D3000

Beta

Installation & Setup Guide

Contents

Description	Page

Safety

These symbols on or inside the unit mean:

Use caution to avoid personal injury or damage to equipment.

Caution! Risk of electrical shock.

Always wear the required Personal Protective Equipment (including gloves and goggles that must be worn when potentially exposed to any hazardous materials and when carrying out hazardous work tasks). Turn the dispenser off during cleaning and note that parts may be contaminated with product.If possible, flush tubing out with water prior to carrying out any maintenance. For information on products that are used in this dispenser, please carefully read the product label and Material Safety Data Sheet (MSDS).

Electrical installation of this dispenser should only be performed by trained personnel in accordance with local electrical wiring regulations. Before working on this dispenser, isolate it from any electrical source and lock out/tag out.

Installation Standards

Ensure that the unit is always installed in accordance with local regulatory requirements.

Any specific installation recommendations relating to this unit are explained in this Installation and Setup Guide.

Specification

Operating Mode		
Uniview	-	Conductivity
	-	Timed
	-	Speed
Potentiometer	-	Conductivity
	-	Timed (default setting)
Dimension		
Size	-	140 (h) x 140 (w) x 143 (d) mm
		5.5 (h) x 5.5 (w) x 5.6 (d) inches
Weight	-	0.8 kg/ 1.76 lbs
Mounting	-	2 holes in back, 1 hole ⌀5.4 mm/0.2 inches
Electrical Power	-	24V AC, 2 Amps max
Alarm Trigger Output	-	24VDC@ 200mA (Note:depends upon VA of transformer)
Trigger Inputs	-	Closed contact by opto coupler, switch or relay

Ambient Operating Temperature

+2° to 40° Celsius/36° to 104° Fahrenheit

Maximum Altitude

2000 meters/6560 feet

Maximum Relative Humidity

80% for temperatures up to 31°C/81°F, decreasing linearly to 50% relative humidity at 40°C/104°F

Mains Supply Voltage Fluctuations

± 10% of the nominal voltage

Pollution Degree

2

Installation Category

II, FOR INDOOR USE ONLY

Speed & Displacement

Detergent Unit	-	0 - 148 ml / 0 - 5 oz/min. nominal
Rinse Unit	-	2 - 18 ml / 0.07 - 0.6 oz/min. nominal

Hydraulic Performance

Detergent unit	-	20 psi max.
Rinse unit	-	30 psi max.

LED Indicator

Green

On	-	Power supplied
Slow Flashing	-	Feeding
Rapid Flashing	-	Rinse Delay

Red

On	-	Depletion Alarm
Flashing	-	Long Feed Alarm

Conductivity

Measuring range	-	660 to 12,800µS. at 25°C/77°F Cell constant K = 0.4

Long Feed Alarm

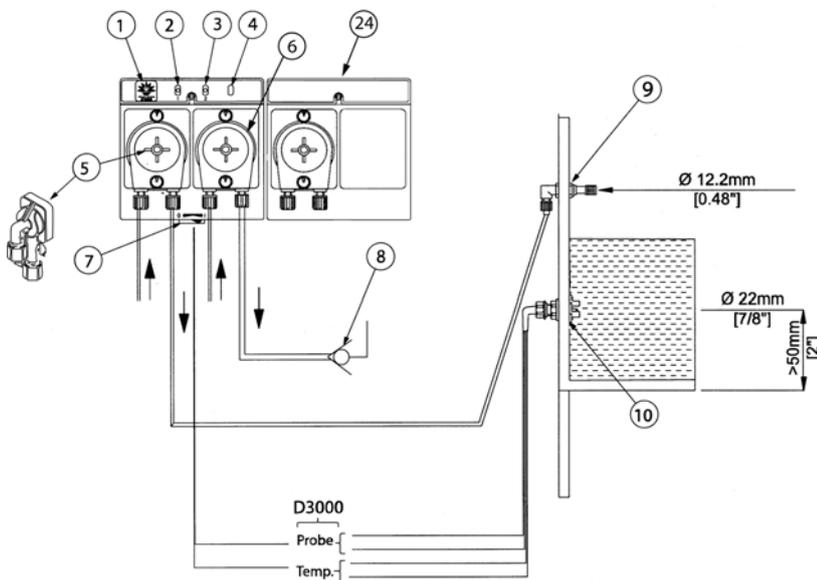|		
(Conductivity, Uniview option)	-	After 5 feeds red LED flashes & Audible activated. After 10 feeds unit stops feeding, LED & Audible on constant.

Complete Installation

Figure 1a. External and internal part identification

Part Identification

1. Uniview Socket
2. Prime Detergent* (Product 1)
3. Prime Rinse* (Product 2)
4. Power/Alarm Indicator
5. Product 1 Pump or Solenoid
6. Product 2 Pump
7. On/Off Switch
8. Non-Return Valve
9. Bulkhead Fitting
10. Conductivity Probe
11. Detergent Set Point Dial
12. Rinse Setting Dial
13. Detergent Initial charge Dial
14. Conductivity or timed option (potentiometer setting)
15. Probe Connector
16. Depletion Input
17. Optocoupler/Trigger inputs (+WASH and +RINSE)
18. External Alarm output
19. Rinse Pump Connection
20. Internal Connections
21. Pressure Switch Input (for Conveyer mode), +RINSE
22. Det Pump Connection
23. Optional third pump connection (Sanitizer)
24. Optional 3rd (auxiliary) Pump Box
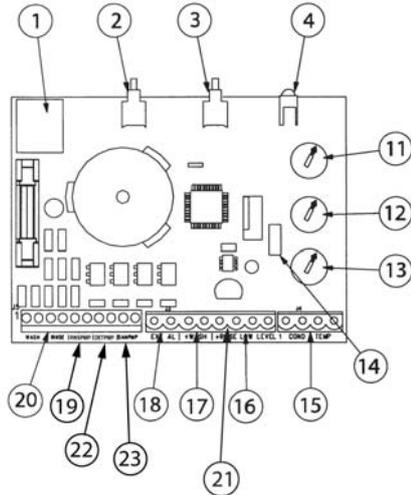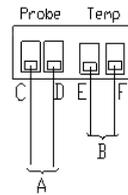*Press 2+3 simultaneously to prime 3rd Pump

Figure 1b.

Circuit Board Connection

A. Conductivity Probe
B. Temperature Probe
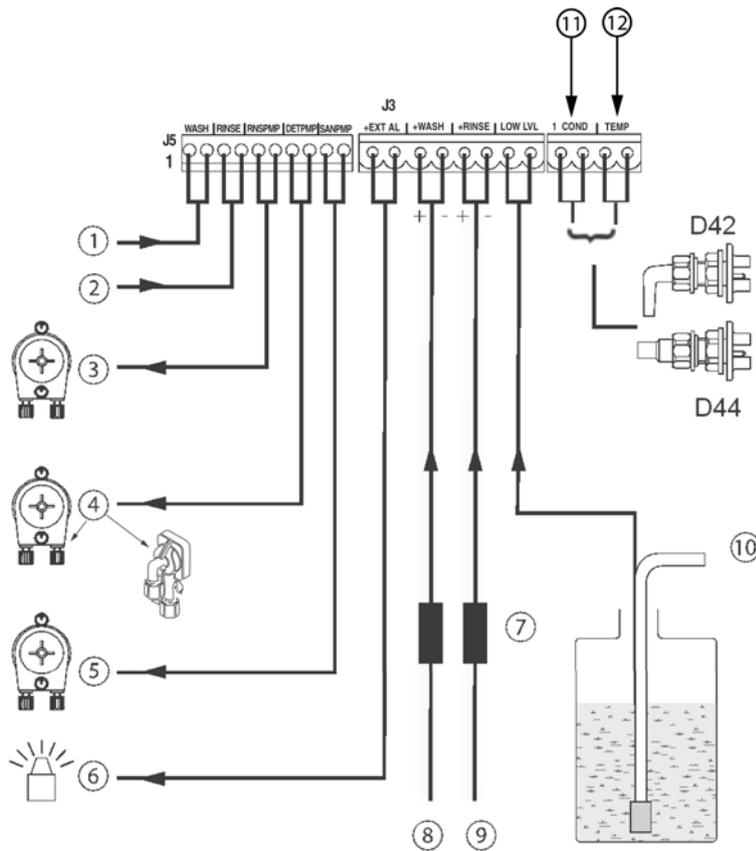C. Blue Wire
D. Red Wire
E. Yellow Wire
F. Green Wire

Figure 2

Part Identification

1. Wash 24V Power
2. Rinse 24V Power
3. Rinse Pump
4. Detergent Pump or Solenoid
5. Third Pump
6. Remote Alarm
7. Optocouplers
8. Wash Trigger
9. Rinse Trigger
10. Depletion Lance
11. Connection for Conductivity Probe
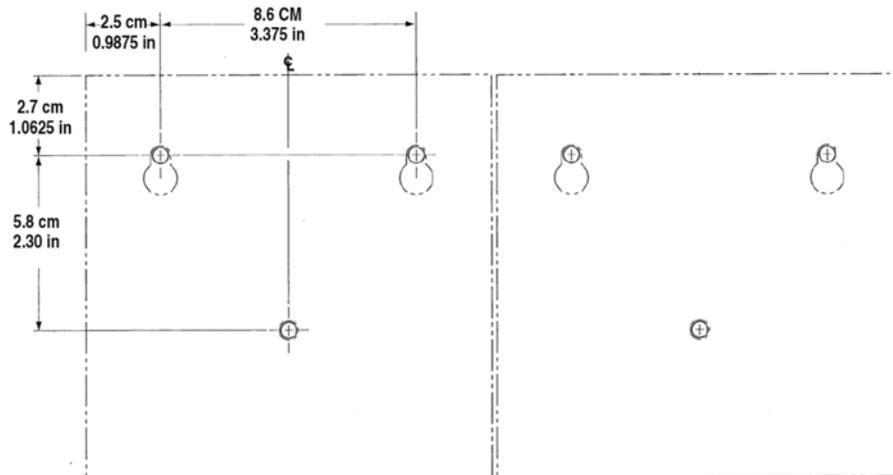12. Connection Temperature Probe

Notes:

The trigger inputs via opto couplers or relays are only required when operating in "Door with external power" configuration.

The third pump can be used for sanitizer, defoamer or other products.

The +RINSE input can be used for a pressure switch input for Conveyer Mode.

Mounting Dimensions

Figure 3. Mounting dimensions for 2-pump system

Installation Procedure

Mechanical Installation

The main point to consider is the way in which the level of detergent is to be controlled ie by conductivity or timed. If conductivity is to be used then a conductivity probe must be installed in the main tank of the dishwasher.

For the rinse aid the point of injection needs to be considered. Ideally it should be injected into, or just before, the calorifier (water boiler) to ensure good rinse aid dispersal. If you will not be using a calorifier, install the injector fitting directing into the rinse water line, as close to the machine entry point as possible.

Mount the D3000 unit on a vertical flat surface away from steam and spray in an operating temperature range of +2°C to 40°C (36 to 104°F) Mounting hole size ø5.4mm (0.21 inches). Use the 3rd hole for locking into place.

If a probe is used, drill a 22 mm (0.87 inches) diameter hole and a 12.2 mm (0.48 inches) hole for the bulkhead fitting as shown in Figure 1b.

For timed/speed dosing only the bulkhead fitting is required.

Install the non return valve(1/8"BSP thread) into the rinse water line or calorifier as required.

Use 6mm (1/4") pick up tube for detergent delivery. Use 4mm (1/8") tube for rinse aid delivery. Ensure that only continuous lengths of tube are used without joints and all fittings are fully tightened.

Fit an appropriate standpipe with depletion switch to the pick-up tube to ensure that the end of the tube stays at the bottom of the product drum.

Electrical Installation
External Transformer Units
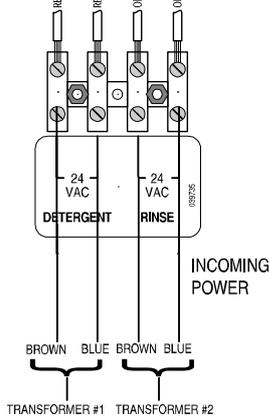
Figure 4. Incoming power connections for external transformer dispensers

1. Mount 2 transformers in protective enclosure (typically inside dishmachine.
2. Connect primary legs of each power source to the transformers as shown in the table below.
3. Connect secondary wires (brown and blue wires in white sheath) to the WHITE terminal block inside the dispenser. These wires provide low voltage (24 VAC) power.

|	240 VAC Power Source (North American-Sourced)	120 VAC Power Source (North American-Sourced)	230v Power (Europe, Middle East and Africa-Sourced)
Primary Connection (transformer input wires)	Red and white (black must be safely terminated)	Black and white (red must be safely terminated)	Brown and blue

⚠ CAUTION

*The secondary output voltage wires from the transformer to the dispenser **must** connect to the white plastic terminal block "24 VAC" connections in the pumpbox. Do not connect them directly to the green "Trigger" connector on the PCB; connecting them to the green terminal block will destroy the PCB, as the green terminal block only handles contact closures.*

The primary of the transformer must be connected via a 1 amp fuse to a source which can supply the required current (see specification). It can either be from the wash or rinse part of the cycle depending on the installation configuration. Where transformers are not required, i.e. dishwashers with 24V control circuits, fit a 2 Amp fuse.

⚠ **CAUTION:** *For Conductivity Control a transformer must be used. If not, a feedback loop is generated via the probe and this causes erratic probe readings.*

Internal Transformer Units
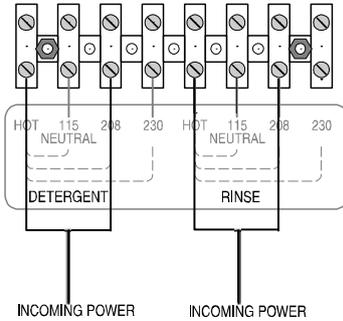
Figure 5. Incoming power connections for internal transformer dispensers(showing 208 VAC power source)

Connect the two legs of each power source to the appropriate terminals on the white terminal block inside the dispenser.

Probe Connection

If a conductivity probe is used it can be both temperature as well as conductive. Connect the probe to connector J4. Polarity for both the conductivity and temperature does not need to be considered.
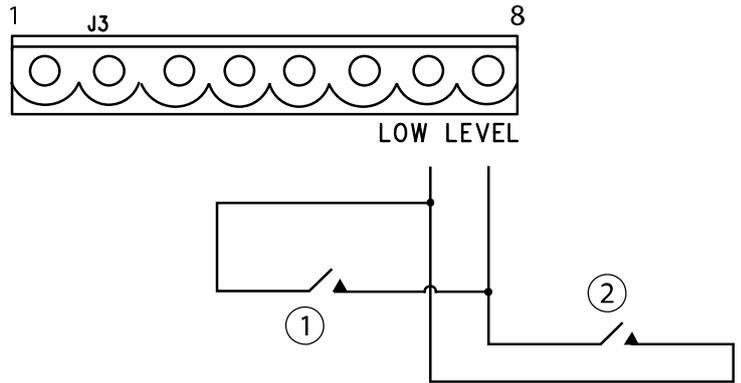
Low Level and Pressure Switch Connections

Low Level Connection

To trigger low level/depletion a switch needs to be connected to J3 pins 7 & 8. A closed connection will trigger the alarm. No voltage should be connected to this input.

Note: Low level will cause the LED on the front to flash Red, activate the internal alarm and the external alarm. The effect on the pumps depends upon programming option selected with Uniview menu 14.

If more than one product requires a depletion lance then connect both depletion switches to the same input.

The operator will have to determine which product container is empty and replace.

1. Product 1 Lance Switch
2. Product 2 Lance Switch

Figure 6. Low level connection

Pressure Switch Connection

Figure 7. D3000 PCB, Pressure Switch and Low Level Connections
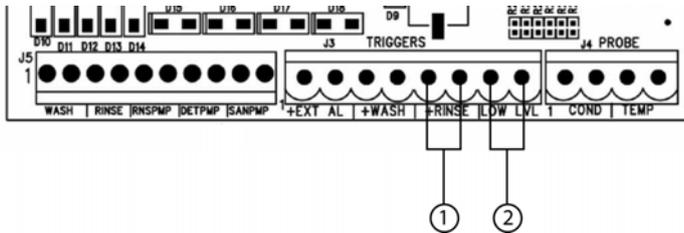
1. Pressure switch connection
2. Low level switch connection

- If using a pressure switch (for conveyer machines), connect to pins 5 and 6 on the J3 terminal.

Remote Trigger Signal Connection

Figure 8. Remote Trigger Connections
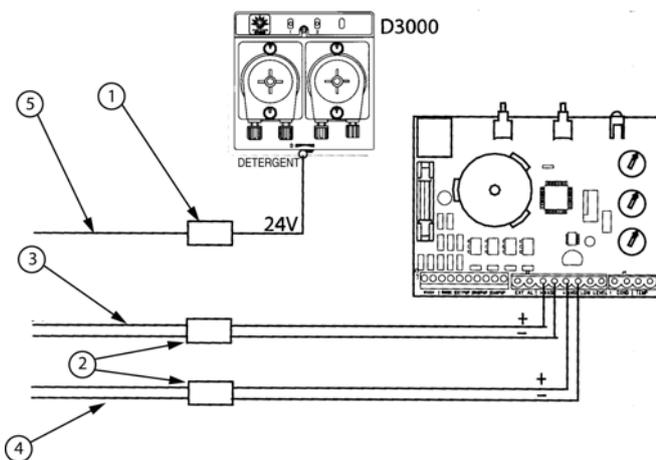
If the D3000 is used in Timed or Speed mode with Uniview programmer and Door with external power is selected, then the unit is triggered to dose product by a closed contact on connector J3 pins 3 & 4 for wash and 5 & 6 for rinse. An opto coupler can be used as the interface between the high voltage dishwasher signals and the volt free closed contact required. A standard relay could also be used.

Exact connections to dishwasher depend upon type of washer and availability of signals.

1. Transformer
2. Optocouplers
3. Wash fill valve
4. Rinse valve
5. Dishwasher on

External Alarm

An external alarm can be connected to connector J3 pins 1 & 2. The output is 24VDC with a maximum current of 200mA.

⚠️ *The current is dependant upon the transformer used for the power supply. Use a bigger transformer if more current is required.*

This output is triggered when the D3000 goes into long feed alarm or the low level/production depletion input has been activated.
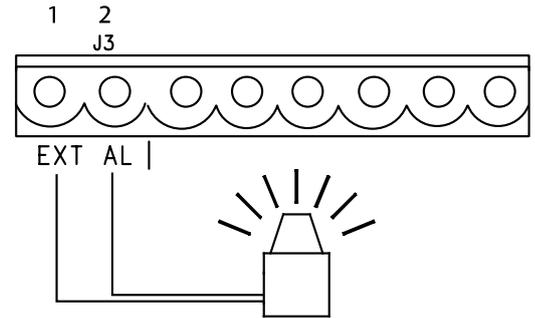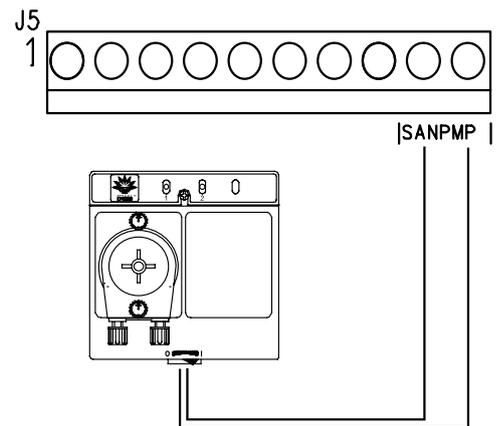

Figure 9. External alarm connection

Third Pump Connection

The D3000 can control a third pump in proportion to either the detegent or rinse pumps depending how it is programmed via the Uniview.

The third pump box option comes with a cable and connector that plugs directly into the connector J5 pins 9 & 10.

Figure 10. Third pump connection

Setup

Programming

The D3000 can be programmed via the Uniview or by potentiometers mounted on the circuit board. The D3000 default setting is to be potentiometer programmable. This ensures all users can use it and those who have access to a Uniview can change to a Uniview programming mode if required. Refer to Menu 23 to change to Uniview programming.

Most of the menu options are self-explanatory but a number require further explanation to obtain the full benefit of the feature.

Note: -The D3000 is delivered in potentiometer (POTS) mode of programming. Go to menu 23 to change to Uniview programming.

-The Uniview can be used to read only the settings of the potentiometers and other menus when in POTS mode.

-When in POTS mode, only the alarm volume, menu 10, and control source, menu 23, can be changed.

-When in Uniview mode the number of menus that are visible can be changed ref Mode 4, Menu 2. This is to provide the extra menus and features but still give the option that the D3000 is compatible with the D5000. This feature is only available with a firmware version 2.0 or higher. Firmware version is visible with the Uniview menu 24.

-Rinse Saver option, Mode 4, Menu 4: This option sets the D3000 unit to only dispense rinse aid if there has previously been a wash signal received or the wash signal is present at the same time as the rinse. This will stop rinse aid being dispensed when the dishwasher is filling through the rinse as this process usually involves multiple rinse activations with no wash taking place. This option is only available with firmware version 2.0 or higher.

Potentiometer Programming

Knob	Conductivity Mode	Time Mode
Detergent Setpoint	Concentration setpoint 0-70 Beta units	Detergent Recharge 0-30 seconds at 99% speed
Rinse Setting	Rinse Speed 0-99% while trigger is on	Rinse Run Time 0-30 seconds
Det. Initial Charge		Det. Initial Charge 0-90 seconds

Table 1. Potentiometer modes/knob settings

Figure 11. D3000 PCB with potentiometer dials

NOTE

*You can use the potentiometer dials to program the standard 2 pumps (detergent and rinse). If you will be adding a third pump for sanitizer, you will need to program it with the Uniview (see menus 14 and 15 under **Programming: Using Uniview**). You can then use Uniview menu 23 to change back to "0" (potentiometer mode).*
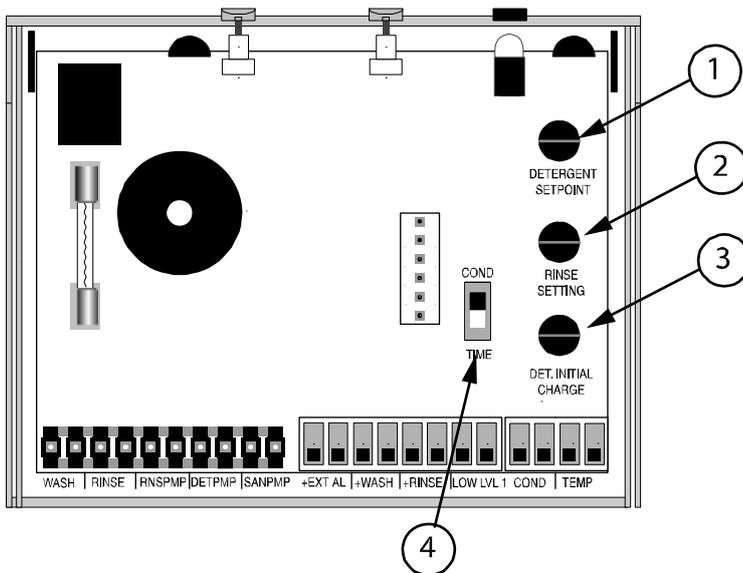
The default operating mode is time/probeless. To change the mode to conductivity, change the switch on the PCB from "TIME" to "COND" (See Figure 11). Adjust the knobs per the chart on the left to program the D3000.

1. Detergent setpoint dial
2. Rinse setting dial
3. Detergent initial charge dial
4. Conductivity or timed option (potentiometer setting)

Uniview Menus- Additional Explanation

Rack Count

User Interface	Uniview Controlled & Pot Controlled
Modes	Conductivity, Timed, Speed
Limitations	If rinse pump run time is set to zero the rack counter will never increment
Value Saved	Rack count is saved each time rack counter is incremented. Accumulated rinse run time is saved every time the power to the unit is turned off.
Specification	Counts 0-2,400,000 racks, then rolls back to 0. Can not manually reset counter
Default	0
Description	The rack counter can count up to 2,400,000 racks and is displayed using 3 Uniview menus. The 2 least significant digits are displayed in menu 19, the next 2 are in menu 18, and the 3 most significant digits are in menu 17. Door machines increment the rack counter when the rinse pump turns on, and Conveyor machines increment the rack counter after 20 seconds of accumulated rinse pump run time. If 500 racks are washed a day 365 days a year the rack counter will keep track of 13+ years of racks. When pot controlled the unit counts racks based on the menu 2 setting which is only adjustable when a Uniview unit is selected. So the default rack counting scheme for a pot controlled unit is for a conveyor machine.

Drain Count

User Interface	Uniview Controlled & Pot controlled
Modes	Conductivity Only
Limitations	Only works in conductivity mode because it requires a conductivity probe. Conductivity set point must be set to 20 Beta Units or higher than fresh water or the drain count will not work.
Value Saved	Drain count incremented when unit powers up and it detects at least a 20 BU step change in tank conductivity.
Specification	Counts 0-240 drains, then rolls back to 0. Can not manually reset counter
Default	0
Description	When the wash power is on the unit compares the previous conductivity reading to the current conductivity reading. If the conductivity reading dropped 20 or more Beta Units the drain counter will increment. Example: The wash power is on and the tank concentration is 40 Beta Units. Wash power turns off, so the unit stores the value of 40 Beta units. A drain occurs, and the wash tank is filled with clean water. Tank concentration is now 3 Beta units. Wash power turns back on, the unit delays for 4 seconds, then compares the new tank concentration to the previously stored old concentration. The tank concentration dropped more than 20 Beta Units so the drain counter is incremented.

Conductivity Range

User Interface	Uniview Controlled
Modes	Conductivity Only
Limitations	Only works in HI range when POT controlled
Value Saved	When value changed by user on Uniview
Specification	0 = LO, 1 = HI
Default	Hi Conductivity Range = 1
Description	The D3000 allows 2 different conductivity ranges when Uniview controlled. The default high conductivity range is the same conductivity range used by the D1000.

Tank Concentration without C3M

User Interface	Uniview Controlled & Pot Controller
Modes	Conductivity Only
Limitations	
Value Saved	None
Specification	
Default	0 – 70 Beta Units
Description	Used to indicate a scaled probe. When scale builds up on a conductivity probe the capacitance of the probe drops, and the measured tank concentration is lower than it actually is. If this value is significantly lower than the 3CM reading in menu 3 then it is time to clean the probe.

Control Source

User Interface	Uniview Controlled or POT controlled
Modes	Conductivity, Timed, Speed
Limitations	
Value Saved	When value changed by user on Uniview
Specification	0 = Pots, 1 = Uniview
Default	Pot Controlled = 0
Description	Selects if the Unit will be controlled by the Pots on the PCB, or the values set on the Uniview

Firmware Version

User Interface	Uniview Controlled or POT controlled
Modes	Conductivity, Timed, Speed
Limitations	
Value Saved	
Specification	Version number increases each time new firmware is released.
Default	
Description	This number indicates what version of the code is programmed in the PCB

D5000/DiTelli Compatibility Mode 4 Menu 2

User Interface	Uniview Controlled
Modes	Conductivity, Timed, Speed
Limitations	
Value Saved	When value changed by user on Uniview
Specification	0 = No: 24 Menus, 1 = Yes: 16 Menus
Default	Not D5000 Compatible = 0
Description	For the data output to operate with D5000, the data format is to have 16 menus only. The extra menus to 24 have been added to provide more information and programming options for most of the installations that don't use D5000

Rinse Saver Mode 4 Menu 4

User Interface	Uniview Controlled
Modes	Conductivity, Timed, Speed
Limitations	Feature on firmware v.2 and higher
Value Saved	When value changed by user on Uniview
Specification	0 = OFF, 1=ON
Default	0
Description	If the feature is ON, the unit will only dispense rinse aid if there has previously been a wash signal or the wash signal is present at the same time as the rinse. This will prevent rinse aid being dispensed when the dishwasher is filling through the rinse, as this process usually involves multiple rinse activations with no wash taking place. It eliminates unnecessary dosing of rinse aid.

D3000 Uniview Menus - When Uniview Controlled

Before you begin programming, you must connect your Uniview to the dispenser, go to Menu 23, select "1" for "Uniview" and press the "send" button. You will not be able to do any programming until you complete this task.

Using Uniview
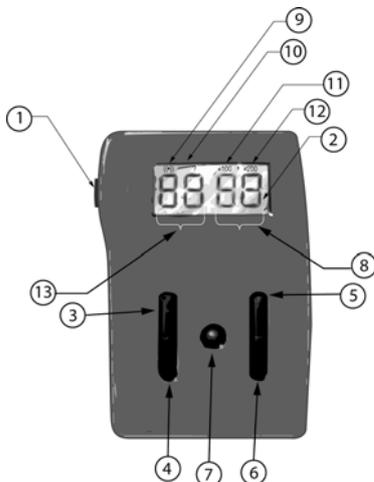
Figure 12. Uniview

Uniview can be used to program the D3000. A cable connects the Uniview to the D3000 through the communications port. Disconnect the Uniview after programming the D3000.

Uniview Components

1. Communications port
2. LCD Display
3. Menu "UP" button
4. Menu "DOWN" button
5. Data "UP" button
6. Data "DOWN" button
7. "Send" button

Display Data

8. Data value
9. System is communicating with dispenser.
10. Data has been changed.
11. Add 100 to data value.
12. Add 200 to data value
13. Menu number

Using Uniview

Menu	Conductivity Mode (Probe)	Timed Mode (Probeless) default mode	Speed Mode (Probeless)	Compatibility Mode
1	1	2	3	4
2	1 - Conveyor 2 - Door default = 1	1 - Conveyor 2 - Door 3 - Door with external power default = 1	1 - Conveyor 2 - Door 3 - Door with external power default = 1	D5000/DiTelli Compatible 0 = No (24 menus) 1 = Yes (16 menus) default = 0
3	Tank Concentration with C3M (0-70 Beta Units, Hi/Lo)	- - -	- - -	
4	Concentration Set Point (0-70 Beta Units) default = 5	Detergent Recharge (0-20 seconds) default = 5	Detergent Recharge Speed (0-99%) default = 5	Rinse Saver 0 = Off 1 = On default = 0
5	- - -	Detergent Initial Charge (0-240 seconds) default = 30	Detergent Initial Speed (0-99%) default = 30	
6	Rinse Delay (0-240 sec) default = 0	Rinse Delay (0-240 sec) default = 0	Rinse Delay (0-240 sec) default = 0	
7	Rinse Speed (0-99%) default = 10%	Rinse Speed (0-99%) default = 10%	Rinse Speed (0-99%) default = 10%	
8	Rinse Run Time (0-240 sec) default = 0	Rinse Run Time (0-240 sec) default = 0	Rinse Run Time (0-240 sec) default = 0	
9	Wash Temperature (0-100 degrees C)	- - -	- - -	
10	Alarm Volume: 0-5, min-max default = 5	Alarm Volume: 0-5, min-max default = 5	Alarm Volume: 0-5, min-max default = 5	
11	- - -	- - -	- - -	
12	- - -	- - -	- - -	
13	Detergent Speed =0-99% default = 99% NOTE: For detergent solenoid applications using a bowl, speed MUST be no lower than 99%.	Detergent Speed = 0-99% default = 99%	- - -	
14	Sanitizer Feed 0 = on with rinse 1 = on with detergent 2 = on with rinse, low level stops all pumps 3 = on with detergent, low level stops all pumps default = 0	Sanitizer Feed 0 = on with rinse 1 = on with detergent 2 = on with rinse, low level stops all pumps 3 = on with detergent, low level stops all pumps default = 0	Sanitizer Feed 0 = on with rinse 1 = on with detergent 2 = on with rinse, low level stops all pumps 3 = on with detergent, low level stops all pumps default = 0	
15	Sanitizer Speed: 0-99% default = 0%	Sanitizer Speed: 0-99% default = 0%	Sanitizer Speed: 0-99% default = 0%	
16	PCB ID Code default = 5	PCB ID Code default = 5	PCB ID Code default = 5	
17	Rack Count High (0-240) digits 7,6,5 Door counts when rinse turns on Conveyor counts after 20 seconds of accumulated rinse time Max rack count = 2,400,000 default = 0	Rack Count High (0-240) digits 7,6,5 Door counts when rinse turns on Conveyor counts after 20 seconds of accumulated rinse time Max rack count = 2,400,000 default = 0	Rack Count High (0-240) digits 7,6,5 Door counts when rinse turns on Conveyor counts after 20 seconds of accumulated rinse time Max rack count = 2,400,000 default = 0	
18	Rack Count Middle (0-99) digits 4 & 3 default = 0	Rack Count Middle (0-99) digits 4 & 3 default = 0	Rack Count Middle (0-99) digits 4 & 3 default = 0	
19	Rack Count Low (0-99) digits 2 & 1 default = 0	Rack Count Low (0-99) digits 2 & 1 default = 0	Rack Count Low (0-99) digits 2 & 1 default = 0	
20	Drain Count (0-240) Only works in conductivity mode with conductivity probe default = 0	- - -	- - -	
21	Conductivity Range 0 = LO 1 = HI default = 1	- - -	- - -	
22	Tank Concentration without C3M or averaging (0-70 Beta Units, Hi/Lo)	- - -	- - -	
23	Control Source 0 = POTS 1 = Uniview default = 0	Control Source 0 = POTS 1 = Uniview default = 0	Control Source 0 = POTS 1 = Uniview default = 0	
24	Firmware Version	Firmware Version	Firmware Version	

D3000

D3000 Uniview Menus - When Potentiometer Controlled

Ensure Menu 23=0.

The only menus which can be edited by the UniView are menus 10 & 23

Menu	POT Controlled Conductivity Mode	POT Controlled Timed Mode	
1	Mode Switch Position 1 = Conductivity	Mode Switch Position 2 = Time	
2	1 - Conveyor 2 - Door default = 1	1 - Conveyor 2 - Door 3 - Door with external power default = 1	
3	Tank Concentration with C3M (0-70 Beta Units, Hi/Lo) HI Conductivity Range	Tank Concentration with C3M (0-70 Beta Units, Hi/Lo) HI Conductivity Range	
4	Concentration Set Point (0-70 Beta Units) Detergent Setpoint POT	Detergent Recharge (0-30 Seconds) Detergent Setpoint POT	
5	- - -	Detergent Initial Charge (0-90 seconds) Det. Initial Charge POT	
6	Rinse Delay = 0	Rinse Delay = 0	
7	Rinse Speed (0-99%) Rinse Setting POT	Rinse Speed = 99%	
8	Rinse Run Time = 0 On as long as rinse trigger on	Rinse Run Time (0-30 sec) Rinse Setting POT	
9	Wash Temperature (0-100 degrees C)	Wash Temperature (0-100 degrees C)	
10	Alarm Volume (0-5, min-max) default = 5	Alarm Volume (0-5, min-max) default = 5	**Uniview Changeable**
11	- - -	- - -	
12	- - -	- - -	
13	Detergent Speed Speed = 99%	Detergent Speed Recharge = 80% Recharge & Rinse = 88% Initial Charge = 98%	
14	Sanitizer Feed 0 = on with rinse 1 = on with detergent 2 = on with rinse, low level stops all pumps 3 = on with detergent, low level stops all pumps default = 0	Sanitizer Feed 0 = on with rinse 1 = on with detergent 2 = on with rinse, low level stops all pumps 3 = on with detergent, low level stops all pumps default = 0	
15	Sanitizer Speed (0-99%) default = 0%	Sanitizer Speed (0-99%) default = 0%	
16	PCB ID Code default = 5	PCB ID Code default = 5	
17	Rack Count High (0-240) digits 7,6,5 Door counts when rinse turned on Conveyor counts after 20 seconds of accumulated rinse time Max rack count = 2,400,000 default = 0	Rack Count High (0-240) digits 7,6,5 Door counts when rinse turned on Conveyor counts after 20 seconds of accumulated rinse time Max rack count = 2,400,000 default = 0	
18	Rack Count Middle (0-99) digits 4 & 3 default = 0	Rack Count Middle (0-99) digits 4 & 3 default = 0	
19	Rack Count Low (0-99) digits 2 & 1 default = 0	Rack Count Low (0-99) digits 2 & 1 default = 0	
20	Drain Count (0-240) Only works in conductivity mode with conductivity probe default = 0	- - -	
21	Hi Conductivity Range = 1	Hi Conductivity Range = 1	
22	Tank Concentration without C3M or averaging (0-70 Beta Units, Hi/Lo)	Tank Concentration without C3M or averaging (0-70 Beta Units, Hi/Lo)	
23	Control Source 0 = POTS 1 = Uniview default = 0	Control Source 0 = POTS 1 = Uniview default = 0	**Uniview Changeable**
24	Firmware Version	Firmware Version	

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