

DCM 200, DCM200cl Keypad-LCD Display User Manual

DCM200 controllers use ORP to measure & control oxidant.

DCM200cl controllers use a CLB chlorine sensor to measure & control chlorine.

CONTENTS

Navigation

1. Day-to-Day Operation

- 1.1 Main Menu: Sensors & Pumps
- 1.2 Checking & Clearing Alarms
- 1.3 View & Adjust Setpoint
- 1.4 Auto-Manual-OFF Selection

2. Chemical Feed Controls

- 2.1 Limiting Feed and Alarms
- 2.2 Feed Diagnostics
- 2.3 Selecting a Pump Type

3. Sensors:

- 3.1 Calibrate
- 3.2 Chlorine Calibrate
- 3.3 LSI-Ryznar Manual Entry
- 3.4 Sensor Alarms
- 3.5 Sensor Diagnostics
- 3.6 Contact Set Alarms

4. System Settings

- 4.1 Passwords
- 4.2 Time & Date
- 4.3 Keypress-Alarm Log
- 4.4 Enabling Inputs & Outputs
- 4.5 Metric & U.S. Units
- 4.6 Configuration
- 4.7 Communications
- 4.8 System Diagnostic

5. Data Logging

- 5.1 Overview
- 5.2 USB Flash Drive Log Upload

KEYPAD

If you get lost in a sub-menu, press **EXIT** & you'll stop what you're doing & move back to the main menu

An **ENTER** symbol on the display signals that there are sub-menus available.

Press & Hold **RIGHT** when viewing a pump to switch between Auto-OFF-Manual. See section **1.4**

UP & **DOWN** to view options or to EDIT numbers



Move **RIGHT** to select next field when EDITing



ENTER to select an option & to execute EDITing



EXIT to escape option, info display or EDITing

**MAIN MENU**

The sensors and controls in the main menu vary with your controller part number and sensors and pumps that you enable or disable.

The main menu auto-groups sensors with the pumps that they control, so you will find the menu order changing when you modify a pH sensor from controlling an ON/OFF pump connected to Relay #1 to a frequency controlled pump connected to output #5.

Where are Sensors, Solenoids, Valves & Pumps Connected

You may modify the names of sensors, meters, flowswitches and pumps but the controller tags each input with a letter **A** to **F** and each output with a number **1** to **5** representing where each is wired so you can locate each I/O within the controller enclosure.

Inputs **A**, to **F** have wiring terminals on the lower left side of the controller board.

A is the pH sensor, labeled **+pH-** (where '+' is the center conductor & '-' is the shield)

B in DCM200 controllers is the ORP, labeled **+ORP-**

B in DCM200cl is a chlorine sensor, connected to the bottom, left plug-in CLB driver card.

C is a temperature sensor labeled **Temp RED** & **BLK** & used for the 10mV/C sensor.

D is a Langelier-Ryznar calculated input & does not require wiring terminals

E is sensor header flowswitch, labeled **FS** & ground.

F is an assignable contact set, defaulted to monitoring the recirculation pump & labeled **RP** & ground. The adjacent **+12** terminal is used if input **F** is used to power a paddlewheel or turbine water meter.

Terminals for relay outputs **1** to **3** are located on the right hand side of the circuit board.

They are ON/OFF power relays that switch 120 or 230VAC to pumps & solenoids.

The AC load connections are labeled, **P1**, **P2** & **R3** for outputs **1** to **3** with state indicated by **green** LEDs.

Terminals for outputs **4** & **5** are located to the right of the Ethernet jack & are labeled **A4B** and **A5B**. Outputs **4** & **5** are electronic switches configurable as frequency controlled pumps or dry contact, DO outputs and thermally fused to 24VDC & 250mA with state indicated by adjacent **red** LEDs

FREQUENCY CONTROLLED PUMPS

DCM200 controllers combine the 3 ON/OFF controls with 2 frequency controls.

Depending on your feed application, frequency controlled pumps may deliver more accurate feed, easier to understand setpoints and fed volume tracking, without increasing pump cost.

Frequency controls may be new to you:

Typical Applications	ON/OFF Controller switches AC power ON/OFF to pump or solenoid.	Frequency Controller-to-pump cable varies stroke rate.
PID controls	Modulates pump ON & OFF time within a user set period	Continuously modifies the pump feed rate.
Acid or Oxidant-Chlorine Feed on Setpoints	Turn ON pump when pH greater than 7.65 & OFF when pH less than 7.55	Increase the acid feed rate as the pH increases. Decrease the oxidant feed rate as the ORP increases.
Proportional Feed	Requires a 4-20mA controlled pump or modulates the pump ON & OFF times	Any sensor can control the feed rate from a 1000:1 turn down to maximum feed rate.
Metered Feeds Priming	Turn-on pump for 45 minutes @ 7:00 every Tuesday	Turn-on pump for 0.535 Gallons @ 7:00 every Tuesday
Typical Base Feed	Turn pump ON for 45 seconds every 5 minutes	Feed @ 4.5mL/minute
User Support	Relies on user to correctly set pump stroke & frequency	Won't let you set feed rate greater than the pump can deliver. Auto-switches from proportional to MAX rate depending on feed mode.

You can select one of 6 of the most popular ProMinent pumps for each frequency control which automatically sets the maximum stroke rate and volume per stroke OR you can define a mL/stroke and maximum frequency for any manufacturer's frequency controlled pump.

Sidebars: Are used to explain typical uses for feed and control functions.
Sidebars are at the bottom of the page detailing the function.
New aquatics users & users new to the DCM200 may find these explanations helpful.

1.0 Day-to-Day Operation

1.1 Main Menu : DCM200

Power ON display

Pool 746.5mV ←↕↗
7.65pH 84.2F



Pool Oxidant ←↕↗
ON: 70.5min

Alternating @ 2 secs

Alarms ←↕↗
LSI-Ryznar



pH Sensor ←↕↗A
7.65 pH



Acid Pump ←↕↗1
ON: 2.03hrs

Press & Hold →

Acid Pump ←↕↗1
←↕↗Auto ↓ OFF ↑ ON



ORP Sensor ←↕↗B
746.5 mV



Oxidant Pump ←↕↗2
OFF:Setpoint

Press & Hold →

Oxidant Pump ←↕↗2
←↕↗Auto ↓ OFF ↑ ON



Temperature ←↕↗C
84.2 F

Displays the current values of controlling sensors.

Press **ENTER** to view or modify system settings

Displays the status of the oxidant feed.

Alternates with **Alarms**.

Active alarms are displayed by the letter, **A..F**, of the input or the number **1..5**, of the output or **'None'**.

Press **ENTER** to reset alarms, to view alarm detail, or to scroll the key-press log,

Present value of the **pH Sensor** connected to sensor input **'A'**. Updates every second.

Press **ENTER** to Calibrate, view-set Alarms & Diagnostics.

pH Sensor 'A' controls the **Acid Pump** connected to relay output **'1'** so they display together.

The pump is **ON** because the pH is greater than the turn ON **Setpoint - Deadband**

Press **ENTER** to view-modify Setpoint, Alarms, Diagnostic...

Press & hold **RIGHT** to select Auto-OFF-Manual selections.

Present value of the **ORP Sensor** connected to sensor input **'B'**. Updates every second.

Press **ENTER** to Calibrate, view-set Alarms & Diagnostics.

ORP Sensor 'B' controls the **Oxidant Pump** connected to relay output **'2'** so they display together.

The pump is **OFF**; the ORP is above the ON setpoint.

Press **ENTER** to view-modify Setpoint, Alarms, Diagnostic...

Press & hold **RIGHT** to select Auto-OFF-Manual selections.

Press **UP** or **DOWN** to scroll through all of the enabled I/O, flowswitches, solenoids, manual LSI-Ryznar entries...

Press **ENTER** to select each I/O's sub-menus.

1.1 Main Menu : DCM200cl

Displays the current values of controlling sensors.

Press **ENTER** to view or modify system settings

Displays the status of the oxidant-chlorine feed.

Alternates with **Alarms**.

Active alarms are displayed by the letter, **A..F**, of the input or the number **1..5**, of the output or **None**.

Press **ENTER** to reset alarms, to view alarm detail, or to scroll the key-press log,

Present value of the **pH Sensor** connected to sensor input **'A'**. Updates every second.

Press **ENTER** to Calibrate, view-set Alarms & Diagnostics.

pH Sensor 'A' controls the **Acid Pump** connected to relay output **'1'** so they display together.

The pump is **ON** because the pH is greater than the turn ON **Setpoint - Deadband**

Press **ENTER** to view-modify Setpoint, Alarms, Diagnostic...

Press & hold **RIGHT** to select Auto-OFF-Manual selections.

Present value of the **ORP Sensor** connected to sensor input **'B'**. Updates every second.

Press **ENTER** to Calibrate, view-set Alarms & Diagnostics.

Chlorine sensor **'B'** controls the **Chlorine Pump** connected to relay output **'2'** so they display together.

The pump is **OFF**; the chlorine ppm is above the ON setpoint. Press **ENTER** to view-modify Setpoints, Alarms, Diagnostic...

Press & hold **RIGHT** to select Auto-OFF-Manual selections.

Press **UP** or **DOWN** to scroll through all of the enabled I/O, flowswitches, solenoids, manual LSI-Ryznar entries...

Press **ENTER** to select each I/O's sub-menus.

Power ON display

Pool 1.41ppm ←↕↕
7.65pH 84.2F



Pool Oxidant ←↕↕
ON: 70.5min

Alternating @ 2 secs

Alarms ←↕↕
LSI-Ryznar



pH Sensor ←↕A
7.61 pH



Acid Pump ←↕1
ON: 1.52hrs

Press & Hold →

Acid Pump ←↕1
←↕Auto ↓OFF ↑ON



Chlorine ←↕B
1.41 ppm



Chlorine Pump ←↕2
OFF:Setpoint

Press & Hold →

Chlorine Pump ←↕2
←↕Auto ↓OFF ↑ON



Temperature ←↕C
84.2 F

1.2 Checking & Clearing Alarms

Key **DOWN** from the power ON display to view alarms.

In this example, the thermal sensor @ input 'C', the LSI-Ryznar calculation @ input 'D' and the acid pump controlled by Relay '1' have alarmed

Press **ENTER** to view or clear **Alarms**

Press **ENTER** to clear **Alarms**, resets all alarmed feeds and controls; zeroing owed time & volume, and resets the delay on alarm for all sensors.

Exit the acknowledge display, press **ENTER** or any key. The adjacent flashing **RED** LED will switch to **BLUE**.

Returns to the main menu **Alarms** display. See **Sidebar** @ bottom of page.

Press **ENTER** then **DOWN** to view active alarms. Alarms display until cleared so you'll know there was a problem although it may have occurred when you were not @ the controller.

Press **ENTER** at **Alarms** and **UP** or **DOWN** to view active alarms.

'C' is a thermal sensor which is below or has been below its low alarm limit.

'1' is a pump, which has exceeded its minutes ON today alarm. Acid pumps are usually set to stay OFF after alarming until the issue that caused the alarm has been corrected.

Pool 746.5mV
7.65pH 84.2F



Alarms
C D 1



Clear Alarms
Alarms



Cleared Alarms
Reset All



Alarms
none

View Alarms

Alarms
C D 1



Alarms
Activity Log



Temperature
Alarmed Low



Acid Pump
Limit, Time/Day

Sidebar: Feed limit and water meter alarms will immediately re-trip unless you adjust the alarm limits. Sensor alarms will re-trip after the user set 'Delay' unless the fault is corrected.

1.3 View & Adjust Setpoint

Key **UP** or **DOWN** to the target Pump or Solenoid then press **ENTER**.

Press **ENTER** @ Setpoint. Setpoint types differ with control type and ON/OFF or frequency.

When the controlling ORP sensor falls below **735mV** the **Oxidant Pump** will **TurnON**. Key **ENTER** to adjust.

Key **RIGHT** to move the underline and then **UP** or **DOWN** to change the number.

Press **ENTER** to change the setpoint or **EXIT** to leave unchanged

Adjust Setpoint

Oxidant Pump ←2
ON 16.2min

↩

Setpoint ←↕
Diagnostic ↕

↩

TurnON setpoint↕
735.0 mV ↕

↩

Editing,↔or Exit
725.0 mV →↕

↓ ↑ then →

TurnON Setpoint↕
725.0 mV ↕

Sidebar:

Deadband You set when the pump turns ON. ‘Deadband’ sets when the pump turns OFF. Deadbands may be adjusted using the browser interface. The default deadband varies with controlling sensor type: 0.05pH, 5mV ORP, 0.2 ppm Chlorine, 0.5F Temperature

‘**Alarms-Limit**’ displays if the new setpoint exceeds the sensor alarm limits. Setpoint is auto-set to the alarm limit.

‘**ON=OFF fault**’ displays if the ON setpoint = OFF setpoint. (user sets deadband = 0.0) Setpoints auto corrected for a 1% deadband.

‘**Out of Range**’ displays if PID control setpoint = 0.0. Setpoint change rejected in both cases.

Frequency outputs 4 and 5 configured as dry contact special controls (Digital Outs) display **No Sensor, No Setpoints**.

ON-OFF Acid pumps without PID control selected typically use setpoints 0.05 pH apart so that the delay between feeding acid and measuring its pH does not cause wide pH swings.

1.3 View & Adjust Setpoints

Key **UP** or **DOWN** to the target Pump then press **ENTER**.

The **Acid Pump**, frequency controlled by output **5** is **ON** and feeding at **65.84%** of maximum SPM (strokes/minute).

This chemical is fed based on the value of a pH sensor.

Key **ENTER** once to **Setpoint** and again to view the **100%ON Setpoint**.

At pH's greater than 7.50 the **'5' Acid Pump** is @ maximum, rated SPM.

Press **ENTER** to adjust.

Key **RIGHT** to move the underline and then **UP** or **DOWN** to change the number.

Press **ENTER** to change the setpoint or **EXIT** to leave unchanged

In this example, we've increased the 100% ON setpoint from 7.50pH to 7.55pH. The 'deadband' (the difference between 100% ON & OFF) remains unchanged

Adjust Setpoint Variable Frequency

Acid Pump ← 5
Feed@ 65.84%



Setpoint ←
Diagnostic ↓



100%ON Setpoint ←
7.50 pH ↓



Editing, ← or Exit
7.55 pH →



then



100%ON Setpoint ←
7.55 pH ↓

Sidebar:

The controller knows the pump type connected to output '5' and its rated maximum SPM. Pumps of varying SPM and ml/stroke rating may be controlled at the same time.

In this example, the red 'A5B' indicating LED on the lower controller board flashes at the pump stroke rate. As the feed rate approaches zero, the time between flashes increases.

Any sensor may be used to frequency control any pump connected to outputs '4' or '5' delivering proportional control without using 4-20mA controlled pumps.

Controls inherit the setpoint units and resolution from the controlling sensor.

'Deadband' may be adjusted using the browser user interface.

1.4 Auto-Manual-Off Selection

Key **UP** or **DOWN** to the target Pump, Valve or Solenoid
 In this example the controlling ORP sensor
 has turned ON the pump.

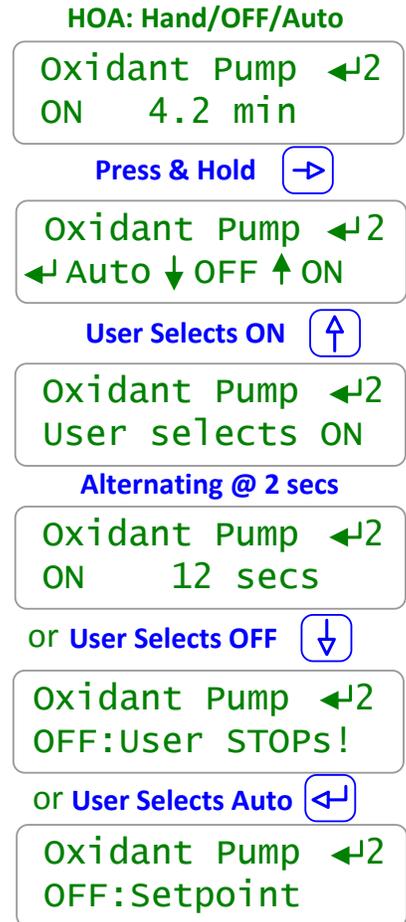
Press & **HOLD RIGHT** to change state.

Manual turns the output controlling the pump
 or solenoid ON for the time set in **Alarms Minutes/Manual**.
 After **Manual** time has elapsed, control returns to **Auto**.

Open flowswitch and RUN-STOP contacts
 will still turn the output OFF.

Selecting **OFF**, turns **OFF** the pump or solenoid
 & it remains **OFF** until **Manual** or **Auto** is selected

An alarm may be set when **OFF** is selected if
Alarm on STOPS is set to **Yes** in the
SYS Configure browser page.



Sidebar:

Manual is an easy way to prime pumps or to slug feed a chemical on system start-up.

Manual overrides sensor control to turn ON a control relay but it does not
 bypass safety interlocks and blocking.

Stop finds most use remotely as a way to disable a faulted feed control
 until corrective maintenance

Hold to Select:

Press & hold the **RIGHT** key and press **UP**, **DOWN** or **ENTER** while holding **RIGHT**,
 which blocks accidental state change selection.

ON/OFF Indicators

If the green or red LED on the controller circuit board is ON, the pump or valve connected to that
 output **1** to **5** should also be ON.

2.0 Chemical Feed Controls

2.1 Limiting Feed & Alarms

To view or modify the **Alarms-Limits** used on a pump or solenoid, key **UP** or **DOWN** to the target Pump, & press **ENTER**.

Key **UP** or **DOWN** to **Alarms** & key **ENTER**.

The **Minutes per Actuation** limit is the elapsed ON time for each ON-OFF cycle. Key **ENTER** to adjust.

The **Minutes/Manual** limit is the **ON** time in **Manual** before returning to **Auto**. Key **ENTER** to adjust.

If this pump alarms, it will turn OFF. Acid Pumps ALWAYS are set to **OFF on alarm**. Key **ENTER** to adjust.

Set to **Yes** to send the alarm to any output with the Alarm Relay special control set.

ENTER ends all owed time or volume & feed events. Resets the Minutes/Actuation alarm timer.

If this pump or solenoid has ever previously alarmed, displays type of alarm and time & date it occurred. Used to flag alarms that have been **Reset**

Alarms-Limits

Acid Pump ←1
 OFF:Setpoint

↩ and ↓

Alarms ←
 Setpoint ↑↓

↩

Mins/Actuation ←
 240.0 min ↑↓

↓

Minutes/Manual ←
 10.0 min ↑↓

↓

OFF on alarm ←
 Yes ↑↓

↓

Alarm Relay ←
 No ↑↓

↓

Reset Alarm ←
 Yes ↑↓

↓

Limit,ON timer
 16:55 23/09/11 ↑↓

Sidebar:

Alarms and Feed Limits prevent over feeds and/or alert users to operating faults. Set limits to more than 1440 to block alarms.

Example:

An acid feed that exceeds 15 minutes indicates that we're out of acid, the pump's unplugged or incorrectly adjusted, the pH sensor isn't responding...

To view or modify the **Alarms-Limits** used on a frequency controlled pump, key **UP** or **DOWN** to the target Pump, & press **ENTER**.

In this example, the **Oxidant** pump is frequency controlled by output **5** and is currently **ON** @ **61.48%** of maximum feed rate.

Key **ENTER** & **DOWN** to **Alarms** & key **ENTER**.

The **Volume @ Maximum** pump speed is currently set @ 3.8 Gallons.. Key **ENTER** to adjust.

If a user selects **Manual** feed mode, the **Oxidant Pump** will deliver **0.2** gallons before returning to **Auto**. Key **ENTER** to adjust.

Variable speed pumps may feed continuously, however a pump that feeds @ maximum rate for an extended period indicates an undersized pump, incorrect setpoints or a faulted controlling sensor.

Any of these reasons should set an alarm.

The response of a frequency controlled pump is identical to a relay controlled ON-OFF pump on **Alarm Relay**, **Reset Alarm** & **Alarms**.

Note that in this example, this pump has never alarmed

2.1 Limiting Feed & Alarms

Alarms-Limits

Oxidant Pump ←5
Feed@ 61.48%



Alarms ←
Pump Type ↕



vol.@ MAX spm ←
3.8 G ↕



volume/Manual ←
0.2 G ↕



OFF on alarm ←
Yes ↕



Alarm Relay ←
NO ↕



Reset Alarm ←
Yes ↕



Alarms
none ↕

Sidebar:

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

Set the limits so that worst-case operation on the hottest day or highest bio-load 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.

To view or modify the **Alarms-OFF on Alarm** used on a pump or solenoid, key **UP** or **DOWN** to the target Pump, & press **ENTER**.

Key **ENTER** & **UP** to **Alarms** & key **ENTER**.

Key **ENTER** & **DOWN** or **UP** to **OFF on Alarm**

Key **ENTER, DOWN, ENTER**.
to change the **OFF on Alarm** from **No** to **Yes** or **EXIT** to leave unchanged.

To view or modify the **Alarms-Alarm Relay** used on a pump or solenoid, key **UP** or **DOWN** to the target Pump, & press **ENTER**.

Key **ENTER** & **DOWN** to **Alarms** & key **ENTER**.

Key **ENTER** & **DOWN** or **UP** to **Alarm Relay**

Key **ENTER, DOWN, ENTER**.
to change the **Alarm Relay** from **No** to **Yes** or **EXIT** to leave unchanged.

2.1 Limiting Feed & Alarms

Alarms-OFF On Alarm

Acid Pump ←4
ON:Owes 56.45mL

← and ↑

Alarms ←4
Pump Type ↓

← and ↓

OFF on alarm ←4
No ↓

← and ↓ then ←

OFF on Alarm ←4
Yes ↓

Alarms-Alarm Relay

Acid Pump ←4
ON:Owes 56.45mL

← and ↓

Alarms ←4
Pump Type ↓

← and ↓

Alarm Relay ←4
No ↓

← and ↓ then ←

Alarm Relay ←4
Yes ↓

Sidebar:

Chemical feeds are usually all set to **OFF on alarm** since an overfeed indicates an operating problem which requires correction.

Setting **Alarm Relay = YES** turns ON the output with Alarm Relay special control set. Multiple sensors and pumps may be set to trip the alarm power relay or contact set.

2.2 Feed Diagnostics

To view or modify the **Diagnostic** for a pump or solenoid,
 key **UP** or **DOWN** to the target Pump
 The main menu display provides the current state.
 Press **ENTER**.

Key **DOWN** to **Diagnostic** & key **ENTER**.
 then **UP** or **DOWN** .

Displays **Alarmed** if feed stopped on
Actuation limit.

Displays the controlling sensor, meter or contact
 set & current value
 This example shows a pump controlled by the
 ORP sensor connected to input '**B**'.

Displays the setpoint & value.
 This example is ORP sensor controlled so the setpoint is the
 mV value @ pump turn ON

Displays the OFF setpoint which for ORP controls,
 is the ON setpoint + '**Deadband**'.
 This example is ORP controlled so the OFF setpoint is
 higher than ON. Adding oxidant increases the ORP.

Typical ORP controls **Feed Oxidant**, but it's also possible
 to use the same ORP sensor to De-Chlor.
 Similarly, a pH sensor can be used to control
 both Acid & Caustic chemical pumps.

A pump that never runs may indicate a setpoint,
 sensor or flow cell problem. Always ON may indicate a
 setpoint, pump sizing, feed or sensor problem.

Pump Diagnostics

Oxidant Pump ←2
 ON 21.9min



Diagnostic ←
 Alarms ↓



Current State
 Operational ↓



Control by: B
 738.2mV ↓



TurnON setpoint
 735.0 mV ↓



OFF Setpoint
 740.0 mV ↓



Control Type
 Feed Oxidant ↓



ON today
 186.4 min ↓

Sidebar:

Diagnostics vary with the output type and control. Relays '1' to '3' use ON time instead of the volumes displayed Frequency controls '4' and '5'.

The main menu displays **Blocked** & the blocking output OR **Lockout** & the **Interlock** input OR **Alarmed** if a pump cannot feed OR **Delayed** on power-on sample cell delay.

2.2 Feed Diagnostics

Diagnostics cont.



Pumps or solenoids with ON time or volume events will display the time or volume owed

Time Owed
0.0 min



Available **Special Controls** vary with the type of output: Relay, Frequency or Digital Out and the controlling sensor type.

Special Control
none

OR

Displays active **Special Control**; PID, Percentage Time-Base Feed, Time Modulate, Alarm Output, Filter Events..

Special Control
Sensor wash

Meter paced feeds don't use **Special Controls**.



& we're back at the top of the **Diagnostic** scroll.

Current State
Operational

Sidebar:

DCM200 controllers are **Diagnostic** intensive.

Each sensor, water meter, contact set, relay-frequency-digital output and the controller itself has a **Diagnostic** display sequence.

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

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

Browser access available locally or remotely via a VPN or modem connection displays all controller **Diagnostics**.

Controller outputs '4' and '5' may be used for frequency-controlled pumps or as dry contact, digital outputs.

To view or modify a **Pump Type** key **UP** or **DOWN** to the target pump and press **ENTER** then **UP**.

Key **ENTER** @ **Pump Type**.

Displays one of six default pump types or **Other**.
In this example **Oxidant '4'** controls a **ProMinent 1001** type pump.
Key **ENTER** to modify.

Displays the current **mL/stroke** volume in mL.
In this example, it's the default for a **ProMinent 1001** type pump.
Key **ENTER** to modify.

Displays the current **Rated SPM** in strokes per minute.
In this example, it's fixed by selecting a **ProMinent 1001** type pump.

2.3 Selecting a Pump Type

Pump Type

Oxidant ←4
Feed@ 51.07%

↩ and ↵

Pump Type ←
Diagnostic ↕

↩

Pump Type ←
ProMinent 1001 ↕

↓

mL/stroke ←
0.10 ↕

↓

Rated SPM
180 ↕

Sidebar:

Pump Type:

If you select one of the 6 built-in ProMinent pumps, the feed volume mL/stroke and maximum frequency are correctly and automatically assuming a nominal 40psi 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.

3.0 Sensors

3.1 Calibration

Sensor Calibrate

To calibrate a sensor, key **UP** or **DOWN** to the target sensor and press **ENTER**.

pH Sensor ←A
7.46 pH



Key **ENTER** @ **Calibrate**.

Calibrate ←J
Alarms ↓↑



Displays current value. Key **ENTER** to modify.

Enter value ←J
7.46 uS ↓↑



Key **UP** or **DOWN** to change the underlined digit.
Key **RIGHT** to move the digit underline.

Editing, ←or Exit →J
7.36 uS

Press **ENTER** to calibrate.
or **EXIT** to leave unchanged.



In this example we decreased the value measured by a pH sensor from **7.46** to **7.36**.

pH Sensor ←A
7.36 pH

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.

Aquatics systems, setpoint control so that the pH or ORP is controlled within a narrow range, allowing simple, single point calibration.

Process control and monitoring only sites which may operate over a wide sensor range benefit from 2-point calibration.

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

ORP Calibration: Requires the 'admin' password..

3.1 Sensor Calibration

If the controller cannot calibrate you'll view this warning after you modify the sensor value & key **ENTER**.

Key **ENTER** to ignore the warning or **EXIT** to return the sensor to its pre-calibration value.

To reset the sensor to its factory default setting key **ENTER** and **DOWN** to **Factory Reset**.

Press **ENTER**.
Factory Reset doesn't correct the problem which caused the warning

In this example, we started at **7.46**, got a warning when we calibrated at **7.36** and returned to **7.62** after **Factory Reset**.
Is the fault due to a failing pH sensor or our pH tester.
Verify the tester against a calibration buffer.

Calibrate Faults

Sensor Fault ←
Ignore warning

←

pH Sensor ←A
7.36 pH

←

Calibrate ←
Alarms ↓

← and ↓

Factory Reset ←
Yes ↓

←

pH Sensor ←
7.62 pH ↓

Sidebar:

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

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 the sensor's platinum surface reads low and responds slowly & requires strong acid stripping.

pH: Verify solution ground in sensor header connected & excess pH 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 cabling color-coding correct and sensor wires firmly connected. Inspect sensor for damage or leaking.

3.2 Chlorine Calibration

To calibrate the chlorine sensor, key **UP** or **DOWN** to the sensor display and press **ENTER**.

Key **ENTER** @ **Calibrate**

Take a sample at the sensor entry header & press **ENTER**
The ppm value measured when you press **ENTER** is used for chlorine calibration.

Some time may elapse between the time you sample and when the results of the DPD test are available. During this period, the 10 minute return to the summary LCD display on 'no key pressed' is blocked.

Displays value @ sampling. Key **ENTER** to calibrate or key **DOWN** to **Cancel** & **ENTER** to discard the captured sample ppm.

Key **UP** or **DOWN** to change the underlined digit.
Key **RIGHT** to move the digit underline.

Press **ENTER** to calibrate or **EXIT** to leave unchanged.

Displays **Completed OK** on successful calibration.
Press **EXIT** twice to return to the **Chlorine ppm** display.



Sidebar:

Sensor Warning:

When the chlorine sensor operation is marginal, but still useable **Warning High** or **Low** displays. Subsequent calibrations may fault.

Sensor Fault:

When the chlorine sensor cannot be calibrated, **Fails High** or **Low** displays

The current value of the chlorine sensor will remain unchanged.

If the sensor no longer tracks the chlorine level, switch the control to base feed to maintain a residual until the sensor fault can be corrected.

3.3 LSI-Ryznar Manual Entry

To calibrate the Langelier – Ryznar indexes, key **UP** or **DOWN** to the **LSI RSI** display and press **ENTER**.

Key **ENTER** @ **Calibrate**.

Displays current calcium hardness ppm value. Key **ENTER** to modify.

Key **UP** or **DOWN** to change the underlined digit. Key **RIGHT** to move the digit underline.

Press **ENTER** to calibrate or **ENTER** to view-modify **Alkalinity**.

Displays current alkalinity ppm value. Key **ENTER** to modify.

Key **UP** or **DOWN** to change the underlined digit. Key **RIGHT** to move the digit underline.

Press **ENTER** & then calibrate **Conductivity** to match the grab sample value.

Press **ENTER** to calibrate or **ENTER** to view the updated **LSI** & **RSI** indexes.

```
LSI:  0.4  ←D
RSI:  6.8
```



```
Calibrate ←J
Alarms    ↓↑
```



```
CaCO3 Hardness ←J
200.0           ↓↑
```



```
Editing, ←or Exit
210.0      →↑↓
```



```
Alkalinity ←J
90.0        ↓↑
```



```
Editing, ←or Exit
92.0      →↑↓
```



```
LSI:  0.5  ←D
RSI:  6.7
```

Sidebar:

The LSI-Ryznar scaling & corrosion indexes calculations require current pH, temperature & conductivity in addition to hardness & alkalinity.

You'll be prompted for a conductivity value after you view-modify **Alkalinity**.

Calcium limits = 50 to 400ppm

Alkalinity limits = 30 to 140 ppm

Conductivity limits = 100 to 10000

If you enter a value outside of the limits, it will be set to the limit

3.4 Sensor Alarms

To view or adjust sensor alarm, key **UP** or **DOWN** to the target sensor and press **ENTER**.

In this example we're viewing the alarms on the **Temperature** sensor connected to input 'C'

Key **UP** and **ENTER** @ **Alarms**.

In this example, the controller will alarm if the **Temperature** exceeds **90.0 F**. Key **ENTER** to modify.

In this example, the controller will alarm if the **Temperature** falls below **60.0 F**. Key **ENTER** to modify.

Delay on Alarm prevents nuisance alarms by requiring, in this example, **5** minutes of fault occur before alarming.

Set the Delay to zero minutes if you require an immediate alarm.
Key **ENTER** to modify.

Alarms

Temperature ←C
83.1 F

← and ↓

Alarms ←
Diagnostic ↕

←

High Alarm ←
90.0 F ↕

↓

Low Alarm ←
60.0 F ↕

↓

Delay on Alarm ←
5.0 minute ↕

Sidebar:

Sensor Alarms: Nuisance alarms tend to be ignored.

Select alarm limits that represent user safety & comfort and trap control fault & sensor failure.

LAN connected DCM200's auto E-mail out on each sensor and control alarm unless E-mailing is disabled.

Sensors can be configured using the browser interface to trip a relay or digital output designated as an Alarm Output

3.4 Sensor Alarms

Adjust Alarms

To adjust a sensor alarm, key **UP** or **DOWN** to the target sensor and press **ENTER**.

Temperature ←C
83.1 F

← and ↑

Key **UP** and **ENTER** @ **Alarms**.

Alarms ←
Configure ↕

←

Key **UP** or **DOWN** to select **High Alarm**, **Low Alarm** or **Delay on Alarm** & press **ENTER**.

High Alarm ←
90.0 F ↕

←

Key **UP** or **DOWN** to change the underlined digit.
Key **RIGHT** to move the digit underline.

Editing, ← or Exit
86.5 F → ↕

Press **ENTER** to modify.
or **EXIT** to leave unchanged.

↓ ↑ then →

In this example we've increased the **High Alarm** from **90.0 F** to **86.5 F**.

High Alarm ←
86.5 F ↕

Sidebar:

Reset Alarms: Section 1.2 **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.

Alarms when OFF Line:

If the sensor installation piping drains or siphons when the system turns OFF and a sensor alarm results, install a check valve on the sensor line.

A check valve will prevent alarms but more importantly will prevent wet-dry cycles from depositing on sensing surfaces, causing calibration problems and shortening sensor life.

3.5 Sensor Diagnostics

To view sensor **Diagnostics**, key **UP** or **DOWN** to the target sensor and press **ENTER**.

Key **UP** and **ENTER** @ **Diagnostics**.

Sensor Type; 'pH Sensor' in this example. Also displays ChlorineCLB2 or CLB3, ORP, Temperature, or 'Calculated' for LSI-Ryznar.

Current State may also display **Alarmed**, **Fail Calibrate**, or **Overrange** (Hardware fault).

Current value of the sensor. With user set digits after the decimal and user set units. Sensors may be displayed with from 0 to 3 digits after the decimal. Chlorine sensors are 0 to 2 digits

Thermal Compensation is used with pH sensors.

Gain Multiply is the value required to convert the sensor millivolts to the displayed pH. See following page for an example.

Default Gain is the **Gain** after a **Factory Reset**. pH Sensor **Gain** is usually only modified by a 2 point sensor calibration.

Diagnostic

pH Sensor ←A
7.65 pH

← and ↑

Diagnostic Calibrate ↵

↵

Sensor Type
pH Sensor ⇅

↓

Current State
Operational ⇅

↓

Displayed Value
7.65 pH ⇅

↓

Compensation
None ⇅

↓

Gain Multiply
0.0170 ⇅

↓

Default Gain
0.0170 ⇅

continued

Sidebar:

Diagnostic displays how the sensor is configured, compensated and calibrated. This is where you go if you have a non-obvious sensor problem.

3.5 Sensor Diagnostics

Diagnostic cont.

Offset Adjust is the value required to make the displayed pH, ORP or temperature match your last calibration.

Offset Adjust
6.8960



Default Offset is the **Offset** after a **Factory Reset**. pH & ORP sensors with offsets remote from the default offset will not usually track & have failed, contaminated or fouled.

Default offset
7.0000



Measured Level is the sensor voltage measured by the controller. Varies with sensor type. Useful when diagnosing non-tracking sensors.

Measured Level
44.3 mV

Example: $44.3 \text{ mV} \times 0.0170 \text{ Gain} + 6.896 \text{ Offset} = 7.65 \text{ pH}$
The **pH Sensor** value displayed on the previous page.

Sidebar:

This page is not applicable to the CLB2 & CLB3 chlorine sensors, handled within the sensor driver card.

Offset & Default Offset

When you calibrate a pH, ORP or temperature sensor, the controller adjusts the OFFSET to make your measured value match the displayed value. Note above that the actual pH sensor OFFSET is not the Default.

Gain & Default Gain

When you two point calibrate a pH sensor, the controller adjusts both OFFSET and GAIN.

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 some unusual sensor types.

3.5 Sensor Diagnostics

Meter Diagnostic

To view Diagnostic for a meter key **UP** or **DOWN** to the target meter and press **ENTER**.

Pool Make-up ←F
9860 gal



Key **UP** and **ENTER** @ **Diagnostic**.

Diagnostic Alarms ↵



Both Turbine & Contact Head meter display as **Digital Type Volume Meter**.

Digital Type Volume Meter ⇅



Displays **Alarmed** if **Volume Today** greater than **High Alarm** or less than **Low Alarm**.

Current State Operational ⇅



Volume Today is the measured volume from midnight of the current day.

Volume today 9860 gal ⇅



Vol. this year is the measured volume in the current calendar year.

Vol. this year 1642900 gal ⇅

continued

Sidebar:

Insertion Turbine-Paddlewheel water meters may be browser configured to measure flow rate. These meters will display and alarm on rate in gpm & not volume & will display:

Compensation Volume to Rate.

Note: A DCM200 can only set input 'F' to be a water meter. Input 'E' is fixed as a flowswitch.

3.5 Sensor Diagnostics

Diagnostic cont.

Vol. Last year is the measured volume in the previous calendar year.

Vol. Last year
2694250



Days Online is the number of days that this meter has been enabled and operating in this controller.

Days Online
286



Volume/Contact or '**K**' **Factor** is the current scaling factor for the installed meter

Volume/contact
100 gal

Sidebar:

If **Days Online** = 286 and **Vol. this year** = 1642900 & the site operates 24/7 then we're averaging 5750 Gallons/day.

Is this the expected make-up volume for the load?

If we've been averaging 5750 and today at noon we've measured

Volume today = 9860 Gallons, why the increase?

Meter Alarms: Low Alarm

The **Low Alarm** for water meters only trips at midnight if the meter has not exceeded the **Low Alarm** volume. Set **Low Alarms** = 0 to prevent alarms @ midnight.

Use **Low Alarm** to flag sites that have not made-up.

Meter Alarms: High Alarm

The **High Alarm** for water meters trips when the meter exceeds the **High Alarm** volume.

Set **High Alarms** higher than the volume expected @ highest load to prevent nuisance alarms OR close to actual usage to flag you on increased load..

Set **High Alarms** on feed verify meters to flag you on increased usage.

Note; clearing a water meter **High Alarm** without adjusting the **High Alarm** level will immediately trip another alarm on the meter.

3.6 Contact Set Alarms

To view or modify contact set **Alarms** key **UP** or **DOWN** to the target contact set input and press **ENTER**.

Key **UP** and **ENTER** @ **Alarms**.

Alarms if the contact set is **ON** today for longer than the **ON Time Alarm**.
Timing resets every time contact set turns **OFF** and at midnight.

Alarms if the contact set is **OFF** today for longer than the **No Flow Alarm**.
Timing resets every time contact set turns **ON** and at midnight.

Keying **ENTER** to modify.
Key **UP** or **DOWN** to change the underlined digit.
Key **RIGHT** to move the underline.

Press **ENTER** to save the new **No Flow Alarm**.
or **EXIT** to leave unchanged.

In this example we've reduced the **No Flow Alarm** from its factory default of **1500** minutes to **60** minutes.

Alarms

Flowswitch ←E
ON 52.6min

← and ↑

Alarms ←
Configure ↓

←

ON Time Alarm ←
1500.0 min ↓

↓

No Flow Alarm ←
1500.0 min ↓

←

Editing, or Exit ←
0060.0 min →

↓ ↑ then →

No Flow Alarm ←
60.0 min ↓

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 side-stream filter shows high pressure for more than 30 minutes, you'd like to log an alarm.

No Flow Alarm:

If you had a system that typically 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.

If you expected a switch to trip or a contact set to close daily when an event or action occurred, you'd want an alarm if it did not occur.

4.0 System Settings

4.1 Passwords

Controllers are defaulted to **Keypad Password** OFF.

To turn ON the **Keypad Password** press **ENTER** and **DOWN** to **Configure** at the power up or top of menu display.

Key **ENTER** @ **Configure**.

Key **DOWN** to **Keypad Password**.

Key **ENTER DOWN ENTER** to turn ON **Keypad Password**.

You'll view the **Login** display when you select a password protected part of the controller. See **Login Displays**.
Key **ENTER**

Key **UP** or **DOWN** to change the underlined letter or digit.
Key **RIGHT** to move the underline.

Press **ENTER** to **Login**.
If you have not keyed any of the current, valid passwords, you'll view an error message.

Pool 746.5mV ←↕
7.65pH 84.2F



Configure ←↕
Time&Date ↓



Keypad Password ←↕
No ↕



Keypad Password
Yes ↕↕



Password ON

Login ←↕
Yes ↕



Editing, Or Exit
1 →↕



Sidebar:

Default Passwords:

The first time you turn ON **Keypad Password** the 8 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 8 default User IDs are used in the controller's keypress log.

Modify Password: Once you Login you can modify your password.

Refer to the following page.

Login Displays: Prompts you for the required password level. **Login @ Admin, Config** or **Operate** depending on what key press activity required a password.

4.1 Passwords

After you've turned ON passwords and logged in as one of the eight users:

To modify your **Keypad Password** press **ENTER** and **UP** to **Passwords** at the power up or day-time display.

Key **ENTER** @ **Passwords**.

To **Logout** as the current user, key **ENTER** at **Logout**.

The controller automatically logs you out 10 minutes after your last key press.

Note that this display shows **Operator1**, your user ID.

Key **ENTER** at **Reset Pswrds**. to key in the reset code which returns all passwords to default.

Key **ENTER** at **Edit Passwords** to view or modify your password.

Key **UP** or **DOWN** to change the underlined letter or digit. Key **RIGHT** to move the underline.

Press **ENTER** to change your password or EXIT to leave unchanged. In this example we changed **Operator1**'s default password from '1' to **OP1**.

Modify Password

Poo1 746.5mV ←↕
7.65pH 84.2F

← then ↑

Passwords ←↕
Diagnostic ↓

←

Logout ←↕
Operator1 ↓↕

↓

Reset Pswrds
Yes ↓↕ ←

↓

Edit Passwords ←↕
Yes ↓↕

←

Editing, or Exit
OP1 →↕

↓ ↑ then →

Sidebar:

Modify Passwords:

Because all 8 default passwords are listed on the previous page.

You'll should modify all 8 passwords when you initially turn ON passwords.

Passwords are limited to 8 numbers.

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

Two users cannot share the same password because the password is used to identify the user.

The controller displays **Password Fail** on a duplicate password.

Reset Passwords: If you forget your password, a **Reset Password** is available from ProMinent, specific to your controller's serial number which sets all passwords to defaults.

Passwords: This menu item only displays on controllers that have turned ON **Keypad Password**.

4.2 Time & Date

To view or adjust the **Time&Date** press **ENTER** and **DOWN** to **Time&Date** at the power up display.

See **Controller Response to a new Time&Date:** on this page **Sidebar** prior to adjusting

Key **ENTER** @ **Time&Date**.

Key **ENTER** twice to modify **Time&Date**.
OR **ENTER**, **DOWN** & **ENTER** to modify **Weekday**.

Display current date and time.
Key **UP** or **DOWN** to change the underlined digits.
Key **RIGHT** to move the underline.

Press **ENTER** to save the new **Time&Date**.
or **EXIT** to leave unchanged.

Displays current day.
Key **UP** or **DOWN** to modify.

Press **ENTER** to save the new **Weekday**.
or **EXIT** to leave unchanged.

Time & Date

Pool 746.5mV ←↕
7.65pH 84.2F

← then ↓

Time&Date ←
Enable I/O ↓

← ← OR ← ↓ ←

DD/MM/YY HH:MM
20/08/11 14:20 →↕

↓ ↑ then →

Thu 16:54:10 ←
S/N: A041X0486

← ↓ ←

weekday
Thu ↕↕

←

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. Ends time and volume owed which ends all events.
3. Does a midnight reset which will may set volume-meter Low Alarms.
4. Sets the event control Day 1 to the most recent Sunday.

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

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

To view the **Activity Log** press **ENTER** and **DOWN** to **Activity Log** at the **Alarms** display.

Key **ENTER** @ **Activity Log**.

Each entry in the log initially displays it's activity as you key **DOWN** .

In this example the feed limit **Alarms** for the **Acid Pump** were **Adjusted**.

Key **RIGHT** to view the User ID and the Time & Date stamp for the Activity.

Key **RIGHT** again to get back to the **Activity** or key **DOWN** to scroll the User ID and Time-Date stamps.

Scroll **UP** or **DOWN** through the Activity Log. Keying **RIGHT** to view the User IDs & Time-Date stamps

4.3 Keypress-Alarm Log

View Activity Log

Alarms  
C D 1

 and 

Activity Log 
Clear Alarms 



Acid Pump 
Alarms Adjusted 



Configure1 
17:19 23/08/11 



OxidantPump 
Reconfigured 



LSI-Ryznar 
Calibrated 

  or 

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 11.1 Sidebar: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 logging a power OFF/ON, use the **System** user ID.

4.4 Enabling Inputs & Outputs

To **Enable I/O** press **ENTER** and **DOWN** to **Enable I/O** at the power up display..

Enable I/O

Pool	746.5mV	←↵↕
7.65pH	84.2F	

←↵ then ↓

Key **ENTER** @ **Enable I/O**.

Enable I/O	←↵
Passwords	↕

←↵

Displays the number of sensor inputs and meter-contact inputs available for enabling.
Key **ENTER** to select one.

Enable Inputs	←↵
1 unused	↕

↓ ↑ or ←↵

Displays the number of relays and frequency controlled outputs available for enabling.
Key **ENTER** to select one.

Enable Outputs	←↵
2 unused	↕

Disabling I/O:

Individual Inputs and Outputs are disabled using the browser interface. I/O in use by the controller for control or sensor compensation cannot be disabled.

Disabled I/O does not display on the LCD or Browser, is not logged and does not appear in the selections used to compensate and configure other enabled I/O

Enabling Inputs:

Sensor inputs **A**:pH, **B**:ORP or Chlorine and **C**: Temperature Inputs are fixed and cannot be disabled.

Contact set input '**E**' is fixed as the system flowswitch

Digital input '**F**' may be configured as a Meter-Volume or Contact Set Input.

Enabling Outputs:

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

Outputs **4** and **5** are frequency controlled outputs that are enable to proportionally control pumps or used as 24VDC dry contact digital outputs.

4.5 Metric & U.S. Units

To view or adjust the Metric - U.S. Units setting press **ENTER** and **DOWN** to **Configure** at the power up display.

Key **ENTER** @ **Configure**

This controller is currently set to U.S. units. Temperatures are in F and volumes greater than 100mL are in Gallons.

Key **ENTER** to **DOWN** to switch to **Metric Units**.

Key **ENTER** to set **Metric Units** or **EXIT** to leave as U.S. Units.

Switch to Metric

Pool 746.5mV ←↕
7.65pH 84.2F

↵ then ↓

Configure ←↵
Time&Date ↓

↵

Metric Units ←↵
NO ↓↕

↵ and ↓

Metric Units
Yes ↕↵

↵

Metric Units ←↵
Yes ↓↕

Sidebar:

Commissioning:

Select U.S. or Metric Units when you commission or install the controller.

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

Metric Inputs:

Temperature inputs are converted to Centigrade using the default offset and gain for each of the thermal input type.

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.

Water meter units default to 'L'iters not 'G'allons.

Metric Outputs:

Pumped volumes are reported in mL & Liters.

Timed event 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.

To view or adjust the configuration of the whole controller press **ENTER** and **DOWN** to **Configure** at the power up display.

Key **ENTER** @ **Configure**

Currently set to U.S. units.
To switch to **Metric Units**, key **ENTER**, select **Yes** & **ENTER**.

Password for LCD-Keypad users currently OFF.
To turn ON passwords key **ENTER**, select **Yes** & **ENTER**.

The DCM200 logs up to 24000 records at Log Periods from 1 to 60 minutes. Five minutes is an 83 day log of sensor values, state & pump ON times.
Key **ENTER** to modify the **Log Period**.

Insert a USB flash drive & auto-uploads the **Last 7 days** of Log records.
Key **ENTER** to select **Last 48 hours** or **All Logs**.

You can modify the keypress response to your preference from 150mS, default to 200mS.
Key **ENTER** to modify.

You can modify the Auto-Manual-OFF, **HOA** Press & HOLD response to prevent accidental Selection from 1 to 10 seconds; 2 second default.
Key **ENTER** to modify

4.6 Configuration Configure

The screenshot shows a series of configuration screens for the DCM200 controller. Each screen displays a setting name and its current value, with navigation arrows (left, right, up, down) and an 'or' key icon. The settings shown are: Pool (746.5mV, 7.65pH, 84.2F), Configure (Time&Date), Metric Units (No), Keypad Password (No), Log Period (5.0 min), USB Log size (Last 7 days), Key Response (200 ms), and HOA Response (2000 ms).

Sidebar: Recommended:

Turn on Keypad password.

Log on as the 'admin' and modify the password if this controller is likely to be accessed by uninformed users. Do this to prevent accidental or malicious controller reconfiguration.

To view or adjust the controller Ethernet settings 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 04 0A 30 00 00**

4.7 Communications

Communicate

Pool 746.5mV ⬅️↕️
7.65pH 84.2F

⬅️ 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
0004.0a30.0000 ⬇️

Sidebar:

Not Connected to the Site LAN?

Leave the IP Address at 10.10.6.106. Connect a crossover cable from your notebook PC to the controller and browse 10.10.6.106.

Browser passwords are the same as the default keypad passwords listed in manual Section **5.1 Passwords**.

You'll need to configure your notebook or netbook to connect & browse.

Refer to DCM200_browser manual.

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

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

Key **ENTER** to modify.

Key **UP** or **DOWN** to change the underlined number
Key **RIGHT** to move to the next 3 digit number.

Key **ENTER** to change or **EXIT** to leave the **IP Address** unchanged.

In this example we've changed the **IP Address** from **10.10.6.106** to **192.168.24.86**.

4.7 Communications

Modify IP Address

Pool 746.5mV ←↕
7.65pH 84.2F

← then ↓

Communicate ←
Configure ↓

←

IP Address ←
10.10.6.106 ↕

←

IP Address →←
192.168.024.106 ↕

↓ ↑ then →

IP Address ←
192.168.24.86 ↕

Sidebar:

Not LAN connected: Using An Ethernet CrossOver Cable:

You'll need to set your notebook PC's IP Address to the same network to browse the controller using a crossover cable. In this pages example, the controller **IP Address** is **192.168.24.86**.

To be on the same network, your notebook needs an **IP Address 192.168.24.xxx** where xxx is any number from 2 to 255, excluding **86**.

To view the controller's **Diagnostic** press **ENTER** at the power up or top of menu display.

Key **ENTER** @ **Diagnostic**.

The **12VDC Power** level is the unregulated voltage @ the controller's **+12** terminal. At less than 10VDC, an alarm will indicate an external wiring error is loading the 12V turbine meter supply.

Displays the time and date of the most recent **Factory Reset** I/O reset or the time and date of DCM200 manufacturing

An **Admin Password** @ **Default** has not been modified from '**AAAA**'. If modified displays '**Changed**'.

An **Watchdog Resets** should always display **0**. An increasing number of **Resets** indicates corrupted firmware or controller electrical fault or interference.

The controller **Firmware Version** indicates the version of the software operating the controller.

5.8 System Diagnostic

Pool 746.5mV ↵↕
7.65pH 84.2F



Diagnostic ↵
Communicate ↓



12VDC Power ↕
11.98



Reset to Factory ↕
10:32 20/08/11



Admin Password ↕
Default



Watchdog Resets ↕
0



Firmware Version ↕
D5C1

Sidebar:

Reset to Factory: Sets volume-water meter total for this year and the previous year to zero.

5. Data Logging

5.1 Overview

The DCM200 logs all sensor, flowswitch & meter values & state and all pump-valve-solenoid ON times or fed volumes & status at a user set interval every 1 to 60 minutes.

The 24,000 record log therefore has time span of 16.6 days @ a 1 minute rate to 1000 days @ a 60 minute logging rate.

There are several ways to download the DCM200 data log and to generate reports.

1. LAN Connected DCM200 Controllers

1A: Run ProMinent's Trackster app on a local site PC.

1B: Use a VPN or cell EVDO modem to remotely access the data log via Trackster

2. Stand-alone DCM200 Controllers

Insert a USB flash drive into the DCM200 USB socket and your selected log download size will auto-upload.

Log files are compacted, CSV (comma separated variable) delimited text files, structured to be imported into Excel but also human readable. Log files are named '**DxxxLyyy**' where **xxx** = last 3 digits of controller serial number and **yyy** = day of year from 1 to 365.

5.2 USB Flash Drive Log Upload

HP v125w flash drives are both SCSI and USB 2.0 compatible and can be written by the DCM200. Other flash drives may or may not be compatible. The DCM200 will detect an incompatible flash drive on insertion into the DCM200 USB connector.

1. Insert the Flash Drive

If the DCM200 cannot read or write the flash drive, you'll view an error message.

2. Auto-Upload

Log upload starts automatically.

Keypad is locked during upload but control continues.

Do not browse during log upload.

LCD display alternates between the current sensor values & the record# uploading with record number counting down to zero.

If you have requested more records than the log holds, you get all of the log.

3. Remove the Flash Drive

Upload Complete Remove Drive LCD displays on completion.