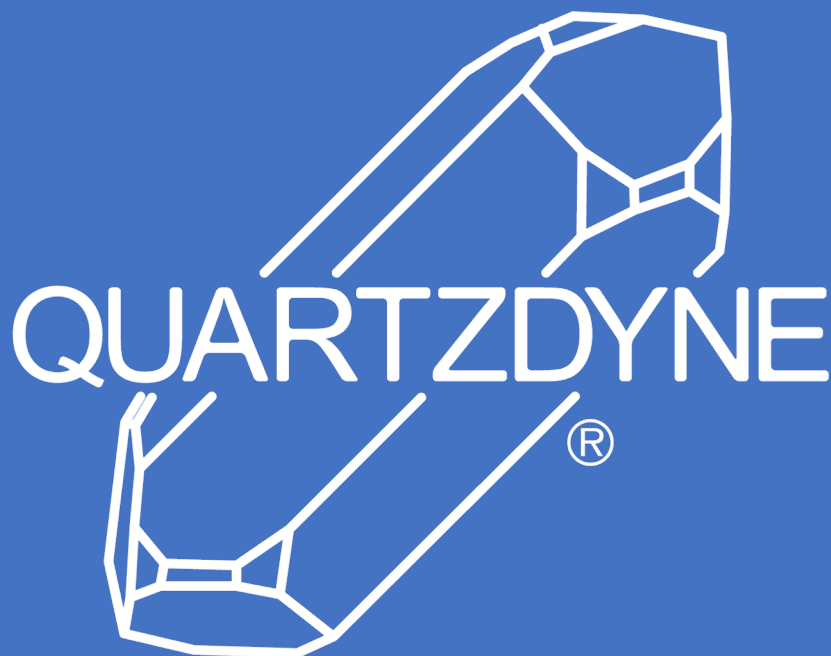


PERMANENT PIEZO PRESSURE GAUGE INSTALLATION & QUICK-START GUIDE



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Software Description:

Quartzdyne's Configuration and Diagnostic Tool (CDT) was developed to aid service companies and operators in configuring and deploying Quartzdyne Permanent Gauges in a Downhole Environment.

The key functions of the application enable operators to:

- Configure the Surface Box inputs / outputs (Wireline & RS485 communication)
- Assign key parameters, including units, downhole voltage, memory map, baud rate and device ID
- Add and remove gauges
- Install coefficients
- View live data

Installation:

1. Download the application's zip folder to a PC via Quartzdyne.com or the provided thumb drive.
2. Extract the files to a PC directory.
3. Run "CDTApp.exe" by double clicking the file icon.

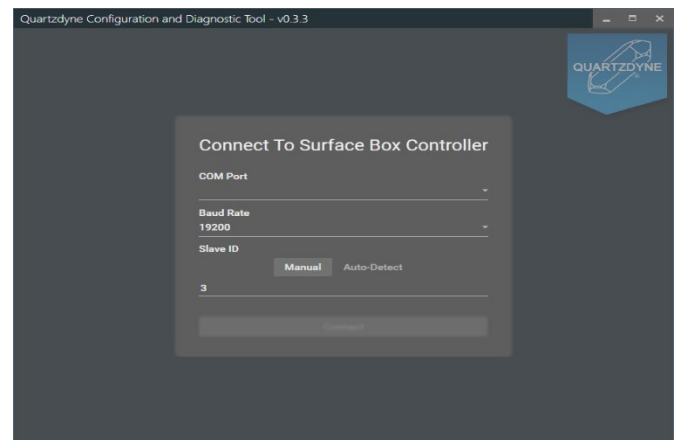


Initial Connection Screen:

This screen is used to establish connection with the Surface Box and begin configuring the Surface Box for use with Downhole Gauges.

- COM Port: Windows-assigned communication port which can be found in Windows Device Manager.
- Baud Rate: Choose the correct baud rate – Default is 19200.
- Slave ID: ID (1 – 247) assigned to the device on the Modbus Network.
 - If the ID is unknown, select "Auto Detect" to scan for devices physically connected to the PC.
- Clicking "Connect" will establish communication with the Surface Box and allow the user to configure gauges, adjust Surface Box settings and view live gauge data.

Note: Updating the Slave ID and Baud Rate is completed within the "Parameters" screen, once connected.

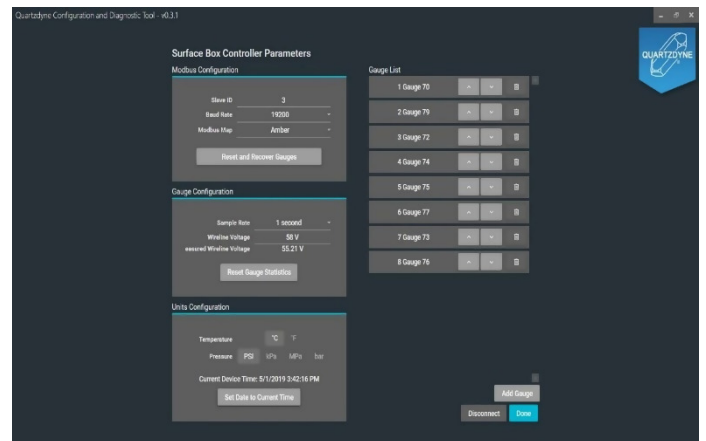


Note: If connecting the box for the first time, a driver may be needed to enable the RS485 to USB Adapter. Information on this driver can be found on the manufacturer’s website. Please contact Quartzdyne with any questions that you might have.

Surface Box Parameters:

This screen is used to adjust key parameters for the Surface Box and data collection, as well as to add and remove gauges. If this screen is not visible immediately after connecting to a Surface Box, it can be accessed by clicking the “Edit Parameters” button.

- **Modbus Configuration:**
 - Slave ID: Set Slave ID (1-247) of the Surface Box
 - Baud Rate: Used to specify the rate of communication with the Surface Box
 - Modbus Map: (Amber, Halite, Quartz) See manual for detailed descriptions of each Modbus Map
 - Reset and Recover Gauges: Deletes all gauge information from the Surface Box, automatically discovers connected gauges and downloads gauge information, including coefficient files from each gauge; the gauge list will be re-populated based on the last saved gauge position of each gauge
- **Gauge Configuration:**
 - Sample Rate: 1 second to 10 minutes
 - Wireline Voltage: 18 to 60 volts
 - Measured Wireline voltage: Current wireline voltage reading
- **Units Configuration:**
 - Temperature: Celsius or Fahrenheit
 - Pressure: PSI, kPa, MPa, bar
 - Current Device Time: Can be sync’d with the local computer by clicking “Set Date to Current Time (computer)”
- **Gauge List:**
 - The list of gauges currently configured in the Surface Box. Key functions include:
 - Reorder gauges: Gauge’s position can be adjusted by clicking the up and down arrows
 - Delete: Delete gauge from configuration



- Add Gauge – Add a new gauge to the Surface Box; User will be prompted to enter the “Gauge Address Number.” The system will attempt to connect to gauges and download coefficient files from the gauges only when the “Save” button is pressed
- Reset Gauge Statistics: Resets status or error counters for each connected gauge
- Disconnect: Disconnects from the Surface Box and returns the user to the “Initial Connection” screen.
- Cancel: Returns the user to the “Live Gauge View” screen
- Save Changes: Save changes to the Surface Box configuration
- Done: Exit the “Edit Parameters” screen without saving.

Note: Make sure to save gauge configuration before exiting the application.

Note: Gauges to be configured must be connected to the input of the Surface Box prior to configuration.

Live Gauge View:

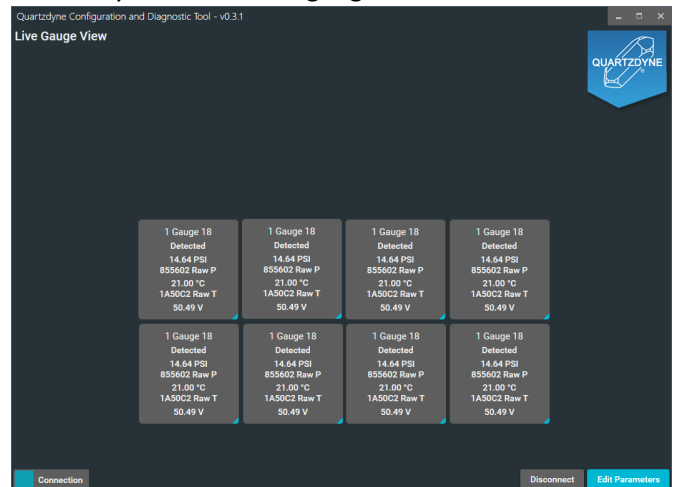
Real-time view of the gauges installed in the Surface Box. The individual gauge boxes will update as data is received from the downhole gauges. From this screen, the user can view gauge data, edit parameters, as well as disconnect and monitor the connection with the Surface Box.

Key information available on the screen is:

- Gauge Position: Position of the gauge on the wireline
- Gauge Address: Unique ID of the gauge used to identify the downhole gauge
- Pressure Reading
- Temperature Reading
- Measured Voltage of the Downhole Gauge

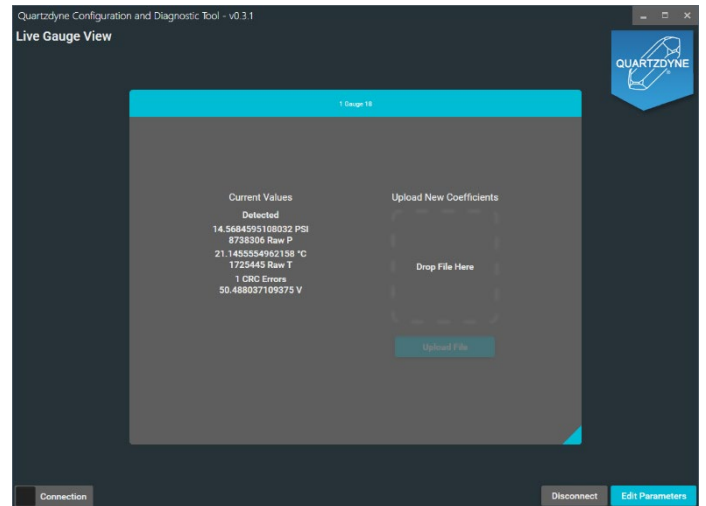
Note: The gauge box will change colors to represent the status of the gauge.

- The status options are:
 - Gray – Gauge is reporting properly
 - Yellow – Coefficients not installed correctly
 - Red – Gauge is not reporting



Expanded Gauge View:

This screen is accessed by clicking the blue triangle in the lower right-hand corner of the gauge box. From this screen, the user can view a snapshot of data from the downhole gauge and upload new calibration coefficients, overwriting old coefficients in the gauge's internal memory.



Raw Data Download:

Raw data from any gauge connected to the Surface Box is stored in the local database. The user can access this data by attaching a USB thumb drive to the device. Once connected, the LED lights will blink sequentially until the data is downloaded. Once the download is completed, all lights will blink until the USB drive is removed.

