ComponexX Broadband Passives

Splitters and Couplers Series

High-Performance Splitters & Directional Couplers for Modern Networks

Introduction

ComponexX engineers every unit in our broadband passives family to deliver uncompromising performance across modern **HFC, DOCSIS 3.1, and hybrid-fiber networks.**

These splitters and directional couplers are built for reliability in the field and can be formatted to fit your program — as **"Your Brand" private-label**, **unbranded**, or under **Componexx's commercial brand, DiGiTAL-1** — all manufactured to the same precision specifications and strict quality-control standards.

Key Features and Benefits

- **Wideband Performance:** Consistent, flat frequency response from **5–1000 MHz** with minimal insertion loss and outstanding port-to-port isolation.
- **Return-Path Optimization:** Enhanced **15–42 MHz** reverse path provides superior output return loss and isolation for interactive DOCSIS systems.
- **Surge Protection:** All ports include **6 kV ring-wave protection** (IEEE C62.41 A3), verified for surge withstand and second-order harmonic performance after five 6 kV surges per port.
- **Ultra-Linear Design:** High-grade ferrite cores eliminate intermodulation, maintaining forward-path integrity even under high-level return carriers.
- **Precision Contacts: 360° gold-plated center conductor** and contact surfaces ensure maximum electrical engagement and retention stability.
- **Voltage Blocking: 6 kV capacitors on all ports** prevent core saturation and maintain consistent impedance.
- **Heavy-Duty Construction: Solid zinc die-cast housing** with **triple bright-tin plating** for long-term corrosion resistance and mechanical strength.
- **Weather-Sealed Ports: Machine-threaded "F" connectors** and **O-ring seals rated to 15 PSI** protect against moisture and environmental ingress.
- **Shielding Effectiveness: Tin-plated copper back plate** delivers **≥ –130 dB RFI shielding** to preserve signal quality and minimize interference.
- **Industry Compliance:** Meets or exceeds **ANSI/SCTE 153 (2008)** and **ANSI/SCTE 143 (2007)** standards for outdoor reliability and corrosion resistance.

Applications

- **HFC Networks:** Provides reliable signal distribution and isolation across hybrid fiber-coax (HFC) systems.
- **DOCSIS 3.1 Upgrades:** Supports extended frequency ranges and low intermodulation for next-generation broadband networks.
- **FTTx & MDUs:** Compatible with broadband delivery systems in fiber-to-the-x and multi-dwelling unit deployments.
- **Amplifier Cascades:** Maintains linearity and consistent performance across cascaded RF amplification stages.
- **Outdoor or Pedestal Installations:** Weather-sealed design ensures durability in street-cabinet, aerial, or underground environments.

Models

Model	Description	Configuration	Frequency	Surge Protection
CX-SP-2WH / V	2-Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-SP-3WH / V	3 -Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-SP-3WBH / V	3 -Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-SP-4WH / V	4-Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-SP-6WH / V	6-Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-SP-8WH / V	8-Way Splitter	Horizontal / Vertical	5–1000 MHz	6 kV
CX-DC6 / 9 / 12 / 16	Directional Couplers	6 – 16 dB Tap Values	5–1000 MHz	6 kV

General Specifications

Parameter	Specification
Nominal Impedance	75 Ω
Frequency Range	5 – 1000 MHz
Flatness	± 0.5 dB
Return Loss	≥ 18 dB
Isolation	≥ 30 dB typ.
Surge Protection	6 kV ring wave (IEEE C62.41 A3)
Shielding Effectiveness	≥ 130 dB RFI
Operating Temperature	–40 °C to +60 °C
Waterproof Rating	15 PSI minimum
Corrosion Resistance	1000 h salt spray (ANSI/SCTE 143 2007)

Horizontal Splitters

		CX-SP-2WH-1G		CX-SP-3WH-1G		CX-SP-3WBH-1G		CX-SP-4WH-1G	
PARAMETER	**FREQUENCY RANGE MHz**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**
Insertion Loss Maximum (dB)	5-15	3.1	3.4	3.2/6.5	3.5/7.0	5.3	5.4	6.6	6.9
	15-42	3.3	3.4	3.2/6.5	3.5/7.0	5.3	5.5	6.6	7
	50-550	3.3	3.5	3.3/6.8	3.4/7.2	5.5	5.8	6.8	6.9
	550-870	3.6	3.8	3.7/7.5	3.9/7.6	6.0	6.2	7.3	7.6
	870-1000	3.7	4	3.7/7.5	3.9/7.8	6.3	6.7	7.5	7.9
Return Loss Input Minimum (dB)	5-15	28	23	28	25	30	24	24	21
	15-42	30	27	27	25	32	26	32	24
	50-550	29	27	25	21	25	20	25	20
	550-870	26	24	25	21	24	20	25	22
	870-1000	26	21	26	21	23	20	24	20
Return Loss Output Minimum (dB)	5-15	33	29	24	22	26	23	26	21
	15-42	45	41	42	34	35	30	38	32
	50-550	28	24	28	24	26	24	22	20
	550-870	25	21	26	23	25	22	25	22
	870-1000	26	21	30	22	25	22	25	21
Port/Port Isolation (Output/Output) Minimum (DB)	5-15	32	29	34	30	32	28	33	25
	15-42	40	37	44	38	38	33	44	36
	50-550	29	27	32	30	37	34	30	26
	550-870	27	23	34	29	34	25	28	25
	870-1000	28	22	34	27	31	23	28	24
RFI (dB)	5-1000	-130	-120	-130	-120	-130	-120	-130	-120
Impedance	5-1000	75 Ohm							
Spurious Signals Including 2nd Harmonic		-45 dBmV after 6 kV Ring Wave surge measured with a 55 Harmonic dBmV return input carrier							
Surge Protection		6 kV Ring Wave per IEEE C62.41-1991 Category A3							
Waterproof test (Min)		15 PSI							
Operating Temperature		-40°C to +60°C							
Corrosion Resistance		1000 hours of salt spray per ANSI/SCTE 143 2007							

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VERTICAL Splitters*

		CX-SP-2WV-1G		CX-SP-3WV-1G		CX-SP-3WBV-1G		CX-SP-4WV-1G		CX-SP-6WV-1G		CX-SP-8WV-1G	
PARAMETER	**FREQUENCY RANGE MHz**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**	**TYP**	**QC**
Insertion Loss Maximum (dB)	5-15	3.3	3.5	3.3/6.8	3.5/7.0	5.5	6.0	6.8	7.0	9.0	9.2	10.8	11.0
	15-42	3.3	3.5	3.4/6.8	3.5/7.0	5.5	5.8	6.8	7.2	9.0	9.2	10.8	11.0
	50-550	3.5	3.8	3.6/7.2	3.4/7.2	5.8	6.0	7.2	7.6	9.4	9.6	11.0	11.2
	550-870	3.6	3.8	3.8/7.5	4.0/7.6	5.9	6.2	7.3	7.6	9.7	9.9	11.4	11.8
	870-1000	3.8	4.2	4.0/8.0	4.3/8.3	6.5	6.9	7.8	8.2	10.0	10.5	12.0	12.5
Return Loss Input Minimum	5-15	22	20	22	20	22	20	22	20	22	20	20	22
	15-42	25	22	25	22	25	22	25	22	25	22	22	25
	50-550	22	20	22	20	22	20	22	20	22	20	22	20
	550-870	22	20	22	20	22	20	22	20	22	20	22	20
	870-1000	22	20	22	20	22	20	22	20	22	20	22	20
Return Loss Output Minimum (dB)	5-15	22	20	22	20	22	20	22	20	22	20	22	20
	15-42	38	30	38	30	35	25	38	30	35	25	30	28
	50-550	25	20	25	20	22	20	25	20	25	20	20	20
	550-870	22	20	22	20	22	20	22	20	22	20	22	20
	870-1000	22	20	22	20	22	20	22	20	22	20	22	20
Port/Port Isolation (Output/Output) Minimum (DB)	5-15	25	22	30	22	25	22	25	22	25	22	25	22
	15-42	40	35	40	35	38	32	40	35	40	35	35	32
	50-550	28	25	28	25	28	25	28	25	28	25	28	25
	550-870	27	24	27	24	27	24	27	24	27	24	27	24
	870-1000	25	23	25	23	25	23	25	23	25	23	25	23
RFI (dB)	5-1000	-130	-120	-130	-120	-130	-120	-130	-120	-130	-120	-130	-120
Impedance	5-1000	75 Ohm											
Spurious Signals Including 2nd Harmonic		-45 dBmV after 6 kV Ring Wave surge measured with a 55 Harmonic dBmV return input carrier											
Surge Protection		6 kV Ring Wave per IEEE C62.41-1991 Category A3											
Waterproof test (Min)		15 PSI											
Operating Temperature		-40°C to +60°C											
Corrosion Resistance		1000 hours of salt spray per ANSI/SCTE 143 2007											

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Directional Couplers*

		CX-DC-1W-6dB		CX-DC-1W-9dB		CX-DC-1W-12dB		CX-DC-1W-16dB	
PARAMETER	FREQUENCY RANGE MHz	TYP	QC	TYP	QC	TYP	QC	TYP	QC
Insertion Loss Maximum (dB)	5-15	2.3	2.6	1.2	1.6	0.8	1.0	0.8	1.0
	15-42	2.2	2.5	1.2	1.6	0.6	0.8	0.6	0.8
	50-550	2.5	2.6	1.4	1.7	0.8	1.0	0.6	0.8
	550-870	2.6	2.8	1.8	2.0	1.0	1.1	0.8	1.0
	870-1000	2.6	3.2	1.8	2.2	1.2	1.5	1.0	1.3
Return Loss Input Minimum	5-15	25	20	20	20	24	20	20	18
	15-42	28	25	25	22	25	22	25	20
	50-550	24	20	22	20	24	20	22	20
	550-870	22	20	22	20	22	20	20	18
	870-1000	21	20	21	20	22	20	20	18
Return Loss Output Minimum (dB)	5-15	22	20	20	18	22	18	22	20
	15-42	28	27	28	27	30	28	30	28
	50-550	22	20	22	20	22	20	22	20
	550-870	20	18	21	18	21	18	20	18
	870-1000	20	18	20	18	20	18	20	18
Port/Port Isolation (Output/Output) Minimum (DB)	5-15	30	24	30	25	30	25	35	30
	15-42	35	32	35	31	38	30	35	30
	50-550	28	24	30	27	35	28	35	30
	550-870	25	22	28	23	28	25	30	26
	870-1000	25	20	25	20	26	24	28	24
RFI (dB)	5-1000	-130	-120	-130	-120	-130	-120	-130	-120
Impedance	5-1000	75 Ohm							
Spurious Signals Including 2nd Harmonic		-45 dBmV after 6 kV Ring Wave surge measured with a 55 Harmonic dBmV return input carrier							
Surge Protection		6 kV Ring Wave per IEEE C62.41-1991 Category A3							
Waterproof test (Min)		15 PSI							
Operating Temperature		-40°C to +60°C							
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