

# Check It - Single Phase, Duplex

Model: CKIT1D | Overload, Opaque Door, Beacon

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## Introduction

### Product Overview

The Check It™ Duplex control panel is designed to operate two sewage pumps in demand dose applications. It supports both 120VAC and 230VAC pumps within specified FLA ranges and has a Type 4X (indoor/outdoor) enclosure.

The panel offers up to five float inputs: low level alarm, stop level, lead level, lag level or lag/alarm level, and high alarm or high alarm/start level. The pump starts when the liquid level rises and activates the pump lead switch, and runs until the pump stop switch is deactivated, ending the cycle. If the pump lag level alarm switch is activated, the second pump will start and both pumps will continue to run until the pump stop switch is deactivated. After the pump stop switch is deactivated, the system will alternate the lead pump if the Pump Lead Selector Switch is set to ALT. The lag and alarm inputs can both be programmed as lag/alarm inputs to trigger an alarm when the lag pump starts. If the low level float deactivates, a low level alarm will be triggered and both pumps will turn off.

### Product Highlights

Below is a list of highlighted features of the Check It™ Duplex system. For further details on each feature, please see the rest of this document.

#### Power Inputs

- ▶ 120 VAC Board Power Input
- ▶ 120/230 VAC Pump Power Input

#### Sensor Inputs

- ▶ Five Float Inputs
  - ▶ Low Level, Stop, Lead, Lag, and Alarm
- ▶ Two Seal Fail Sensor Inputs (Optional)
  - ▶ With Sensitivity Adjustment Between 10K and 100K

#### User Inputs

- ▶ Test/Silence Switch
- ▶ Test/Config Switch (For Changing Field Settings)
- ▶ Check It™ Switch for Simulating Pump Start Events

- ▶ Hand-Off-Auto Control for Each Pump
- ▶ Pump Lead Selector Switch

## Outputs

- ▶ Two Pump Contactors With Specified FLA Ranges
- ▶ One Auxiliary Dry Contact Output

## Indications

- ▶ Red/Green Beacon for System Normal, Pump Run, and Alarm Indication
- ▶ Indicator LEDs for Each Sensor Input
- ▶ Pump Run Indicator LEDs

## Field Configurations

- ▶ Low Alarm Enable/Disable
- ▶ Input Error Detection
- ▶ Automatic Alarm Reset
- ▶ Lag Alarm Enable
- ▶ High Float Redundant Start Enable
- ▶ Seal Fail Pump Stop Enable
- ▶ Seal Fail Buzzer Enable
- ▶ Green System Normal Beacon Enable

## Before Installation

Before proceeding with the installation or operation of the control panel read all instructions thoroughly, as well as comply with all Federal, State and Local Codes, Regulations and Practices. The control panel must be installed by qualified personnel familiar with all applicable local electrical and mechanical codes. Refer to the National Electrical Code (NFPA 70). Failure to properly install and test this product can result in personal injury or equipment malfunction. All conduit connected to the panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. NEMA 1 enclosures are for indoor use only while NEMA 4X panel enclosures may be used indoor or outdoor. Refer to panel model name plate on inside of door for enclosure rating. Note: If options are ordered that affect the number of floats, refer to the panel schematic for complete information.

## Safety Guidelines



1. DO NOT USE WITH FLAMMABLE OR EXPLOSIVE FLUIDS SUCH AS GASOLINE, FUEL OIL, KEROSENE, ETC. DO NOT USE IN EXPLOSIVE ATMOSPHERES. CONTROL PANEL SHOULD ONLY BE USED IN WATER AND WASTEWATER APPLICATIONS THAT ARE NOT RATED AS A HAZARDOUS LOCATION.
2. DO NOT WORK ON THE CONTROL PANEL WITH LIVE VOLTAGE APPLIED TO THE CONTROL PANEL WITH WET HANDS OR WHEN STANDING ON A WET SURFACE.
3. DISCONNECT ALL ELECTRICAL SERVICE BEFORE WORKING ON OR HANDLING THE CONTROL PANEL
4. INCOMING VOLTAGE MUST MATCH THE CONTROL PANEL VOLTAGE. REFER TO THE PANEL SCHEMATIC FOR COMPLETE INFORMATION.

## Description of Product Interface

The following sections will describe all of the interface points with the Check It™, including all buttons, indicator outputs, and sensor inputs for the system.

### Outside of the Panel

Each Check It™ panel is equipped with a test/silence switch, an Red-Green (RG) indicator LED, and a buzzer. The test/silence switch is used to activate an indicator test routine to verify the beacon, buzzer, and LED indicators are all functioning properly. The Red-Green beacon will by default be illuminated green while the system is normal and monitoring, will blink green while a pump is running, and will blink red when there is an alarm. If both an alarm and a pump run event are happening simultaneously, the beacon will alternate between Red and Green. If there are no pumps enabled (both are set to OFF mode), the beacon will blink a yellow warning to the user.

### Inside of the Panel

#### HOA Switches

Each pump on the Check It™ has its own Hand-Off-Auto (HOA) selector switch. When set all the way up, the pump will enter hand mode and the contactor output from the Check It™ will activate. When in the middle, the pump will be in OFF mode and will not activate during pump starting events. When set all the way down, the pump will be in auto mode and will be used as the lead or lag pump as indicated by the Pump Selector Switch. Note that if both pumps are set to OFF, the RG beacon will blink yellow to warn the user that the system will be unable to activate any pumps.

## **Pump Selector Switch**

This switch selects the lead/lag configuration of the pumps. If Pump One (P1, Left) or Pump Two (P2, Right) are selected, that pump will be the permanent lead pump. If Alternate (ALT, Middle) is selected, the pumps will alternate between lead and lag every run cycle.

## **Check It™ Button**

The Check It™ button on the chassis of the product is used to simulate start float events. This can be used to verify pump connections and double check that the pump HOA and Alternate configurations are behaving as expected. If the system does not start pumps or alternate between them as expected, double check the HOA and Pump Lead Selector switches.

## **Test/Config Button**

The Test/Config button is used to activate the indicator test routine, to clear active alarms, and to modify the system settings. See the "How To Clear an Alarm" section for details on alarm clearing and the "How to View and Change Settings" section for details on configuring the device.

## **Indicator LEDs**

The Check It™ features indicator LEDs for each sensor input as well as indicator LEDs for each pump. The F1 through F5 LEDs indicate the state of the float inputs. The S1 and S2 LEDs indicate if the seal fail sensor inputs are tripped or not. The Pump 1 Run and Pump 2 Run LEDs indicate whether or not their respective pumps are running. Note that if a Pump Run LED is blinking, that means that pump's seal fail sensor has been tripped.

## **Auxiliary Dry Contact**

The Check It™ features a single auxiliary dry contact alarm output with both normally open and normally closed connections. This dry contact output will activate during any alarm condition. Additionally, the contact will be active when the product loses power, allowing for power loss detection and alarming when connected to building automation systems.

## **Sensor Connections**

### **Float Sensors**

The F1 through F5 inputs are designed for standard signal level gold contact floats. They are powered by an isolated 3.3 Volt low power and touch safe power source generated by the Check It™ circuit board.

### **Seal Fail Sensors**

The S1 and S2 inputs are water detecting probe circuits designed for use with stainless steel pump seal fail probes. They are powered by an isolated 12 Volt alternating, low power and touch safe power source generated by the Check It™ circuit board. Next to the seal fail sensor inputs, there is a "SEAL SENSITIVITY" adjustment potentiometer. This can be used to adjust the trip point of the seal fail probes between 10 and 100 Kilo-Ohms of equivalent resistance through water. 100 K is the most sensitive setting, and 10 K is the least sensitive.

## How To Clear an Alarm

If automatic alarm reset is disabled, the user must manually clear all alarm events. To do this, activate and hold the Test/Silence switch on the side of the panel **or** the Test/Config button on the product chassis for 5 seconds. This will reset all active alarms. Note that if the alarm immediately re-activates and the buzzer activates again, this means that the alarm condition is still present and the system cannot clear the alarm. If this happens, check for the source of the alarm.

## Settings

The Check It™ panel has several settings that the user can use to customize the panel for the application. This section will describe how to change the settings and provide a list of the available settings.

### How to View and Change Settings

Press and hold the test/configure pushbutton on the Check It™ chassis to begin the setting viewing and changing routine. The system will immediately begin a test blinking pattern of all indicator outputs. After holding for 5 seconds, the setting viewing and changing routine will begin. The routine is as follows:

1. **LED Test Pattern;** Press and hold the Test/Config button.

- ▶ The LED indicator outputs, buzzer, and beacon will all begin blinking in a test pattern.

2. **View Settings;** Hold the Test/Config button for 5 seconds.

- ▶ The test blinking pattern will stop and the indicator LEDs will display the current system settings.
- ▶ If an indicator LED is ON, that means the setting is enabled. Otherwise, the setting is disabled.
- ▶ See the "Available Settings" section for a summary of the configs and which LED they are indicated by.

3. **Toggle Settings;** Hold the Test/Config button for another 5 seconds to change a setting.

- ▶ A fast blinking pattern will begin to move through the indicator LEDs from left to right and then up to the green beacon.
- ▶ This fast blinking pattern indicates which setting is currently selected.
- ▶ To toggle a setting, release the Test/Config button while the desired Setting Indicator LED is blinking.
- ▶ After releasing the Test/Config button, a medium blinking pattern will confirm which setting was toggled, after which the system will display the new system settings followed by a burst of fast blinks before the system returns to normal operation..

4. **Exit Without Saving;** To exit without changing any settings, keep holding the Test/Config button until the fast blinking pattern moves through all of the indicator LEDs and the system returns to the test blinking pattern. The Test/Config button can now be released without changing any settings.

## Automatic Low-Alarm Enable

The low alarm input of the Check It™ is disabled by default to remove the need for installing jumpers on panels that do not use it. However, the system will automatically enable this input if it detects a closed float connected to it for at least 30 seconds.

### Available Settings

Name	Indicator LED	Factory Default	Description
<b>Low Alarm Float Enable</b>	F1 LED	Disabled	Enables the low alarm float input. Note that this will automatically be enabled if the system detects a float is connected for more than 30 seconds.
<b>Input Error Detection</b>	F2 LED	Enabled	Enables input sequence error detection. If the floats activate out of sequence (e.g., the lag float activates before the start float) the system will alarm.
<b>Automatic Alarm Reset</b>	F3 LED	Enabled	Enables automatic alarm resetting. If enabled, the system will automatically stop alarming once the alarm condition is resolved. If disabled, the user must manually clear each alarm by holding the test/silence switch.
<b>Lag Alarm Enable</b>	F4 LED	Enabled	Enables a high level alarm on the lag float.
<b>High Float Redundant Start Enable</b>	F5 LED	Enabled	Enables redundant lag pump starting on the high alarm float.
<b>Seal Fail Pump Stop Enable</b>	S1 LED	Disabled	If enabled, this will cause the pumps to stop when their seal fail inputs have been triggered.
<b>Seal Fail Buzzer Enable</b>	S2 LED	Enabled	If enabled, the buzzer will enunciate when the seal fail inputs are triggered. If disabled, only the beacon will activate.
<b>Green System Normal Beacon Enable</b>	Green Beacon	Enabled	If enabled, the beacon will be illuminated green when the system is normal. If disabled, the green beacon will only activate when one of the pumps are running.



