



# Control and Monitoring Solutions for the Littelfuse MP8000

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# Introduction

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Ctek Z4550 Automation Controllers allow you to create complete, autonomous, monitoring and control systems anywhere they may be required. Many of these monitoring and control systems act as complete, stand-alone SCADA systems and in many cases, this involves controlling pumps and motors. In some cases, the Z4550 controls motors through a VFD and in other cases, the Z4550 controls motors directly through contactors.

In cases, where motors are being controlled through contactors, the Littelfuse MP8000 Motor Protection Relay can provide valuable levels of protection, safety and control. Therefore, Ctek has developed comprehensive support for the MP8000 in a wide range of standard operational configurations.

This document presents the information necessary for use of the MP8000 in conjunction with the Ctek Z4550.

## Related Documents

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This document is intended to supplement information provided in the Littelfuse MP8000 Motor Protection Relay Instruction Manual ([www.littelfuse.com/mp8000](http://www.littelfuse.com/mp8000)).

Users may also refer to the following Ctek documents:

- UM004 - Z4550 User Manual
- TN1007 – Automation Control
- TN7040 – Automation Syntax & Programming
- TN1010 – 4550 Outputs and Inputs

## Standard Capabilities and Configurations

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The Ctek Z4550 is designed for easy configuration with a standard web browser. Configuration may be done either locally over the LAN interface or remotely over the Cellular interface. You will find this configuration to be very similar to the Littelfuse Bluetooth configuration APP with all configuration parameters being defined in a similar manner.

In addition to configuring and controlling the MP8000, you will find standard 4550 configurations for:

- **Remote control and monitoring of motor/pump** – Using your web browser or your phone with Ctek Automation APP.
- **Controlling a pump based on pressure** – Attach a standard pressure sensor, configure high and low settings, and set runtime limits and alarm conditions.
- **Monitoring a tank and controlling a pump based on level or volume** – Attach a standard pressure sensor, set tank dimensions, and set runtime limits and alarm conditions.
- **Run a pump or motor based on schedule** - Utilize the scheduling screen of the Ctek Z4550 to create an appropriate schedule.

If you do not find a standard configuration to meet your requirements, it is easy to create your own through the Z4550's onboard configuration screens or contact Ctek Support for assistance.

## Standard Components

The picture below, shows the major components required to create a complete motor/pump control system around the MP8000.

- Ctek Z4550
- Littelfuse MP8000
- Contactor sized properly for motor being controlled

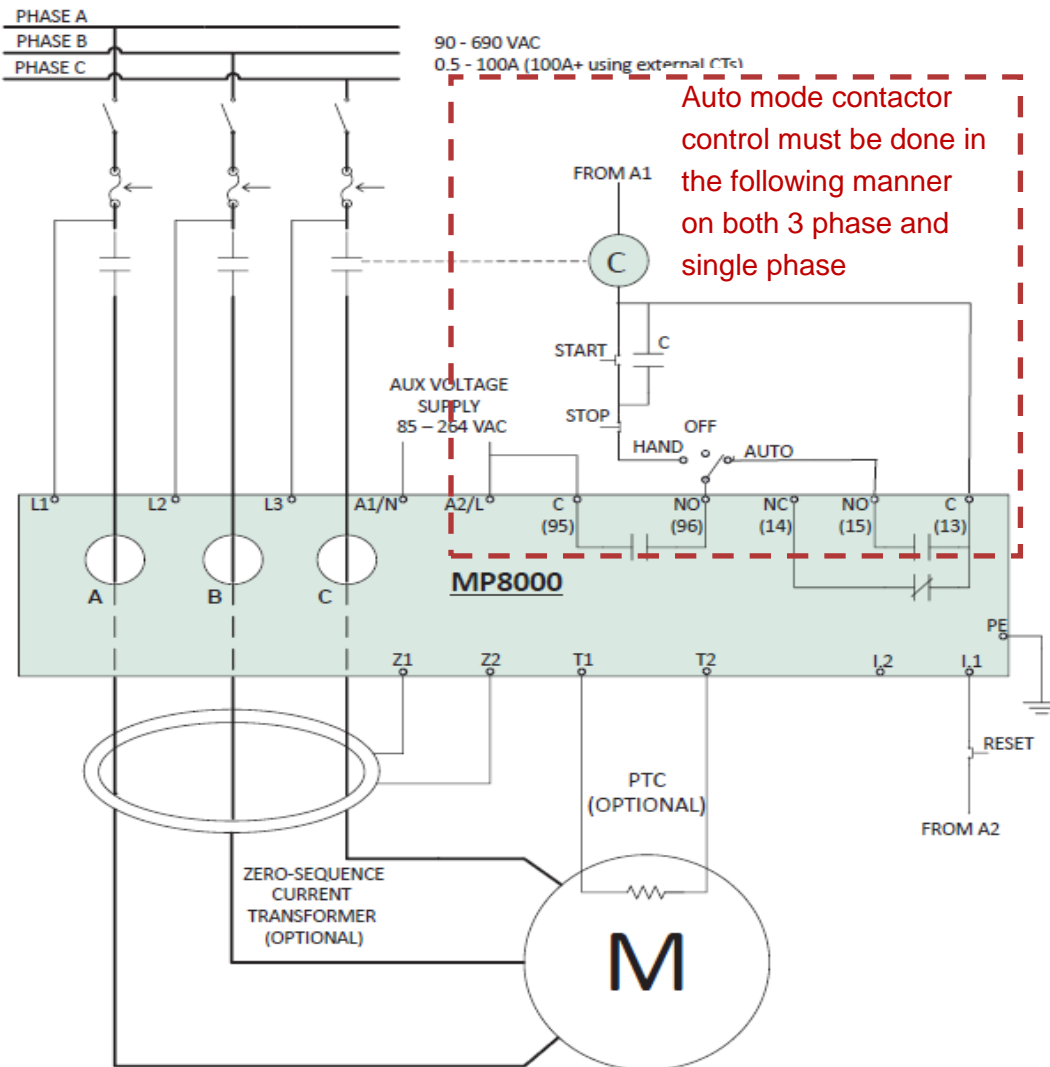


## Electrical Connections

- Connect the Ctek Z4550 to DC power (9- 24Vdc). It is suggested that 24vdc be used if a standard 4-20ma pressure sensor will be used.
- Connect a standard Ethernet cable between Z4550 and MP8000.
- Connect 3 phase AC power as defined in the diagram below. For single phase, see Littelfuse instruction manual but ensure that contactor control is wired as shown below in both cases.
- If a standard 4-20ma pressure or level sensor will be used for motor control, connect it to IN1 (pin 16) on the Z4550.

- If relay contact closure or any standard digital output signal will be used for motor control, connect it to IN4 (pin 20) on the Z4550.

**CAUTION:** Before proceeding to power up and configure, ensure that the HOA switch is in the **OFF** position. You must completely configure your installation before switching to AUTO.



# Initial Configuration

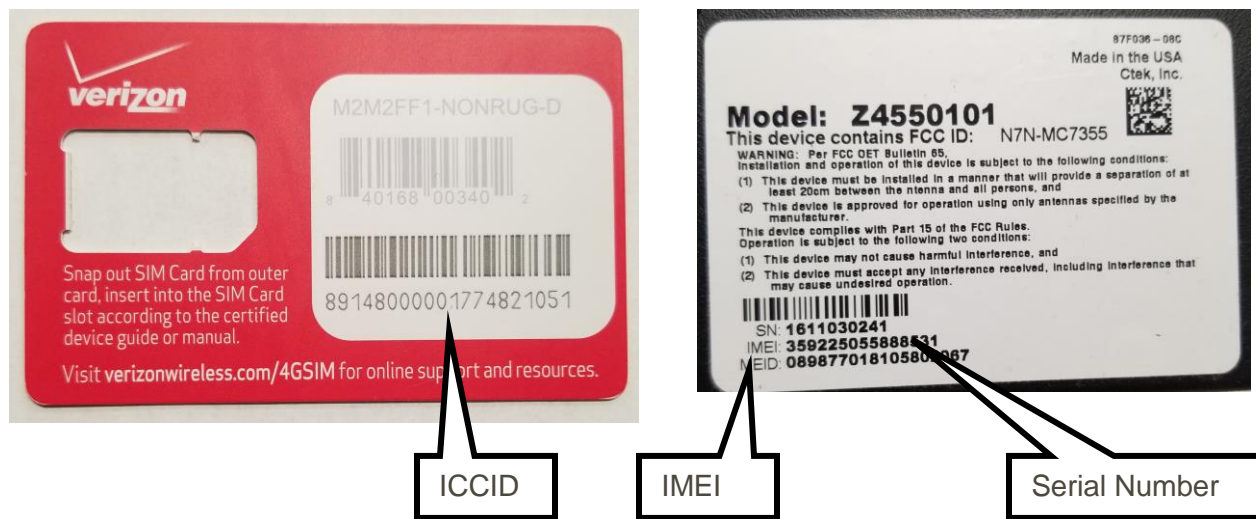
## Give your MP8000 an IP Address

The MP8000 must be configured with a static IP address in order for the Ctek controller to communicate with it over the Ethernet connection. Refer to the MP8000 documentation to configure the IP address. The following IP parameters must be configured on the MP8000:

- IP Address: 192.168.1.20
- Netmask: 255.255.255.0
- Default Gateway: 192.168.1.10

## Activate your Ctek controller

When you remove your Ctek controller from its box, you will find a SIM Card carrier enclosed. The SIM has already been removed from the carrier and installed in the unit but you must still activate it. If this is the first time you have activated a unit, please call (805) 701-0151 and they will walk you through it. You will need to provide them with the IMEI which is located on the label on the back of the Ctek controller and you will also need to provide them with the ICCID which is located on the back of the SIM Card carrier.



Once you have activated the unit, apply power and observe the Service and Link indicators on the Ctek controller. It may take several minutes for the network to activate the controller. When the unit is active, you will see a solid Service indicator of either Yellow or Green and a solid Red Link indicator. Once the unit is active with the network, you may proceed with configuration.

The Service indicator represents cellular signal quality:

- Yellow blinking – No service
- Yellow solid – Service with low signal level
- Green solid – Service with excellent signal level

The Link indicator represents the state of the cellular data connection:

- Off – No data connection
- Green – 3G data connection
- Red – 4G/LTE data connection

## [Logging into your Ctek controller](#)

To proceed with configuration, you will need an Internet connected computer with a web browser. If you are using a VPN, your computer will also need appropriate access. Once activated, your Ctek controller may be addressed using its serial number which is located on the label on the back of the controller. Using the example above with a serial number of 1611030241, you would type the following into your web browser:

**1611030241.ctekskycloud.com**

When the login screen appears, enter the default username and password:

- Username: **ctek**
- Password: **ctek**

Once your login is accepted, the Quick Panel will be presented. Select the **Admin Main** button on this screen and the Main Admin Screen will be presented.

## [Securing your Ctek controller](#)

Before placing your Ctek controller in service, it is important to secure it with a unique username and password. From the Admin Main Screen, select the **User Accounts** button. We strongly suggest that you replace the standard Ctek username and password with your own secret credentials and then select the **Update** button. You may also add other accounts if required. When complete, select the **Home** button to return to the Main Admin Screen.

## [Give your installation a name](#)

Once your Ctek controller is placed in service, it will most likely be displayed on Ctek's SkyCloud and it may also be presenting notifications and information through the Ctek APP on your smartphone. You will define a name associated with each Ctek controller. From the Main Admin Screen, select the **Device Profile** button. On the Device Profile screen, select the **Edit** button in the upper right hand corner. Fill in the Location Name field with a name that meets your requirements and then scroll to the bottom of the screen and select the **Update** button. When complete, select the **Home** button to return to the Main Admin Screen.

## [Give your installation a location](#)

In order for a Ctek controller to present itself on the Ctek SkyCloud map, it must provide its location. All Ctek controllers have an internal GPS which allows them to automatically determine their location. If your unit will be installed in a location where GPS signal can be received, and if you have a suitable antenna on the secondary antenna connection, your unit will automatically determine and report its location and it is not necessary for you to give your controller a location.

If the Ctek controller is being installed in a location with no GPS signal or is not configured with a suitable antenna, you may configure its address manually. We suggest that you go to the website: <https://www.latlong.net> and enter the address where the Ctek controller will be installed. This website will provide you with the latitude and longitude of that address which you will enter into your Ctek controller. Pay careful attention to the minus sign on longitude as it must be entered.

From the Main Admin Screen, select the **Location Source** button. On the Location Configuration screen, select the Location Source menu at the top and then select the entry for **Use Lat/Lon Below**. You must then enter the Latitude and Longitude of your location in the fields below. Finally, scroll to the bottom of the screen and select the **Update** button. When complete, select the **Home** button to return to the Main Admin Screen.

## [Enable alarms](#)

Your Ctek controller is capable of sending alarms and notifications through email, text message or notifications on the Ctek smartphone APP. If you intend to use email or text message notifications, you must define the email addresses and phone numbers to be notified.

From the Main Admin Screen, select the **Device Profile** button. On the Device Profile screen, scroll down to the Application Alarming section. Set **Alarming Status** to Enabled and Select the appropriate **Delivery Method**. Next you will proceed down to that Alarm/Email Groups section and define the necessary information in default Group 1. In the **Add Alarm Contact** fields enter the contact **Name**, contact **Email Address** and contact **SMS Number** and then select the **Add** button. Repeat these steps for each contact. **IMPORTANT:** When all contacts have been added, scroll down to the bottom of the screen and select the **Update** button to save your contact list. When complete, select the **Home** button to return to the Main Admin Screen.

## [Select a configuration](#)

You are now ready to select a configuration that supports your type of installation:

- Pump Management – This configuration will control and monitor a pump based on a pressure or contact closure. It also allows you to schedule pump operation for requirements such as irrigation.
- Tank and Pump Management – This configuration will manage tank level based on pressure, depth or contact closure and control the pump supplying the tank.
- Well, Tank, and Pump Management – This configuration provides all of the features of Tank and Pump Management but also supervises the pump that is consuming the contents of the tank. Supervision of the consumption pump addresses runtime monitoring, manual override, and tank empty override.

From the Main Admin Screen, select the **System Tools** button. On the System Tools Screen select **Backup/Restore**. On the Backup/Restore screen select **Local Storage** and **Install** as shown in the image below and then select  **Factory Applications**. From the red menu, select the configuration that you require and then select the **Submit** button. Your configuration has now been installed. You may now select the **Home**



button to return to the Main Admin Screen and at this point, you must restart the Ctek controller. This may be done by selecting **Restart** or by cycling power to the unit.

### Backup/Restore Screen Example

No USB device found

Format

Mount

#### Select a Location

Local Storage

USB Drive

#### Select an Option

Save/Backup

Install

#### Select an Module

- Factory Applications
- Entire System
- Product Branding
- Automation Control

Submit

Select a file:

-- Available Options --

-- Available Options --

**Littelfuse**

Well, Tank and Pump Management with the MP8000

MP8000 - General Tank and Pump Management with the MP8000

MP8000 - General Pump Management with the MP8000

**Jesco**

Topax DX Universal Configuration

Topax MC Universal Configuration

**Ctek standard**

Well, Tank and Pump Management

General Tank and Pump Management

General Pump Management

Back

# Managing the MP8000

Once you select one of the Z4550 configurations that support the MP8000, the Automation Dashboard of the Z4550 will present several status panels and several configuration panels for the MP8000. These panels are laid out in a similar manner to those provided by the Littelfuse Bluetooth APP and Littelfuse Windows configuration software. Please see the examples below and refer to the Littelfuse MP8000 documentation for detailed information on each parameter.

## Status Panels

The screenshot displays the 'Automation Dashboard' for a '4550 Controller' (Pump & Tank & MP8000). It features four main status panels for the MP8000:

- MP8000 System Status:** A table of operational parameters and their current values.
- MP8000 Voltage:** A table showing line voltages and unbalance.
- MP8000 Current:** A table showing line currents and unbalance.
- MP8000 Power:** A table showing line power and power factors.

MP8000 System Status	
Motor Demand	STOP
MP8000 Status	OK
Motor State	STOP
Motor Start Count	62
Thermal Capacity Use	0.00
Line Frequency	60.01
Phase Sequence	0.00
Positive Temperature	0.00
Motor Relay State	Energized
Aux Relay State	Open
Total Runtime	3.76 hours
Current Runtime	0.00 min
● Current Fault	None OK - No Faults
● Warning Status	None OK - No Warnings
Remaining Trip Delay	0.00 sec
Restart Time Remain	0.00 sec
Ground Fault Current	0.00
Fault Trip Reset	<input type="button" value="Reset"/>

MP8000 Voltage	
Line 1 Voltage	212.17 Vac
Line 2 Voltage	210.58 Vac
Line 3 Voltage	211.55 Vac
Voltage Unbalance	0.40

MP8000 Current	
Line 1 Current	0.00 amps
Line 2 Current	0.00 amps
Line 3 Current	0.00 amps
Current Unbalance	0.00

MP8000 Power	
Line 1 Power	0.00 Kw
Line 2 Power	0.00 Kw
Line 3 Power	0.00 Kw
Line 1 Power Factor	Lagging Inductive +
Line 1 Power Factor	0.00
Line 2 Power Factor	Lagging Inductive +
Line 2 Power Factor	0.00
Line 3 Power Factor	Lagging Inductive +
Line 3 Power Factor	0.00



# 4550 Controller

Pump & Tank & MP8000

Automation Dashboard

## MP8000 Configuration

Restart-Undercurrent	5	( )
Restart-Other	1	( )
Low Voltage ( Vac )	56	( )
High Voltage ( Vac )	500	( )
Voltage Unbalance ( percent )	15.00	( )
Over Current ( amps )	10.50	( )
Under Current ( amps )	0.50	( )
Current Unbalance ( percent )	20.00	( )
Trip Class	5	( )
RD0 PowerUp Timer ( sec )	5	( )
RD1 RapidCycle Timer ( sec )	5	( )
RD2 CoolDown Timer ( sec )	300	( )
RD3 Well Recovery Ti ( sec )	300	( )

## MP8000 Configuration 2

Current Transformer	1	( )
Potential Transforme	1	( )
Stall Percent (OC)	0.00	( )
Stall Trip Delay ( sec )	5	( )
Stall Inhibit Delay ( sec )	6	( )
Motor Accel. Delay ( sec )	10	( )
Motor Accel. Control	6553.60	( )
Curr Unbalance Delay ( sec )	120	( )
Low Power Limit ( Kw )	0.00	( )
High Power Limit ( Kw )	51.30	( )
High Power Delay ( sec )	10	( )
Under Current Delay ( sec )	30	( )
Linear Overcurrent T ( sec )	10	( )
Gnd Flt Current Lmt ( amps )	0.00	( )
Ground Fault Delay ( sec )	5.00	( )
Ground Inhibit Delay ( sec )	5	( )

# General Pump Management

The General Pump Management configuration of the Z4550, has a wide range of pump management functions available to you:

- Connect a pressure sensor to IN1 (0-20ma) of the Z4550 and manage a pump based on pressure.
- Connect a float switch to IN4 of the Z4550 and manage a pump based on contact closure.
- If required, use the Schedule Screen of the Z4550 to create and manage operational schedules.
- If required, set a runtime alarm on pump operation.
- If you selected a standard configuration, connect the motor control contactor to **DO1** of the Z4550 <sup>Note1</sup>.
- If you selected a configuration that utilizes the MP8000 or a VFD, pump control will be managed by those devices.

**NOTE 1:** DO1 and DO2 are designed to drive a DC contactor coil and will sink a maximum current of .25Amps (250ma).

The screenshot displays the 'Automation Dashboard' for the 'Ctek 4550 Controller'. The page title is 'Pump' and the current time is 'Fri Jan 22 16:30:45 2021'. There are three tabs: 'Details' (selected), 'Overview', and 'Analysis'. A 'Show All' dropdown menu is visible. The dashboard is divided into three main sections:

- Water System Status:** Shows 'System Pressure' at 0.00 PSI, 'Pump Faults' as OK, 'Pump State' as Idle, 'Pump Override' as Pump enabled, and 'Operational Mode' as Always on.
- Pump Operational Parameters:** A table with four rows: 'Min System Pressure ( PSI )' (0.00), 'Max System Pressure ( PSI )' (0.00), 'Pump Run Limit Alarm ( Minutes )' (0), 'Manual Pump Override' (Is Disabled), and 'Scheduled Operation' (Is Disabled).
- Pump Control Input Select:** Shows 'Input Select' as IN4 - Switch, '4-20ma Min Range ( PSI )' (0.00), and '4-20ma Max Range ( PSI )' (0.00).

## Pump Control Input Select

- **Input Select** – Two choices:  or
- **If you selected IN1 - 4-20ma**, review the documentation for your sensor and enter the minimum and maximum range of your sensor.
- **If you selected IN4 – Switch**, the Z4550 will accept dry contacts (relay) or most standard open collector or open drain output signals.

## Pump Operational Parameters

- **Min and Max System Pressure** – Set the minimum and maximum limits for pressurizing your water system. The Z4550 will manage the pump within this range.
- **Pump Run Limit Alarm** – Set a value in minutes if you want to be notified of runtime reaching this value. If you do not require an alarm, set this value to 0.
- **Manual Pump Override** – You may override pump operation by clicking on this button.
- **Schedule Operation** - If Scheduled Operation is disabled, the pump will always run based on the pump control input that you have selected. If you only want the pump to run on certain days and at certain times, you should enable Scheduled Operation and create a schedule using the Z4550 Scheduler screen shown below.

**Ctek 4550 Controller**

Pump Schedule Manager

Automation Control Schedule

Current Weekly Schedule

Sunday	No Events	<input type="button" value="+"/>
Monday	No Events	<input type="button" value="+"/>
Tuesday	No Events	<input type="button" value="+"/>
Wednesday	No Events	<input type="button" value="+"/>
Thursday	No Events	<input type="button" value="+"/>
Friday	No Events	<input type="button" value="+"/>
Saturday	No Events	<input type="button" value="+"/>

# Tank and Pump Management

The Tank and Pump Management configuration of the Z4550, will manage a wide variety of installations and it is simple to configure for any size cylindrical tank. See configuration options below:

- Connect a pressure sensor to IN1 (0-20ma) of the Z4550 to manage a pump based on level or volume.
- Connect a float switch to IN4 of the Z4550 to manage a pump based on contact closure.
- If required, set a runtime alarm on pump operation.
- If required, set empty and overflow alarms
- If you selected a standard configuration, connect the motor control contactor to **DO1** of the Z4550 <sup>Note1</sup>.
- If you selected a configuration that utilizes the MP8000 or a VFD, pump control will be managed by those devices

Many configuration options are available. For any of the following, contact Ctek Support for assistance:

- Well depth sensor support
- Well recovery management
- Alternate tank profiles
- Flow meter support

**NOTE 1:** DO1 and DO2 are designed to drive a DC contactor coil and will sink a maximum current of .25Amps (250ma).

The screenshot displays the 'Automation Dashboard' for the 'Ctek 4550 Controller'. The dashboard is divided into several sections:

- Water System Status:** Shows 'Tank State' as OK, 'Pump Faults' as OK, 'Pump State' as Idle, and 'Pump Override' as Pump enabled.
- Storage Tank Status:** Shows 'Current Level' as 0.00 Feet, 'Current Volume' as 0.00 Gallons, and 'Total Usage' as 0.00 Gallons. A 'Reset Total Usage' button is available.
- Configure Storage Tank Parameters:** Includes input fields for Low Alarm (Feet), Start Fill Level (Feet), Stop Fill Level (Feet), High Alarm (Feet), Tank Diameter (Feet), and Tank Height (Feet), all currently set to 0.00.
- Configure Pump Parameters:** Includes 'Pump Run Limit Alarm (Minutes)' set to 0, 'Pump Run Limit Alarm' set to 'Is Disabled', and 'Manual Pump Override' set to 'Override Off'.
- Configure Pump Control Input:** Includes 'Input Select' set to 'IN1 - 4-20ma', '4-20ma Min Range (PSI)' set to 0.00, and '4-20ma Max Range (PSI)' set to 0.00.

## Pump Control Input Select

- **Input Select** – Two choices: **IN1 - 4-20ma** or **IN4 - Switch**
- **If you selected IN1 - 4-20ma**, review the documentation for your sensor and enter the minimum and maximum range of your sensor.
- **If you selected IN4 – Switch**, the Z4550 will accept dry contacts (relay or float switch) or most standard open collector or open drain output signals.

## Pump Operational Parameters

- **Min and Max System Pressure** – Set the minimum and maximum limits for pressurizing your water system. The Z4550 will manage the pump within this range.
- **Pump Run Limit Alarm** – Set a value in minutes if you want to be notified of runtime reaching this value. If you do not require an alarm, set this value to 0.
- **Manual Pump Override** – You may override pump operation by clicking on this button.

## Storage Tank Parameters

- **Low Alarm** – Set a level for Tank Empty Alarm
- **Start Fill Level** – Level where pump will be enabled
- **Stop Fill Level** – Level where pump will be disabled
- **High Alarm** – Set a level for Tank Overflow
- **Tank Diameter** – Used to calculate volume of water in tank
- **Tank Height** – Used to scale measurements and graphs

## Total Usage

- **Calculated** – Total usage is calculated by totalizing the volume of fill cycles. The Z4550 calculates the volume of the tank at the Stop Fill Level. When the tank reaches the Start Fill Level, the Z4550 calculates the difference between the Stop and Start level and adds that volume to the total.
- **Measured** – If an optional flow meter is installed, the Z4550 will use the output of that meter to totalize usage. Support is available for pulse, 4-20ma and Modbus flow meters.

# Well Tank and Pump Management

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The Well, Tank and Pump Management configuration of the Z4550, will manage a wide variety of installations and it is simple to configure for any size cylindrical tank.

This configuration manages tank level by controlling a well pump. It is also configured to monitor a supply pump pulling water from the tank. It is expected that the supply pump has its own pressure switch leaving the Z4550 to monitor runtime and override pump operation if the tank reaches its empty level. See configuration options below:

- Connect a pressure sensor to **IN1** (0-20ma) of the Z4550 to manage a pump based on level or volume.
- Connect a float switch to **IN4** of the Z4550 to manage a pump based on contact closure.
- Connect a current switch (Such as Dwyer MCS) to **IN3**. This will be used to monitor runtime on the supply pump.
- If required, set a runtime alarm on pump operation.

- If required, set empty and overflow alarms.
- If you selected a standard configuration, connect the motor control contactor to **DO1** of the Z4550 <sup>Note1</sup>.
- If you selected a configuration that utilizes the MP8000 or a VFD, pump control will be managed by those devices.
- Connect your supply pump override contactor to **DO2** of the Z4550. Normally closed contacts must be used for the override contactor <sup>Note1</sup>.

Many configuration options are available. For any of the following, contact Ctek Support for assistance:

- Well depth sensor support
- Well recovery management
- Alternate tank profiles
- Flow meter support
- Supply pump pressure management by Z4550

**NOTE 1:** DO1 and DO2 are designed to drive a DC contactor coil and will sink a maximum current of .25Amps (250ma).

**Ctek 4550 Controller**  
Well & Tank & Pump Automation Dashboard  
Time: Fri Jan 22 17:17:13 2021

Show All ▾ | **Details** | Overview | Analysis

### Water System Status

● Tank State	OK
● Pump Faults	OK
● Well Pump	Idle
● Supply Pump	Idle
● Well Pump Override	Pump enabled
● Supply Pump Override	Pump enabled

### Storage Tank Status

Current Level	0.00 Feet
Current Volume	0.00 Gallons
Total Usage	0.00 Gallons
Reset Total Usage	<input type="button" value="Reset"/>

### Configure Storage Tank Parameters

Low Alarm ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
Start Fill Level ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
Stop Fill Level ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
High Alarm ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
Tank Diameter ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
Tank Height ( Feet )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>

### Configure Pump Parameters

Well Pump Alarm ( Minutes )	<input type="text" value="0"/>	<input type="button" value="↔"/>
Supply Pump Alarm ( Minutes )	<input type="text" value="0"/>	<input type="button" value="↔"/>
Supply Pump Rate ( GPM )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
Well Pump Override	<input type="button" value="Override Off"/>	
Supply Pump Override	<input type="button" value="Override Off"/>	

### Configure Pump Control Input

Input Select	<input type="button" value="IN1 - 4-20ma"/>	
4-20ma Min Range ( PSI )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>
4-20ma Max Range ( PSI )	<input type="text" value="0.00"/>	<input type="button" value="↔"/>



## Pump Control Input Select

- **Input Select** – Two choices:  or
- **If you selected IN1 - 4-20ma**, review the documentation for your sensor and enter the minimum and maximum range of your sensor.
- **If you selected IN4 – Switch**, the Z4550 will accept dry contacts (relay or float switch) or most standard open collector or open drain output signals.

## Pump Operational Parameters

- **Min and Max System Pressure** – Set the minimum and maximum limits for pressurizing your water system. The Z4550 will manage the pump within this range.
- **Well Pump Alarm** – Set a value in minutes if you want to be notified of runtime reaching this value. If you do not require an alarm, set this value to 0.
- **Supply Pump Alarm** – Set a value in minutes if you want to be notified of runtime reaching this value. If you do not require an alarm, set this value to 0.
- **Supply Pump Rate** – See explanation in Total Usage section below.
- **Well Pump Override** – You may override pump operation by clicking on this button.
- **Supply Pump Override** – You may override pump operation by clicking on this button.

## Storage Tank Parameters

- **Low Alarm** – Set a level for Tank Empty Alarm
- **Start Fill Level** – Level where pump will be enabled
- **Stop Fill Level** – Level where pump will be disabled
- **High Alarm** – Set a level for Tank Overflow
- **Tank Diameter** – Used to calculate volume of water in tank
- **Tank Height** – Used to scale measurements and graphs

## Total Usage

- **Calculated** – Total usage is calculated by totalizing the volume of fill cycles. The Z4550 calculates the volume of the tank at the Stop Fill Level. When the tank reaches the Start Fill Level, the Z4550 calculates the difference between the Stop and Start level and adds that volume to the total. If the supply pump is pulling water from the tank during a fill cycle, Supply Pump Rate is multiplied by supply pump runtime and added into the Total usage.
- **Measured** – If an optional flow meter is installed, the Z4550 will use the output of that meter to totalize usage. Support is available for pulse, 4-20ma and Modbus flow meters.