W		≤ 300 W ≤ 60 W	
DC and AISG	1 A (port 1 -> port 3)					
Connectors	7-16 female		4.3-10 female			
Temperature range	-40 °C ... +55 °C					
Degree of protection (mated)	IP 67				IP 65	
Weight	~ 2.5 kg	~ 5.5 kg	~ 2.5 kg	~ 5.5 kg	~ 6 kg	~ 12 kg
Mounting bracket	Included					

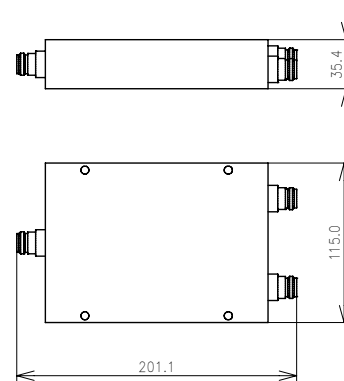
Combining



BN 570744



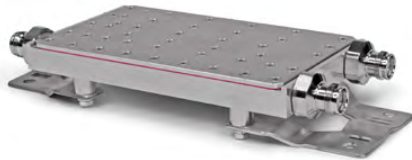
BN 572924



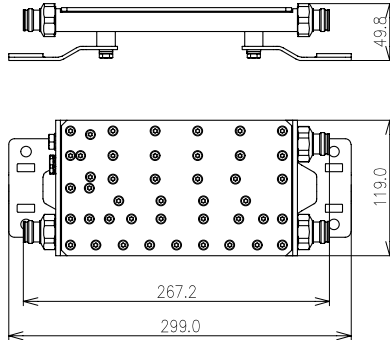
Multiband Combiners - Diplexers

Part Number	BN 570744	BN 572924
Version	Single	
Frequency range Port 1 Port 2 Port 3	350 - 960 MHz 1710 - 3800 MHz Common	440 - 475 MHz 870 - 960 MHz Common
Insertion loss	≤ 0.50 dB; typ. ≤ 0.30 dB	≤ 0.20 dB
Isolation	≥ 50 dB; typ. ≥ 60 dB	≥ 60 dB
Passive intermodulation (IM3) @ 2 x 20 W	≤ -155 dBc; typ. ≤ -160 dBc	≤ -150 dBc; typ. ≤ -160 dBc
VSWR	≤ 1.25; typ. ≤ 1.20	≤ 1.15
Power rating	≤ 250 W	≤ 50 W
DC and AISG	1 A (port 1 -> port 3)	N/A
Connectors	4.3-10 female	N female
Temperature range	-20 °C ... +60 °C	-40 °C ... +70 °C
Degree of protection (mated)	IP 67	IP 60
Weight	~ 2.0 kg	~ 1.3 kg
Mounting brackets	Included	N/A

Combining



BN 572670



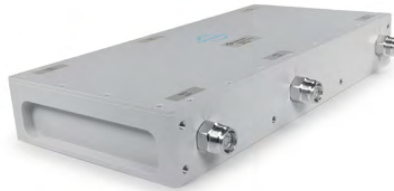
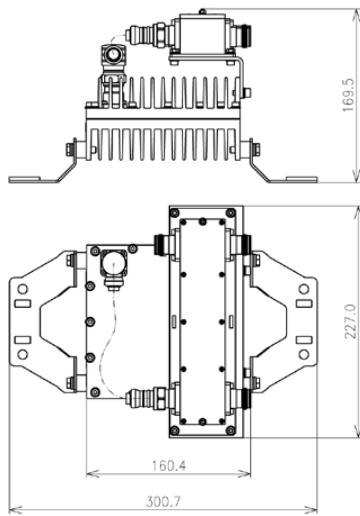
Multiband Combiners - Diplexers

Part Number			BN 573189	BN 573191	BN 570637	BN 570638	BN 572670	BN 572671	BN 572672	BN 572673
Version			Single	Double	Single	Double	Single	Double	Single	Double
Frequency range										
Port 1	range 1	698 - 800 MHz								
	range 2									
	range 3									
	range 4									
Port 2	range 5	800 - 960 MHz								
	range 6									
	range 7									
	range 8									
Port 3	range 5	1710 - 2500 MHz								
	range 6									
	range 7									
	range 8									
Insertion loss										
Port 1 -> port 3	range 1	≤ 0.30 dB								
	range 2, 3, 4									
Port 2 -> port 3	range 5, 6, 7	≤ 0.20 dB								
	range 8									
Isolation										
Port 1 -> port 2	range 1	≥ 30 dB								
	range 2, 3									
	range 4									
Port 2 -> port 1	range 5, 6, 7	≥ 50 dB								
	range 8									
Passive intermodulation (IM3) @ 2 x 20 W			≤ -155 dBc; typ. ≤ -160 dBc							
VSWR										
Port 1	range 1	≤ 1.35								
	range 2, 3, 4									
Port 2	range 5, 6, 8	≤ 1.2								
	range 7									
Power rating										
Port 1		≤ 500 W								
	Port 2									
DC and AISG			N/A		1 A (port 2 -> port 3)		N/A		1 A (port 2 -> port 3)	
Connectors			7-16 female				4.3 - 10 female			
Temperature range			-25 °C ... +65 °C							
Degree of protection (mated)			IP 68							
Weight			~ 1.5 kg	~ 3.6 kg	~ 1.5 kg	~ 3.6 kg	~ 1.5 kg	~ 3.6 kg	~ 1.5 kg	~ 3.6 kg
Mounting brackets			Included							

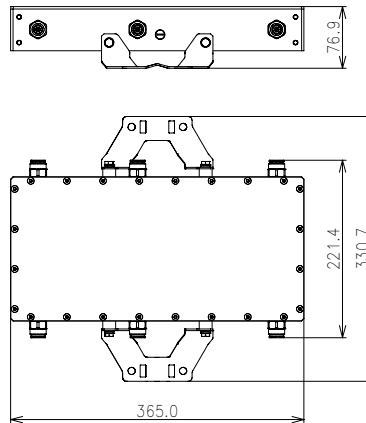
Combining



BN 753388



BN 570754



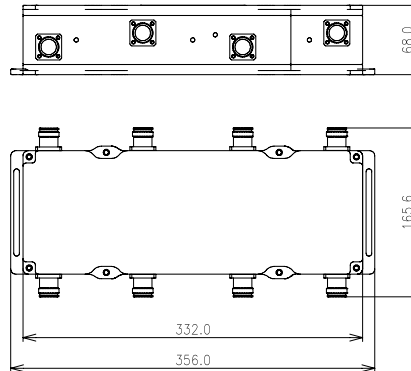
2 : 1 / 3 : 3 Multiband Combining Systems

Part Number	BN 753388	BN 570754
Version (input : output)	2 : 1	3 : 3
Frequency range	350 - 2700 MHz	380 - 3800 MHz
Insertion loss	3.0 dB $\pm$ 0.9 dB	5.0 dB $\pm$ 1.2 dB
Isolation	$\geq$ 23 dB	$\geq$ 28 dB; typ. $\geq$ 30 dB
Passive intermodulation (IM3) @ 2 x 20 W	$\leq$ 140 dBc @ 350 - 694 MHz $\leq$ 150 dBc @ 694 - 2700 MHz	$\leq$ -160 dBc; typ. $\leq$ -165 dBc
VSWR	$\leq$ 1.25	
Power rating	$\leq$ 80 W	$\leq$ 500 W
Connectors	4.3-10 female	
Temperature range	-40 °C ... +50 °C	-40 °C ... +55 °C
Degree of protection (mated)	IP 65	
Weight	~ 3.7 kg	~ 6.6 kg
Mounting brackets	Included	

Combining



BN 570680



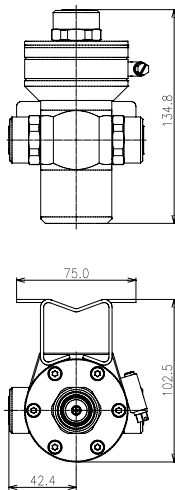
4 : 4 Multiband Combining Systems

Part Number	BN 570755	BN 570680	BN 570680F001
Version (input : output)	4 : 4		
Frequency range	380 - 3800 MHz	350 - 2700 MHz	
Insertion loss	6.1 dB ± 1.2 dB	6.0 dB ± 1.5 dB	
Isolation	≥ 28 dB; typ. ≥ 30 dB	≥ 23 dB	
Passive intermodulation (IM3) @ 2 x 20 W	≤ -160 dBc; typ. ≤ -165 dBc	≤ -155 dBc	≤ -160 dBc; typ. ≤ -165 dBc
VSWR	≤ 1.25	≤ 1.25; typ. ≤ 1.2	
Power rating	≤ 500 W	≤ 400 W	
Connectors	4.3-10 female		
Temperature range	-40 °C ... +55 °C	-25 °C ... +65 °C	
Degree of protection (mated)	IP 65		
Weight	~ 6.2 kg	~ 3.6 kg	
Mounting brackets	Included		

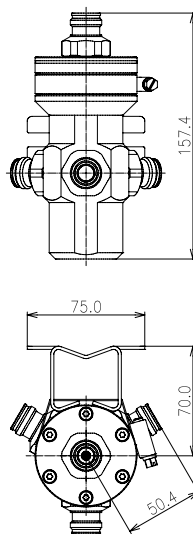
Distribution



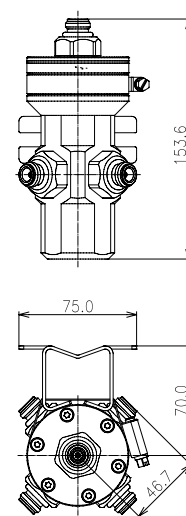
BN 818289



BN 818293



BN 923091

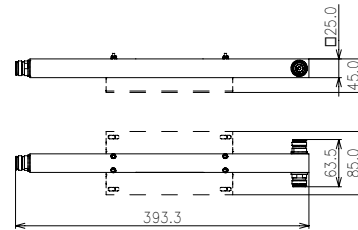


Symmetric Splitters

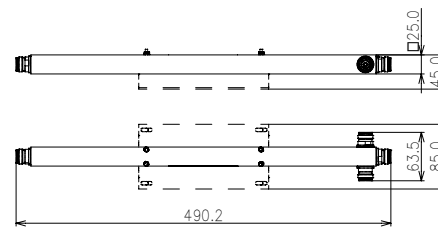
Part Number	BN 818289	BN 818290	BN 818291	BN 818292	BN 818293	BN 818294	BN 923089	BN 923090	BN 923091
Version (outputs)	2	3	4	2	3	4	2	3	4
Frequency range	330 - 2700 MHz								
Insertion loss	≤ 3.2 dB	≤ 5.0 dB	≤ 6.5 dB	≤ 3.2 dB	≤ 5.0 dB	≤ 6.5 dB	≤ 3.2 dB	≤ 5.0 dB	≤ 6.5 dB
Passive intermodulation (IM3) @ 2 x 20 W	≤ -160 dBc								
VSWR	≤ 1.20								
Power rating	≤ 450 W						≤ 250 W		
Connectors	7-16 female			4.3 - 10 female			N female		
Temperature range	-40 °C ... +75 °C								
Degree of protection (mated)	IP68								
Weight	~ 1.1 kg		~ 1.2 kg	~ 1.1 kg		~ 1.2 kg	~ 1.1 kg		~ 1.2 kg
Mounting brackets	Included								

Distribution

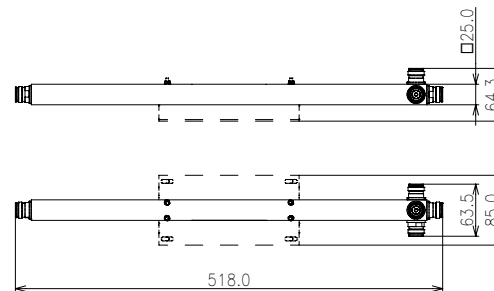
BN 818269



BN 818273



BN 818274



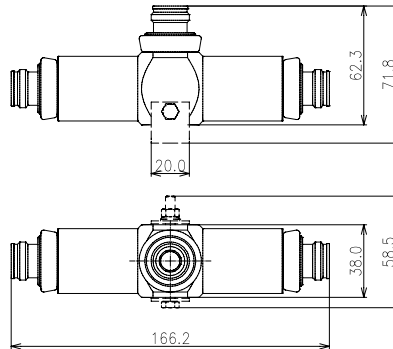
Symmetric Splitters

Part Number	BN 818269	BN 818273	BN 818274
Version (outputs)	2	3	4
Frequency range	350 - 3800 MHz		
Insertion loss	≤ 3.3 dB	≤ 5.2 dB	≤ 6.6 dB
Passive intermodulation (IM3) @ 2 x 20 W	≤ -155 dBc; typ. ≤ -160 dBc		
VSWR	≤ 1.25		≤ 1.35
Power rating	≤ 400 W		
Connectors	4.3-10 female		
Temperature range	-30 °C ... +65 °C		
Degree of protection (mated)	IP 65		
Weight	~ 1.0 kg		~ 1.1 kg
Mounting brackets	BN B30342		

Distribution



BN 818342



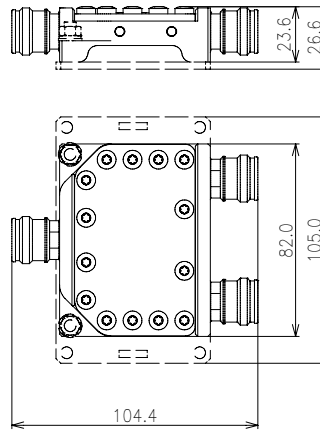
Asymmetric Splitters (Tappers)

Part Number	7-16 4.3-10 N	BN 818242 BN 818342 BN 923042	BN 818243 BN 818343 BN 923043	BN 818244 BN 818344 BN 923044	BN 818245 BN 818345 BN 923045	BN 818246 BN 818346 BN 923046	BN 818299 BN 818399 BN 923099	BN 818248 BN 818348 BN 923048	BN 818249 BN 818349 BN 923049
Version (splitting ratio) Secondary line Main line		1/4 3/4	1/5 4/5	1/6 5/6	1/10 9/10	1/20 19/20	1/30 29/30	1/100 99/100	1/1000 999/1000
Frequency range	170 – 1500 MHz 1710 – 2700 MHz								
Insertion loss Secondary line		6.0 dB	7.0 dB	8.0 dB	10.0 dB	13.0 dB	15.0 dB	20.0 dB	30.0 dB
VSWR		≤ 1.45	≤ 1.35		≤ 1.2				
Temperature range	-40 °C ... +70 °C								
Degree of protection (mated)	IP 68								
Weight	~ 0.6 kg								
Mounting brackets	BN B09499								
Part Number	7-16	BN 818242	BN 818243	BN 818244	BN 818245	BN 818246	BN 818299	BN 818248	BN 818249
Passive intermodulation (IM3) @ 2 x 20 W	≤ -155 dBc; typ. ≤ -160 dBc								
Power rating	≤ 500 W								
Connectors	7-16 female								
Part Number	4.3-10	BN 818342	BN 818343	BN 818344	BN 818345	BN 818346	BN 818399	BN 818348	BN 818349
Passive intermodulation (IM3) @ 2 x 20 W	≤ -160 dBc; typ. ≤ -165 dBc								
Power rating	≤ 500 W								
Connectors	4.3-10 female								
Part Number	N	BN 923042	BN 923043	BN 923044	BN 923045	BN 923046	BN 923099	BN 923048	BN 923049
Passive intermodulation (IM3) @ 2 x 20 W	≤ -150 dBc; typ. ≤ -155 dBc								
Power rating	≤ 250 W								
Connectors	N female								

Distribution



BN 818459



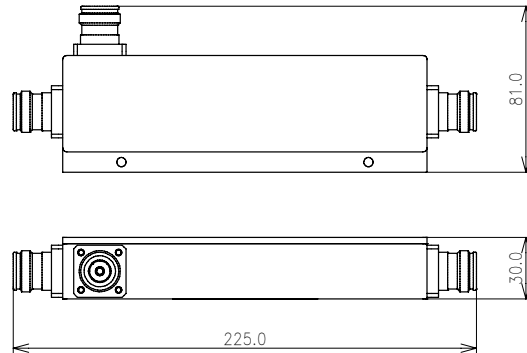
Asymmetric Splitters (Tappers)

Part Number	BN 818458	BN 818459	BN 818460	BN 818461	BN 818462	BN 818463	BN 818464	BN 818465
Version (splitting ratio) Secondary line Main line	1/3 2/3	1/4 3/4	1/5 4/5	1/6 5/6	1/10 9/10	1/20 19/20	1/30 29/30	1/100 99/100
Frequency range	380 – 3800 MHz							
Insertion loss Secondary line	4.8 dB	6 dB	7 dB	8 dB	10 dB	13 dB	15 dB	20 dB
Passive intermodulation (IM3) @ 2 x 20 W	≤ -155 dBc; typ. ≤ -160 dBc							
VSWR	≤ 1.3							
Power rating	≤ 300 W							
Connectors	4.3 -10 female							
Temperature range	-40 °C ... +55 °C							
Degree of protection (mated)	IP 65							
Weight	~ 300 g							
Mounting brackets	BN B23656							

Distribution



BN 818431



Asymmetric Splitters (Tappers)

Part Number	7-16 4.3-10	BN 818440 818431	BN 818441 818432	BN 818442 818433	BN 818443 818434	BN 818444 818435	BN 818445 818436	BN 818446 818437	BN 818447 818438	BN 818448 818439
Version (splitting ratio)										
Secondary line	1/3	1/4	1/5	1/6	1/10	1/20	1/30	1/100	1/1000	
Main line	2/3	3/4	4/5	5/6	9/10	19/20	29/30	99/100	999/1000	
Frequency range	350 – 3800 MHz									
Insertion loss										
Secondary line	4.8 dB	6 dB	7 dB	8 dB	10 dB	13 dB	15 dB	20 dB	30 dB	
Isolation	≥ 23 dB	≥ 24 dB	≥ 25 dB	≥ 26 dB	≥ 28 dB	≥ 30 dB	≥ 32 dB	≥ 35 dB	≥ 45 dB	
Passive intermodulation (IM3) @ 2 x 20 W	≤ -155 dBc; typ. ≤ -160 dBc									
VSWR	≤ 1.3									
Temperature range	-35 °C ... +75 °C									
Degree of protection (mated)	IP 65									
Mounting brackets	Included									
Part Number	7-16	BN 818440	BN 818441	BN 818442	BN 818443	BN 818444	BN 818445	BN 818446	BN 818447	BN 818448
Power rating	≤ 500 W									
Connectors	7-16 female									
Weight	~ 880 g									
Part Number	4.3-10	BN 818431	BN 818432	BN 818433	BN 818434	BN 818435	BN 818436	BN 818437	BN 818438	BN 818439
Power rating	≤ 400 W									
Connectors	4.3 -10 female									
Weight	~ 680 g									

Distribution



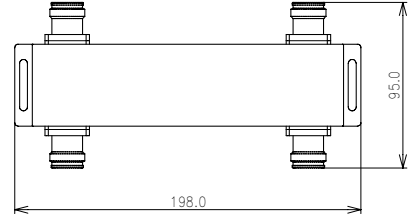
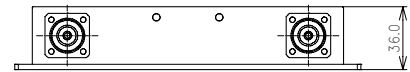
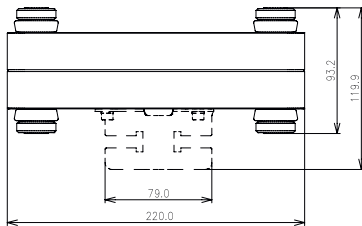
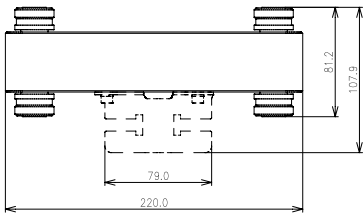
BN 753381 / BN 753382 / BN 753383



BN 753386



BN 753359



Directional Couplers

Part Number	BN 753381	BN 753382	BN 753383	BN 753386	BN 753357	BN 753359	BN 753358
Version	H-style				X-style		
Frequency range	330 - 520 MHz				350 - 2700 MHz		
Coupling attenuation	3.0 dB	6.0 dB	10.0 dB	20.0 dB	3.0 dB		
Isolation	≥ 36 dB		≥ 40 dB	≥ 50 dB	≥ 23 dB; typ. ≥ 25 dB		
Passive intermodulation (IM3) @ 2 x 20 W					≤ -155 dBc		
VSWR	≤ 1.06				≤ 1.25		
Power rating	≤ 1000 W				≤ 300 W		
Connectors	7-16 female					4.3-10 female	N female
Temperature range	-40 °C ... +70 °C				-40 °C ... +80 °C		
Degree of protection (mated)	IP 68				IP 65		
Weight	~ 1.4 kg				~ 0.9 kg	~ 0.8 kg	~ 0.7 kg
Mounting brackets	BN B13702				Included		

Distribution



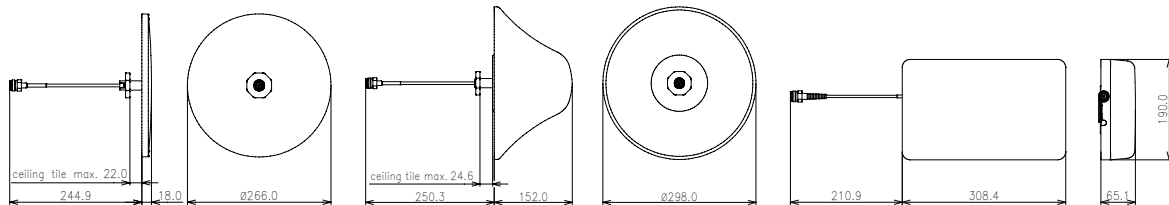
BN A77137



BN A77144



BN A77149



Antennas

Part Number	BN A77137	BN A77144	BN A77149
Type	Omni chip for ceiling mount	Omni for ceiling mount	Panel for wall mount
Polarization	Horizontal	Vertical	
Beamwidth	360 °		70 °
Frequency range	380 - 2700 MHz	380 - 6000 MHz	380 - 4000 MHz
Ports	1		
Gain	≥ 2.0 dBi ... ≥ 4.5 dBi	≥ 2.0 dBi ... ≥ 4.0 dBi	≥ 4.0 dBi ... ≥ 7.5 dBi
Passive intermodulation (IM3) @ 2 x 20 W	≤ -140 dBc *)	≤ -153 dBc	≤ -140 dBc **)
VSWR	≤ 2.5 @ 380 - 520 MHz ≤ 2.0 @ 694 - 2700 MHz	≤ 3.0 @ 380 - 520 MHz ≤ 2.0 @ 694 - 6000 MHz	≤ 2.5 @ 380 - 520 MHz ≤ 2.0 @ 698 - 6000 MHz
Power rating	50 W		
Connector(s)	4.3-10 female		
Temperature range	-55 °C ... +60 °C		
Material and color	ABS, white, RAL9003		
Degree of protection	IP 54		
Weight	~ 0.4 kg	~ 0.9 kg	~ 0.6 kg
Mounting material	Included		

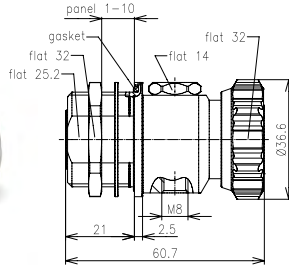
*) Variant with IM3 ≤ -150 dBc is available, please order BN 77137C0001

**) @ 2 x 2 W

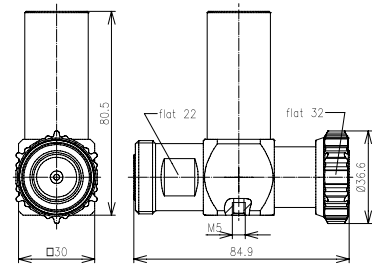
Protection



BN 194284



BN 766419



Surge Protectors

Part Number	BN 194284	BN 920480	BN 950880	BN 950888	BN 766419
Version	Gas discharge arrestors (Housing only, gas discharge arrestors see table below)				Quarter wave-length stub
Frequency range	0 - 2500 MHz				380 - 512 MHz
Insertion loss	≤ 0.1 dB				
Surge current (8/20 µs)	N/A				≤ 50 kA
Test pulse	N/A				4 kV (1.2/50 µs) and 2 kA (8/20 µs)
Residual energy at test pulse	N/A				≤ 20 µJ
Power rating	Dependent on gas discharge arrestor BN A71307: ≤ 20 W @ 90 V BN A71308: ≤ 180 W @ 230 V BN A71311: ≤ 1.2 kW @ 600 V BN A71313: ≤ 3 kW @ 1 kV				≤ 3 kW
VSWR	≤ 1.06 @ 0 - 1000 MHz ≤ 1.20 @ 1000 - 2500 MHz				≤ 1.22
Connectors	7-16 male / 7-16 female bulkhead	7-16 female / 7-16 female bulkhead	N male / N female bulkhead	N female / N female bulkhead	7-16 male 7-16 female
Temperature range	-40 °C ... +85 °C				-45 °C ... +75 °C
Degree of protection (mated)	IP 67				
Weight	~ 270 g	~ 280 g	~ 160 g	~ 130 g	~ 430 g
Grounding cable	BN A71367				

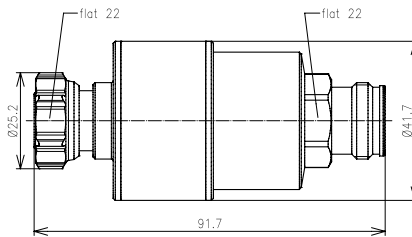
Gas Discharge Arrestors

Part Number	BN A71307	BN A71308	BN A71311	BN A71313
Stat. sparkover voltage (100 V/s)	90 V ± 20 V	230 V ± 35 V	600 +120 V / -90 V	1000 V ± 200 V
Power rating	≤ 20 W	≤ 180 W	≤ 1200 W	≤ 3000 W
Dyn. sparkover voltage (1 kV/µs)	≤ 700 V	≤ 750 V	≤ 1200 V	≤ 1600 V
Surge current	Single (8/20 µs) multiple (8/20 µs) 5 pulses in 3 min.	≤ 25 kA		
	≤ 20 kA	≤ 10 kA	≤ 10 kA	≤ 5 kA
Arc (residual) voltage	≤ 25 V			≤ 30 V

Protection



BN 432054



DC Breaks

Part Number	BN 766436	BN 766438	BN 432054	BN 432067	BN 950720	BN 950721
Version	Inner and outer conductor separated	Inner conductor separated	Inner and outer conductor separated	Inner conductor separated	Inner and outer conductor separated	Inner conductor separated
Frequency range	80 - 3800 MHz *)					
Insertion loss	≤ 0.25 dB; typ. ≤ 0.10 dB					
Passive intermodulation (IM3) @ 2 x 20 W	≤ -160 dBc; typ. ≤ -165 dBc				≤ -155 dBc; typ. ≤ -160 dBc	
VSWR	≤ 1.40; typ. ≤ 1.28 @ 80 – 100 MHz ≤ 1.30; typ. ≤ 1.22 @ 100 – 300 MHz ≤ 1.10; typ. ≤ 1.06 @ 300 – 1880 MHz ≤ 1.20; typ. ≤ 1.11 @ 1880 – 2700 MHz ≤ 1.25; typ. ≤ 1.19 @ 2700 – 3800 MHz					
Power rating	1500 W @ 80 MHz 300 W @ 1880 MHz 250 W @ 2700 MHz 130 W @ 3800 MHz					
Temperature range	-40 °C ... +55 °C					
Degree of protection (mated)	IP 67					
Connectors	7-16 male / 7-16 female		4.3-10 male screw type / 4.3-10 female		N male / N female	
Weight	~ 0.3 kg					
Blocking DC voltage	3000 V					

*) All DC Breaks can be made available with extended frequency range from 33 - 4000 MHz + 5000 - 6000 MHz.
For ordering, please add suffix F001 to above shown part numbers (e.g. BN 766436F001).



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