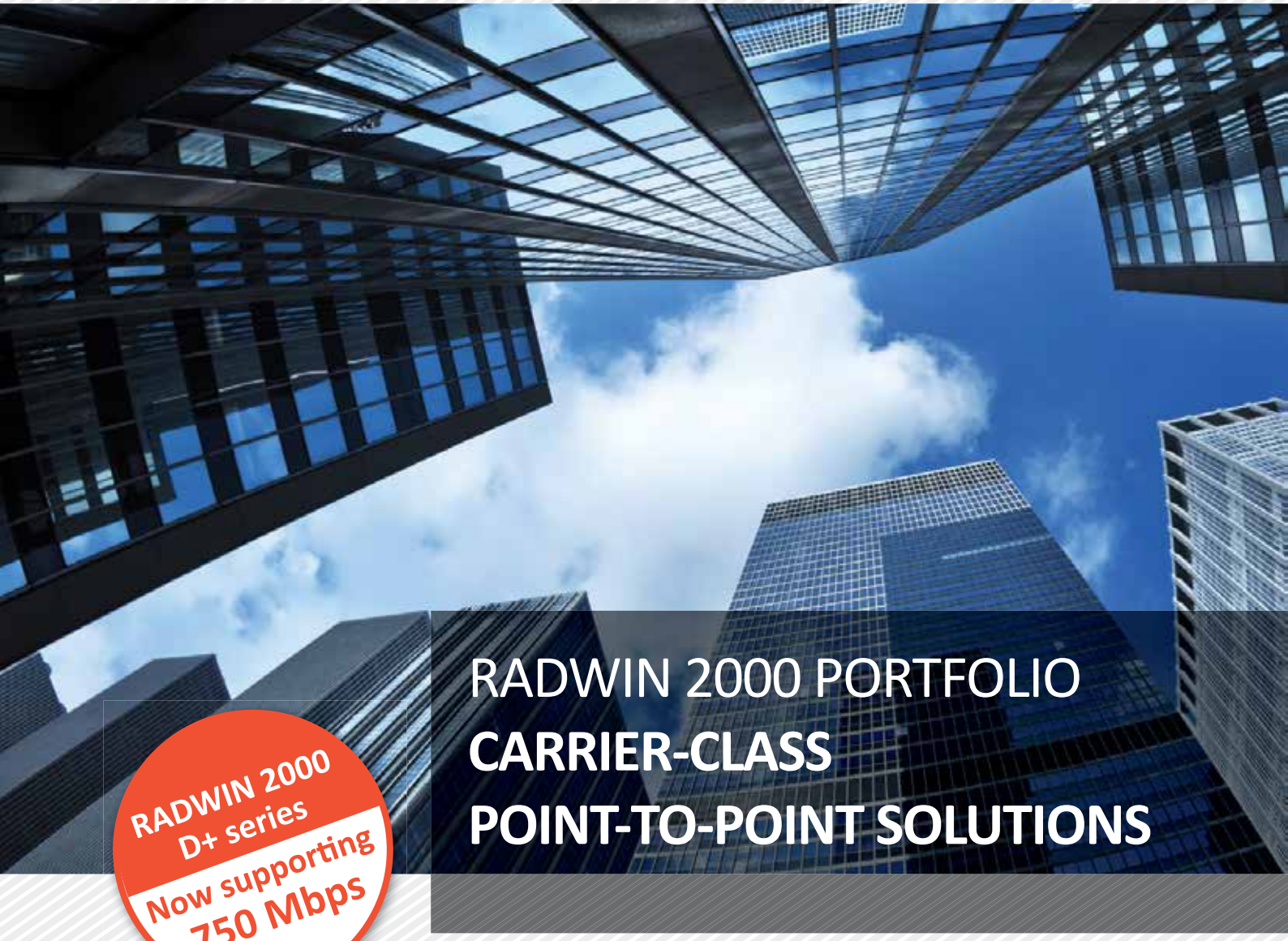


RADWIN 2000 PORTFOLIO
CARRIER-CLASS POINT-TO-POINT SOLUTIONS

RADWIN 2000 D+ series
Now supporting 750 Mbps

RADWIN 2000 sub-6 GHz point-to-point portfolio delivers 10 to 750 Mbps and is ideal for carriers and vertical markets that require high capacity backhaul and access connectivity.

RADWIN

www.4Gon.co.uk info@4gon.co.uk Tel: +44 (0)1245 808295 Fax: +44 (0)1245 808299

RADWIN 2000 PORTFOLIO
CARRIER-CLASS POINT-TO-POINT SOLUTIONS

The RADWIN 2000 portfolio offers sub-6 GHz licensed and unlicensed wireless broadband solutions that deliver high throughput of up to 750 Mbps and operate for extensive range. Supported bands include 2.3-2.4 GHz, 3.3-3.8 / 3.65 GHz, 4.4-6.0 GHz and 5.7-6.4 GHz. Compact and robust, RADWIN 2000 products provide Ethernet and native TDM (up to 16 E1s/T1s), thus facilitating seamless migration from TDM to all-IP networks.

RADWIN 2000 radios incorporate state-of-the-art technologies such as MIMO, OFDM and high modulation schemes including QAM 256. Unique air interface capabilities ensure optimal performance and high spectral efficiency in dense radio environments and multipath conditions. RADWIN 2000 radios also support QoS and advanced networking features such as VLAN and Q-in-Q.

RADWIN 2000 radios can be deployed in point-to-point and multiple point-to-point topologies and support intra-site and inter-site TDD synchronization to maximize network capacity. The radios incorporate built-in 1+1 redundancy and ring protection functionality to maximize service availability.

RADWIN 2000 products comply with worldwide regulations and standards and are deployed globally by leading carriers, service providers and public and private networks requiring high-capacity connectivity.

WIN

RADWIN 2000 Portfolio Highlights

High capacity & long range

- 10 to 750 Mbps net aggregate throughput
- Pay as you grow capacity
- Long range - up to 120 Km/75 miles
- Native TDM (up to 16 E1s/T1s) + Ethernet

Robust operation

- Telco-grade, operates in harsh conditions
- Unmatched performance in dense radio environments
- Field proven operation in nLOS / NLOS
- Inter & Intra site TDD synchronization to maximize network capacity
- Ethernet service protection via 1+1 and ring topologies

Easy to install & maintain

- Multi-band radio supports multiple frequency bands on same platform
- QoS and VLAN capabilities

RW 2000 D+ Series - up to 750 Mbps

RW 2000 C Series - up to 200 Mbps +16E1s/T1s

RW 2000 B Series - up to 50 Mbps +8 E1s/T1s, upgradable to 200 Mbps

RW 2000 A Series - 10/25/50 Mbps + 2 to 8E1s/T1s, upgradable to 100 Mbps

HIGH-CAPACITY RADIOS FOR IP & TDM BACKHAUL

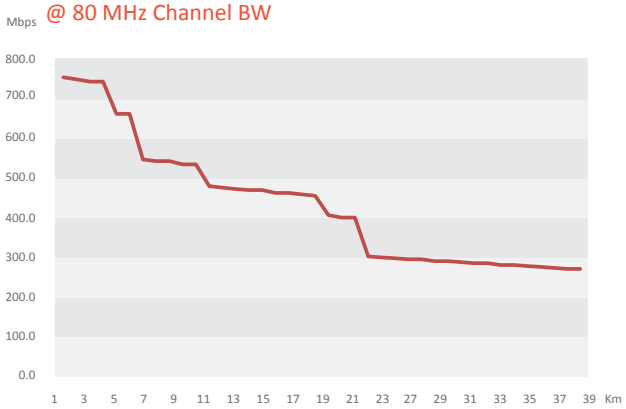
RADWIN 2000 D+ Series

Delivering up to 750 Mbps Ethernet throughput, RADWIN 2000 D+ series is ideal for IP backhaul applications. RADWIN 2000 D+ series provides high spectrum efficiency by employing a QAM 256 modulation scheme.

RADWIN 2000 D+ Series radios deliver high performance even in a highly congested spectrum by utilizing RADWIN's enhanced interference mitigation techniques and D-CBS (Dynamic Channel Bandwidth Selection). D-CBS is a unique feature that selects the widest channel bandwidth (up to 80 MHz) yet with minimal interference to maximize link throughput.

RADWIN 2000 D+ radios deliver 350 Mbps in 40 MHz and support 20 and 10 MHz channel bandwidth. The solutions build on RADWIN's extensive experience in designing systems that commercially operate in nLOS/NLOS environments and overcome severe multipath conditions.

RADWIN 2000 D+ Series Total Throughput
@ 80 MHz Channel BW

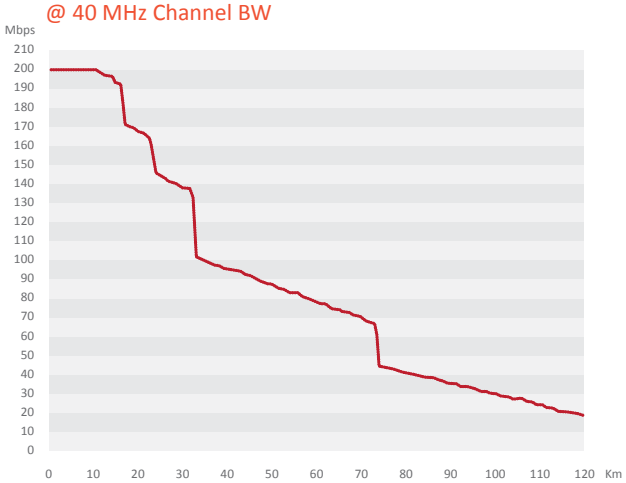


* 5.x Ghz, 28 dBi antenna

RADWIN 2000 C Series

Delivering up to 200 Mbps net aggregate throughput and up to 16 E1s/T1s this radio unit is ideal for operators seeking a carrier-class solution for IP and TDM backhaul with guaranteed QoS. Delivering IP and TDM over the same link enables seamless migration from legacy TDM to all-IP networks.

RADWIN 2000 C Series Total Throughput
@ 40 MHz Channel BW



* 5.x Ghz, 28 dBi antenna

RADWIN 2000 B Series

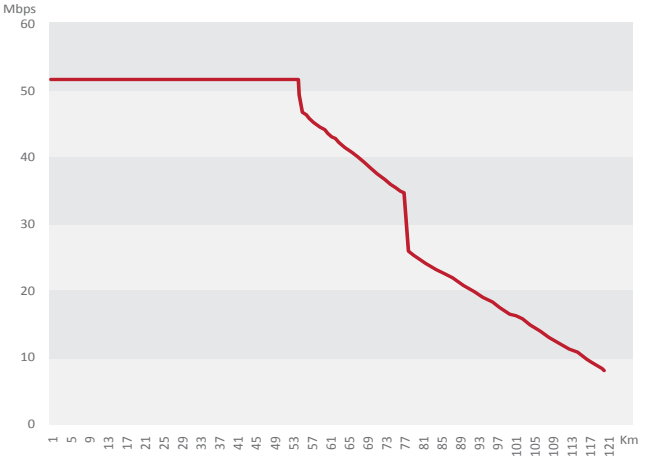
Delivering up to 50 Mbps net aggregate throughput and up to 8 E1s/T1s, this radio is upgradable to 100 and 200 Mbps via a software key. The radio unit is available with a 23dbi antenna or with a small form factor antenna and built-in connectors for an optional external antenna. This unique configuration assures greater installation flexibility while reducing inventory burden. The radio unit is ideal for carrier-class IP and TDM access and backhaul applications that require high availability and guaranteed QoS.

RADWIN PtP radios operate in symmetric and asymmetric modes: RADWIN 2000 B & C Series uplink and downlink capacities are dynamically allocated based on traffic load and air-interface conditions, while in RADWIN 2000 D+ the ratio between the uplink and downlink capacity is configurable.

Extremely simple to install and maintain, RADWIN's solutions operate flawlessly in the most challenging surroundings, including non-line-of-sight scenarios, dense urban environments and extreme temperatures.

For operators who want to break the capacity barrier and meet the skyrocketing demand for broadband, RADWIN's radios are the right choice.

RADWIN 2000 B Series Total Throughput
@ 20 MHz Channel BW



* 5.x Ghz, 28 dBi antenna

RADWIN 2000 D+ Series Highlights

- Up to 750 Mbps Ethernet throughput
- Range of up to 40 Km/25 miles
- D-CBS maximizing link capacity in congested spectrum
- Configurable asymmetric capacity
- Auto selection between MIMO and Diversity modes for optimal NLOS performance

RADWIN 2000 C Series & RADWIN 2000 B Series Highlights

» 50 to 200 Mbps net aggregate throughput

» Pay as you grow capacity

» Native TDM (up to 16 E1s/T1s) + Ethernet

» Long range - up to 120 Km/75 miles

» Fixed or dynamic asymmetric capacity

» Ethernet service protection through 1+1 and ring topology

ODU with Integrated Antenna

IDU-H

Ethernet aggregation unit for 6 ODUs

IDU-E

Ethernet + 2 E1s/T1s indoor unit

IDU-C

Ethernet + 4, 8, 16 E1s/T1s indoor unit

"RADWIN 2000 is robust and durable enough to withstand the toughest outdoor conditions, and is very simple to install and maintain."

Jim Makepeace
Director of Network Engineering
Revol Wireless
USA

"RADWIN's links have exceeded our expectations in terms of capacity, security and robustness.

The bandwidth provided by the wireless network has been phenomenal and we are able to transfer massive amounts of data files and x-ray images in seconds."

Dr I Hansrod
Medical Director
Jackpersad Radiology Center
South Africa

"We chose RADWIN 2000 because we liked the throughput of 100 Mbps which was the perfect fit for our requirements. The installation was easy and fast, and connectivity was easily achieved even in a difficult 5.8 GHz band where the spectrum is very tight."

Kevin Kluge
Planning Engineer
Bug Tussel Wireless Carrier
Wisconsin, USA

"What really sets RADWIN's systems apart is that they are exceptionally robust and transmit video from mega-pixel cameras with crystalline image quality. Thanks to RADWIN's surveillance network, the Maserà municipality is providing a safe city environment for its citizens."

Lorenzo Zanfardin
Director
SAIV (SI)
Italy

RADWIN 2000 A SERIES FOR IP & TDM ACCESS

RADWIN 2000 A Series radios are available in three models:

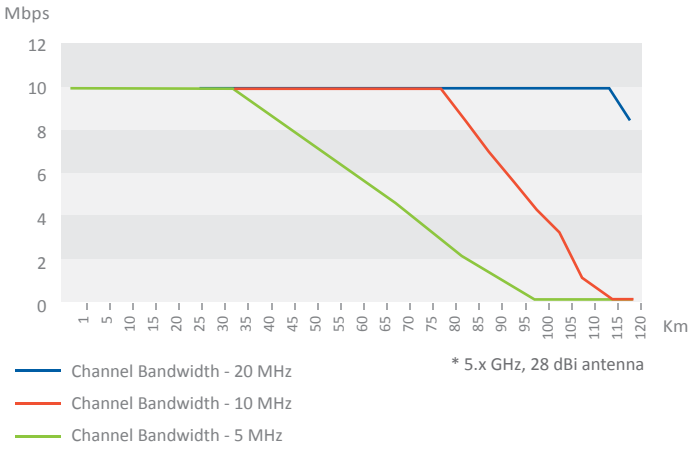
- Supporting 50 Mbps net Ethernet throughput and up to 8 E1s/ T1s
- Supporting 25 Mbps net Ethernet throughput and up to 4 E1s/T1s
- Supporting 10 Mbps net Ethernet throughput and up to 2 E1s/T1s

Ethernet capacity can easily be upgraded up to 100 Mbps via a software key. This assures a low initial investment while securing future capacity growth. RADWIN 2000 A Series is available with 17 or 23dbi integrated antenna or as a connectorized unit.

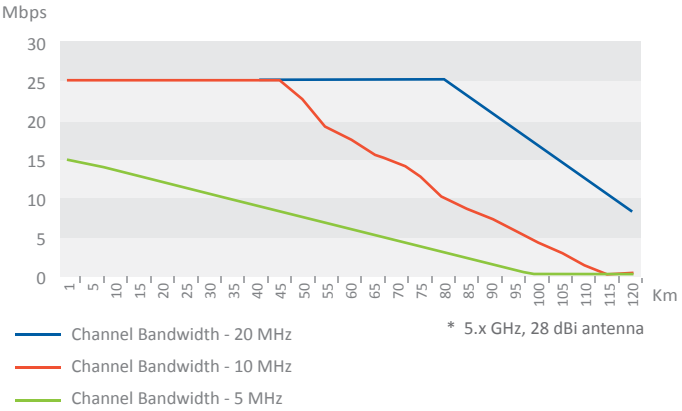
RADWIN 2000 A Series radios are ideal for carrier access applications that require SLAs and for private networks seeking carrier-class solutions. Incorporating the RADWIN 2000 advanced features, RADWIN 2000 A Series radios enable optimal spectrum utilization using MIMO and OFDM technologies, combined with RADWIN's field-proven interference mitigation techniques critical for operation in dense urban environments.

Housed in compact, extremely small form factor units, the RADWIN 2000 A Series radios are ideal for deployments where a small equipment footprint is required.

RADWIN 2000 A Series 10 Mbps - Total Throughput



RADWIN 2000 A Series 25 Mbps - Total Throughput



RADWIN 2000 Specifications

Configuration

Architecture	ODU: Outdoor Unit with Integrated Antenna, Embedded Antenna or Connectorized Unit for External Antenna IDU: Indoor Unit or PoE device

Outdoor Units (ODUs)

	D+ Series	C-Series[1]	B-Series	A-Series
Max Throughput				
Ethernet	750Mbps	200Mbps	50Mbps upgradable to 200Mbps	10Mbps, 25Mbps, 50Mbps, upgradable to 100Mbps
TDM E1 / T1 Trunks		16	8	2 4 8
Radio				
Range	Up to 40km / 25 miles	Up to 120km/75 miles		
	5.145-6.090 GHz	2.297-2.482 GHz 3.300-3.800 / 3.65 GHz 4.390-5.010 GHz 4.900-6.060 GHz 5.890-6.410 GHz	2.297-2.482 GHz 4.900-6.060 GHz 5.890-6.410 GHz	2.297-2.482 GHz 4.890-5.960 GHz
Channel Bandwidth	10/20/40/80 MHz	5/10/20/40 MHz	5/10/20/40 MHz	5/10/20 MHz
Maximum Tx Power	25 dBm @ 3.3-3.8 GHz, 4.9-6.4GHz, 26 dBm @ 2.3-2.5 GHz			
Adaptive Modulation & Coding	10 levels: BPSK to 256QAM	8 levels: BPSK to 64QAM		
Radio Access Scheme	MIMO 2x2 - OFDM			
Duplex Technology	TDD			
Asymmetric TDD	Configurable	Adaptive		
Dynamic Channel BW Selection	20/40/80MHz or 20/40MHz			
DFS / ACS	Supported			
Diversity	Polarization and Spatial Diversity supported			
Spectrum View	Built-in Spectrum Analyzer			
TDD Synchronization	Intra-site and inter-site using GPS			
Encryption, US Security	AES128, FIPS197			
Maximum Information Rate	Supported			
Service Protection		Built in support: 1+1 and Ring topology		
QoS	4 levels supported, Strict priority, TTL	4 levels supported		
Maximum Frame Size	2048 bytes			
Latency	< 3msec			
Management				
Link Management	Application RADWIN Manager			
Protocol	SNMPv1, SNMPv3, Telnet and HTTP			
NMS Application	RADWIN NMS (RNMS)			
Web- based Management	Web access via browser			
Dimensions and Weight				
Integrated ODU (w)x(h)x(d) Cm	30 x 30 x 10; 2.9 kg / 6.4 lbs			With 23dbi Antenna: 30x30x10; 2.9kg/ 6.4lbs With 17dbi Antenna: 17x21x7; 1.2kg / 2.65 lbs
Connectorized ODU (w)x(h)x(d)	19.5 x 28.0 x 8.0; 2.4 kg / 5.29 lbs			17x21x7; 1.2kg / 2.65 lbs
Power				
Power Feeding	Via Indoor Unit or PoE device			
Power Consumption	25W (ODU + POE)			22W (ODU+ IDU); 12W (ODU+ PoE device)
Environmental				
Operating Temperatures	-35°C to 60°C / -31°F to 140°F; For -55°C / -67°F advise local RADWIN REP			
Humidity	100% condensing, IP67 (totally protected against dust and immersion up to 1m)			
Shock and Vibration	EN 300 019-2-4 IEC 60068-2 Class4M5			

[1] 250Mbps capacity is available in 3.300-3.800/3.65GHz & 4.900-5.150GHz using RADWIN 2000 C+. For data sheet please contact RADWIN local Rep.

Radio Regulations	
FCC	47CFR Part 15 Subpart C; 47CFR Part 15 Subpart E (D-Plus Series is pending FCC certification in 5.3 GHz and 5.4 GHz band ,due in May/2015); 47CFR Part 90 Subpart Y; 47CFR Part 90 Subpart Z UCBP
IC (Canada)	RSS-210 (D-Plus Series is pending IC certification in 5.3 GHz and 5.4 GHz band, due in May/2015. Band 5.1 GHz is not supported); RSS-111 RSS 192 RSS 197 UCBP
ETSI	EN 300 328; EN 301 893; EN 302 502, EN 302 326-2
WPC (India)	GSR-38
MII (China)	5.8 GHz Band Regulation
Safety	
FCC/IC (cTUVus)	UL 60950-1, UL 60950-22, CAN/CSA C22.2 60950-1, CAN/CSA C22.2 60950-22
ETSI	EN/IEC 60950-1, EN/IEC 60950-22
EMC	
FCC	47CFR Part15 Subpart B, Class B
ETSI	EN 301 489-1, EN 301 489-4
CAN/CSA	CISPR 22Class B
AS/NZS	CISPR 22Class B

Indoor units (IDUs)

Ethernet Interface

	PoE	IDU-H		IDU-C	IDU-C EO	IDU-E	IDU-EO
		WAN	LAN				
Ports	1x 10/100/1000BaseT	6 x PoE-10/100/1000BaseT	2 x 10/100/1000BaseT 2 x SFP GbE	2 x 10/100BaseT 1 x SFP FE	2 x 10/100/1000BaseT 1 x SFP GbE	2 x 10/100BaseT	

TDM Interface					
Number of E1s/ T1s Ports			Up to 16		2
Framing	Unframed (transparent)				
Timing	Independent timing per port, Tx and Rx				
Standards Compliance	ITU-T G.703, G.826				
Latency	Configurable: 5-20 msec (default: 8 msec)				
Jitter & Wander	According to ITU-T G.823, G.824				
Service Protection	Monitored Hot Standby (MHS) 1+1 (using IDU-C)				
Dimensions and Weight					
Dimensions (w)x(h)x(d) Cm					
Weight		1U Half 19" width, 22 x 5 x 21	44 x 5 x 21;	22 x 4.5 x 18;	
Power		1.5kg / 3.3 lbs	1.2 kg / 2.65 lbs	0.45kg / 1.0 lbs	
Power Feeding	-20 to -60 VDC (dual feed in IDU-C); 100-240 VAC, 50/60 Hz; -45 to -55 VDC (dual redundant power feeding for IDU-H)				
Environmental					
Operating Temperatures	0°C to 50°C / 32°F to 122°F				
Humidity	90% non-condensing				
Safety					
TUV	IEC/EN 60950-1, UL 60950-1, CAN/CSA-C22.2 No. 60590-1				
EMC					
FCC	Class B Part 15 Subpart B				
ETSI	EN 300 386, EN 301 489-1, EN 301 489-4				
CAN/CSA	ICES 003 CISPR 22 Class B				
AS/NZS	CISPR22 Class B				