

## Cisco 1.25 GHz Surge-Gap Passives

The Cisco® 1.2 GHz Surge-Gap Passives product line is the latest evolution of the HFC network providing full support of the DOCSIS 3.1 standard. DOCSIS 3.1 support will allow MSOs to fully and efficiently utilize their broadband networks to provide the services that their subscribers demand. Support for DOCSIS 3.1 means that the frequency capabilities of the devices is increased to the full 1.218 GHz spectrum as well as full compatibility with the new OFDM signaling requirements. These new capabilities will allow MSOs to increase revenue generation by allowing increased capability across their networks to drive new and improved services to their customer base.

Today's MSOs are challenged to deliver new and improved services to subscribers, as cost-effectively as possible. The Cisco® 1.25 GHz Surge-Gap Passives product line is the latest evolution of the HFC network providing full support of the DOCSIS 3.1 standard and OFDM sub carrier requirements. This allows MSOs to increase frequency of devices to the 1.218 GHz spectrum across the existing network with no signal degradation. Added capacity plus reliable performance means better service for customers.

A key requirement for service quality is the reliability of the network. The Cisco 1.25 GHz Surge-Gap Passive family of products is designed for optimal reliability in broadband networks. The 6 kV surge specification, industry-leading hum modulation, and the power soak ratings of the directional couplers, splitters, and power inserters, coupled with the outstanding insertion loss specifications, help ensure the reliable performance required in the most demanding applications.

**Figure 1.** Cisco 1.25 GHz Surge-Gap Passives



## Features

- 6 kV surge protection
- 15A current carrying capability of splitters and directional couplers and 20A input rating of power inserters allow network powering of cable telephony services
- Industry-leading insertion loss specifications reduce amplifier requirements
- Unique, patented AC bypass coil provides superior hum modulation performance, which is important in advanced, high current networks
- Superior return loss specifications promote more reliable transmission of digital signals
- Versatile housing design permits aerial or pedestal mounting
- Power passing/blocking jumpers for increased architectural flexibility
- Interchangeability of faceplates for all directional couplers and splitters simplifies architectural changes and reduces costs
- Durable powered-paint coating for superior environmental protection
- Compliant to 25A and 2-hour, 149°F (65°C) power soak rated

## Specifications

Tables 1 through 3 provide product specifications for the Cisco 1.25 GHz Surge-Gap Passives.

**Table 1.** RF Section Specifications

Item	Value																
	Type	8		12		16		2-Way		3-Way		3 Way-Unbalanced				PI	
	Freq.	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Low		High		Typ.	Max
												Typ.	Max	Typ.	Max		
Insertion Loss (dB)	5	1.7	1.9	0.9	1.1	0.9	1.1	4.1	4.4	5.9	6.1	7.3	7.5	3.7	3.9	0.6	0.9
	10	1.6	1.8	0.8	1.1	0.8	1.0	3.8	4.2	5.5	5.8	7.0	7.4	3.6	3.8	0.4	0.6
	40	1.6	1.7	0.8	1.1	0.8	1.0	3.7	4.0	5.3	5.6	6.8	7.2	3.5	3.8	0.4	0.6
	85	1.6	1.7	0.9	1.1	0.8	1.0	3.7	4.0	5.4	5.6	6.9	7.2	3.6	3.8	0.4	0.7
	100	1.6	1.7	0.9	1.1	0.8	1.0	3.8	4.0	5.4	5.6	6.9	7.2	3.6	3.8	0.5	0.7
	200	1.6	1.8	1.0	1.1	0.9	1.1	3.9	4.1	5.6	5.8	7.1	7.3	3.7	3.8	0.6	0.7
	550	1.6	2.0	0.9	1.3	0.9	1.2	3.9	4.3	5.7	6.2	7.3	7.9	3.8	4.2	0.4	0.7
	750	1.8	2.2	1.1	1.5	1.0	1.4	4.1	4.5	6.0	6.5	7.5	8.0	4.1	4.6	0.4	0.8
	870	1.9	2.4	1.2	1.7	1.0	1.5	4.3	4.7	6.2	6.6	7.6	8.1	4.4	4.7	0.5	0.9
	1000	2.2	2.5	1.5	1.9	1.3	1.6	4.5	4.9	6.4	6.9	7.8	8.3	4.6	4.9	0.6	1.0
	1218	2.5	2.7	2.1	2.2	1.6	1.8	5.0	5.1	6.9	7.2	8.3	8.6	5.1	5.2	0.8	1.1
	1250	2.5	2.8	2.2	2.3	1.7	1.9	5.0	5.2	7.1	7.3	8.4	8.7	5.1	5.2	0.9	1.2

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Item	Value																
	Type	8		12		16		2-Way		3-Way		3 Way-Unbalanced				PI	
	Freq.	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Low		High		Typ.	Max
												Typ.	Max	Typ.	Max		
<b>Tap Loss (dB)</b> <b>(Max Tolerance ±1 dB)</b>	5	8.5		12.3		16.0		-		-		-		-		-	
	10	8.5		12.3		16.0		-		-		-		-		-	
	40	8.5		12.3		16.0		-		-		-		-		-	
	85	8.5		12.3		16.0		-		-		-		-		-	
	100	8.5		12.3		16.0		-		-		-		-		-	
	200	8.5		12.3		16.0		-		-		-		-		-	
	550	8.5		12.3		16.0		-		-		-		-		-	
	750	8.5		12.3		16.0		-		-		-		-		-	
	870	8.5		12.3		16.0		-		-		-		-		-	
	1000	8.5		12.3		16.0		-		-		-		-		-	
	1218	8.5		12.3		16.0		-		-		-		-		-	
	1250	8.5		12.3		16.0		-		-		-		-		-	
<b>Flatness (±dB)</b>	5 to 1000	0.5		0.5		0.5		0.5		0.5		0.5				0.35	
	5 to 1250	0.6		0.6		0.6		0.6		0.75		0.75				0.5	
<b>Return Loss (dB)(Min)</b>	5 to 40	16		15		15		16		15		15				16	
	41 to 400	18		18		17		18		18		18				18	
	401 to 750	18		18		18		18		18		18				18	
	750 to 870	18		18		18		18		18		18				18	
	871 to 1000	17		17		17		16		17		16				18	
	1000 to 1250	16		16		16		16		16		16				18	
<b>Isolation (dB)(Min)</b>	5 to 10	16		20		20		20		18		19				56	
	11 to 85	20		23		24		23		23		23				58	
	86 to 204	20		23		24		23		23		23				58	
	205 to 750	20		23		24		23		23		23				58	
	751 to 870	20		20		22		23		20		20				53	
	870 to 1250	18		20		22		20		20		20				53	

**Table 2.** Electrical Specifications

Item	Value
<b>Electrical</b>	
<b>Power Inserter</b>	Hum modulation @ 15A (typical): <ul style="list-style-type: none"> <li>• 60 dBc (5-10 MHz)</li> <li>• 65 dBc (11-869 MHz)</li> <li>• 65 dBc (870-1250 MHz)</li> </ul> Power passing: <ul style="list-style-type: none"> <li>• 20A, 60/90 VAC max input port</li> <li>• 15A, 60/90 VAC max output port</li> <li>• 6 kV Surge Resistant (combination wave)</li> </ul>

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments

Item	Value
<b>Directional Couplers</b>	Hum modulation @ 15A (typical): <ul style="list-style-type: none"> <li>• 60 dBc (5-10 MHz)</li> <li>• 65 dBc (11-1000 MHz)</li> <li>• 60 dBc (1001-1250 MHz)</li> </ul> Power passing: <ul style="list-style-type: none"> <li>• 15 A, 60/90 VAC, 60 Hz</li> <li>• 6 kV Surge Resistant (combination wave)</li> </ul>
<b>Splitters</b>	Hum modulation @ 15A (typical): <ul style="list-style-type: none"> <li>• 60 dBc (5-10 MHz)</li> <li>• 2 Way, 65 dBc (11-1000 MHz)</li> <li>• 3 Way, 3 Way-Unbalanced, 60 dBc (11-1000 MHz)</li> <li>• 60 dBc (1001-1250 MHz)</li> </ul> Power passing: <ul style="list-style-type: none"> <li>• 15A, 60/90 VAC, 60 Hz</li> <li>• 6 kV Surge Resistant (combination wave)</li> </ul>

**Table 3.** Mechanical, Environmental and Compliance Specifications

Item	Value
<b>Mechanical</b>	
<b>Water and dust ingress rating</b>	IP68
<b>Dimensions (H x W x D)</b>	4.5 x 5.5 x 3 in. 114.3 x 139.7 x 76.2 mm
<b>Weight</b>	0.65 kg 1.43 lb
<b>Bolt Torque Requirements</b>	Center conductor seizure: <ul style="list-style-type: none"> <li>• 15 lb-in to 20 lb-in (1.7 Nm to 2.3 Nm)</li> </ul> Housing closure: <ul style="list-style-type: none"> <li>• 50 lb-in to 60 lb-in (5.6 Nm to 6.8 Nm)</li> </ul> Port plugs: <ul style="list-style-type: none"> <li>• 50 lb-in to 60 lb-in (5.6 Nm to 6.8 Nm)</li> </ul>
<b>Connector pull out</b>	100 lb. min.
<b>Environmental</b>	
<b>Operating temperature</b>	-40 to 60°C -40 to 140°F
<b>Standards Compliance</b>	
<b>Mechanical</b>	SCTE IPS-SP-420 - entry port interface specification
<b>Emissions</b>	FCC - Part 76, Subpart K EN 50083-2
<b>Environmental</b>	ASTM G 53 - weathering specification ASTM B 117 - salt spray specification ASTM D 3170 - chip resistance specification ASTM G 21 - fungus growth rate of zero EN 50083-1
<b>Electrical Safety</b>	UL/CSA 60950-1

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

## Ordering Information

To place an order, visit the Cisco Commerce Workspace tool at <https://cisco-apps.cisco.com/cisco/psn/commerce> and refer to the ordering information provided in Table 4.

**Table 4.** Ordering Information - 1.25 GHz Surge-Gap Passives

Product Description	Part Number
Cisco 1.25 GHz Surge-Gap Directional Coupler, 8dB	SG-PASSIVES-DC-08
Cisco 1.25 GHz Surge-Gap Directional Coupler, 12dB	SG-PASSIVES-DC-12
Cisco 1.25 GHz Surge-Gap Directional Coupler, 16dB	SG-PASSIVES-DC-16
Cisco 1.25 GHz Surge-Gap 2-Way Splitter	SG-PASSIVES-S2
Cisco 1.25 GHz Surge-Gap 3-Way Splitter - Balanced	SG-PASSIVES-S3
Cisco 1.25 GHz Surge-Gap 3-Way Splitter - Unbalanced	SG-PASSIVES-S3U
Cisco 1.25 GHz Surge-Gap Power Inserter	SG-PASSIVES-PI

## For More Information

Cisco 1.25 GHz Surge-Gap Passives products include some of the industry's most complete range of high-performance components. For additional information, please contact your Cisco Account Manager or Cisco System Engineer.



Americas Headquarters  
Cisco Systems, Inc.  
San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV Amsterdam,  
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)