CS114SSL

FEATURES:

Single phase, 120vac power in.
Simple Pump @ ½ hp, 120vac, single phase.
Aerator rating @ 1/3 hp 120vac, single phase.
Replaceable modules with plug/play technology.
Dual Alarm lights for better diagnostics.
(15) Onboard indicator lights for better
Over voltage protection from mis-wire with 230vac.
Select program control module with scroll display.
System parts wire straight thru to control.
Onboard pump run sensor and counter.
Smart logic stores 30 day time and cycles.
Continuous clock time with backup power.
Alarm Lights and status lights rated for 100Khrs.
Onboard socket for RMSYS monitoring dialer.
Pump "TEST" without picking up any floats.
Quick connect terminals to service parts replace.

CONTROL TYPE FUNCTION: select by standard type (default standard preset for your region)
Standard 40: Pump On Demand, Night Spray, Dosing.
Standard 245 (D): Pump On Demand, Night Spray, Dosing.
Standard 245 (DA): Gravity, Night Spray, Dosing (option set internal timer for pump on demand).
Standard 350: power terminals dedicated for UV light operation, terminals for UV alarm inputs.

ALARM INDICATORS: There are 2 Alarm Lights external on top of the enclosure RED & AMBER.
RED on Solid = High Level in Pump tank.
RED Flashing = Pump run fail detected in pump tank
Amber on Solid = Low Air detected in aeration treatment tank.
Amber Flashing = Disinfection alarm, aeration treatment tank.
RED & AMBER Flashing = 230vac mis-wire detected, no power allowed to turn on pump or aerator.
Note: All alarm faults are displayed on control module as service guide.

ALARM CONTROL ACTION: HIGH LEVEL Alarm turns on solid the Red Alarm external light the audible buzzer (to silence push "Alarm Test/Mute"). The smart logic determines the switch function by status. If in alarm, pushing the button will silence the buzzer, push again if you want the buzzer to sound while in alarm. If not in alarm, the button acts as an alarm test button only. When button is pushed, both red & amber alarm lights on solid with audible buzzer sounded.

PUMP FAIL Alarm turns on flashing; this indicates that a control command for pump action to start has not detected a pump run amp load. Audible alarm sounds also, "Alarm Test/Mute" will silence buzzer until alarm status has been remedied.

LOW AIR sensor alarm turns on solid AMBER Alarm external light and audible buzzer. This indicates an aeration tank alarm has been detected. Silence the audible by pushing "Alarm Test/Mute" button. Alarm will be active until alarm has been remedied.

DISINFECTION ALARM: AMBER flashing external alarm light indicates an alarm has been activated at the aeration treatment tank. Push the "Alarm Test/Mute" button to silence the audible. Alarm stays activated until the fault has been remedied.

CONTROL MODULE FUNCTION:

The onboard plug/play control module allows for user program selection. In most cases other than setting the correct time no action is required by the user. However the display shows status of the control and allows for user to review 30 day stored pump run information or change internal timer settings for dosing operations. The control module runs a stored clock time for night spray functions and determining each 24hr of stored pump run. If short term power is OFF the clock time has backup power so as not needing to reset the time. Expect clock time to be stored for up to 21 days.

A 3 button select operation is all that is required to enter the program and make needed changes. In normal operation the display will be asleep until needed. Simply touch the "Enter" button to awake the display. Push the same "Enter" button for a little longer period to bring up MENU display. Scroll up and down buttons will move the selection asterisk (*) thru the available choices and "Enter" button will select. After you have made the final select the display screen goes back to show program is "READY". By observing the clock time you can visually see it is running. During any point in your scrolling if you are unsure about changing a setting, no action on your part for 4 minutes will send the control back to its last working setting. After another 4 minutes if no action, the display will go to sleep unless called up again by touching the "Enter" button.

To replace a control module – turn off all 3 power circuit breakers and unplug by lifting straight up. Next take the new module, check for plug lineup and insert into sockets. Turn power circuit breakers back to "reset" position for power ON. You will probably need to change time display to current time, follow the display setting selections by scrolling up/down as needed. If a replacement module is needed be sure to order the same ID as shown in the bottom right corner.

TECHNICAL DATA:
There are 3 branch circuits on the control board, each with overload circuit protection.
Control = 5A with surge protection and quick cutoff and thermal reset.
Air = 5A circuit breaker
Pump = 20A circuit breaker

As an added protection from new install mis-wiring there is 230vac protection that does not allow any power to go to the aerator or the pump until the control module has evaluated for proper voltage supply. Alarm is activated and indicated by RED & AMBER lights flashing and audible sounding. The control module is also showing on the display the fault detected.

(15) Onboard status indicator lights:
POWER CIRCUIT BREAKERS: All indicator lights green ON are indicating 120vac power is good.

Control = 5A	Air = 5A	Pump = 20A
(green)	(green)	(green)

POWER STRIP INPUTS: All indicator lights ON at power strip are showing 120vac is present.

Power In	Aux Power	Aerator Out	Pump Out	Pump Run – no terminals	Low Level	High Level	Low Air	Disinfect Alarm
(green)	(green)	(green)	(green)	(green)	(green)	(red)	(amber)	(amber)

ADDITIONAL ONBOARD STATUS: Power to branch section is good.

12VDC	Red Alarm	Yellow Alarm
(green)	(red)	(amber)

REPLACEMENT MODULES:

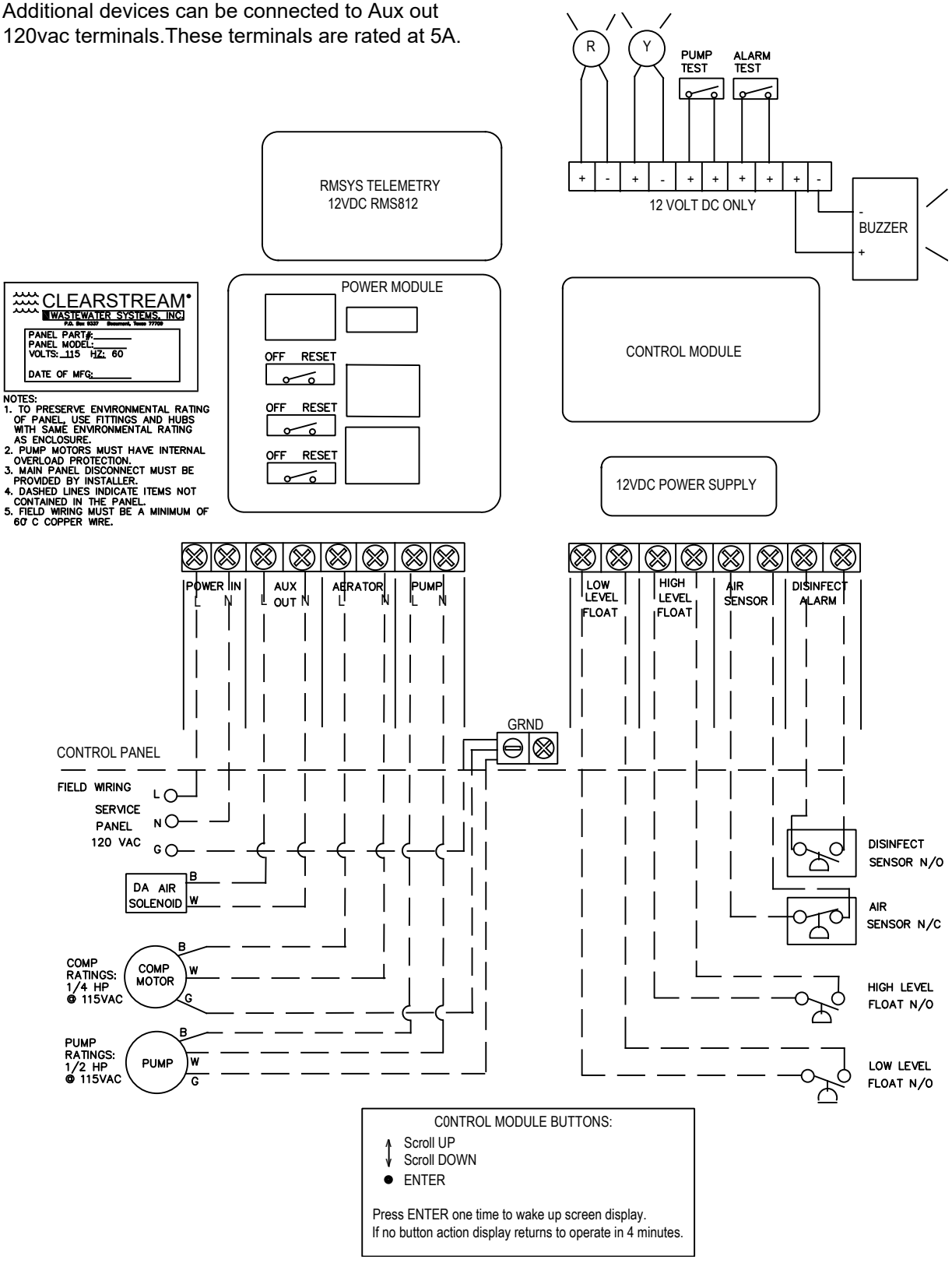
Power module: Contains the power out relays to pump, current load sensor, aerator and control surge protection with thermal reset. To replace pull straight up wiggling slightly as you pull up.To replace, line up the plug in sockets and insert until fully seated.

POWER SUPPLY – 12vdc power supply that can accept 240vac and regulate 12vdc out to control module. Good power out is indicated by (green) 12vdc indicator light. To replace if needed pull straight up out of sockets. To insert line up dual sockets and insert until fully seated. Do not force into sockets, check the alignment when inserting.

CONTROL MODULE - Operating brains of the control, selectable functions, timers and stored counts. To replace, power OFF. Pull straight up from sockets, slightly wiggle if need. Check alignment to sockets and insert straight in, do not force, push until firmly seated in place.

BASIC FIELD WIRING REQUIRED:

a. 20A service panel supply, 120vac, single phase. Use external power disconnect from main power.
b. Use #12 or #14 stranded for discharge pump, other control devices can use #16 or #18 wire.
c. There are 7 wires from the control to the pump tank and 5 wires to the aerator/sensor.
d. All wirings are straight thru from the control to the part. It is suggested to use different colored wires for the low level float and high level float, this will expedite trouble shooting if ever needed.
e. Additional devices can be connected to Aux out 120vac terminals.These terminals are rated at 5A.



INTRO TO THE CS114SSL CONTROL OPERATION:

Some users may not be familiar with DA operation of the Clearstream Wastewater Systems, Inc denitrification system. This airlift recycling method is used in our NSF Standard 245 and 350 systems. Except for Aux out power timing, the functions are similar to the NSF Standard 40.

For normal operation the pump is allowed to run only when the LOW LEVEL float is up (active). This allows for protecting the pump if water level in the pump tank is at cutoff. The indicator for the LOW LEVEL float is (green) when up. By timer control command in any selected function or high level alarm, the pump is allowed to run when in this state. No Low Level float ON then NO PUMP RUN.

In "Pump Test" mode, the button pushed, you have a choice to hold the button in for the amount of time you want to run or after the 1st button push the control display tells you to push a 2nd time. This will activate an internal timer and run for 5 min continuous. At any time you want to stop this feature just push the button. Smart logic will return to start if you push again. Note: the display shows not only time count as it counts down the 5 min cycle, it also displays the pump amp load. This is valued information about pump performance. Use it to evaluate system status.

In "Alarm Test/Mute" mode when pushing the button, both RED & AMBER will be on solid and the audible buzzer will sound. This indicates the alarm circuitry is ready and active for normal operation.

Pump Run amp load is monitored during every pump ON command. If the pump fails to be running at an operational electrical load it will go into Pump Fail Alarm. Indicated by flashing RED alarm and audible. This alarm stays active until pump run test is good or power off reset.

Should the system go into HIGH LEVEL ALARM from a peak loading, the override circuitry will activate with the Red alarm light on solid and audible sounding. A pump run command is activated until the High Level float goes to off position. The normal operation continues if Dosing or pump down at Night spray time cycles.

During a Low Air sensor alarm the AMBER alarm light is on and buzzer sounds, this alarm stays on until fault is corrected. There is no pump run command tied to this alarm

Disinfect alarm will activate if the device sends an alarm signal to the control input (120vac). This alarm stays active until the fault is corrected.

Aux Out power is available for external devices. Depending on operation the power out (120vac) can be timed or continuous. This is useful for a 2nd aerator, auto dialer or UV device requiring continuous of DA operation requiring timed out power.

INITIAL QUICK CHECK: Listed are some quick checks that may help guide you during a service visit.

1. Make visual inspection as you arrive at the control, look for alarm indication and audible buzzer.
2. When opening control box, 1st verify the power in is good (green light on solid).
3. Check all 3 circuit breakers, when put in reset position all 3 branch circuits should be (green).
4. Identify control operation setup; standard, pump on demand, night spray or dosing.
5. All Pump out power, 120vac to the pump tank, is indicated (green).
6. Verify Low Level float is showing up position (green), this indicates water is in the pump tank.
7. Verify Aerator out is (green), this is indicating 120vac power for the aerator to run.
8. Verify if using the Aux power for an external device that it shows (green), indicating 120vac is good.
9. If the system is in High Level alarm, the Red top light should be ON and the buzzer sounding. The pump run override action should have pumped the water level down to high level alarm off. If the High Level is still active and the Pump Out (green) is ON, expect a pump tank issue to resolve the issue.
10. If the Amber top light is ON and buzzer sounding, an aeration tank fault is activating the low air sensor. Test the air supply using test assembly gauges. Internal aerator diaphragms, airline integrity to the diffuser or the high level bob float in aeration tank can cause low air alarm. Seldom is the air sensor the failing device.
11. Secure panel lid with both screws when completed to ensure environmental protection.

COMMON SYSTEM FAILURES FOR NIGHT SPRAY OPERATION:

Any time you are making service visit, verify the 120vac power in is valid. Power In (green).

#1. Homeowner reports spraying during the daytime with no alarm light on or audible buzzer sounding.
Possible Cause & Remedy:

a. The 24hr control module time has an incorrect time setting.
    1. Check time on control display, change as needed.
b. Faulty control board power module or control module.
    1. Usually you would expect other issues being observed and not just a pump run at random. However, anything is possible with electrical components.

#2. Homeowner reports spraying during the daytime with Red alarm light ON and audible sounding.
Possible Cause & Remedy:

a. Excess water usage is causing peak loading above normal use settings.
    1. Examine influent coming into pretreat tank, continuous flow indicates high usage. Advise homeowner of continuous flows coming from residence.
    2. Faulty pump power or poor wiring connection in jbox. Perform manual pump test run by pushing the "test" button. Hold for at least 1 min to be sure it is not an intermittent wiring connection.
    4. Faulty control board. This is unlikely to be the issue without other faults showing also. This should be last decision to replace control board power module or control module.

#3. Homeowner reports Red light is ON and audible buzzer is sounding continuous. Advise on call in that homeowner can push the "Mute" button to silence buzzer until service person can arrive.

Possible Cause & Remedy:

a. Failed pump run and water level is high in pump tank. Be aware that if there is continued use of system that rising water level in aeration tank will activate the aeration alarm-Amber light also.
   1. Verify Low Level float is up (green). If not perform float continuity check.
   2. Perform "Test" button test to see if pump will run during test. If no pump run, inspect the pump to see if it is operational. If it does run, make sure the pump suction unlet is not restricted with sludge. Replace pump if inspection shows bad internal motor.
   3. Faulty control board. This is unlikely to be the issue without other faults showing.

#4. Homeowner reports that Amber light comes ON & audible buzzer sounds intermittently.

Possible Cause & Remedy:

1. Aerator may be operating at marginal output supply for the system.
   a. Perform air flow test with gauge assembly to determine cause.
   b. If poor flow from aerator, do a rebuild of internals.
   c. If airline integrity shows open perform pressure test to verify.
   d. It could be a failing sensor, last part that should be changed.
   e. Internal thermal cutoff in high heat environment. Move the unit out of direct sun.

#5. Homeowner reports Amber light ON and audible sounding continuous.

1. Verify aerator is running.
2. Perform air flow test with gauges to meet spec flows.
3. Bob float up in aeration tank, inspect for restricted flow control weir keeping aeration tank water level at above normal height.
4. Check that airline supply all the way to the diffuser has not been damaged.
5. Faulty air sensor, not likely but is a possible part failure.
6. Faulty control board, not likely, other faults would be present also.