

Remove 6 Existing



X7CAP-465

65° Azimuth Beam, 50.5 inches

Directing our energies for you.

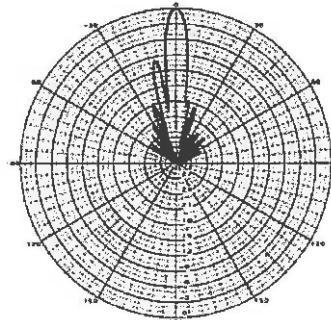
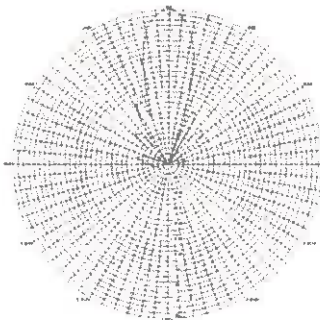
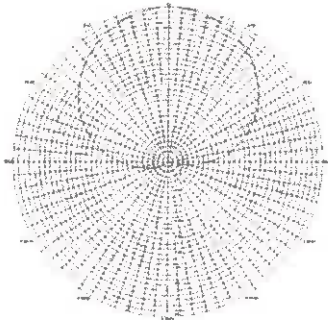
698-896 & 1710-2155 MHz Band

Electrical Specifications

Frequency	698-896 & 1710-2155 MHz
Polarization	Slant +/- 45
Gain @ 698 MHz	11.7 dBd
Gain @ 896 MHz	12.3 dBd
Gain @ 1710 MHz	14.4
Gain @ 2155 MHz	15.0
Horizontal Beam (3dB Points)	65° & 65°
Vertical Beam (3dB Points)	14.5° & 7°
Electrical Downtilt Options	0, 2, 4 or 6°
VSWR	<1.45:1
Front-to-Back at Horizon	>27 dB & >27 dB
Upper Side Lobe Suppression	<-18 dB & <-18 dB
Impedance	50 Ohms
Power Input Per Connector (W CW)	500 Watts
Isolation	<-28 dB
Intermodulation (2x20W)	<-150 dBc

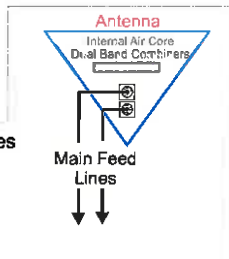
Mechanical Specifications

Input Connector (female)	Back Mounted 7/16 DIN (silver finish)
Antenna Dimensions (inches)	50.5 x 12.5 x 7
Antenna Weight	28 lbs ("-opt" adds 6 lbs)
Bracket Weight	13.4 lbs
Lightning Protection	Direct Ground
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	150 mph
Front Wind Load at 100 mph	123.4 lbs
Front Flat Plate Equivalent	2.5 sq-ft (c=2)
Mounting Brackets	Fits 2.5 to 3 inch Schedule 40 Pipe
Mechanical Downtilt Range	0-12°
Clamps/Bolts	Hot Dip Galvanized Steel/Stainless Steel



Available with Opt "i"

- The Opt "i" antenna option provides Integrated Diplexers that reduce mainline cables and eliminate separate external devices.



5 Year Warranty

Ordering Information & Options

X7CAP-465-xy

X7CAP-465-xyi

X7CAP-465-xyi-bot

X7CAP-465-xyi-bot-#

"xy" is a placeholder for the built-in fixed electrical downtilt in degrees 0,2,4 or 6, "x" for low band, y for high band.

to add the Opt "i" option for integrated diplexers, add "i" to model number

for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)

add a "-j#" to add a 1/2" RF cable, where "#" is the cable length, "j2" is 2 meters, "j4" is 4 meters, "j6" is 6 meters...

HTXCWW63111414Fxy0

Tri Band | FET Panel | XXX-Pol | 65° / 65° / 65° | 11.0 / 14.0 / 14.0 dBi | Fixed Tilt

- Tri band, fixed tilt panel antenna, 6 connectors
- Wide band performance
- Ideal solution for Small Cell applications



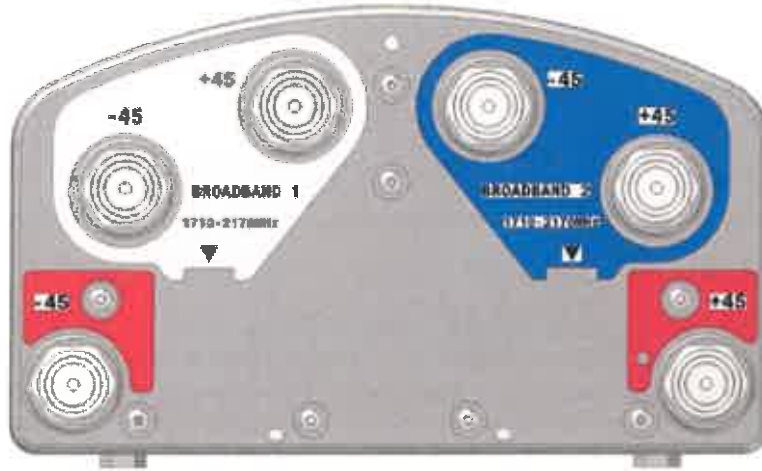
Ordering Options					
When ordering, replace "x" in the model number with the desired low band electrical downtilt and "y" with the desired high band electrical downtilt (same tilt for both high bands). Tilt options are shown below under Electrical Tilt (°).					
Electrical Characteristics	Low Band 696-960 MHz		High Band #1 and #2: 1710-2170 MHz		
Frequency Bands (MHz)	696-806	806-960	1710-1880	1850-1990	1900-2170
Polarization	±45°		2x ±45°		
Horizontal Beamwidth	75°	70°	65°	70°	75°
Vertical Beamwidth	42°	40°	18°	16°	14°
Gain	10.5 dBi	11.0 dBi	13.5 dBi	14.0 dBi	14.0 dBi
Electrical Downtilt (°)	(x) 0, 5		(y) 0, 2, 4, 6		
Impedance	50Ω		50Ω		
VSWR	≤ 1.5:1		≤ 1.5:1		
Front-to-Back Ratio	> 20 dB		> 25 dB		
Isolation Between Ports	> 25 dB		> 25 dB		
IM3 (2x20W carrier)	< -150 dBc		< -150 dBc		
Input Power	500 W		300 W		
Lightning Protection	Direct Ground				
Connector(s)	6 ports / 7/16 -DIN / Female / Bottom				
Mechanical Characteristics					
Dimensions (Height x Width x Diameter)	589 x 305 x 180 mm		23.2 x 12.0 x 7.1 in		
Weight without Mounting Brackets	5.9 kg		13 lbs		
Survival Wind Speed	241 km/hr		150 mph		
Wind Area	Front: 0.18 m ² Side: 0.11 m ²		Front: 1.9 ft ² Side: 1.1 ft ²		
Wind Loads (160 km/hr or 100 mph)	Front: 219 N Side: 129 N		Front: 49 lbf Side: 29 lbf		
Mounting Options	Model Number	Image	Fits Pipe Diameter	Weight	
2-Point Mounting Bracket Kit	MKS04P01		40-115 mm (1.57-4.5 in)	2.9 kg (6.4 lbs)	
2-Point Mounting & Downtilt Bracket Kit	MKS04T03		40-115 mm (1.57-4.5 in)	4.1 kg (9.0 lbs)	

Quoted performance parameters are provided to offer typical, peak or range values only and may vary as a result of normal testing, manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to products may be made without notice.

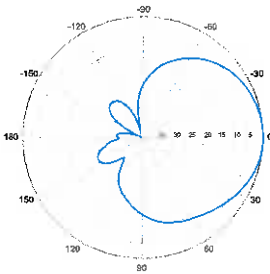
HTXCWW63111414Fxy0

Tri Band | FET Panel | XXX-Pol | 65° / 65° / 65° | 11.0 / 14.0 / 14.0 dBi | Fixed Tilt

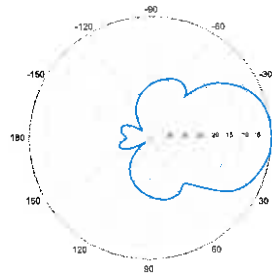
Bottom View



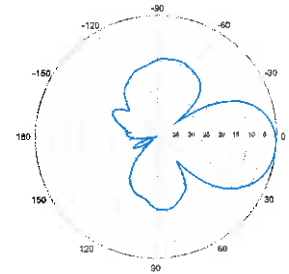
696-960 MHz



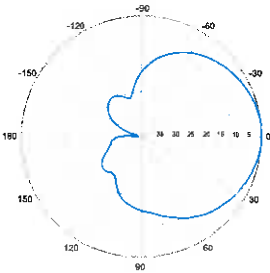
Horizontal | 750 MHz



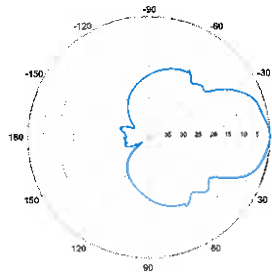
0° | Vertical | 750 MHz



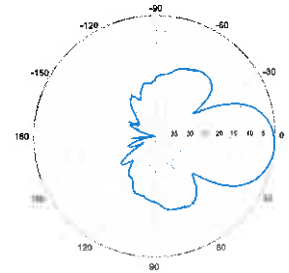
5° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



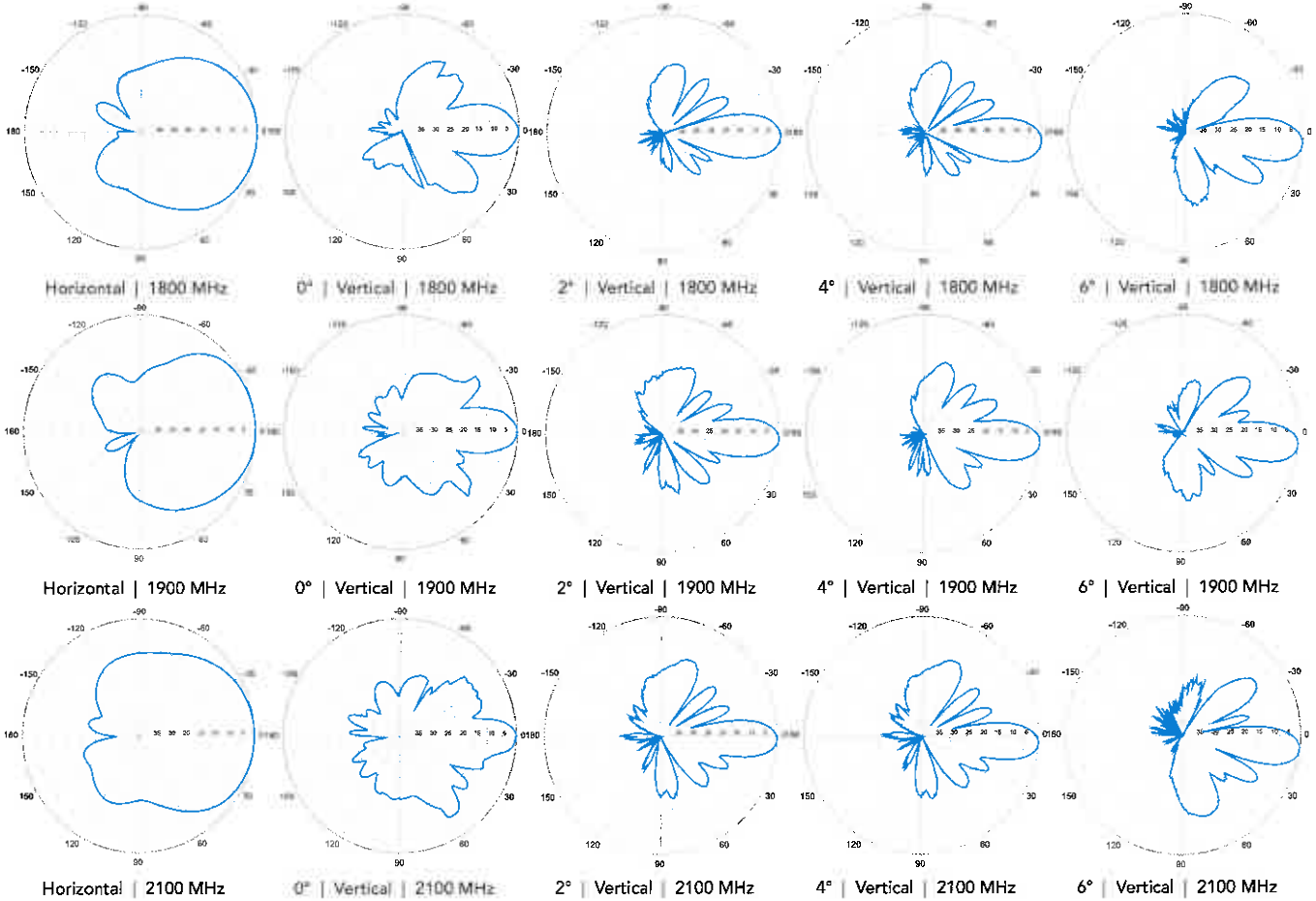
5° | Vertical | 850 MHz

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HTXCWW63111414Fxy0

Tri Band | FET Panel | XXX-Pol | 65° / 65° / 65° | 11.0 / 14.0 / 14.0 dBi | Fixed Tilt

Highband #1 and #2: 1710-2170 MHz

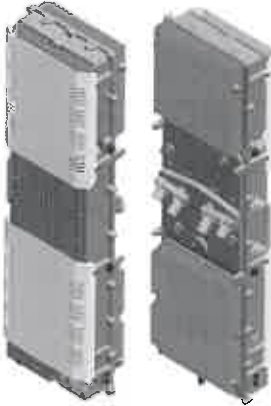


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Proposed 3

ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET RRH2X60-AWS FOR BAND 4 APPLICATIONS

The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-AWS integrates all the latest

technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-AWS is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

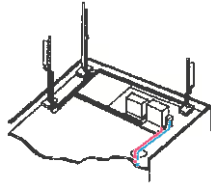
EASY INSTALLATION

The RRH2x60-AWS includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

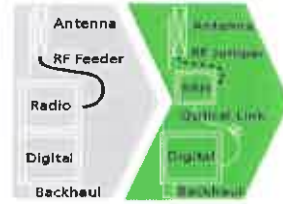
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-AWS is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

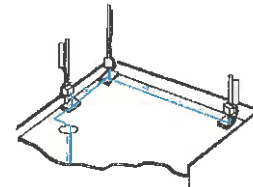
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 25 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and

silent solutions, with minimum impact on the neighborhood, which ease the deployment

- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 930x270x146 mm (with solar shield)
- Weight : 25 kg (55 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 250W @2x60W

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI (3-6) optical ports for daisy chaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 300m using MM fiber, up to 15km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Four external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B, CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

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AT THE SPEED OF IDEAS™

Alcatel-Lucent



Proposed 2

Product Data Sheet DB-B1 and DB-T1 Series



DC and Fiber Management Distribution Boxes for HYBRIFLEX™ Cable

Product Description

RFS' flexible Tower, Base Stations and Rooftop protection and Distribution products provide protection for up to 6 Remote Radio Heads/Integrated Antennas. The solutions mitigate the risk of damage due to lightning and provide high levels of availability and reliability to radio equipment.

Features

- Employs the Strikesorb® 30-V1-HV Surge Protective Device (SPD) specifically designed for the Remote Radio Head (RRH) installation environment and certified for use in DC applications and at low DC operating voltages (48V).
- The Strikesorb 30-V1-HV is a Class I SPD, certified by VDE per the IEC 61643-1 standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb 30-V1-HV is able to withstand direct lightning currents of up to 5kA (10/350) and induced surge currents of up to 60kA (8/20).
- Provides very low let through / clamping voltage – unique for a Class I product – as it does not employ spark gaps or other switching elements. Strikesorb offers unique protection levels to the RRH equipment as well as the Base Band Units.
- Alarms for SPD sacrifice, Moisture detection and Intrusion.
- Fully recognized to the UL 1449 3rd Edition Safety Standard.
- Patent pending design



Tower / Base / Rooftop /
Rooftop Distribution Models:
DB-T1-6Z-12AB-0Z
DB-B1-6C-12AB-0Z

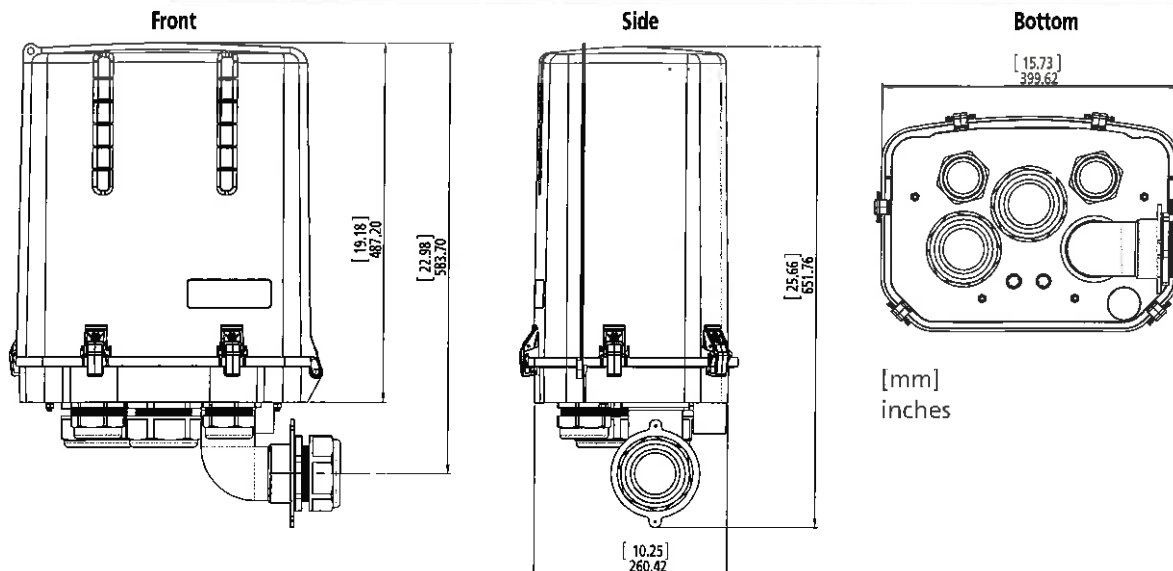


Companion Sector Model:
DB-E1-2C-4AB-0Z

Benefits

- Offers unique maintenance-free protection against direct lightning currents.
- Protects up to 6 Remote Radio Heads and connects up to 12 fiber pairs.
- Utilizes an IP67 rated enclosure, allowing for indoor or outdoor installation on a roof or tower top.
- Configurable cable ports are designed to accommodate varying diameters of hybrid (combined power and fiber optic) or standard cables with diameters up to 2" (will fit most standard 15/8" coax class cables) depending upon port configuration.
- Lightweight aerodynamic design provides maximum flexibility for tower top installation.

Product Diagram



* This data is provisional and subject to change.

RFS The Clear Choice®

DB-B1 and DB-T1 Series

Rev: P1

Print Date: 12.11.2012

All information contained in the present datasheet is subject to confirmation at time of ordering.



Technical Specifications

Electrical Specifications

Model Numbers	DB-T1-6Z-12AB-0Z	DB-B1-6C-12AB-0Z
Nominal Operating Voltage		48 VDC
Nominal Discharge Current [In]		20 kA 8/20 μs
Maximum Surge Current [Imax]		60 kA 8/20 μs
Maximum Impulse (Lightning) Current per IEC 61643-1		5 kA 10/350 μs
Maximum Continuous Operating Voltage [Uc]		75 VDC
Voltage Protection Rating (VPR) per UL 1449 3rd Edition		400V
Protection Class as per IEC 61643-1		Class I
SPD Alarm		Upon sacrifice
Intrusion Sensor		Microswitch
Moisture Sensor		Infrared moisture detector
Strikesorb Module Type	No Strikesorb modules installed <i>(used as Distribution Unit only)</i>	30-V1-HV -- Strikesorb modules installed to protect 6 RRHs

Mechanical Specifications

Suppression Connection Method	Compression lug, #20-#6 AWG (0.5 mm ² -16 mm ²)	
Fiber Connection Method	LC-LC Single mode	
Pressure Equalizing Vent	Gore™ Vent	
Environmental Rating	IP 67	
Operating Temperature	-40° C to +80° C	
UV Resistant	Yes	
Weight	System: 16.0 lbs (7.25 kg) Mount: 5.5 lbs (2.49 kg) Total: 21.5 lbs (9.75 kg)	System: 21.4 lbs (9.70 kg) Mount: 5.5 lbs (2.49 kg) Total: 26.9 lbs (12.20 kg)
Combined Wind Loading	150mph (sustained): 200 lbs (889.6 N)	

Standards Compliance

Standards (Strikesorb modules ONLY)	Not Applicable	ANSI/UL 1449 3rd Edition IEEE C62.41, NEMA LS-1 IEC 61643-1:2005 2nd Ed (Class I Protection) IEC 61643-12 EN 61643-11:2002 (including A11:2007)
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