

Browser Manual

ProMinent® DCM 200 series

Aquatic Water Quality Controller

User Manual Browser insert

CONTENTS

1. Day-to-Day Browsing

- 1.1 Connect
- 1.2 Log-in
- 1.3 Checking & Clearing Alarms
- 1.4 View & Adjust Setpoints
- 1.5 HOA: Manual-Off-Auto

2. Chemical Feed Controls

- 2.1 Sensor Controlled ON/OFF Feed
- 2.2 Proportional Feed
- 2.3 Base Feed
- 2.4 PID Controls
- 2.5 Oxidant Feed Controls
- 2.6 'Simple' ON/OFF Control
- 2.7 Limiting Feed & Alarms
- 2.8 No Feed on No Flow
- 2.9 Blocking a Feed
- 2.10 Feed Diagnostics

3. Event Controls

- 3.1 Four Types of Events
- 3.2 Setting & Viewing Events

4. Sensors

- 4.1 Sensor Calibration
- 4.2 LSI-Ryznar Calculation
- 4.3 Sensor Alarms
- 4.4 Sensor Configure
- 4.5 Sensor Diagnostics
- 4.6 Water Meters

5. Flowswitches & Contact Sets

- 5.1 Switching Meters & Contact Sets
- 5.2 Contact Set Alarms
- 5.3 Contact Set Controls

6. Frequency Controlled Pumps

- 6.1 Selecting a Pump
- 6.2 Adjusting ml/stroke

7. System Settings

- 7.1 Site Configuration
- 7.2 Passwords
- 7.3 Time & Date
- 7.4 Keypress-Alarm Log
- 7.5 Enabling I/O, Switching Icons
- 7.6 Communications
- 7.7 E-mail Out.
- 7.8 System Diagnostic

9. Notebook & PC Ethernet Set-up

- 9.1 Ethernet Overview
- 9.2 View-Modify the DCM200 IP Address
- 9.3 Browser Connect
- 9.4 Windows 7 Cross-Over Set-up
- 9.5 Windows VISTA Cross-Over Set-up
- 9.6 Windows XP Cross-Over Set-up

Sidebars:

Are used to explain typical uses for feed and control functions.

Sidebars are at the bottom of the page detailing the function.

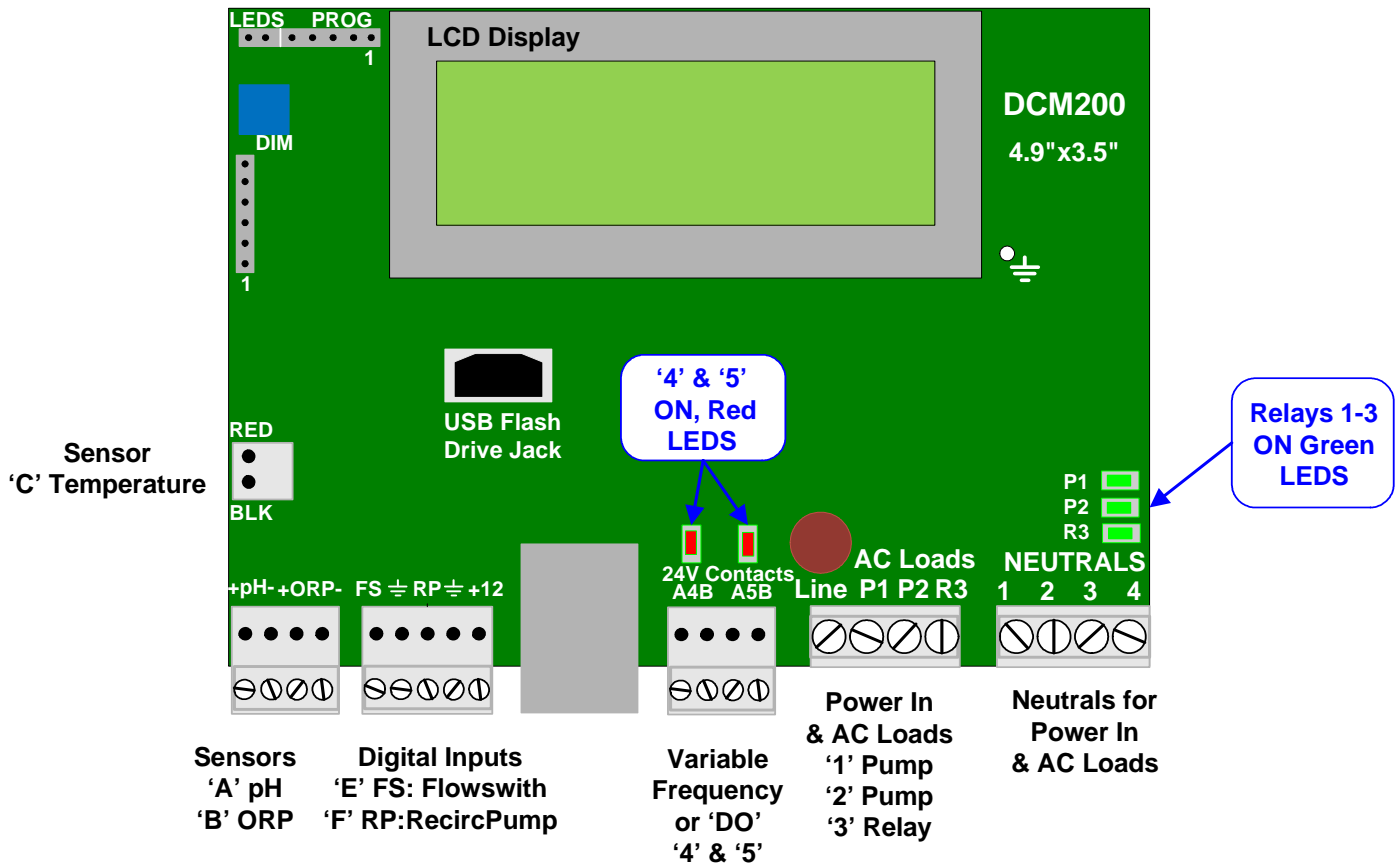
New users & users new to automated controls will find these explanations helpful.

DCM200 series controllers are shipped preconfigured.

This manual supports re-configuration required as you add and modify the way you feed chemicals and manage filters, heaters and sensors

Users may re-name controller inputs & outputs @ each site.

DCM200 Input-Output Namespace



Sidebar:

The physical connection points for inputs & outputs are designated by letters (A-F) for inputs & numbers (1-5) for outputs.

Inputs:

Sensors: **A to C** Input '**D**' is the LSI-Ryznar calculation
 Flowswitches, Contact sets & Water Meter: **E & F**

Outputs:

120VAC Relay Outputs: **1 to 3**.
 Dry Contact or Frequency Outputs: **4 & 5** (Rated 24VDC & 250mA max)

Using letters & numbers provides a compact, generic way of defining a control;

Example: The sensor connected to input '**B**' controls the pump connected to relay '**2**' when the flowswitch connected to input '**E**' is closed. Users label **B,2 & E** with site specific names.

Complex controls can be defined by letters (sensors) & numbers (pumps & solenoids).
 Inputs & outputs don't need to have fixed functions & a more flexible controller results.

1.0 Day-to-Day Browsing

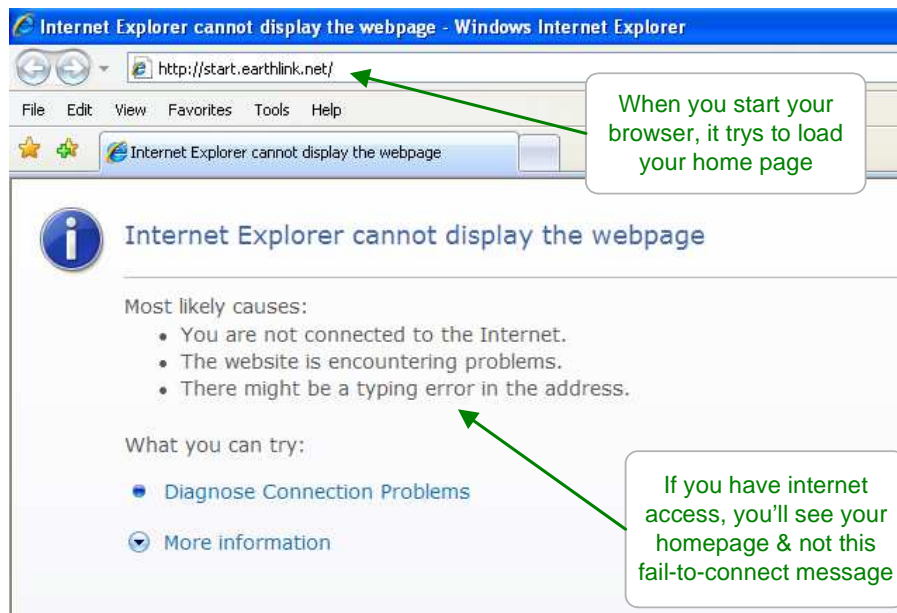
1.1 Connect

On-Site using a Notebook PC to a DCM200 not on the Site LAN

- A. You'll need an Ethernet crossover cable available from office supply & electronics stores;
Example: **Office Depot #8333370**, 10 ft. long, \$14.99.
- B. You'll need to set up a new connection in your notebook or PC.
Refer to Section 9.

Open the controller enclosure door and jack into the controller Ethernet jack located on the lower center of the controller circuit board.

If you need command & control only, start **Internet Explorer** or **Mozilla's Firefox**.
If you also require reporting, start ProMinent's **Trackster** application.



Notebook PC & Over the Site LAN

Key the controller IP address into the PC's browser address.
You can find the controller's IP address using the controller keypad (default = **10.10.6.106**).
Refer to Section 9.



1.1 Connect continued

Remotely using a VPN

If the site has provided you with VPN (Virtual Private Network) access to the site LAN, you'll need to start the VPN application on your PC to gain access to the site's LAN. Once connected to the site LAN, follow the previous, 'Over the Site LAN' procedure.

Here's what you'll see in your browser on first connect.

The image displays two screenshots from a web-based monitoring interface for a ProMinent DCM200 system. The left screenshot shows a 'Real time view' with a 'REFRESH' button and a note stating 'Real time view updates every 2 seconds'. It features a central tank icon connected to various sensors and pumps. The sensors include a 7.6 pH pH Sensor (OK), 725.6 mV ORP Sensor (OK), 73.0 F Temperature (OK), and a 2.0min Flowswitch (ON). The pumps include a 0.2 LSI-Pylnar (OK), a 0 G Re-circ Pump (OK), an ON 2.1min Acid Pump, an ON 2.1min Oxidant Pump, and a Feed@ 0.97% UV Control (ON). There are also 'No alarms Alarm Out' (OFF) and 'No Event Filter Run' (OFF) indicators. The right screenshot shows a 'System View' with a login form. The form includes fields for 'System:', '15/12/11', 'S/N U000/0005', 'Status: Waiting for Login', 'Select User: Public', and a 'Password' field with masked characters. There are 'RESET' and 'SUBMIT' buttons. A note indicates 'Requires password for command & control'.

System View
Current values of sensors, water meters and flowswitches and the status of pumps, solenoids are displayed in the System view.

Note: Views are optimized for limited resolution displays, notebooks & PCs at 1024 x 768 pixels.

1.2 Log-in

Pull down the **Select User** list and select a user id.
Key in the **Password** for the selected user ID & press **SUBMIT**.
Status updates you on an incorrect password.
Once you've logged in you can change your user ID & password.

Login

System:

06/11/07 S/N: A000X0005

Status: **Waiting for Login**

Select User:

Password:

New View: Diagnostic

Alarms: none

Select User

System:

06/11/07 S/N: A000X0005

Status: **Waiting for Login**

Select User:

Password:

New View: Diagnostic

Alarms: none

Enter the password for the selected User and press **SUBMIT**

Once you've logged in, the controller's home page changes to show your user ID, **Current User**. Press the link at any sensor, meter, pump, solenoid or valve to view or modify.

Logged In

System:

06/11/07 S/N: A000X0005

Status: **Logged In**

Current User: **Configure6**

Logout: Yes

New View: Diagnostic

Alarms, Events and Timers: Reset All

Alarms: none

Default Passwords:

The factory default passwords are:

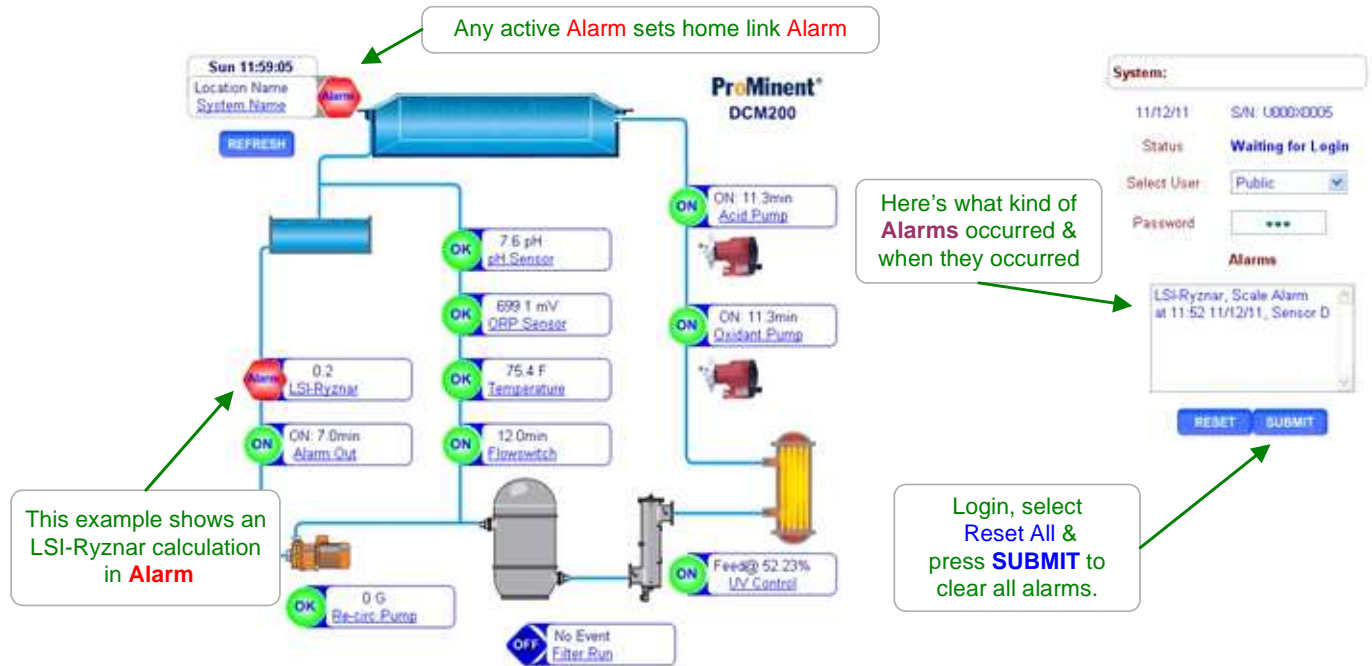
Operator1 = 1 Operator2 = 2 Operator3 = 3 Operator4 = 4.
Configure5 = 5 Configure6 = 6 Configure7 = 7 Administrator = AAAA
There are 3 password levels, Operator, Configure and Administrator.
The User IDs are used in the controller's keypress log.

WARNING: 5 incorrect passwords, blocks logon until 7:00AM or until a power OFF/ON.

1.3 Checking & Clearing Alarms

Alarms display as **RED Alarm** hexagons.

Any alarm also sets the System alarm beside the Day-Time display.



Sidebar:

Sensor alarms will re-trip after the user set 'Delay' unless the fault is corrected. Relay controlled pumps will alarm on ON time. Frequency controlled pumps alarm on volume.

Individual input-output alarms may be cleared by selecting the input or output link and then selecting **Alarms** from the pull down menu at the top of the left side of the screen.

LAN connected controller may be set to E-mail out on alarm in addition to E-mails sent at a user selected interval.

1.4 View & Adjust Setpoints

Setpoint values vary with the use of the pump, digital out or solenoid.
The following, typical example changes the pH controlled, acid pump setpoints.

The screenshot shows a control interface for a ProMine DCM2000 system. It displays various sensors and their status: pH Sensor (7.65 pH, OK), ORP Sensor (697.4 mV, OK), LSI-Ryznar (0.4, OK), Temperature (82.7 F, OK), Flowswitch (2.7min, ON), Re-circ. Pump (2.7min, ON), and UV Control (ON, 114sec). A 'No alarms Alarms Out' indicator is shown as OFF. A 'No Event Filter Run' indicator is also OFF. The 'Acid Pump' link is highlighted with a green circle and labeled 'ON: 114sec Acid Pump'. A callout box points to the 'Acid Pump' link, stating: 'Links display the Diagnostic first. Pull down this menu & select Configure'. Another callout box points to the 'Acid Pump' link, stating: 'Click on the Acid Pump link'. A third callout box points to the 'Acid Pump' link, stating: 'Diagnostic displays a summary of the link. In this example, the acid pump has been ON for 1.3 minutes today & 1.3 minutes this feed cycle'. A fourth callout box points to the 'Acid Pump' link, stating: 'Acid Pump is controlled by the pH sensor connected to input 'A''. A fifth callout box points to the 'Acid Pump' link, stating: 'Edit one or both setpoints and then SUBMIT'. A sixth callout box points to the 'Acid Pump' link, stating: 'When the Flowswitch contact set connected to input 'E' opens, the acid pump stops'. A seventh callout box points to the 'Acid Pump' link, stating: 'Feed Acid turns ON the Acid Pump when the pH is greater than TurnON and OFF when the pH is less than TurnOFF'. A eighth callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.' A ninth callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.' A tenth callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.'

The screenshot shows a control interface for a ProMine DCM2000 system. It displays various sensors and their status: pH Sensor (7.65 pH, OK), ORP Sensor (697.4 mV, OK), LSI-Ryznar (0.4, OK), Temperature (82.8 F, OK), Flowswitch (3.3min, ON), Re-circ. Pump (3.3min, ON), and UV Control (ON, 2.5min). A 'No alarms Alarms Out' indicator is shown as OFF. A 'No Event Filter Run' indicator is also OFF. The 'Acid Pump' link is highlighted with a green circle and labeled 'ON: 2.5min Acid Pump'. A callout box points to the 'Acid Pump' link, stating: 'Acid Pump is controlled by the pH sensor connected to input 'A''. A second callout box points to the 'Acid Pump' link, stating: 'Edit one or both setpoints and then SUBMIT'. A third callout box points to the 'Acid Pump' link, stating: 'When the Flowswitch contact set connected to input 'E' opens, the acid pump stops'. A fourth callout box points to the 'Acid Pump' link, stating: 'Feed Acid turns ON the Acid Pump when the pH is greater than TurnON and OFF when the pH is less than TurnOFF'. A fifth callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.' A sixth callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.' A seventh callout box points to the 'Acid Pump' link, stating: 'Configure displays the current Acid_Pump set-up and allows you to modify. You'll need to logged in at the Configure or Admin password to modify.'

1.4 View & Adjust Setpoints continued

Pumps controlled by ORP, pH or temperature have setpoints limited by each sensors High and Low Alarm setpoints. If you attempt to adjust a control setpoint outside of the alarm limits, you'll get an **Alarms-Limits Status** message.

'**Interlocked**', '**Blocked by**', '**Control Type**' and '**Special Control**' are detailed in following sections of this manual.

Interlocked turns off pumps & solenoids when flowswitch contact set turns OFF.

Blocked by prevents a pump from turning ON when another pump or solenoid is ON.

Control Type selects the setpoint order. For example, when you feed **Feed Caustic**, **TurnON** is less than **TurnOFF**. **Feed Acid**, reverses the setpoint order.

Special Control selections vary with sensor and output type.

For example,

Oxidant feeds may select PID control.

Outputs without a controlling sensor may be used switch the filter regenerate.

Sidebar:

Relays controlled by sensors power Pumps and Solenoids ON and OFF.
(Relays are outputs **1 to 3**)

Frequency controlled Pumps feed chemicals at varying rates.
(Frequency controlled pumps are outputs **4 & 5**)

Digital Outputs are dry contacts rated 24VDC & 250mA and are either ON/closed or OFF/open
(Digital Outputs, DO are outputs **4 & 5**. Outputs **4 & 5** are user configurable as frequency or DO)

ON-OFF Acid pumps typically use setpoints 0.05 pH apart so that the delay between feeding acid and measuring its pH does not cause wide pH swings.

Pay attention to the number **:1 to :5** that follows the pump or solenoid name.

It's the physical location on the controller circuit board that connects to the pump, valve or solenoid.

You may modify the name of the pump, DO or solenoid but you'll need to know which output is controlling so you can check that the **1 to 3 GREEN** or **4 & 5 RED** indicating light is ON when the pump, contact set or solenoid is ON.

1.5 HOA: Manual-OFF-Auto

Controlled outputs default to 'Auto' allowing the DCM200 to control the pump, solenoid or DO. 'Manual' overrides controls and turns ON the output for priming & testing of pumps & solenoids. 'OFF' turns OFF the pump or solenoid and opens digital outputs. Cycling controller power has no effect on an 'OFF' pump or solenoid.

Mode displays the current feed state, **Manual** in this example

Click on the **Oxidant_Pump** link

Use **Mode = Manual** to prime or to bypass the automatic feed controls

When the system setting 'Alarm on STOP' = YES, any stop alarms

In this example, the user has turned OFF the **Oxidant Pump**

Use **Mode = OFF** to stop a pump or control and to leave it OFF.

Sidebar:

Manual may also be used to slug feed on system start-up in addition to testing pumps, dry contact outputs or solenoids.

Safeguards: A pump or solenoid that is Interlocked, Blocked or OFF on alarm will not turn ON when **Manual** is selected. This safeguard blocks feeding acid into a non-flowing line. Feed Limiting will turn OFF **Manual** on time or volume limit if configured for **OFF on Alarm**.

2.0 Chemical Feed Controls

2.1 Sensor Controlled ON/OFF Feed

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.

The image displays two screenshots of a web-based configuration interface for chemical feed pumps. The top screenshot is for 'Oxidant Pump :2' and the bottom is for 'Boost Pump:5'. Both interfaces show a 'Configure' dropdown menu and various control parameters. Callout boxes provide detailed explanations for these settings.

Oxidant Pump :2 Configuration:

- Control by:** B
- TurnON setpoint:** 720.0 mV
- TurnOFF setpoint:** 745.0 mV
- Interlocked:** E Flowswitch
- Blocked by:** none
- Control Type:** Feed Oxidant
- Special Control:** Time Modulate
- Period:** 120 seconds

Boost Pump:5 Configuration:

- Control by:** B
- TurnON setpoint:** 760.0 mV
- TurnOFF setpoint:** 780.0 mV
- Interlocked:** E Flowswitch
- Blocked by:** none
- Control Type:** Feed Oxidant
- Special Control:** Simple ON/OFF

Callout Boxes:

- Setpoints are limited automatically to the controlling sensor high and low alarm settings
- When the **Flowswitch** connected to input 'E', opens the pump turns OFF
- Control Type** options vary with sensor type.
- The ORP sensor connected to input 'B' controls the **Oxidant Pump** connected to relay 2
- The pump turns ON when the ORP falls below **720mV** and turns OFF when the ORP exceeds **745mV**
- In this example we're not using 'blocking', stopping this pump when another pump turns ON
- Any number of controls may share the same sensor. In this example, the ORP sensor @ 'B' is used to control pump relay 2 & digital output 5
- Both 'E' & 'F' contact sets may be used to **Interlock** a control
- If you set **Control Type** = **Feed Caustic**, the controller will switch the setpoint order.
- Control Type** sets the setpoint order. **Feed Acid** turns ON as the pH rises, so ON must > OFF
- Control Type** = **Between Sets** seldom used with pH & ORP sensors; more useful with temperature sensors.

Sidebar

Setpoints may be set incorrectly. Sensors eventually fail. Solenoids & Pumps fault. Refer to **Section 2.5 Limiting Feed & Alarms** to control a fault response.

2.1 Sensor Controlled ON/OFF Feed continued

Control type:

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.

The screenshot shows the configuration interface for 'Acid Pump:1'. The 'Control Type' dropdown menu is open, showing options: 'Feed Acid', 'Feed Caustic', and 'Between Sets'. The 'TurnON setpoint' is 7.50 pH and the 'TurnOFF setpoint' is 7.45 pH. The 'Interlocked' field is set to 'E Flowswitch' and 'Blocked by' is 'none'. The 'Special Control' dropdown is also open, showing 'Feed Caustic' and 'Between Sets'. Three callout boxes provide additional information:

- Control Type** sets the setpoint order. **Feed Acid** turns ON as the pH rises so **ON** must be **> OFF**.
- If you set **Control Type** = **Feed Caustic**, the controller will switch the setpoint order.
- Between Sets** is seldom used with pH & ORP; more useful with temperature controls.

Each sensor pump control uses a **Control type** set by the chemical fed. ORP, pH and temperature sensors have **Control types** specific to the sensor.

For example, when select a temperature sensor, the **Control Type** options are **Lower Temp** & **Increase Temp**.

Sidebar:

Control Type is not applicable or displayed for water meter based feeds.

Between Sets turns ON a pump or solenoid whenever the controlling sensor value is between the TurnON & TurnOFF setpoints. This **Control Type** finds use in blocking and sequential PLC type controls.

Setpoint Order:

The controller will automatically switch the setpoints to fit the selected **Control Type**, inserting a **Setpoints Switched** message into the **Status** line of the left hand side of the page.

2.2 Proportional Feed

Special Control: Time Modulate for ON-OFF Pumps

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.

Time Modulate allows an ON/OFF pump to operate like a frequency or 4-20mA controlled pump.

This **Special Control** is used feed proportionally to a sensor value.

ON-OFF pumps are typically set to maximum stroke and rate when **Time Modulate** is selected.

Oxidant Pump02 Configure

Control by: 0

TurnON setpoint: 725.0 mV

TurnOFF setpoint: 740.0 mV

Interlocked: E-Flowswitch

Blocked by: none

Control Type: Feed Oxidant

Special Control: Time Modulate

Period: 120 seconds

RESET SUBMIT

Time Modulate Special Control typically widens the difference between setpoints

Select **Time Modulate Special Control**

Pump ON time varies from 0 to 120 sec. every 120 seconds

Sidebar:

Frequency controlled pumps connected to controller outputs '4' & '5' are proportionally controlled as the controlling sensor varies the pump frequency.

Often there is a need to proportionally control an ON/OFF pump connected to one of the controller power relays '1' to '3'.

Examples: The pump may be oversized for the application or turning down the pump stroke or frequency may cause loss of prime or feed line blocking.

The **Time Modulate Special Control:**

Turns OFF below the **TurnOFF** setpoint and is always ON above the **Turn ON** setpoint.

Between setpoints, linearly increases the ON time from zero @ the **TurnOFF** to always ON at the **Turn ON** setpoint.

Example: Period=120 seconds, pH **Turn ON** = 7, pH **TurnOFF** = 8, current pH = 7.4.
ON time = 48 seconds in every 120 seconds, OFF time = 72 seconds in every 120 seconds.

Time Modulate Special Control works for acid & caustic, oxidant & de-chlor, setpoints.

2.2 Proportional Feed

Frequency Controlled Pumps

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.

Frequency controlled pumps modify the feed rate as the value of the controlling sensor changes.

In this example, the pump frequency increases as the ORP falls towards 300mV. At 300mV the oxidant is fed at the maximum rate, decreasing as the ORP increases.

If this example was an anti-chlor pump, the **100%ON Setpoint** would be greater than the **TurnOFF setpoint**. As anti-chlor feeds, the ORP decreases.

Frequency controller pumps are 4: and 5:

At 730 mV the pump feed at Maximum SPM

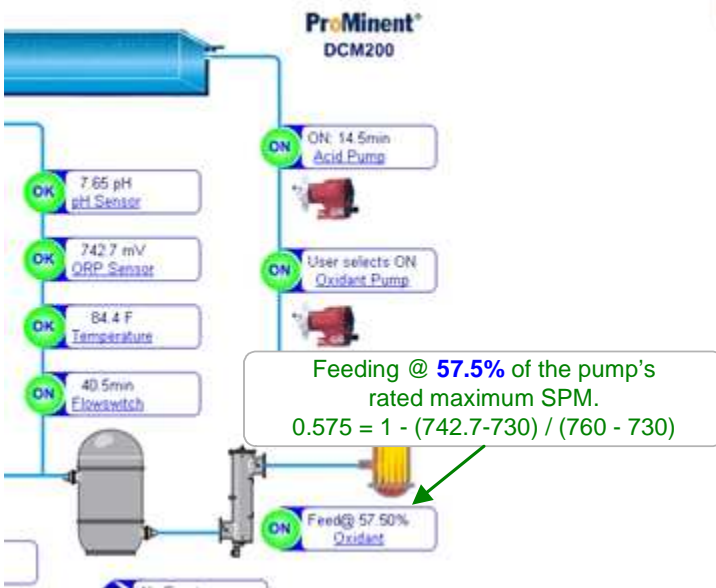
At 760 mV the pump is OFF

Control Type is always Between Sets

Diagnostic displays when you select **Oxidant Pump**

Controlling sensor location, 'B' and its present value.

Volume pumped from midnight



Sidebar:

In this example the pump is rated @ 180 SPM, Strokes per Minute, and pumps 0.1mL stroke so we're pumping (180 x 0.1 x 0.575) 10.35 ml/minute or 0.166 Gallons/hour

2.3 Base Feed

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.

Set **Special Control** to **Percent Time**

Control by: No sensor
Interlocked: none
Blocked by: none
Special Control: Percent Time
% ON Time: 12 %
RESET SUBMIT

The pump connected to relay 3 will be on for 12% of every 5 minutes

Set **Special Control** to **Base Feed**

Control by: No sensor
Interlocked: E Flowswitch
Blocked by: none
Special Control: Base Feed
Feed: 4.5 ml/min
RESET SUBMIT

The pump connected to frequency control 4 will feed at 4.5mL/min

ON-OFF Pumps: Setting the **% ON Time** greater than 100%, sets the % to 100.
12% ON time is 36 seconds ON in every 5 minutes (0.12×300 seconds).

Frequency Controlled Pumps: If you set a **Feed** rate greater than the pump rating, the controller will set the feed rate to pump maximum SPM. If the pump is rated 180 strokes/minute & 0.1mL stroke, the rate will be set to **18mL/min**.

Sidebar:

Base Feeds are used to continuously feed a chemical.

In some cases, as a temporary measure while a sensor is replaced or a water meter repaired or to pre-treat a system on start-up

Concentration is modified by changing the frequency controlled pump (4 & 5) feed rate or relay (1 to 3) **% ON Time**.

2.4 PID Controls

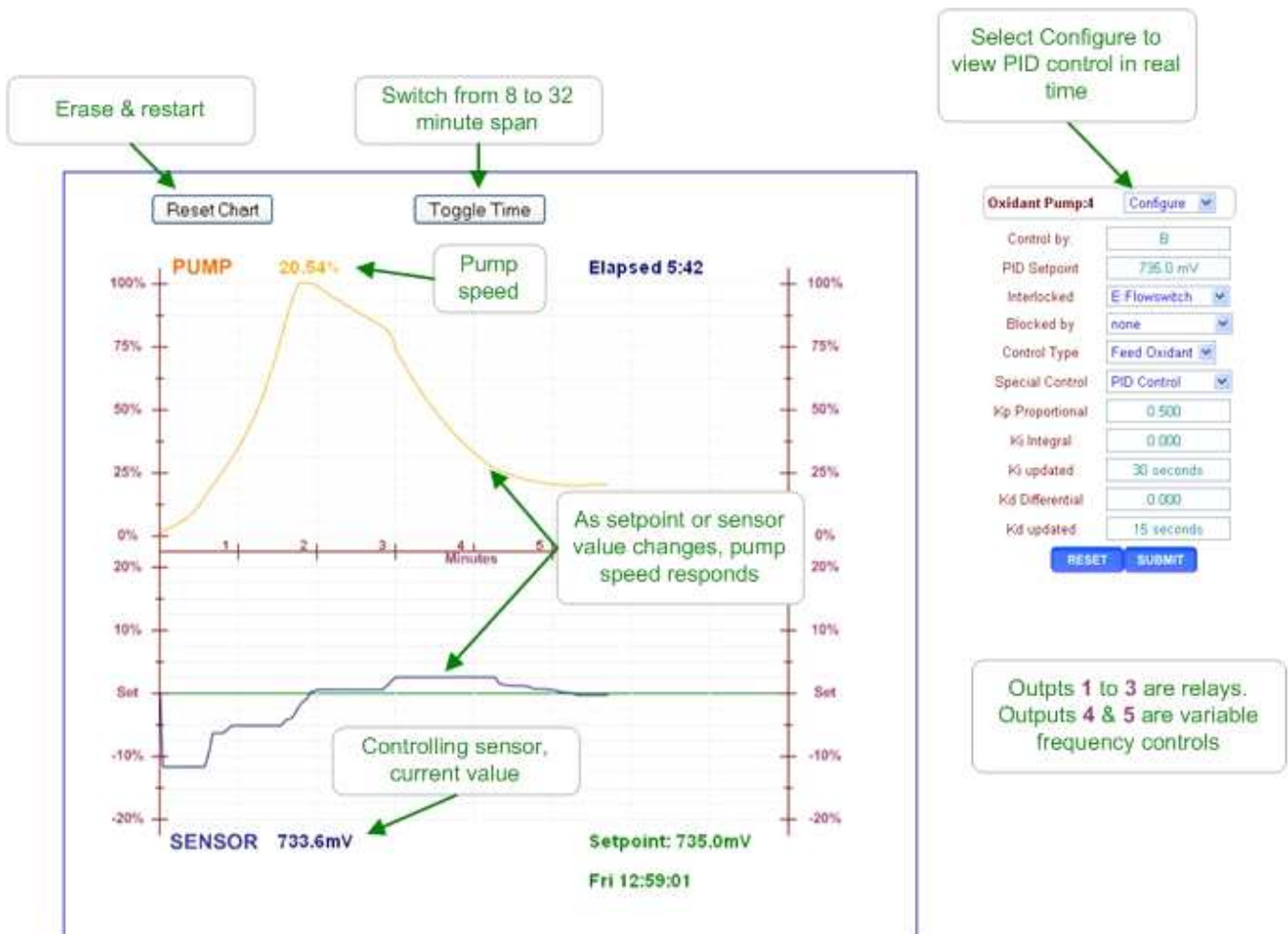
Each of the frequency-controlled pumps, outputs 4 & 5, can be configured for PID (Proportional-Integral-Derivative) control.

Relay outputs 1 to 3 may also be configured for PID control, implemented by continuously modifying the pump-powering relay ON & OFF times.

Users of the Firefox Mozilla browser can view a real time 'chart' of pump rate versus setpoint as they adjust Kp, Ki & Kd to tune the PID loop response
The 'chart' HTML tag is not supported by Internet Explorer prior to Version 9.

Chart time spans of 8/16 minutes and 32/64 minutes are supported.

Set a pump **Special Control** = **PID Control** & charting will start on the next **SUBMIT** & re-start every time you select **Configure** on the pump.



2.4 PID Controls

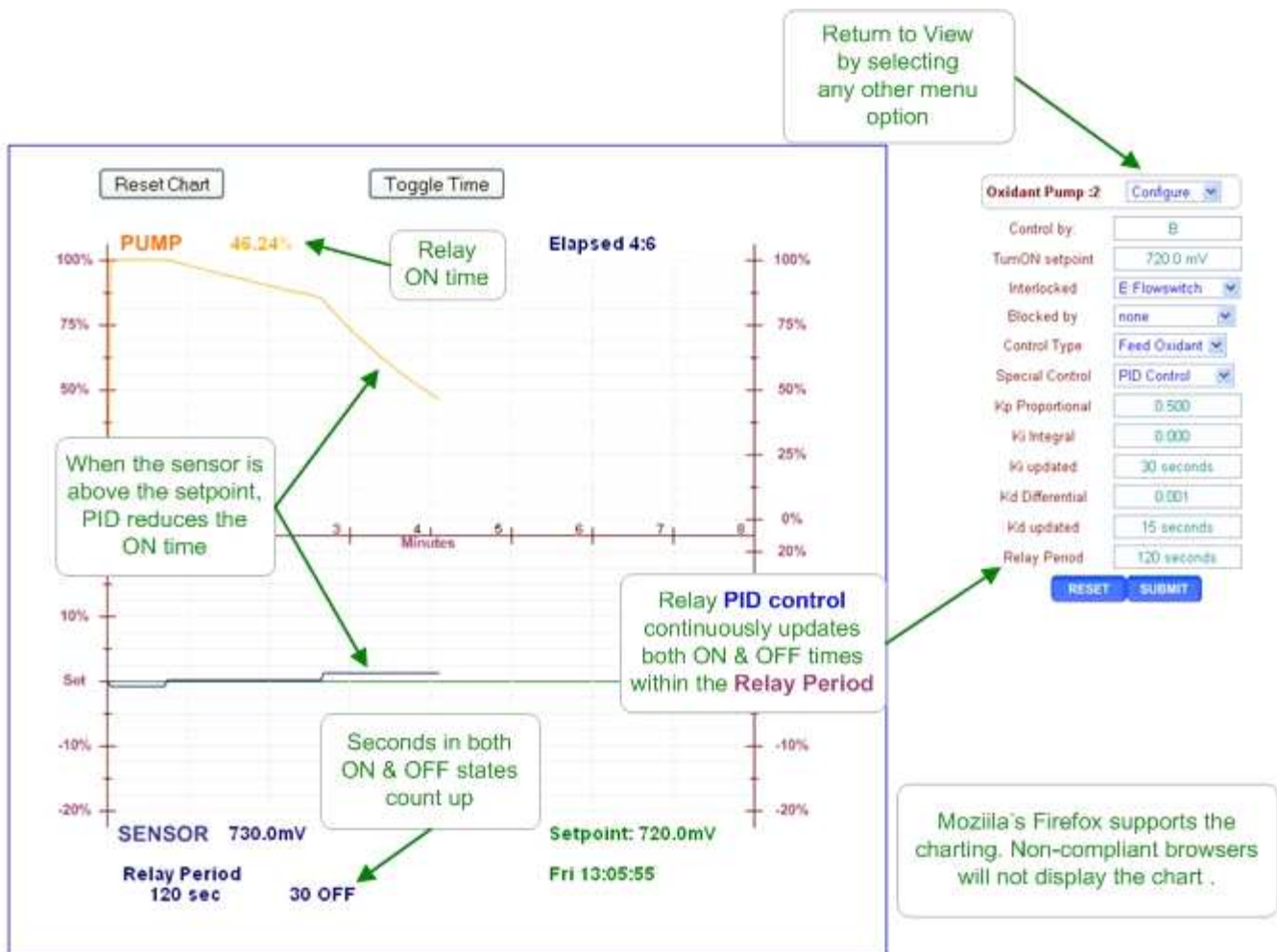
Most aquatics systems have a delay between feeding the chemical and the controlling sensor measuring the effect of the fed chemical.

This delay effectively adds to the **K_p** value to make PID feed systems oscillate & means that few aquatics chemical feed systems will need **K_i**.

The default **K_i** & **K_d** settings (0.001) disable the Integral & Derivative control.

Most feed systems and slow responding systems in particular will benefit from frequent (**K_d Updated** = 1), differential control (**K_d** > 1.0).

ON/OFF pump PID controls include the **Relay Period** field and the real time chart includes a display of the ON & OFF times within each **Relay Period**.



2.5 Oxidant Feed Controls

Pumps and solenoids controlled by ORP sensors have additional, optional controls.

The screenshot shows the 'Oxidant Pump :2 Setup' page. The form includes the following fields and options:

- Description:** Oxidant Pump
- Event Controls:** Radio buttons for Yes (selected) and No.
- Event setpoint:** 735.0 mV
- Off Setpoint:** 740.0 mV
- Event Cycle:** A pull-down menu with options: 24 Hours, 7 Days (selected), and 26 Days.
- Lockout mode:** A pull-down menu with options: high & low pH and low pH only.
- Disable output:** Radio buttons for Yes and No (selected).

Callouts provide additional information:

- Any pump controlled by an ORP sensor has extra controls for oxidant feed** (points to the top of the form).
- Event Controls replace the pump control setpoints during user defined event periods** (points to the Event Controls radio buttons).
- Event Controls allow up to 28 events in each user selected Event Cycle period.** (points to the Event Cycle pull-down menu).
- Lockout Mode selects which pH alarms turn OFF the oxidant pump** (points to the Lockout mode pull-down menu).

Buttons for 'RESET' and 'SUBMIT' are located at the bottom of the form.

Sidebar:

Event Controls are used to implement periods of high oxidant or low ppm typically when the water feature or pool is unused or offline.

If **Event Controls** = **No**, neither the **Events** pull-down option and Event sub-fields on the **Setup** page do not display.

2.5 Oxidant Feed Controls

If **Setup Event Controls** = **Yes**, pull down & select **Events** on the oxidant pump or solenoid pull down to view and/or set events.

Select the **OxidantPump** link & pull down the **Diagnostic** selector to **Events**

Edit the **Day, Time & ON Time** duration. Select an **Event Frequency** & **SUBMIT**

Events may be edited, deleted & replicated

Pull down this selector to view existing events & select an event for editing & deleting.

These fields apply to the selected event on **SUBMIT**. Use **Event Frequency** to replicate an edited event

2.6 'Simple' ON/OFF Controls

Frequency controlled outputs **4** & **5** may be re-configured as dry contact ON/OFF outputs by selecting the **Simple ON/OFF Special Control**.

The **Simple ON/OFF** option is available for outputs controlled by sensors connected to inputs 'A' to 'C'.

Special Control = Simple ON/OFF is used to control devices, filters, UV's... that require a dry contact set to operate

Relay outputs **1** to **3** are powered at AC line voltage & would require an interposing relay to convert control to a dry contact set.

Oxidant Pump: Configure

Control by: B

100%ON Setpoint: 750.0 mV

TurnOFF setpoint: 742.5 mV

Interlocked: E Flowswitch

Blocked by: none

Control Type: Between Sets

Special Control: None

RESET

Select **Simple ON/OFF** to make a variable frequency output, a dry contact ON/OFF output

Oxidant Pump: Diagnostic

Status: Operational, ON

Mode: Auto

Control by: B

TurnON setpoint: 743.3 mV

TurnOFF setpoint: 745.0 mV

OFF Setpoint: 750.0 mV

Control Type: Feed Oxidant

7.8m ON today 6.4m ON, actuation

Simple ON/OFF: ON

REFRESH SUBMIT

Simple ON/OFF controls report and log ON time, not volume pumped.

Simple ON/OFF controls by pH, ORP and temperature sensors do not require pump type selection and do not have added control options in the **Setup** page.

Sidebar:

Digital outputs **4** & **5** are DC isolated, floating, non-polarized, electronic contact sets. thermally fused @ 250mA & 30VDC.

Do not switch AC line voltages with these contact sets.

Thermal fusing prevents damage to the contact set due to wiring errors, recovering automatically when the wiring fault is corrected.

2.7 Limiting Feed & Alarms

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Alarms**.

Frequency controlled pump alarm on volume fed @ maximum SPM & Volume/Day

Pump alarms after any single feed greater than **45** minutes.

Pump alarms after daily feed ON time greater than **Minutes/Day**.

Pump turns OFF on alarm & stays OFF until **Reset Alarm**.

Alarm Relay turns ON any output with **Special Control = Alarm Output** when this output alarms.

Yes & SUBMIT clears alarm. Immediately re-alarms if you have exceeded **Minutes/Day**.

Outputs with **Special Control = Alarm Output, Sensor Wash or Filter Event** do not have elapsed time alarms.

Sidebar:

Feed Limits are ON times for pumps & solenoids controlled by relays **1 to 3** and volumes for frequency controlled outputs **4 & 5**.

Set the limits so that worst case operation on the hottest day or highest load will not trip the limit, avoiding nuisance alarms. In more critical applications, run the limit close to actual operating volume or time & use the limit alarms to flag atypical system operation.

Chemical feeds other than Oxidant & Acid feeds are usually all set to **OFF on alarm** since an overfeed indicates an operating problem which requires correction whereas continuing to feed Oxidant or Acid may put users at risk.

Typically you are only concerned with either the **Actuation** or **Day** limit.

Examples:

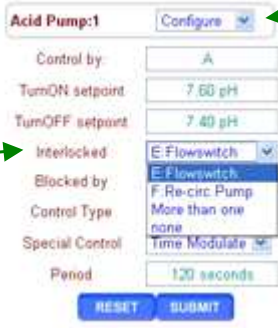
Oxidant feeds usually use the **Actuation** limit to prevent overfeeds & to detect loss of feed, setting the **Day** limit so it never trips.

Acid feeds would use both **Actuation** and **Day** limits since different fault types trip each limit alarm.

Note: Setting **Minutes Day** > **1440** will not alarm

2.8 No Feed on No Flow

Select the link on the target chemical feed pump and pull down the top, right menu, selecting **Configure**.



The screenshot shows the configuration page for 'Acid Pump:1'. The 'Interlocked' dropdown menu is open, showing options: 'E Flowswitch', 'F Re-circ Pump', 'More than one', and 'none'. The 'E Flowswitch' option is selected. Callouts provide the following information:

- Each Pump, Valve & Solenoid views & selects its Interlock on the **Configure** page.
- Pull down this selector to view possible Interlocks and 'none'. Select & **SUBMIT** to change **Interlocked**.
- The **Acid Pump** connected to Relay '1' is **Interlocked** to the **Flowswitch** connected to input 'E'.
- In this example, whenever the **Flowswitch** is OFF, the **Acid Pump** is OFF.

Sidebar:

Interlocks are contact sets that must be closed for a Pump to feed, a Solenoid to open or a Valve to operate.

Aquatics sites use a flowswitch installed in the sensor header to detect that the pool/spa/water feature is operating & it's OK to feed chemicals, backwash filters, run electrolyzers...

One or more closed contact sets may be required to **Interlock** a pump.

Examples:

If both the sensor sample flow (Input 'E') and the recirculation pump are ON(Input 'F') enable the oxidant pump. The oxidant pump **Interlocked** = **E+F**

If there is flow in the recirculating line (Input 'E') and the tank level switch (Input 'F') shows chemical available, feed chemical. The chemical pump **Interlocked** = **E+F**

Interlocks may be **ORed** using the ' / ' symbol or **ANDed** using the '+' symbol.

The controller prevents a mix of **ORs** and **ANDs** in any one **Interlock**.

2.9 Blocking a Feed

Select the link on the chemical feed pump that you wish to block and pull down the top, right menu, selecting **Configure**.

Pull down the **Blocked by** selector to view all other pumps, valves & solenoids.

In this example, select the pump you wish to block the **Oxidant Pump** & **SUBMIT**

Sidebar:

Blocking prevents one or more chemicals from feeding at the same time. If you are owed time or volume on the blocked pump, the controller remembers and feeds when the block clears.

A pump may be **Blocked** by one or more other pumps, solenoids or valves.

Examples:

1. You may wish to prevent oxidant and acid feeds during a filter backwash.

Blocking the Acid pump connected to Relay '1' and Oxidant pump connected to Relay '2' with the connected filter backwash run connected to digital output '5'.

Acid & Oxidant Pumps **Blocked by** = '5'.

2. Some chemicals are degraded by high levels of oxidant. The Flocculant pump is connected to Relay '3' & the Oxidant pump connected to frequency control '2'. Flocculant **Blocked by** = '2'

Caution: Be careful **Blocking** with frequency outputs '4' & '5' that are controlled by a sensor to ensure that they occasionally turn OFF to allow the blocked pump to feed.

2.10 Feed Diagnostics

Select the link on the target chemical feed pump. The pump **Diagnostic** displays on the right.

The **Oxidant Pump** is controlled by #5 frequency output.

The **Oxidant** pump has pumped **0.091** Gallons from midnight

View displays a feed rate of 26.75%

The **Oxidant** pump controlling sensor is **743.4 mV** which is **26.75%** of the difference between setpoints. A pump rated @ 180 SPM & 0.1mL/stroke would be pumping 4.82 mL/minute

Oxidant #5	
Status	Operational, ON
Mode	Auto
Control by: B	743.4 mV
100%ON Setpoint	780.0 mV
OFF Setpoint	730.0 mV
Control Type	Between Sets
Volume today	0.091G

Sidebar:

Diagnostics vary with the output type and control.

Relays '1' to '3' use ON time instead of the volumes of Frequency controls '4' & '5'.

The main menu displays **Blocked** & the blocking output OR **Lockout** & the **Interlock** input OR **Alarmed** if a pump cannot feed.

Diagnostic tells you a lot about the operation of the aquatics system and is invaluable if you have a configuration problem or feed fault.

Even if you have LCD **Passwords** turned ON, any Keypad-LCD user can still view the **Diagnostics**. An uniformed user reading you the **Diagnostic** screen sequence may save you a site trip.

3.0 Event Controls

3.1 Four Types of Events

Alarm : Sensor Wash : Filter : Oxidant Controlled (refer to Section 2.5)

Events turn on a pump, solenoid or valve for user set time (Relay & Digital Outputs) or volume (Frequency controlled pumps) at a user set day & time or on alarm.

Non-Alarm events are repeated every Day, Week or Four Week cycle.

Alarm Out:3 Configure

Special Control: Alarm Output

Alarm, No Flow: [RESET]

Special Control
Sensor Wash & Filter Events turn ON @ the user set time for the user set event duration.
Alarm Output turns ON when an alarm event occurs

AlarmRelay :3 Configure

Special Control: Alarm Output

Alarm, No Flow: Yes No

[RESET] [SUBMIT]

Yes alarms on **Flowswitch OFF** and any sensors set to **Alarm Relay**.

Alarm Output relays or dry contacts turn ON when an I/O with **Alarm Relay = YES**, alarms

Washer:t Configure

Control by: No sensor

Interlocked: none

Blocked by: none

Special Control: Sensor Wash

[RESET] [SUBMIT]

Sensor Wash relays or dry contacts hold all sensor values during each wash event and flashes the **BLUE OK** LED to let you know that the pH, ORP, Temperature & LSI are **not** changing

Filter Run :5 Configure

Control by: No sensor

Interlocked: E Flowswitch

Blocked by: none

Special Control: Filter Events

[RESET] [SUBMIT]

Filter Events relays or dry contacts turn ON during the event

3.2 Setting & Viewing Events

Select the link on the target output, pump or solenoid and pull down the top, right menu, selecting **Setup** to modify the event cycle or **Events** to view, add or modify events.

Sensor Wash & Filter Events Special Controls and Oxidant feeds display the **Events** selection

Select **Setup** to change the event cycle from 1 to 7 to 28 days

To add a new event select **Add an Event**

Edit the **Start Day** (Sunday = day 1) **Start Time & ON Time**

Event frequency selections vary with selected cycle days

Select **frequency** and **SUBMIT**

Up to 28 events may be scheduled for each relay, pump or digital output (DO)

Pull down the selector to view active event set

In this example the **Filter Events** enabling relay #3, runs twice a day, every other day, repeating every week

Sidebar:

Event Day can be set from 1 to 28 for Pumps set on a 28 day **Event Cycle** and from 1 to 7 for controllers set on a 7 day **Event Cycle** or always 1 on a 1 day **Event Cycle**.

Events repeat every 1, 7 or 28 days.

Relays '1' to '3' & Digital Outputs feed time in minutes.

Frequency controlled outputs '4' & '5' feed volume in mL. @ maximum pump SPM.

4.0 Sensors

4.1 Sensor Calibration

Select the link on the target sensor and pull down the top, right menu, selecting **Calibrate**.

Put the grab sample value of the **pH Sensor** here & **SUBMIT**

After **SUBMIT** the DCM200 displays the **Diagnostic** page

Factory Reset returns the sensor back to its default value. It's useful when you are trying to identify a faulted sensor or correct an incorrect calibration.

Sensors are measured in millivolts and then **Gain & Offset** are applied to convert to user units, **pH** in this example.

In this example, pH calibration requires an offset correction from **7.0** to **7.0996**

Calibration modifies either **Gain** or **Offset**. If either gets too far from **Default** values, the sensor will fail to calibrate

pH Sensor:A	
Status	Operational
Sensor Type	pH Sensor
Period Maximum	7.65 pH
Period Minimum	7.65 pH
Period Average	7.66 pH
Period	20 minutes
Compensation	None
Measured Level	-32.5 mV
Gain Multiply	-0.0170
Default Gain	-0.0170
Offset Adjust	7.0996
Default Offset	7.0000

Sidebar:

Single Point Calibration: All sensors can be single point calibrated. Measure a grab sample from the sensor installation line and calibrate the sensor based on the grab sample. It's the simplest, most repeatable method.

Process control and monitoring only sites which may operate over a wide sensor range benefit from 2 point calibration. For these users, the DCM500 supports direct set of sensor OFFSET & GAIN and 2 point calibration of pH.

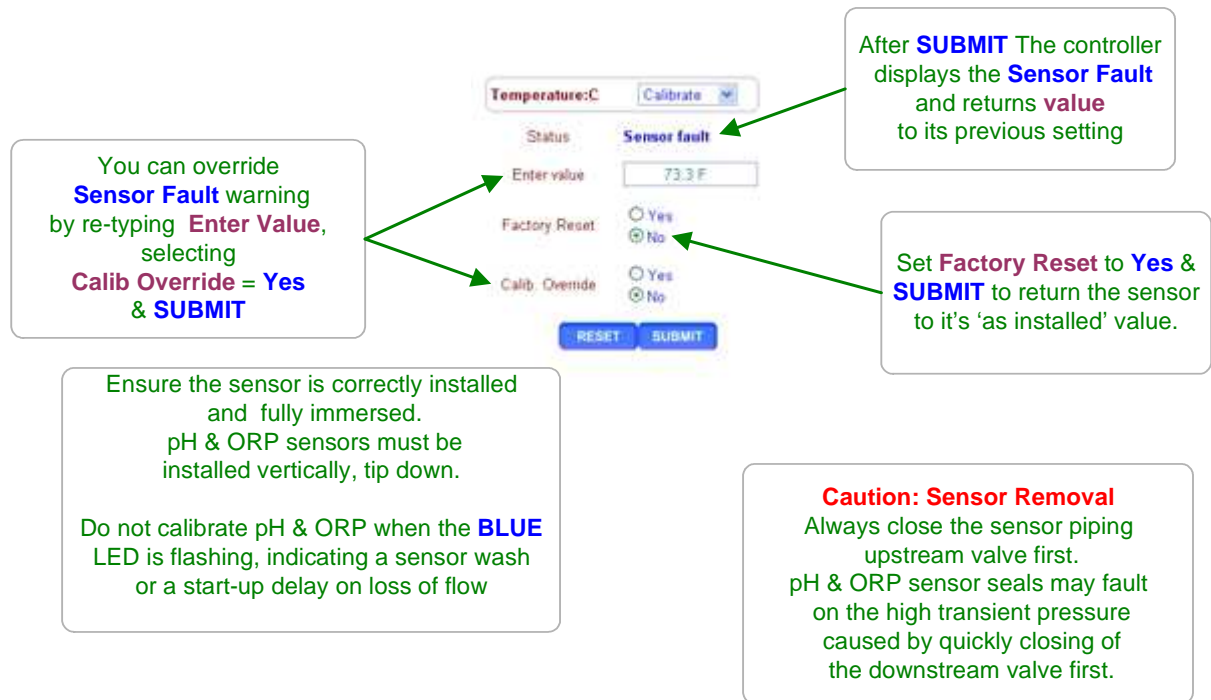
Calibration Faults: Refer to the next page for options on fault.

LSI-Ryznar sensors

Use **Calibrate** after you measure conductivity, alkalinity or hardness to update **LSI_Ryznar**

4.1 Sensor Calibration

This page displays on a failure to calibrate. Although, you may elect to ignore and bypass this warning it's usually telling you there's a problem. You may force the sensor to read a value, but it may not track changes in pH, ORP or temperature.



The screenshot shows a web interface for sensor calibration. At the top, there is a dropdown menu for 'Temperature:C' and a 'Calibrate' button. Below this, the 'Status' is 'Sensor fault'. There is an 'Enter value' field containing '73.3 F'. Below that are two radio button options: 'Factory Reset' with 'Yes' and 'No' options, and 'Calib. Override' with 'Yes' and 'No' options. At the bottom are 'RESET' and 'SUBMIT' buttons. Five callout boxes provide additional information:

- Top-left:** You can override **Sensor Fault** warning by re-typing **Enter Value**, selecting **Calib Override = Yes & SUBMIT**
- Top-right:** After **SUBMIT** The controller displays the **Sensor Fault** and returns **value** to its previous setting
- Middle-right:** Set **Factory Reset** to **Yes & SUBMIT** to return the sensor to its 'as installed' value.
- Bottom-left:** Ensure the sensor is correctly installed and fully immersed. pH & ORP sensors must be installed vertically, tip down. Do not calibrate pH & ORP when the **BLUE** LED is flashing, indicating a sensor wash or a start-up delay on loss of flow
- Bottom-right:** **Caution: Sensor Removal** Always close the sensor piping upstream valve first. pH & ORP sensor seals may fault on the high transient pressure caused by quickly closing of the downstream valve first.

Sidebar:

Sensor Fault: The DCM200 verifies that sensor OFFSET or GAIN required to make the sensor read its new value are within the range of typical sensor operation. If out of range, **Sensor Fault** displays.

Fault Cause varies with sensor type.

ORP: Verify sensor cable not shortened & firmly connected. Verify not visibly fouled. If stream contains organics, clean with alcohol or solvent. If stream high in iron or copper, restore platinum surface with Aqua Regia or equal.

pH: Verify solution ground connected & excess sensor cable coiled at sensor, not in enclosure. Verify sensor cable not shortened & firmly connected. Then replace if no recovery after **Factory Reset**. pH sensor life decreases with handling and temperature extremes.

Temperature: Verify color coding correct and sensor wires firmly connected. Inspect sensor for damage or leaking.

4.2 LSI-Ryznar Calculation

LSI-Ryznar calculations use a combination of measured sensor & manual test values.

LSI-Ryznar:0 **Configure**

Description: LSI-Ryznar

Decimal digits: 1

Compensation: LSI-Ryznar

uS to TDS: 0.670

Disable Input: Yes No

REFRESH **SUBMIT**

Select **LSI-Ryznar Compensation** to configure for a Langelier -Ryznar calculation

uS to TDS conversion typical for non-brine streams
Brine streams use **0.5**

LSI-Ryznar:0 **Calibrate**

Status: Calc. Updated

CaCO3 Hardness: 210.0

Alkalinity: 95.0

Conductivity: 580

RESET **SUBMIT**

Grab sample, measure & enter a **Conductivity** measurement in uS

Select **Calibrate** to enter chemical test values for **Hardness & Alkalinity**.

Hardness limited 50 to 400ppm
Alkalinity limited 30 to 140ppm

LSI-Ryznar:0 **Alarms**

Status: Alarmed

LSI Scaling: 0.0

RYZ Corode: 8.0

RYZ Scaling: 6.0

Alarm Relay: Yes No

Delay on Alarm: 30.0 minutes

Clear Alarms: Yes

Scale Alarm: 17.28 27/12/11

RESET **SUBMIT**

Ryznar alarms display both **Scaling** & **Corrode** alarms.

LSI > **LSI Scaling** displays a **Scaling** alarm.

These LSI-Ryznar alarm values are recommended.

LSI-Ryznar:0 **Diagnostic**

Status: Operational

Sensor Type: Calculated

Period Maximum: 0.3

Period Minimum: 0.2

Period Average: 0.3

Period: 34 minutes

Compensation: LSI-Ryznar

Ryznar: 7.0

REFRESH

Diagnostic for the LSI-Ryznar input shows the **Ryznar** value. The LSI value is logged.

4.3 Sensor Alarms

Select the link on the target sensor and pull down the top, right menu, selecting **Alarms**.

The screenshot shows the configuration page for an ORP sensor. The top section is titled "ORP Sensor: [ID]" and has a dropdown menu set to "Alarms". The status is "Control limited". The High Alarm is set to 900.0 mV and the Low Alarm is set to 600.0 mV. The Alarm Relay is set to "Yes" and the Delay on Alarm is set to 5.0 minutes. There are "RESET" and "SUBMIT" buttons.

Callouts for the ORP sensor configuration:

- Blocks, if you attempt to adjust an alarm on a pH, ppm or ORP sensor used for control to a value outside of the present control setpoints (points to the dropdown menu).
- If the sensor measures greater than **High** or less than **Low**, it will Alarm after the **Delay** (points to the High and Low alarm fields).
- Alarm Relay = Yes** will turn ON any output with **Special Control = Alarm** when this sensor alarms (points to the Alarm Relay field).
- Delay** block transient, nuisance alarms. Set to >1440 to prevent alarms (1 day = 1440 minutes) (points to the Delay on Alarm field).

The bottom section is titled "temperature: [ID]" and has a dropdown menu set to "ALARMS". The status is "Alarmed". The High Alarm is set to 74.0 F and the Low Alarm is set to 60.0 F. The Alarm Relay is set to "Yes" and the Delay on Alarm is set to 1.0 minutes. There is a "Clear Alarms" checkbox set to "No" and an "Alarmed High" timestamp of 08:34 24/12/11. There are "RESET" and "SUBMIT" buttons.

Callouts for the temperature sensor configuration:

- pH, ORP and temperature pump & solenoid controls block setpoints outside of the controlling sensor alarm range (points to the High and Low alarm fields).
- Set **Clear Alarms = Yes**, and **SUBMIT** to acknowledge & clear the alarm (points to the Clear Alarms checkbox).
- If an input is **Alarmed**, the time-date stamp will display with the cause of the alarm (points to the Alarmed High timestamp).
- Alarms do not auto-clear so that problems that occur when you are not viewing the controller are not missed (points to the "Alarmed" status).

Sidebar:

Clear Alarms: Resets the **Delay on Alarm** time

If the **Delay on Alarm** is set to zero minutes and the sensor is above the **High Alarm** or below the **Low Alarm**, the sensor alarm will immediately re-trip.

Water meters & Contact sets also have alarms & these are defaulted to not trip the **Alarm Relay**.

4.4 Sensor Configure

Select the link on the target sensor and pull down the top, right menu, selecting **Configure**.

The screenshot shows the configuration page for a 'pH Sensor :A'. The interface includes a 'Configure' dropdown menu at the top right. Below it are several settings: 'Description' (pH Sensor), 'Gain Multiply' (-0.0170), 'Offset Adjust' (7.0000 pH), 'Display units' (pH), 'Decimal digits' (2), and 'Compensation' (Thermal Comp). At the bottom are 'REFRESH' and 'SUBMIT' buttons. Five callout boxes provide additional information:

- Edit Description** for up to 14 letters & numbers. Changes the View on **SUBMIT**
- Gain or Offset** are modified by the controller when you Calibrate the sensor
- Display Units** may be set to any three characters
- Decimal digits** sets the number of digits displayed after the decimal point.
- The DCM200 won't let you **Disable** pH, ORP, temperature & flowswitch sensors.
- In this example, the pH sensor is **Thermal Compensated**. Aquatics sites typically do not need to temperature compensate pH

Sidebar:

Description: Text is rejected if it contains HTML delimiters like < >.

Avoid assigning duplicate or similar names for sensors, requiring the user to identify using only the identifying letter 'A' to 'D'.

Each sensor has only one name. It's the same for both Keypad-LCD and Browser users and is included in the controller data logs.

Resolution: When you select the number of digits displayed after the decimal:

1. Keep the number to a minimum to unclutter the display, making sensor values easier to read & remember.
2. pH is typically displayed with 2 digits of resolution & ORP with 0 or 1 digits after the decimal point

The displayed resolution of a sensor does not alter the data log resolution or the resolution used for control or the accuracy of sensor calculations.

Disabling a sensor removes it from the display and all selection menus used for control and compensation. Data logging stops for disabled sensors.

4.5 Sensor Diagnostics

Select the link on any sensor to view the **Diagnostic** page for the sensor.

Status displays Alarmed if tripped.

Normal variation reflect typical control response. **Minimum** may reflect a drained sample line.

When you calibrate a **pH Sensor**, the controller adjusts the **Offset** to modify the displayed value.

'B' indicates where the sensor's connected, independent of the site's sensor name

Summary of the sensor variation within the run time period. **Period** resets @ midnight

The -12mV difference between **Default Offset** & **Offset Adjust** indicates an OK sensor, operating close to Factory default.

pH Sensor :A	
Status	Operational
Sensor Type	pH Sensor
Period Maximum	7.66 pH
Period Minimum	-5.80 pH
Period Average	7.61 pH
Period	6 minutes
Compensation	None
Measured Level	-32.5 mV
Gain Multiply	-0.0170
Default Gain	-0.0170
Offset Adjust	7.0996
Default Offset	7.0000

ORP Sensor :B	
Status	Operational
Sensor Type	ORP Sensor
Period Maximum	742.6 mV
Period Minimum	730.6 mV
Period Average	742.4 mV
Period	8 minutes
Compensation	None
Measured Level	742.6 mV
Gain Multiply	1.0000
Default Gain	1.0000
Offset Adjust	-12.0000
Default Offset	0.0000

Sidebar:

Diagnostic displays how the sensor is configured, compensated and calibrated.

Offset & Default Offset

When you calibrate a pH, ORP or temperature, the DCM200 adjusts the OFFSET to make your measured value match the displayed value.

Manual Sensors:

These sensor types use only the OFFSET to set the displayed value. The controller ignores GAIN for these sensor types.

Measured Level:

pH sensors have a well defined mV to pH relationship.

Example pH7 = 0mV, pH10=176 mV and pH4 = -176 mV.

Displayed sensor value = **(GAIN x Measured Level) + OFFSET**.

Using this simple equation, you can directly modify the OFFSET & GAIN to get a desired display. This is seldom done, but it's convenient for atypical sensor types.

4.6 Water Meters

Select the link on the meter and pull down the top, right menu, selecting **Configure**.

If you are using a turbine or paddlewheel meter, set **Meter Type** to **Turbine Meter** & **SUBMIT**. Then adjust **'K' Factor** & **SUBMIT**

Set **Digital Type** to **Volume Meter**

Set **Volume/contact** to the value measured each time the meter contacts close

If you have set the controller to **U.S. Units**, **Display Units** are **'G'**allons. Metric Units display **'L'**iters

Disabling input 'F' removes it from the browser view and the LCD display

Sidebar:

Contact Head Meters

Meters may often be user configured for many Gallon/Contact or Liter/Contact settings. Make sure you get the volume/contact correct or feed concentration errors will occur.

Turbine-Paddlewheel Meters

Nominal **'K' Factors** or Pulses-per-Gallon are listed for each pipe size on the manufacturer's web site or on the installation manual supplied with the meter.

When meter are supplied with entry fittings, the actual **'K'** factor is frequently labeled on the body of the meter.

Common Meter Wiring Errors:

1. Switching wire colors when extending 3 wire meter cables.
2. Routing meter wiring in the same conduit as AC power.
Meter cables are low voltage. If site practice allows, tie wrap meter cabling to the outside of conduit rather than share a conduit with AC power.

Contact Set Debouncing:

Mechanical water meter contact sets bounce when closing or opening. The DCM200 software debounces so that you don't measure extra counts when you select **Contact Meter**.

Maximum Turbine Pulse Rate:

Turbine pulse streams are not debounced and will measure up to 400 pulses/sec. or Hertz. 400 Hz. is faster than the pulse stream from the Seametrics type meter at maximum **'K' Factor**.

5.0 Flowswitches & Contact Sets

5.1 Switching Meters & Contact Sets

Select the link on the target water meter or contact and pull down the top, right menu, selecting **Configure**.

The screenshot shows the configuration page for 'Filter Run :F'. The 'Digital Type' is set to 'Contact set'. The 'Invert sense' is set to 'No'. The 'Disable input' is set to 'No'. There are 'REFRESH' and 'SUBMIT' buttons at the bottom.

Invert sense makes a contact set display ON when it is open.

Set **Digital Type** to **Contact Set** and **SUBMIT**

The input's **Diagnostic** page for contact sets 'E' & 'F' will tell you if a contact set is Open or Closed

Water Meters used for feed control and Contact sets used for interlocking or control cannot be **Digital Type** switched.

The DCM200 has a single assignable digital input 'F'. Input 'E' Flowswitch cannot be reconfigured.

Sidebar:

Volume & Contact Set Input:

Controller input 'F' may be set to be a water meter or a contact set. The DCM200 is defaulted to contact at input 'F'.

5.2 Contact Set Alarms

Select the link on the target sensor and pull down the top, right menu, selecting **Alarms**.

ON Time Alarm in this **Flowswitch** example is the time the water feature operates in every 24 hours

Filter Run :F Alarms

ON Time Alarm 1000.0 minutes

No Flow Alarm 30.0 minutes

Alarm Relay Yes No

RESET SUBMIT

The **No Flow Alarm** in this example would alarm **30.0 minutes** after a loss of flow.

This is not a realistic example, since most sites would be concerned about loss or flow or flow being no too long, but not both

Any event or condition that can be indicated by a contact set, can be alarmed... high or low pressure, level or temperature on filters, ROs tanks, sumps...

Sidebar:

Default alarm times are set so that contact sets won't alarm unless user configured. It's unlikely that you would set both alarms on any one contact set but the ability to alarm both ON & OFF states gives you a lot of application flexibility.

ON Time Alarm:

If the pressure switch on your RO or sidestream filter shows high pressure for more than 30 minutes, you'd like to log an alarm.

If the flowswitch on a water pad which typically is ON between 6:00AM & 8:00PM

Is ON for more than 15 hours, either the flowswitch has faulted OR pad operation has changed.

No Flow Alarm:

If you had an aquatics system that runs 24/7 you'd want to alarm on a flowswitch that has no flow since it indicates that the sensor or injection line is blocked or inadvertently valved OFF.

5.3 Contact Set Controls

Select the pump, valve or solenoid you wish to control using a contact set or flowswitch and pull down the top, right menu, selecting **Configure** and set **Control by** to either contact set **'E'** or **'F'**.

When the controlling contact set is **ON**, the relay is **ON** .

In this example when input **'F'** is **ON**, relay **3** is **ON**.

If the contact set is controlling a variable frequency pump output, **4** or **5**, the pump feeds at 100% when the contact set is **ON**.



Set **Control by** to a contact set input. In this example we've selected input **'F'** to control relay **3**

The **Diagnostic** display shows the total time the output has been **ON** today & **ON** time of the controlling contact set this **actuation** .

If **Invert sense** is set to **Yes**, the controlling contact set in this example will be **ON** when the contact set is **OPEN**.

This setting allows you to turn the relay or pump **ON** when the contact set is **OPEN** or **CLOSED**.



Contact set controls are simple. There are no setpoints or special controls. Relays can be renamed. Frequency controls include pump type selection.

6.0 Frequency Controlled Pumps

6.1 Selecting a Pump

Select the link on the target pump and pull down the top, right menu, selecting **Setup**.

Pull down the **Pump Type** selector and select one of the 6 built-in pumps

The controller sets the **Rated SPM** and **mL/stroke** for a 40 psi injection head.

Pull down the **Pump Type** selector and select **Other** if your pump isn't one of the 6 built-in pumps

Set the **Rated SPM** and **mL/stroke** for your pump & **SUBMIT**

Built-in Pump types

Pump Type	ml/stroke	Liters/hr	Gallons/hr
1601	0.13	1.404	0.371
1602	0.24	2.592	0.685
1001	0.10	1.080	0.285
1002	0.24	2.592	0.685
0704	0.42	4.536	1.198
0705	0.50	5.400	1.427

Sidebar:

Pump Type:

If you select one of the 6 built-in ProMinent pumps, the feed volume mL/stroke and maximum frequency are set correctly and automatically assuming a nominal 40 psi feed line pressure. If you select '**Other**' as a pump type, you'll need to provide both the nominal mL/stroke and maximum stroke rate. Pumps with maximum stroke rates from 50 SPM to 400 SPM are supported by the controller.

Relay Controls:

Frequency controlled pumps may be switched ON/OFF by one of the controller's relays '1' to '3'. Disconnect and remove the frequency control cable and plug the pump power cord into the controller.

This is not the best use for a frequency controlled pump but if you need more than the controller's two frequency controls, it's an option.

6.2 Adjusting mL/stroke

Select the link on the target frequency controlled pump and pull down the top, right menu, selecting **Setup**.

The screenshot shows a configuration page for a pump. At the top, there is a dropdown menu labeled 'Flocculant :4' with a 'Setup' option selected. Below this are several fields: 'Status' set to 'Feed @ MIN!', 'Description' set to 'Flocculant', 'Disable output' with radio buttons for 'Yes' and 'No' (the 'No' option is selected), 'Pump Type' set to 'ProMinent 0704', and 'ml/stroke' set to '1.41'. At the bottom, there are 'RESET' and 'SUBMIT' buttons. Four callout boxes with arrows point to specific elements: 1. A box on the left points to the 'Setup' dropdown, stating: 'Select the **Setup** option to modify a frequency controlled pump's **ml/stroke**'. 2. A box on the right points to the 'Pump Type' dropdown, stating: 'Verify that you are using a **0704** type pump cable to frequency control **'4'**'. 3. A box on the left points to the 'ml/stroke' input field, stating: 'The default ml/stroke for each pump assumes a 40psi injection head.' 4. A box on the right points to the 'SUBMIT' button, stating: 'If you require more **ml/stroke** accuracy, modify the default setting & **SUBMIT**'.

Sidebar:

Product Concentration Error Sources

ppm level errors can be caused by: Product formulation inaccuracy, loss of active product due to extended storage, settling-separation or temperature, reaction of the product with other fed chemicals, errors in the ppm test method or its reagent, inaccuracy or incorrect scaling of the make-up or feedwater meter **and** errors in the mL/stroke setting of the feed pump.

Calibrating Stroke Volume:

When your chemical ppm tests don't match the feed volume, then consider calibrating the pump ml/stroke.

If you find you're correcting the mL/stroke value frequently, then its very likely that the error source is not the mL/stroke setting since the feed head hasn't changed.

Calibration Limits:

The controller limits the range of **mL/stroke** calibration for the built-in ProMinent pumps.

7.0 System Settings

7.1 Site Configuration

Select the system or home link. Pull down the top, right menu, selecting **SYS Configure**.

The screenshot shows the 'SYS Configure' page with the following settings and callouts:

- Metric Units:** Displays temperatures in 'C'centigrade and volume in 'L'itres.
- Site name:** Location-Name
- Controller name:** System-Name
- Metric Units:** Radio buttons for Yes and No.
- Keypad Password:** Radio buttons for Yes and No.
- Flow ON delay:** 45 seconds
- Flowswitches:** E
- Wash END delay:** 30 seconds
- Alarm on STOPs:** Radio buttons for Yes and No.
- Log Period:** 5 minutes
- System restart:** Radio buttons for Yes and No.
- Erase Log:** Radio buttons for Yes and No.
- Factory Reset:** Radio buttons for Yes and No.
- Buttons:** RESET and SUBMIT

Callout boxes provide additional information:

- Editing Site name and Controller name fields uniquely identifies the DCM200.
- Flow ON delay allows time for a representative sample of water to reach the sensors.
- Wash END delay holds sensor values past the end of a wash event to allow rinsing.
- Flowswitches tell the controller which digital inputs initiate a Flow delay.
- Selecting Yes for Keypad Password requires a password to modify the controller configuration.
- Select Yes for Alarm on STOPs to alarm on all pumps or solenoids user set to STOP.
- Select Yes for Erase Log to remove all logged data records.
- Select Yes for Factory Reset to restore all inputs and outputs to factory defaults.
- Remote AC power OFF & ON. Clears alarms, resets diagnostics & restarts Flow ON delay.
- Sensor values & state, Contact set ON times, Meter volumes, Pump ON time or pumped volume and output states are logged at this frequency.

Sidebar:

Commissioning: *Select U.S. or Metric Units when you commission or install.*

Data logging uses the Units setting for the units on logged volumes and temperatures. Changing units does not change data already logged.

Metric Inputs:

If you switch back to U.S. units, temperatures are converted to Fahrenheit using the default offset & gain, removing the effect of any user calibration.

Metric Outputs:

Pumped volumes are reported in mL & Liters.

Event feed volumes are in Liters and not Gallons.

The controller uses the units of the controlling sensor for setpoints.

If a water meter was set to measure Gallons prior to switching the **Metric Units**, it will still display Gallons on the meter and wherever it's used for control.

7.2 Passwords

Select the system or home link. Pull down the top, right menu, selecting **Passwords**.

The screenshot shows two side-by-side forms for password management. The left form is for 'Login @ configure' and the right for 'Login @ Admin'. Both forms have a 'System:' dropdown set to 'Passwords'. The left form has fields for 'User ID' (Configure5), 'New Password' (5), and 'Confirm Password' (5). The right form has fields for 'New Password' (AAAA), 'Confirm Password' (AAAA), 'Select User' (O:Operator1), and 'Access Level' (Operate). Both forms have 'RESET' and 'SUBMIT' buttons. Callouts provide instructions: 'Displays your access level, configure, operate or Admin' points to the System dropdown; 'Modify your User ID & SUBMIT' points to the User ID field; 'Modify both New & Confirm Passwords & SUBMIT' points to the password fields; 'You can only view & modify the User ID & Password of the present current login.' points to the User ID field; 'The Admin login user can set the access level for other userids' points to the Access Level dropdown; and 'Select the User ID, select the Access Level and then SUBMIT to change a user's access.' points to the Select User and Access Level dropdowns.

Default Passwords:

Operator1 = 1 Operator2 = 2 Operator3 = 3 Operator4 = 4.

Configure5 = 5 Configure6 = 6 Configure7 = 7 Administrator = AAAA

There are 3 password access levels, Operate, Configure and Administrator.

The eight User IDs are used in the controller's keypress log.

Login Page: Operators can view all controller pages.

When you modify a page & **SUBMIT** the Status message will display **Login @ configure** OR **Login @ Admin** is a higher access level is required.

Go to the home page or select the system link and **Logout & SUBMIT**, then login at the required access level.

Modify Passwords:

If the controller is accessible on the site LAN, you should modify all 8 passwords.

Passwords are limited to 8 letters and numbers. Keypad passwords are numbers only.

Any space in a password ends the password on both editing and **Login** password entry

Two users cannot share the same password because only the password is used to identify keypad users. The controller displays **Password Fail** on a duplicate password.

Reset Passwords: If you forget your password, a **Reset Password**, available from ProMinent & specific to your controller's serial number, setting all password to default.

7.3 Time & Date

Select the system or home link. Pull down the top, right menu, selecting **Time & Date**.

The screenshot shows a web interface for configuring the system's time and date. At the top, there is a dropdown menu labeled 'System:' with 'Time & Date' selected. Below this are four input fields: 'Date DD/MM/YY' with the value '25/12/11', 'Time HH MM SS' with the value '12:18:45', and 'Weekday' with a dropdown menu showing 'Sun'. At the bottom of the form are two buttons: 'RESET' and 'SUBMIT'. Three callout boxes with arrows point to specific elements: the first points to the date field with the text 'Note the DD/MM/YY date digit sequence'; the second points to the time field with the text 'The controller uses a 24 hour clock, 18:00:00 is 6PM.'; and the third points to the 'SUBMIT' button with the text 'Modify the date and/or time and/or day of week & SUBMIT'.

Sidebar:

Time & Date:

The controller uses a 24 hour clock where 14:30 is 2:30 PM.

Controller Response to a new Time&Date:

When you change the time & date, the controller:

1. Turns all outputs OFF, resets all control timing and restarts the logging period on each I/O
2. Zeroes time and volume owed which ends all timed & volume events.
3. Does a midnight reset which will may set volume-meter Low Alarms.
4. Sets the events Day 1 to the most recent Sunday.

Example: If you are at Day 19, Thursday of week 3, on a 28 day event cycle.

After a **Time&Date** change you are now at, Day 5, Thursday of week 1

7.4 Keypress-Alarm Log

Select the system or home link. Pull down the top, right menu, selecting **Activity Log**.

The screenshot shows a web interface with a dropdown menu set to 'Activity Log'. Below the menu is a table of activity logs. Three callout boxes with arrows point to specific parts of the table:

- The top callout points to the entire table, stating: "The last 25 user activities, 2 lines for each activity".
- The middle callout points to the first line of an entry, stating: "1st line displays the name of the sensor, meter or pump and the activity".
- The bottom callout points to the second line of an entry, stating: "2nd line displays the user id and the time and date of activity".

System:	Activity Log
pH Sensor	Calibrated
admin	20:26 26/12/11
Filter Run	Reconfigured
admin	20:22 26/12/11
Oxidant Pump	Control changed
admin	20:21 26/12/11
Temperature	Reconfigured
admin	20:21 26/12/11
ORP Sensor	Calibrated
admin	20:21 26/12/11
System:	Cleared Alarms
admin	20:20 26/12/11
Flowswitch	Adjusted Alarm
admin	20:19 26/12/11
Interposing	Control changed
admin	20:18 26/12/11
Interposing	

Sidebar:

Keypress-Alarm Log:

The log contains the last 25 activities that effect the operation of the controller. Most recent activities first. Both keypad and browser user activities are logged.

User IDs:

Keypad Password ON: Logs the User IDs listed in **Section 7.1 Default Passwords**.

Keypad Password OFF: Logs all User IDs as **Keypad**.

Browser user IDs are always logged because login is required to browse.

Actions taken by the controller, like Power OFF/ON, use the **System** user ID.

7.5 Enabling I/O, Switching Icons

The screenshot shows a web interface for configuring I/O. At the top, there is a 'System:' dropdown menu currently set to 'View-Config'. Below this are three sections: 'Switch icon', 'with icon', and 'Enable I/O'. Each section contains a list of I/O items with a dropdown arrow. The 'Enable I/O' section has 'F Filter Run' selected. At the bottom are 'RESET' and 'SUBMIT' buttons. Three callout boxes provide instructions: one points to the 'System:' dropdown, another points to the 'Enable I/O' section, and a third points to the 'SUBMIT' button.

Any enabled I/O may be switched with any other enabled I/O. Select one I/O from each selector & **SUBMIT**

Select **View-Config** from the **System** link pull down

Enable I/O displays all currently disabled I/O. Select the I/O you wish to enable & **SUBMIT**

Disabling I/O:

Select Input link and then the **Configure** top menu option, then **Disable & SUBMIT**. Inputs **A**:pH, **B**:ORP, **C**:Temperature & **E**:Flowswitch cannot be disabled. Sensor inputs **D** and **F** may be disabled if not used for control.

Select Output link then the **Setup** top menu option, then **Disable & SUBMIT**.

I/O in use by the controller for control or sensor compensation cannot be disabled. Disabled I/O is removed from the view. Disabled I/O is not logged and does not appear in the selections used to compensate and configure other enabled I/O

Enabling Inputs:

Meter-Volume and Contact Set Input '**F**' is enabled and configured as either a water-volume meter OR flowswitch, contact sets, level-pressure switches ...

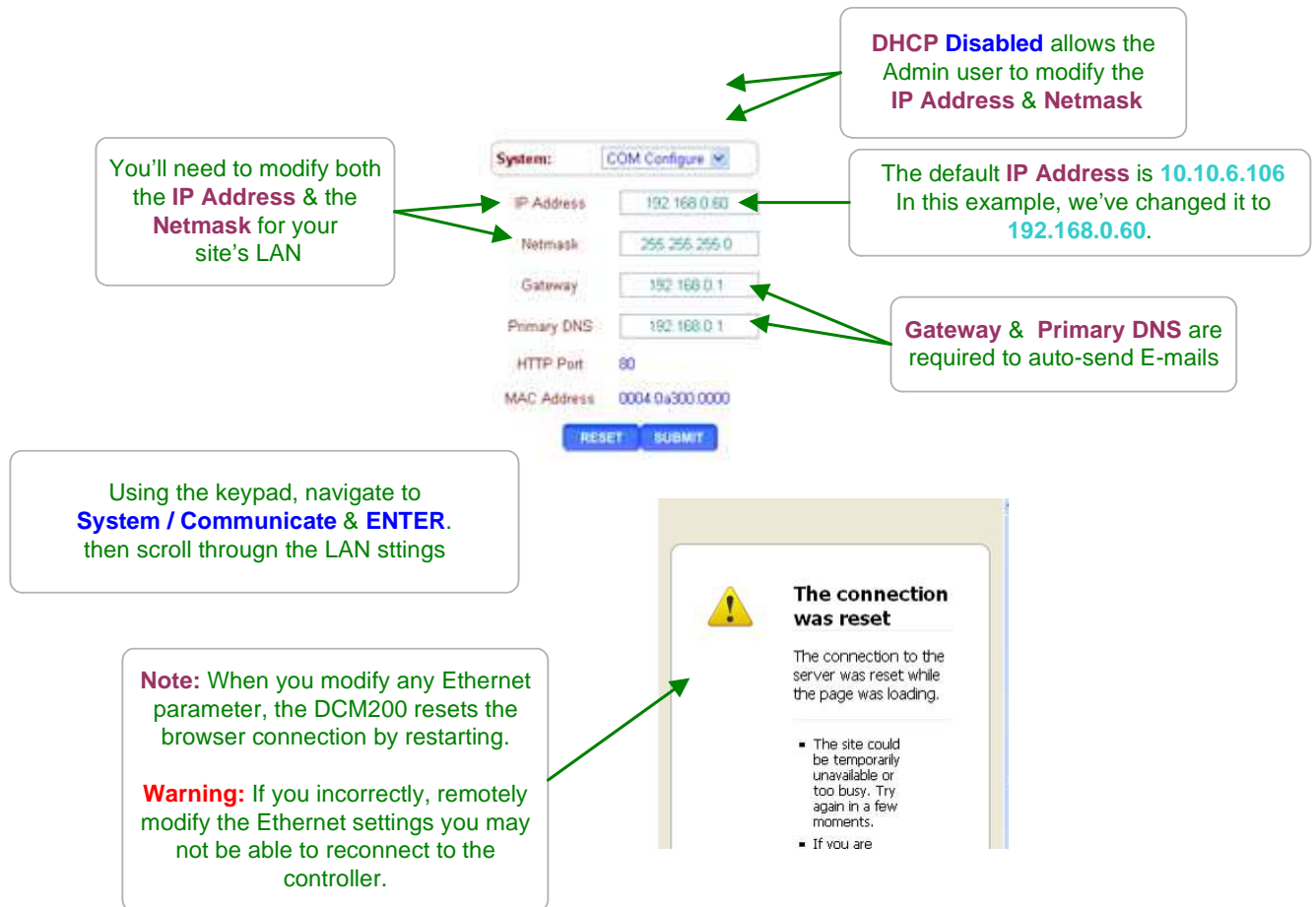
Enabling Outputs:

Outputs **1** to **3** are AC line powered switching relays that are enabled to power pumps, solenoids or motorized valves.

Outputs **4** & **5** are frequency controlled outputs or dry contact digital outputs (DO) that are enabled to proportionally control pumps or enable external equipment, send alarms

7.6 Communications

Select the system or home link. Pull down the top, right menu, selecting **COM Configure**.



The screenshot shows the 'COM Configure' web interface. The 'System' dropdown is set to 'COM Configure'. The form contains the following fields:

- IP Address: 192.168.0.60
- Netmask: 255.255.255.0
- Gateway: 192.168.0.1
- Primary DNS: 192.168.0.1
- HTTP Port: 80
- MAC Address: 0004 0a300 0000

Buttons for 'RESET' and 'SUBMIT' are at the bottom of the form.

Callouts and notes:

- DHCP Disabled** allows the Admin user to modify the **IP Address & Netmask**
- You'll need to modify both the **IP Address & the Netmask** for your site's LAN
- The default **IP Address** is **10.10.6.106**. In this example, we've changed it to **192.168.0.60**.
- Gateway & Primary DNS** are required to auto-send E-mails
- Using the keypad, navigate to **System / Communicate & ENTER**, then scroll through the LAN strings
- Note:** When you modify any Ethernet parameter, the DCM200 resets the browser connection by restarting.
- Warning:** If you incorrectly, remotely modify the Ethernet settings you may not be able to reconnect to the controller.

A warning message is displayed: **The connection was reset**. The message states: "The connection to the server was reset while the page was loading." It includes a list of potential causes: "The site could be temporarily unavailable or too busy. Try again in a few moments." and "If you are".

Sidebar:

Warning: Do not connect the DCM200 Ethernet connection into a site LAN without approval from site IT staff .

Browser passwords are the same as the default keypad passwords listed in the manual Section **7.2 Passwords**.

You'll need to configure your notebook to connect.

Refer to Section 9 for Ethernet TCP-IP setup and the following page to get your site's LAN settings.

7.6 Communications cont.

Windows operating systems have a simple way to find the Ethernet setup parameters:

Locate 'Run' (location differs with Windows version) and open the "cmd" command window

You can find **Netmask, Gateway & Primary DNS** from any PC or notebook; hardwired or wireless connected to the site LAN

Type 'ipconfig/all' and ENTER

In this example
Netmask: Subnet Mask = 255.255.255.0
Gateway: Default Gateway = 192.168.0.1
Primary DNS: DNS Servers = 192.168.0.1

```
C:\windows\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600.5512]
(C) Copyright 1985-2001 Microsoft Corporation
C:\Documents and Settings\Owner>

C:\windows\system32\cmd.exe
C:\Documents and Settings\Owner> ipconfig/all

Windows IP Configuration

Host Name . . . . . : Development
Primary Dns Suffix . . . . . :
Node Type . . . . . : Mixed
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Local Area Connection 2:

Connection-specific DNS Suffix . :
Description . . . . . : 3Com 9000-Based PCI Fast Ethernet Adapter #2
Physical Address. . . . . : 08-00-18-6F-75-45
Dhcp Enabled. . . . . : Yes
Autconfiguration Enabled . . . . : Yes
IP Address. . . . . : 192.168.0.103
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.0.1
DHCP Server . . . . . : 192.168.0.1
DNS Servers . . . . . : 192.168.0.1
                          192.168.1.1
Lease Obtained. . . . . : Monday, December 26, 2011 6:40:18 PM
Lease Expires . . . . . : Tuesday, December 27, 2011 6:40:18 PM

Ethernet adapter Local Area Connection 4:

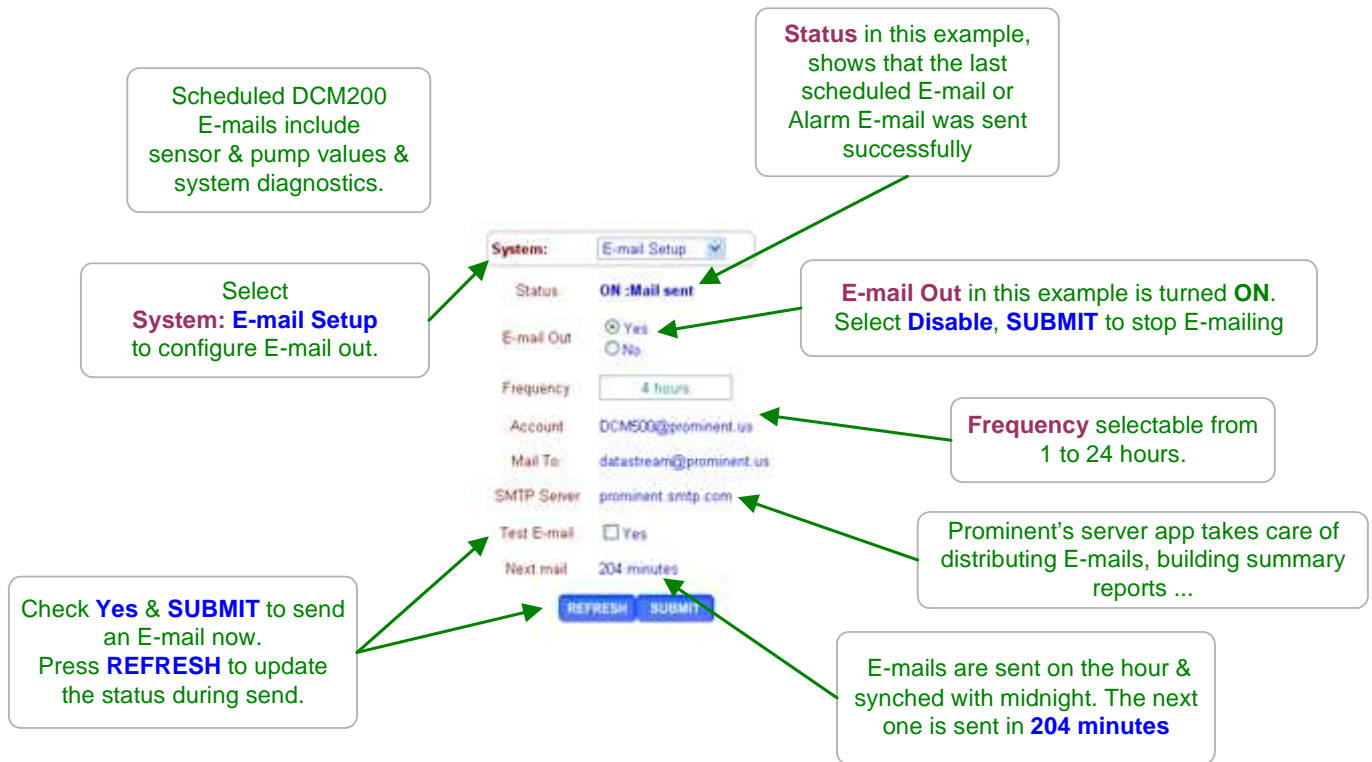
Media State . . . . . : Media disconnected
Description . . . . . : Intel(R) Virtual Ethernet Adapter
Physical Address. . . . . : 00-00-00-00-00-00

C:\Documents and Settings\Owner>
```

You can use either the Keypad-LCD interface or the browser to setup the controller's IP Address, Netmask, Gateway & Primary DNS.

7.7 E-Mail Out

DCM200's connected to the site LAN can E-mail alarms & system operating parameters thru Prominent's app which redistributes and re-packages for end users.



Status: messages

OFF: = E-mail out Disabled by user
ON : = E-mails out Enabled by user
Testing: = User selects Test E-mail

:Mail Sent = last test, alarm or scheduled E-mail successfully sent.

:Busy, wait! = file server temporarily unavailable. In use by LAN or USB log uploader.

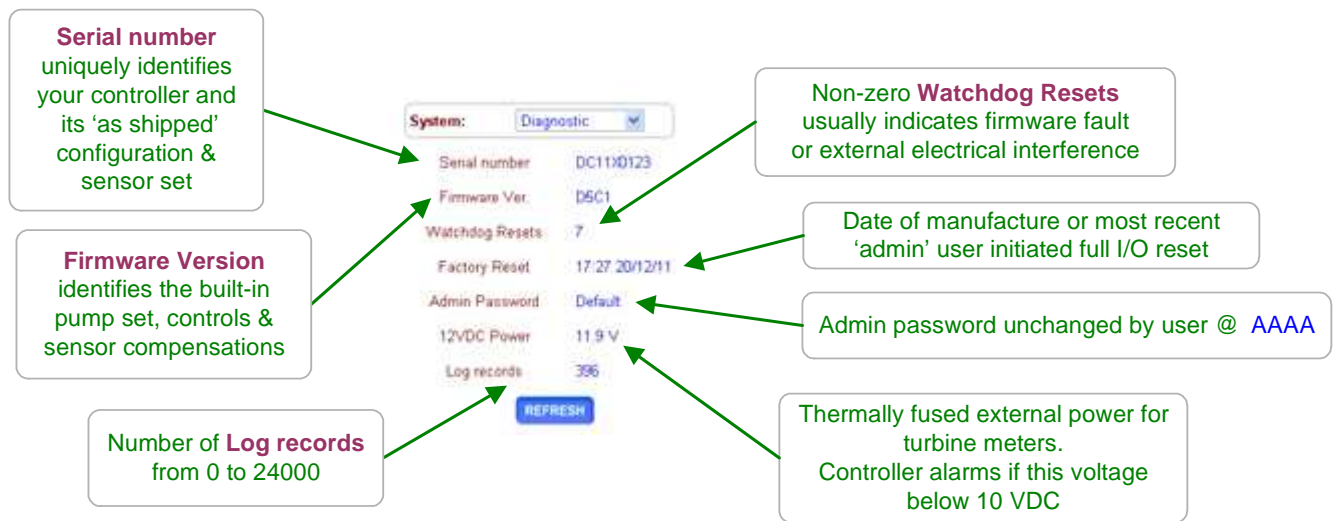
:none sent = Power-on state, prior to 1st E-mail.

DCM200 Mail Server Messages

:Can't Send = E-mails blocked external to the DCM200
:fails, no DNS = cannot connect to SMTP server, check Primary DNS & Gateway settings
:authorize fails = password or user name incorrect, report fault to ProMinent

7.8 System Diagnostic

Select the link below the view Day & Date to get to the log in page then select **Diagnostic** at the top on the right side page.



Sidebar:

If the **System Diagnostic** Admin Password is not Default, then you will not be able to use the default 'AAAA' administrator password to log onto the controller.

Watchdog Resets should always be zero.

If you have discharged static onto one of the controller circuit boards or one of the meter, sensor or contact set cables is in the same conduit as AC power switching transients, you may see the Watchdog Resets count up as the controller times-out & recovers.

Touch the grounded controller internal aluminum frame before handling controller terminals. Static discharge is not typically a problem on-site since few controllers are installed in carpeted areas.

Correct wiring to remove instrument cabling from AC power conduits.

9.0 Notebook & PC Ethernet Set-up

9.1 Ethernet Overview

If you are going to occasionally browse the DCM200 using an Ethernet crossover cable, leave the controller IP address @ the default 10.10.6.106 & setup a connection to this IP in your notebook.

9.2 View-Modify the DCM200 IP Address

If you the DCM200 is on the site LAN, you can use the keypad to view/modify the DCM200 IP parameters.

To view or adjust the controller Ethernet setting press **ENTER** and **DOWN** to **Communicate** at the power up or top of menu display.

Key **ENTER** @ **Communicate**

Displays the current LAN **IP address**.
In this example, it's the factory default.

Key **ENTER** to modify.

Netmask is usually this value for most sites.
Key **ENTER** to modify.

Gateway is frequently the '1' address on the subnet
Key **ENTER** to modify.

Primary DNS is frequently provided @ the same address as the **Gateway**
Key **ENTER** to modify.

The DCM200 HTTP sever is fixed at Port 80.

The **MAC address** is six 2 digit hexadecimal numbers, separated by colons into 3 groups of 4 to fit the LCD screen.
In this example, the **MAC address** is **00 90 C2 00 00 00**

Communicate

Pool	742.5mV	←↕
	7.65pH	80.3F

← then ↓

Communicate	↕
Configure	↓

←

IP Address	↕
10.10.6.106	↕

↓ ↑ or ←

Netmask	↕
255.255.255.0	↕

↓ ↑ or ←

Gateway	↕
10.10.6.1	↕

↓ ↑ or ←

Primary DNS	↕
10.10.6.1	↕

↓ ↑ or ←

HTTP Port	↕
80	↕

↓ ↑

MAC Address	↕
0004.0a300.0000	↕

9.3 Browser Connect

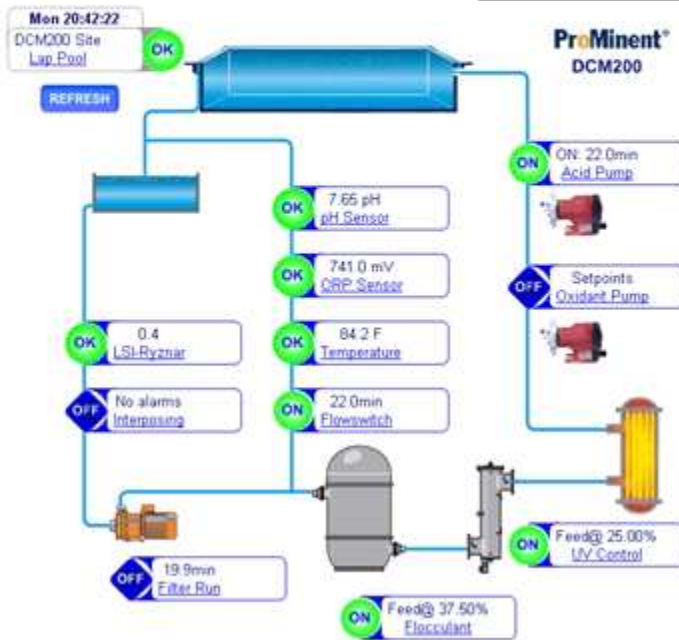
If the DCM200 is on the site's LAN, you're ready to Ethernet connect & browse.

If you are not on the site LAN & are going to use a Crossover cable, see one of the following sections for your operating system (Windows 7, Vista, or XP) TCP-IP connection set-up.

Connect a 'cross-over' cable between you notebook's Ethernet jack & the controllers Ethernet jack.

Start you browser, Internet Explorer or Mozilla's Firefox.
If you have wireless internet access you'll connect to your ISP.

Then key the controller's IP address into the browser's address line.
192.168.0.60 in this example. Factory default IP is **10.10.6.106**.
In either case, your browser will convert to **http://[IP Address]**



The screenshot shows the login form for the ProMinent DCM200 web interface. It includes the following fields and buttons:

- System: (text input)
- Date: 26/12/11, SN: DC11X0123
- Status: Waiting for Login
- Select User: Public (dropdown menu)
- Password: (password input field with three asterisks)
- Alarms: none
- Buttons: RESET, SUBMIT

You'll see a real time view of your DCM200 updated automatically every 2 seconds.

To do anything else, you'll have to **Login** to the controller.

Five incorrect **Login** attempts will lock all users out until a power OFF/ON or 7:00 AM the following morning

9.4 Windows 7 Cross-Over Set-up

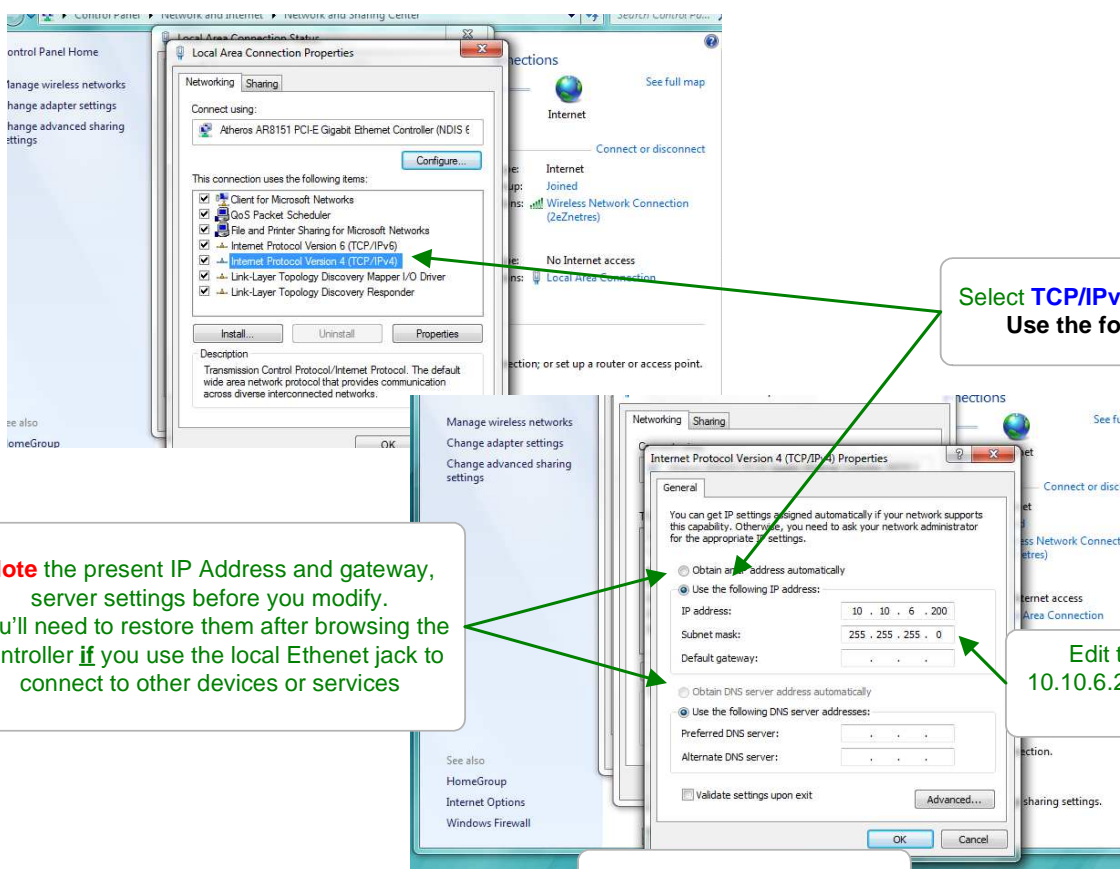
Select start, & Control Panel

Select View network... then Local Area Connection

Select Properties

The image consists of four overlapping screenshots from Windows 7, illustrating the steps to access network settings. The first screenshot shows the Start menu with 'Control Panel' selected. The second screenshot shows the Control Panel window with 'Network and Internet' highlighted. The third screenshot shows the Network and Sharing Center with 'Local Area Connection' selected. The fourth screenshot shows the Local Area Connection Status window with 'Properties' selected.

9.4 Windows 7 Cross-Over Set-up cont.



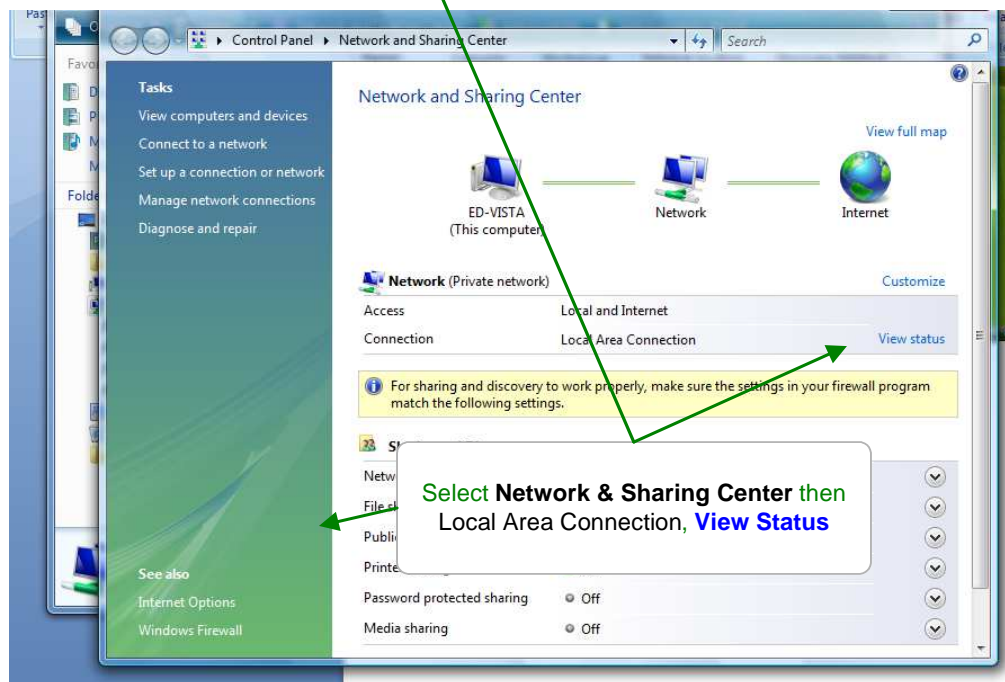
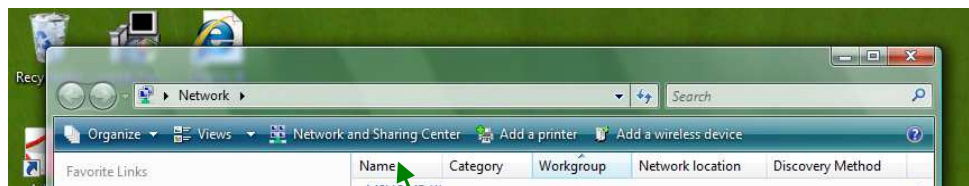
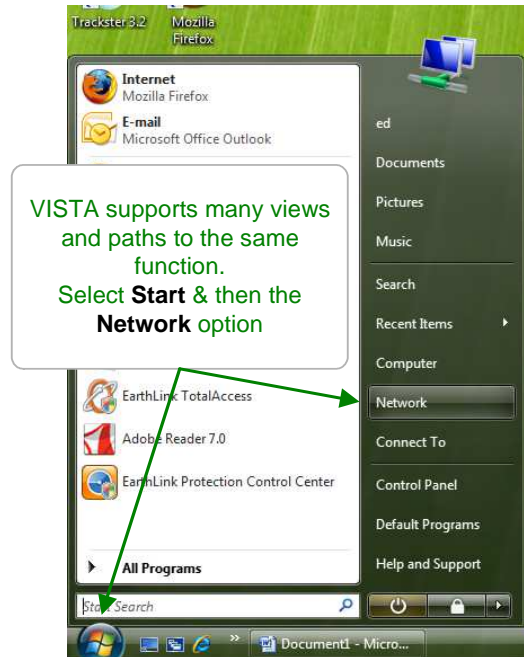
Select **TCP/IPv4** then select
Use the following...

Note the present IP Address and gateway,
server settings before you modify.
You'll need to restore them after browsing the
controller **if** you use the local Ethernet jack to
connect to other devices or services

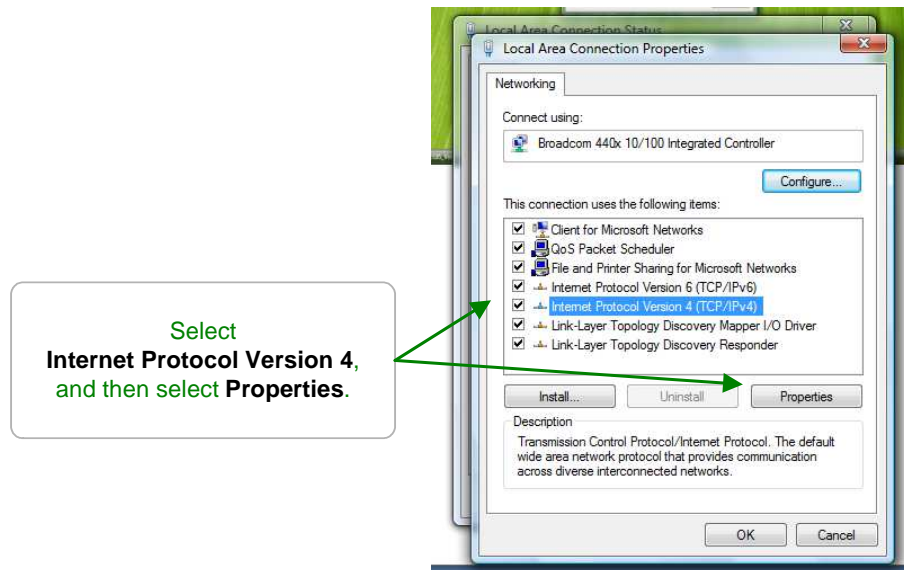
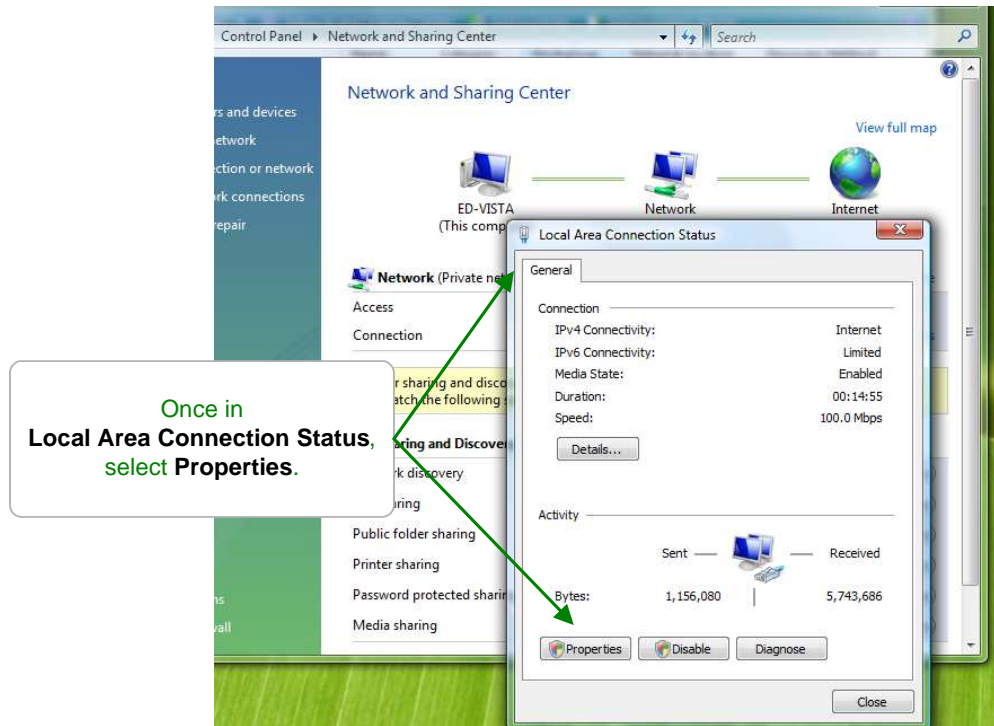
Edit the IP address,
10.10.6.200 in this example
& **OK**

We've put our notebook PC
on the same LAN as the
DCM500. Now we can
connect using an Ethernet
cross-over cable

9.5 Windows VISTA Cross-Over Set-up



9.5 Windows VISTA Cross-Over Set-up cont.



9.5 Windows VISTA Cross-Over Set-up cont.

The image shows a screenshot of the Windows Vista network configuration interface. The 'Internet Protocol Version 4 (TCP/IPv4) Properties' dialog box is open, with the 'Alternate Configuration' tab selected. The 'User configured' radio button is chosen. The IP address is set to 10.10.6.29 and the Subnet mask is 255.255.255.0. The other fields (Default gateway, DNS servers, WINS servers) are empty. The 'OK' button is highlighted.

Select Alternate Configuration and User Configured.

Set the IP address so that only the last 2 digits differ from the controller's IP address.

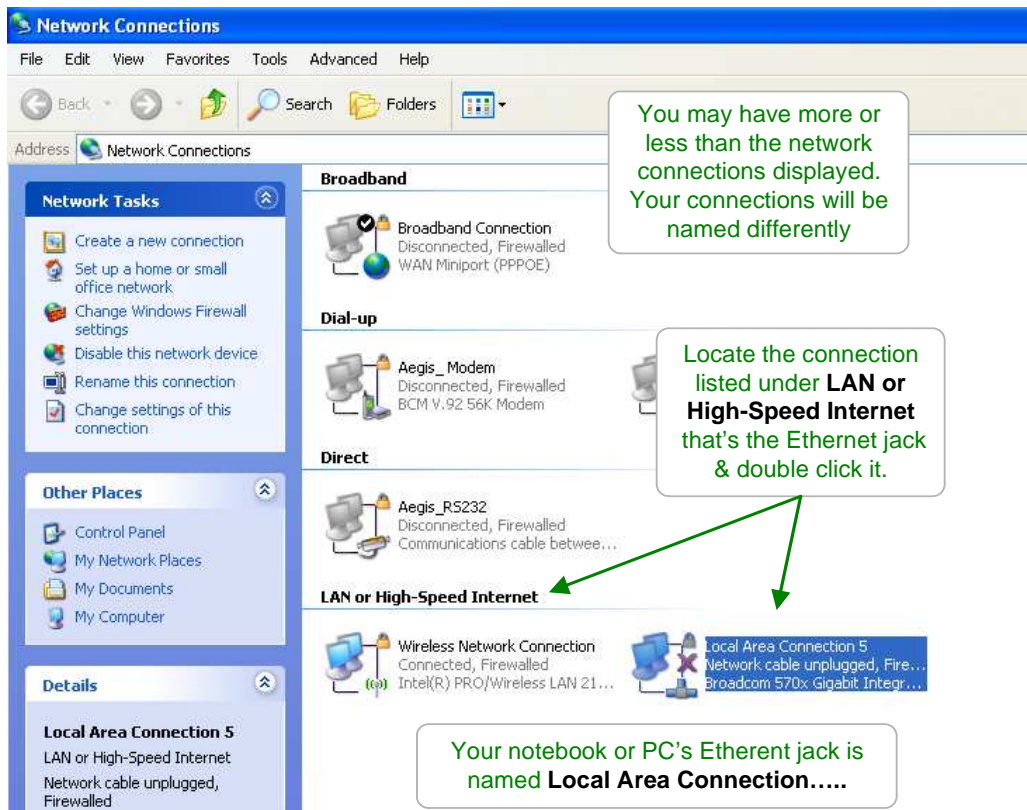
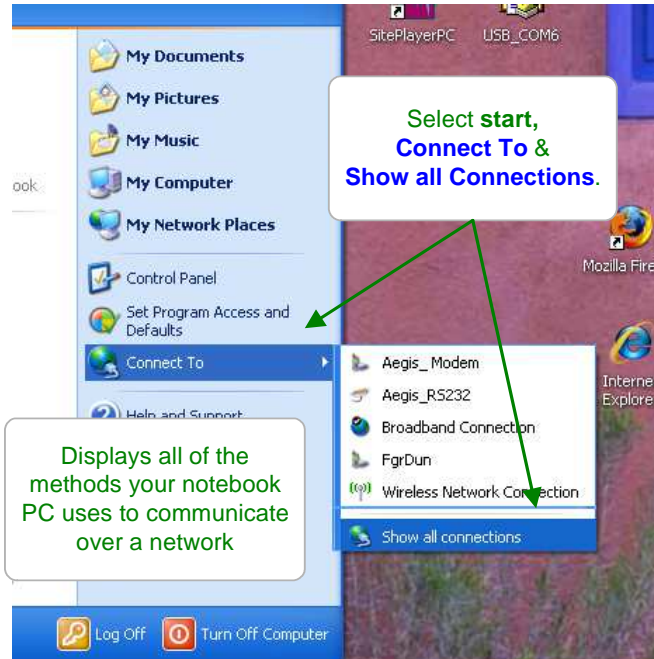
This Subnet mask will match 99.9% of controllers. Don't modify it.

Leave all four of these fields blank.

Select OK.

If Alternate Configuration is not an option, note the present IP Address and gateway, server settings before you modify. You'll need to restore them after browsing the controller if you use the local Ethernet jack to connect to other devices or services

9.6 Windows XP Cross-Over Set-up



9.6 Windows XP Cross-Over Set-up cont.

