C3IWirelessGateway Installation Manual

Omni-Pro Software, Inc.
23608 458th Avenue
Madison, SD 57042
C3IWireless Gateway Installation Manual
605-270-2285

General Hardware Functionality

- **The C3IWireless Gateway is a load control and remote meter reading device suitable for municipal utility use.**
- **NOTE: The screw terminals on the circuit board are to be tightened carefully or damage to the board could result.**
- **C3IWireless Standard:**
- **4 Pulse/Status Inputs**
- **3 Pilot Relays**
- **2 Meter Encoder Inputs**
- **RS485 Serial Port Metering Inputs**
- **Integrated VHF Radio Transceiver**
- **Power Supply**
- **GE-I210+ Communication Modules**
- **Plug In Type 12 Volt Regulated DC**
- **Other 12 Volt Regulated DC supplies (In Line)**
- **Metering Interfaces**
- **GE I210+ Communication Modules**
- **GE KV2C Communication Modules**
- **Transparent Technologies Wireless Meters**
- **Electronic Meter KYZ Pulse Initiators**
- **Water/Gas Meter Pulse Initiators**
- **Absolute Digital Encoder Interfaces**

C3IGateway Operation

- The C3IWireless Gateway product line sends data to a master communications station via a digipeater network. Each unit has an individual identification number. When data is needed from a unit, the computer polls the unit through the assigned digipeater path.
- A digipeater is a unit that retransmits packet data. For example, if data is needed from unit ID 500, and the closest digipeater that has been assigned is unit ID 20, the transmissions will route as follows:
- POLL MESSAGE FROM MASTER TO DIGIPEATER ID 20
- POLL MESSAGE FROM DIGIPEATER ID 20 TO UNIT ID 500
- RESPONSE MESSAGE FROM UNIT ID 500 TO DIGIPEATER ID 20
- RESPONSE MESSAGE FROM DIGIPEATER ID 20 TO MASTER COMPUTER
- Note: If the communications path fails, the computer will retry the route up to the specified number of retries before trying the alternate digipeater path.
- An alternate digipeater path would be the next best routing path determined by terrain, building, and distance issues. This alternate path can be entered into software so the system can automatically switch to it in case the primary digipeater path fails.
- If the unit fails to communicate after both digipeater paths have been tried the appropriate number of times, the unit ID will be added to the error log.

TROUBLESHOOTING COMMUNICATIONS

- If a unit fails to report, the following might solve the problem:
- **FROM MASTER**
- Insure master is up and running, check to see if other units are reporting. If no units at all are reporting, reset master station computer. If resetting master station computer has no effect, reset master radio control unit. If no units communicate after this, an equipment failure is possible. We will use your C3IConfig PDA as a master and attach it to the master radio control unit to check status.
- If some units will report, then:
- Make sure digipeaters are communicating by polling them manually.
- If digipeater doesn't report, reset it and insure unit control board and radio equipment is powered. If it still will not report, then connect C3IConfig PDA to check status.
- If the digipeater is communicating with the master, try polling the unit with a different digipeater. It is possible that the unit is too far away or has an obstruction reducing the signal strength, etc. The next step would be to try polling it with a path that includes a neighboring gateway ID that responds correctly.
- **FROM GATEWAY UNIT**
- To determine if a gateway has failed, or if the communications path is not reliable, attach the configuration PDA.
- Check to see if configuration ID matches label's ID number.
- Check to see if utility/segment ID matches system assignment.
- Attempt to poll the nearest digipeaters with the PDA and see if data returns.
  - Document the digipeaters that work reliably with that unit
- If the gateway will not communicate with the PDA, check to make sure gateway is powered up. Next attempt to reset the gateway by un-powering then power back up. If unit still fails, try a different gateway and consult Omni-Pro.

C3IWireless Gateway Functionality

- Each gateway returns the following information when polled:
- **Normal Reading Poll**
- 4 Input Counters (Actual Meter Reading Accumulators)
  - Up to Two GE electric meters
  - Up to Two Absolute Digital Encoder Meters
- 4 Status Inputs
- 3 Relay Status
- 3 Relay Operation Counters
- 4 Demand Accumulators
- Meter Diagnostics and Voltage
- Remote Disconnect Status (Where Available With GE I210+RD Meter)
- **Demand Poll (C & I Units Only)**
- 2 Input Counters
- 4 Status Inputs
- 3 Relay Status
- 3 Relay Operation Counters
- Monthly High KV2C Demand & Reset
- **Load Management Relay Address Messaging**
- Each relay on the gateway can be assigned a group control address and cold load pickup settings. These parameters are returned to the master station in a reply message in order to verify that the gateway is properly configured.

C3IWireless Gateway Installation

- **Attach Gateway Enclosure**
- The C3IWireless Gateway features three mounting tabs to be used for mounting. Use lag screws or bolts appropriate to the structure the device is mounted to. The C3IWireless Gateway should be mounted close to the electric meter.
- The device must be mounted with the access holes facing **DOWN. See Picture.** The condensation drain hole is located on the bottom of enclosure.

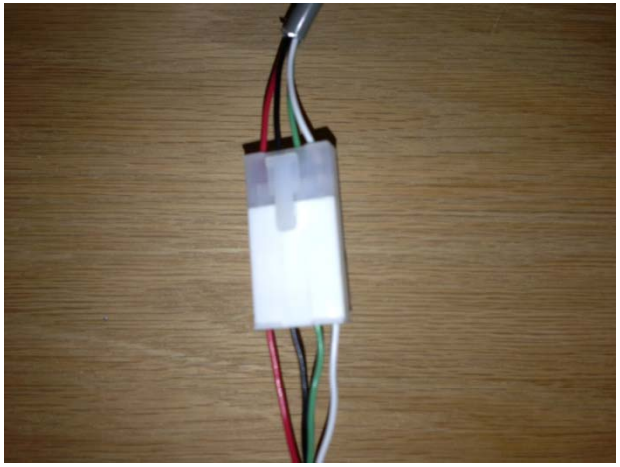
- Screw Terminals are labeled for power, pulse-status inputs, and relays 1-3.
- Power-Status LED will stay solid GREEN with occasional flash when the assigned metering devices are successfully communicating with the C3IWireless Gateway.
- If Transparent Technologies Wireless devices are used, Status LED should be ON for 4 seconds, then OFF for 2 seconds when all metering inputs are valid.

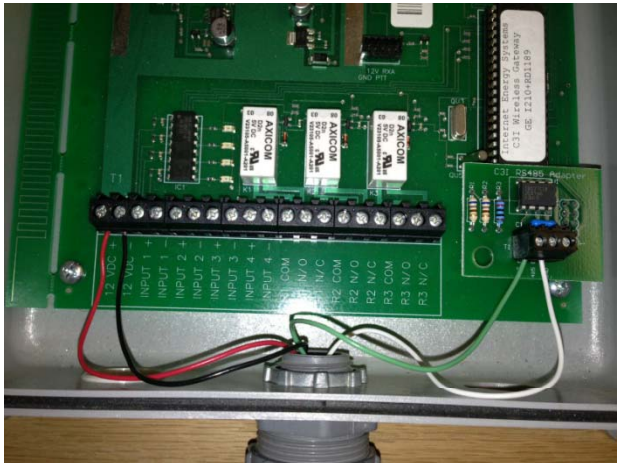
Attach Wiring Harness To Gateway

GATEWAY	GE I210+ Harness
12 VDC +	Red
12 VDC -	Black Wire
RS 485+	Blue or Green Wire
RS 485-	White Wire

- Install GE Com Module Equipped Electric Meter
- Attach quick connect harness. Gateway should now be operational. Verify operation of GREEN power/status LED. LED will blink continuously on the standard version of the gateway when assigned meters are not reporting valid data to the C3IWireless Gateway.

- Secure the enclosure with screws, plugs, and a utility seal when installation is finished





Absolute Encoding Register Meters

- The C3IWireless Standard Gateway can read Sensus Absolute Digital Encoder type water and gas encoders. Encoder meters utilize a 3 wire connection to the C3IWireless Gateway. There are two available input ports for the encoders. The terminals are labeled R, G, and B and they are simply wired to the corresponding terminals on the encoder meter head.
- The register reading must be assigned to one of the 4 input channels on the C3IWireless Gateway. The C3IConfig PDA is used to make these assignments.
- Since absolute encoders provide a direct register reading to the C3IWireless Gateway, no calibration is required. We recommend the use of these meters whenever possible.

- **Note: Not all digits are always transmitted in the encoder protocol. Depending on register programming the appropriate multiplier must be used in the software.**

- This device has been evaluated for

  distance of 20 cm. Installation of the device should be such that a minimum distance of 20 cm can be maintained between the radio antenna and nearby persons.

- No User Serviceable parts. RF module is programmed and tuned at factory.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.