SJE RHOMBUS.

DIGITAL TIMED DOSE
Single Phase Simplex
Installation and Operation Manual

Specifications

Input Voltage: 120/208/240 VAC
Pump Rating: Up to 20 Amps at 120/208/240 VAC
Control/Alarm Ratings: 2 Amps at 120 VAC
Enclosure: 8 x 6 x 4 inch NEMA 4X thermoplastic
Operating Temperature: 14°F to 122°F
Auxiliary Alarm Contacts: N.O. 1A, 120 VAC Max
Inputs: 2 - 4 float switches (normally open)
4-20mA level transmitter

U.S. Patent 10,251,284

c(UL)us LISTED

Level Sensor options
For ordering information, please see our catalog pages at www.sjerhombus.com

| MilliAmpMaster™	Sub-X™ LT	Recommended Sub-X™ LT
	+	+
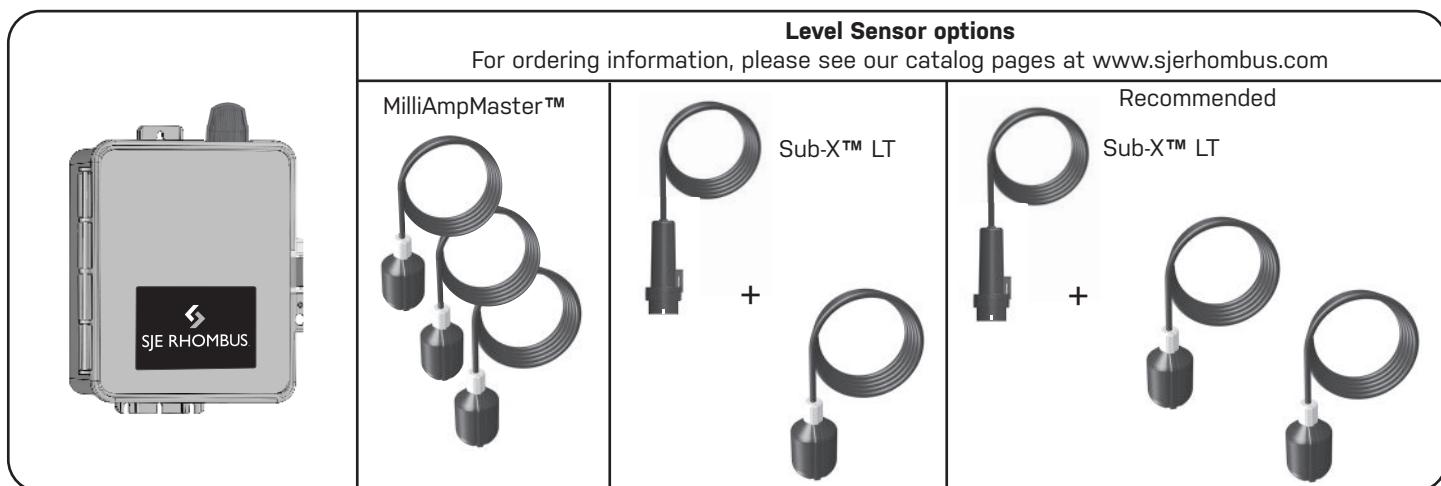
⚠ WARNING!

ELECTRICAL SHOCK HAZARD
Disconnect all power sources before servicing. Failure to do so could result in serious injury or death.

This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes. UL Type 4X enclosures are for indoor or outdoor use.

Warranty void if panel is modified.

? **For information regarding operation, available options, or servicing questions, please call an SJE Rhombus customer service technician:**

1-800-Rhombus (1-800-746-6287)

SJE Rhombus offers a five-year limited warranty. For complete terms and conditions, please visit www.sjerhombus.com.

Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment to ensure that employees will not be exposed to health hazards in handling said material. All applicable laws and regulations shall apply.

Installing the Float Switches

The Digital Timed Dose single phase simplex control panel operates with four float switches or one 4-20mA transmitter (sold separately) to activate REDUNDANT OFF, TIMER ENABLE, TIMER OVERRIDE, and high-level ALARM functions.

1 ⚠ **WARNING!**

Ensure all power is turned OFF before installing floats in tank. Failure to do so could result in serious or fatal shock.

2 ⚠ **CAUTION!**

If the floats are not properly mounted and connected in the correct order, the pump will not function properly.
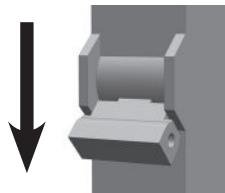
Timed Dose (Four Floats)

- Timer Override (optional)
- High Float Alarm
- Timer Enable
- Redundant Off (optional)
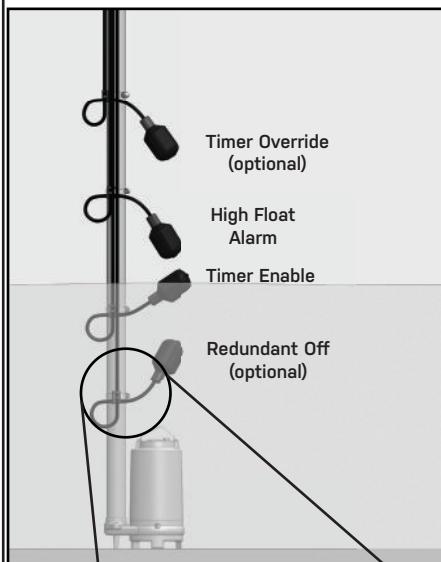
Floats require free range of motion. They must not touch each other or any equipment in the pump chamber.

High Float Alarm and Timer Override are swappable.

Do not install cord under hose clamp.

Tighten the clamp.

3.5" (9cm)
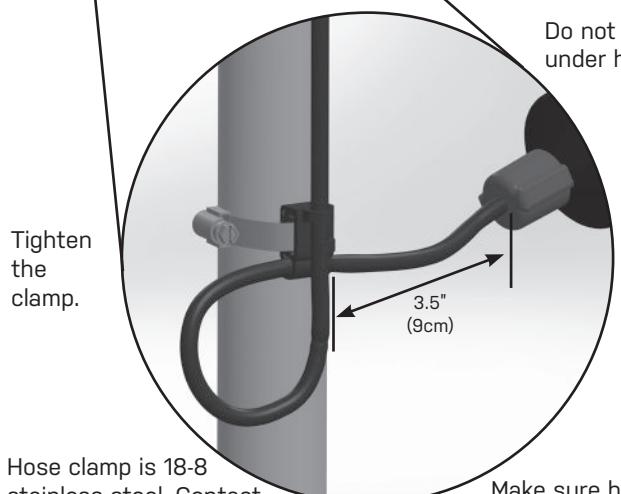
Hose clamp is 18-8 stainless steel. Contact your SJE Rhombus supplier for replacements.

Make sure hose clamp band does not interfere with float operation.

Mounting the Control Panel

NOTE

If the distance to the control panel exceeds the length of the float switch cords, transmitter cord, or the pump power cord, splicing in a liquid-tight junction box will be required. For outdoor or wet installation, we recommend an SJE Rhombus, UL Type 4X junction box.

1 Drill and install top fastener using appropriate anchor if necessary.

SJE RHOMBUS

2 Drill and install a bottom fastener using appropriate anchor if necessary.
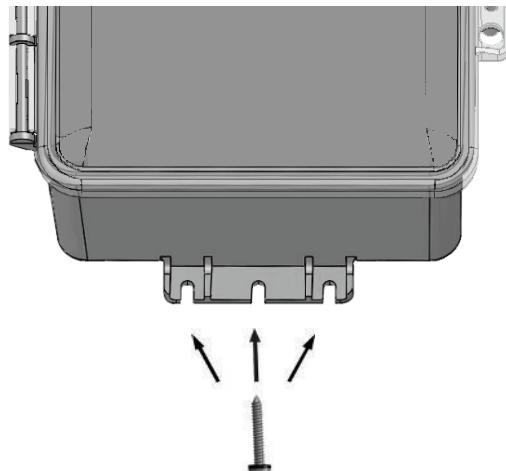
SUB-X™ LT LEVEL TRANSMITTER INSTALLATION

+V   A1

| C | 1 | C | 2 | C | 3 | C | 4 |

BLK   WHT

C ⚬—⚬ 1

RED. OFF
BACK-UP

C ⚬—⚬ 4

ALARM
BACK-UP

Sub-X™ LT
Level Transmitter
4-20mA
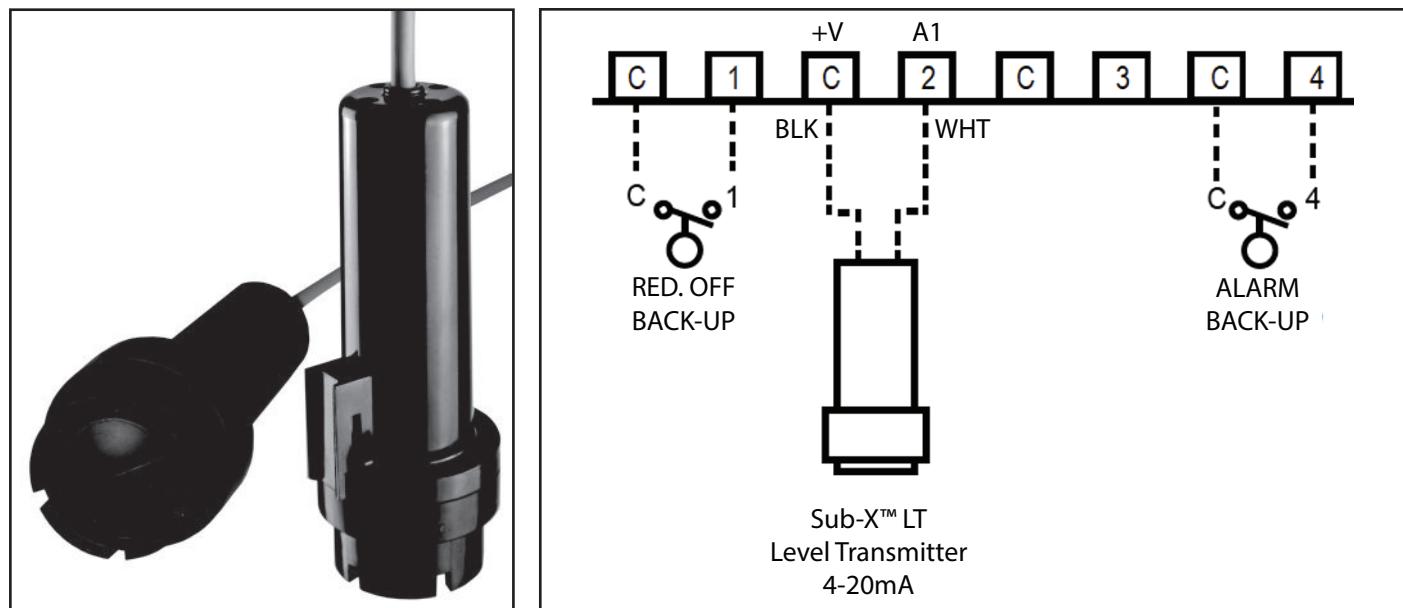
Installing the Sub-X™ LT Transmitter & Recommended Float Switches

The control panel operates with a Sub-X™ LT level transmitter and 1 or 2 back-up float switches.

Transmitter
set points

Timer
Override

High Level
Alarm

Timer
Enable

Redundant
Off

Redundant
High Float Alarm
(optional)

Redundant
Off Float
(optional)

⚠ Stow excess cable using cable ties. Roll, do not kink.
Caution: Do not overtighten and pinch vented cable.

⚠ Do not use the hose clamp to attach the vented cable. Doing so will cause sensor to fail.

cable tie

4 inch (10.2 cm) minimum set level

0 inch (0 cm) liquid level measured from approximately this point

1 inch (2.5 cm) minimum from bottom of tank or from sludge

hose clamp

Wiring the Control Panel

1 Determine conduit entrance locations on control panel as shown. Check local codes and schematic on the inside cover of the panel for the number of power circuits required.

⚠ CAUTION!

Be sure the pump power voltage and phase are the same as the pump motor being installed. Use of separate pump and control/alarm power sources is recommended.

**2** Connect the following wires to the proper terminal positions:
- incoming power for pump circuit
- incoming power for control/alarm circuit
- pump
- float switches or transmitter

3 Verify correct operation of control panel after installation is complete.

TORQUE: 45 IN-LB   TORQUE: 5 IN-LB

CIRCUIT BREAKER

L1   L2/N

120/208/240 VAC INCOMING PUMP POWER

ALARM TEST/SILENCE BUTTON   BEACON

HORN
J1:3 J1:6 J1:1   J1:4 J1:2 J1:5

PRINTED CIRCUIT ASSEMBLY

P1 P2   SENSOR +V A1

L1 L2/N   L1 N C—1 C—2 C—3 C—4   AUX

120/208/240 VAC PUMP   120 VAC CONTROL/ ALARM   RED. OFF   ENABLE   OVERRIDE   ALARM   GND LUG

FIELD WIRING SECTION   TORQUE: 45 IN-LB

OVERLOAD PROTECTION, MAIN DISCONNECT AND OVERCURRENT PROTECTION OF INCOMING FEEDER CIRCUIT PROVIDED BY OTHERS AND MUST BE SIZED ACCORDING TO PUMP/MOTOR MANUFACTURER SPECIFICATIONS.

TEMPERATURE RATING OF FIELD INSTALLED CONDUCTORS MUST BE AT LEAST 140° F (60° C). TERMINAL STRIPS AND GROUND LUGS USE COPPER CONDUCTORS ONLY.

DASHED LINES REPRESENT FIELD WIRING.

Operations

The Digital Timed Dose panel uses float switches or a 4-20mA transmitter to continuously monitor and control the liquid level in a tank. For normal operation, the OFF cycle will start when the ENABLE float is closed. Once the OFF cycle is complete, the ON cycle will activate and run the pump for the full cycle unless the water level goes below the REDUNDANT OFF float. The OVERRIDE float will activate the pump on the OVR ON/OFF times. The controller has an internal overload that will turn off the pump if it exceeds the setpoint. Press and hold the TEST button to operate the pump manually. Turn off the Pump Breaker to deactivate pump.

Circuit Breaker
Thermal-magnetic circuit breaker that provides pump disconnect.

Alarm System (Indicator Light and Horn)
When an alarm condition occurs, the red light and horn will be activated.

If the TEST/SILENCE button is pressed and released, the horn will be silenced. When the alarm condition is cleared, the alarm system is reset.

Pump Run Light
Activates when pump is running.

Pump Test
Activates pump while pressed.

Settings Dial
Used to set timers and aerator amps.

Digital Display
Shows float status and pump run.

⚠ CAUTION!

You must use conduit sealant to prevent moisture or gases from entering the panel.

Type 4X conduit must be used to maintain a Type 4X rating of the control panel.

? **Technical support, service questions:**
+1-800-Rhombus (+1-800-746-6287)

Programming & Display Information

RED. OFF   ENABLE   OVERRIDE

Float in up position (ON)   Float in down position (OFF)

ROTATE   ROTATE   ROTATE

Pbbb
0.05h
⊘ OFF AUTO

HIGH FLOAT ALARM

Float status, ETM (h)

Pbbb
5ⁿ
⊘ OFF AUTO

Float status, CC (Π)

5
OV COUNT
⊘ OFF AUTO

Override CC

2
HL COUNT
⊘ OFF AUTO
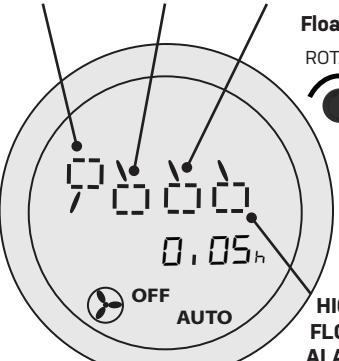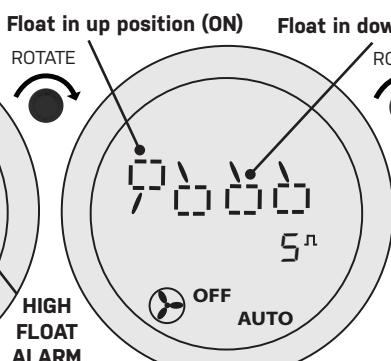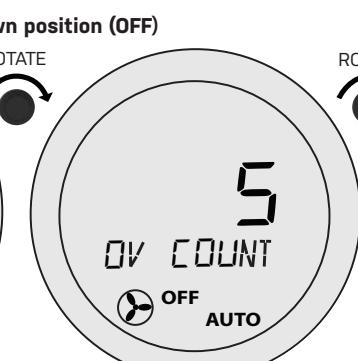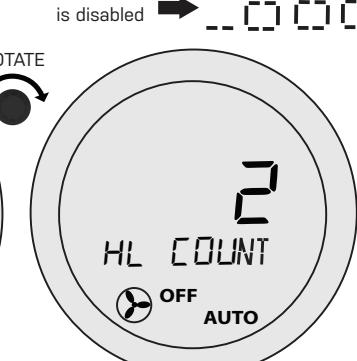
High Level CC

Press in dial to enter settings. Turn to desired setting and press in dial to set.

1:00 s
ON TIME

Pump ON TIME mm:ss
Default: 01:00

1:00 m
OFF TIME

Pump OFF TIME hh:mm
Default: 01:00

1:00 s
OVR ON

Override ON TIME mm:ss
Default: 01:00

0:01 m
OVR OFF

Override OFF TIME hh:mm
Default: 00:01

15.0A
OVERLOAD

Pump Overload
Default: 15.0 Amps

OFF
RO FLOAT
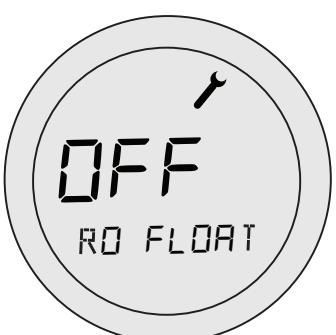
Redundant Off Float
Turn OFF if no RO float

OFF
OVRD ALM

Turn ON for alarm
activation upon Override

OFF
HI FLOAT
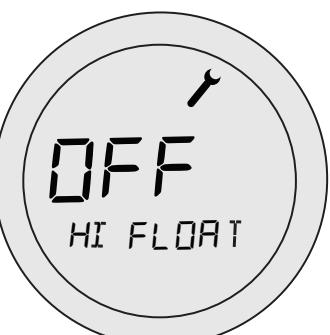
To activate pump on
HIGH FLOAT, choose
how many seconds
you would like the
pump to run after the
HIGH Float goes down
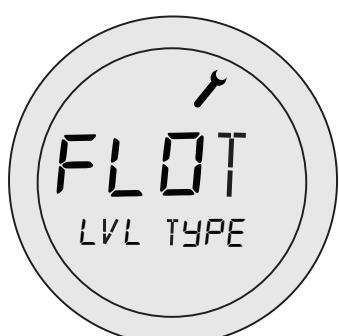
FLOT
LVL TYPE

Level Type
FLOT = Floats
XDR2 = 4-20mA Sensor

FLT
HISTORY

Fault History

50

25   ((♠))   75

0.0A

⊘ OFF AUTO

0

Transmitter Scale %

Alarm

Pump Amps

Pump Status

**Pump Run status will
spin when pump is
running.**

5
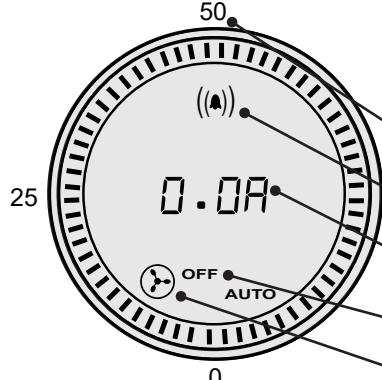
PARAMETERS

PARAMETER	SENSOR	DEFAULT	RANGE MIN	RANGE MAX	UNIT	DESCRIPTION
ON TIME	FLOT/XDR2	01:00 SEC	00:05	99:59	MM:SS	PUMP ON TIME - Pump runs for this time after the OFF TIME is finished, provided the level is above Timer Enable.
OFF TIME	FLOT/XDR2	00:01 MIN	00:01	99:59	HH:MM	PUMP OFF TIME - Waiting period when Timer Enable is activated.
OVRD ON	FLOT/XDR2	01:00 SEC	00:05	99:59	MM:SS	TIMER OVERRIDE ON TIME - Separate timer when level is above Timer Override.
OVRD OFF	FLOT/XDR2	00:01 MIN	00:00	99:59	HH:MM	TIMER OVERRIDE OFF TIME - Separate timer when level is above Timer Override. 00:00 = OFF
RED OFF	XDR2	3 in	0	100 (scale)	in	TRANSDUCER REDUNDANT OFF LEVEL
TMR ENBL	XDR2	10 in	0	100 (scale)	in	TRANSDUCER TIMER ENABLE LEVEL
TMR OVRD	XDR2	32 in	0	100 (scale)	in	TRANSDUCER TIMER OVERRIDE LEVEL
HIGH LVL	XDR2	30 in	0	100 (scale)	in	TRANSDUCER HIGH LEVEL
OVERLOAD	FLOT/XDR2	15A	1	20	Amps	AMP RATING FOR PUMP OVERLOAD - Pump circuit will shut off if amps go higher than setting.
RO FLOAT	FLOT/XDR2	OFF	OFF	ALRM	OFF/ENBL/ALRM	REDUNDANT OFF FLOAT - Turn off if no Redundant Float is used. No jumper wire is needed on float wiring. When set to ENBL, the pump will shut off if the level drops below the float. When set to ALRM, the pump will shut off and the alarm will activate.
OVRD ALM	FLOT/XDR2	OFF	OFF	ON	OFF/ON	TIMER OVERRIDE ALARM ACTIVATION - ON = Turns ON the beacon and horn when Timer Override is activated.
HI FLOAT	FLOT/XDR2	10	OFF	9999s	Sec	High Level Float Pump RUN timer. The pump will start and run continuously as long as the High-Level Float is ON. When the float turns OFF, this timer begins to count down and the pump will stop when the timer is done, or Redundant Off float goes down. This feature has a built-in five second delay before starting the pump. 0=OFF, the pump will not RUN on high-level float activation (Alarm only).
SCALE	XDR2	100 in	100	420	in(unit)	INCHES FOR 4-20mA TRANSDUCER RANGE
UNIT	XDR2	INCH	in	cm	in/cm	INCHES OR CENTIMETERS - Units can be changed to user preference.
LVL TYPE	FLOT/XDR2	FLOT	FLOT	XDR2	FLOT/XDR2	LEVEL TYPE: FLOT (FLOAT) OR XDR2 (TRANSDUCER)
HISTORY	FLOT/XDR2	-	FLT0	FLT9	FLT	Display the last 10 alarms faults.

ALARMS - For manual reset, hold ESC button for 5 seconds.

FAULT	ACTION	RESET	DELAY	TROUBLESHOOTING
RO FLOAT	Stop pump	Auto	3 sec	If RO FLOAT setting is set to ALRM and the redundant off float is down.
OVRD ALM	None	Auto	3 sec	If ALM OVRD is set to on and the override float is up.
OVERLOAD	Stop pump	Manual / Auto		Pump motor overload. Will reset automatically 4 times. Manual reset after. Check pump, running voltage, amps, and overload setting.
HIGH LVL	None	Auto	3 sec	4-20mA level is greater than HIGH LVL setpoint. Ignored if XDR is shorted.
HI FLOAT	None	Auto	5 sec	When the High Level Float is UP, it will activate the alarm. If the parameter HI FLOAT = ON, the pump will start, overriding everything: XDR OPEN, XDR SHRT, OVRD, TMR and RO FLOAT.
FLOAT SQ	None	Manual	1 sec	Must be in float mode. If the redundant off float is down and any other float or floats are up. Also if timer enable float is down and the override float is up.
XDCR SC	Stop pump	Auto		>21mA. The level transmitter is shorted. Check cable for damage or water in junction box.
XDCR OPN	Stop pump	Auto		<3mA. The level transmitter circuit is open. Check for cable damage or loose connections