Willard Information Document
v. 2014.281 JL, PM

Section 1: General Willard Instructions for a Mac Laptop
Pg. 1   General exposure to the Windows OS based software called Willard for connecting to and communicating with a Q330 via a Mac Laptop. This section highlights some of the more useful Willard menu options.

Section 2: Loading an XML Configuration (Recording Parameters) from Willard into a Q330
Pg. 6   Instructions on how to load an XML configuration into a Q330 so that it can be loaded on to Clie Handheld controllers for programming Q330 instruments at field sites.

Section 3: Emergency Service of a Station with Willard
Pg. 9   Instructions on how to use Willard for servicing a station when a Clie Handheld controller is unavailable or not working. These can be printed separately and used as a station service sheet.

Section 1:   General Willard Instructions for a Mac Laptop

Connecting with Willard to a Q330
Willard is a custom piece of software used to interface with and configure a Quanterra Q330 DAS. When running Willard on a Mac, a Windows OS emulator must be running. On the PASSCAL field laptops WINE is setup for that purpose. The software is typically located in the folder: Applications -> Quanterra -> Willard
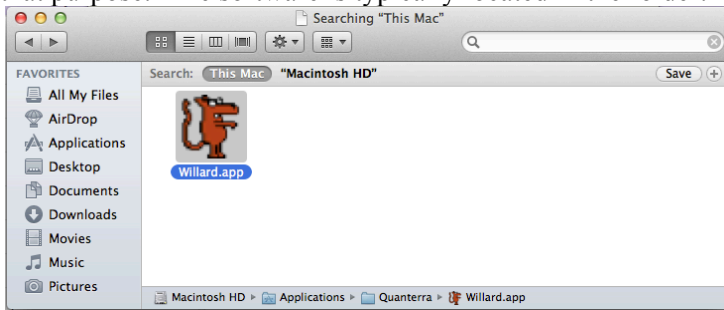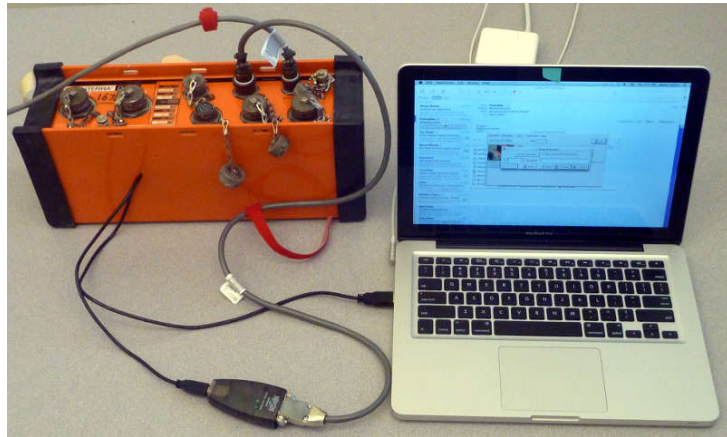

or also on the Dock.
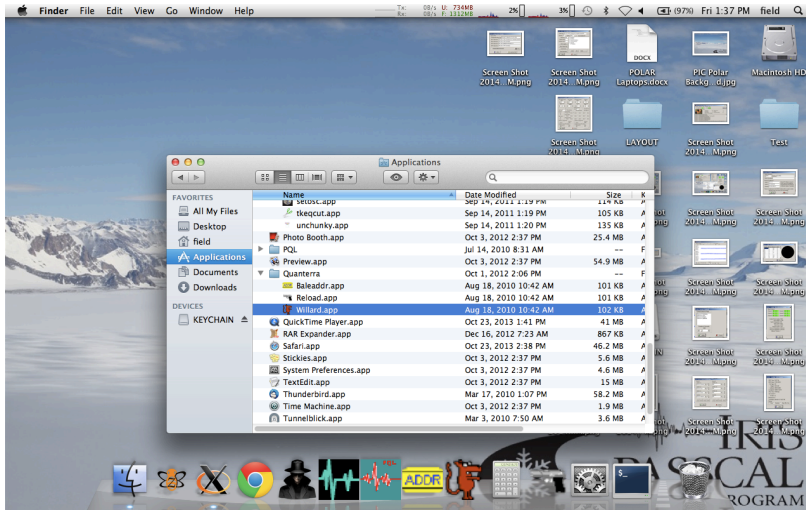
Willard will run without a live connection to a Q330, but in order to do anything useful it must be connected.
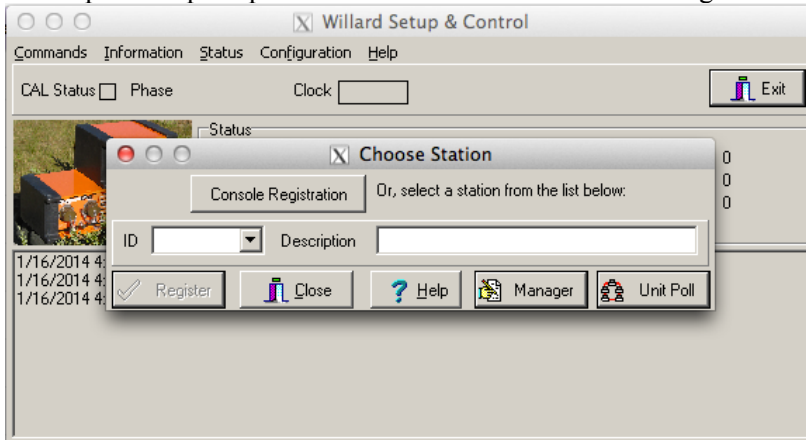
Typically, to connect a computer to a Q330 a USB to serial adapter (like a Keyspan) is used along with a standard Q330 serial console cable.

The Q330 must also be powered up.

With the powered Q330 connected to a computer via the serial/USB ports, open the Willard application. It will come up with a prompt for a station. Select the Console Registration button.

This will let you pick the interface. The Keyspan USB to serial adapter will usually default to COM1 however, the Keyspan could be mounted anywhere up to COM31.

Look in the Applications Folder for the Keyspan Serial Assistant and open the program with the Keyspan connected to a powered Q330.
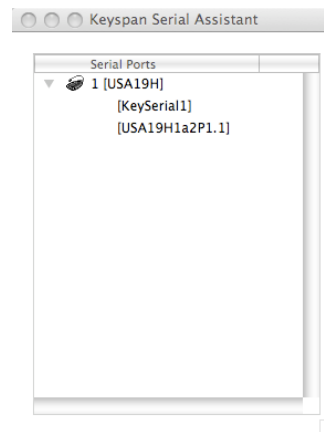
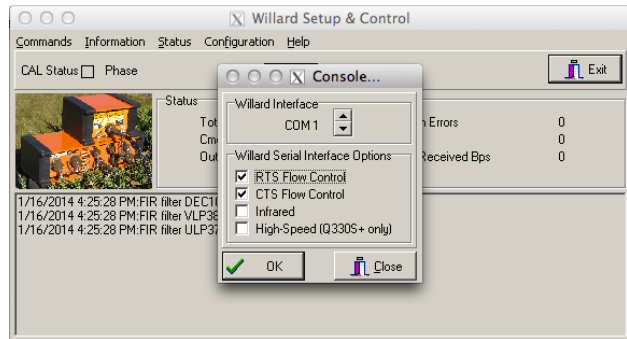Select the COM port from the list on the Console Registration window that was indicated in the Keyspan Serial Assistant and click OK.

The first thing Willard will do with a new connection is ask if it should create a station directory. There is usually no reason to do this for a typical PASSCAL experiment. The station directory is used for keeping track of the station on a telemetered network.
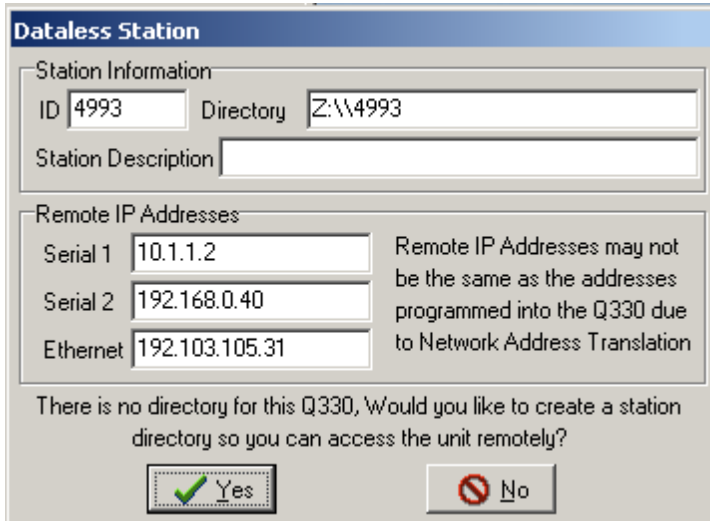
With a successful connection the main Willard window will show basic status information and offer various menus to send commands to the sensor(s), configure the Q330, etc.
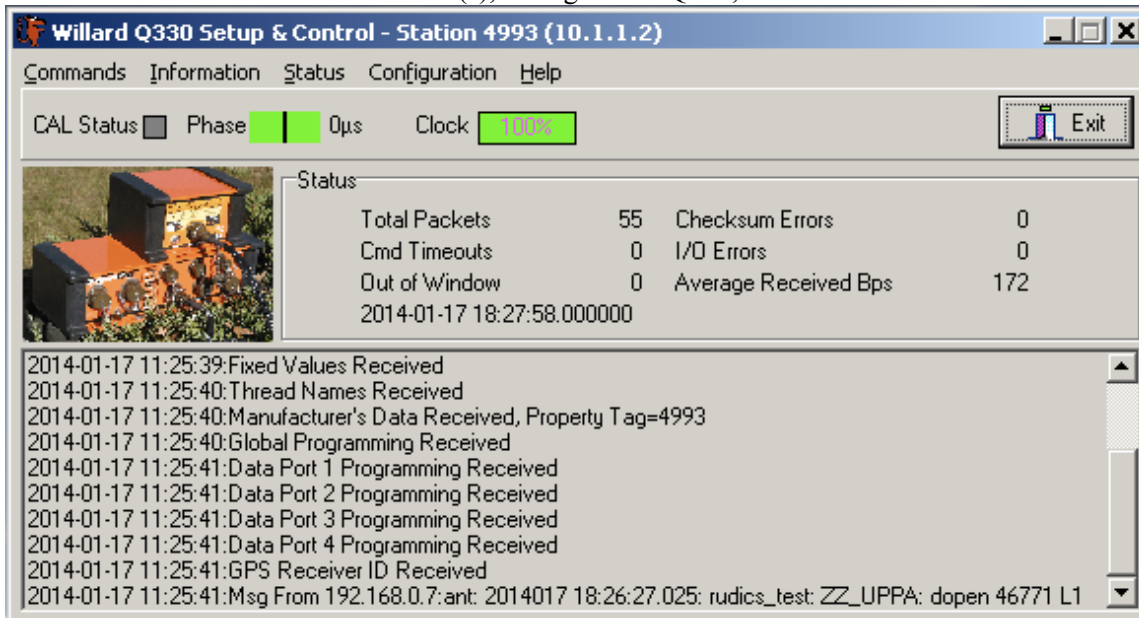
Status

The current mass positions can be viewed with the Miscellaneous Analog menu option. Channels 1-3 are for the mass positions of Sensor A and Channels 4-6 are for Sensor B. Most PASSCAL Q330 DASes record only channels 1-3. If a sensor is not connected, the corresponding 3 channels will default to 20. The values reported are decivolts; so for example a value of 14 means 1.4volts on that channel.
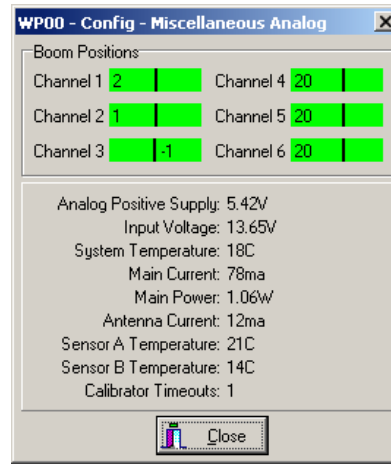
The QuickView screen gives a real time plot of the channel voltages.
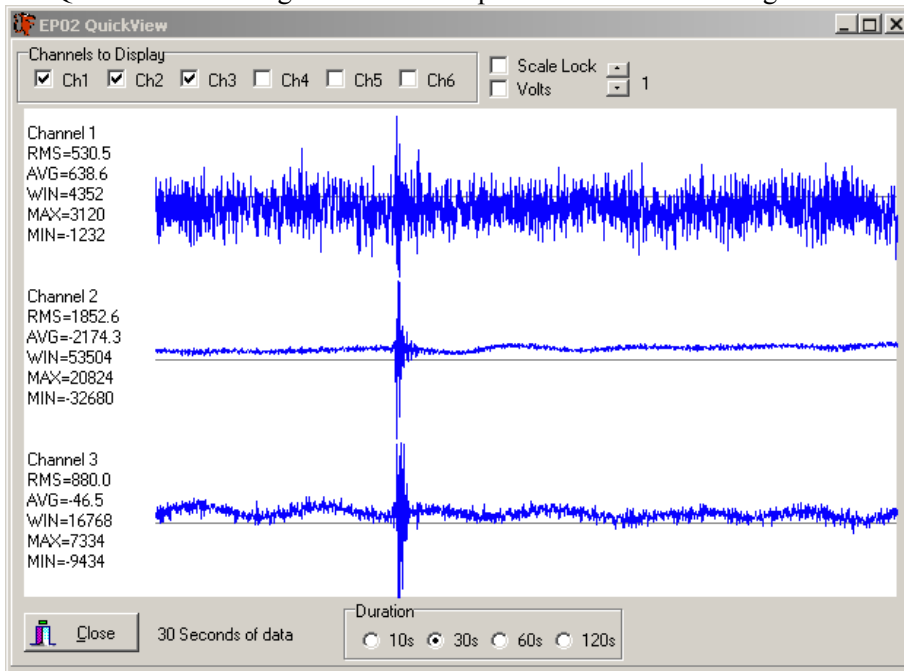
The plot is auto-scaling and with a sensor connected, the signal from a stomp test will be visible as a simple operational test of the sensor and Q330.

Willard will automatically disconnect after a period of inactivity.
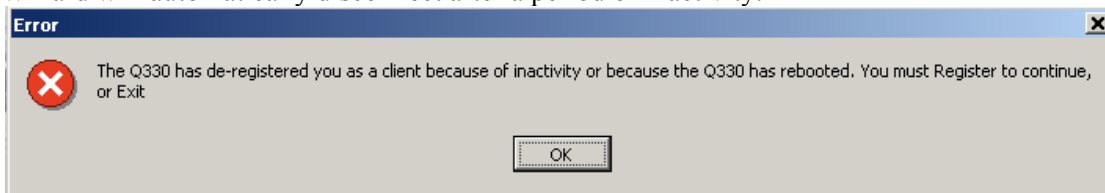
However, with the QuickView window open Willard will stay connected indefinitely and may unintentionally block other remote connections.

The status of the GPS connection and satellite lock are visible with the GPS Status and GPS Satellite menu items.

4993 - Config - GPS Satellites being Tracked

Number	Elevation	Azimuth	SNR
3	21	305	37
6	37	286	32
14	34	2	34
15	27	45	33
18	65	9	35
21	67	103	35
22	53	295	33
24	25	95	29

Close

4993 - Config - GPS Status

GPS Time: 18:27:36
GPS Date: 17/01/2014
Fix Type: 3-D
Height: 1441.3M
Latitude: 3404.4230N
Longitude: 10655.1367W
Run Time: 19341min
Sat. Used: 9
In View: 12
Checksum: 0
Last Mark: 2014-01-17 18:27:35

Format
◉ Raw ○ Decimal ○ Deg. Min. Sec.

Close

Information

The Hardware and Software menu is used for looking up the long serial number of the Q330.

0991 Hardware and Software

Q330 Serial Number: 0100000A27A7705B
AMB Serial Number: 0100000A1BAED0AE
Sensor A Serial Number: 000000000000000
Sensor B Serial Number: 000000000000000
QAPCHP1 Serial Number: 3431323
QAPCHP2 Serial Number: 0
KMI Property Tag: 991
System Software Version: 1.145
Slave Processor Version: 1.10
Calibrator Type: QCAL330
Calibrator Version: 1.6
Auxiliary Board Type:
Auxiliary Board Version:
Clock Type: Motorola M12
PLD Version: 4.6

Close

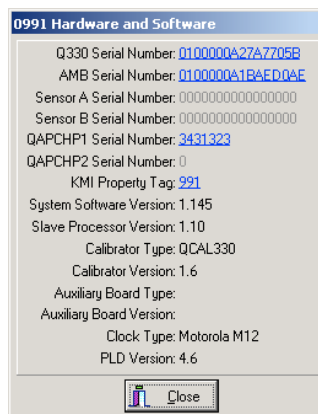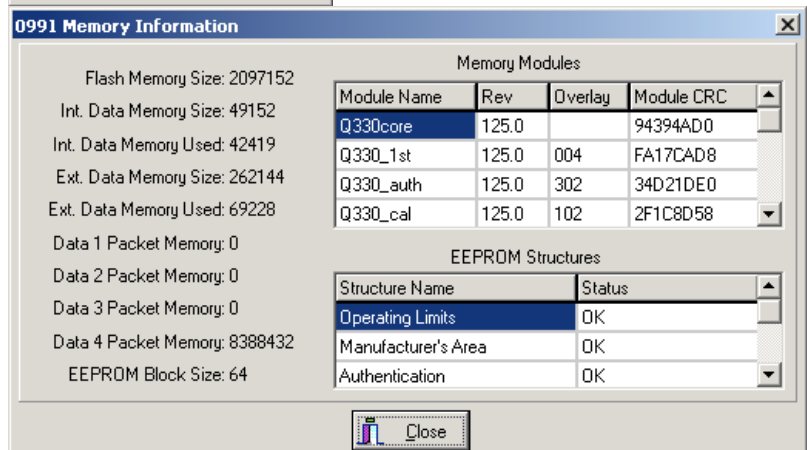The Memory menu can be used for determining if the Q330 has either 8MB or 32MB memory. If the Q330 is programmed for PASSCAL typical stand alone operation, all of the memory allocation will be on Data 4 Packet Memory.

0991 Memory Information

Flash Memory Size: 2097152
Int. Data Memory Size: 49152
Int. Data Memory Used: 42419
Ext. Data Memory Size: 262144
Ext. Data Memory Used: 69228
Data 1 Packet Memory: 0
Data 2 Packet Memory: 0
Data 3 Packet Memory: 0
Data 4 Packet Memory: 8388432
EEPROM Block Size: 64

Memory Modules

Module Name	Rev	Overlay	Module CRC
Q330core	125.0		94394AD0
Q330_1st	125.0	004	FA17CAD8
Q330_auth	125.0	302	34D21DE0
Q330_cal	125.0	102	2F1C8D58

EEPROM Structures

Structure Name	Status
Operating Limits	OK
Manufacturer's Area	OK
Authentication	OK

Close

Commands

The Pulse Sensor Control menu is used to send commands the sensor(s) like lock/unlock and recenter. Use the slider to set the duration of the pulse sent from the Q330 to the sensor.
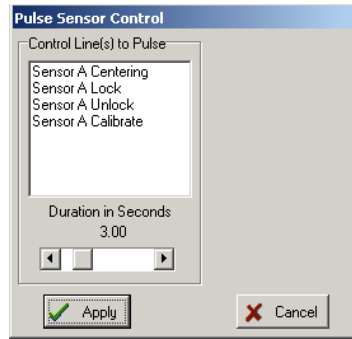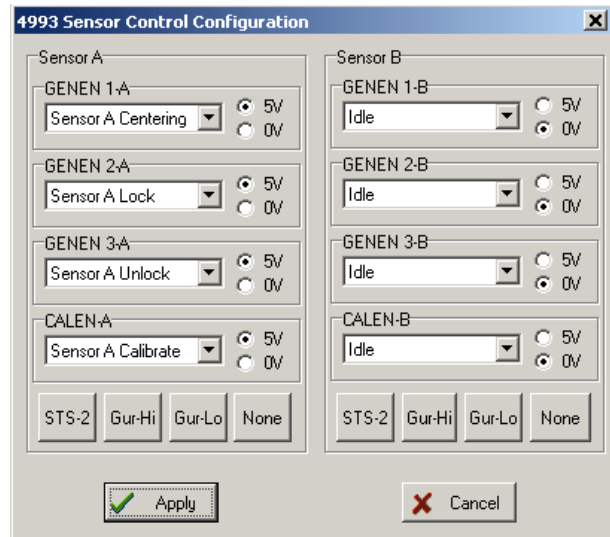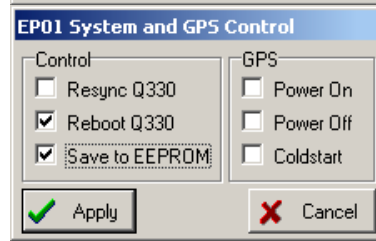
Configuration
Some sensor types are active-high and others are active-low for lock, unlock, and center commands. These are configured with the Sensor Control Configuration menu.

These settings should be adjusted and applied BEFORE connecting a sensor. Also, the sensor configuration should be saved to the EEPROM so that if the Q330 loses power it will reboot with the correct configuration. From the Command menu select System and GPS control, then check the Reboot Q330 and Save to EEPROM boxes and click Apply.

Section 2:   Loading XML Configuration Programs to a Q330

These instructions are specifically for stand-alone stations where all of the data are going to the Baler on data port 4. It is only necessary to use this procedure if you do not have a "clone" of the configuration on a Clie. Upon completion of this procedure the Q330 will be using the new configuration to acquire data, and a clone of the configuration can be uploaded to a Clie for programming other Q330 stations.

An existing PASSCAL approved XML configuration file must exist on the .
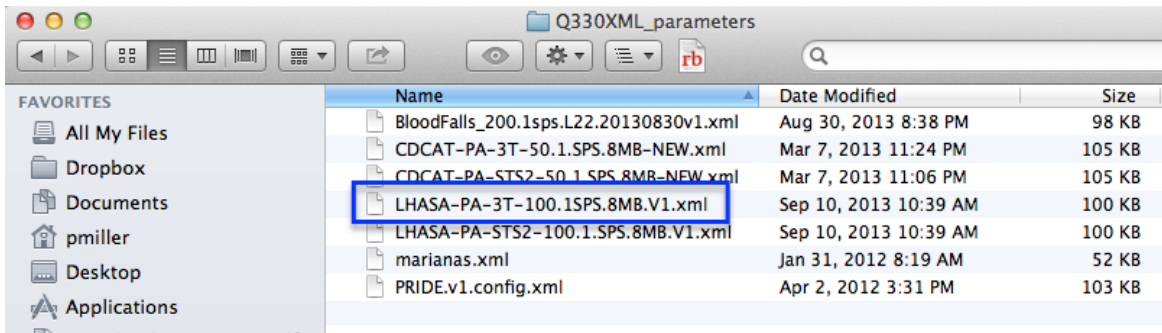
Select Configuration -> Configuration Cloning and select Load from File. Browse to the XML configuration file to be used, select it and click Open.
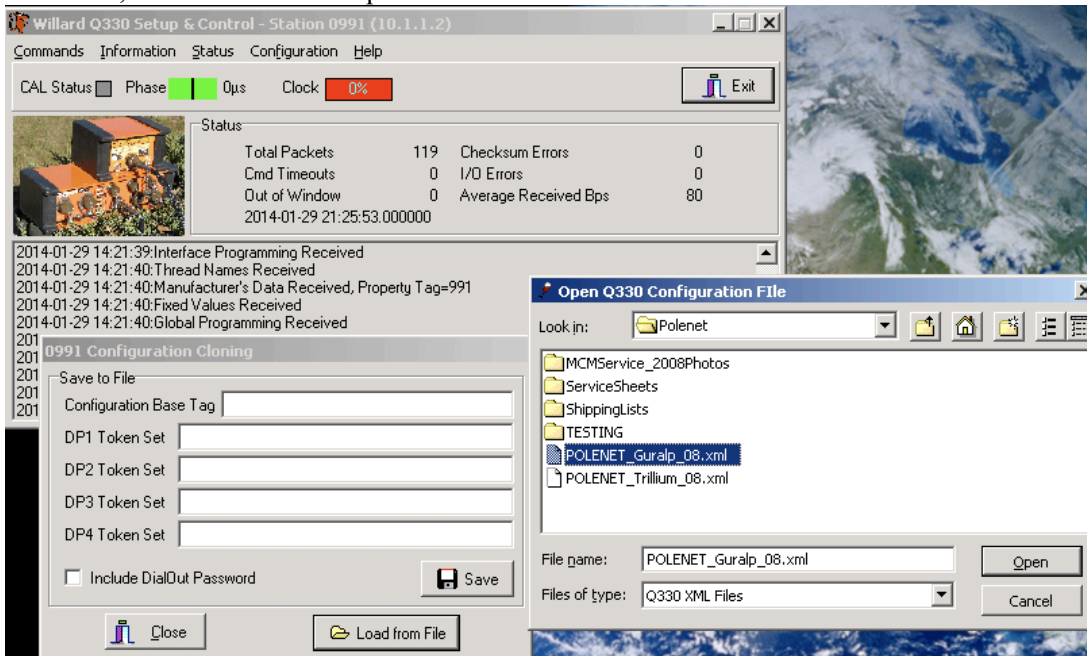
After the file has finished loading, all of the fields in the Configuration Load window will be empty. Select Copy from File for DPs, Interface and Global. This will copy the specified names and values from the file. The station names should now indicate the generic configuration. Select Apply.
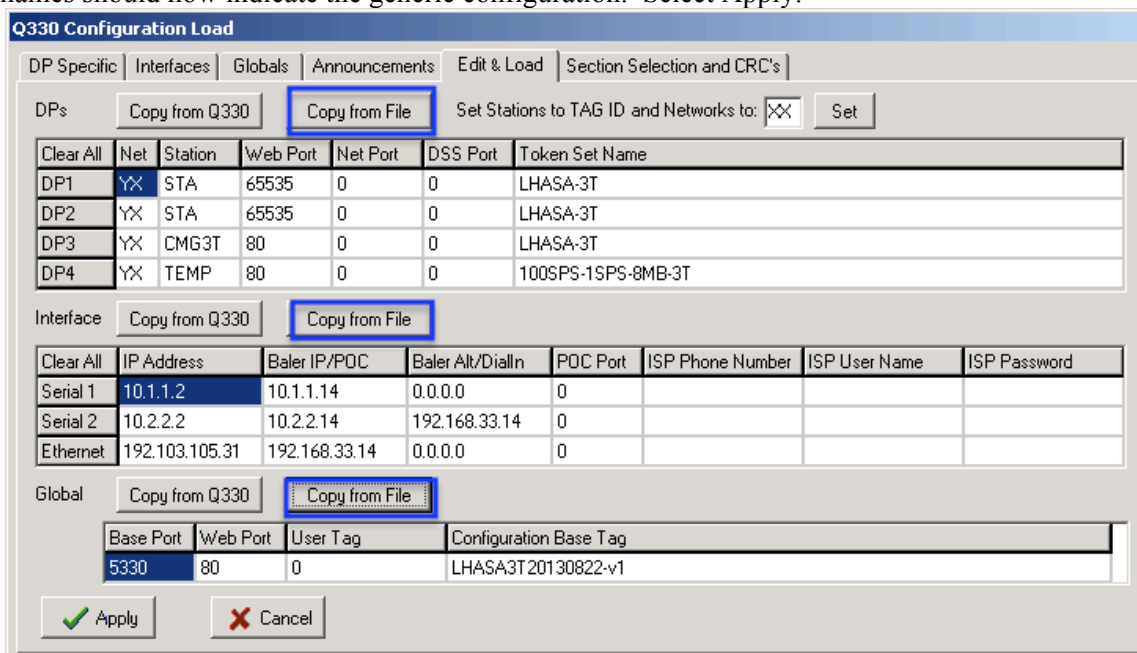
After the configuration is loaded in the Q330 and the Cloning Complete window comes up, select Re-boot Now.

Cloning Complete

Structures written to Q330. The Q330 must have these structures written to EEPROM and be re-booted. If you are done with the configuration you can re-boot now or wait until all configuration changes are complete.

[Re-boot Now]   [Continue Configuration]
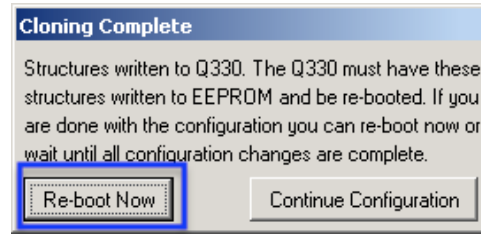
Verify that the configuration has been loaded
When the Q330 has finished rebooting, Reregister Willard and select Configuration -> DP Token Editor.
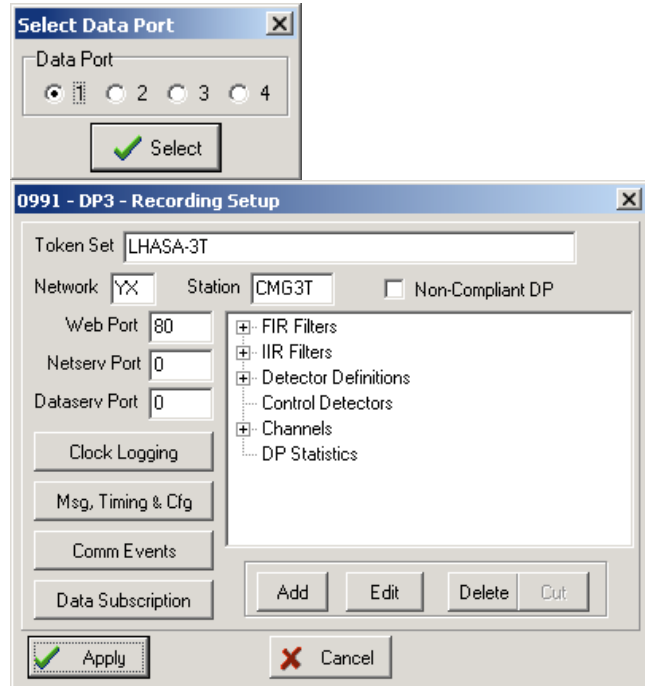
Select Data Port

Data Port
◉ 1   ○ 2   ○ 3   ○ 4

✓ Select

Select Data Port 3 and verify that the **Token Set** has the project name included and that **Station** name corresponds to the correct sensor type configuration and then select Cancel.

0991 - DP3 - Recording Setup

Token Set LHASA-3T

Network YX   Station CMG3T   ☐ Non-Compliant DP

Web Port 80   ⊞ FIR Filters
Netserv Port 0   ⊞ IIR Filters
Dataserv Port 0   ⊞ Detector Definitions
                        Control Detectors
[Clock Logging]   ⊞ Channels
                        DP Statistics
[Msg, Timing & Cfg]

[Comm Events]

[Data Subscription]   [Add] [Edit] [Delete] [Cut]

✓ Apply   ✗ Cancel

Exit from Willard

Clones to Clies can now be made from the Q330.

Section 3: Emergency Service of a Station with Willard

Servicing a station with Willard is not recommended by PASSCAL, however if the handheld controller is misplaced (or broken) and there is an available laptop with USB to serial adapter along with a standard Q330 serial console cable at the site it can be used.

Service Sheet

STATION SERVICE: DATE (mm/dd/yy)_____ STATION NAME_____

| *Q330B147* Key to symbols: **>** Menu items: * Values: ! Commands: Check: |

Personnel _____ Local time_____
Site conditions_____
*Q330 Serial Number_____ *Power Box Serial Number_____
*Old Baler Serial Number_____ *New Baler Serial Number_____

Q330 Operations with a laptop running Willard (see Section 1 of the Willard Document)
1. **Status->Miscellaneous Analog:**
   *Main Current: _____ **Input Voltage: _____ (>12.5 full sun, >11.5 no sun)
   If Power is Low, follow instructions at the end "IF POWER IS BAD"; otherwise continue.
   *Antenna Current: _____ *System Temperature: _____
   *Boom Pos: 1: _____ 2: _____ 3: _____ (within +/-15 for CMG-3T, i.e. within +/-1.5 volts, +/- 20 for STS-2)
   If the Boom Positions are out, recenter sensor: **Commands->Sensor Control:** Slide **Duration in Seconds bar:**
   10sec (CMG-3T) or 2sec (STS-2) !Apply
2. **Status->General Status** *Time of Last Boot: _____ *Total number of
   Boots:_____
   *Time of last Last Re-Sync: _____ *Total Number of ReSyncs _____
3. **Information->Hardware and Software:** *System Software Version:_____
4. **Main Screen**: *Phase: _____ *Clock: _____
5. **Status->GPS Status** (select the Decimal radio button at the bottom of the window)
   *GPS Time: _____ *GPS Date: _____(given in DD/MM/YYYY)
   *Height: _____ *Latitude: _____ *Longitude: _____
   *Last Mark: _____ If clock has not locked within 4 hours try to fix before proceeding
6. **Configuration->DP Token Editor-> Data Port 3** !Select *Station _____(SENSOR TYPE)
   ->DP Token Editor->Data Port 4 !Select *Station name_____(STATION NAME)
7. **Status ->QuickView**   !Stomp test: ch 1: □ OK   ch 2: □ OK   ch 3: □ OK
   ->Close
8. **Status ->Data Port Status** (look at Data Port 4) *Packet buffer used (Increasing)   YES   NO
9. **Commands ->Baler Control** click **Ethernet** radio button   ____!Turn On Baler
   If baler does not respond use the ATTN button on the baler to dump to the baler.
   If the baler times out BEFORE finishing then REPEAT
10. **Status ->Data Port Status** (look at Data Port 4) *Packet Buffer : Decreases to zero? YES   NO (if not repeat step 7)
   *Packets sent _____
11. **Commands ->Baler Control** click **Ethernet** radio button   ____!Turn Off Baler
   Wait for slow green blink = Idle and no lights under Ethernet Active or Link
   ____Remove Baler and label it
   ____Replace with new Baler
12. **Status ->Data Port Status** (look at Data Port 4) *Packet buffer used (Increasing)   YES   NO
   *Packet Buffer _____%
13. **Commands ->Baler Control** click **Ethernet** radio button   ____!Turn On Baler
   (Baler should turn on ---- Do NOT use ATTN button!)

14. **Status ->Data Port Status** (look at Data Port 4)   *Packet Buffer :: Decreases to zero :: YES NO
                                                *Packets sent _____ ****
    NOTE: If the Q330 does not transfer data to the Baler try clearing the Baler "association" by holding in the baler Attention button in until the light turns solid red (~5 sec). Release the button and then, after the light begins to flash green, press the Attention button once to shut down the Baler. Repeat the process once more and then try to transfer data to the Baler. (OR use EzBaler with the laptop connected to the Baler.)
15. **Status->Miscellaneous Analog:** *Main Current: _____ **Input Volts: _____ (>12.5 full sun, >11.5 no sun)
        If Power is Low, follow instructions at the end "IF POWER IS BAD"; otherwise continue.
        *Ant. Current: _____ *Temp: _____
        Boom Pos: 1: _____ 2: _____ 3: _____ (within +/-15 for CMG-3T, i.e. within +/-1.5 volts, +/- 20 for STS-2))
        If the Boom Positions are out, recenter sensor: **Commands->Sensor Control:** Slide **Duration in Seconds bar:**
                                10sec (CMG-3T) or 2sec (STS-2) !Apply
14. **Status->General Status**   *Time of Last Boot: _____ *Total number of
    Boots:_____ *Time of last Last Re-Sync: _____ *Total Number of
    ReSyncs _____
15. **Information->Hardware and Software:** *System Software Version:_____
16. **Status ->GPS Status** *GPS Time: _____ *GPS Date: _____(given in DD/MM/YYYY)
        *Height: _____ *Latitude: _____ *Longitude: _____
        *Last Mark: _____

IF POWER IS BAD
POWER: Check power ONLY IF the station has Power Problems
NOTE: The following tests should be performed with the solar panels in full sun. Check solar panel is clean and pointed in the correct direction.

1. Disconnect the solar panel.
2. Test output of the batteries (12.5 – 13 Volts DC) Voltage:_____
WARNING: DO NOT test the current of the battery
3. Record Vs from the power box's display (should be same as above) Voltage: _____
4. Test the solar panel output (~2A, 18 Volts DC) Voltage: _____
5. Connect the solar panels to power box
6. Record Vs (battery voltage) _____ Vpn (solar panel voltage) _____
        Apv (solar panel current) _____ from the power box's display (Vs should be higher now)

Download SOH from Baler (at station site)

*Baler tag ID_____   *Station name _____
EZBaler – Offload State of Health data only (See Baler Download Doc)

*StartTime/Date_____ *EndTime/Date_____ *DataSize_____

*SOH file name_____ *Size_____ SOH check complete?_____

QPEEK – Evaluate State of Heath information and correct any problems seen if possible (see QPEEK doc.)

PQL – Evaluate 1 sps data stream (LHZ, LHN, LHE) and correct any problems seen if possible (see PQL doc.)