



AL200

Encoder Configured for Legacy ALERT
with Sensor Input Enabled



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1. AL200 summary

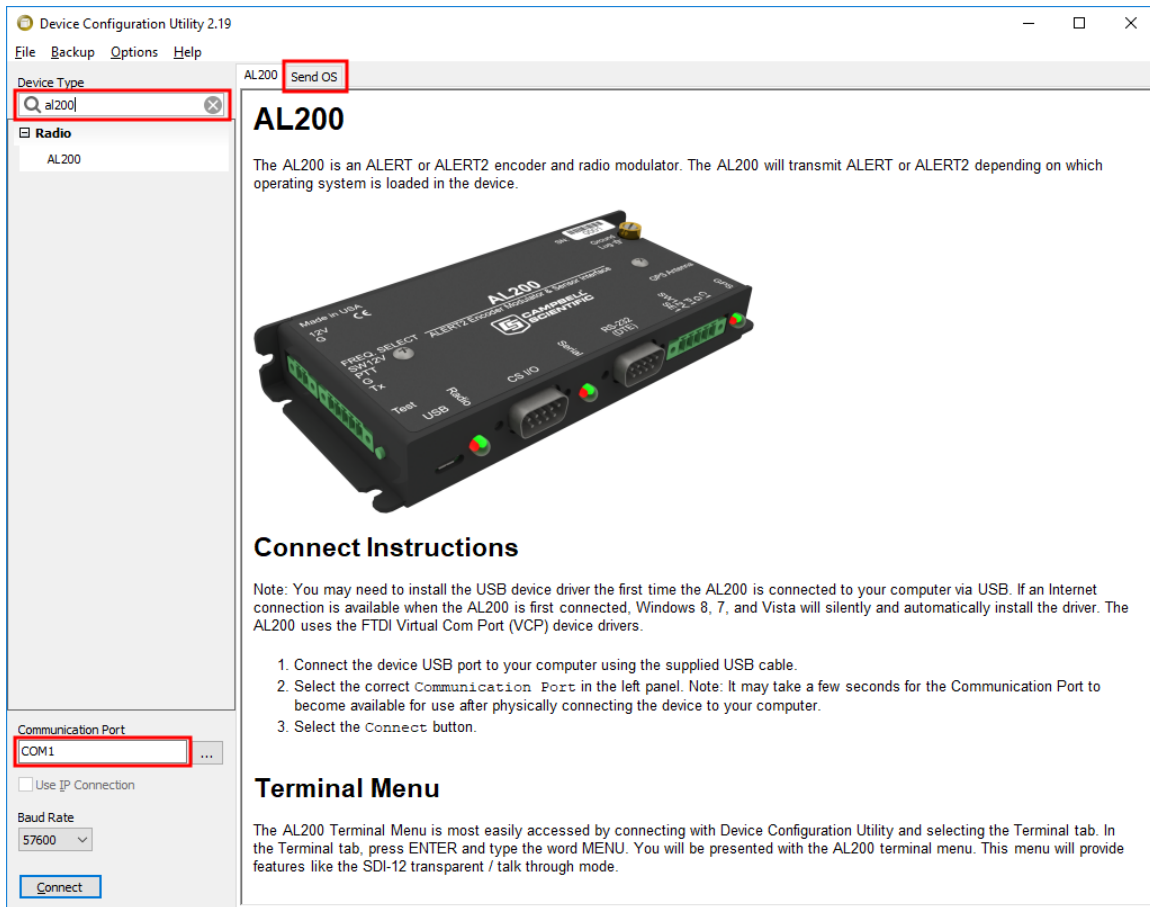
The AL200 can transmit data using either the ALERT2 or legacy-ALERT protocol. Each protocol requires a specific operating system (OS) version, which is available for download from the Campbell Scientific website. The OS can be uploaded to the AL200 in less than five minutes. This document discusses configuring for the legacy-ALERT protocol. More information is provided in the product manual (<https://s.campbellsci.com/documents/us/manuals/al200.pdf>).

The AL200 includes an analog input (0 to 5 volts or 4 to 20 milliamps), a pulse counter, and a digital input (SDI-12 or switch closure) terminal for measuring a tipping bucket rain gage and digital or analog water level sensors. Combining the AL200 with a Campbell Scientific data logger provides increased measurement capabilities, user-defined logic and control, data logging, redundant communications, or other advanced functionality.

2. Device Configuration Utility

1. Download and install the latest version of Device Configuration Utility from:
www.campbellsci.com/downloads/device-configuration-utility
2. Connect the AL200 to the computer using a micro USB cable.
3. Connect a 12 VDC battery to the **12V** and **G** terminals on the AL200.
4. Launch Device Configuration Utility.
5. In the **Device Type** box, type AL200 or find the AL200 under **Device Type > Radio**.

6. Select the appropriate **Communication Port** from the drop-down list. If you are unsure which port to select, unplug the AL200 and see which option disappears.



2.1 Send OS tab

The AL200 OS needs to be uploaded when a new OS is available or when changing the AL200 from ALERT to the ALERT2 protocol. Procedure for uploading a new OS is as follows:

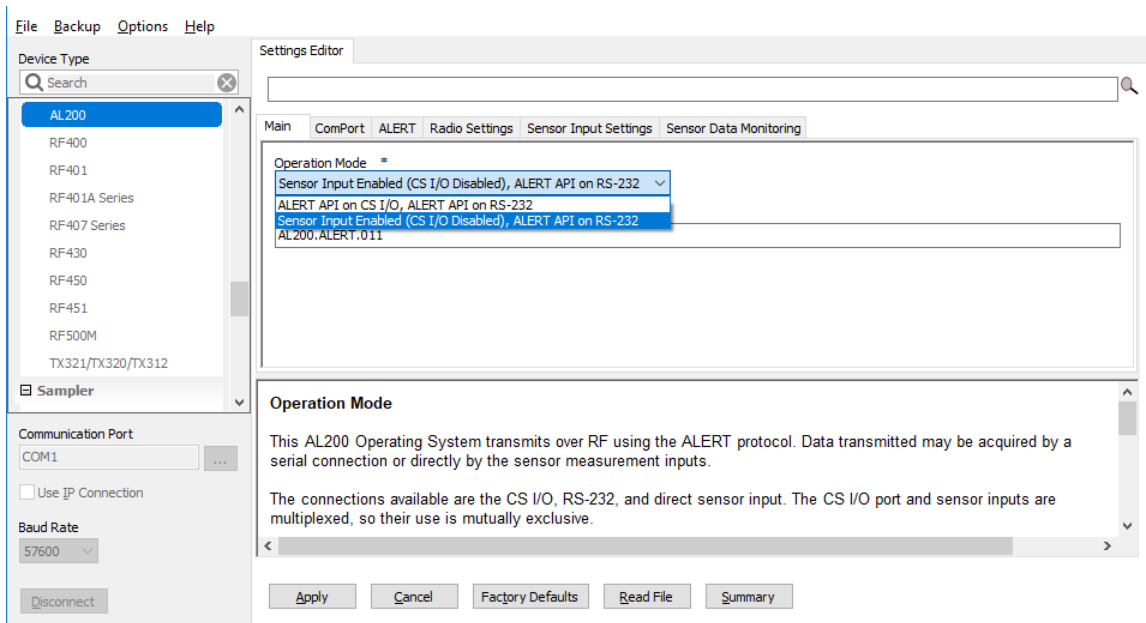
1. Download the OS from www.campbellsci.com/downloads/al200-alert2-os.
2. Run the .exe file.
3. In the Device Configuration utility, click the **Send OS** tab and follow the instructions for load the new OS file into the AL200.

2.2 Main tab

When the AL200 uses the legacy-ALERT protocol, it has two main modes of operation. The AL200 can act as a stand-alone device with its sensor inputs enabled or as a peripheral that accepts data

over a serial connection from a data logger. The following steps change the **Operation Mode** to the stand-alone mode:

1. Click **Connect**.
2. Click the **Main** tab.
3. For the **Operation Mode** setting, select **Sensor Input Enabled, ALERT API on RS-232**.



4. Click **Apply**.

NOTE:

The default settings for the **ComPort**, **ALERT**, and **Radio Settings** tabs work for typical ALERT applications, and should only be changed for special circumstances.

2.3 Sensor Input Settings tab

1. Click the **Sensor Input Settings** tab.
2. Type the **Self Report Interval**, which determines how often the sensor data is reported. Value is expressed in seconds. Typical settings are 21,600 or 43,200 s (six or twelve hours).
3. Type the **Sensor Scan Interval** (typically from 60 to 300 s).
4. Typically type -1 for the **SW12 Warm Up Time**, which leaves the SW12V continuously on.

5. To enable tipping bucket rain gage measurements, do the following:
 - a. For the **P1 Mode**, select **Enabled**.
 - b. For the **P1 Sensor ID**, choose an ALERT sensor ID (0 to 8191)
6. To enable analog water level measurements, do the following:
 - a. For the **SE1 Mode**, select either **Millivolt** or **Milliamp**, depending on the output of the sensor.
 - b. For the **SE1 Sensor ID**, choose an ALERT sensor ID (0 to 8191)
 - c. Type the **SE1 Multiplier** and **SE1 Offset** settings, which convert the analog output of the sensor into a 0 to 2047 ALERT count.
$$\text{ALERT Count} = \text{Millivolts} \cdot \text{SE1 Multiplier} + \text{SE1 Offset}$$
 - d. Type the **SE1 Tx Change**. If the difference between the last transmitted value and the current measurement exceeds the **SE1 Tx Change** value, an event driven transmission occurs.
7. To enable digital water level measurements, do the following:
 - a. For the **C1 Mode**, select either **Status** if using a float switch or **SDI-12** if using an SDI-12 sensor.
 - b. If using a float switch (**C1 Mode** set to **Status**), choose an ALERT sensor ID (0 to 8191) for the **C1 Sensor ID**.
 - c. If using an SDI-12 sensor, do the following:
 - i. Type the full **SDI-12 Command** (SDI-12 address and measurement command) in the **SDI-12 Command** field.
 - ii. Click the **Edit** button located to the right of the **SDI-12 Tx Config** field.
 - iii. For each value returned by the SDI-12 sensor (up to 9), type the **Sensor ID**, **Multiplier**, **Offset**, and **Tx Change**.
8. Click **Apply**.
9. Click **Yes**
10. In the summary window, click **Save**. The summary is useful for troubleshooting.

3. Sensor Data Monitoring tab

This tab displays raw and scaled values for each of the configured measurements and displays the last three transmitted values. Before leaving the site, go to this tab and check the values to ensure that the system is working properly. The **Configuration Sensor Scan Interval** parameter determines how long you wait before seeing the values. Make sure the **Configuration Sensor Scan Interval** is longer than the response time of any attached SDI-12 sensors.

4. Radio connections

The AL200 has five screw terminals for connecting an analog radio. [Table 4-1](#) (p. 5) provides wiring for connecting a Maxon SD-125EL V2 radio to the AL200 by using the radio data cable available from Campbell Scientific. The cable has a DB9 female connector that attaches to the radio.

Wire color	AL200 terminal
Green	Tx
Black	G
White	PTT
Red	SW12V

The default radio settings of the AL200 work with the Maxon SD125EL V2 radios. Contact the radio manufacturer if using another radio.

5. Test transmissions

Use the AL200 **Test** button to trigger test transmissions and generate test tones. Press and hold the **Test** button for the duration indicated in [Table 5-1](#) (p. 6).

Table 5-1: Function and Test button press duration	
Function	Press duration
Test transmission	3 seconds
1 KHz test tone (10 seconds duration)	6 seconds

Normally, the AL200 suppresses transmissions when a user is connected with Device Configuration Utility. However, while connected, the **Test** button can be used to generate test transmissions. If a watt meter is available, the 1 KHz test tone can be used to check the output power of the radio and reflected power from the antenna system.



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