

PURPOSE: To provide instructions on replacing a SENSEI® CU tankless water heater model with a SENSEI® CX/CXP model in an existing cascade system.

IMPORTANT: This technical bulletin explains how to electronically connect only the **SENSEI CU Series** and **SENSEI CX Series** with cascade cable(s). For other tankless water heater combinations with the cascade cable, refer to the “Cascade Cable Installation Instructions.”

PRODUCT INFORMATION

- **Applicable Products:** SENSEI CU Series and SENSEI CX/CXP Series Condensing Tankless Water Heaters
- **Applicable Models:**
 - **SENSEI CU Series:** CU199i/e and CU160i/e
 - **SENSEI CX/CXP Series:** CX199i, CXP199i, CX160i and CXP160i
- **Applicable Accessories:** Cascade Cable (Part Numbers: REU-CSA-C1 and REU-CSA-C2)

OVERVIEW

With the use of cascade cables (Figure 1), up to 24 water heaters can be electronically connected. When the system is cascaded, the water heaters will function as one hot water source, ensuring equal usage by rotating operation order.

One cable is needed for each water heater.

- Part Number: **REU-CSA-C1** (10 ft/3 m cable length)
- Part Number: **REU-CSA-C2** (26 ft/8 m cable length)

Includes one cable and two cascade jumpers.

Figure 1



TERMS AND DEFINITIONS

The following terms and definitions are used in this document:

- **CU:** SENSEI CU Series Models: CU199i/e or CU160i/e
- **CX:** SENSEI CX Series Models: CX199i or CX160i
- **CXP:** SENSEI CXP Series Models: CXP199i or CXP160i

BEFORE YOU BEGIN



WARNING

To protect yourself from harm, follow the steps below before proceeding:

- Turn off the electrical power supply by unplugging the water heater power cord or by turning off the electricity at the circuit breaker. The controller on the water heater does not control the electrical power.
- The steps in this section must conform with local codes and the guidelines established by the National Electrical Code (NEC).

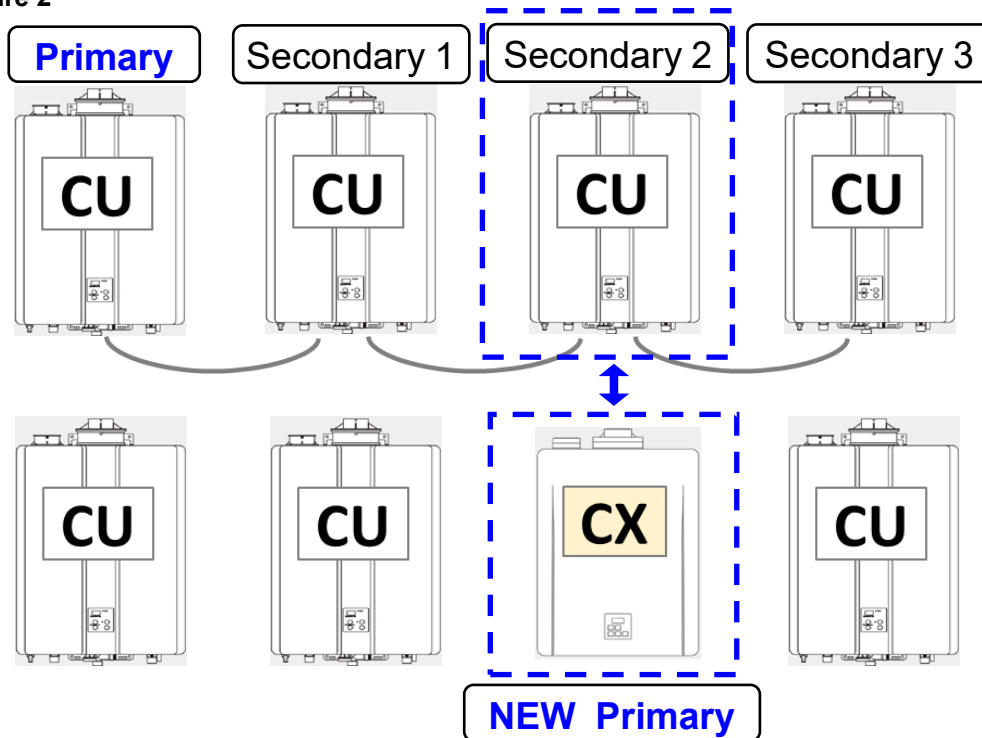
- You will need: Rinnai SENSEI CX Commercial Installation and Operation Manual (packaged with water heater or found online at www.rinnai.us or www.rinnai.ca).
- Determine which water heater in the cascade system will be the **primary** unit. Temperature settings for all water heaters in the cascade system can only be changed on the primary unit.
- For proper operation with the cascade system, the following rules must be met:
 - If the cascade system includes one CXP model, then the CXP model must be the primary unit.
 - If the cascade system includes two or more CXP models, then one CXP model must be the primary unit.
 - If the cascade system includes only CX models (no CXP models), then one of the CX models must be the primary unit.

INSTRUCTIONS

The following instructions address how one of the CU units is replaced with one CX unit as an example.

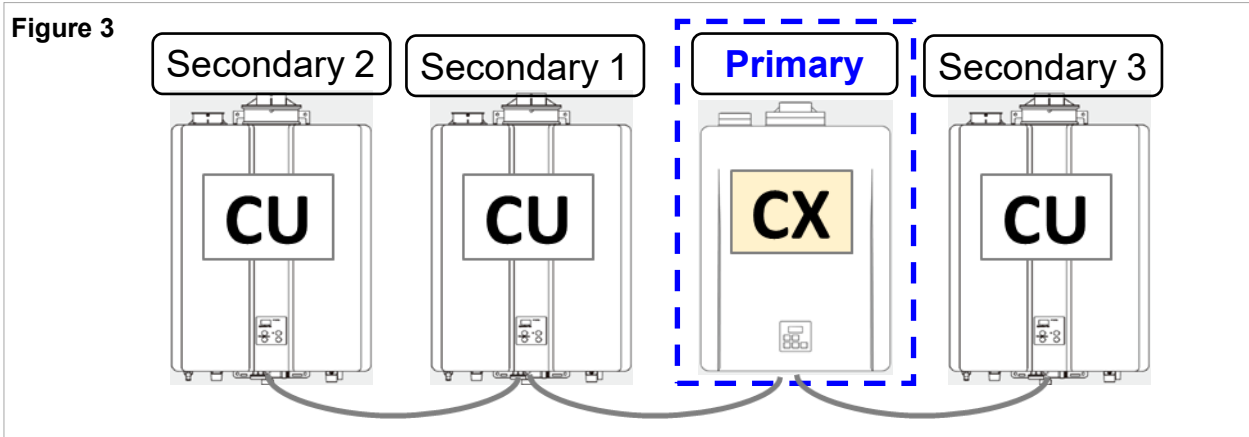
1. Four CU models are electronically connected with 3 cascade cables (Figure 2). The **Secondary 2** unit has a malfunction and needs to be replaced with a CX model because a new CU model is not available.

Figure 2



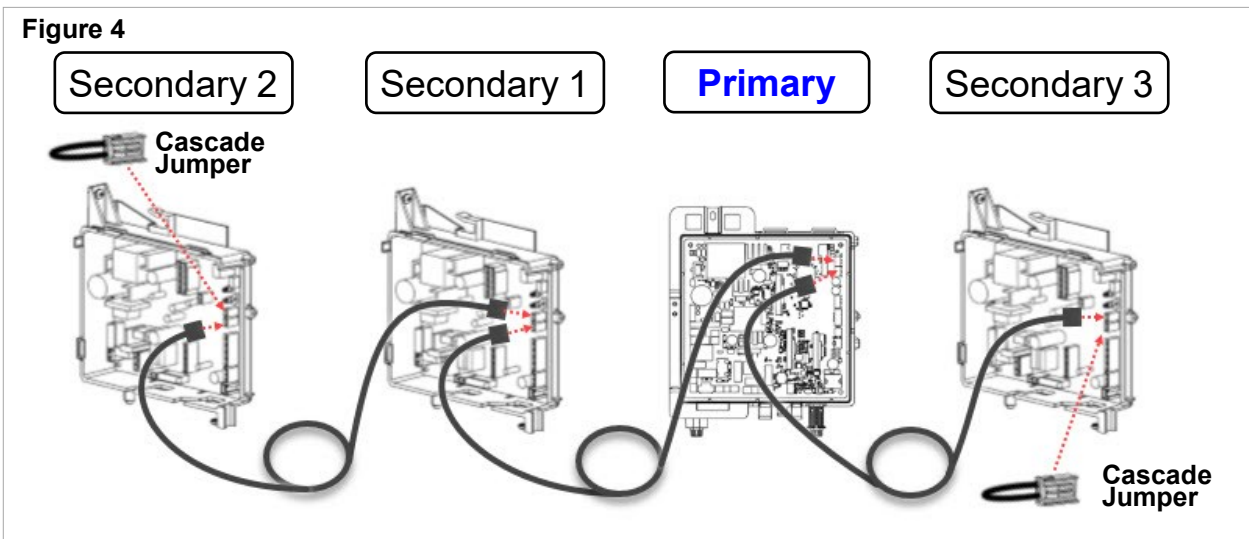
The CX unit must be the new primary unit

2. Connect power supply to the new CX unit by plugging in power cord. **Do not connect a cascade cable to the new CX unit yet.**
3. Complete the water heater initial settings. Refer to the “Initial Settings” section in the “SENSEI CX Commercial Installation and Operation Manual” for complete steps.
4. Because a CX unit has been added to the cascade system, the CX unit will now be the **primary** unit, and the CU units are the secondary units (Figure 3).



Connect cascade cables and jumpers:

5. On the first water heater (Secondary 2 in Figure 4), connect one end of the cable to the **Cascade Out** accessory port on the PC Board. Connect the other cable end to the **Cascade In** accessory port of the next water heater (Secondary 1).
6. Connect the cascade jumper (supplied with cable) to the open accessory ports:
 - **Cascade In** port on the first unit
 - **Cascade Out** port on the last unit



Note:

The **First** unit **MUST** have the cascade jumper installed at **Cascade IN** and the cascade cable at **Cascade OUT**.
 The **Last** Unit **MUST** have a cascade cable installed at **Cascade IN** and a cascade jumper installed at **Cascade OUT**.
 All remaining units must have a cascade cable installed at **Cascade IN** and **Cascade OUT**.

7. Set the CX unit as primary. Adjust Parameter **08** to **08b**. Refer to the section “Configure Parameter Settings” in the “SENSEI CX Commercial Installation and Operation Manual” for detailed steps.
8. Set all CU units as secondary. Adjust Parameter **08** to **08A**. Refer to the section “Configure Parameter Settings” in the CU Installation and Operation Manual for detailed steps. Confirm all CU units show “- - -” on their controller.
9. Push “On/Off” on each CU unit. Confirm each unit is assigned a new ID number such as “-01”, “-02” and “-03”.
10. Confirm all parameter settings on the CX unit are correct.
11. Run all units to confirm the cascade system works properly.