

EXTREME[®]
BROADBAND ENGINEERING

Broadband Products Selection Guide

Building Unique Features In, For Maximum Performance Out.





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The Extreme Advantage

In today's rapidly changing cable industry, Extreme Broadband allows broadband networks to stay one step ahead by offering the most innovative broadband products available. With over two decades of experience designing advanced broadband components, we can enhance your system's performance and provide comprehensive technical support.

Advanced Technology And Industry Leadership

Extreme Broadband Engineering delivers innovative products engineered to power the most advanced broadband networks. We draw on the knowledge and experience of leading broadband experts to offer state-of-the-art components that help your system stay at the forefront of the fast-changing technological marketplace. In addition to our technical expertise, we provide total customer support as part of a holistic approach to meet your current and future needs.

The Extreme Mission: Total Customer Support

When you choose Extreme Broadband products, you have the Extreme advantage every step of the way. Our program begins at the factory with innovative design and unsurpassed quality. We follow that up with our **Extreme inventory control system** to help you access our products once they're in your warehouse. Finally, we offer a comprehensive training system to ensure you get the maximum performance from your Extreme products once they're on your network.

For details on Extreme's unique inventory control, see page 27.



The Infinity Premise™ System Eliminates Jumper Cables To Improve System Reliability And Lower Inventory Cost.



FIC-Port™ Technology

The new Infinity Premise™ system of broadband amplifiers and external modules features our patented direct-connect FIC-Port™ interface connector technology. This unique design eliminates the use of jumper cable interfaces, saving installation time and cost.

Lower In-Home Service Calls

By eliminating the jumper interface, fewer connections are needed, resulting in fewer in-home service calls and reducing the chances of common path distortion (CPD).

Forward Compatible For Future Upgrades Extreme offers a full selection of splitter modules, VoIP cable modem modules and reverse amplifier modules. As additional outlets are needed or service upgrades are made, a simple module change is all it takes to preserve the investment in your installed base.

The Infinity Premise™ System Is A Fully Integrated Family of Modular Components Designed To Work Together.

Amplifiers: Full selection of forward amplifiers with passive reverse or active reverse, with or without passive data port, plus reverse amplification models for retrofitting to existing systems.



Premise Enclosures:

Three sizes to choose from in heavy-duty lockable designs. Pre-assembled enclosures can be ordered to save installation time on the job.



Splitter Modules: 2-way, 3-way, 3-way balanced and 4-way models in both power passing and non-power passing versions, all with unique direct-connect FIC-port technology.



Unique Ground Bonding Technology: Built into every Infinity Premise System amplifier is Extreme's unique patented bonding block system.

VoIP/Cable Modem Modules: Designed to connect directly to the premises amplifier, these protect data services from power outage interruptions.



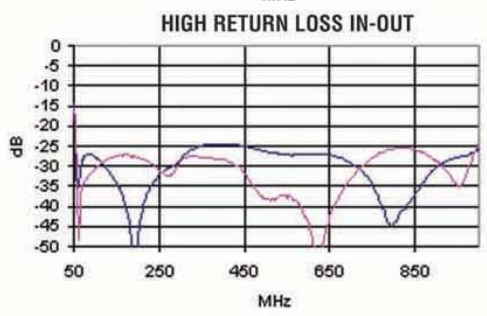
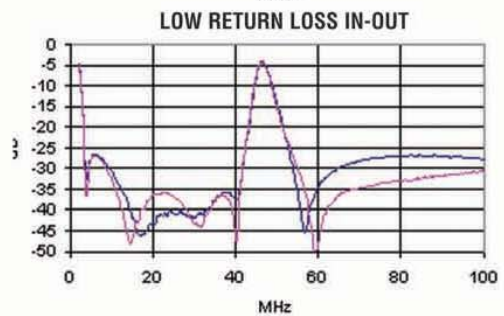
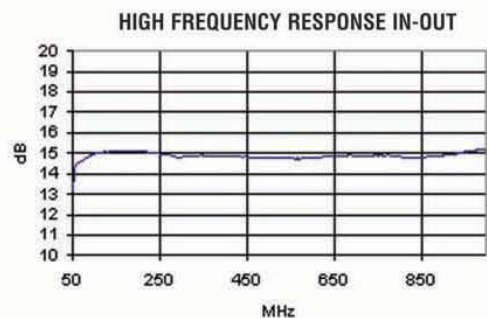
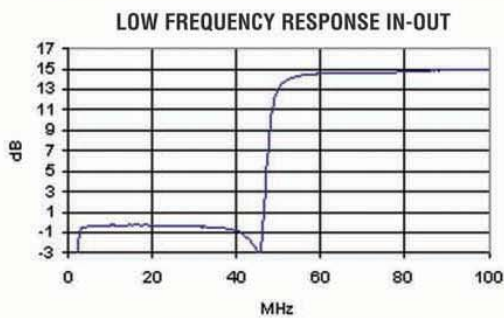
Building Unique Features In, For Maximum Performance Out.

Infinity Premise™ System Amplifiers & External Modules

- Compact housing is perfect for any premises enclosure
- 1-output amplifier (shown); 2- and 4-output models available with standard F-port or FIC connectors.
- Electrical features:
 - 6kV combination wave surge protection
 - 15 psi sealed SCTE-compliant F-ports
 - Low noise figure
 - Gallium arsenide technology
- Slotted mounting tabs make it easy to align and install
- Remote power with the IPPIM power inserter
- Local power connection
- Revolutionary new grounding system will not damage ground wire
- Power indicator

● = Electrical
● = Mechanical

SHOWN ACTUAL SIZE



Infinity Premise System Forward Amplifiers / Passive Reverse

The *Infinity Premise* Forward Amplifier is available in four standard models, including a unique retrofit model with Extreme's patented direct-connect *FIC-Port* connector to allow direct connection to existing splitters without a jumper.

- Advanced broadband performance in a compact housing
- Eliminates cable bends when installed in a premise enclosure
- Choose from 1-, 2-, or 4-output models
- Includes a unique retrofit model with direct-coupled *FIC-Port* technology



Model IPA1001
1-Output



Model IPA1001FIC
1-Output



Model IPA1002
2-Output



Model IPA1004
4-Output

Infinity Premise System | Symmetry Plus™ 1-Output Amplifier With Passive Data Port

The IPA1111D-RS, when used in combination with Extreme's unique Output Splitter Modules (pages 10-11), offers the most flexible and cost effective amplifier system on the market.

- Model includes one video output plus one passive data port
- Built-in passive data port ensures continuous failsafe data, a must for e911 compliance
- Basic symmetrical gain is 11 dB – amplifier overcomes splitter loss in both directions as splitter modules are added
- Surface-mount components control impedance and isolation for linear frequency response and contribute to the unit's compact size



Model IPA1111D-RS
1-Video Output / 1-Passive Data Port
Also available with Passive Reverse,
Model IPA1111D



Unique Patent
Pending Passive Data Port



Infinity Premise
VoIP/Modem Installation



Traditional components

Infinity Premise System | Symmetry Plus™ 8-Output Amplifier With Passive Data Port

The IPA1008D-RSVF is an 8-output amplifier designed with unity forward and reverse gain symmetry, plus an integrated Passive VoIP/Modem Data Port.

- Model includes eight video outputs plus one passive data port
- Built-in passive data port ensures continuous failsafe data, a must for e911 compliance
- Surface-mount components control impedance and isolation for linear frequency response and contribute to the unit's compact size
- True Flex™ housing provides vertical or horizontal installation flexibility
- Unity gain in both directions maintains drop symmetry; the reverse amplifier handles set-top box access to any output port



Unique True Flex Mounting Tabs

Model IPA1008D-RSVF
8-Video Output / 1-Passive Data Port
Also available with Passive Reverse,
Model IPA1008D-VF.



Unique Patent Pending Passive Data Port



Infinity Premise VoIP/Modem Installation

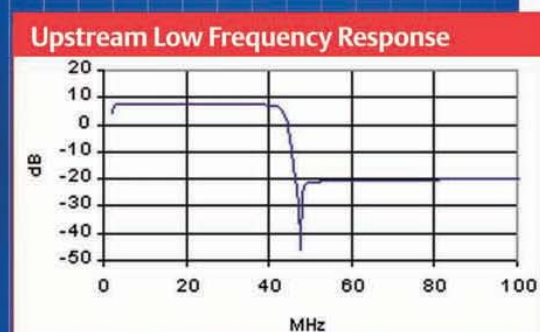
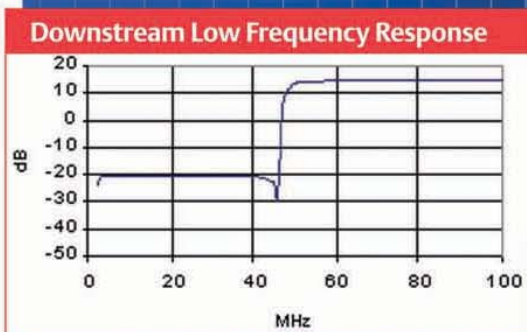
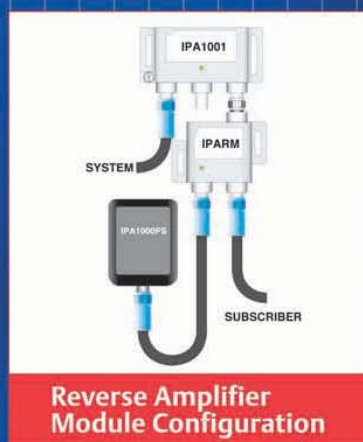


Traditional components

Infinity Premise System Reverse Amplifiers

The IPARM Reverse Amplifier Module (patent pending) is a part of the *Infinity Premise System*, the components of which are designed to enable flexible modularity by focusing on the quality of the interconnection technology.

- Used to add reverse amplification to any forward amplifier
- Unique direct-connect *FIC-Port* eliminates jumpers and improves system reliability
- Rugged push-pull circuit handles high power levels with low distortion
- Reverse module powers the forward amplifier eliminating the need for dual power supplies
- Standard *F-Port* model is also available for standalone reverse amplification; DC power is blocked from the input port



Infinity Premise System VoIP Cable/Modem Modules

The new patented *Infinity Premise VoIP/Cable Modem Module* protects data service from power outages in the home.

- Module connects to drop amplifier for direct passive access to the cable network
- Protects data service from interruption, and is particularly useful for VoIP
- *FIC-Port* connects directly to the premises amplifier without a jumper cable
- Passive output VoIP/Cable Modem port provides the full CATV spectrum
- Housing can be rotated 180° or installed vertically to meet space restrictions
- Models available with one or two data ports



3.5 dB Data Port
Model IPMM01



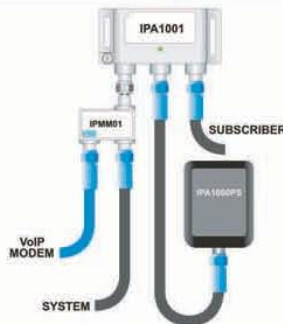
6.0 dB Data Port
Model IPMM01-06



9.0 dB Data Port
Model IPMM01-09



Full 180° Flexible
Mounting



Modem Module Diagram
Locally Powered

Infinity Premise System Splitter Modules, Non-Power Passing

The unique *Infinity Premise System* Splitter Modules (patented) connect directly to the forward amplifier without a jumper cable, decreasing installation time and cost, and increasing system reliability.

- Splitter modules feature direct-connect *FIC-Port* technology
- Eliminates the jumper cable for a reliable, cost-effective installation
- Four models available: 2-way, 3-way, 3-way balanced and 4-way
- Perfect for installations requiring local powering

Unique *FIC-Port*[™]
Technology



2-Output
Model IPSM02



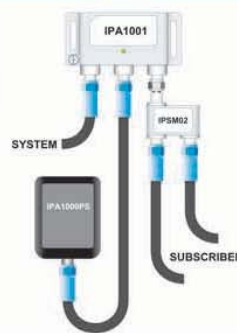
3-Output
Model IPSM03



3-Output
Model IPSM03B Balanced



4-Output
Model IPSM04



External Module Diagram
Locally Powered

Infinity Premise System Splitter Modules, Power Passing

The *Infinity Premise System* Splitter Modules (patented) are available in these four power-passing models for installations requiring remote powering. Modules connect directly to the forward amplifier without a jumper cable, decreasing installation time and cost, and increasing system reliability.

- Splitter modules feature direct-connect *FIC-Port* technology
- Eliminates the jumper cable for a reliable, cost-effective installation
- Four models available: 2-way, 3-way, 3-way balanced and 4-way
- Perfect for installations requiring remote powering

Unique
FIC-Port[™]
Technology



2-Output
Model IPSM02P



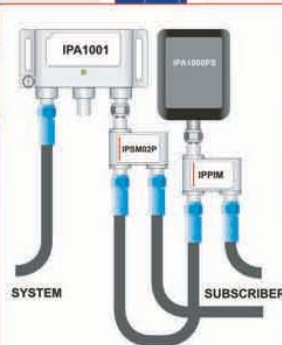
3-Output
Model IPSM03P



3-Output
Model IPSM03BP Balanced



4-Output
Model IPSM04P



External Module Diagram
Remotely Powered

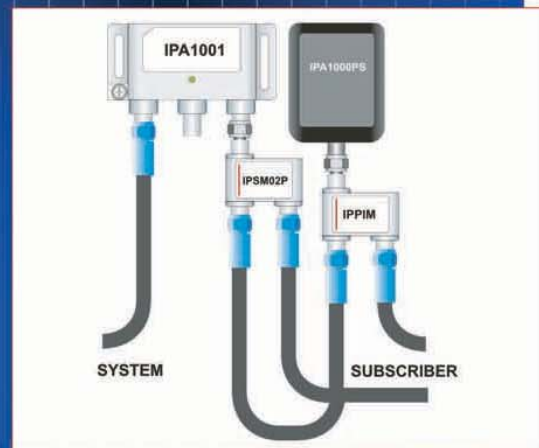
Infinity Premise System Power Inserter Module

The *Infinity Premise* Model IPPIM Power Inserter Module (patent pending) combines RF signals and DC voltage on the same cable to enable remote powering of a premises amplifier. The Power Inserter features the unique *FIC-Port* for a clean, neat home installation.

- Unique patented *FIC-Port* eliminates jumper cables, reducing the number of connections
- Eliminates unwanted cable bends for better reliability
- Requires less installation space in the home (see comparison)



Power Inserter
Module – Model IPPIM



IPPIM
Installation



Typical Power Inserter
Installation

Infinity Premise System Premises Enclosures

- Three convenient sizes in weather resistant high-impact thermoplastic alloy
- Self-latching, hinged cover design snaps closed; with padlock and F-terminator security
- Internal mounting bosses conveniently located to accommodate a variety of components
- Self-sealing entrance ports prevent water and insects from entering housing



Model IPE1500
12.25" h x 12" w x 5.25" d



Model IPE1000
9" h x 9" w x 3" d



Model IPE500
6.3" h x 7.8" w x 2" d

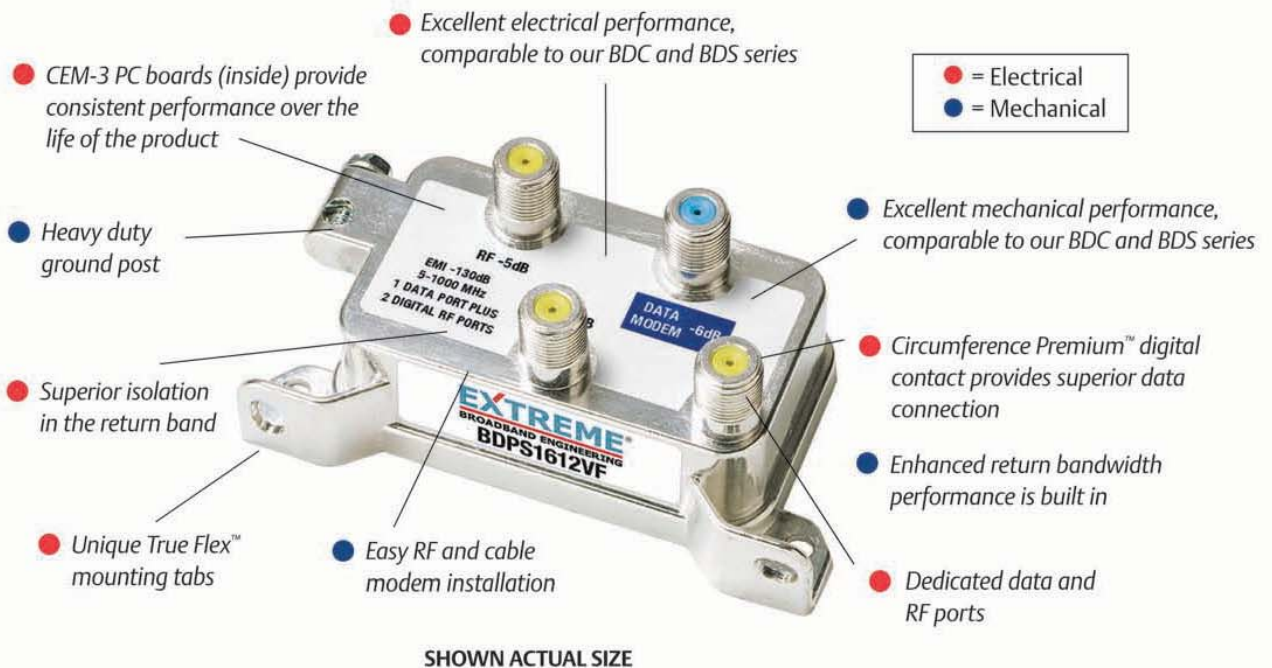
Pre-Assembled Premises Enclosures



Pre-assembled premises enclosures, made to your specifications, allow you to stock commonly used components already wired and ready for quick installation.

- Consistency from installation to installation
- Inventory reduction
- Labor and cost savings advantages

Data Plus™ Broadband Digital Splitters & External Modules



Extreme Broadband's *Data Plus™* splitter line provides proven performance for high-speed data. It is designed to be cost-efficient and meet all your high-speed data needs. These unique products incorporate a data/modem port with RF outputs in the same housing, eliminating the need for a separate directional coupler (DC), splitter and jumper.

- The industry's first Data/Modem splitter built into a *True Flex™* housing
- Provides a dedicated VoIP/Modem Data port along with RF ports in a single housing
- Eliminates the cost of separate coupler, splitter and jumper
- Improves system reliability by reducing the number of connections
- Reduces installation time and labor cost
- Models available with 2-, 4-, or 5- RF ports plus a 6 dB or 9 dB dedicated data port

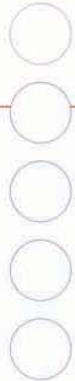


Unique *Data-Plus™* Splitter Installation



Typical VoIP or Cable Modem Installation

Data Plus™ Model BDPS1010VF Series



Model BDPS1612VF
Data Port -6.0 dB
2-RF Ports -5.0 dB



Model BDPS1614VF
Data Port -6.0 dB
4-RF Ports -9.0 dB



Model BDPS1615VF
Data Port -6.0 dB
5-RF Ports -11.0 dB



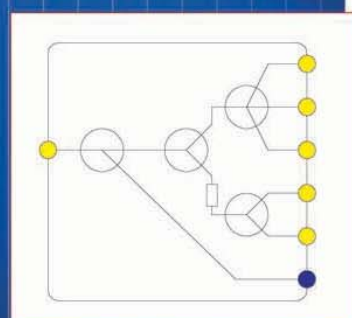
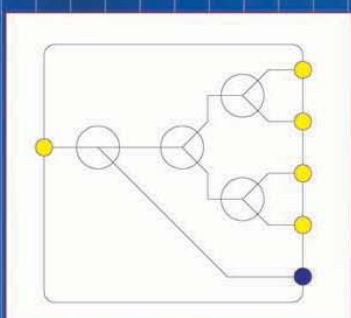
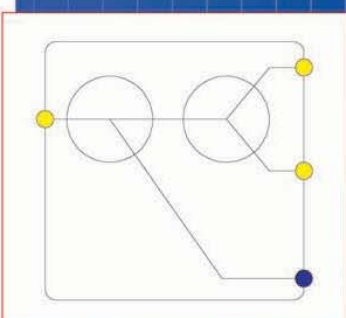
Model BDPS1912VF
Data Port -9.0 dB
2-RF Ports -4.5 dB



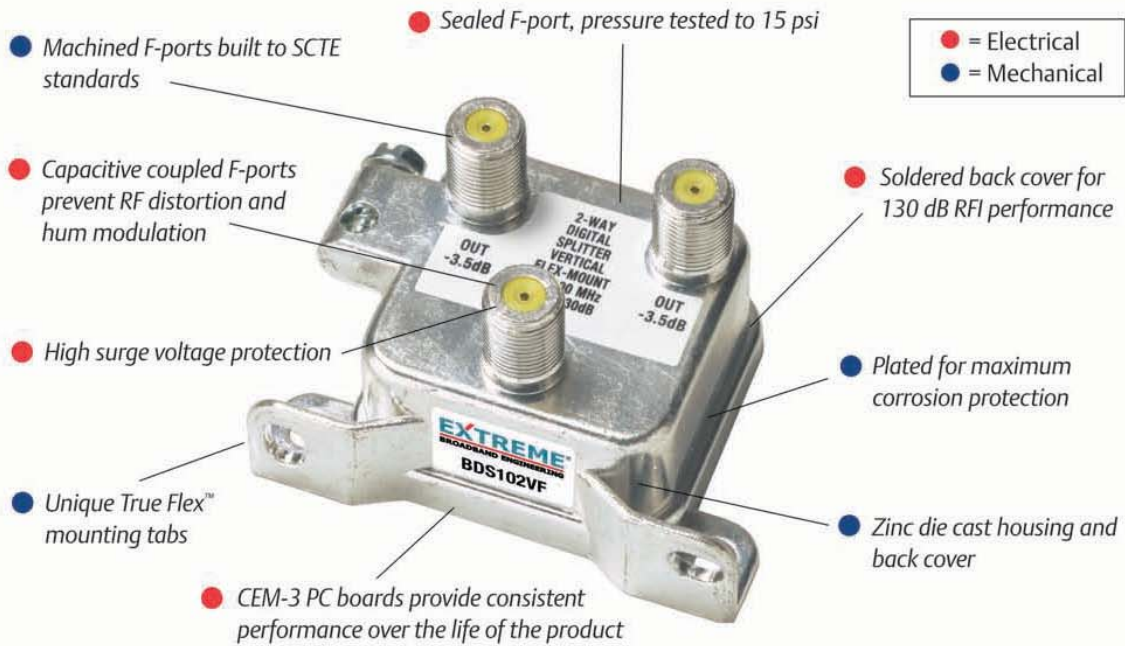
Model BDPS1914VF
Data Port -9.0 dB
4-RF Ports -8.5 dB



Model BDPS1915VF
Data Port -9.0 dB
5-RF Ports -11.0 dB



True Flex™ Broadband Digital Splitters



The True Flex™ line of broadband digital splitters is an Extreme innovation with infinite possibilities. The unique True Flex™ mounting tab system allows for a variety of installation options, permitting technicians to go to any installation site with just a single style True Flex™ housing.

- Flexible design permits horizontal or vertical mounting
- True Flex™ mounting minimizes unwanted cable bends, supporting true signal fidelity.
- Mounts either horizontally or vertically, and is perfect for apartment boxes and premises enclosures
- Available in 2-, 3-, 3- balanced, 4-, 6- or 8-way configurations



Unique True-Flex™
Housing

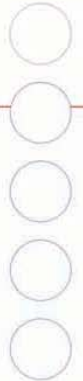


Unique True-Flex™
Installation



Typical Enclosure
Installation

True Flex™ Model BDS100VF Series Splitters



Model BDS102VF
2-Way Broadband Digital Splitter, 1GHz



Model BDS103VF
3-Way Broadband Digital Splitter, 1GHz



Model BDS103VFB
3-Way Broadband Digital Splitter,
Balanced, 1GHz



Model BDS104VF
4-Way Broadband Digital Splitter, 1GHz

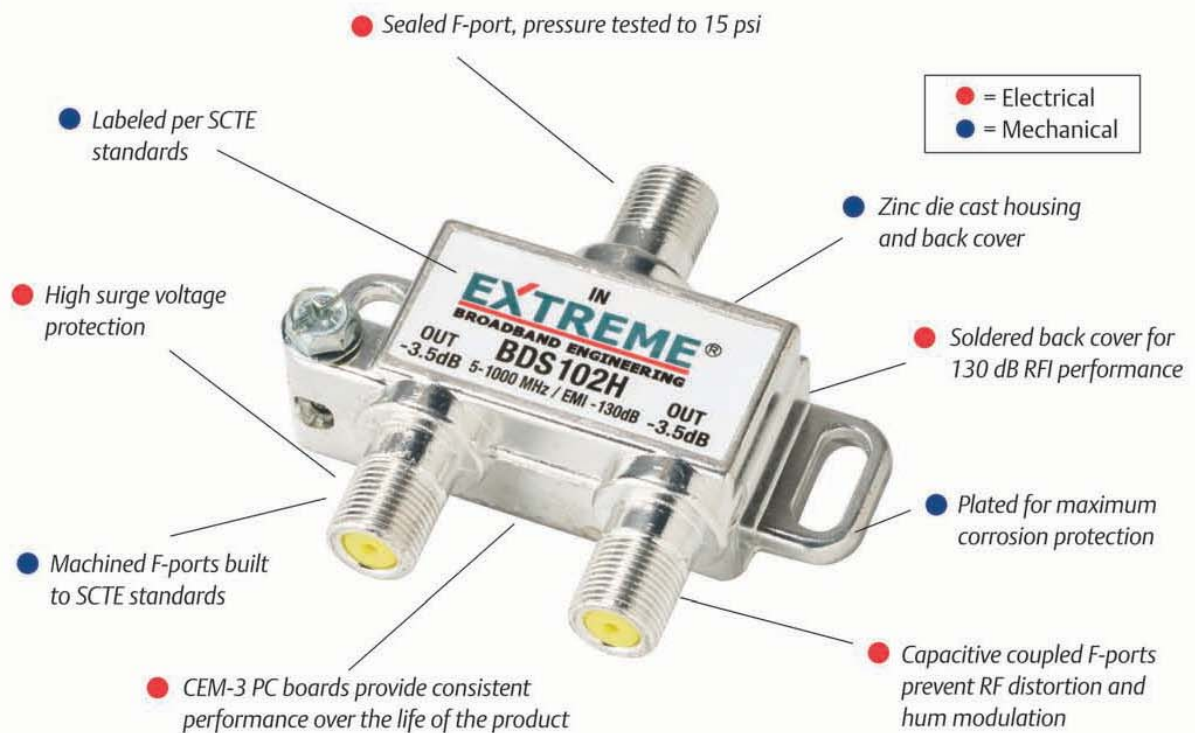


Model BDS106VF
6-Way Broadband Digital Splitter, 1GHz



Model BDS108VF
8-Way Broadband Digital Splitter, 1GHz

Horizontal Broadband Digital Splitters



Extreme Broadband's horizontal digital splitters can help you optimize the performance of your entire network. *Circumference Premium™* digital contacts and surface-mount technology combine to deliver superior RF performance to improve the reliability of your video and data applications.

- Superior design features optimize network performance
- Zinc die-cast housing and back cover eliminate galvanic corrosion
- Selected ferrite core material minimizes core saturation
- Capacitive-coupled F-ports prevent RF distortion and hum modulation
- Features Extreme *Circumference Premium™* digital contact for superior RF performance
- Offered in both non-power passing and power passing models
- Also available in low-profile raceway housing

Model BDS100H Series Splitters



Model BDS102H
 2-Way Broadband Digital Splitter, 1GHz
 Also available in power-passing:
 Model BDS102HP



Model BDS103H
 3-Way Broadband Digital Splitter, 1GHz
 Also available in power-passing:
 Model BDS103HP



Model BDS103HB
 3-Way Broadband Digital Splitter, Balanced, 1GHz
 Also available in power-passing:
 Model BDS103HBP



Model BDS104H
 4-Way Broadband Digital Splitter, 1GHz
 Also available in power-passing:
 Model BDS104HP



Model BDS108H
 8-Way Broadband Digital Splitter, 1GHz

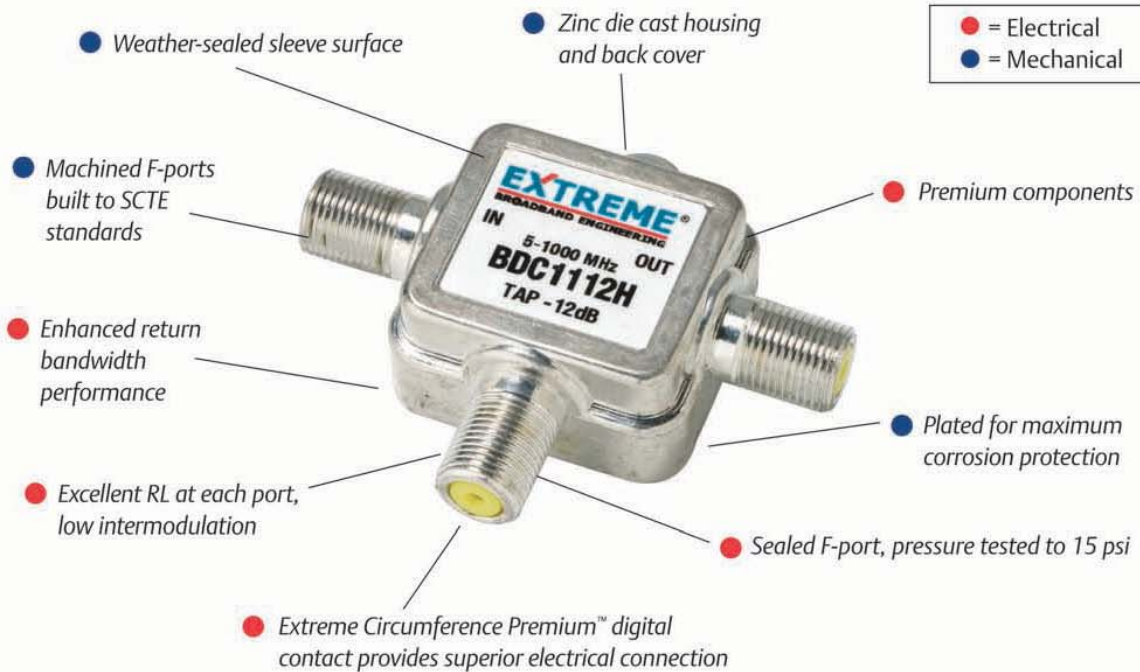


Model BDS116H
 16-Way Broadband Digital Splitter, 1GHz



Model BDS102RW
 Raceway Splitter
 5/8" high x 1-1/8" wide

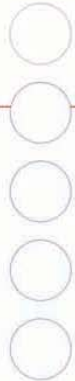
Broadband Directional Couplers



Extreme Couplers provide premium quality and installation flexibility. The advanced technology of the BDC1000 Series meets your system's demands for both high-level and low-level signal applications.

- Horizontal, vertical, and *True Flex*™ housing configurations available
- Capacitor-coupled F-ports prevent RF distortion and hum modulation
- Enhanced return bandwidth isolation and low intermodulation
- Full range of output configurations and tap values available to fit any application
- Also available in low-profile raceway housing

Model BDC1000 Series Couplers



Model BDC1100H
 1-Output Broadband Digital Directional Coupler, 1GHz
 Tap Values:
 04, 06, 09, 12, 16, 20, 24, 27, 30 dB



Model BDC1100V
 1-Output Broadband Digital Directional Coupler, 1GHz
 Tap Values:
 04, 06, 09, 12, 16, 20, 24, 27, 30 dB



Model BDC1200VF
 2-Output Broadband Digital Directional Coupler, 1GHz
 Tap Values:
 04, 08, 11, 14, 17, 20, 23, 26, 29, 32 dB



Model BDC1400VF
 4-Output Broadband Digital Directional Coupler, 1GHz
 Tap Values:
 08, 11, 14, 17, 20, 23, 26, 29, 32, 35 dB

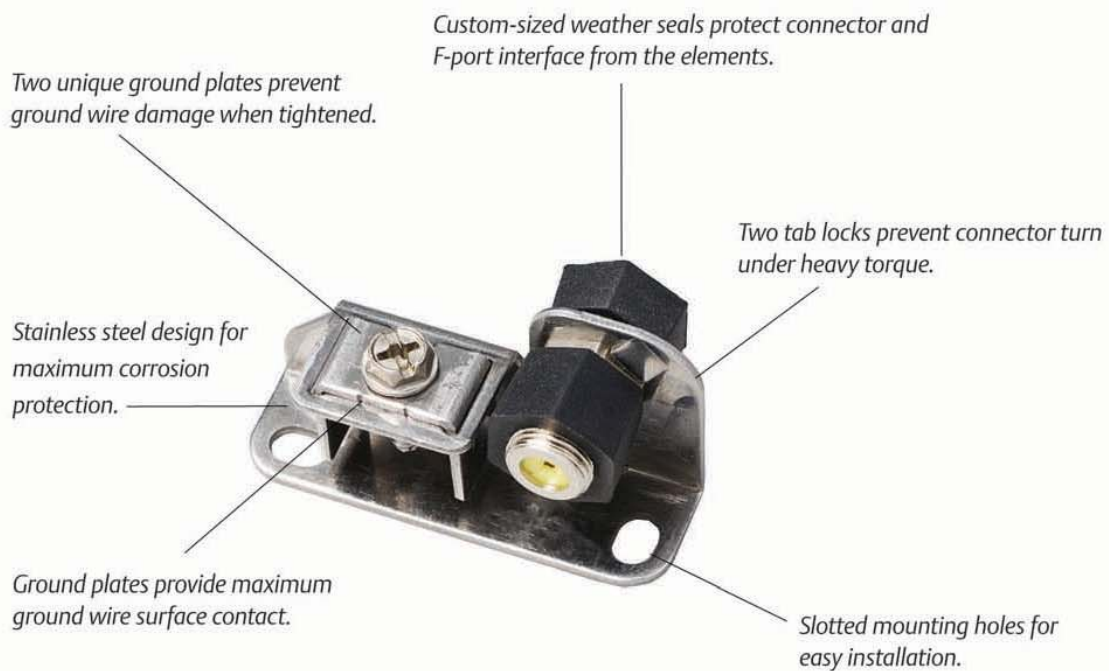


Model BDC1800VF
 8-Output Broadband Digital Directional Coupler, 1GHz
 Tap Values:
 12, 15, 18, 21, 24, 27, 30, 33, 36 dB



Model BDC1100RW
 Raceway Coupler
 5/8" high x 1-1/8" wide
 Tap Values: 6, 9, 12 dB

Premises Hardware



SHOWN ACTUAL SIZE

- Select from either diecast or stainless steel designs
- Unique grounding system ensures maximum ground-contact integrity
- Accepts #6 to #14 ground wire
- Dual bonding blocks come standard with one or two high quality F-81 factory-installed connectors
- For protection from transient voltages induced on the distribution system, choose the Model BB1SP. This high quality Bonding Block in a die-cast zinc housing exceeds IEEE C62.41 B3 surge rating.

Premises Hardware Models

		
<p>Model BBCP Die-cast Housing Bonding Block</p>	<p>Model BB1SP Surge Protected Bonding Block</p>	<p>Model F81CPBC-F81CP1NW Feedthrough Connector</p>
		
<p>Model SB1-GND Nickel Plated Model SB1-GND-SS Stainless Steel</p>	<p>Model DB1-GND Nickel Plated Model DB1-GND-SS Stainless Steel</p>	<p>Model DB2-GN Nickel Plated Model DB2-GN-SS Stainless Steel</p>
<p><i>Weather Seals</i></p> 		
<p>Model SB1-GND-SSWS Stainless Steel with Weather Seals</p>	<p>Model DB1-GND-SSWS Stainless Steel with Weather Seals</p>	<p>Model DB2-GND-SSWS Stainless Steel with Weather Seals</p>

Extreme Broadband Product Features

Housing Design

The Extreme engineered housing provides excellent mechanical integrity, which results in both superior mechanical and electrical performance. Each subscriber passive housing is die cast from zinc alloy and is then plated for maximum corrosion protection. These features provide a strong housing, which has been time-tested for durability and protection against long-term environmental elements. The back cover is also made of a zinc alloy, which, when mated with the zinc alloy housing, eliminates corrosion due to dissimilar metals. The back cover is 100% soldered to the housing, giving exceptional RFI and EMI isolation and protection.

The flat F-ports are precision machine threaded in order to improve electrical and mechanical contact. This ensures excellent RF performance and weather integrity. The Extreme 3600 Digital Contact is designed with a 360-degree flat F-port base providing seating for the entire sealing sleeve, which in conjunction with the weather sealed F-ports, allows for exceptional weather protection.

The F-ports are spaced to accommodate easy mounting in a customer premises box. This spacing



also provides ample space for the installation of RG-11, security sleeves, traps, etc. Integrated heavy-duty mounting tabs are flush with the housing to prevent breaking. Each housing has a label that is designed to be legible for years of service.

Printed Circuit Board

Extreme subscriber passive printed circuit boards are made of CEM-3. These high quality printed circuit boards, along with surface-mounted technology, provide superior RF performance over the life of the splitter. This Extreme advantage ensures the performance from splitter to splitter.

CEM-3 printed circuit boards do not absorb moisture like inferior wafer-style circuit boards, so there's no change in electrical performance and the risk of corrosion is significantly reduced. The surface mounted component is adhered to the circuit board prior to the soldering stage, which guarantees proper placement. The circuit board is also pre-heated to ensure excellent solder flow and prevent cold solder connections. Each printed circuit board is securely mounted in the housing to provide good electrical performance even

when handled roughly. This helps protect the components from damage even when they're bouncing around in vehicle bins.



Extreme Direct-Connect *FIC-Port™* Technology

Extreme Broadband's unique F Interface Connector (FIC) is the cornerstone of the *Infinity Premise System*. This technology enables a direct connection between components without a jumper cable, reducing the number of connections, the chances of common path distortion, and the possibility of unnecessary service calls. The *FIC-Port* was developed from a rigorous engineering program which tested the limits of every conceivable connection failure mode, such as:

Torque The torque limit on average is 90 inch-pounds. This exceeds the 60 inch-pound SCTE specification by 50% for a male F connector guaranteeing mechanical durability under extreme conditions.

Torque vs. EMI A close field probe (shown here) measures electromagnetic radiation at the FIC Port connection with respect to the torque applied to the nut. At 1 inch-pound of torque, the worst case leakage radiation averages -122dB. At 5 inch-pounds and above, leakage is less than -135dB. When just hand-tight, it is about -134dB. This exceeds the accepted -120dB leakage limit for an F connector interface by 14dB even when hand tightened.

Contact Resistance The average contact resistance of the FIC interface measured over a range of DC currents from 2 amps to 6 amps is 7.6 milliohms when mated with a standard *Circumference Premium™* F port. Jumper



cables with two connectors per jumper have more than twice that amount of resistance. The FIC Port reduces the chance of common path distortion (CPD) by half.

Axial Tension The average axial tension limit tested in a dynamometer averages 227 pounds. This is more than three times the retention pull-out strength of premium jumper cables.



Moisture Migration and Pressure The FIC Port Interface was cycle-tested for five days in the environmental chamber to determine the effectiveness of the seals. A red dye was used in the SCTE test procedure (ANSI/SCTE 60 2004) to mark any leakage patterns. No traces of dye were found when the connectors were sectioned. The seals will maintain 15 psi without leakage. Moisture ingress is the leading cause of component failure. The FIC Port is designed and built to ensure maximum environmental protection.

Extreme Broadband Product Features *(continued)*

Surge Resilient Ferrite Core Material

Extreme products are engineered to withstand significant surge currents, while continuing to provide excellent RF performance. All ports are protected with premium 1KV blocking capacitors, capable of withstanding 6kV ring wave surges. The Extreme design eliminates burned-out F-ports and provides excellent hum modulation performance.

The advent of the cable modem has made the use of ferrite core material extremely important. Standard ferrite cores become saturated and magnetized when surges occur. This results in non-linear operation of the splitter. When this occurs, high signal levels from the cable modem



produce second harmonics, which show up on the forward channels as beats.

Extreme splitters incorporate the most advanced ferrite design to minimize core saturation and provide excellent performance from splitter to splitter. Extreme Broadband's unique splitter design provides:

1. Voltage-blocking capacitors on all ports, which prevent current from getting to the ferrite and saturating the core material.
2. An improved ferrite design: careful selection of special ferrite core material, core geometry, wire size and winding of the wire offer ultra linear performance.

Design & Manufacturing

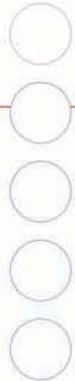
The Benefits of ISO 9000 Certification

Extreme Broadband Engineering gives MSOs the high quality and reliable products they need to deliver the optimal level of service to their subscribers. Our commitment to quality starts in the factory — all Extreme manufacturing facilities are certified to be ISO 9001:2000 compliant. The ISO certification process ensures a commitment to product quality beyond just a final inspection



prior to shipment. The manufacturer must implement quality management systems through every phase of the manufacturing process.

ISO registered facilities reduce product defects dramatically and can significantly lower operating costs. As a result, their customers get competitively priced products and an assurance of quality right out of the box.



The Extreme Approach To Quality

Extreme Broadband's manufacturing facilities embrace the concept of total quality control. The focus is on preventive maintenance, just-in-time management, quality circles, and other principles of quality control. It's a common sense approach to product improvement, better manufacturing practices and enhanced productivity. Every employee in the company, from factory worker up to senior management, undergoes regular quality training.

Each facility that manufactures Extreme products has its own system in place for material inspections, manufacturing, and quality assurance:

Quality Inspections Each part that is supplied to an Extreme factory is measured by the supplier's quality system, if it is an accredited organization, or by direct incoming or receiving inspections.

Manufacturing Quality Inspectors monitor the entire manufacturing process, supervising and reporting each activity in the assembly process.

Quality Assurance This department oversees each assembled lot, selecting random samples for statistical analysis and testing, prior to final approval and release to the customer. The quality department solicits comment from each customer on a regular basis in order to rate his level of confidence and satisfaction.

Extremely Convenient Inventory Control

Providing customer service involves more than just superior technical support. We have developed a user friendly packaging system to simplify ordering and inventory management.

Bar Codes

Bar codes provide an easy way for all product handlers to manage their inventory. In the near future bar codes will be a primary means of inventory control.



Labeling

Both the inner and outer packing cartons are clearly marked with model numbers and quantities for easy identification.

Quantity Pack Size

Our shipping cartons come in two convenient sizes – shelf-packs and larger master case packs.





Designers and Manufacturers of Unique Broadband Products.

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