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C2C Hardware Description and Specifications

This chapter provides information on the hardware for the C2C™ chassis. The C2C provides service for legacy equipment. The legacy equipment remains in place and connects to the C2C's modem port. The C2C connects to a wireless IP network to reach the legacy service host. See the following:

A.1 C2C Chassis Hardware Description

The standard C2C chassis is available in a hard plastic cover. The C2C complies with the European Union's directive on restriction of hazardous substances (ROHS). This directive places strict controls on pollutants, including the elimination of lead in the manufacturing process.

The front of the C2C chassis (Figure A-1) has LEDs to show system and port status.

Figure A-1. C2C Chassis, Front

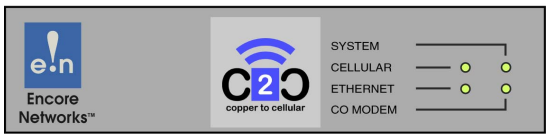
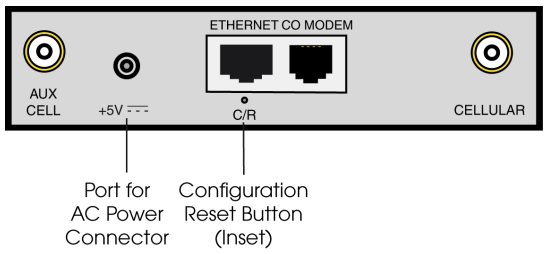


Figure A-2 shows the back of the C2C chassis.

Figure A-2. C2C Chassis, Rear



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The following items are on the back of the C2C chassis:

- A port for a 110/220 volts AC power supply, converting power input to +5 volts DC at 2 amps
- An Ethernet port that can function as one of the following:
  - A WAN port, typically used as the network uplink to the host
  - A LAN port, typically used for the intranet connection
- An analog modem port

  Note: The C2C chassis also contains a wireless modem port (on the internal wireless card). However, because that port is internal, it cannot be seen on the back of the chassis. The internal wireless card can connect to a 2G, 3G, or 4G/LTE wireless network. An external antenna supports the wireless card.
- A recessed configuration reset button

Caution: Use only a paperclip to press this reset button.

- One antenna port for the cellular wireless card, for connection to a wireless network

  Note: There is a second antenna inside the chassis to provide diversity in data collection. This is helpful when radiofrequency signals might encounter barriers or interference or when the signal level might be low.

See the following:

- *Power Supply*
- *Ports*
- *C2C LEDs*

A.1.1 Power Supply

The C2C accepts power from an autosensing 100/240 VAC adapter connected to an AC power source. The C2C's AC power supply converts the AC input power to 5 VDC at 2 amps output, for use by the C2C chassis.

A.1.2 Ports

See the following:

- *Modem Ports*
- *Standard Network Ports*

A.1.2.1 Modem Ports

The C2C has two modem ports.

- The modem port on the back of the chassis uses a standard RJ11 connector. (For specifications of the RJ11 port, see *RJ11 Modem Port* in *C2C Specifications*.)
- The C2C's other modem port is internal, on the wireless card inside the chassis.

A.1.2.2 Standard Network Ports

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See the following:

- *Ethernet Port*
- *Wireless Port*

A.1.2.2.1 Ethernet Port

The C2C has one Ethernet port that can connect to a LAN or a WAN. A 10-Base-T/100-Base-T Ethernet connection is implemented over unshielded twisted-pair (UTP) wire, using a standard RJ45 connector. Figure A-4 shows the RJ45 connector pins. Table A-5 lists the RJ45 pin configuration. Table A-3 shows the interface options for the Ethernet port. (References are in *C2C Specifications*.)

The Ethernet port has the following IP features:

- Static routing
- Standard RIP V1, V2 routing
- Prioritization on Layers 2 and 3
- DiffServ marking and classification for end-to-end prioritization
- IP Quality of Service
- Dynamic bandwidth allocation
- 802.1q VLAN tagging
- VRRP (RFC 3768)
- Fragmentation and reassembly (MTU) LAN
- DHCP server, client, relay; Bootp
- SNMP, MIB II
- ARP; Proxy ARP
- Routing over VPN tunnels
- Dynamic split tunneling

A.1.2.2.2 Wireless Port

The C2C has one internal wireless card with one port for 2G/3G wireless transport.

A.1.3 C2C LEDs

Light-emitting diodes (LEDs) on the front of each C2C chassis indicate states, connections, and activities. The following general rules apply to the C2C's LEDs:

- A lit green System LED indicates that the unit is being supplied with power.
- A lit green LED for the Cellular port, the Ethernet port, or the CO Modem port indicates that there is a connection to another device.
- A flashing LED indicates a special state. The state indicated may vary for each type of LED.

Table A-1 describes the LEDs on the C2C chassis.

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Table A-1. C2C General Status LED Definitions

LED	Color	Description
System	Green	Unit is receiving power.
	Green (flashing)	A port has an alarm or the system needs attention.
	Off	Unit is not receiving power.
Ethernet	Green	Connection to a supported Ethernet device or connection to the LAN or the WAN (connection to an Ethernet hub or switch) has been made.
	Off	There is no connection to the network.
CO Modem	Green	Connection to the analog device has been made. (The BANDIT device is acting as a modem to support an analog device.)
	Off	There is no connection to an analog device.
Cellular	Green	Connection has been made to a wireless carrier.
	(Flashing)	The cellular LED flashes one to five times to show signal strength. The number of flashes in a set is equivalent to the same number of bars displaying signal strength on a mobile phone. Flashes display in one of the following patterns: • A set of short flashes followed by a longer final flash indicates that connection to a cell tower has been authenticated. Sample flash pattern: . . . . – . . . . – . . . . • A set of short flashes followed by a pause indicates that there is a signal from a cell tower but that the connection has not been authenticated. The device may need to be activated. Sample flash pattern: . . . . The number of short flashes in a set indicates the signal strength. A long flash is not counted as part of the signal strength.
	Off	Not activated. The device has not been authenticated for a wireless carrier and is not receiving a signal.

A.2 C2C Specifications

See the following C2C specifications:[1]

- Section A.2.1, *Physical Specifications*
- Section A.2.2, *Ports and Pin Configurations*

1. Specifications are subject to change without notice.

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A.2.1 Physical Specifications

The products in the BANDIT™ family are designed for quick and easy integration with other equipment in a typical networking environment. Table A-2 provides the physical specifications for the C2C chassis.

Table A-2. C2C Physical Specifications

Item	Value
Installation Type	Desktop/Shelf Model
Length	4.44 in. (11.27 cm)
Width	2.94 in. (7.46 cm)
Height [1, 2]	1.19 in. (3.02 cm)
Weight	Less than 1 lb. (Less than 0.45 kg)

1. The chassis must have adequate ventilation for cooling. There must be an open vertical space of 1 U (1.75 inches, or 44.45 mm) above the chassis, and there must be nothing between the chassis and the desk surface or shelf surface that the chassis feet rest on. Do not place anything on top of the chassis or under the chassis.
2. When the height of the chassis feet is included, the chassis stands 0.03 inches (0.076 cm) taller, for a total height of 1.22 inches (3.096 cm).

A.2.2 Ports and Pin Configurations

Table A-3 lists the port interfaces in the C2C. See the following for detailed information about ports and pin configurations:

Table A-3. C2C Physical Interfaces and Connectivity *(Sheet 1 of 2)*

Port	Quantity	Interface	Connectivity
CO modem port	1	RJ11	Analog modem: • Bell103, Bell212, V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34 • LS/GS • Polarity reversal • V.42 with error correction and MNP 2-4 • V.42bis with Data Compression and MNPS

Table A-3. C2C Physical Interfaces and Connectivity (Sheet 2 of 2)

Port	Quantity	Interface	Connectivity
Internal wireless port	1	integrated cellular wireless modem	2G, 3G, and 4G/LTE[1] cellular wireless data networks
Ethernet port	1	RJ45, 10/100 Base-T Ethernet, with automatic failover, to connect to LAN or WAN	IP: • TCP, UDP/RTP Data Transport • TCP Port configuration • TCP Broadcast • RTP Packet Optimization • DLCI over IP configuration • Telnet (Client or Server)

1. Consult manufacturer for availability.

A.2.2.1 RJ11 Modem Port

Figure A-3 shows the pin locations for the modem port. Table A-4 lists the pin configuration for the C2C's RJ11 modem port.

Figure A-3. Pin Locations for Female RJ11 Modem Port

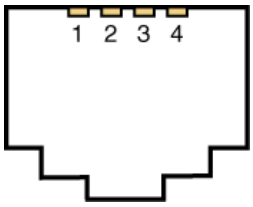


Table A-4. RJ11 Modem Port Pin Configuration

Pin Number[2]	Function
2	Ring
3	Tip

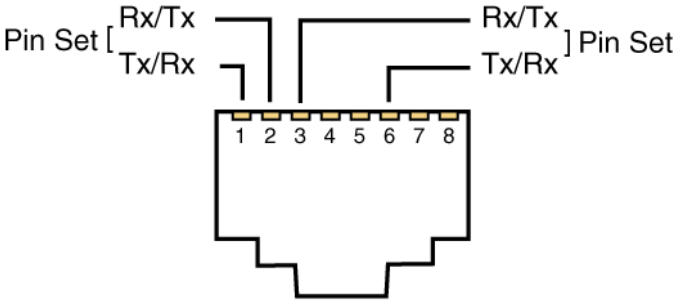
2. Unused pins are not listed.

A.2.2.2 RJ45 10-Base-T/100-Base-T Ethernet Port

Figure A-4 shows the pin locations on an RJ45 Ethernet port. Table A-5 lists the pin configuration for the C2C's 10/100-Base-T Ethernet ports.

Note: The C2C senses the pin configuration at the remote end of the connection and sets its own pin configuration accordingly.

Figure A-4. Pin Locations for Female RJ45 Ethernet Port



Each pin set autosenses and adjusts to signals from the device at the remote end of the connection.

Table A-5. RJ45 10-Base-T/100-Base-T Ethernet Port Pin Configuration

Pin Set[1]	Description[2]
Pin 1 and Pin 2	Tx or Rx
Pin 3 and Pin 6	Rx or Tx

1. Unused pins are not listed.
2. The C2C Ethernet connector is autosensing and will adjust to the signals from the device at the remote end of the connection.

A.2.3 Power

The C2C chassis accepts an external AC power supply. As shown in Table A-6, the AC power supply accepts input power at 110 to 220 volts AC, 50 to 60 Hz, auto-ranging, and delivers 5 volts DC at 2 amps maximum output to the C2C chassis.

Table A-6. C2C Power Specifications

Item	Specification
C2C chassis with analog modem and integrated cellular modem	7.0 watt maximum
AC power supply[1]	100 VAC to 240 VAC, 50 Hz to 60 Hz

1. uses external connection to AC power outlet

A.2.4 Environmental Specifications

Table A-7 provides the environmental specifications for the C2C.

Table A-7. C2C Environmental Specifications *(Sheet 1 of 2)*

Item	Chassis or Card	Range
Operating Temperature	Chassis	0°C to +50°C (32°F to 122°F)
Non-Operating (Storage) Temperature	All	-40°C to +85°C (-40°F to 185°F)

Table A-7. C2C Environmental Specifications (Sheet 2 of 2)

Item	Chassis or Card	Range
Humidity	All	5% to 95%, non-condensing
Altitude	All	Up to 10,000 ft. (up to 3,048 m)

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A.2.5 Compliance

The C2C complies with the North American Electric Reliability Corporation's provisions for critical infrastructure protection (NERC CIP). The C2C also complies with the agency standards listed in Table A-8.

Table A-8. C2C Standards Compliance

Area	Specification
Product Materials	European ROHS
Electromagnetic Compatibility (EMC)	FCC Part 15 EN 55022: 1998 EN 55024: 1998
Product Safety	UL/CSA 60950-1 CAN/CSA-C22.2 No. 60950-1-03 EN 60950-1

A.3 Ventilation for BANDIT Products

There must be sufficient space for ventilation and cooling around each chassis in the BANDIT product family. Guidelines for ventilation include the following:

- Each desktop or tabletop chassis (for example, a C2C or a BANDIT II C2C) must sit on a smooth, flat, non-cloth, non-paper surface, so that there is adequate ventilation under the chassis.
- There must be 1 U (1.75 inches) of empty space above and below each BANDIT, VSR, or RDU chassis installed in an equipment rack.
- Do not place anything on top of any chassis.
- Do not place anything against any chassis, and do not allow anything to rest against the chassis.