



RF OVER FIBER SATELLITE PHONE DISTRIBUTION SYSTEM

Iridium Re-Rad and Direct-Connect Series



Features

- Compact Environmentally Hardened IP-67 Outdoor Enclosures House RF and Fiberoptic Components
- Ceiling Mount and/or 19" 1RU Rack Mount Chassis Indoor Units House RF and Fiberoptic Components
- Single and Dual Outdoor Antenna Systems
- System is Transparent to Any Approved Iridium Equipment
- Fiberoptic Cabling Supports Location of Indoor Equipment up to 1 km Away From Outdoor Line-of-Sight Antennas
- Support for Voice and Data Modems
- Support for Direct Connection of Phone Docking Stations to Indoor Unit Over Copper
- Support for Re-Radiated Wireless Indoor Connections via Indoor Antennas
- Receive Only Satellite Paging + GPS Transport Supported
- Systems Available to Support Globalstar, Inmarsat, and Thuraya Requirements

Applications

- Large Buildings
- Underground Facilities, Mines, Tunnels
- Maritime
- Oil & Gas Platforms
- Secure Military Facilities
- Disaster Recovery

IRIDIUM

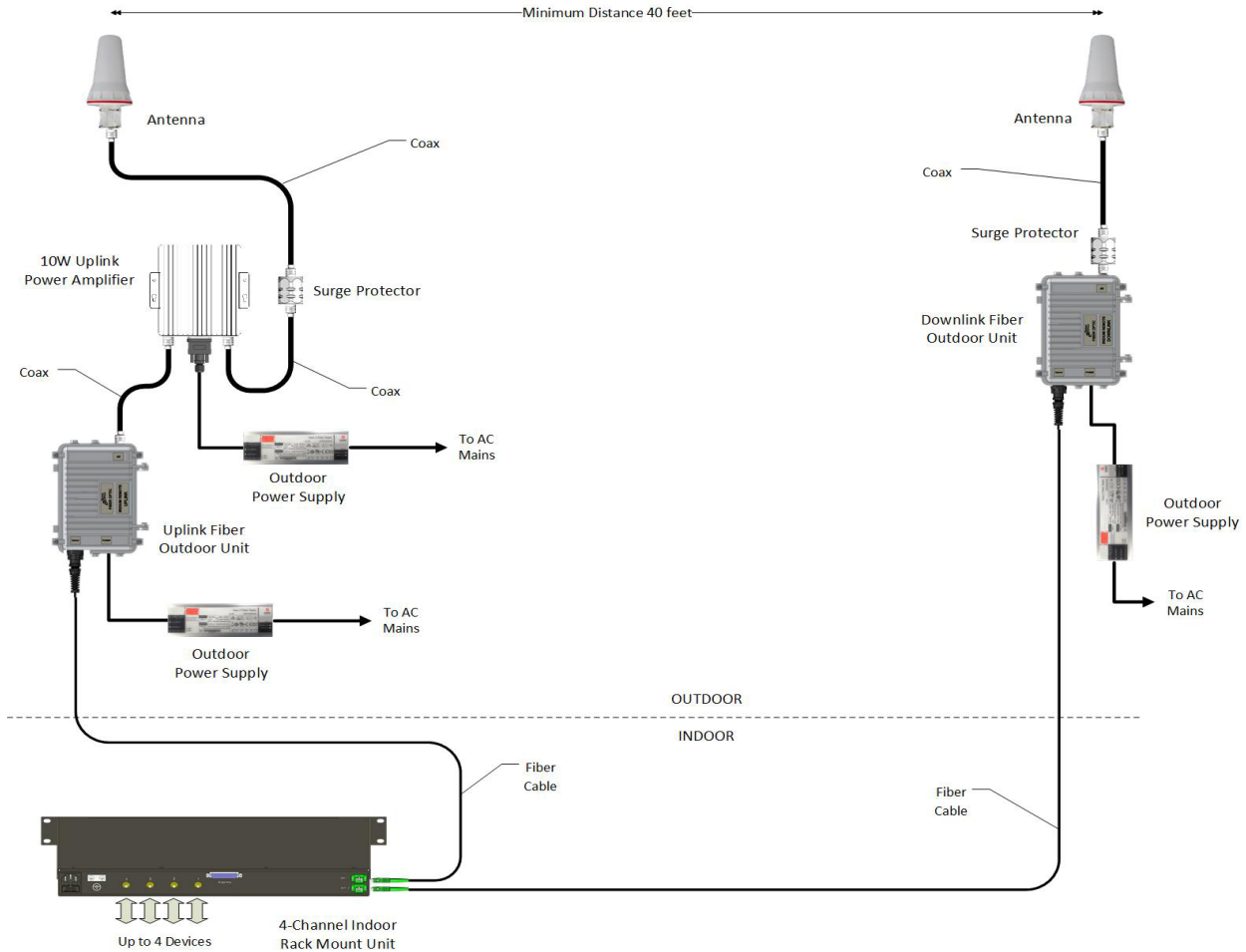
Iridium

Optical Zonu's Iridium over fiber solution is designed for applications requiring satellite communications where a clear view of the sky is not available. The system allows remote antennas to be installed at an ideal location with a clear view of the sky, linking with master indoor units over fiber optic cable. The master unit can be located up to 1 kilometer away from the outdoor antennas, allowing a flexibility that cannot be achieved with a simple antenna coaxial cable kit. The Optical Zonu optical fiber kits transport bi-directional (or uni-directional) RF traffic between the antennas and subscriber units over singlemode fiber cables. The Iridium systems support applications and locations such as oil rigs, large ships, inside of large buildings, or within the deepest mines and tunnels. The systems are designed to be transparent to any Iridium communication equipment and will function with both voice and data services. This is a flexible solution available in several architectures.

In addition to Iridium communications, GPS timing signals can also be incorporated onto the same downlink fiber via a third GPS antenna. This extends the flexibility of the system by allowing the communications link to also carry a precise GPS signal that can be used for timing and synchronization. The system can be tailored to fit specialized applications. An option for receive-only Iridium paging plus L1 GPS is also available.

Optical Zonu satellite phone systems are also available for Globalstar (1.615 GHz uplink, 2.491 GHz downlink), Inmarsat (1.643 GHz uplink, 1.542 GHz downlink), and Thuraya (1.644 GHz uplink, 1.542 GHz downlink). Many options are available, contact a sales representative for more information.

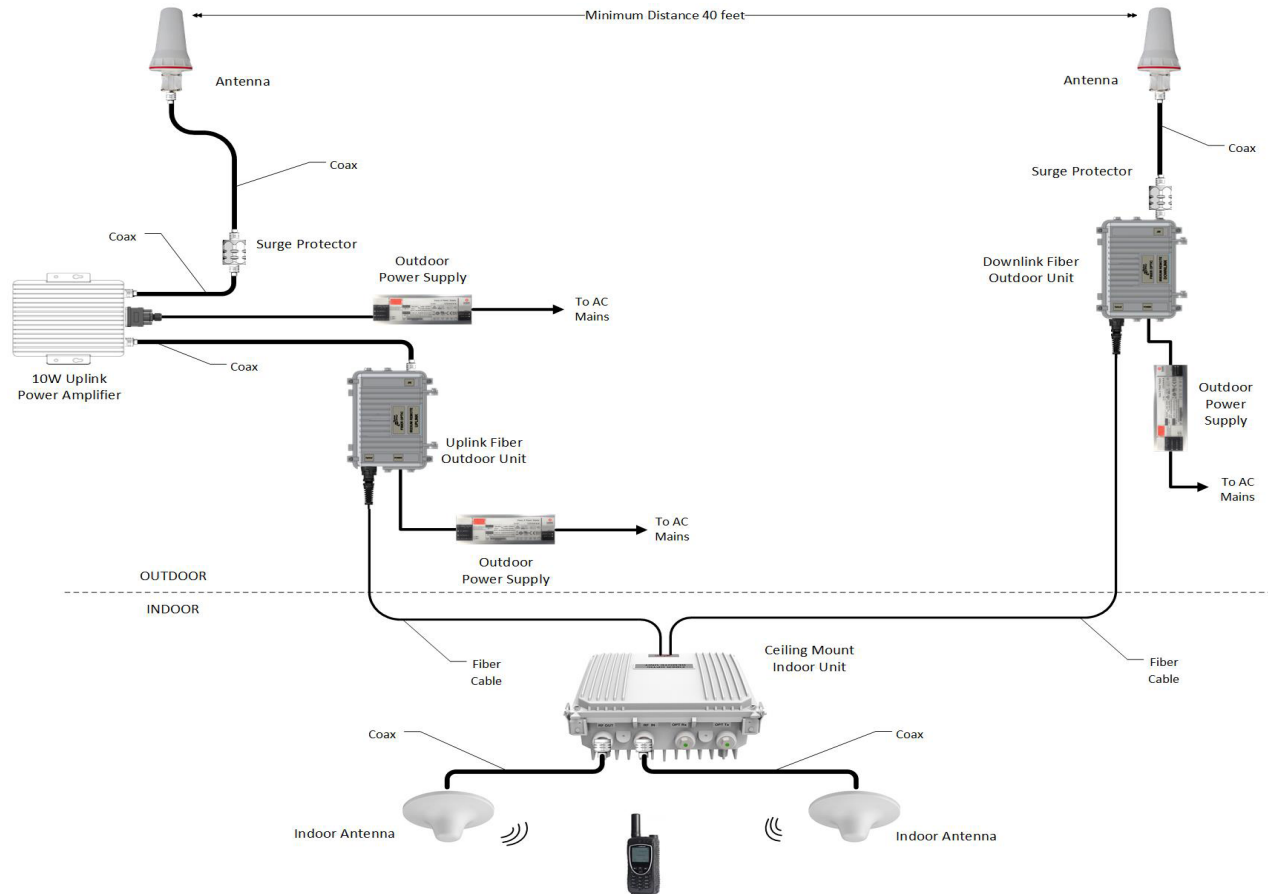
Direct Connection Architecture



The Iridium direct connection architecture consists of outdoor antennas connecting over fiber to an Optical Zonu indoor unit that supports the direct connection of phones and/or data modems over copper media.

- Connect up to four satellite phones (or data modems) directly to Optical Zonu indoor unit
- Outdoor uplink equipment consists of Optical Zonu IP-67 enclosed fiberoptic receiver, power amplifier, and antenna
- Outdoor downlink equipment consists of Optical Zonu IP-67 enclosed fiberoptic transmitter and antenna
- All outdoor units are powered from +12 VDC
- Indoor 19" 1RU rack mount unit is powered by AC or 48 VD
- Optical distribution cable connects each outdoor unit to indoor unit

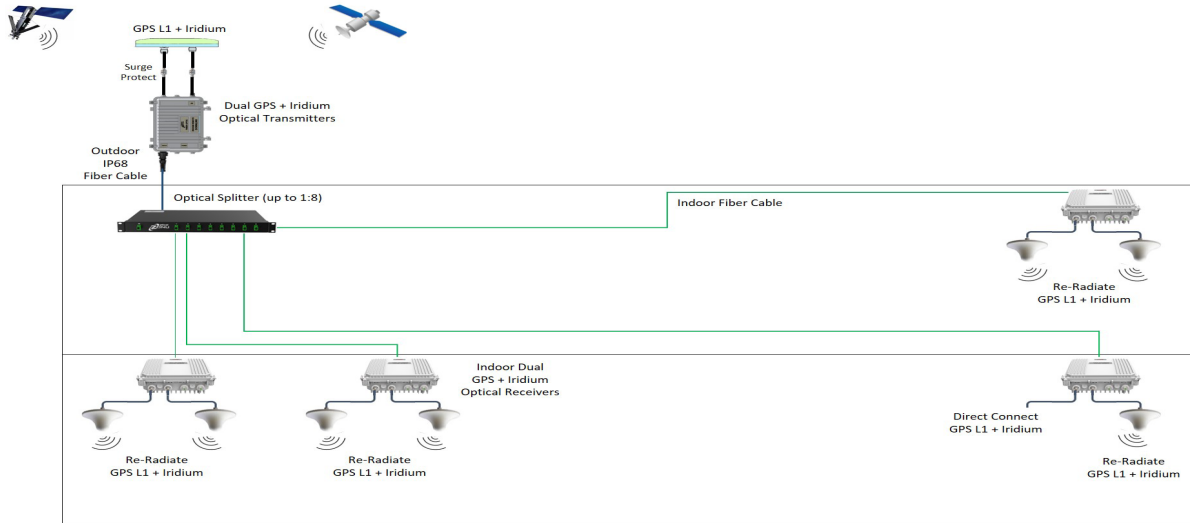
Re-Radiating Architecture



The Iridium re-radiating architecture consists of outdoor antennas connecting over fiber to an indoor unit which supports the connection of indoor Iridium re-radiating antennas. Phones connect wirelessly to the re-radiating antennas.

- Connect up to four satellite phones (or data modems) wirelessly to Optical Zonu indoor unit via re-radiating antennas (one transmit, one receive)
- Outdoor uplink equipment consists of Optical Zonu IP-67 enclosed fiberoptic receiver, power amplifier, and antenna
- Outdoor downlink equipment consists of Optical Zonu IP-67 enclosed fiberoptic transmitter and antenna
- Outdoor units and indoor unit are powered from +12 VDC
- Indoor unit is a ceiling mount enclosure
- Optical distribution cable connects each outdoor unit to indoor unit

Iridium Paging + GPS Receive Only Architecture



The Iridium paging + GPS architecture consists of a single receive only outdoor antenna that transports both Iridium paging plus L1 GPS to the appropriate indoor units.

- Broadcast Iridium paging messages and L1 GPS signals to multiple locations within a building, tunnel, etc.
- Outdoor equipment consists of Optical Zonu IP-67 enclosed fiberoptic transmitter and a single antenna
- GPS path contains a 33 dB low noise amplifier
- Indoor and outdoor units are powered from +12 VDC
- Optical distribution cable connects the outdoor unit to one or more indoor units using an optical splitter (optional)
- Multiple indoor units may be supported at diverse locations
- Indoor units are ceiling mount enclosures
- Indoor units may connect directly to GPS receivers and/or to multiple Iridium pagers either wirelessly or direct connected.

Absolute Maximum Ratings

Parameter	Min	Typical	Max	Units	Notes
Storage Temperature	-40		+85	°C	
Operating Temperature IDU	0		+40	°C	
Operating Temperature ODU	-20		50	°C	Ambient
DC Supply Voltage – ODU and PA			13VDC	Volts	PA AC Version Available
AC Supply Voltage – IDU	110/60		240/50	Volts/Hz	

RF Parameters – Iridium Downlink

Parameter	Re-Rad System					Direct-Connect System				
	Min	Typical	Max	Units	Notes	Min	Typical	Max	Units	Notes
Frequency	1616		1625.5	MHz		1616		1625.5	MHz	
Noise Figure			5	dB				5	dB	
Link Gain		50		dB	ODU -> IDU End to End RF Gain		10			
Return Loss	12			dB	All Ports	12			dB	All Ports
Coverage Area		20x20		m ²	-3 Meter Ceiling					
No. of Phones						1		4		
Impedance		50		Ohms			50		Ohms	
Outdoor RX Antenna Operating Composite RF input Power		-50	-40	dBm	Linear Operation		-50	-40	dBm	

RF Parameters – Iridium Uplink

Parameter	Re-Rad System					Direct-Connect System				
	Min	Typical	Max	Units	Notes	Min	Typical	Max	Units	Notes
Frequency	1616		1625.5	MHz		1616		1625.5	MHz	
Link Gain		50		dB	IDU -> ODU End to End RF Gain		0		dB	
Output Power Remote Antenna		6.2	10	watt	Power Amplifier Output		6.2	10	watt	Power Amplifier Output
Number of Phones						1		4		
Coverage Area		20x20		m ²	-3 Meter Ceiling					
Return Loss	12			dB	All Ports	12			dB	All Ports
Impedance		50		Ohms			50		Ohms	
Indoor Composite RF Input Power		-20		dBm	Linear Operation					

Optical Parameters

Fiber	Single Mode (Multimode can be supported - Contact Factory)
Optical Loss	Available up to 5dBo (Contact factory for more details)
Optical Wavelength Downlink	1550 or 1310 nm
Optical Wavelength Uplink	1550 or 1310 nm
Fiber Length Max	5Km

Electrical Parameters

Power Amp	Voltage Peak	+12VDC
	Current	2.5A
	Idle Current	300mA
Voltage	Remote Unit	+12VDC
	Master Unit	100 - 240 VAC, 50 - 60 Hz
Current	Remote Unit	400 mA MAX
	Master Unit	<100mA AC

Environmental

Operating Temperature	Remote Unit	-40 to +50 °C
	Master Unit	0 to +40 °C

Mechanical Parameters

Dimensions	Remote Unit	9.25" W x 6" H x 3" D
	Master Unit	19" W x 1.75" H x 7.8" D
Connectors	RF	N (F): Remote Unit SMA (F): Master Unit and PA
	Amplifier	TNC
	Optical	Senko IP-SC / APC (Remote Unit) SC / APC (Master Unit)
	DC	2.1 mm Sealed Power Lock

OZC KIT PART NUMBERS and individual Part Numbers for modules, cables, antennas, and fiber are available.

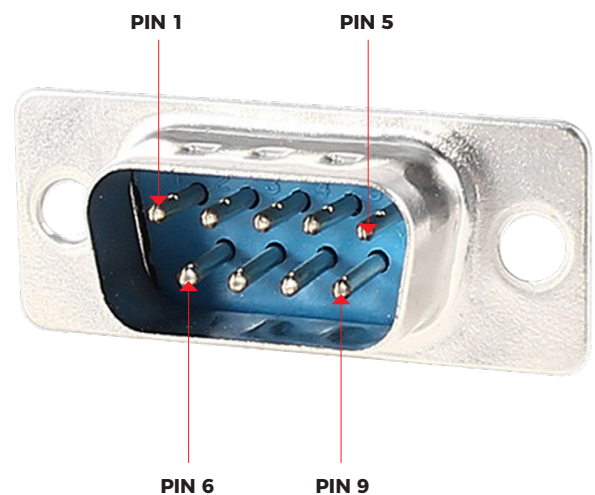
Alarm Out

Pin	Function	Comment	Pin	Function	Comment
1	Rx 1 Opt Alarm	Closed (OK), Open (Failed)	14	Rx 1 Opt Monitor	0.1V / 1mW
2	No Connection		15	No Connection	
3	No Connection		16	No Connection	
4	No Connection		17	No Connection	
5	No Connection		18	No Connection	
6	TX 1 Opt Alarm	Close (OK), Open (Failed)	19	TX 1 Laser Bias Current	100 mA/V
7	No Connection		20	No Connection	
8	No Connection		21	No Connection	
9	No Connection		22	No Connection	
10	No Connection		23	No Connection	
11	Ground		24	+12 VDC Out	500 mA internal Fuse
12	RX Alm Common		25	+12 VDC Out	500 mA internal Fuse
13	TX Alm Common				

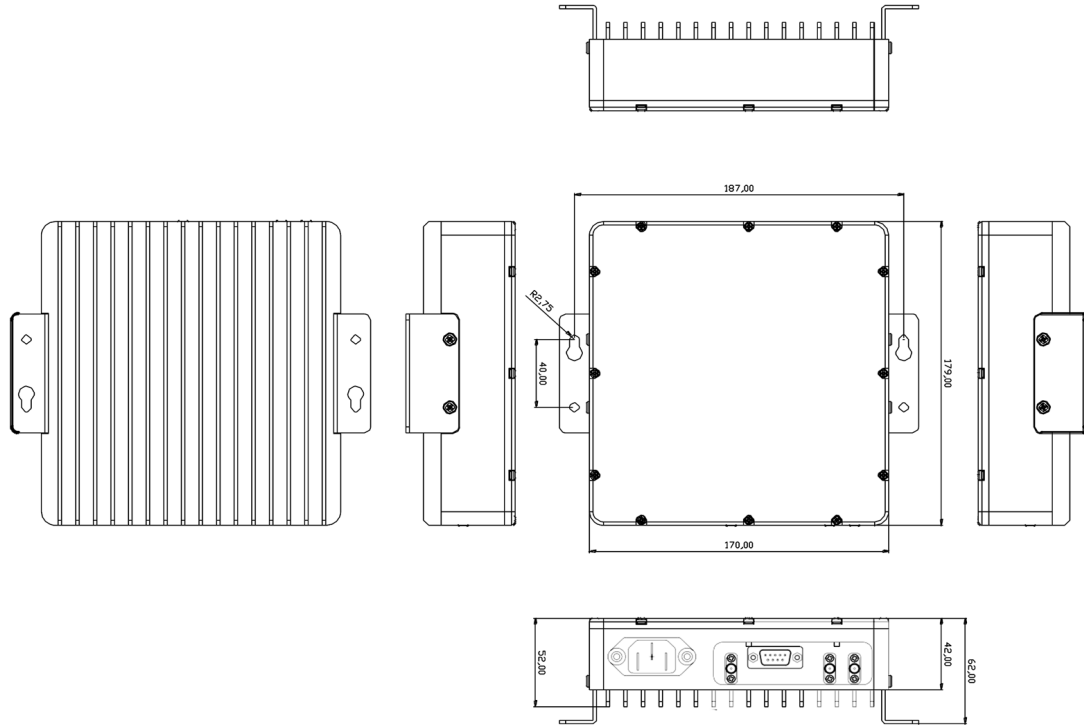
Power Amp-DC-DB 9 Male

Pin	Function	Comment
1	No Connection	Enable: Low or Open, Disable: HIGH
2	No Connection	Do Not Connect
3	No Connection	Do Not Connect
4	No Connection	2.5 VDC @ +38dBm, 50mV/dB
5	No Connection	Do Not Connect
6	+12 VDC	
7	+12 VDC	
8	Ground	
9	Ground	

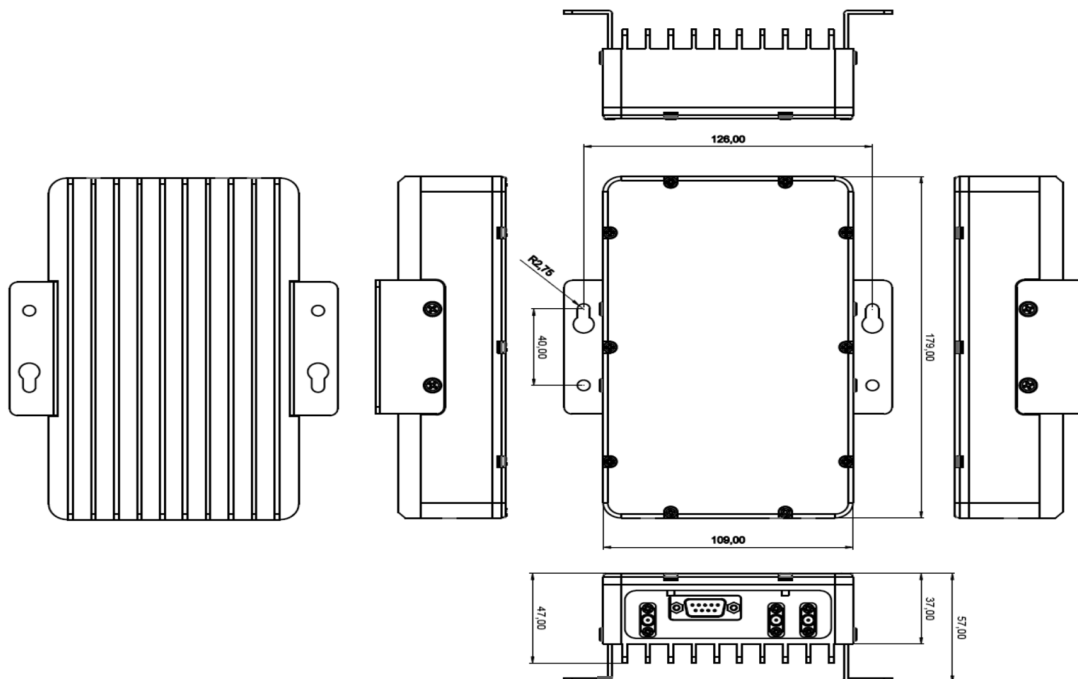
DB 9 - Male



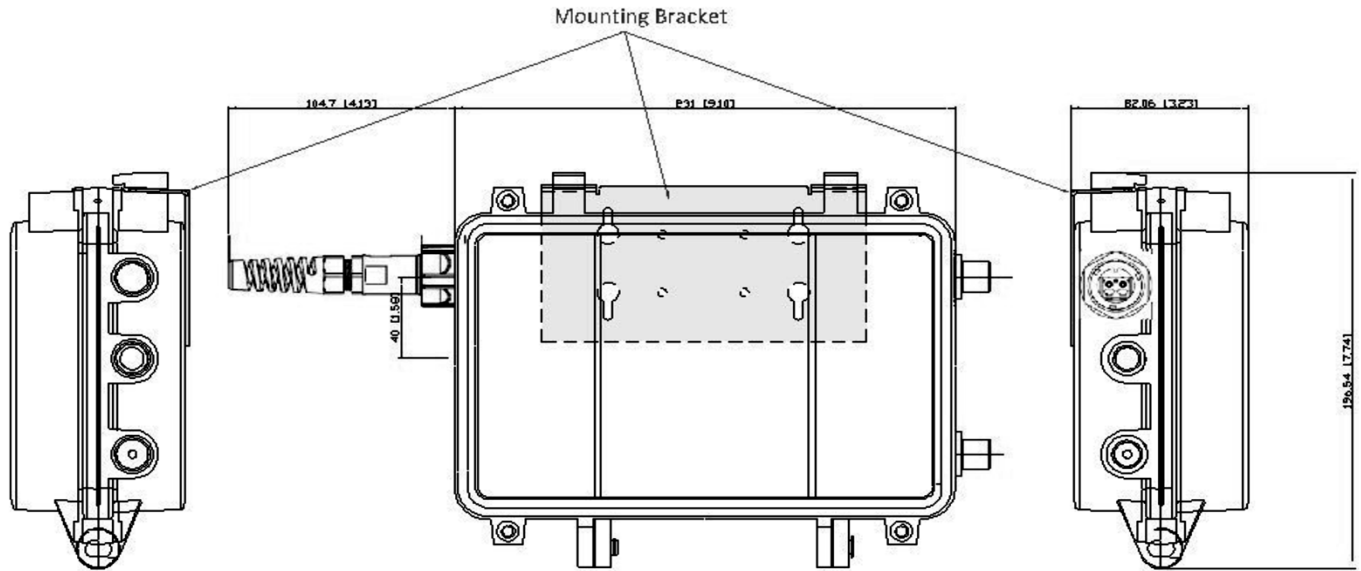
Mechanical - Power Amp - AC



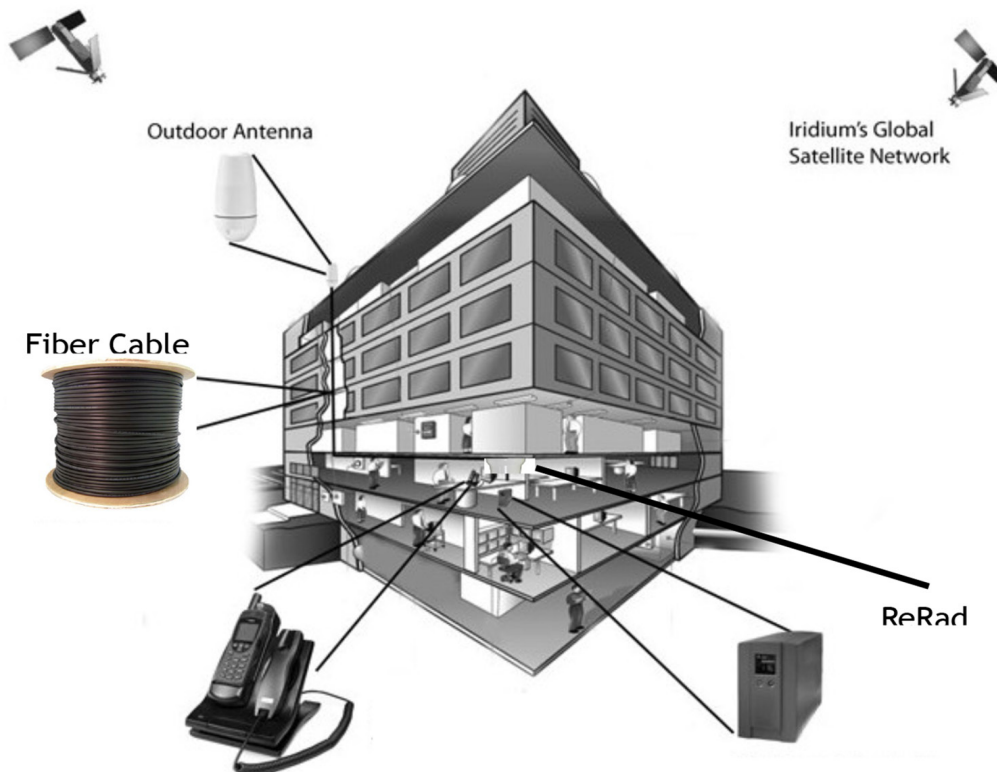
Mechanical - Power Amp - DC



Mechanical - Outdoor T-Box



Building Architecture - Iridium ReRad



Ordering Information

PART NO. Direct Connect System (Indoor Equipment)

A03- Z9IRXX - XXX - AX - X - XX

I Iridium Only **1** Phones **D31** 1310nm (A13 Only) **S** SC-APC **S** Single Mode **Blank** AC

G Iridium and GPS (A13 Only) **2** Phones **F** FC-APC **M** Multi-Mode **48** -48 VDC

3 Phones

4 Phones

PART NO. Direct Connect and Re-Radiating System (IP-67 Outdoor Unit)

AX3- TL1IRX - XXX - NX - X

1 Tx **I** Iridium Only **D31** 1310nm (A13 Only) **S** SC-APC **S** Single Mode

2 Rx **R** Iridium and GPS (A13 Only) **00** A23 Only **F** FC-APC **M** Multi-Mode

Re-Radiating System (Ceiling Mount Indoor Unit)

A03 - IR - DXX - HG **XX** See Channel Table (A13 Only)

Iridium Paging + L1 GPS (Ceiling Mount Indoor Dual Iridium + GPS Unit)

A23 - GPSIRI - 1x2 - NS - SW

Iridium Paging + L1 GPS (Indoor Optical Splitter)

ZA5 - 0000 - 10X **x** # of Splits (2, 4 or 8 Way)

Iridium Paging + L1 GPS (Iridium + GPS Outdoor Antenna)

Z250 - IRI - GPS



Contacts

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