



Pump Manager 2 User Manual

October 21, 2013

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1.0 Introduction

Pump Manager 2 software (PM2) is to provide a software interface between Rain Bird pump stations and Rain Bird central control software. Additionally, Pump Manager 2 will store all data acquired from one or more pump stations in a central control PC local database. From this stored data, Pump Manager 2 can generate reports or export data for further analysis. Pump Manager 2 also helps to automate remote pump station touch screen control. Remote control allows station operating parameter adjustment from the central control PC.

2.0 Installation

System Requirements

- Windows XP, Windows XP/64, Windows 7, or Windows 7/64
 - Intel Core 2 processor, 1.0GHz or greater
 - Up to 500MB of data can be archived per pump station per year. Appropriate free storage should be provided.
 - Available Ethernet connection or existing local network connection connecting to pump station

During the Pump Manager 2 setup process several components will be installed:

- Microsoft .NET Framework 4.0 (installed if necessary for your PC)

This library component is required for Pump Manager 2 execution. Windows 7 PCs may already have this component installed and many applications use it.

- Microsoft SQL Server 2008 R2 Service Pack 1 (installed if necessary for your PC)

This PC service component provides database storage, data retrieval for export, and reporting services for Pump Manager 2.

- Pump Manager 2

Pump Manager 2 controls pump station communication over your local network or Internet connection, historical pump station data storage, station monitoring, and report generation. Pump Manager 2 provides pump station flow and pressure data to Rain Bird Golf central control software enabling SmartPump operation.

- UltraVNC

This application provides remote control interface to Rain Bird pump stations. When connected, UltraVNC copies the actual screen display from the pump station control panel for PC display using the VNC (Virtual Network Computing) protocol. It can also transmit clicks/taps to the pump station allowing direct station control similar to direct interaction at the pump station.



Both Pump Manager 2 and UltraVNC require a network interface to the pump station. If local Ethernet or WiFi connects the central control PC location and the pump station, wired Ethernet may be used. If Ethernet-based radio is used, the Ethernet radio should be connected to the central control PC and the paired radio to the pump station Ethernet connection.

3.0 Computer Configuration

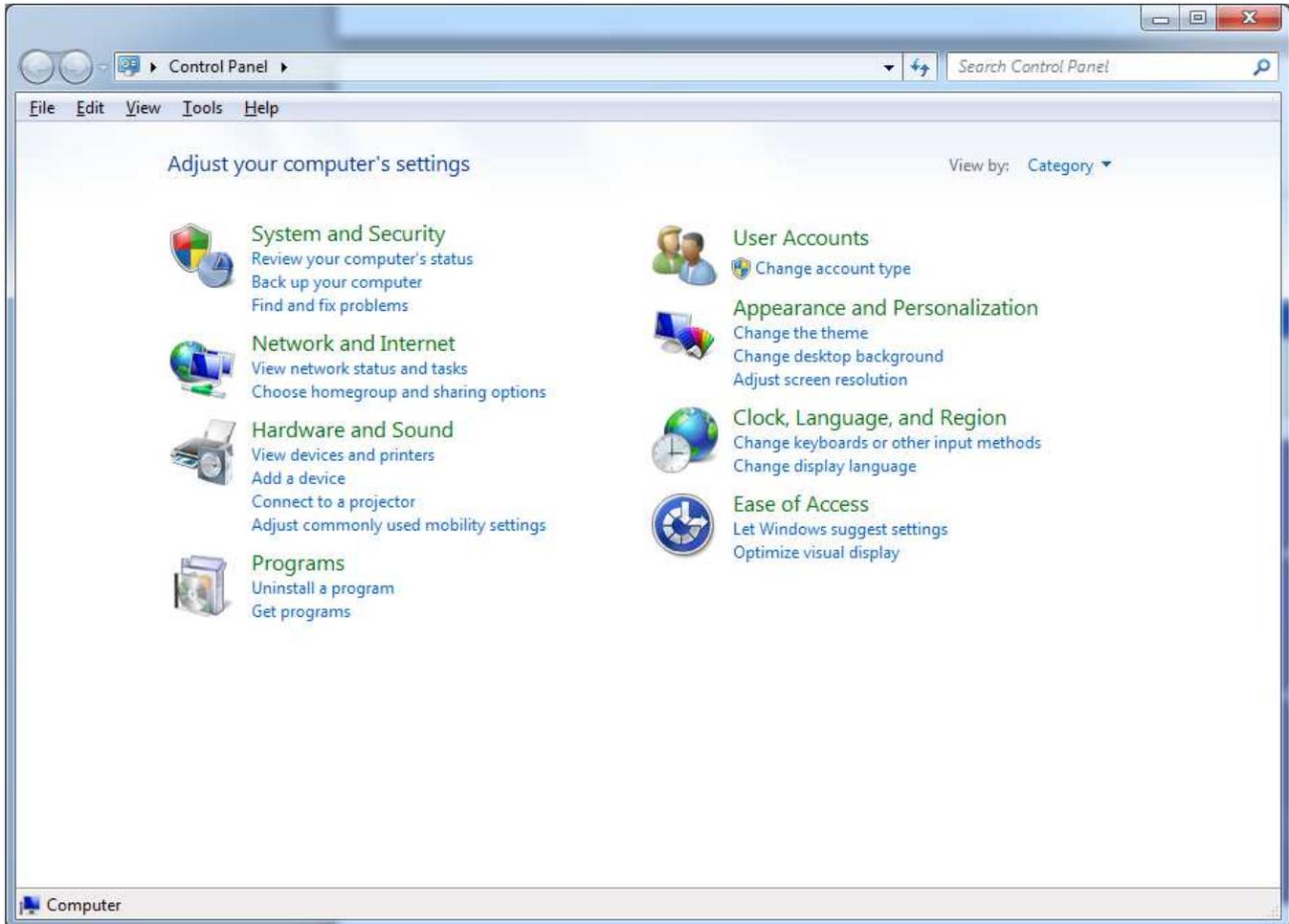
Rain Bird pump stations are factory configured with “static IP addresses”. That is, your local network servers are not consulted to determine the addresses. In order to communicate with the pump station, the central control PC must either have a similar address or your network support team must establish a “route” defining the path between PC and pump station. The addresses assigned to the pump station by the factory are listed below for reference:

- Pump station controller (PLC): 192.168.148.200, subnet mask 255.255.0.0, gateway 192.168.148.1
- Pump station touch screen: 192.168.148.201, subnet mask 255.255.0.0, gateway 192.168.148.1

The addresses can be changed from the pump station panel but it is much easier to alter the PC address. That process is documented below for Windows 7, setting a static PC IP address of 192.168.148.100. This process is appropriate for a point-to-point radio network connecting the pump station and central control PC or a stand-alone wired Ethernet network connecting only the central control PC and pump station. Note that changing your computer’s network configuration can disconnect you from the Internet. Address assignments, except in direct-wired or point-to-point wireless networks, must be carefully planned to avoid communication problems. Consult your network experts for assistance.

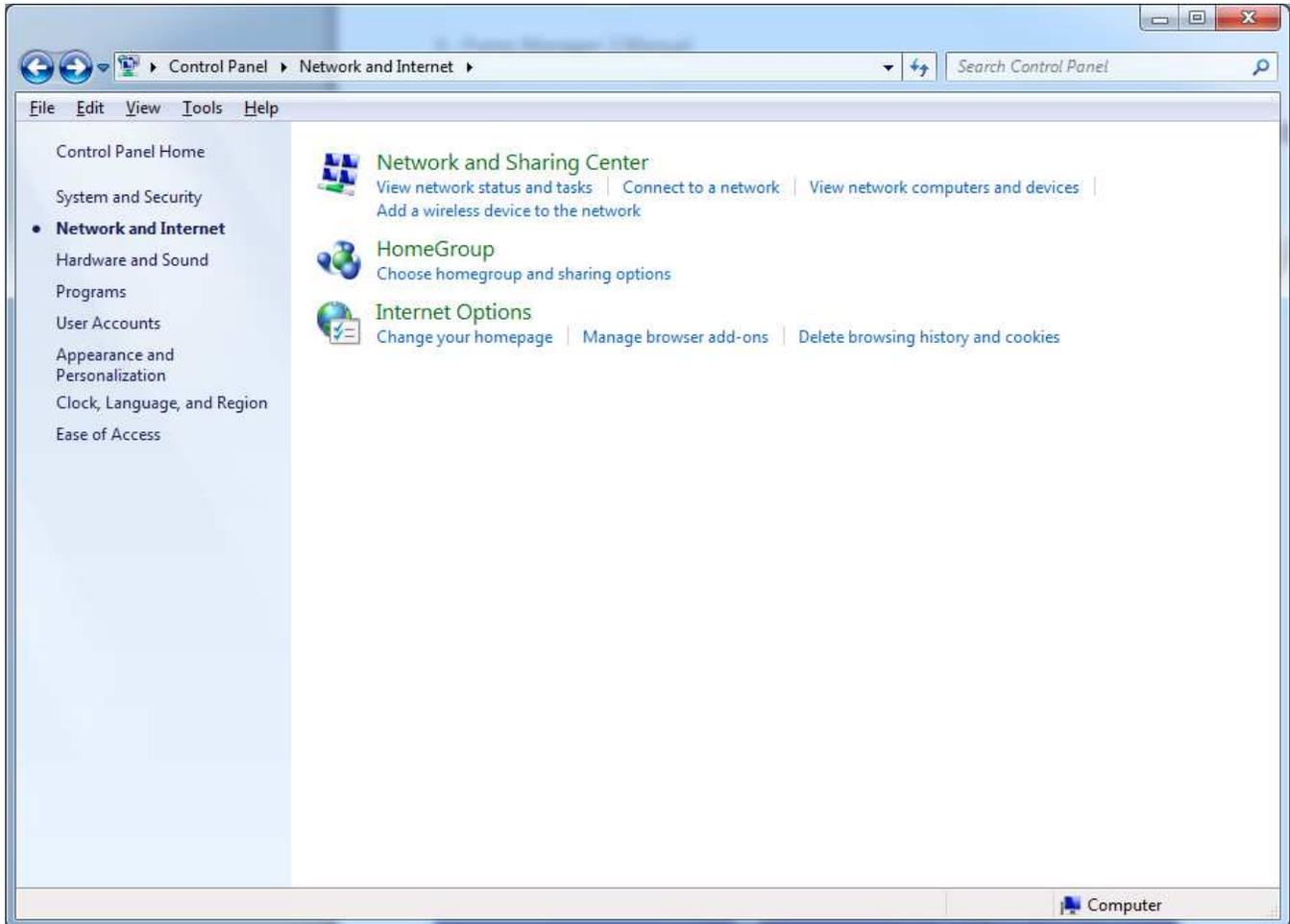
Step 1:

Open start menu. Click on **Control Panel**



Step 2:

Click on **Network and Internet**



Step 3:

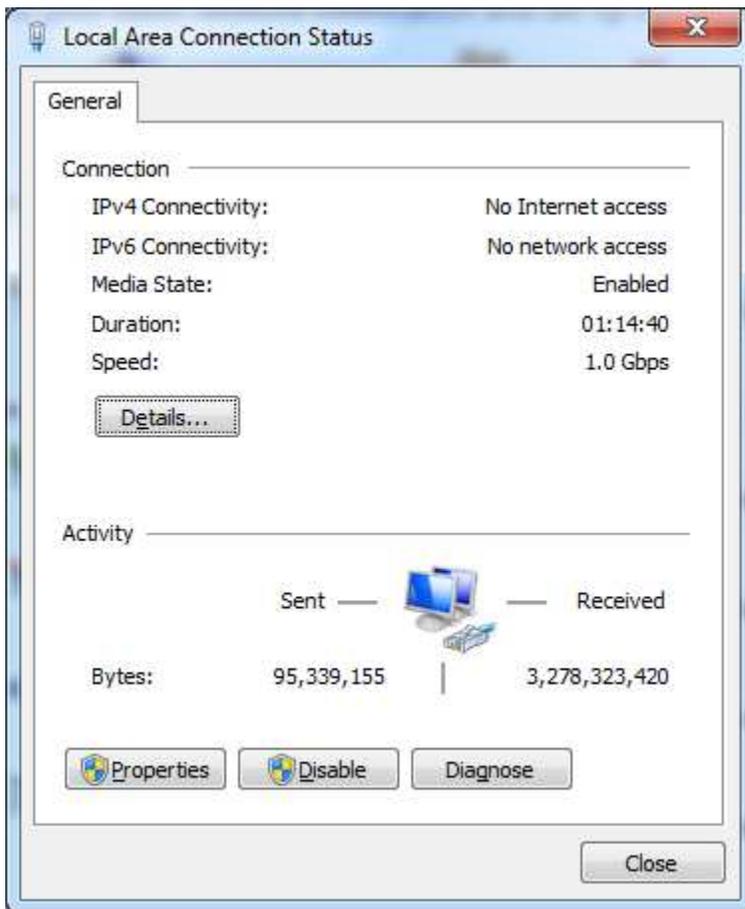
Click on **Network and Sharing Center**. Select **Local Area Connection** from your view of active networks:

View your active networks [Connect or disconnect](#)

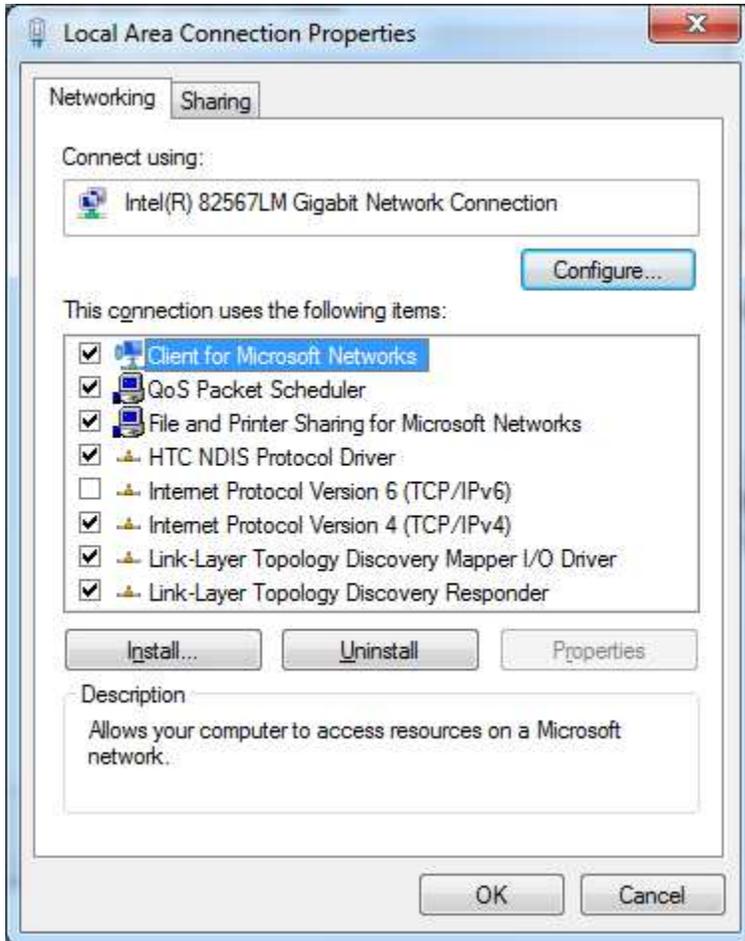


Unidentified network
Public network

Access type: No network access
Connections: [Local Area Connection](#)

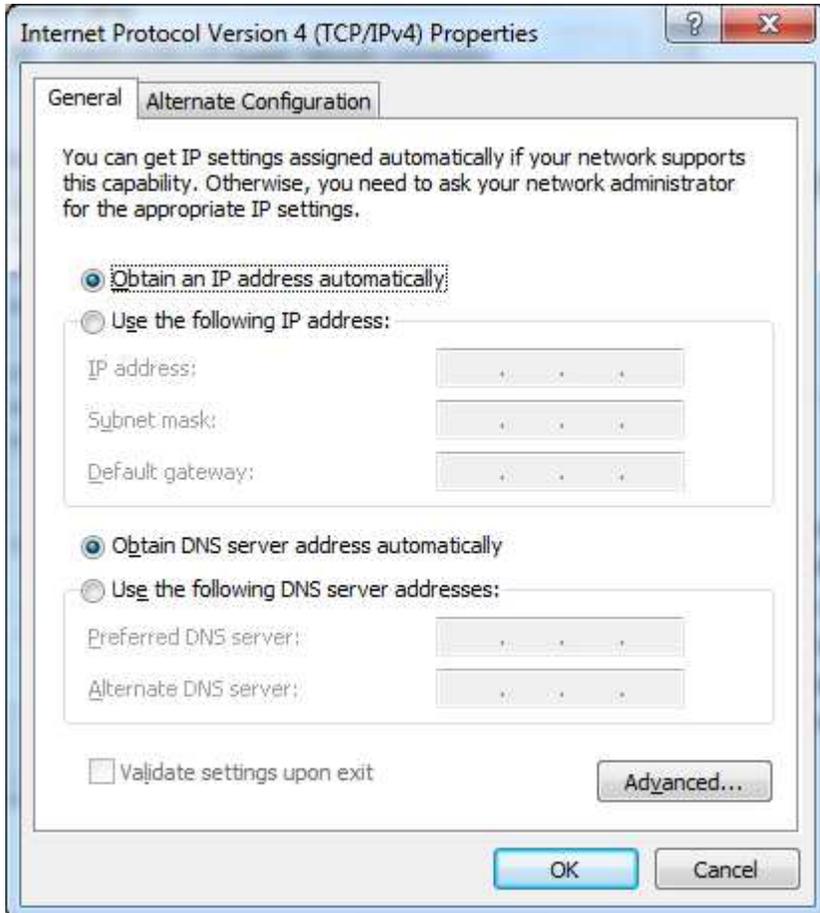


Step 4:
Click **Properties**



Step 5:

Click **Internet Protocol (TCP/IPv4)** and then the **Properties** button.



Step 6:

Select **Use the following IP address** (which selects a “static IP”, as opposed to the “dynamic” address requested from a server by **Obtain an IP address automatically**), and configure to the following:

- **IP address:** 192.168.148.100
- **Subnet mask:** 255.255.0.0
- **Default gateway:** [blank or based on your network expert’s advice]

The IP address must be unique on this network. It is best to consult with your network experts to select an address and determine whether static or dynamic address should be used.

Step 7:

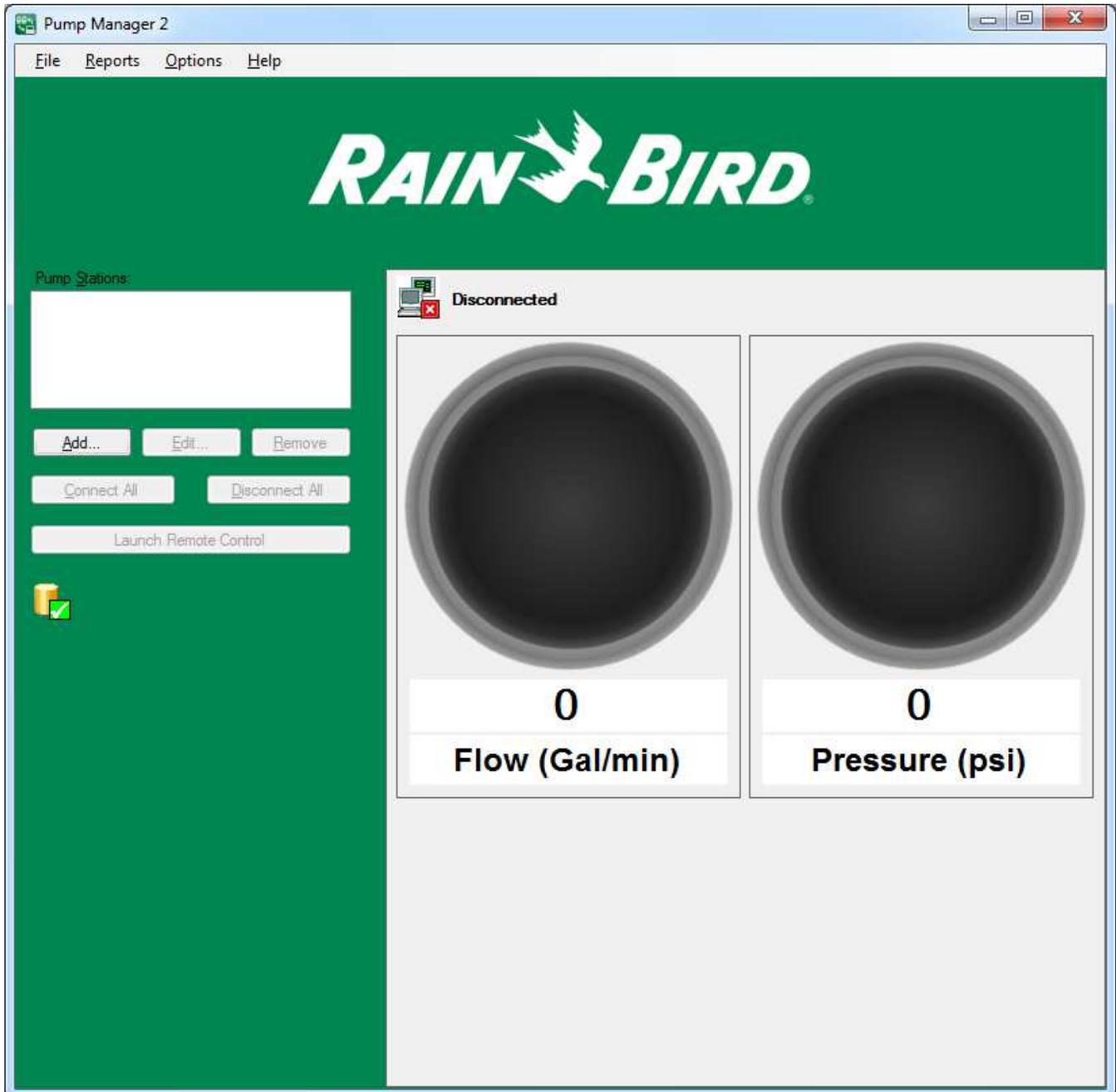
Click **OK** to close the TCP/IPv4 properties, **Close** to close the Local Area Connection properties, and **Close** to close the Local Area Connection Status window.

4.0 Pump Manager 2 Configuration

As mentioned in the previous section, Rain Bird pump stations are factory configured with static IP addresses. This section describes Pump Manager 2 configuration for communication with 1 such pump station. The IP addresses shown below are the factory pump station defaults. If your pump station has been reconfigured for compatibility with your local area network or if the pump station will be Internet accessed different addresses or names will be used. Refer to your networking experts for assistance. If multiple pump stations will be monitored by Pump Manager 2 each station will have a unique IP address or host name.

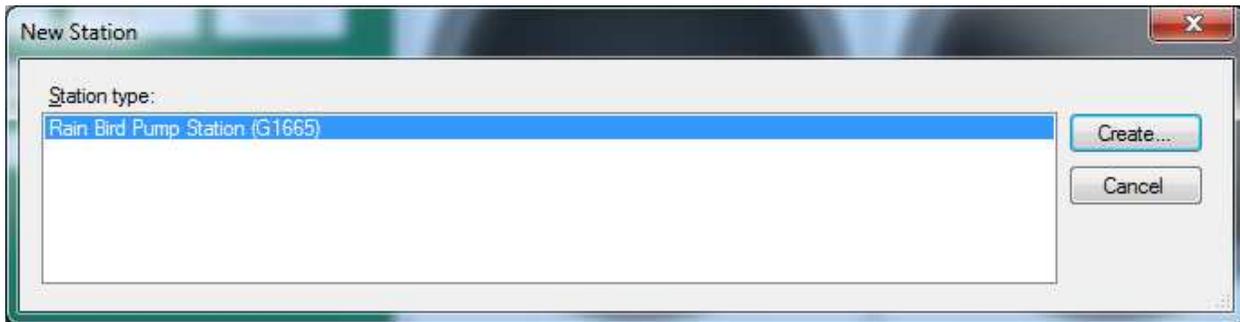
Step 1:

Start Pump Manager 2 from the Windows Start menu.



Step 2:

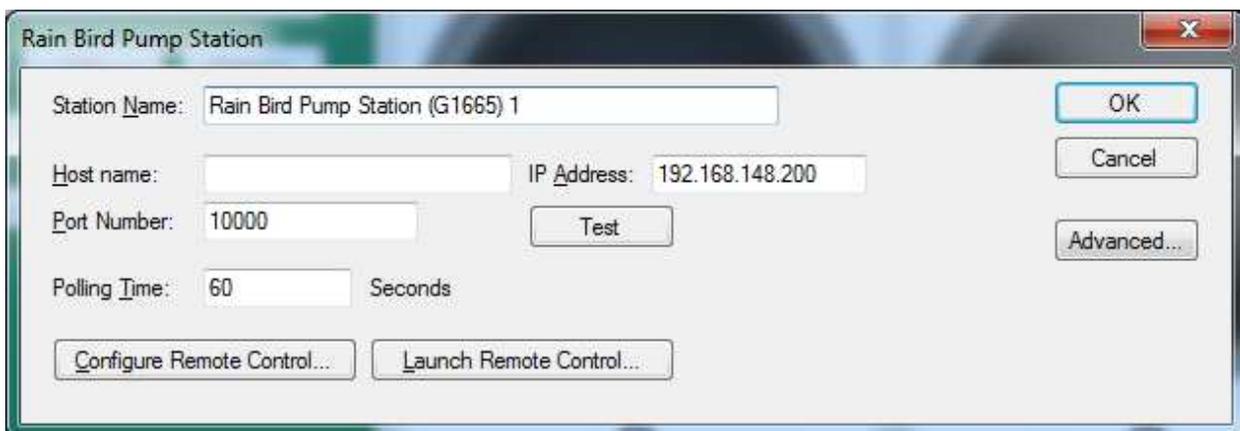
Note that the **Pump Stations** list is empty. Pump Manager 2 can monitor up to 10 stations. To add your pump station click **Add**



Select station type Rain Bird Pump Station (G1665). Depending on certain options, your list may show other station types.

Step 3:

Select **Create...** This will create a new entry in the Pump Stations list and prepare for configuration of the pump station connection. The driver configuration window for new pump stations appears:



Step 4:

Configure options as follows. The **IP address** and **Port number** are set to default values:

- **Host name:** <blank>
- **IP Address:** 192.168.148.200
- **Port number:** 10000

- **Polling Time:** 5 seconds

Note that the **IP Address** entry matches the factory default IP assigned to the pump station. **Host name** and **IP Address** are alternate methods of defining the pump station network address. In some networks and particularly over the Internet, a host name is more likely to be used to identify a device. The host name is typically in similar form to “pump1.mypumps.com” although the specifics will vary. The IP address is more likely to be used on a local network or point-to-point radio network.

Polling Time defines the pump station data collection frequency. When set for 5 seconds Pump Manager 2 will contact the pump station controller every 5 seconds, capture the operating data, and store in the database. It will also update the pressure, flow and other status indicators. For networks where data charges may apply, you may choose to reduce polling time. Fast polling also increases data storage in the Pump Manager 2 database so consider hard disk capacity when choosing a time.

Step 5:

Select **Configure Remote Control**



The screenshot shows a dialog box titled "Touchscreen Remote Control Configuration". It contains several input fields and a checkbox. The "Host Name" field is empty. The "IP Address" field contains "192.168.148.201". The "Port Number" field contains "5900". The "User Name" field is empty. The "Password" field is empty. There is a checked checkbox labeled "Launch Remote Control on Program Start". On the right side, there are "OK" and "Cancel" buttons.

Step 6:

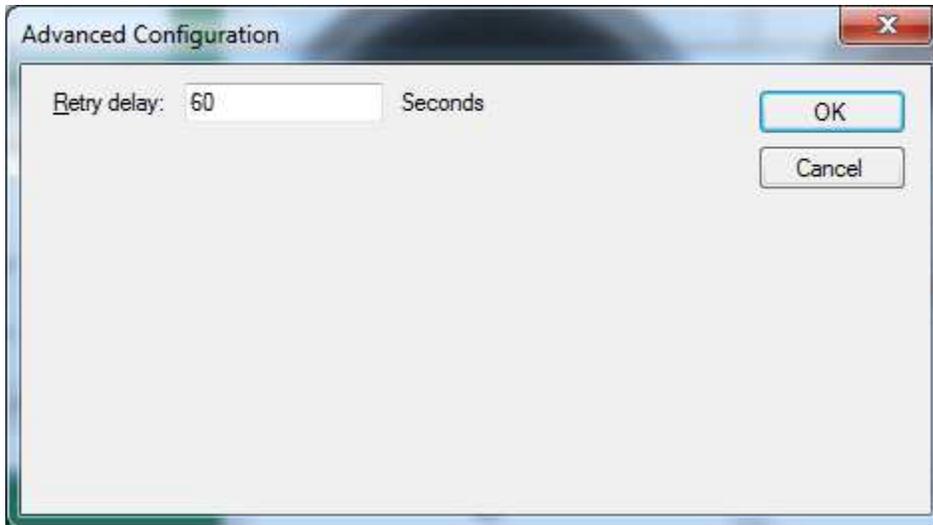
Configure options as follows (these are also factory defined default values):

- **IP Address:** 192.168.148.201
- **Port Number:** 5900

Click **OK** to accept the changes.

Step 7:

Select **Advanced...** button



Step 8:

Configure options

- **Retry delay:** 60

Click **OK** to accept the value.

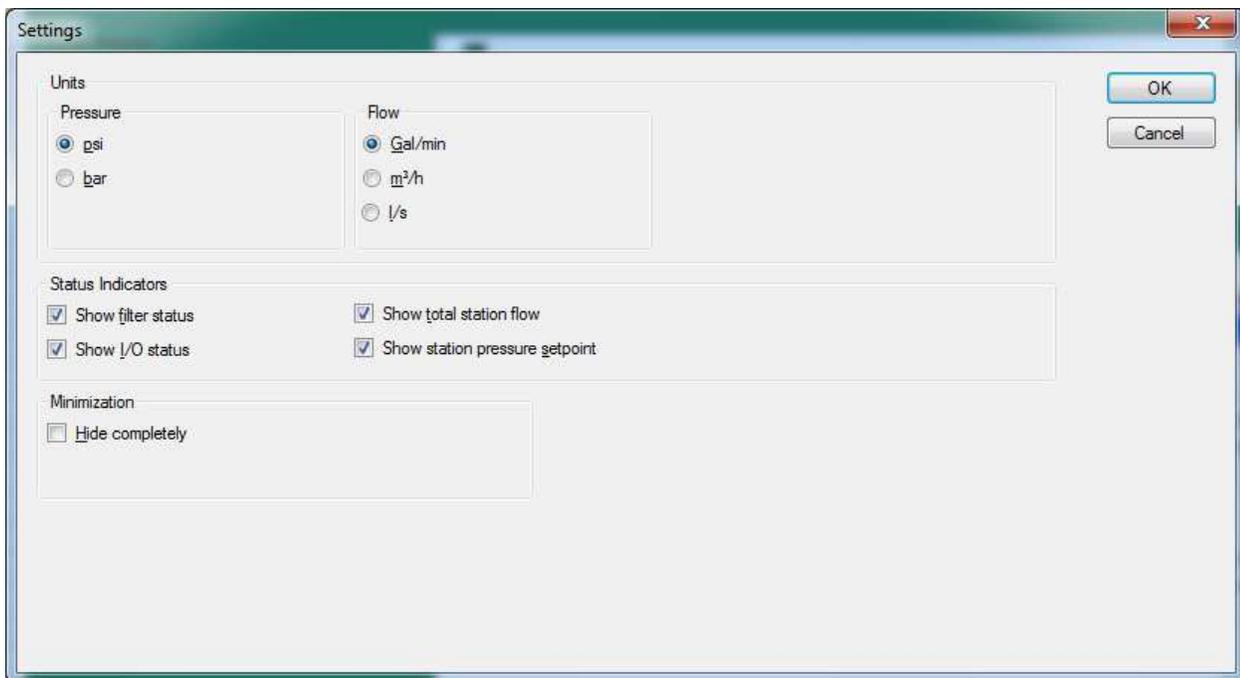
Note: The **Retry delay** is the time delay between connection attempts when a network fault or other communication error has prevented or broken connection with the pump station.

Step 9:

Click **OK** to close the Rain Bird Pump Station configuration dialog . There should now be a single pump station entry in the Pump Manager 2 main window **Pump Stations** list.

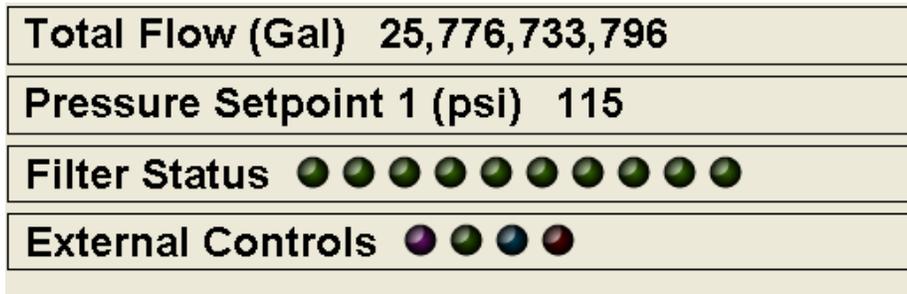
5.0 Pump Manager 2 Settings

Pump Manager 2 preferred unit of measurement for water flow and pressure options. Some front panel display information can also be suppressed. To change the settings, access the **Settings...** item from the **Options** menu.



Units selection controls both the front panel display of Pump Manager 2 and the units of measure transferred to Rain Bird Golf central control SmartPump. To assure proper operation, **Units** should be configured to match central control software settings.

Status Indicators controls the appearance of Total Flow, Pressure Setpoint, Filter Status and External Controls indicators found in the Pump Manager 2 main window as shown below.



Minimize Completely controls the appearance of Pump Manager 2 when minimized. By default when minimized Pump Manager 2 will show a status mini window including the pressure, flow, and pump status indicator information for each pump station:



The mini window floats in front of other windows giving immediate access to pump information. To restore the normal window double-click the small window. To move the mini window, click and drag.

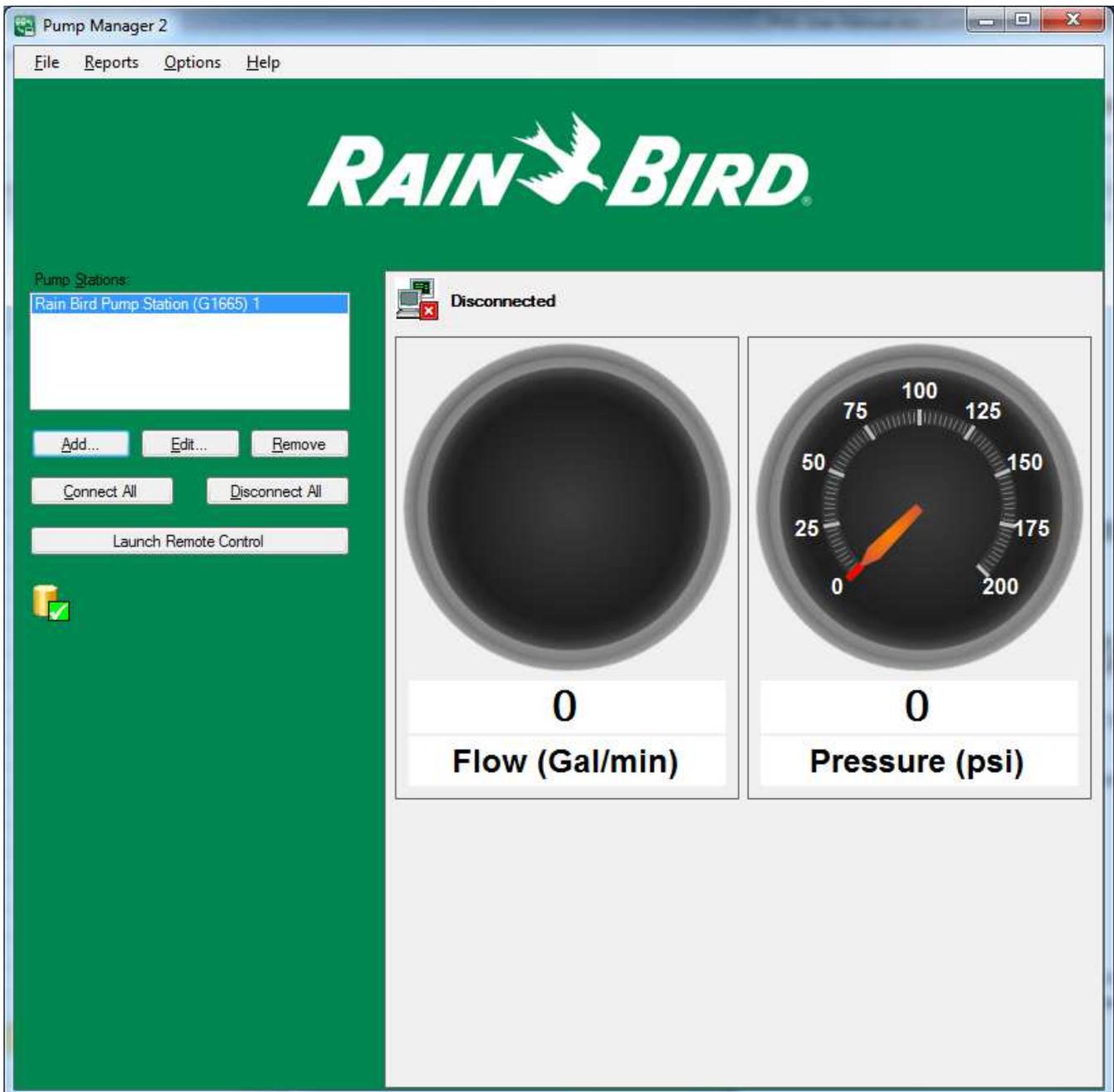
If you prefer to hide Pump Manager 2 completely when minimized, check **Minimize Completely** option. When **Minimize Completely** is selected and Pump Manager 2 minimized, access is available only through an icon in the system tray. Double-click this icon to restore Pump Manager 2 to normal size.



6.0 Pump Manager 2 Operation

6.1 Main Window

After pump stations are configured, the main Pump Manager 2 window appears generally as shown below.



Add a pump station

To add a new Pump Manager 2-connected pump station, select **Add...** Refer to section 4.0 Pump Manager 2 Configuration for more information on adding pump stations.

Edit pump station settings

To edit pump station settings, select the target pump station in the Pump Stations list and select **Edit...** or double-click the pump station in the list. The configuration options are identical to adding a new pump station. Note that **Edit...** is not enabled when the pump station's communication is enabled; click **Disconnect All** to edit in this case.

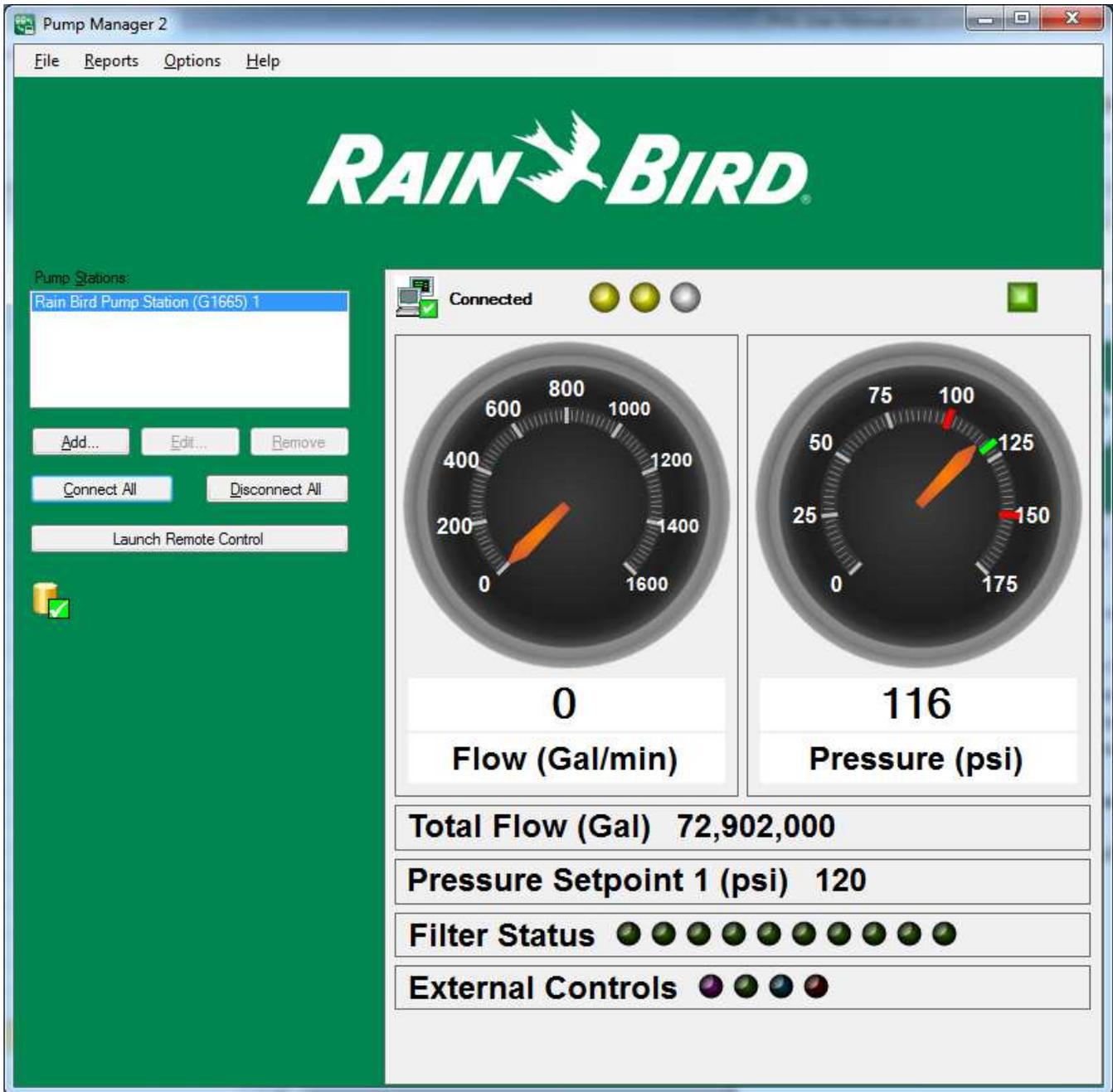
Remove a pump station

To remove an existing pump station, select the target pump station in the Pump Stations list and select **Remove**. Confirmation of the remove operation will be requested; select **Yes** to complete the remove. Note that previously-acquired data from the indicated pump station is not removed from the database. Also note that pump station data is saved by position in the **Pump Stations** list; removing a station may result in discontinuities in pump station data for other stations in the list. It is recommended to **edit** pump station name and connection information **rather than** removing and adding a new station when changing station information.

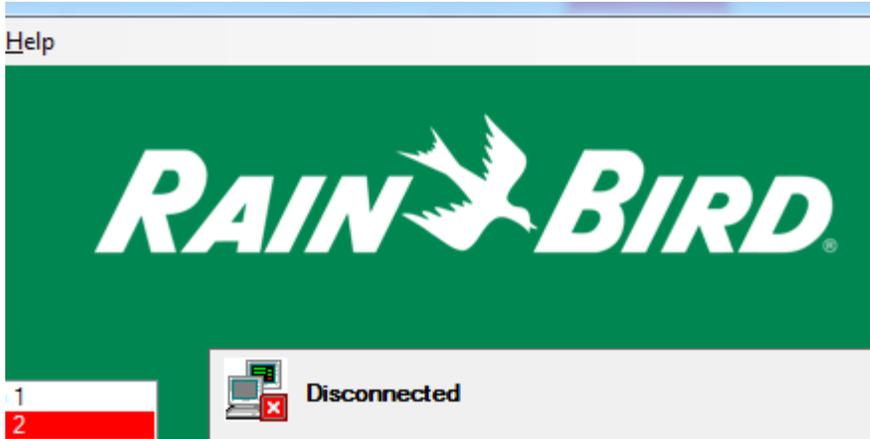
Connect to pump stations

To establish network connection to the pump stations select the **Connect All** button. When selected, this starts communication with all pump stations in the list. Communication will continue until Pump Manager 2 exits or the **Disconnect All** button is selected. If communication with one or more pump stations fails, other stations can continue communicating.

Once communication is successfully established the state is **Connected** as shown below:



If a network error exists or occurs after initial connection, **Disconnected** or **Connecting...** may be shown, as sampled below:



A **Disconnected** state indicates either:

- Communication has not been started using **Connect All**
- Communication has been stopped using **Disconnect All**
- There is a communication error with the pump station. The Retry delay time configured for pump stations determines how long between retries if the latter state is reached.

During a connection retry, a **Connecting...** state is indicated. If the connection is not completed relatively quickly, this may indicate an error. Even connections via Internet connection should be completed in seconds. Refer to 10.0 Troubleshooting for further information.

When in the **Connected** state, the pump data is updated at the Polling Time rate selected during pump station configuration. Each time pump data is retrieved it is saved in the Pump Manager 2 database and sent to Rain Bird central control software. If multiple pump stations are configured, the gauge values, connected state and other status information shown in the Pump Manager 2 main window is associated with the selected pump station in the **Pump Stations** list. Selecting a different pump station allows status checks for each station one at a time.

Several status elements are presented for each station. The row of LEDs across the top of the station data indicates the number of individual pumps reported by the station and the status of each.



The individual main pumps are shown to the left (up to 10 pumps, as round LEDs) and the pressure maintenance and jockey pump (if present) are shown to the right (as square LEDs). The color codes indicate the following statuses and match the color codes used on pump station front panels:

- Black: Pump is locked out
- Blue: Pump is running on VFD
- Green: Pump is running DOL (full voltage)
- Red: Pump has an active alarm
- Purple: Pump switch is in MANUAL or OFF position
- Gray: Pump is disabled
- Yellow: Pump is in Auto Mode but not Activated

The **Flow** and **Pressure** gauges indicate current values for the main pump station flow rate and pressure transducers. The pressure gauge also indicates the pressure high and low alarm values as red tick marks on the scale.



The **Total Flow** gauge indicates the pump station reported total flow since installation. **Total Flow** display can be disabled through Pump Manager 2 settings.

The **Pressure Setpoint** gauge indicates the nominal or target pressure configured for the pump station. **Pressure Setpoint** display can be disabled through Pump Manager 2 settings.

Filter Status indicates the backwash status of up to 10 integrated filters controlled by the pump station. If an LED is ON the corresponding filter is currently backwashing; if OFF the filter is not being backwashed. Filters that are not present always show OFF.

The status of several **External Controls** managed by the pump station can be indicated in the **External Controls** display. External Controls display can be disabled through Pump Manager 2 settings.

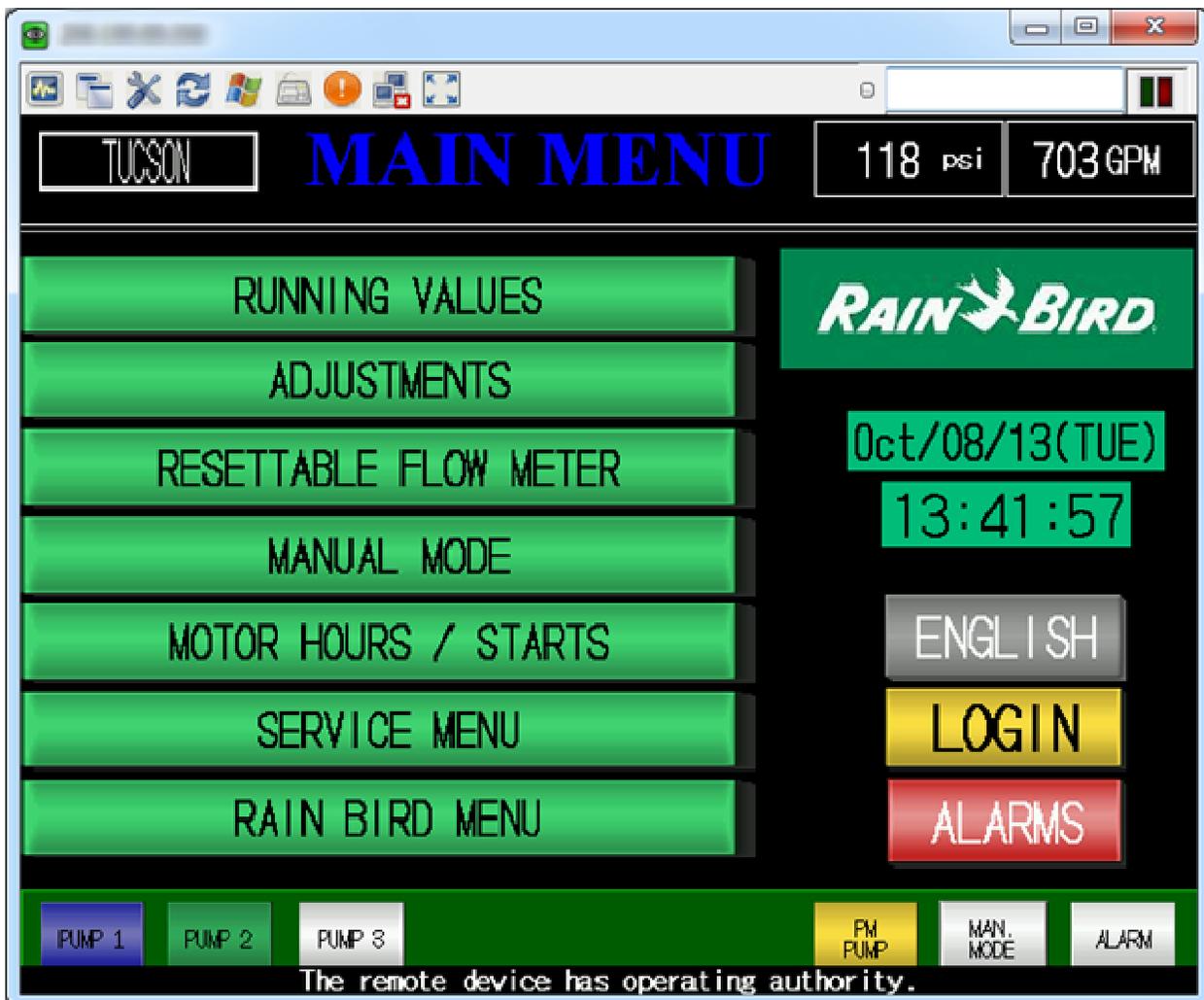
External Controls 

The LEDs presented are:

- Purple: fertigation active.
- Green: lake fill running.
- Blue: pump station intake filter screen cleaning in progress.
- Red: water feature running.

Launch remote control

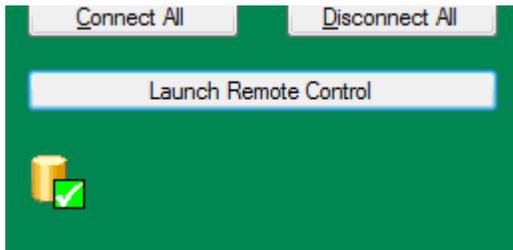
If desired during normal operation, remote control for the selected Pump Stations list item can be triggered by selecting the **Launch Remote Control** button. This causes UltraVNC viewer to be launched using the remote control parameters set during pump station configuration.



See 7.0 Pump Station Remote Control for more details.

Database status

During normal operations the database status icon located below Launch Remote Control button will show good connection as below:



A database error displays the database disconnected icon.



This icon can also be shown before first data is written to the database on startup while Windows launches SQL Server to manage the database. No data is lost in this situation as it is cached in memory and will be saved to the database when SQL Server is ready. If the icon persists for several minutes, refer to the section 10.6 for further steps.

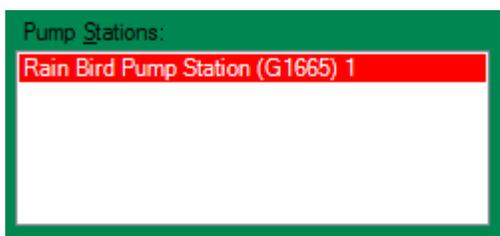
Periodically Pump Manager 2 will split the main database into separate files, minimizing the main database file. All reports use data from both the main database file and the “backup” files. While this splitting operation is in progress the database backup icon is displayed.



During database backup pump station data is cached in memory for save when backup is complete. Backup can take several minutes and occurs automatically when the database size grows large and at the end of each year.

Pump station alarms

When one or more connected pump stations are in the alarm state, or when a pump station connection is “down” the pump station name in the Pump Stations list will flash in red:



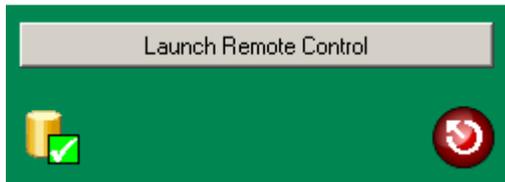
If Pump Manager 2 is minimized and if the mini window is enabled in settings, the pump station data will also be flashed red:



Other indications in the main Pump Manager 2 window will help diagnose problems:

- If the pump station connection status is Disconnected or Connecting, a communication problem is indicated.

- If the pump station alarm indicator is shown  the pump station itself is indicating an alarm. The alarm indicator is shown in context below:



The pump station alarm type and state can be checked at the pump station front panel or through **Launch Remote Control**. If network connectivity is good, pump station warnings can be remotely acknowledged by clicking the pump station alarm indicator:



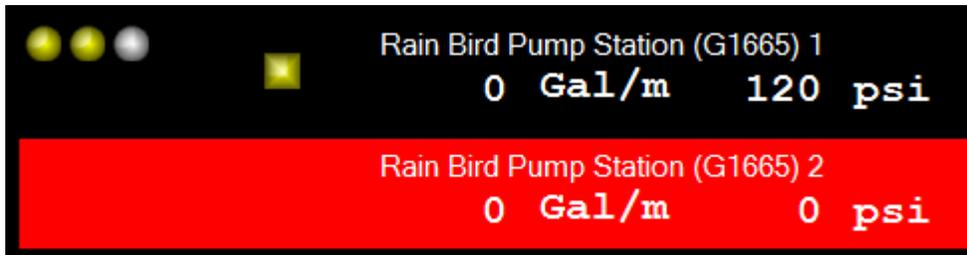
The click notifies the PLC of a remote alarm acknowledge. If the alarm state is a warning clearing the alarm in this way should remove the pump station alarm indicator. If this operation does not clear the alarm (the indicator will reappear on next pump station poll), further investigation of the alarm via remote control or actual pump station access will be required.

6.2 Mini Window

When minimized, the Pump Manager 2 mini window appears generally as shown below:



Up to 10 pump status LEDs with identical color definitions will be displayed to the left (round LEDs in 2 rows, if needed). Pressure maintenance pump and jockey pump status will be displayed to the middle (square LEDs). Station flow rate and pressure are also displayed. Other status indicators visible in the Pump Manager 2 main window are not visible. If multiple pump stations are configured, status information is visible for each as shown below:



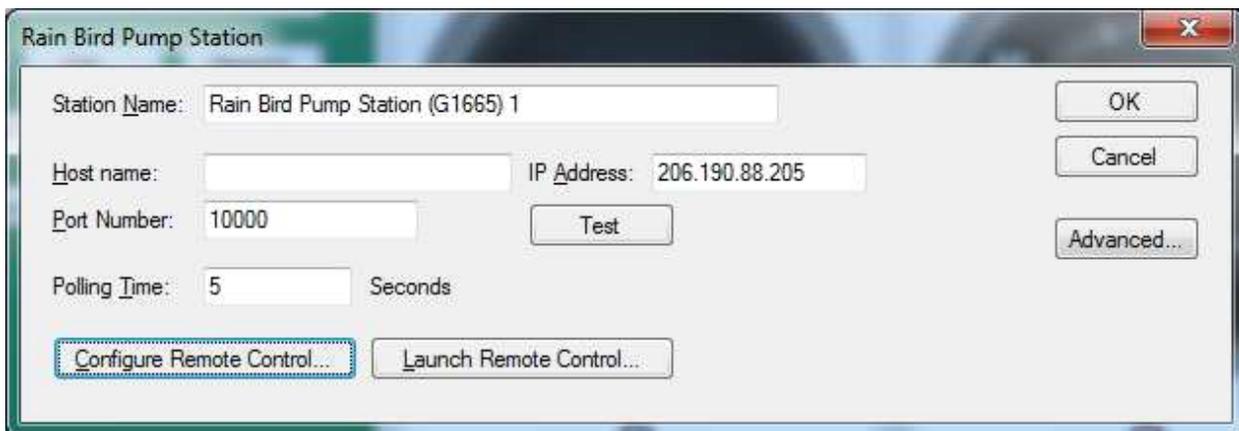
Alarm status, as shown above, is indicated for stations in the alarm state, either due to communication issues or station alarms (over pressure, etc.) by drawing station status in red. To further identify the issue double-click the mini window to show normal Pump Manager 2 window and follow troubleshooting steps given in section 6.1 Main Window.

The mini window can be moved around the screen to a convenient location by clicking and dragging the window. The window will float in front of all ordinary application windows. To return to main Pump Manager 2 window, double-click the mini window.

The mini window can also be disabled using the **Hide Completely** option.

7.0 Pump Station Remote Control

To configure Pump Manager 2 for UltraVNC pump station front panel control use the Configure Remote Control button in the pump station configuration dialog:



The screenshot shows the 'Rain Bird Pump Station' configuration dialog. It contains the following fields and buttons:

- Station Name: Rain Bird Pump Station (G1665) 1
- Host name: (empty)
- IP Address: 206.190.88.205
- Port Number: 10000
- Test button
- Polling Time: 5 Seconds
- Buttons: OK, Cancel, Advanced...
- Buttons at the bottom: Configure Remote Control... (highlighted with a red dashed border), Launch Remote Control...

The Touchscreen Remote Control Configuration dialog sets the UltraVNC connection parameters:



The screenshot shows the 'Touchscreen Remote Control Configuration' dialog. It contains the following fields and buttons:

- Host Name: (empty)
- IP Address: 192.168.148.201
- Port Number: 5900
- User Name: (empty)
- Password: (empty)
- Buttons: OK, Cancel
- Checkbox: Launch Remote Control on Program Start

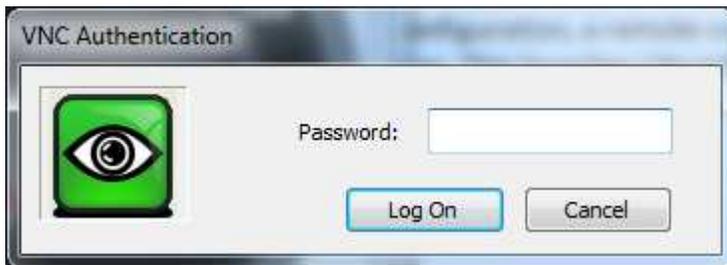
The default parameters are typically correct for LAN connection to the pump station. The parameters are:

- **Host Name:** the Internet host name of the touchscreen panel. This is usually blank for a LAN or radio pump station connection or an Internet server name like rbscreen1.yourdomain.com for an Internet-accessible front panel.
- **IP Address:** the IP address of the front panel. Note that this is **not** generally the same IP address as the pump station (PLC). For LAN connection the default is 192.168.148.201.
- **Port Number:** the IP port number used for front panel VNC protocol connection. 5900 is the default.

- **User Name:** the VNC user name for the front panel VNC connection. This is normally blank as Rain Bird touchscreen panels do not use a user name.
- **Password:** the VNC password for the front panel. This is assigned at the Rain Bird factory and documented in the pump station binder delivered with the station. It may be the read-only password (disallowing remote control of the front panel) or the read-write password (allowing full control). If blank and if a VNC password is required by the panel, UltraVNC will ask for a password when remote control is launched.

After pump station configuration, a remote control process can be activated by selecting the **Launch Remote Control** button. This launches UltraVNC with parameters to connect to the pump station front panel as configured.

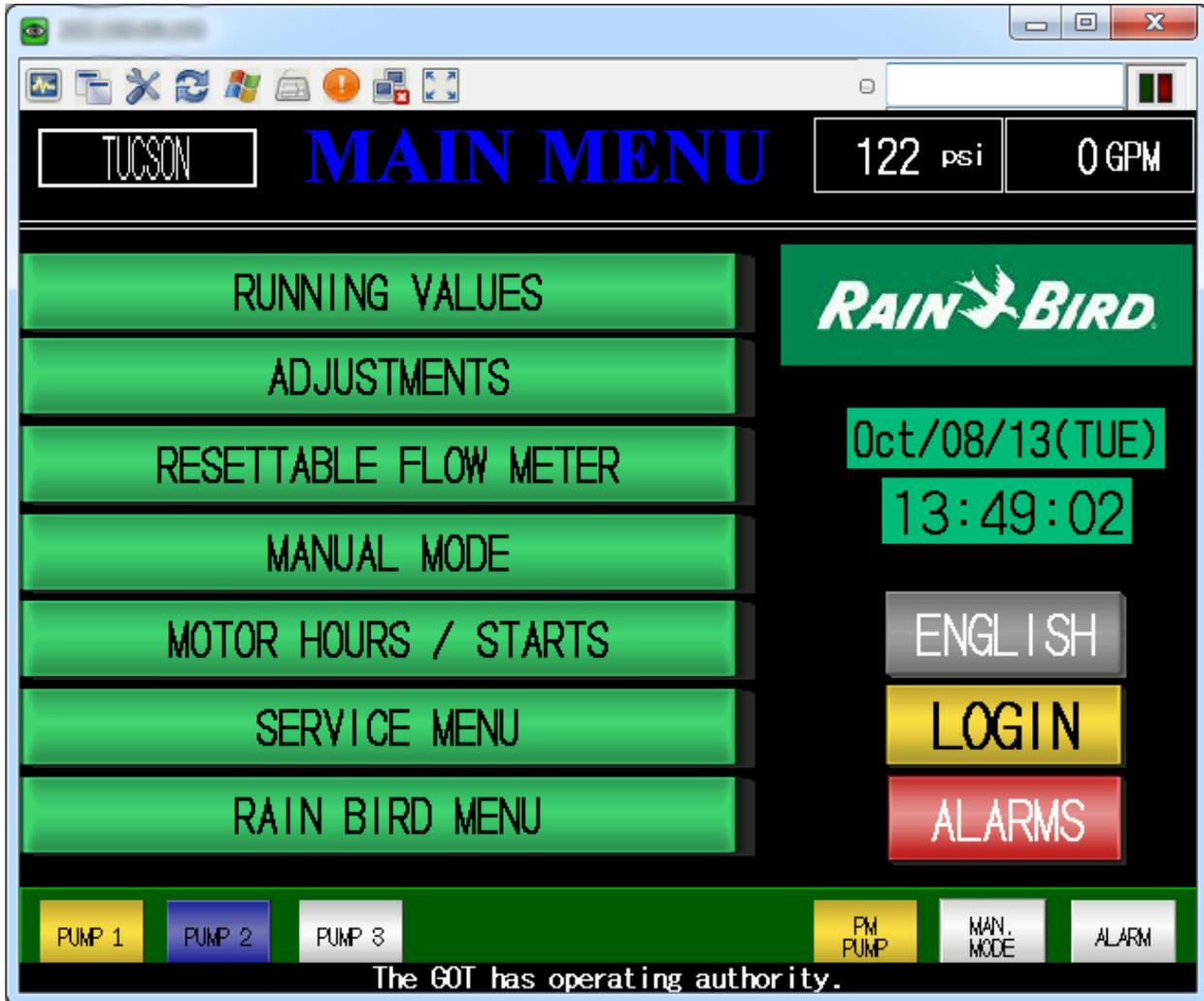
A VNC password may be required to establish VNC pump station connection:



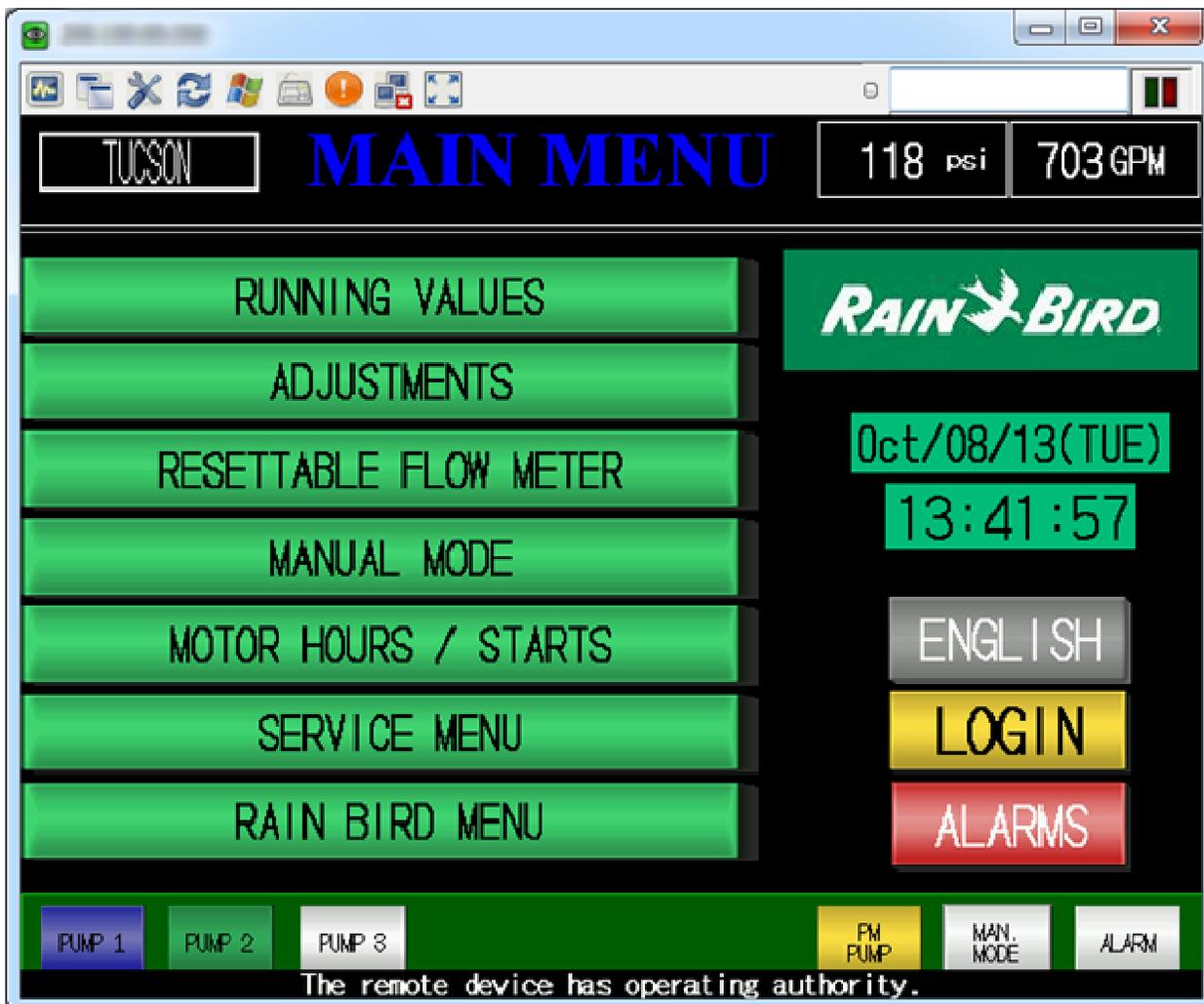
The VNC password is delivered with the pump station Rain Bird configuration binder. Both read/write and read-only passwords can be assigned. Either may be entered in the VNC Authentication dialog shown above or in Pump Manager 2's Touchscreen Remote Control Configuration dialog's **Password** field (**User Name** should remain blank):



Once established the UltraVNC window resembles the actual pump station front panel display very closely:



Note the text indicating “The GOT has operating authority”, however. Initially an UltraVNC connection is only viewing the front panel. Panel control is only available at the Graphic Operation Terminal, the panel itself. To allow remote panel control you must double-click in the bottom area of the UltraVNC window. After doing so, the text will indicate “The remote device has operating authority”. The “remote device”, in this case, is UltraVNC:



To release control to a local front panel user returning to “The GOT has operating authority” exit UltraVNC. When controlling the front panel remotely VNC window clicks are interpreted as front panel touches. Double-clicks are interpreted as double-taps.

To break the pump station front panel remote control connection, close the UltraVNC window.

8.0 Data Export

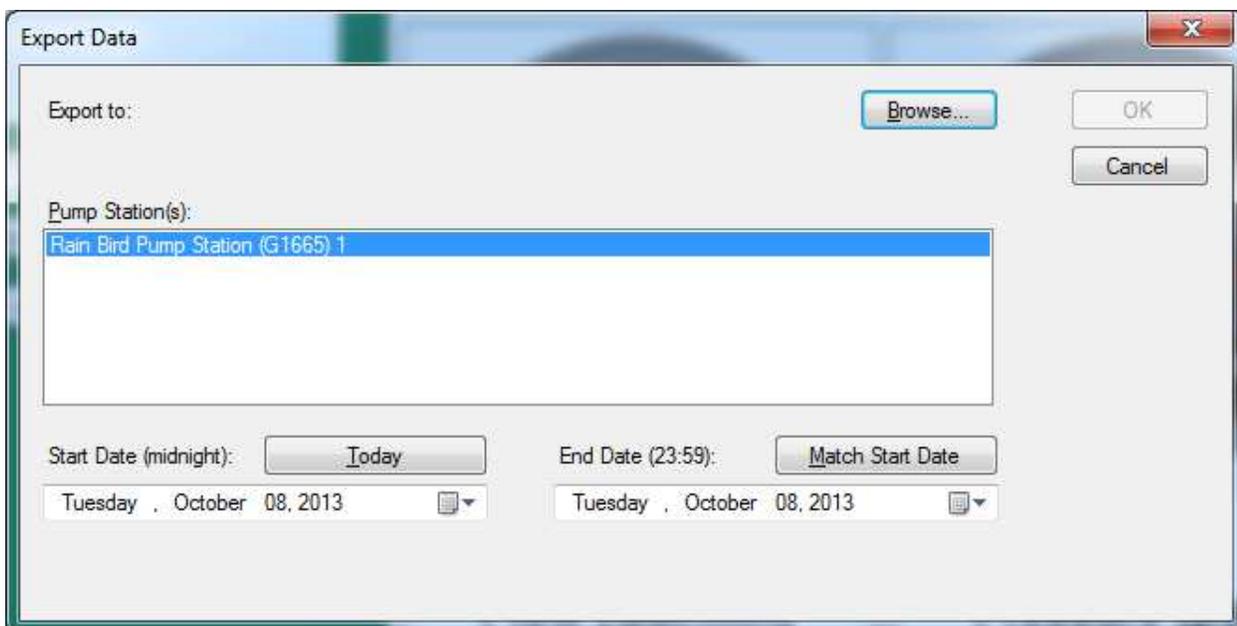
Pump Manager 2 can export a collected data subset for analysis. The data is exported to a Microsoft Excel file following the procedure below.

Step 1:

Select **Export Data to Excel** from the **File** menu



The Export Data window is displayed allowing destination file and export date range selection



Step 2:

Select **Browse...** and choose a destination disk location and file name. Select the **Pump Station** for data export. Use the Ctrl+click or Shift+click to select multiple pump stations. Select **Start Date (midnight)**

to identify the first data to export. Data will begin at midnight (00:00) on the indicated date. The **Today** button can be used to reset the **Start Date** to the current day. Select **End Date (23:59)** to identify the last data to export. Data ends at midnight (23:59) on the indicated date. The **Match Start Date** button can be used to set the **End Date** to the current **Start Date**. When **End Date** and **Start Date** match, the data from a single day will be exported.

Select OK to begin data export



Step 3:

When the process completes the indicated data file can be loaded into Excel for analysis and report generation.

9.0 Data Reporting

Pump Manager 2 produces several different types of reports. Customized reports can also be accessed on disk. Such reports stored as SQL Server RDLC files might be used to provide a required report to an agency or board of directors. Consult Rain Bird sales for further information.



Pre-configured Reports

All reports are accessed through the Reports menu. To open a blank report, select a report type from the menu. Available standard reports are:

- Hourly Flow Total

This report shows total flow reported by a pump station each hour during a selected reporting period. This report might be used to help optimize water use during an allocation period.

- Daily Flow Total

This report shows total flow reported by a pump station per day during a selected reporting period. This report might provide useful information concerning day-of-week usage.

- Pressure, Flow Rate vs. Time by Minute

This report displays two traces indicating instantaneous pressure and flow rate. The values are grouped and averaged per minute. This report might provide useful information when

diagnosing a pipe break or overuse situation.

- Pressure, Flow Rate vs. Time by Hour

This report is similar to Pressure, Flow Rate vs. Time by Minute, but displays the values grouped and averaged by hour during the reporting period. It might provide a rough gauge of pump utilization during an irrigation day.

- Pressure, VFD Frequency vs. Time by Hour

This report provides a graph relating pressure and VFD frequency to time. Measurements are grouped and averaged by hour.

- Flow, VFD Frequency vs. Time by Hour

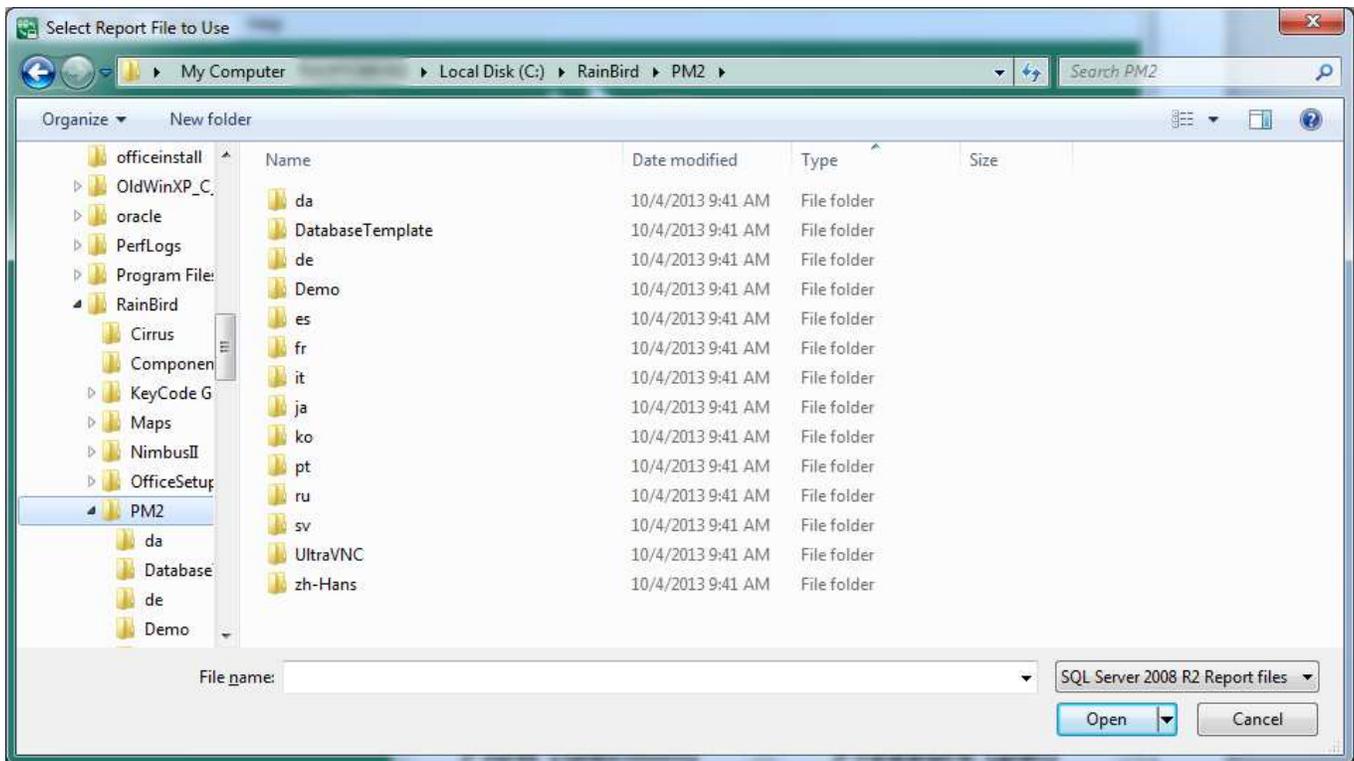
This report provides a graph relating instantaneous flow and VFD frequency (grouped and averaged by hour), to time.

- Pump Starts Per Hour

This report displays the total number of pump starts occurring in each hour during the reporting period in tabular format.

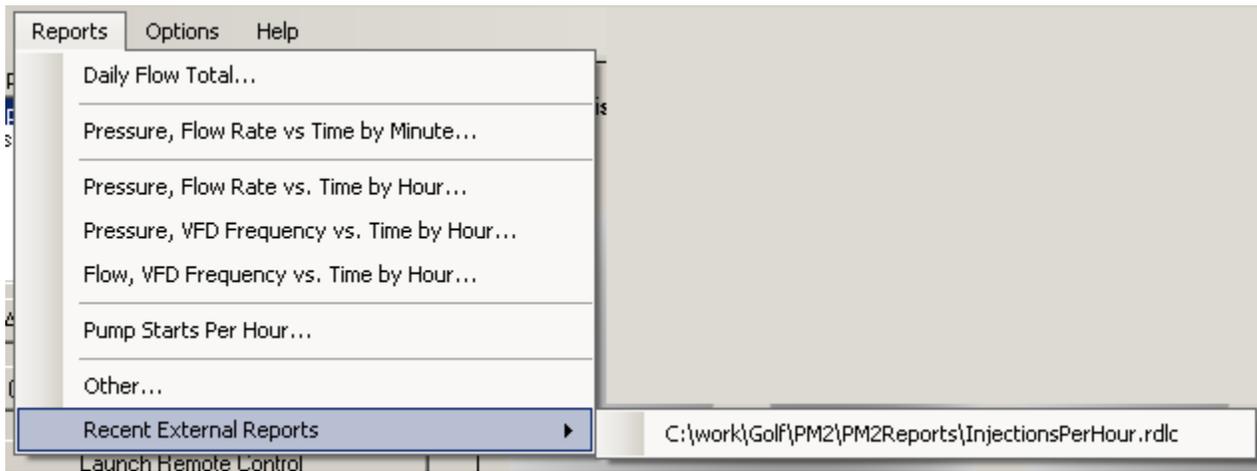
Other reports

The **Other** menu item allows selection of a .RDLC report file. Although no external report files are installed with Pump Manager 2 itself future reports may be available for specific purposes through this capability.



Recent External Reports...

Recent External Reports... expands into a submenu listing any recently-opened external reports. If you use external reports this capability makes them easy to access repeatedly.



Producing a Report

Step 1:

Select a predefined or external report from the Reports menu showing the report viewer form.

Daily Flow Total...

Start Date: Monday, January 01, 2001 Start Time: 12:00:00 PM Pump Stations

End Date: Tuesday, October 08, 2013 End Time: 12:00:00 PM

Enable Series

<input checked="" type="checkbox"/> Pressure 1	<input checked="" type="checkbox"/> Flow Rate 1	<input checked="" type="checkbox"/> VFD Speed 1	<input checked="" type="checkbox"/> Pump 1	<input type="checkbox"/> Pump 4	<input type="checkbox"/> Pump 7	<input type="checkbox"/> Pump 10
<input type="checkbox"/> Pressure 2	<input type="checkbox"/> Flow Rate 2	<input type="checkbox"/> VFD Speed 2	<input type="checkbox"/> Pump 2	<input type="checkbox"/> Pump 5	<input type="checkbox"/> Pump 8	<input type="checkbox"/> Pressure Maintenance Pump
<input type="checkbox"/> Pressure 3	<input type="checkbox"/> Flow Rate 3	<input type="checkbox"/> VFD Speed 3	<input type="checkbox"/> Pump 3	<input type="checkbox"/> Pump 6	<input type="checkbox"/> Pump 9	<input type="checkbox"/> Jockey Pump

Update Report Parameters

of 100% Find | Next

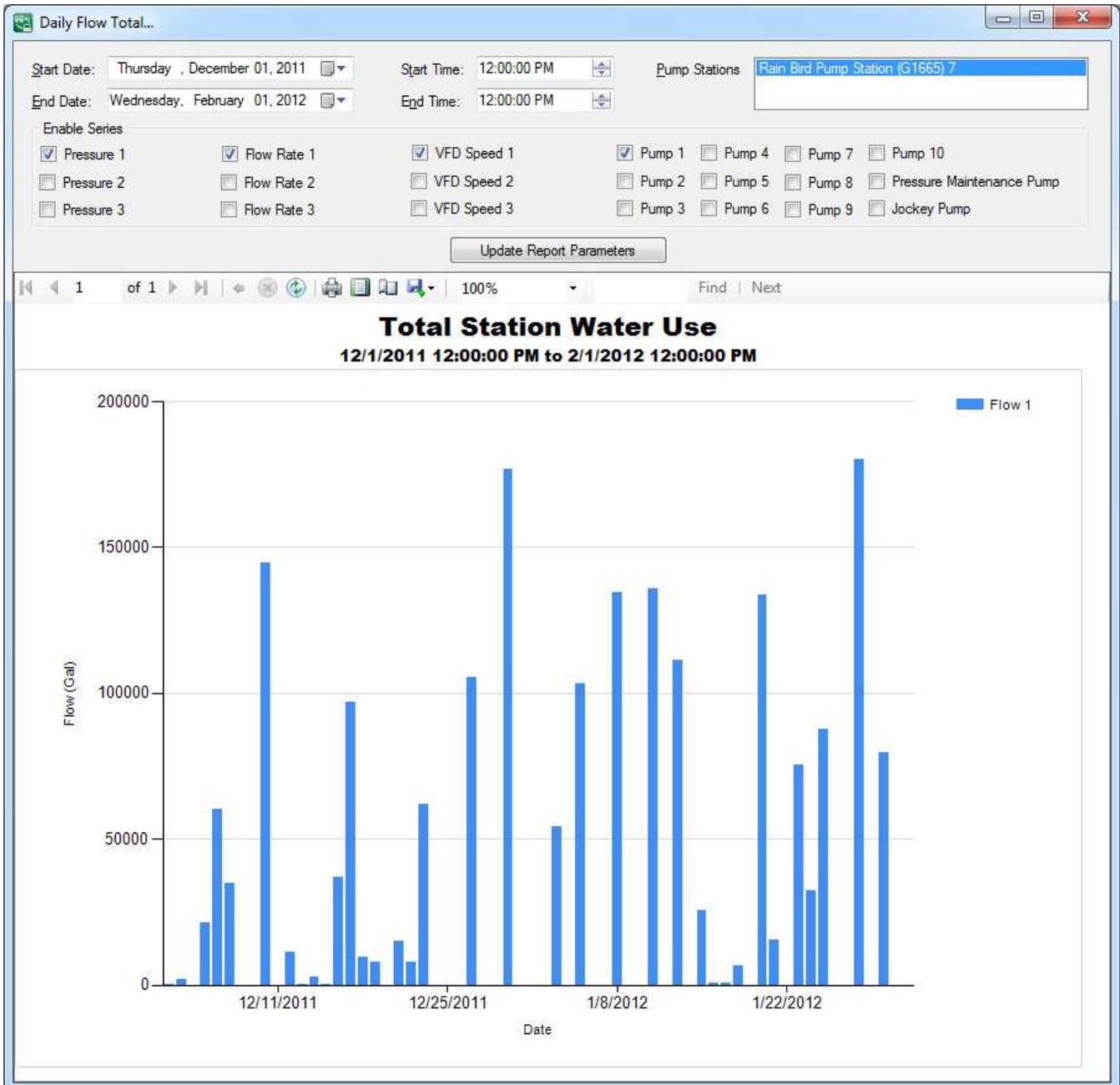
Step 2:

Select report parameters:

- **Start Date/Start Time:** specify the first data point included in the report. The start date/time should precede **End Date/End Time**. For daily reports, the report result is best when selecting at least a 24-hour period.
- **End Date/End Time:** specify the last data point included in the report.
- **Pump Stations:** selects the pump station for the report. Only 1 pump station can be selected for each report. To report on multiple stations or to add/subtract flows, export data to CSV files and create your report in Excel or other spreadsheet application.
- **Pressure 1, 2, 3:** select pump station pressure transducer(s) for reporting (pressure reports). All stations have **Pressure 1**; **Pressure 2** and **Pressure 3** may not be present on your pump station.
- **Flow 1, 2, 3:** select pump station flow transducer(s) for reporting (flow rate reports). All stations have **Flow 1** but may not have other transducers.
- **VFD 1, 2, 3:** select pump station variable frequency drive values for reporting. Stations equipped with VFD have **VFD 1**, but may not have others.
- **Pump 1-10, Pressure Maintenance Pump, Jockey Pump:** select pumps for pump-based reporting. Pump Starts Per Hour for example uses the selected pumps to define the report.

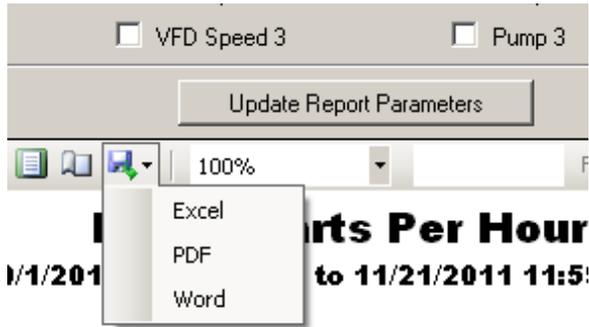
Step 3:

Select **Update Report Parameters** to query the database and produce the report. For lengthy reports, query may take up to 2 minutes and report generation additional time. During database query, the process may be cancelled by clicking the **Cancel** button. The completed report appears as shown below.



Step 4 (optional):

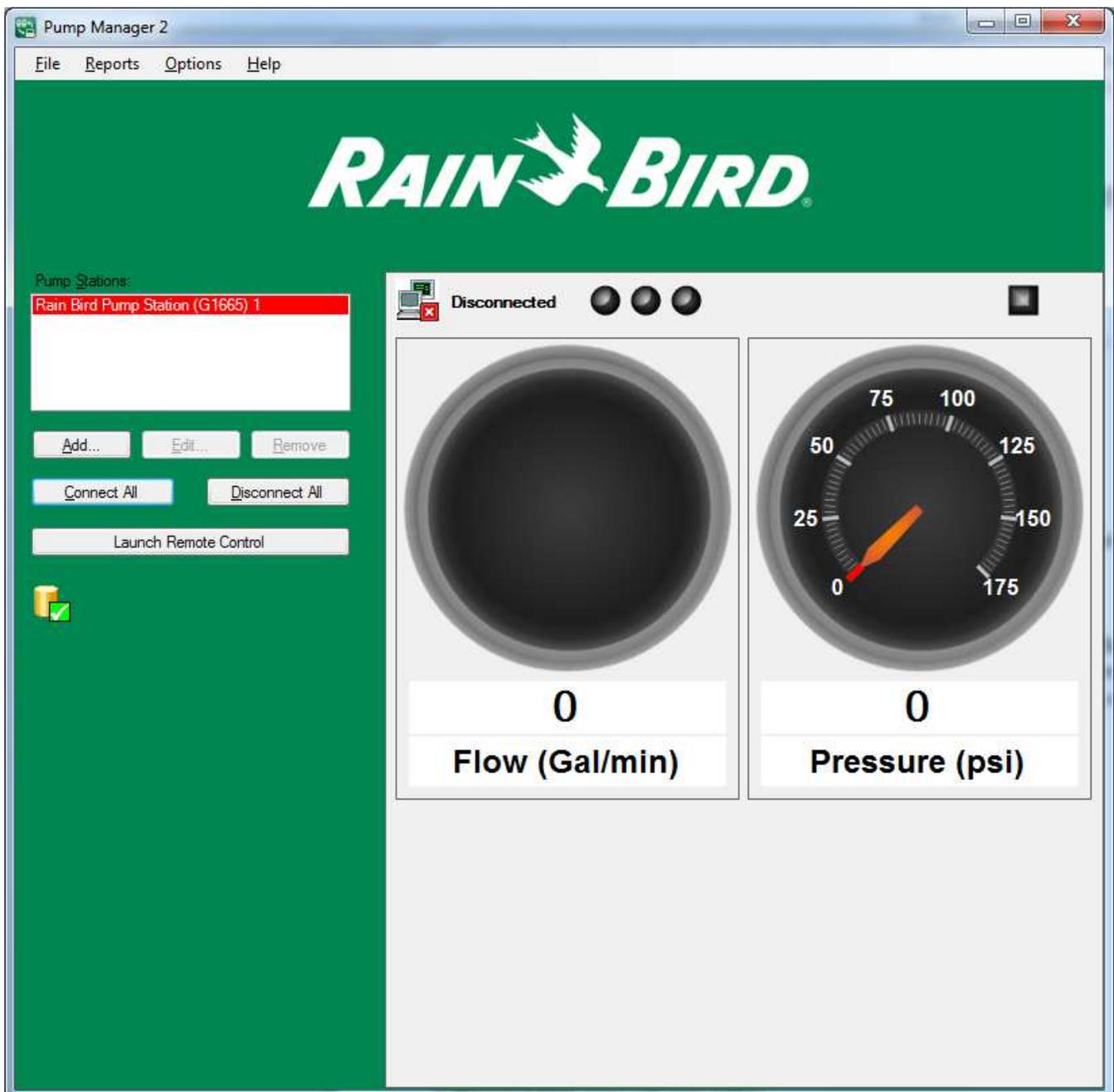
To print or save the report (in Excel, PDF, or Word format), click the **Export** icon indicated below.



10.0 Troubleshooting

10.1 Error indicators

If a pump station has a communication error or is indicating a pump station alarm, the station's name will flash red in the main window **Pump Stations** list:



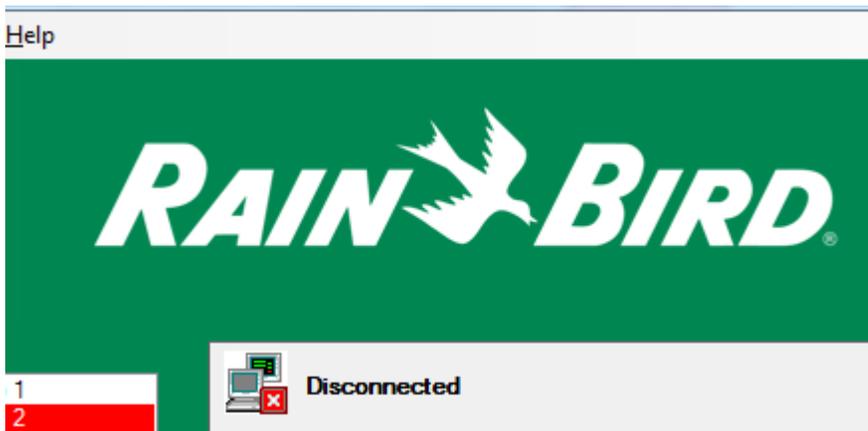
If Pump Manager 2 is minimized and the mini window is shown, all station information will flash red:



To distinguish between a communication error and pump station alarm, refer to the Pump Manager 2 main window, selecting the error pump station from the Pump Stations list.

10.2 Communication errors

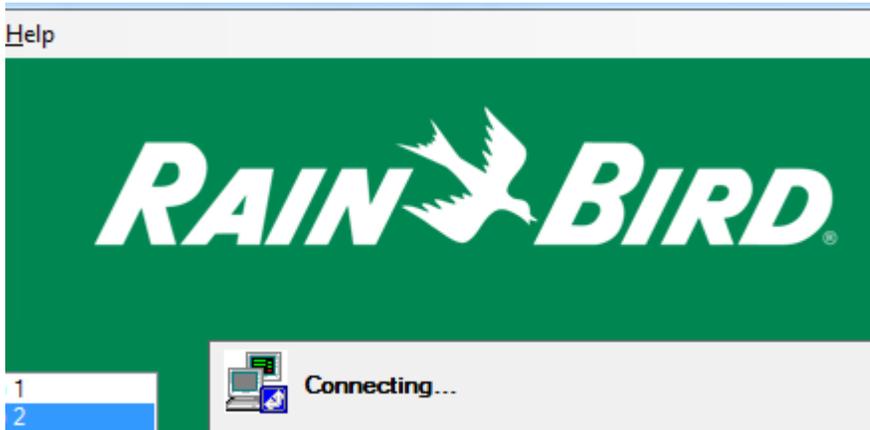
When an error state exists with a configured and active pump station (after **Connect All** has been selected or on Pump Manager 2 program start after pump station(s) have been configured), communication status is indicated for the selected pump station by the icon and text above pressure and flow gauges.



A **Disconnected** state indicates either:

- Communication has not been started using **Connect All**
- Communication has been stopped using **Disconnect All**
- There is a communication error with the pump station. The **Retry delay** time configured for pump stations determines how long between retries if the latter state is reached.

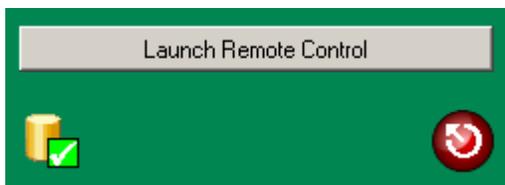
During a connection retry, a **Connecting** state is indicated. If the connection is not completed relatively quickly, this may indicate an error. Even connections via Internet connection should be completed in seconds.



If the state is **Connected**, a communication error is **not** indicated. Instead, a pump station alarm is likely. This is indicated by the pump station alarm indicator:

10.3 Pump station alarms

If the pump station alarm indicator is shown below the **Launch Remote Control** button the pump station itself is indicating an alarm:



The pump station alarm type and state can be checked at the pump station front panel or through **Launch Remote Control**. Use normal pump station front-panel navigation to check alarms, correct issues with the pump station, and reset alarms.

If network connectivity is good, pump station warnings can be remotely acknowledged by clicking the pump station alarm indicator.



This operation notifies the PLC of a remote alarm acknowledge. If the alarm state is a warning, clearing

the alarm in this way should remove the pump station alarm indicator. If this operation does not clear the alarm (the indicator will reappear on next pump station poll), further investigation of the alarm via remote control or actual pump station access will be required.

Note the above mention of the pump station poll time. Alarm state is **not immediately refreshed** when you clear a warning or alarm; this can cause some confusion when the alarm indicator is cleared on click, but reappears 60 seconds later (the station poll time). This may simply indicate a hard alarm at the station which requires on-site action.

10.4 Can't connect for remote control

If you are unable to connect to the pump station front panel for remote control the most-likely causes are:

1. Incorrect remote control Pump Manager 2 configuration. Remember that the front panel/touchscreen and the PLC (controller) do not generally respond to the same IP address. By default, the PLC has LAN address 192.168.148.200 and the front panel has address 192.168.148.201.
2. Incorrect addressing for Internet-connected panel. The default IP addresses for the front panel and PLC are not Internet-addressable. That is, they are values only suitable for access inside the local network perimeter. One or more different addresses (or host names) would be used from outside the LAN perimeter. Your network expert will help identify which address you should use from each location (ie. Your cell phone or tablet, your central control PC on the LAN, your home PC).
3. Only 1 client can use VNC with the pump station front panel at a time. If VNC is already connected from the central control PC, you cannot connect from your cell phone or tablet.

10.5 Can't connect Pump Manager 2 to Pump Station

If you are unable to connect to the pump station with Pump Manager 2 the most-likely causes are:

1. Incorrect Pump Manager 2 Rain Bird Pump Station configuration. Remember that the front panel/touchscreen and the PLC (controller) do not generally respond to the same IP address. By default, the PLC has LAN address 192.168.148.200 and the front panel has address 192.168.148.201.
2. Incorrect addressing for Internet-connected pump station. The default IP address for the PLC is not Internet-addressable. Your network expert will help identify which address you should use from your central control PC location.
3. Only 1 client can use Pump Manager 2-style connection at a time. That is, you should **not** attempt to run Pump Manager 2 from your home and central control PCs both.

10.6 Database errors

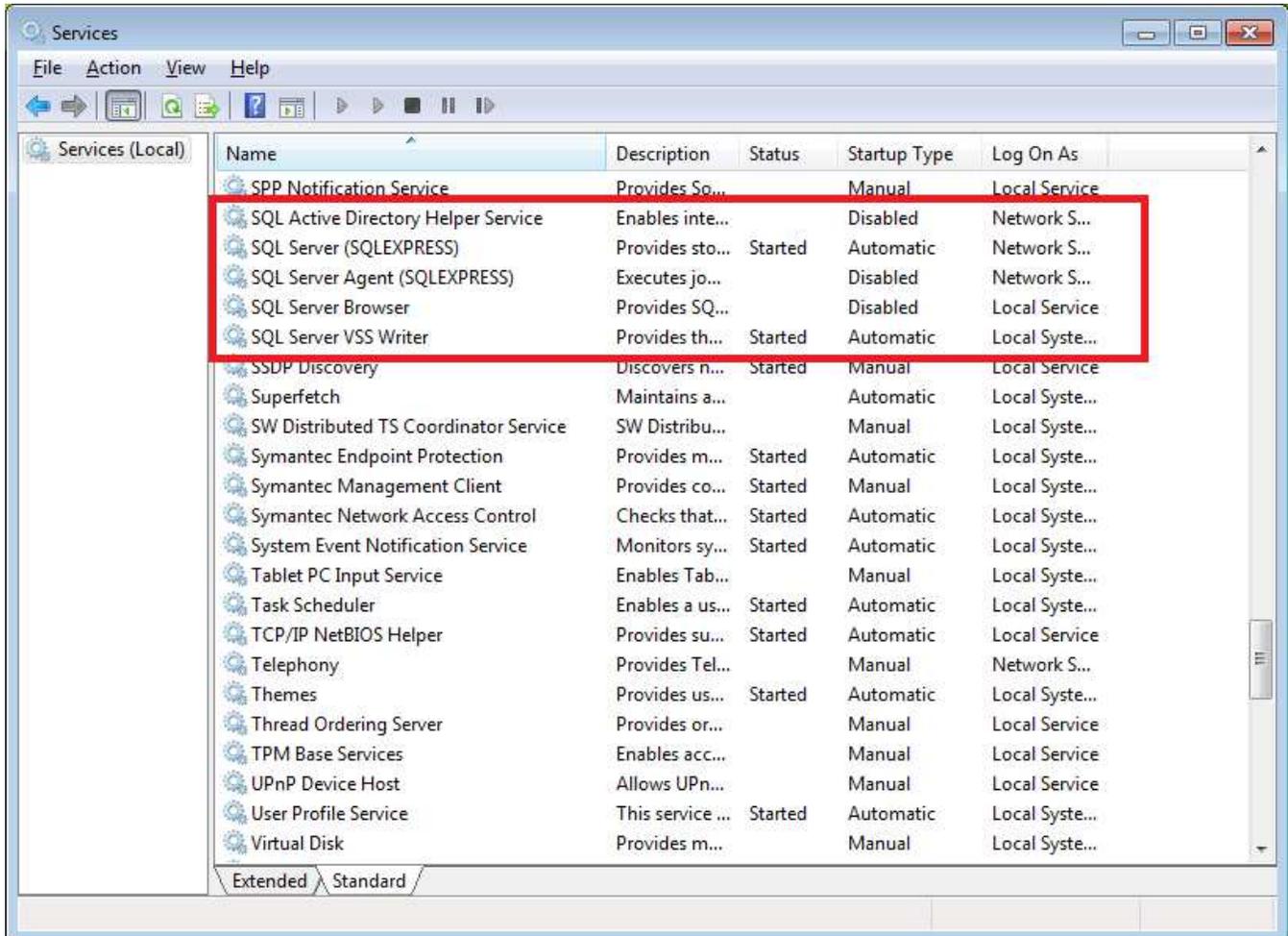
If a database error icon is indicated during normal pump station communication for several minutes, there is likely a problem with SQL Server Express.



The most-common error is that SQL Server Express is not running. This can be a result of over-aggressive disabling of system services by IT personnel. To check SQL Server status, use the Start menu to access Services:

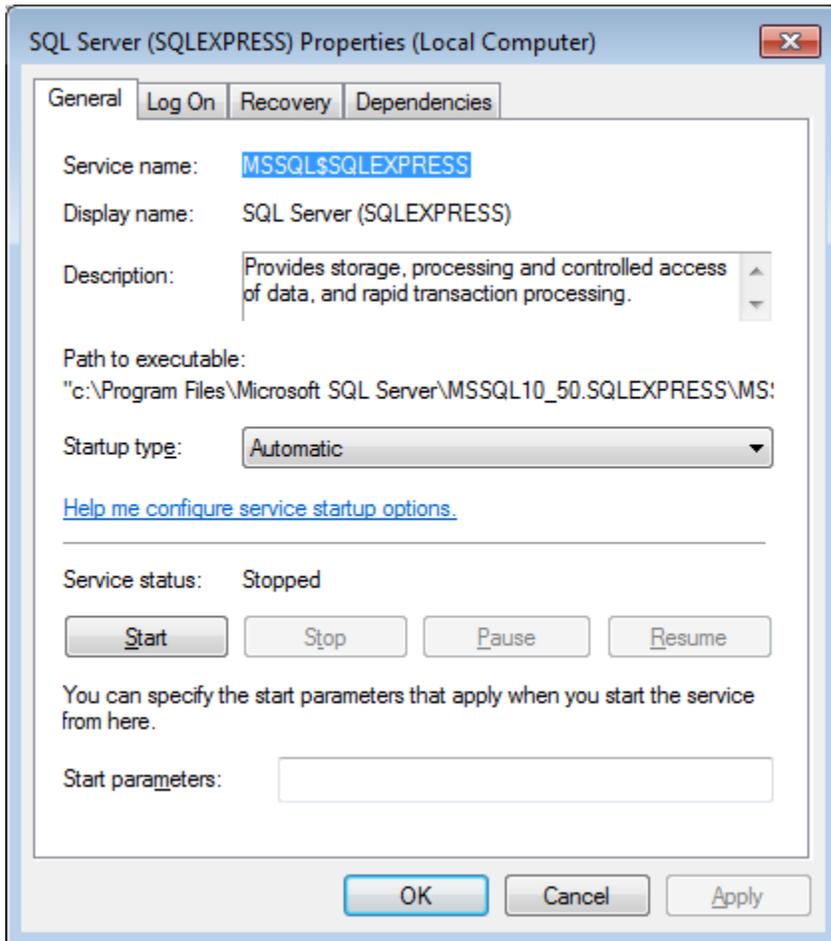


The Services applet will appear. Scroll to the entries associated with SQL Server Express:



The SQL Server (SQLEXPRESS) item should have a status of “Started”. If not, select the item and click the start button in the toolbar: .

If the service successfully starts, assure that the Startup Type is “Automatic”. If it is not or if the service Startup Type is “Disabled”, right-click the item, choose Properties from the menu, and adjust the Startup type to “Automatic”:

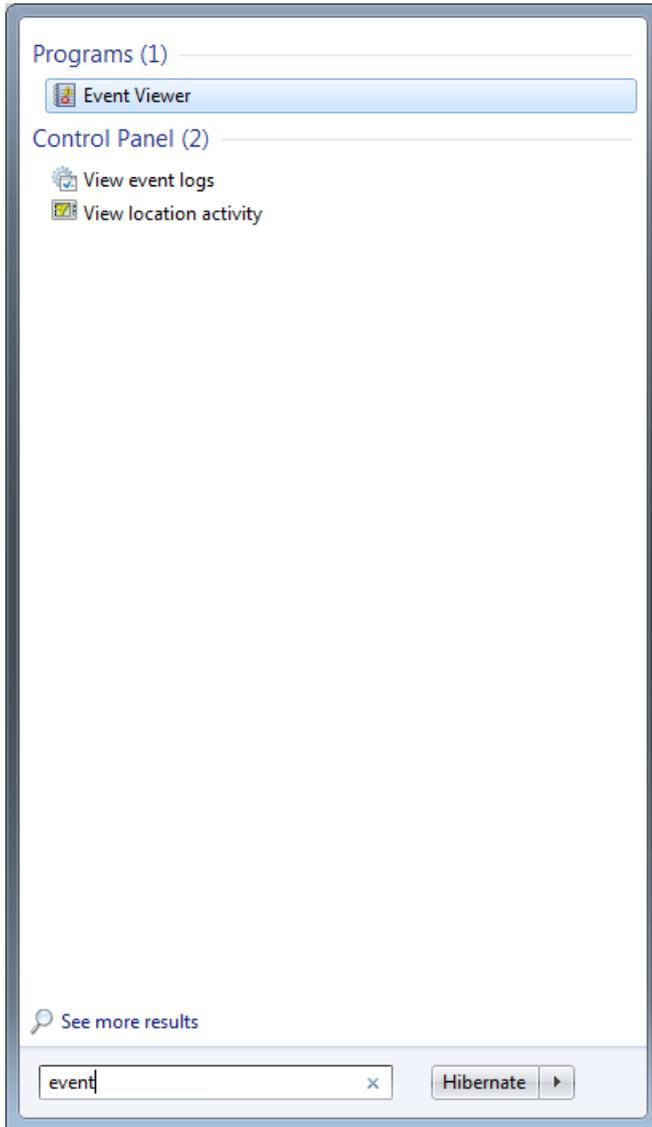


Perform the same steps for the “SQL Server VSS Writer” service.

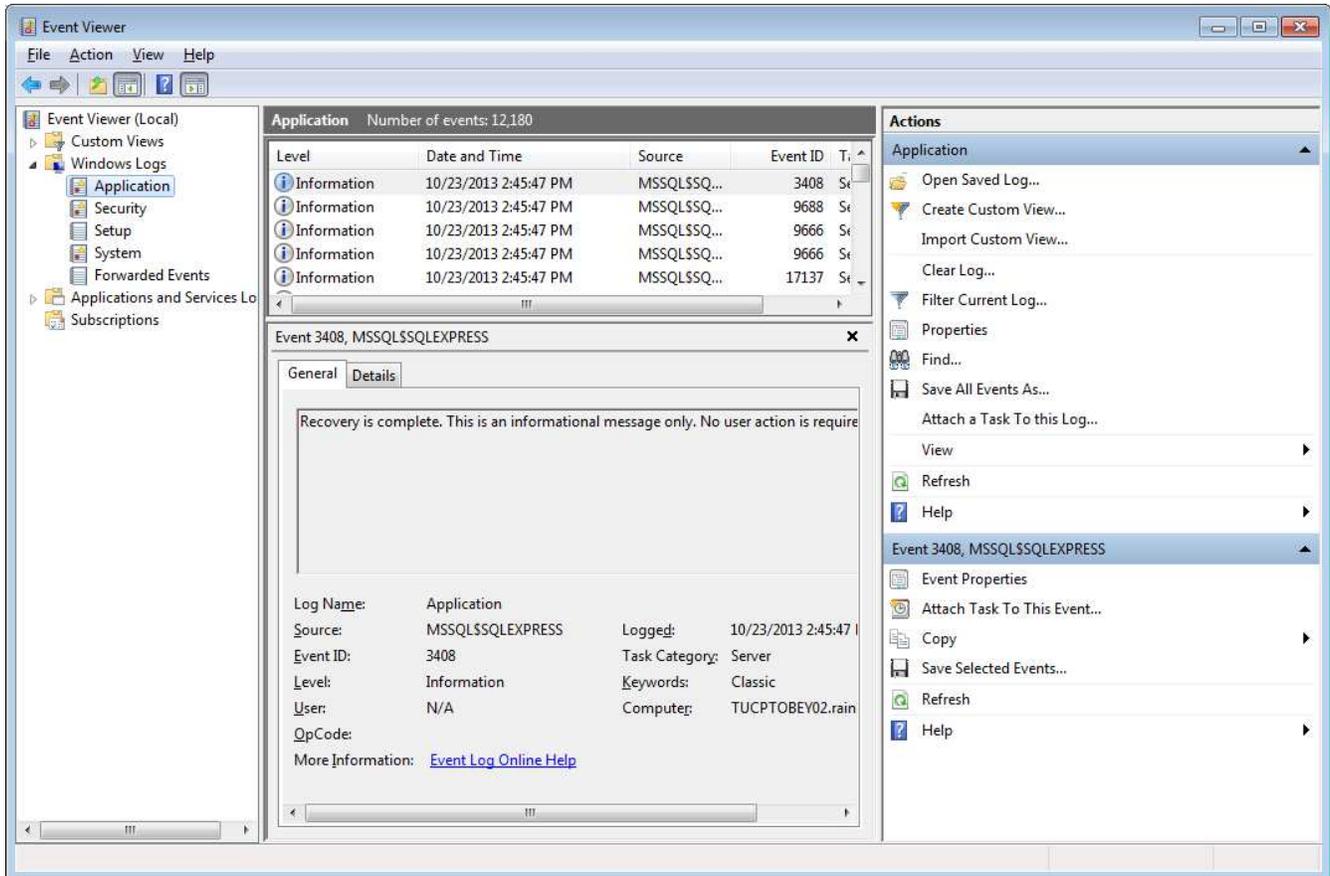
If either service still fails to start contact support for further debugging assistance.

If service changes were made and the services both started successfully, return to Pump Manager 2 and check the database status.

If the database error continues to persist for several minutes, run the system Event Viewer:



The event viewer window will appear. In the left tree view, double-click “Windows Logs” and select “Application”:



The Application event list in the center area will contain error and general information items. Scroll downward to find any error items where Source is “PumpManager2”. This information will be helpful to Rain Bird support personnel.

If one specific error item is present, you may be able to correct the error yourself:

Failed to generate a user instance of SQL Server due to a failure in starting the process for the user instance. The connection will be closed.

If you encounter this error, SQL Server Express is running correctly but has some invalid stored data. It can be cleared following these steps:

1. Exit Pump Manager 2.
2. In Services, stop both “SQL Server VSS Writer” and “SQL Server (SQLEXPRESS)” services.

3. Delete the following folder (replacing “YOUR_USERNAME” with your PC user name, often “PreferredCustomer”):
C:\Documents and Settings\YOUR_USERNAME\Local Settings\Application Data\Microsoft\Microsoft SQL Server Data\SQLEXPRESS
4. In Services, start “SQL Server VSS Writer” and “SQL Server (SQLEXPRESS)” services. Restart Pump Manager 2 and check the database status. If the problem is still not corrected, contact Rain Bird support.