OMNI 4000 E Filter Controller Manual

Revision: 1.1, January 2011

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SECTION 1 - CONSTRUCTION

This manual describes a controller that controls the rinsing of a motorized, automatic, self-cleaning water filter, and is identified as a Rain Bird Model OMNI 4000E Controller (hereafter referred to as the Controller). This manual covers two versions of the controller. One version of the Controller accepts 110-120 Vac, 60 Hz single-phase power, while the other version accepts 220-240 VAC, 50 Hz single phase power. Current draw is less than 10 amperes. All required internal voltages are generated from these input powers.

The Controller is housed in a molded fiberglass reinforced polyester, NEMA 4X rated enclosure. The enclosure's cover is fully hinged with a large clear window and two lockable latches. The enclosure has molded-in mounting rails with holes for mounting the Controller directly to a mounting plate on the filter body or to a nearby wall or structure.

The window on the Controller's cover reveals all the Controller's components and wiring. All operator actions are performed with the cover swung fully open. The 10-amp circuit breaker, mounted in the lower left, is used to apply and remove power to the Controller. There is also an ON/OFF switch in the upper left that enables the PLC Processor. All other operator actions are with the six buttons on the PLC Processor. To the right of Processor are three fuse holder modules that protect the inputs and output of the step-down transformer located in the upper right. Other components include a DPDT relay and motor contactor with overload relay located next to the three fuse holder modules. Finally, along the bottom third of the Controller is a terminal block that provides a convenient location to wire in all the Controller's power, inputs & outputs. The terminal block, component layout drawing and wiring diagram / schematic are detailed in the APPENDIX.

When the controller is supplied attached to the filter's mounting plate, the filter's geared motor, solenoid valve and differential pressure switch (DPS) are all pre-wired to the Controller's terminal block and only the addition of an input power cable is required to operate the Controller. If the Controller is supplied separate from the Controller, then the motor and solenoid along with input power need to be wired to the Controller. The Controller is a powerful device that can also control optional equipment when wired to the Controller's inputs and outputs. This manual details many optional equipment configurations.

SECTION 2 – OPERATION

A typical automatic, self-cleaning filter operates by trapping particles on the woven mesh of a wire screen, then performing a screen rinsing cycle whenever sufficient particles are trapped on the screen. This process is repeated over and over again. The purpose of the Controller is to detect when there are sufficient particles on the screen to warrant a rinsing cycle, and to activate the components that do the actual cleaning of the screen.

A differential pressure switch (DPS) is used to detect how dirty the screen is by monitoring the differences in pressures between the inlet and outlet of the filter, and by closing its switch contacts when a preset differential is reached. From years of experience, Rain Bird has determined that the ideal differential is 7 psi. All differential pressure switches supplied by Rain Bird are factory preset for 7 psi, increasing. When the DPS contacts are closed, the Processor receives a high Differential pressure (Dp) signal and initiates a rinse based on high Dp.

The rinsing cycle normally requires two Controller actions. One action opens the single Rinse Valve on the filter, and the other action energizes the filter's fractional Hp, geared motor. The Processor energizes the coil of the motor contactor to start the motor turning. An overload relay protects the motor. The motor's output drives a gear reduction assembly to drive the filter's dirt collecting assembly in a slow, precise motion. The motion of the dirt collector shaft is both rotary and linear, and the dirt collector's suction nozzles pass over the entire surface of the screen to remove all the accumulated particles. The Rinse Valve allows the suctioned particles to exit the filter. The Rinse Valve can be a diaphragm or ball style valve that can be operated hydraulically, pneumatically or electrically. The Controller typically is connected to a 3-way normally open solenoid valve that normally sustains pressure on the standard, hydraulically actuated diaphragm Rinse Valve to keep it closed, and when the Controller energizes the coil of the solenoid valve, it vents pressure and causes the diaphragm Rinse Valve to open. The operator selects the duration the coil is energized. The Processor can alternately energize a solenoid valve that applies and removes dry, filtered & pressurized air to pneumatic actuator that opens and closes a ball Rinse Valve. The Controller can also supply open or close voltages to an electric actuator that opens or closes a ball Rinse Valve.

The Controller has three solenoid outputs. As mentioned, one is typically used to control the standard supplied diaphragm Rinse Valve. The other solenoids can optionally control hydraulic or pneumatic actuated valves used as a Controlled Outlet Valve (COV hereafter) or as a Bypass Valve.

The COV is used when regular pressure or flow is insufficient to guarantee proper rinsing. It throttles or deadheads the filter's outlet to increase pressure and preserve flow. The COV is activated prior to Rinse Valve activation and stays active until the rinse is completed and is commanded to close.

The Bypass Valve is used to provide unfiltered water to the process when the Controller detects a fault. The fault can be caused by a motor overload that trips the overload relay or by water conditions that cause the filter to become clogged due to a very high particle load that normal repetitive rinsing cannot reduce. This optional valve is located between the filter's inlet and outlet ports of the filter, and is normally closed. The Processor opens the Bypass Valve when a fault it detected to allow unfiltered water to bypass the filter. The Processor also provides dry contacts on the Controller's terminal block that indicate a fault when its normally open contacts are closed. Once the Processor detects a fault it ceases to function and awaits for an operator's intervention to clear the fault, but only after the cause of the fault has been determined and corrected. The Bypass Valve stays open until the fault is cleared.

Should the application require the electric actuation of all valves, the three solenoid outputs can be wired to an auxiliary enclosure that can supply the correct opening and closing voltages to multiple electrically actuated valves.

SECTION 3 – CONNECTIONS

Read this manual thoroughly before attempting to wire power, inputs and outputs to avoid mistakes that can cause bodily harm or damage equipment. Follow all national and local codes when wiring to the Controller. Always remove the power source before making wiring connections. Refer to the Terminal Block diagram in the APPENDIX for additional information.

POWER:

As viewed from left to right, the first component of the Terminal Block is the 10-Amp circuit breaker where line power (usually a black wire) is connected. For the 120 v model this black line wire is designated L, and for 230 v models this black line wire is designated L1. The next terminal is a white terminal (on 120 v models) for the input power neutral (usually a white wire) and is designated N. For 230 v models this terminal is red and the red power line wire is designated L2. The next terminal is the yellow & green ground terminal that is also in contact with the mounting plate.

This controller only accepts single-phase power

For 208 V 60 Hz three phase power with a fourth common wire, two phases, along with the common, can be wired to the 120 v version of the Controller.

Make power connections using 14 AWG or larger stranded or solid copper insulated wire. Place the wire with a ¼'' stripped end into the terminal's lower trough and slide into the opening, then tighten the screw on top of the terminal. This clamps the wire in place. Tug on each clamped wire to insure each connection is secure.

INPUTS:

18 AWG or larger copper insulated wire is recommended.

Terminal 1 is a tie point for the L or L1 voltage, and is not used.

Terminals 2 & 3 are for the Differential Pressure Switch (DPS). Standard Controller's are supplied with the standard DPS mounted to the Controller's enclosure and wired to Terminals 2 & 3. Terminal 2 has the L or L1 voltage present, and when the DPS detects a high differential pressure (hereafter Dp), its normally open dry contacts close, and the L or L1 voltage is returned on Terminal 3 as a command to rinse due to high differential pressure (Processor Input 1).

Terminals 4 & 5 are for an External Rinse Command. Terminal 4 has the L or L1 voltage present, and by closing an external dry contact switch, the L or L1 voltage is returned on Terminal 5 as a remote command to rinse (Processor Input 2).

Terminals 6 & 7 are for an External Lockout Command. Terminal 6 has the L or L1 voltage present, and by closing an external dry contact switch, the L or L1 voltage is returned on Terminal 7 as a command to halt a rinse in process and prevent additional rinses until the command is removed by opening the same external switch (Processor Input 3).

Terminals 8 & 9 are for the Open COV command. Terminal 8 has the L or L1 voltage present, and by closing a dry contact switch, the L or L1 voltage is returned on Terminal 9 as a command to open the COV valve (Processor Input 6). These terminals would be wired from the normally open dry contact End of Rinse Terminals 28 & 29 only if a COV valve were present. At the end of a rinse, the End of Rinse contacts close and are used to open the COV.

Terminals 10 & 11 are for a Multi-Filter Fault Warning. Terminal 10 has the L or L1 voltage present, and by closing an external dry contact switch, the L or L1 voltage is returned on Terminal 11 as a command to issue a Fault (Processor Input 7). Only the master filter uses these terminals in a multi-filter arrangement. These terminals are wired in parallel to each slave filter's terminals 26 & 27. Terminal 10 on the master filter is wired to Terminal 26 of each slave filter and Terminal 11 of the master filter is wired to Terminal 27 of each slave filter. The slave filter's 26 & 27 Terminals are normally open dry relay contacts that close when its filter's Controller detects a motor overload fault. Therefore, a fault of any slave filter will cause the master filter to fault and its Terminals 26 & 27 are used to indicate an overall system fault. Both the faulted slave filter and master filter will display red **FAULT** lights.

OUTPUTS:

18 AWG or larger copper insulated wire is recommended.

Terminals 13 & 14 are for the 24 Vac coil voltage of the filter's Rinse Valve Solenoid. On standard filters, the Rinse Valve Solenoid has been pre-wired to Terminals 13 & 14, if the Controller is supplied attached to the filter.

Terminals 15 & 16 are for the 24 Vac coil voltage of the filter's optional COV Solenoid, only if a solenoid operated COV is present. Whenever a COV is present, these terminals close the COV during the rinse cycle sequence, and a command is required at the end of

the rinse to open the COV. This command is the End of Rinse command on Terminals 28 & 29, and must be wired to Terminals 8 & 9 whenever a COV is present.

Terminals 17 & 18 are for the 24 Vac coil voltage of the filter's optional Bypass Valve Solenoid, only if a solenoid operated Bypass Valve is present. When a Bypass Valve is present, it is normally closed and is opened by energizing the solenoid's coil whenever the Processor detects a fault. This output stays energized until the operator resets the fault with the Processor. With multi-filter applications, the master filter's Processor controls the Bypass Valve whenever the Processor detects a fault.

Terminals 19, 20 & 21 are used to apply opening and closing L or L1 voltages to an electrically operated valve. The valve can either be a filter Rinse Valve, a COV or a Bypass Valve. Terminal 19 provides an L or L1 voltage to open the valve, Terminal 21 provides an L or L1 voltage to close the valve and Terminal 20 is the neutral return.

Terminals 22, 23 & 24 are used to apply opening and closing L or L1 voltages to a second electrically operated valve. The valve can either be a filter Rinse Valve, a COV or a Bypass Valve. Terminal 22 provides an L or L1 voltage to open the valve, Terminal 24 provides an L or L1 voltage to close the valve and Terminal 23 is the neutral return.

Both sets of terminals can be used for two different electrically actuated valves. If three electric actuators are required, then an auxiliary control enclosure is required.

Terminals 25 & 26 are dry contacts that are normally closed to indicate that there is no fault. Terminals 26 & 27 are dry contacts that are normally open, that close when the Processor detects a fault. For multiple filter installations, slave filters wire these terminals to the master filter's Terminals 10 &11.

Terminals 28 & 29 provide the End of Rinse indication when required. For a single filter with a COV, these terminals are wired back to Terminals 8 & 9 to signal the Processor to open the COV. For multiple filter installations, these terminals are wired in series to the next filter's External Rinse command Terminals 4 & 5 to trigger that filter's rinse.

For multiple filter installations with a single system COV, the last filter's terminals 28 & 29 are wired to the first filter's Terminals 4 & 5. This keeps the COV closed for the entire rinsing sequence of all filters.

The last terminal is a yellow & green grounded terminal. The single-phase motor's ground wire is connected here. The motor's **U** and **V** terminals are wired to the overload relay directly. When the Controller is supplied mounted on the filter, the motor has been pre-wired with a 16 AWG cable.

SECTION 4 – CONFIGURATION

Once all the power, input and output connections have been made, the Controller can be powered-up and configured, then the filter can be placed into operation.

1. Twist the locking latches and swing open the Controller's cover.

2. Depress the OMNI 4000E Controller's Circuit Breaker until it clicks. The ON/OFF Switch should glow green. The screen should display:

   Rain Bird
   OMNITROL 4000E
   PRESS OK TO START

3. Turn the ON/OFF Switch to the **ON** position to enable the Processor.

   NOTE: to stop and Processor action is an emergency, either turn the ON/OFF switch to **OFF** or depress the circuit breaker.

4. Depress the Green **OK** button on the PLC.

5. The following MAIN/STATUS screen is displayed:

   MAIN/STATUS
   1 MANUAL 2 FAULT
   RINSE OFF
   00000 (flashing)

6. Depress the Orange **ESC** button and the flashing **00000** will alternate with 6 solid rectangles.

   NOTE: Depressing the **A** & **B** buttons scrolls through the various screens, and depressing the **ESC** button returns the display to the MAIN/STATUS screen. Values can only be changed when **00000** is flashing. Alternate flashing **00000** and rectangles allows scrolling between the screens. Values are changed by first depressing the **OK** button, then the **+** or **-** buttons until the desired value is displayed. Depressing the **OK** button again retains the selected value and allows scrolling.

7. Depress the **A** button and the following screen should appear (if it does not appear, depress the **A** button repeatedly until it appears):

COUNTDOWN TIMER
(ENTER IN MINUTES)
00000 (flashing)

By placing a value (in minutes), the Processor will automatically initiate a rinse cycle if this value counts down to zero without any other commands to rinse. This allows periodic filter rinsing, when there are infrequent rinses due to a high Dp, to exercise the filter and Controller on a regular basis. Inserting a very large value will guarantee that the filter will automatically rinse on a high Dp only. Every time the filter rinses by any method, this timer will reset and start counting down again. A value of 1440 is suggested to allow the filter to rinse automatically at lease once in a 24 hour period. After entering a value, depress the **OK** button to lock in the value. (A value of 1440 has been pre-entered).

8. Depress the **A** button to move to the following screen:

RINSE DURATION:
(ENTER IN SECONDS)
00035 (flashing)

Depress the **OK** button only if the value needs to be changed. The minimum value is 00020 but a value of 00035 is preset from the factory. This is the value for the interval that the rinse solenoid and motor contactor coils are energized. A value of 35 seconds insures that the dirt collector assembly will complete one backward and one forward cleaning stroke as it rotates. The 35-second value allows for some overlap such that the dirt collector always covers the entire screen's surface twice, plus a little more. A value a 35 should be verified and should only be changed when a long continuous rinse is desired due a clogged screen or other operator action.

9. If a value of 35 has been preset, depress the **A** button to move to the next screen. The following should appear:

COV DELAY
(ENTER IN SECONDS)
00000 (flashing)

10. Depress the **OK** button and use the **+** or **–** buttons to enter a value, then the **OK** button again to lock in the value. This delay allows time for a slow acting valve to close. For a diaphragm valve or an electrically activated valve, a value of 15 to 20 seconds might be required to close the valve. For valves with pneumatic actuators, closure times are usually less than 5 seconds. Insert the appropriate value, then depress the **OK** button to lock in the value, and then the **A** button. If a COV is not part of the installation, this step can be skipped by depressing the **A** button.

11. The next screen should appear as:

END OF RINSE
DELAY:
(ENTER IN SECONDS)
00000 (flashing)

12. The End of Rinse Delay is a value that triggers contact closure on Terminals 28 & 29. For multiple filter installations, these terminals are wired to the next filter's Terminals 4 & 5 to signal that filter to start a rinse cycle. With a single filter with a COV, Terminals 28 & 29 are wired back to Terminals 8 & 9 to command the Processor to open the COV. When Terminals 28 & 29 are used, a delay of 5 to 10 seconds is common. This allows time for the filter's Rinse Valve to close before opening the next filter's Rinse Valve or opening the single filter's COV. To select this option, depress the **OK** button, use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value, then the **A** button to move to the next screen. If this option is not part of the installation, depress the **A** button to skip and move to the next screen.

13. The next screen should appear as:

#OF CONSECUTIVE
HIGH DP RINSES
ALLOWED
00000 (flashing)

14. The Processor will allow several consecutive rinses to reduce a high Dp before it

issues a Fault due to a persistently high Dp. Select a value 2 or greater to allow the Processor to perform consecutive rinses to lower a high Dp. Under normal conditions a value of between 2 & 5 is suggested. As an example, if the entered value is 5, and fault due to a high Dp is issued after those 5 consecutive rinses, then it is assumed that the filter is hopelessly clogged, and requires maintenance. To insert a value, first depress the **OK** button, then use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value, then the **A** button to move to the next screen.

15. The next screen should appear as:

COV?
1=SOLENOID 2=NO
3=ELEC. ACTUATOR
00000 (flashing)

16. This screen requires the insertion of a value. First depress the **OK** button, then use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value, then the **A** button to move to the next screen. If there is no COV present, enter a value of 00002. If there is a COV with a solenoid actuator, then enter 00001. This will cause the Processor to energize a 24 Vac solenoid coil on Terminals 15 and 16 during the rinse sequence. If there is a COV with an electric actuator, then enter 00003. This will cause the Processor to activate Terminals 19 with an L or L1 voltage and Terminal 20 with N or L2 to open and keep the COV open. During the rinsing sequence the Processor removes the L or L1 voltage from Terminal 19 and applies it to Terminal 21 to close the COV. The COV remains closed until after the rinse valve is closed at the end of the rinse, if the End of Rinse command on Terminals 28 & 29 are wired to Open COV command on Terminals 8 & 9.

17. The next screen should appear as:

BYPASS VALVE?
1=SOLENOID 2=NO
3=ELEC. ACTUATOR
00000 (flashing)

18. This screen requires the insertion of a value. First depress the **OK** button, then use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value, then the **A** button to move to the next screen. If there is no Bypass Valve present, enter a value of 00002. If there is a Bypass Valve with a solenoid actuator, then enter 00001. This will cause the Processor to energize a 24 Vac

solenoid coil on Terminals 17 and 18 when the Processor detects a fault. If there is a Bypass Valve with an electric actuator, then enter 00003. This will cause the Processor to activate Terminals 21 with an L orL1 voltage and Terminal 19 with N or L2 to close and keep the Bypass Valve closed. If the Processor detects a fault it removes the L voltage from Terminal 21 and applies it to Terminal 19 to open the Bypass. The Bypass Valve remains open until the operator clears the fault.

19. The next screen should appear as:

RINSE VALVE HAVE
AN ELEC. ACTUATOR?
1-= YES 2=NO
00000 (flashing)

20. This screen requires the insertion of a value. First depress the **OK** button, then use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value, then the **A** button to move to the next screen. If the rinse valve has a solenoid, enter a value of 00002. If the rinse valve has an electric actuator, then enter 00001. This will cause the Processor to activate Terminal 21 with an L orL1 voltage and Terminal 20 with N or L2 to keep the rinse valve closed. During the rinse sequence the Processor removes the L or L1 voltage from Terminal 21 and applies it to Terminal 19 to open the rinse valve. The rinse valve remains open for the duration of the rinse cycle, usually 35 seconds, then L or L2 is removed from Terminal 19 and reapplied to Terminal 21 to close the rinse valve.

Normally the filter is supplied with a solenoid activated diaphragm rinse valve wired to Terminals 13 & 14, and the Processor is programmed for this and programmed for no COV, no Bypass Valve and no electric actuated rinse valve. The Rinse Duration is pre-programmed for 35 seconds, the Countdown Timer for 1440 minutes and 5 Consecutive High Dp Rinses.

Note: The Controller can only accept connections to two electric actuators. Based on the response to the last three screens, the Controller will assign which set of terminals are assigned to what valve. Refer to the terminal block designation for actuator terminals. Terminals 19, 20 & 21 are assigned to the first YES response to an electric actuator and Terminals 22, 23 & 24 to the second YES response.

The Processor normally keeps the Actuator Open contact energized for a COV, and the a Actuator Closed contact energized for a Rinse Valve or Bypass Valve.

21. If there is a YES to all three valve responses then the following screen is displayed:

WARNING
MORE THAN TWO ELEC.
ACT VALVES
SELECTED

This requires the review and reselection of valves/actuation responses to satisfy the two electric actuator limit. Depress **OK** to return to the valve selection screens to repeat steps 15 through 20.

22. After correctly entering valve configurations, depress **A** and the next screen should appear as:

DP RINSE: 00000
TIMER RINSE: 00000
REM RINSE: 00000
MAN RINSE: 00000

This is the Rinse Counter screen that keeps a cumulative record of all the rinses by any means ---- DP, TIMER, REMOTE & MANUAL.

23. Depress **OK** to display the counter reset screen as follows:

RESET COUNTERS?
OK TO RESET
ESC TO CANCEL

Selecting **ESC** returns to the MAIN/STATUS screen.
Selecting **OK** clears the counters.

24. If the Rinse Counter screen is displayed and **A** is depressed then the following screen appears:

DP STATUS: OFF (or ON)
CTDOWN: 01440 MIN (the preset valve counting to zero)

RINSE: N/A

This screen provides Rinsing Status. The DP is either OFF (no high Dp) or ON for a high Dp. CTDOWN is the countdown timer value in minutes and is lowered by one each minute. It resets to the programmed valve after ever rinse. Rinse: shows a rinse in progress counting down from its programmed value (usually 35 seconds). This shows how much longer the rinse valve will be open and the motor on. This countdown only occur during a rinse.

25. Depress **A** or **ESC** to return to the MAIN / STATUS screen.

SECTION 5 – OTHER FEATURES

Prior Sections described the normal configuration and operation of a filter in the automatic mode. Once the Processor has been properly configured for all the equipment connected to the Controller and all the parameter values properly inserted, the Controller will continue to perform rinses over and over again, unless a fault is detected or main power is lost.

Dry contacts at terminals 26 & 27 have been provided to indicate a fault. Closure of these contacts indicates a fault has been detected. The filter ceases performing additional rinses until the operator clears the fault at the Controller. The cause of the fault should be determined before resetting the fault. Faults are caused by the detection of a high current draw by the motor by the overload relay or when the Processor has performed several consecutive high Dp rinses without decreasing the high Dp. The red **FAULT** light is lit, and the overload relay needs to be manually reset, if tripped. If the pressure gauge readings on the filter indicate a inlet to outlet Dp greater than 7 psi, then the filter's fine screen is probably clogged. This usually requires the dis-assembly of the filter and removal of the screen, but sometimes extended manual cleaning of the screen can clean a dirty screen.

Manual Mode/Fault Reset

Manual mode is whenever the filter is rinsed by a command from the operator. This can be during normal start-up or maintenance to confirm proper filter & Controller operation, or to attempt to clean a dirty filter screen. If a manual rinse is being performed due to a dirty screen, best results are achieve if the filter's outlet is throttled or closed completely to allow all the available pressure and flow into the filter to be used for the rinsing cycle.

Closure of the filter's outlet can be achieved with a manual isolation valve at the filter's outlet or a valve downstream. If the installation has a COV controlled by the Processor, then the COV acts to restrict or stop flow from the outlet during the manual rinse sequence.

1. Depress the **ESC** button to return the display to the MAIN/STATUS screen.

   MAIN/STATUS
   1 MANUAL 2 FAULT
   RINSE OFF
   00000 (flashing)

2. Depress the **OK** button, then use the **+** or **–** buttons to select a value and then **OK** button again to lock in the value. Select 00001 to enter Manual Mode, or select 00002 to start the fault reset process.

3. If the fault reset was selected, depressing the **OK** button displays the following screen:

   RESET FAULT?
   1=YES 2=NO

   00000 (flashing)

4. Enter 00001 to reset the fault followed by the OK button. The fault is reset and the red **FAULT** light turns off, and the MAIN/STATUS screen is displayed.

   NOTE: The fault will not reset if the fault was caused by a motor overload that is still present, or if the overload relay has not been manually reset.

5. If manual mode was selected, depressing the **OK** button displays the following screen:

   MANUAL RINSE
   PRESS OK TO
   START THE RINSE CYCLE

6. Depress the **OK** button to initiate a manual rinse. The same screen is maintained to allow the operator to repeat the manual rinse over and over again. To end this feature, depress the **ESC** button to return to the MAIN/STATUS screen and normal operation.

Alternately, the value for the rinse duration can be increased to a much larger value (the maximum is 300 seconds) to allow continual rinsing as the dirt collector travels back and forth repeatedly as it rotates. Then by depressing the **OK** button in manual mode, the need for starting, stopping and restarting over and over again is eliminated. Always return the rinse duration to 35 seconds when manual rinsed has been completed.

All Electric Actuated Valves

Some installations might require that all valves need to be ones controlled by electrical actuators. The standard Controller has only two sets of electric actuator outputs controlling a choice two of either a Rinse Valve a COV or a Bypass Valve, however the Controller's solenoid outputs can be utilized with an optional custom auxiliary enclosure to provide Rinse Valve, COV & Bypass Valve control with electric actuators. With this auxiliary enclosure, isolation and external source valves with electric actuators can also be controlled. Contact Rain Bird for further information.

Other End-User Controls

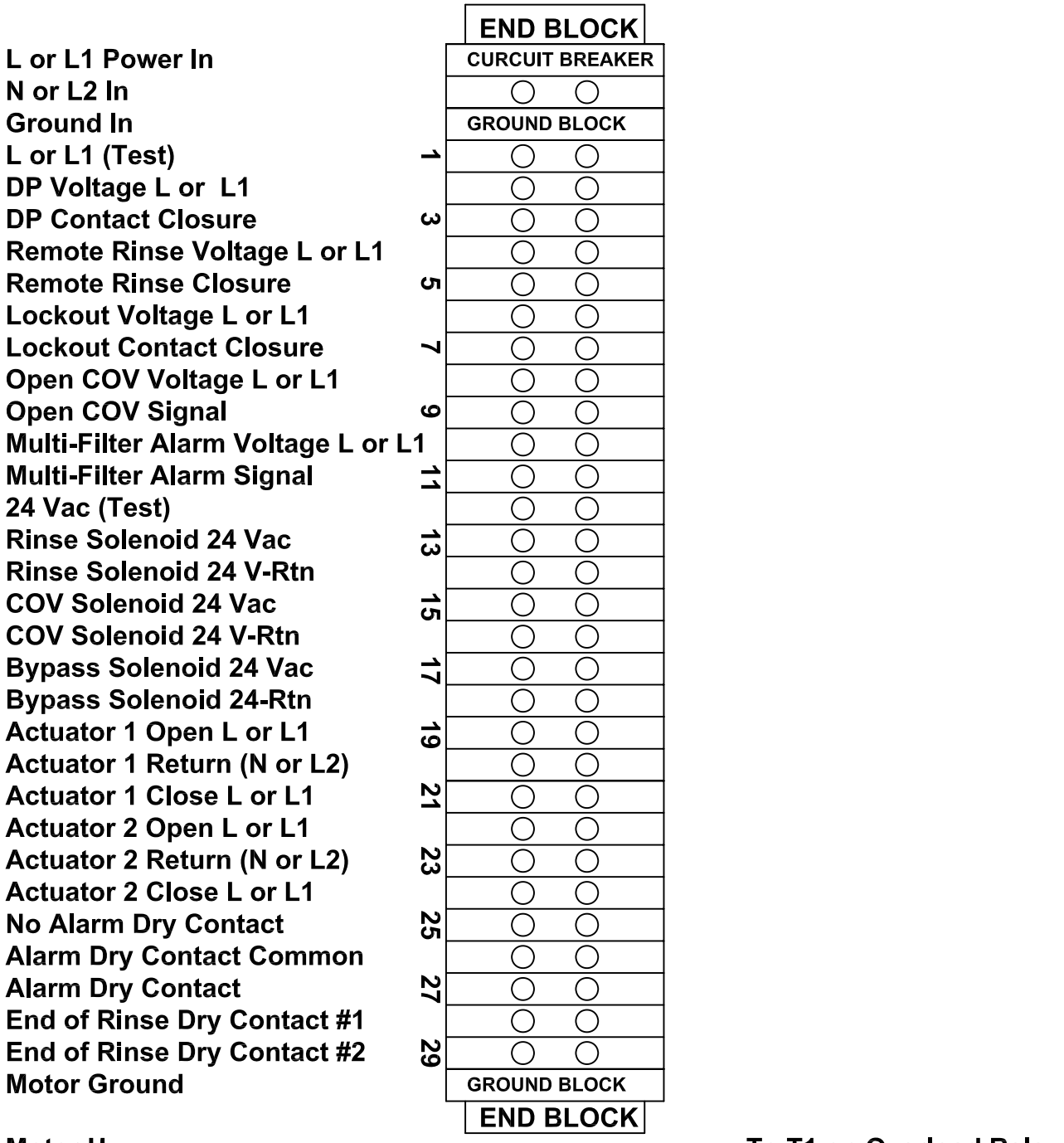
The end user can remotely command a rinse by wiring to Terminals 4 & 5, and can prevent a rinse by locking out the Processor at Terminals 6 & 7. Each action requires dry contact switch closure. The terminal contacts have L or L1 voltage present, and remote closure returns this voltage as a Processor's input to command a rinse or prevent rinsing.

Three-Phase Power Conversion

As mentioned previously, the Controller only accepts single phase power. If only a three-phase power source is available, an auxiliary transformer is required to convert the three-phase power to the required single phase accepted by the Controller. Contact Rain Bird for additional details.

APPENDIX

The following pages contain Controller Terminal Blocks, Component Layout, BOM Information, plus schematics.

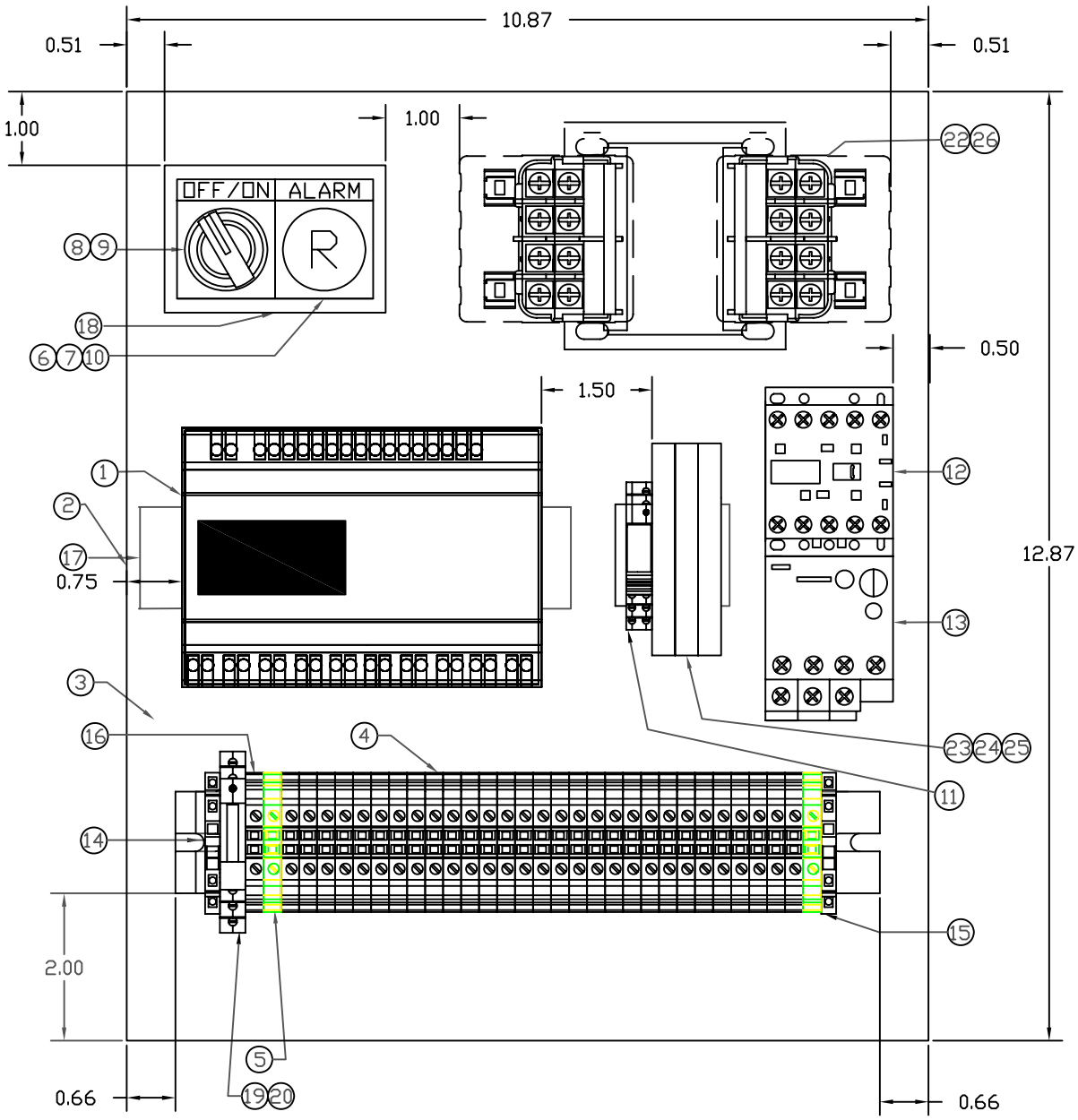


Controlled Outlet Valve (COV) to be supplied by customer

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

Rain Bird Corporation reserves the right to incorporate changes and make improvements to its products without prior notice.

REV	DATE	APP'D			
4			DRAWN BY:	RAIN BIRD CORPORATION 6991 EAST SOUTHPOINT ROAD TUCSON, AZ 85756	OMNI 4000E TERMINAL BLOCK TERMINAL DESIGNATIONS
3			APPROVED:		
2			DATE:		DRAWING NO. OMNI 4000E TERM BLOCK
1			SCALE: NONE		SHEET: 1 of 1



TERMINAL BLOCK LAYOUT

End Block	C. Breaker	N / L2	GND	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	GND	End Block

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

Rain Bird Corporation reserves the right to incorporate changes and make improvements to its products without prior notice.

REV	DATE	APP'D	DRAWN BY:	RAIN BIRD CORPORATION 6991 EAST SOUTHPOINT ROAD TUCSON, AZ 85756	OMNI 4000E COMPONENT ARRANGEMENT WITH ITEM NUMBER DESIGNATIONS	
4			APPROVED:			
3			DATE:		DRAWING NO. OMNI 4000E COMPONENTS	SHEET: 1 of 1
2			SCALE: NONE			
1						

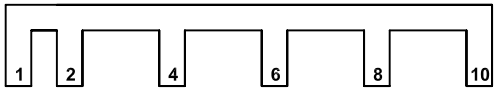
BILL OF MATERIALS - 120VAC

ITEM	QTY	DESCRIPTION
1	1	LOGIC PROCESSOR - 16 IN / 10 OUT 100-240 Vac
2	1	NEMA 4X FIBERGLASS ENCLOSURE - 14 X 12 X 6
3	1	MOUNTING PANEL FOR ENCLOSURE
4	29	TERMINAL BLOCKS
5	2	GROUNDED BLOCKS
6	1	RED LED LIGHT - 120 Vac
7	1	RED LED LIGHT BASE
8	1	GREEN LIGHT ON/OFF SWITCH
9	1	"ON / OFF" LABEL
10	1	"FAULT" LABEL
11	1	DPDT RELAY - 120 Vac COIL
12	1	CONTACTOR - 6A, 120 Vac COIL, NC AUX
13	1	OVERLOAD RELAY - 3.8 - 5.5 A
14	1	DIN RAIL
15	2	END BLOCK
16	1	WHITE TERMINAL BLOCK
17	1	RAISED DIN RAIL
18	1	MOUNTING BRACKET
19	1	TERMINAL BLOCK CIRCUIT BREAKER HOLDER
20	1	10A CIRCUIT BREAKER
21	1	JUMPER STRIP - 19 PINS - CUT INTO 3 JUMPERS
22	1	TRANSFORMER 240/120 X 24, 50 VA
23	3	FUSE BLOCK
24	2	1 A PRIMARY FUSE
25	1	2.5 A SECONDARY FUSE
26	2	TRANSFORMER PRIMARY JUMPER

240 VAC SUBSTITUTED ITEMS

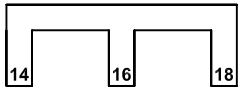
ITEM	QTY	DESCRIPTION
11	1	DPDT RELAY - 240 Vac COIL
12	1	CONTACTOR - 6A, 240 Vac COIL, NC AUX
13	1	OVERLOAD RELAY - 1.8 - 2.6 A
16	1	RED TERMINAL BLOCK
24	2	0.5 A PRIMARY FUSE
26	1	TRAMSFORMER PRIMARY JUMPER

USE ITEM 21
CUT AS SHOWN:



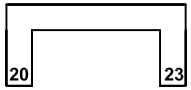
INSTALL FROM TB1-TB10

USE ITEM 21
CUT AS SHOWN:



INSTALL FROM TB14-TB18

USE ITEM 21
CUT AS SHOWN:



INSTALL FROM TB20 -TB23

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

Rain Bird Corporation reserves the right to incorporate changes and make improvements to its products without prior notice.

REV	DESCRIPTION	DATE	APP'D
3			
2			
1			

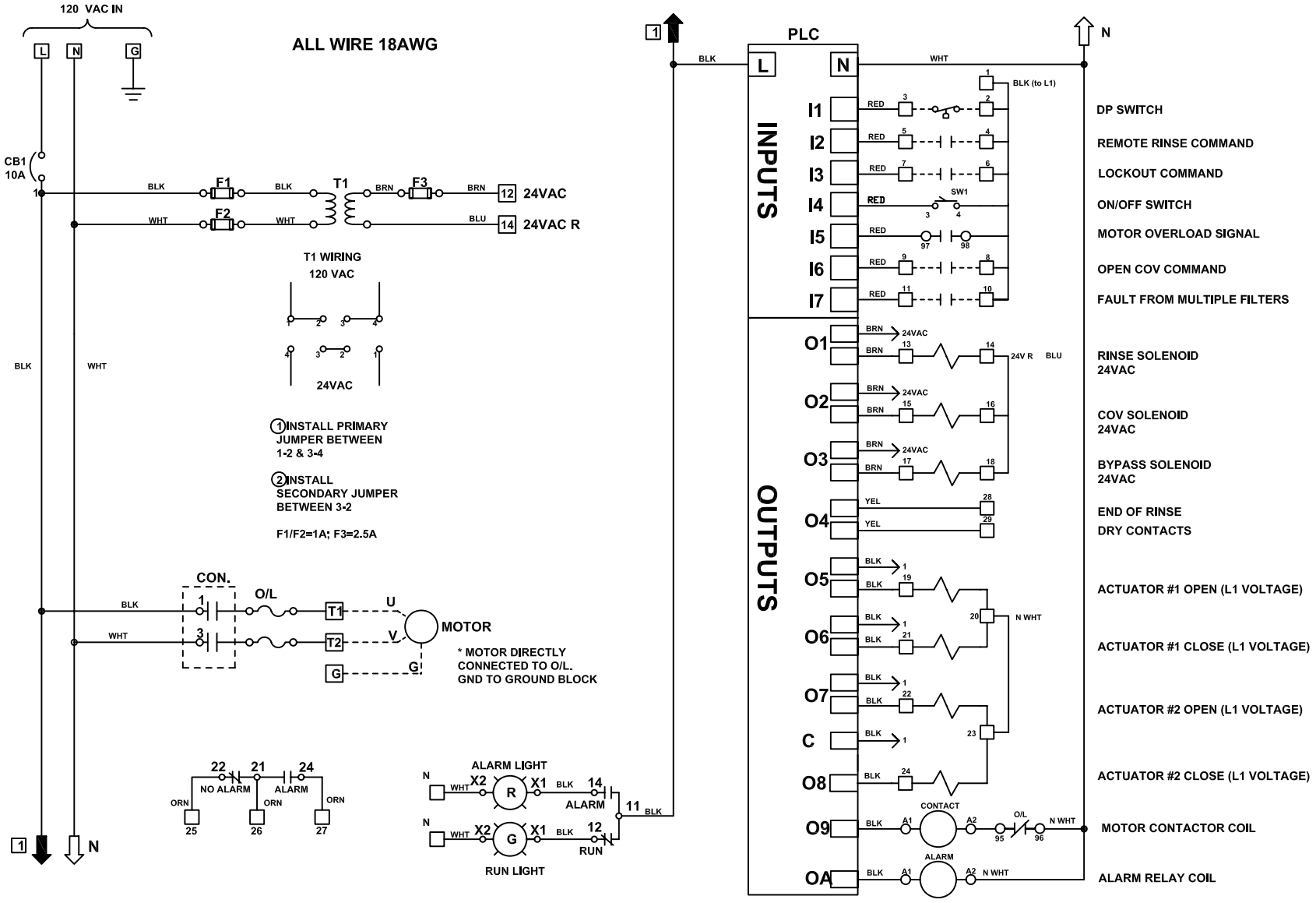
DRAWN BY:
APPROVED:
DATE:
SCALE: NONE

RAIN BIRD CORPORATION
6991 EAST SOUTHPOINT ROAD
TUCSON, AZ 85756

OMNI 4000E BILL OF MATERIALS WITH ITEM NUMBER DESIGNATIONS

DRAWING NO. **0MNI 4000E BOM**

SHEET: 1 of 1



Rain Bird Corporation reserves the right to incorporate changes and make improvements to its products without prior notice.

REV	DESCRIPTION	DATE	APP'D
3			
2	Created 120 V & 230 V versions		
1	Upgraded PLC		

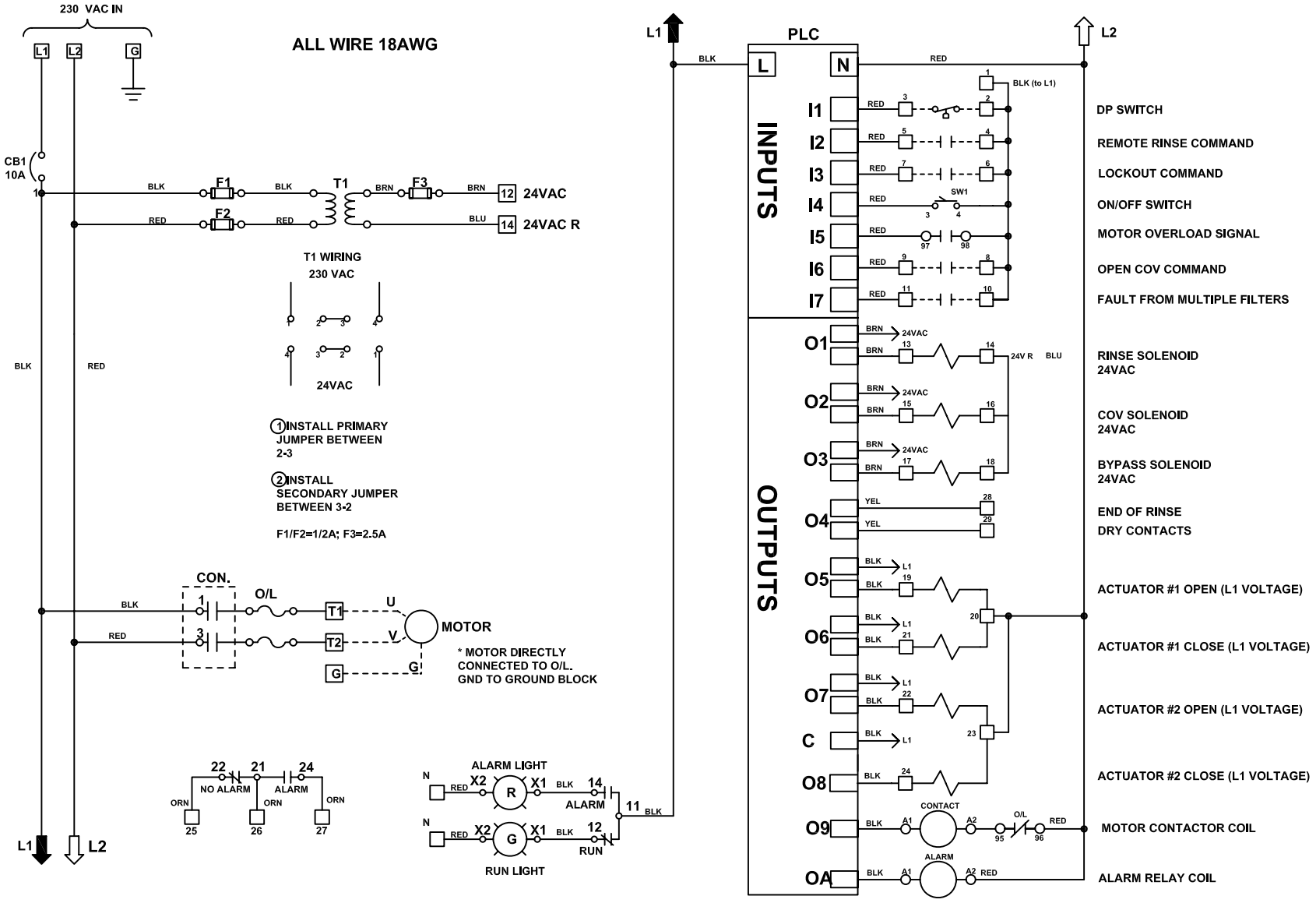
DRAWN BY:
APPROVED:
DATE:
SCALE: NONE

RAIN BIRD CORPORATION
6991 EAST SOUTHPOINT ROAD
TUCSON, AZ 85756

OMNI 4000E WIRING DIAGRAM / SCHEMATIC

DRAWING NO. **0MNI 4000E SCHEMATIC- 120 V**

SHEET: 1 of 1



Rain Bird Corporation reserves the right to incorporate changes and make improvements to its products without prior notice.

REV	DESCRIPTION	DATE	APP'D
3			
2			
1	Upgraded PLC		

DRAWN BY:
APPROVED:
DATE:
SCALE: NONE

RAIN BIRD CORPORATION
6991 EAST SOUTHPOINT ROAD
TUCSON, AZ 85756

OMNI 4000E WIRING DIAGRAM / SCHEMATIC

DRAWING NO. 0MNI 4000E SCHEMATIC- 230 V

SHEET: 1 of 1