

CELL EXTENDER CE-1819-10G2 USER MANUAL AND INSTALLATION INSTRUCTIONS

INSTALLATION OPTIONS

CCI's Cell Extender product family is easy to install, requires no maintenance, and is fully compatible with the Original Equipment Manufacturer's (OEM) Base Station equipment. The Cell Extender offers the maximum installation flexibility by allowing the BTS to be physically distanced from the antenna and mounting structure. As such, the need to run both a T1 connection and an AC connection on the mounting structure is eliminated. Three installation options are available:

- **Configuration 1** - The CE-1819-10G2 can be mounted on the same mounting structure next to the Micro Base Station. This option is ideal when an existing micro-BTS site is being upgraded with a Cell Extender or when both AC and T1 connections are available on the mounting structure.
- **Configuration 2** - The BTS equipment is installed at ground level (or indoors) and the Cell Extender is mounted on the mounting structure, in close proximity to the antenna. This configuration is ideal for environments where AC lines and T1-connections are not easily available on the mounting structure or when it is desired to keep the BTS equipment at ground level. For this configuration, the Cell Extender should be ordered with the *Remote Power Option (Option 3)* which includes a Bias-T and Remote Power Supply module to provide DC power to the Cell Extender over the Coax cable.
- **Configuration 3** - Both the BTS and the Cell Extender equipment are installed at the ground level or indoors. This is intended for applications where it is impractical to install any equipment other than the antenna on the mounting structure.

MOUNTING INSTRUCTIONS

The CE-1819-10G2 can be either pole mounted or wall mounted. It is delivered with a Pole Mounting Kit to allow it to be secured to a pole structure. A separate document titled ***Mounting Instructions – Outdoor Cell Extender*** (100141-MNT) is included which provides detailed mounting instructions.

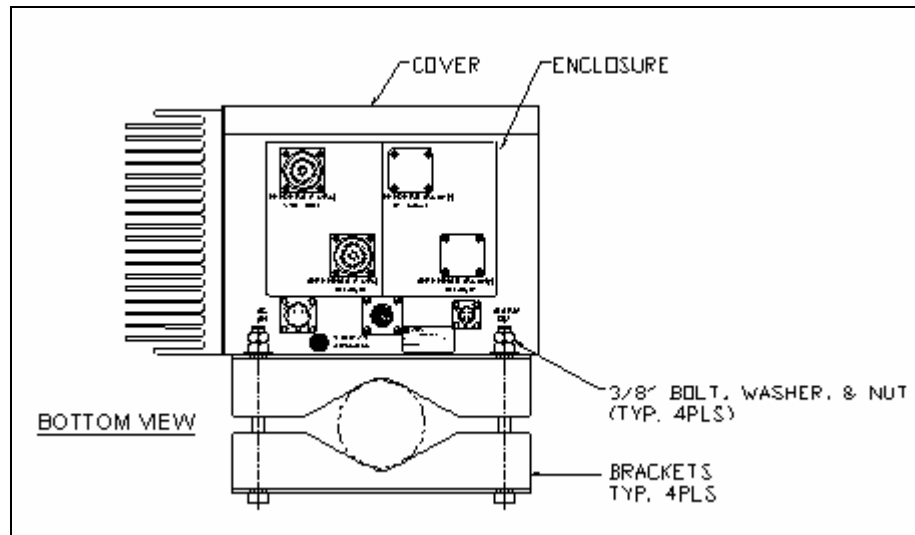


Diagram 1 – Side view of Cell Extender with Pole Mounting Brackets Installed

CONNECTING THE CELL EXTENDER TO THE BTS EQUIPMENT

The Cell Extender sits between the BTS equipment and the Antennas. The 7/16” DIN connector labeled “FEEDER A (TX/RX)” is connected via a coax feeder line to the TX/RX output of the BTS. The connector labeled “Antenna A (TX/RX)” is then connected to the actual Antenna. For BTS equipment with receive diversity and Cell Extenders with **Option 1 – Receive Diversity**, the 7/16” DIN connector labeled “FEEDER B (Rx only)” is connected to the “RX” input of the BTS equipment. Likewise, the connector labeled “ANTENNA B (Rx only)” is then connected to the diversity Antenna.

POWERING THE CELL EXTENDER

The Cell Extender can be ordered with three separate power options: *Direct AC* (default), *Remote Power (Option 3)*, or *Direct DC power (Option 5/6)*. With *Direct AC*, the Cell Extender is supplied with a power cord that is plugged into a 110VAC or 220VAC power source. With the *Remote Power* option, a remote power module (see Diagram 2) supplies the necessary voltage to the Cell Extender over the coax cable. The *Direct DC* power option is for applications where a solar power source or battery voltage is being used to power the unit. Two direct DC voltages are supported: 24-30VDC and 36-72VDC.

With the *Direct AC* and *Direct DC* options, the Cell Extender is provided with a hermetically sealed connector and a power cable that contains three wires – black, white and green. The pinouts are defined below:

AC/DC Input cable

<i>Wire Color</i>	<i>Pin #</i>	<i>Direct AC</i>	<i>Direct 24VDC</i>	<i>Direct 48VDC</i>
Black	PIN C	Line (hot)	No Connection	No Connection
White	PIN A	Neutral	+24-30 VDC	+36-72VDC
Green	PIN B	Chassis Ground	DC Return	DC Return

CONNECTING THE ALARMS

The Cell Extender provides a dry relay contact for alarming purposes. Both the normally open and the normally closed states are provided. A separate hermetically-sealed Alarm connector is provided with wires as specified below:

Wire Color	Pin #	Function *
Black	PIN D	Common
White or Yellow	PIN B	Normally Closed
Red	PIN A	Normally Open
Green	PIN C	Not Used

* When unit is operational

The dry relay alarm is activated in the following conditions:

Alarm	Trigger Conditions
LNA 1 Failure	Loss of Gain > 3 dB
LNA 2 Failure	Loss of Gain > 3 dB
PA 1 Failure	Full Loss of Gain
PA 2 Failure	Full Loss of Gain
Power Supply Failure	DC voltage < +6VDC

SETTING UP THE BTS MAXIMUM TX POWER

The gain on the CE-1819-10G2 is fixed at the factory. No internal gain adjustments can be made in the field. The user must verify that the composite input RF power to the Cell Extender does not exceed the absolute maximum input level (+32.05dBm) in order for the RF output spectral emissions to be compliant with the FCC spurious emissions limit of -13dBm outside of the assigned frequency block. The maximum rated composite output RF power for this device is +43dBm.

This equipment complies with Part 24 of the FCC rules. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

In order to comply with FCC rules for RF exposure, it must be observed that the antenna connected to this equipment be fixed on an outdoor structure and that it must have a minimum separation distance of 3 meters between it and any person.

In accordance with RSS-131, the manufacturer's rated output power for this equipment is for single carrier operation. For situations when multiple carriers are present, the rating would have to be reduced by 3.5dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. The power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

USING THE REMOTE POWER MODULE (Option 3)

The Remote Power Module allows the Cell Extender to be powered remotely over the coax line, thus eliminating the need to run AC or alarm wires up the mounting structure to the unit. The Remote Power Module is typically installed next to the BTS equipment and sits in-between the BTS and the Cell Extender. With Option 3, the *AC* and *ALARM* connectors are no longer available on the Cell Extender, but are now located on the Remote Power Module. The pinouts of these connectors remain the same. It is also important **NOT** to mix the FEEDER A and FEEDER B lines (ie, make sure that the coax feeder line hooked up to the FEEDER A connector on the Remote Power Module is ALSO hooked up to the FEEDER A connector on the Cell Extender).

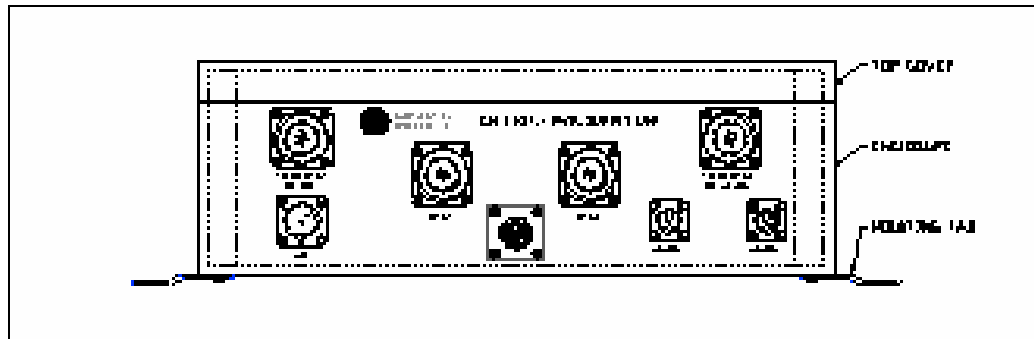


Diagram 2 – Remote Power Module (Option 3)

Cell Extender Electrical & Mechanical Specification

	Uplink	Downlink
A & D Blocks	1850-1870 MHz	1930-1950 MHz
B Block	1870-1885 MHz	1950-1965 MHz
C Block	1895-1910 MHz	1975-1990 MHz
E & F Blocks	1885-1895 MHz	1965-1975 MHz
System Gain	11dB max	10.95 dB max
20dB Nominal Bandwidth	56.65 MHz max	56.65 MHz max
System Noise Figure:	2.5 dB Max.	
System Group Delay:	180 nanoseconds Max	
Pass-band Ripple:	0.5 dB Max.	
Output Third Order Intercept Point:	+31 dBm Min.	+62 dBm Min
1 dB Compression Point:	+22 dBm Min.	+52 dBm Min
Maximum Usable GSM/EDGE Power:	N/A	20 Watts Composite
Input /Output VSWR:	1.5:1 Max.	1.5:1 Max.
Up-Link-Down-Link Isolation	80 dB	
Number of Standard Inputs/Outputs:	1/1	
Power Supply Voltage:	110/220 VAC	
Current Consumption:	1.5/0.75 AMPS max at rated output power	
Dimensions	13"L x 10 7/8"W x 7"H	
Enclosure	NEMA 4x Weather Proof	
Connectors	7/16 DIN Type Female	
Weight	20 Lbs. Max.	
Mounting	Pole and/or Wall Mountable	