# STATION VIEW

## **User Manual**

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Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.



## INTRODUCTION & SPECIFICATIONS

Congratulations, and thank you for your purchase of the Station View<sup>™</sup> controller. This manual explains the features and operations of the Station View<sup>™</sup> controller which was designed specifically for wastewater pump stations. It can be configured to use a level transducer with two (2) back up float switches, or with four (4) float switches without a level transducer.

#### GENERAL

Duplex pump controller. 4-20mA transducer with (optional) 2 back up floats (High + Iow) Or 4 float Switches (Stop/Start/Lag/High level) Pump amps monitoring Pump flow monitoring (with level transducer) Pump HOA selector switch in AUTO monitoring Power loss monitoring Graphic display with easy navigation and intuitive setup. LCD backlit display. 128x64 pixels Real Time clock

## POWER UP SCREEN & REVISION



#### **CONTROLLER FEATURES**

Level/flow monitoring Pump level in feet + bar graph Float switch status indication (when using float switches) Pump GPM. (using volumetric calculation with level transducer)

#### PUMP CONTROL AND PROTECTION

Automatic pump alternation Alternation can be forced to start a particular pump first every time Pump dry run protection (based on motor Amps + timer) Pump run indication Pump Amp indication (with current transducer)

#### SYSTEM

24hrs data log + 7 days of historical data Volume pumped (with transducer) Number of starts for each pump Run time for each pump Average GPM for each pump (with transducer) Real time clock Password protection Alarm log Level simulation (with level transducer)

#### **ELECTRICAL SPECIFICATIONS**

10 Digital inputs 2 analog inputs (4-20mA) 8 digital outputs (6 relay + 2 transistors) 24Vdc power, 5.2W

#### COMMUNICATION

SCADA compatible Serial port: RS 485 Modbus RTU slave Optional cellular remote monitoring (PRIMEX<sup>®</sup> PUMP WATCH<sup>™</sup>)

#### CERTIFICATION

UL /CE listed

## PROGRAMMING

#### MAIN SCREEN

The main screen gives the operator an overview of the lift station status.





#### **KEY PAD OPERATION**

The controller keypad is used for screen navigation and data entry.



#### MAIN MENU NAVIGATION

Navigation from the Main screen to the Menu Screens.



Press ESC to go back to the previous screen at any time.

#### ACTIVE ALARMS

If an alarm event occurs, it is displayed on the message bar on the Main Screen. A flashing alarm bell is also displayed.



Flashing alarm symbol

Possible alarms include:

#	DISPLAY	DEFINITION	FIX
0	HIGH LEVEL XDCR	Level in the wet well has exceeded the High Level Set point	Check pump operation, check in flow, check level transducer
1	MAX RUN TIME	Pump running longer than allowable Run time	Check pump operation, check in flow, check level transducer
2	HIGH LEVEL FLOAT	High level float is ON (up)	Check pump operation, check in flow, check level transducer
3	LOW LEVEL FLOAT	Low level float is OFF (down)	Check transducer
4	HIGH AMPS	Pump amps higher than expected (after time delay)	Check pump, check voltage (low or imbalance)
5	DRY RUN	Pump amps lower than expected for time delay	Check transducer, check low level float, check pump
6	LEVEL SENSOR OPEN	Transducer signal is less than 4mA	Check transducer connection, check trans- ducer and vent tube
7	LEVEL SENSOR SHORT	Transducer signal is more than 20mA	Check transducer
8	P1 OL/OT	Pump 1 Overload trip or Over temp trip	Check pump operation, clogging
9	P2 OL/OT	Pump 2 Overload trip or Over temp trip	Check pump operation, clogging
10	STOP FLOAT FAIL	Stop float out of sequence	Check float tree
11	START FLOAT FAIL	Start float out of sequence	Check float tree
12	LAG FLOAT FAIL	Lag float out of sequence	Check float tree
13	CURRENT SENSOR OPEN	Current sensor signal is less than 4mA	Check transducer connection, check transducer
14	POWER FAIL	Power loss or Phase loss to the control panel	Check incoming power and phase loss monitoring setting (if used)
15	ILLEGAL ENTRY	Unauthorized personnel are tampering with the control panel	Control access to the control panel

#### ALARM HISTORY

The Alarm History of the control panel can be accessed via the Alarm Menu. The last 14 alarm events are recorded with time and date stamp. The last alarm recorded is displayed first.

Use the A to view previous alarms.



to go back to the previous screen at any time. Press ESC

#### ALTERNATION

The alternation mode is set to AUTO by default. The pump will alternate operation during each call to run. It is possible to force the alternation sequence to start the same pump every time. This is typically done to equalize run times.



If 1-2 is selected, P1 will start every time, and P2 will only be used as a lag pump. If 2-1 is selected, P2 will start every time, and P1 will only be used as a lag pump.

Press ESC to go back to the previous screen at any time.

#### DATALOG

The Station View<sup>™</sup> controller will log daily station data for 7 days + today's data since midnight. This data is very useful for tracking high in-flow events and pump performance.



**Cyc** = number of cycles (pump starts)

**min** = pump run time in minutes

**gal** = gallons pumped (only available if a level transducer is used) **gpm** = average GPM (only available if a level transducer is used)

#### SET LEVELS

This screen is only accessible if in "Level Transducer" mode. This mode is used for setting the level set point for proper pump operation.



**Stop** = Stop level. All pumps will stop when the level drops below this value.

**Start** = Start level. The lead pump will start when the level rises above this value.

**Lag** = Lag level. The lag pump will start when the level rises above this value.

**High** = High level alarm. Activates the beacon and horn.

When the lead or lag pump starts, they will continue to run (latched) until the level drops below the stop level or a fault occurs. Only pumps in AUTO will run.

#### Backup float switch operation:

A backup control method independent of the Station View controller is strongly recommended.

A typical 2 backup float system would operate the following way:

#### High level float:

All pumps will run when activated until the level drops below the Low level float. Activates the alarm beacon and horn.

#### Low level float:

If the level drops below the Low level float switch, it will stop any pump operation in automatic mode. The purpose of the Low level float switch is to protect the pumps against damage resulting from dry run condition.

Note: There are 2 digital inputs on the StationView for High Level and Low Level floats. These inputs are only for monitoring and do not control the pumps.

An external controller is the only way to the control the pumps in the event of a Station View controller failure

#### SIMULATE

The level simulation function can be used to verify that the pumps are starting and stopping according to the level set points. This function allows the operator to manually raise or lower the measured level.

**Caution:** Pump will start and stop while using this function. Pump dry run is possible if no backup floats are used or by-passed.



Note: the level simulation screen will time out after 10 seconds of inactivity and return to the measure level.

#### ADVANCED SETUP (MENU NAVIGATION)



Press **ESC** to go back to the previous screen at any time.

#### SYSTEM (ADVANCED SETUP)

The Station View<sup>™</sup> controller can be configured to operate using a 4-20mA level transducer with 2 backup float switches or with 4 float switches and no transducer. See the electrical schematic for sensor connections.



#### SENSOR (ADVANCED SETUP)

Entering the measuring range of the level transducer. This data is provided with the level transducer.



Example: 0-10psi range level transducer = 0-23.0 ft. (1psi = 2.30 ft.) Set 20mA=23.0 ft Some transducers are already calibrated in ft. (Max value for 20mA is 99.9 ft) When using a submersible pressure transducer, 0.0 ft. represents the level at the bottom of the transducer and not the wet well. If the transducer is mounted 2.0 ft off the bottom of the tank, set the offset = 2.0 ft. (Max value -10.0~10.0 ft)

#### FLOW MONITORING (ADVANCED SETUP)

Volumetric flow measurement is available when a level transducer is used for continuous level sensing in a tank. The Station View<sup>™</sup> unit calculates the volume of liquid based on the level. The flow is calculated by using the volume and the fill/discharge times. The in-flow and the discharge flow is measured. The Flow Calc. Level set points are not used for controlling the pump. They are used for volumetric flow calculation. The flow calculation is based on the area of the tank, the Start Flow Calc. and Stop Flow Calc. level set points, and the fill and discharge times. Both In-Flow and Discharge flow are calculated during every cycle.



Tank Diameter: Enter the tank diameter in Ft.

Flow Calc. Start Level: See below (in Ft.)

Flow Calc. Stop Level: See below (in Ft.)

#### Important notes on flow setup:

Set Flow Calc. Start Level at least 4" below the pump start level. Set Flow Calc. Stop Level at least 4" above the pump stop level. The flow accuracy is better with longer cycle times (2 minutes or more).

> When using a rectangular tank, the equivalent diameter would be: d=2 √LxW/∏

Example: A 10X10 tank would equate to a diameter of 11.28. Enter this value and get the flow calculations as if it was a cylindrical tank. L= length, W= width.

#### FLOW MONITORING (ADVANCED SETUP) (Continued)



#### AMPS (ADVANCED SETUP)

Entering the measuring range of the current transducer.



The Station View<sup>™</sup> controller uses a single current sensor input for multiple pumps. It combines the pump run input with the current signal to determine the current for each pump. The measuring range of the current transmitter is typically listed on the device.

#### DRY RUN PROTECTION (ADVANCED SETUP)

Dry Run protection uses the motor Amps measurement to determine whether a pump is running dry (no load). For a submersible pump the current draw will typically drop 30% when running dry. Please consult your pump manufacture for this value. The Amp set value corresponds to the minimum Amp value that the pump should draw during normal operation. If the Amps drops below this value for longer than the "Trip delay" the controller will stop the pump and display a "Dry Run" fault. The "trip Delay" time is used to avoid nuisance tripping. If a pump trips on Dry Run, the next pump will be called to run. The Dry Run fault automatically reset after 2 minutes. Set to "0.0A" to disable this function.



#### HIGH AMP (ADVANCED SETUP)

High Amp Alarm also uses the motor Amps measurement to determine if a pump is running at a higher than expected Amp value. This could be an indication of ware, clogging or changes in the head conditions in the pumping system. This value should be set lower than the motor starter overload trip setting. The "trip Delay" time is used to avoid nuisance tripping. If a High Amp alarm is triggered, it will display the fault on the Screen and close the general alarm relay. This fault does not stop the pump, it is an alarm only. Set to 0.0 A to disable this alarm function.



#### TIME & DATE (ADVANCED SETUP)

It is important that the correct time and date is entered for logging and alarm data.



#### MAX RUN TIMER (ADVANCED SETUP)

The Max Run Timer function is used to alarm and shut down a pump that has exceeded the allowed run time programmed below. To disable this function, set to "Not Used".



#### PASSWORD (ADVANCED SETUP)

The password function is designed to prevent unauthorized access to the Menu. Set to "0" to disable this function.



#### PUMP DATA (ADVANCED SETUP)

The Pump Data screen is for information only. It is a record of the pump HP, Volts and FLA. This data can be viewed remotely when connected to the Primex<sup>®</sup> Pump Watch<sup>™</sup> cellular monitoring system.

Pump Data				
25		460	31.2	
HP		Vac	FLA	
			+	

#### I/O STATUS (ADVANCED SETUP)

These screens can be used to view all the digital and analog inputs and relay output status. It is a good trouble-shooting feature. Digital inputs and output change color when ON.



INPUT TERMINALS			DUPLEX TRANSDUCER BASED	DUPLEX FLOAT BASED
TERM	INPUT	TYPE	DESCRIPTION	DESCRIPTION
15	10	DIGITAL PNP	ILLEGAL ENTRY (OPTIONAL)	ILLEGAL ENTRY (OPTIONAL)
14	11	DIGITAL PNP	PUMP 1 IN AUTO MODE	PUMP 1 IN AUTO MODE
13	12	DIGITAL PNP	PUMP 2 IN AUTO MODE	PUMP 2 IN AUTO MODE
12	13	DIGITAL PNP	PUMP 1 RUNNING	PUMP 1 RUNNING
11	14	DIGITAL PNP	PUMP 2 RUNNING	PUMP 2 RUNNING
10	15	DIGITAL PNP	POWER FAIL	POWER FAIL
9	16	DIGITAL PNP	LOW FLOAT (BACKUP - MONITOR ONLY)	STOP ALL PUMP FLOAT
8	17	DIGITAL PNP		START LEAD PUMP FLOAT
7	18	DIGITAL PNP		START LAG PUMP FLOAT
6	19	DIGITAL PNP	HIGH FLOAT (BACKUP - MONITOR ONLY)	HIGH LEVEL FLOAT
5	AN1	4-20 mA	LEVEL TRANSDUCER	NOT USED
4	AN0	4-20 mA	MOTOR AMPS	MOTOR AMPS
3	GRND		GROUND	GROUND
2	0V		POWER SUPPLY 0V	POWER SUPPLY 0V
1	24V		POWER SUPPLY +24Vdc	POWER SUPPLY +24Vdc

OUTPUT TERMINALS		NALS	DUPLEX TRANSDUCER BASED	DUPLEX FLOAT BASED	
TERM	INPUT	TYPE	DESCRIPTION	DESCRIPTION	
1	00	RELAY C	RUN PUMP 1 IN AUTO		
2	00	RELAY NO		RON FOME TIN AUTO	
3	01	RELAY C	RUN PUMP 2 IN AUTO		
4		RELAY NO		RUN PUMP 2 IN AUTO	
5	02	RELAY C			
6		RELAY NO	GENERAL ALARM	GENERAL ALARIM	
7	03	RELAY C	GENERAL ALARM (USER)		
8	03	RELAY NO		GENERAL ALARINI (USER)	
9	04	RELAY C			
10	04	RELAY NO	FUNF TROLT (USER)		FUNIF I FAULI (USER)
11	- O5	RELAY C			
12		RELAY NO	PUMP 2 FAULT (USER)		PUMP 2 FAULT (USER)
13	O6	TRANSISTOR	HIGH LEVEL XDCR (USER)	NOT USED	
14	07	TRANSISTOR	LOW LEVEL FLOAT (XDCR MODE) - (USER)	NOT USED	



## **I/O Configuration**



## DIMENSIONS AND MOUNTING





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