

Open Bed Detector

Service & Installation Manual



WASHLINK SYSTEMS OPEN BED DETECTOR SERVICE & INSTALLATION MANUAL

This document provides comprehensive operational procedures for the Washlink Systems Open Bed Detector (OBD).

In this manual, we will discuss the Installation, Setup and Operation of the OBD.

If further assistance is needed, please contact the Distributor from which the product was purchased.

When calling for assistance, you must have the following information available:					
UL Number:					
Distributor Name:					

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1 Overview

The Washlink Systems Open Bed Detector (OBD) is a simple and effective way to avoid potentially costly damage to your customer's Pickup truck, as well as your wash equipment. By using ultrasonic profiling of the vehicle, you are able to safely control tunnel equipment. Proven industrial PLC technology provides the car wash operator with unmatched reliability and ease of use.

1.1 Features

Proven functionality: control Top Washer, control Top Air Dryer nozzles, inhibit chemical arches Automatically detect open truck beds

8 functions controlled per enclosure

Automatically control equipment based on detection of an open bed

Add to any brand of equipment on the market

Add to any brand of Equipment Controller

Adjust "on the fly" (no shutting down car wash for system changes)

Hand-Auto switches for easy testing

Double pole 15amp relays for long life

Prewired & fused with blown fuse indicator

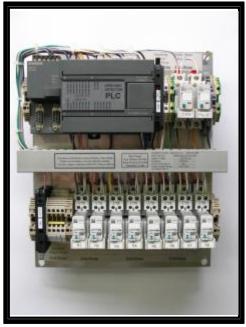
Adjust "on the fly" (no shutting down car wash for system changes)

Built in counters for each function

Corrosion and rust proof enclosure with lockable hasps

Small footprint for easy installation

UL listed



add to any brand of equipment controller



Adjust "on the fly" (no shutting down car wash for system changes)

2 Installation

The Washlink Systems OBD should be mounted securely to a stable and permanent wall. Choose a location in the equipment room that is easily accessible and provides protection from the elements.

2.1 Power Requirements

The Washlink Systems OBD requires 120vac (15A max) branch circuit protection for PLC power.

An optional International Voltage kit rated at 220vac is available upon request.

This power circuit is provided by the customer.

This circuit should be connect to Fuse 101 PLC.

The Washlink Systems OBD requires Branch Circuit protection for Functions (outputs).

The voltage of this circuit is per site needs and can be rated 0-250vac at 15A maximum.

This power circuit is provided by the customer.

This circuit should be connect to Fuse 201 OUTPUTS.



Warning: All electrical work should be performed by a qualified and licensed electrician.

All electrical work should meet or exceed National and Local codes and ordinances.



Warning: Risk of electrical shock.

More than one disconnect may be required to be de-energized before servicing equipment.



Warning: To reduce the risk of fire, connect only to a 110 vac circuit provided with 15a maximum branch circuit protection in accordance with the NEC, ANSI/NFPA 70 and local code authorities.



Warning: Bonding between conduit connection is not automatic and must be provided as part of the installation.

2.2 Inputs

The OBD Input power is supplied by the PLC.

All Inputs should be wired as a Normally Open Circuit.



Warning: All Inputs are 0vdc.

Any other voltage will damage the Controller and void warranty.

The Conveyor Input IS NOT required when operating the OBD.

The **Conveyor Input** is used to control functions per the conveyor run status.



Note:

An interface relay may be needed if the existing Conveyor Control does not have an extra Normally Open contact.

The Pulse Input IS required when operating the OBD in OB Std Function/Car Present + Time Mode. The **Pulse Input** is used if you prefer Pulses vs. **Time Only** resolution.



An interface relay may be needed if the existing Pulse Switch does not have an extra Normally Open contact.

The **Ultrasonic Sensor Input** IS required when operating the OBD.

The Ultrasonic Sensor should be mounted at a minimum of 10 feet from floor surface.



Hint:

Floor surface must be flat/perpendicular to the Sensor face in order to avoid errant readings. The Sensor has been calibrated to function at a distance from floor between 8'0" - 11'6". Reference the Face of Sensor to Floor setting (Sec 3.3.1).



2.3 Outputs

Each Function has (1) pre-wired output circuit.

Fuse 201 provides protection for the Customer provided voltage on each Function output circuit.

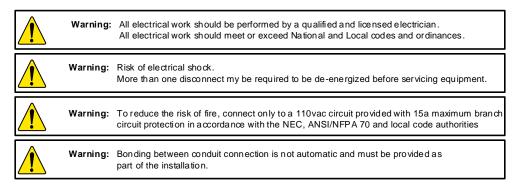
Function outputs are turned on according to their Configuration.

Function outputs can be manually overridden by using the Override latch on the corresponding relay.



2.4 Field Wiring

Input wiring is done directly at the corresponding **CONV** or **PULSE** relay. **Output** wiring is done directly at the corresponding **Function** relay.



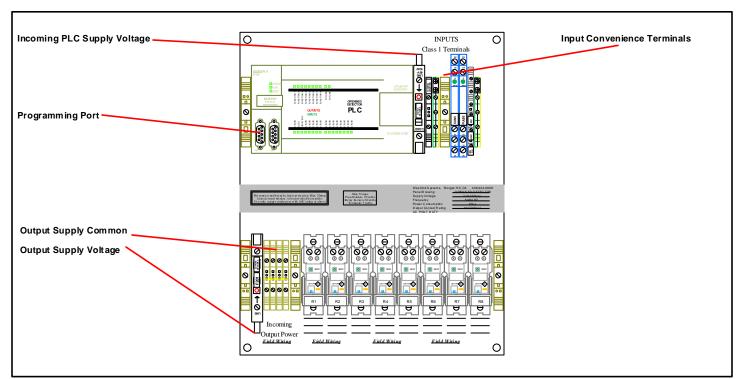


Figure 2.1 Field Wiring

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Chapter 3

3 Programming

Section 3.1 – 3.6 explain the **Programming** Menus and Screens for the OBD.



The **OBD Programmer** is an Optionally purchased Unit. It is required in order to access the **Program Configuration** of the OBD. Please contact your local **Washlink Systems** representative for further details.

The OBD has the capability to interface with any brand of **Tunnel Controller**.

With (8) independently configurable Functions the user is able to finitely control tunnel equipment.

3.1 System Setup

Figure 4.1and 4.2 illustrate the Initial Startup and the Home Screens.

The **Home** Menu is the top tier of the **Programming** Menus.

Please reference **Sec 3.2**, **3.3**, and **3.4** for further explanations.

Within this Menu you will be able to access the following Sub-Menus:

Basic Settings (Access **Settings** specific to **Functions**)

Advanced Settings (Access Settings specific to Sensor Input)

Counts (Access Cycle Counts for Detect 1 and 2)

Further in-depth explanations of each of these Sub-Menus is provided in their respective Sections.

3.2 Basic Settings

Figure 4.2 illustrates the mapping from the Home Menu to the Basic Settings Menu.

Figure 4.3 illustrates the mapping from the Basic Settings Menu to the Function Setup Menu.

Figure 4.3 illustrates the mapping from the Basic Settings Menu to the Simulate Pulse Menu.

The Function Setup Menu allows access to Configuration Settings specific to Function 1-8.

Please reference Sec 3.2.1 for further explanations.

Within this Menu you will be able to access the following **Function** parameters:

Mode

Detection 1 or 2

Location

On Duration

On/Off Delay

The Simulate Pulse Menu allows access to Configuration Settings for a simulated pulse.

Please reference **Sec 3.2.2** for further explanations.

Within this Menu you will be able to access the following Simulated Pulse parameters:

Turn ON/OFF Simulated Pulse

Simulated Pulse resolution

Further in-depth explanations of each of these Parameters is provided in their respective Sections.



3.2.1 Function Setup

Figure 4.3 illustrates the mapping from the Basic Settings Menu to the Function Setup Menu.

Although there are (8) Functions available, you may decide that your application requires less.



Note:

Reference Chapter 6 Wiring Diagram "RELAY DETAIL" page of Drawing OBD.

Definitions of parameters available per Function:

Function Stop

Stay ON w/Conv Stop

If **Function** is ON when the conveyor stops, it will stay ON if **CONV** input is dropped **Turn OFF w/Conv Stop**

If Function is ON when the conveyor stops, it will turn OFF if CONV input is dropped

Mode

OB Std Function

Function will turn on at the **Control Point** (Sec 3.3.2) plus any specified **On Delay** It will remain on for the specified number of **On Duration** pulses plus any specified **Off Delay**

Car Present + Time

Function will turn on at the front of vehicle plus any specified **On Delay** It will remain on for the full length of vehicle plus any specified **Off Delay**

Time Only:

Function will turn on at the front of vehicle plus any specified **On Delay** It will remain on for the specified seconds of **Off Delay**

Detection 1 or 2

Detection range #1 and #2 as defined in Sec 3.3.3 and 3.3.4

Location

Equates to the number of pulses after Mode of Detection that the Function will turn ON

On Duration

Equates to the number of pulses the Function will remain ON

On Delay

Equates to the delay that must elapse before the **Function** will turn ON

Off Delay

Equates to the delay that must elapse before the Function will turn OFF



Hint:

The HOME button will return to the BASIC SETTINGS menu. The PREV button will return to the previous Function screen. The NEXT button will advance to the next Function screen.

3.2.2 Simulate Pulse

Figure 4.3 illustrates the mapping from the Basic Settings Menu to the Simulate Pulses Menu.



Note:

If your are using a hard wired Pulse input, be sure to set Simulated Pulse to OFF.

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3.2.2 Simulate Pulse - cont.'d

Definitions of parameters available per **Function**:

Simulated Pulse status

Simulated pulse is ON

PULSE input is NOT required; The pulse is simulated per the resolution

Simulated pulse is OFF

PULSE input IS required; The pulse is NOT simulated



Note:

If your are using a hard wired Pulse input, be sure to set Simulated Pulse to OFF.

Seconds between simulated pulse

Seconds between each simulated pulse input

Resolution = x.xx seconds



Hint:

A shorter time between simulated pulses results in a faster simulated pulse. A longer time between simulated pulses results in a slower simulated pulse.

This setting may require several trial and error settings for an acceptable pulse configuration.



Hint:

The HOME button will return to the BASIC SETTINGS menu.

3.3 Advanced Settings

Figure 4.2 illustrates the mapping from the Home Menu to the Advanced Settings Menu.

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Sensor Settings Menu.

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Control Point Menu.

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Detection #1 Menu.

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Detection #2 Menu.

The Sensor Settings Menu allows access to Configuration Settings specific to the Ultrasonic Sensor.

Please reference Sec 3.3.1 for further explanations.

Within this Menu you will be able to access the following Sensor Settings:

Face of sensor to floor

Distance from floor to ignore

Minimum height from floor to be a valid vehicle

Sensor poll time

Number of sensor readings to use for average

CONSULT FACTORY BEFORE CHANGING THESE SETTINGS

Current Sensor Reading – (read only display)
Minimum distance count

Maximum distance count

Minimum distance inches

Maximum distance inches

Further in-depth explanations of each of these Parameters is provided in their respective Sections.



Note:

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3.3 Advanced Settings - cont.'d

The Control Point Menu allows access to Settings specific to where Functions turn on.

Please reference **Sec 3.3.2** for further explanations.

Within this Menu you will be able to access the following Control Point Settings:

Front of Vehicle Detection Point Rear of Vehicle

Further in-depth explanations of each of these Parameters is provided in their respective Sections.

The **Detection #1** Menu allows access to **Settings** specific to how the **Sensor** reads vehicles.

Please reference **Sec 3.3.3** for further explanations.

Within this Menu you will be able to access the following **Detection #1 Settings**:

Minimum relative change Maximum relative change Verify change for

Further in-depth explanations of each of these Parameters is provided in their respective Sections.

The **Detection #1** Menu allows access to **Settings** specific to how the **Sensor** reads vehicles.

Please reference **Sec 3.3.3** for further explanations.

Within this Menu you will be able to access the following Detection #1 Settings:

Minimum relative change Maximum relative change Verify change for

Further in-depth explanations of each of these Parameters is provided in their respective Sections.

3.3.1 Sensor Settings

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Sensor Settings Menu.



Note:

Reference Chapter 6 Wiring Diagram "SENS OR DETAIL" page of Drawing OB D.

Definitions of parameters available for **Sensor Settings**:

Face of sensor to floor

Distance in inches from the permanently mounted Sensor to the floor below



Hint:

Floor surface must be flat/perpendicular to the Sensor face in order to avoid errant readings. The Sensor has been calibrated to function at a distance from floor between 120" - 144". This setting is used in conjunction with **Function** Modes (**Sec 3.2.1**).

Distance from floor to ignore

Distance in inches from the floor to the permanently mounted Sensor that will be ignored



Hint:

Floor surface must be flat/perpendicular to the Sensor face in order to avoid errant readings. The Sensor has been calibrated to function at a distance from floor between 120" - 144". This setting is used in conjunction with **OB Std Function** Mode (**Sec 3.2.1**).

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3.3.1 Sensor Settings - cont.'d

Minimum height from floor to be a valid vehicle

Distance in inches from the floor to the permanently mounted Sensor



Hint:

Floor surface must be flat/perpendicular to the Sensor face in order to avoid errant readings. The Sensor has been calibrated to function at a distance from floor between 120" - 144". This setting is used in conjunction with **Car Present + Time** and **Time Only** Mode (**Sec 3.2.1**)

Sensor poll time

Time in seconds between each consecutive Sensor reading



Hint:

Floor surface must be flat/perpendicular to the Sensor face in order to avoid errant readings. The Sensor has been calibrated to function at a distance from floor between 120" - 144". Faster poll times result in more accurate vehicle detection and measurement.

Number of average readings to use

Number of times Sensor readings will be collected and averaged



Hint:

The \mathbf{MORE} button will advance to the second page of \mathbf{SENSOR} $\mathbf{SETTINGS}$ menu.

CONSULT FACTORY BEFORE CHANGING THESE SETTINGS

Minimum distance count

Factory setting = 1152

Maximum distance count

Factory setting = 30864

Minimum distance inches

Factory setting = 16

Maximum distance inches

Factory setting = 138



Hint:

The HOME button will return to the ADAVANCED SETTINGS menu.

3.3.2 Control Point

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Control Point Menu. The setting configured here will be applied to *all* Functions set to Mode OB Std Function (Sec 3.2.1).

Definitions of parameters available for Control Point:

Front of Vehicle

Functions configured for OB Std Function Mode will turn on at the front of the vehicle

Detection Point

Functions configured for OB Std Function Mode will turn on at the detection truck bed (Sec 3.3.3 and Sec 3.3.4)

Rear of Vehicle

Functions configured for OB Std Function Mode will turn on at the rear of the vehicle



Hint:

The HOME button will return to the ADAVANCED SETTINGS menu.

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3.3.3 Detection #1

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Detection #1 Menu. The settings configured here will be applied to any Function programmed to use Detection range #1.

Definitions of parameters available for **Detection #1**:

Minimum relative change

Shortest distance in inches from the top of the vehicle that should be recognized as truck bed

Maximum relative change

Longest distance in inches from the top of the vehicle that should be recognized as truck bed

Vary change for

Time in seconds that the **Relative changes** must be active to be recognized as a truck bed



Hint:

The HOME button will return to the ADAVANCED SETTINGS menu.

The RANGE #2 button will advance to the DETECTION #2 menu.

3.3.4 Detection #2

Figure 4.4 illustrates the mapping from the Advanced Settings Menu to the Detection #2 Menu. The settings configured here will be applied to any Function programmed to use Detection range #2.

Definitions of parameters available for **Detection #2**:

Minimum relative change

Shortest distance in inches from the top of the vehicle that should be recognized as truck bed

Maximum relative change

Longest distance in inches from the top of the vehicle that should be recognized as truck bed

Vary change for

Time in seconds that the Relative changes must be active to be recognized as a truck bed



Hint:

The HOME button will return to the ADAVANCED SETTINGS menu.

The RANGE #1 button will return to the DETECTION #1 menu.

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4 Navigation

Section 4.1 – 4.5 illustrate the **Mapping** of all the **Programming** Menus and Screens.

4.1 Initial System Startup









4.2 HOME Screen



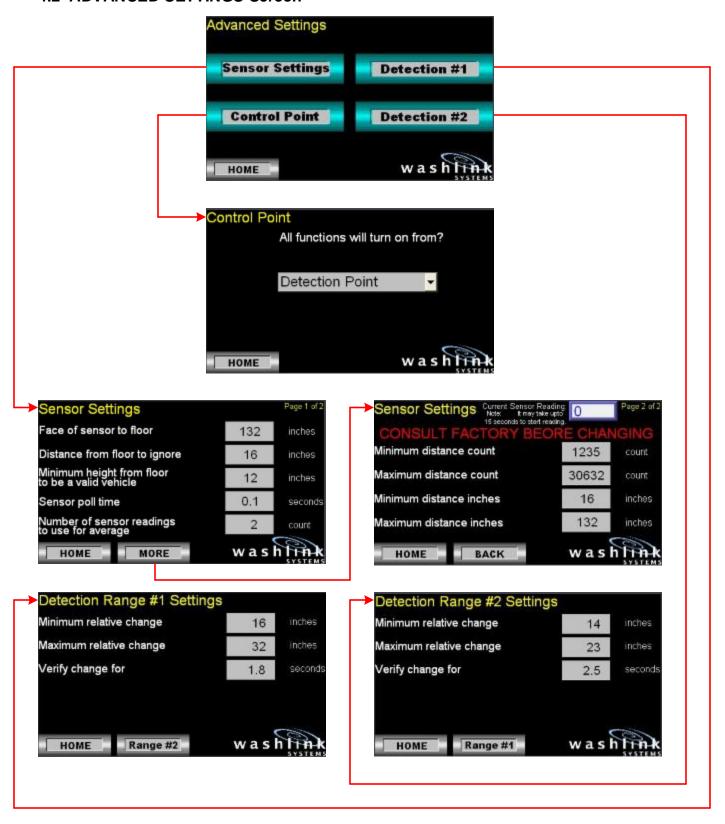


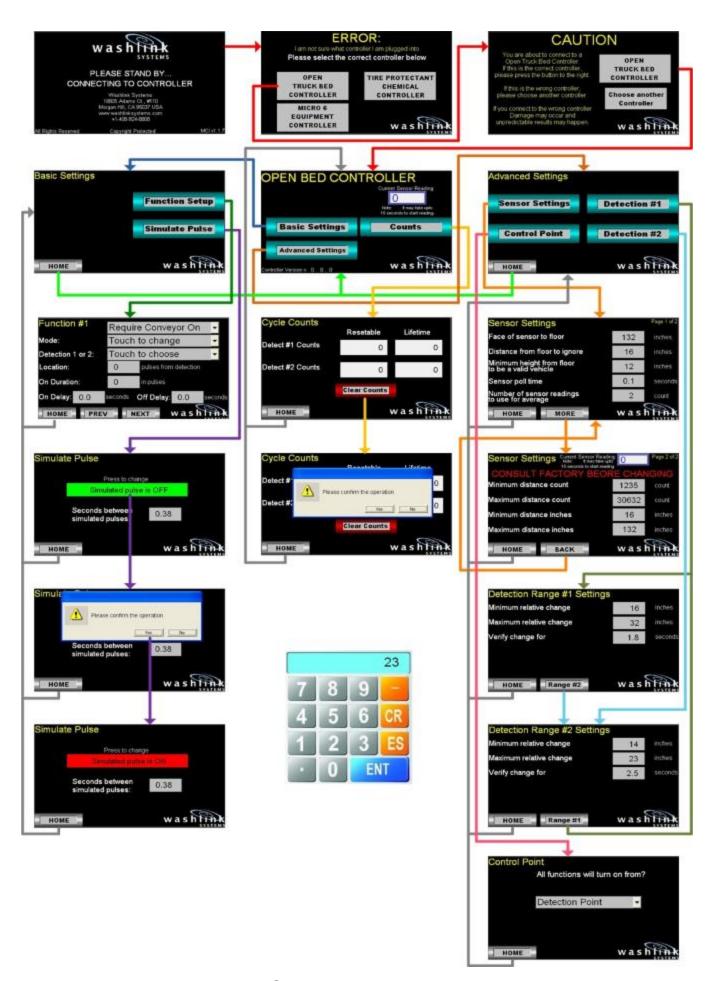
4.2 BASIC SETTINGS Screen





4.2 ADVANCED SETTINGS Screen





5 **System Configuration Notes**

The following pages are dedicated to recording various System Configuration Notes.

5.1 **BASIC Settings Notes**

On Duration On Delay Off Delay

5.1.1 Function Setup Function 1 Description **Value Value Date Date** Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay Function 2 Description Value Value Date **Date** Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay Function 3 Description Value Date Value **Date** Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay Function 4 Description **Value Value Date Date** Require Conveyor On/Off Mode Detect 1 or 2 Location

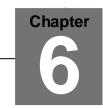


5.1.1	Function Setup (cont.) Function 1 Description				
	Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay	Value	Date	Value	Date
	Function 2 Description				
	Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay	Value	Date	Value	Date
	Function 3 Description				
	Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay	Value	Date	Value	Date
	Function 4 Description				
	Require Conveyor On/Off Mode Detect 1 or 2 Location On Duration On Delay Off Delay	Value	Date	Value	Date



Simulate Pulse	Value	Date	Value	Date
Simulated Pulse ON/OFF Resolution				
ADVANCED Settings Notes				
Sensor Settings	Value	Data	Value	Dete
Face of Sensor to Floor Distance from Floor to ignore Min height from Floor Sensor poll time Number of readings	value		value	Date
CONSULT FACTORY BEFOR	E CHANGIN	G THESE SE	TTNGS	
Min Distance asset	Value	Date	Value	Date
Max Distance count Min Distance inches				
Control Point				
Control Point	Value ———		Value ———	Date
Detection #1	Value	Data	Value	Date
Min relative change				
Verify change for				
Detection #2	Value	Dete	Value	D-4-
Min relative change Max relative change Verify change for	value 	υατ e 	value 	Date
Misc. Notes				
	ADVANCED Settings Notes Sensor Settings Face of Sensor to Floor Distance from Floor to ignore Min height from Floor Sensor poll time Number of readings CONSULT FACTORY BEFOR Min Distance count Max Distance count Min Distance inches Max Distance inches Control Point Control Point Detection #1 Min relative change Max relative change for Detection #2 Min relative change Max relative change Verify change for	Simulated Pulse ON/OFF Resolution ADVANCED Settings Notes Sensor Settings Value Face of Sensor to Floor Distance from Floor to ignore Min height from Floor Sensor poll time Number of readings CONSULT FACTORY BEFORE CHANGING Min Distance count Max Distance count Min Distance inches Max Distance inches Control Point Control Point Value Min relative change Max relative change Verify change for Detection #2 Value Value Value Value Value Value Value	Simulated Pulse ON/OFF Resolution ADVANCED Settings Notes Sensor Settings Value Face of Sensor to Floor Distance from Floor to ignore Min height from Floor Sensor poll time Number of readings CONSULT FACTORY BEFORE CHANGING THESE SE Walue Min Distance count Max Distance count Min Distance inches Max Distance inches Control Point Value Date Min relative change Max relative change Verify change for Value Date Min relative change Max relative change	Simulated Pulse ON/OFF Resolution ADVANCED Settings Notes Sensor Settings Value Date Value Face of Sensor to Floor Distance from Floor to ignore Min height from Floor Sensor poll time Number of readings CONSULT FACTORY BEFORE CHANGING THESE SETTNGS Walue Date Value Min Distance count Max Distance count Min Distance inches Max Distance inches Control Point Value Date Value Detection #1 Value Date Value Min relative change Max relative change

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6 Wiring Diagram

The following pages are dedicated to the wiring diagram for the Open Bed Detector Controller.

PAGE	DESCRIPTION
0	COVER SHEET
1	PLC WIRING
2	RELAY DETAIL
3	INTERCONNECTS
4	LAYOUT
_	

٦	REV	BY	DATE	DESCRIPTION
Į	1.0.1	SRH	110225	CHECKED AND APPROVED
Į	1.1.7	MTS	110225	RELEASED
I	1.1.9	MTS	110303	BASIC FUNCTION "RUN WITH CONVEYOR" REVISION
Į				
I				
Į				
I				
I				
Į				

NOTES:

- 1. STANDARD SUPPLY VOLTAGE IS 120VAC 60Hz. OPTIONAL INTERNATIONAL VOLTAGE KIT AT 220VAC 50Hz IS AVAILABLE UPON REQUEST.
- 2. WASHLINK SYSTEMS RECOMMENDS INDIVIDUAL HOUSE PANEL CIRCUIT. (120VAC 15A or 220VAC 10A MAXIMUM.)
- 3. ILLUMINATED LED INDICATES BLOWN FUSE.
- 4. FUSE HOLDER AND INDICATING LED ARE RATED AT 60 150V.
- 5. TO AVOID RISK OF FIRE AND PERSONAL INJURY, REPLACE ONLY WITH MANUFACTURER'S ORIGINAL RATED FUSE.
- 6. CUSTOMER SUPPLIED VOLTAGE.
- 7. RELAY COILS ARE RATED FOR 24VDC OR 24VAC ONLY.
- 8. WASHLINK SYSTEMS RECOMMENDS AWG 18 STRANDED COPPER WIRE FOR CIRCUITS LESS THAN 400 FEET.
- 9. WASHLINK SYSTEMS RECOMMENDS AWG 18 STRANDED COPPER SHIELDED 3 CONDUCTOR CABLE FOR CIRCUITS LESS THAN 400 FEET.
- 10. ULTRASONIC SENSOR MUST ME MOUNTED A MINIMUM OF 10 FEET AND NO MORE THAN 12 FEET FROM FLAT FLOOR SURFACE.
- 11. IF FLOOR SURFACE IF NOT PERPENDICULAR TO THE ULTRASONIC SENSOR FACE THEN YOU MAY RECEIVE ERRANT FEEDBACK.
- 12. EQUIPMENT OR CONTROLS SUPPLIED BY OTHERS
- 13. IF EXISTING "ENTER" AND "PULSE" DOES NOT PROVIDE A NORMALLY OPEN CIRCUIT, AN INTERMEDIARY RELAY MAY BE NEEDED FOR THE "ENTER" AND "PULSE" INPUT.



CAUTION! ALL ELECTRICAL WORK SHOULD BE PERFORMED BY A QUALIFIED AND LICENSED ELECTRICIAN.



CAUTION! RISK OF ELECTRICAL SHOCK. MORE THAN ONE DISCONNECT MY BE REQUIRED TO BE DE-ENERGIZED BEFORE SERVICING THE EQUIPMENT.

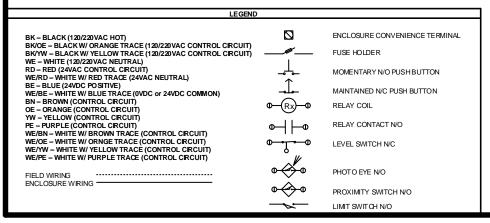


CAUTION! TO REDUCE THE RISK OF FIRE, CONNECT ONLY TO A 110VAC CIRCUIT PROVIDED WITH 15A MAXIMUM BRANCH CIRCUIT PROTECTION IN ACCORDANCE WITH NATIONAL AND LOCAL CODES AND ORDINANCES.



CAUTION! BONDING BETWEEN CONDUIT CONNECTION IS NOT AUTOMATIC AND MUST BE PROVIDED AS PART OF THE INSTALLATION.

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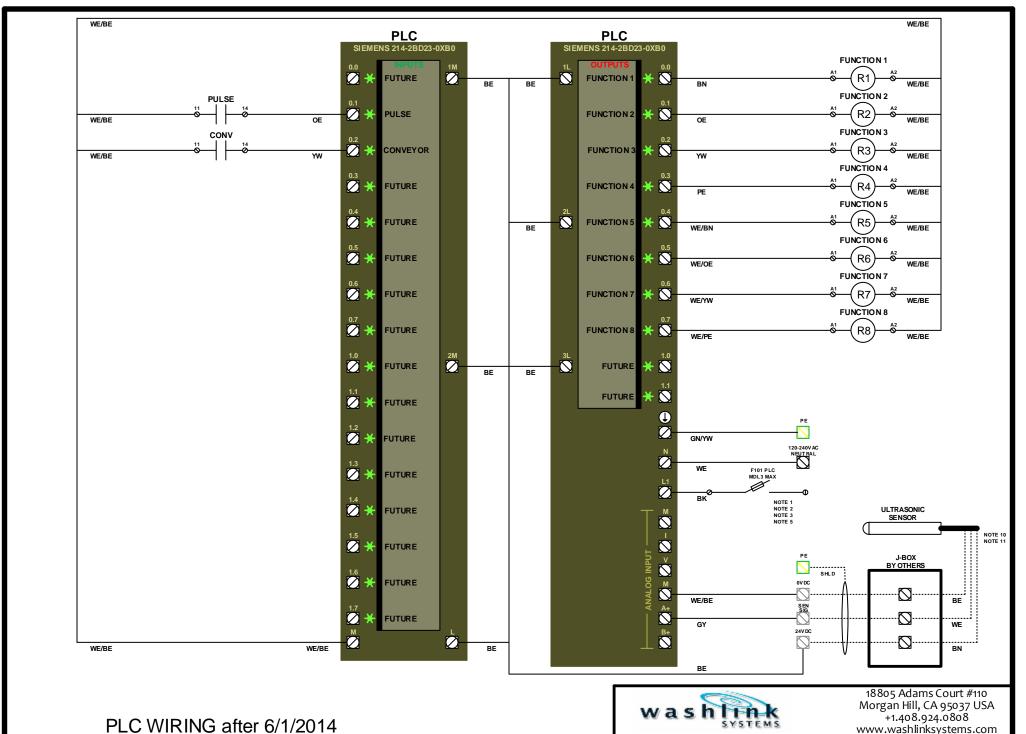
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COVER SHEET

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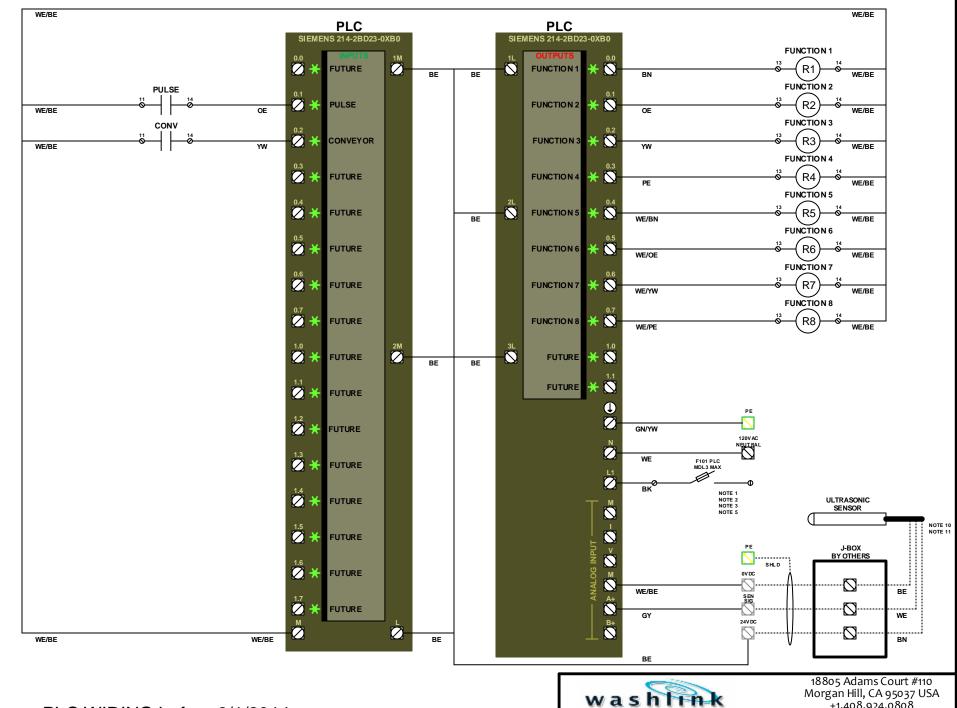
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DRAWN DATE: 5/22/2012

PAGE DESCRIPTION:
PLC WIRING

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PLC WIRING before 6/1/2014

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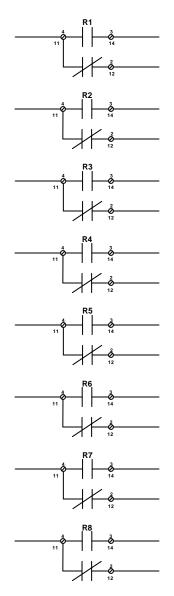
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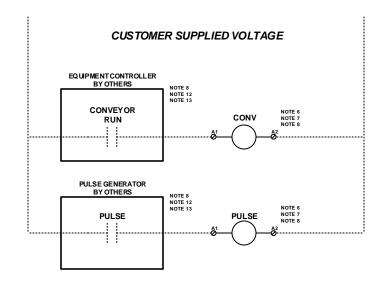
PLC WIRING

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RELAY DETAIL after 6/1/2014

CUSTOMER SUPPLIED VOLTAGE





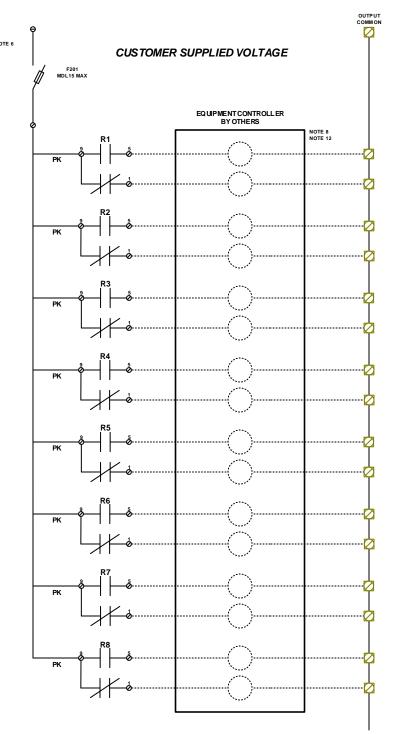


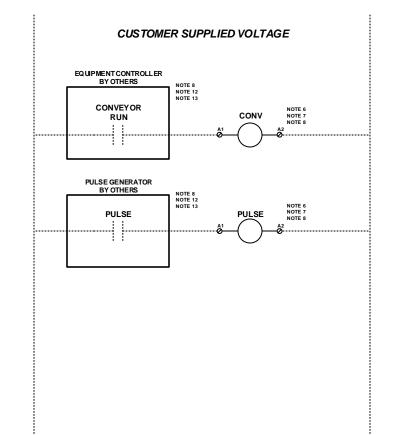
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PAGE DESCRIPTION: **RELAY DETAIL**

RELAY DETAIL befor 6/1/2014



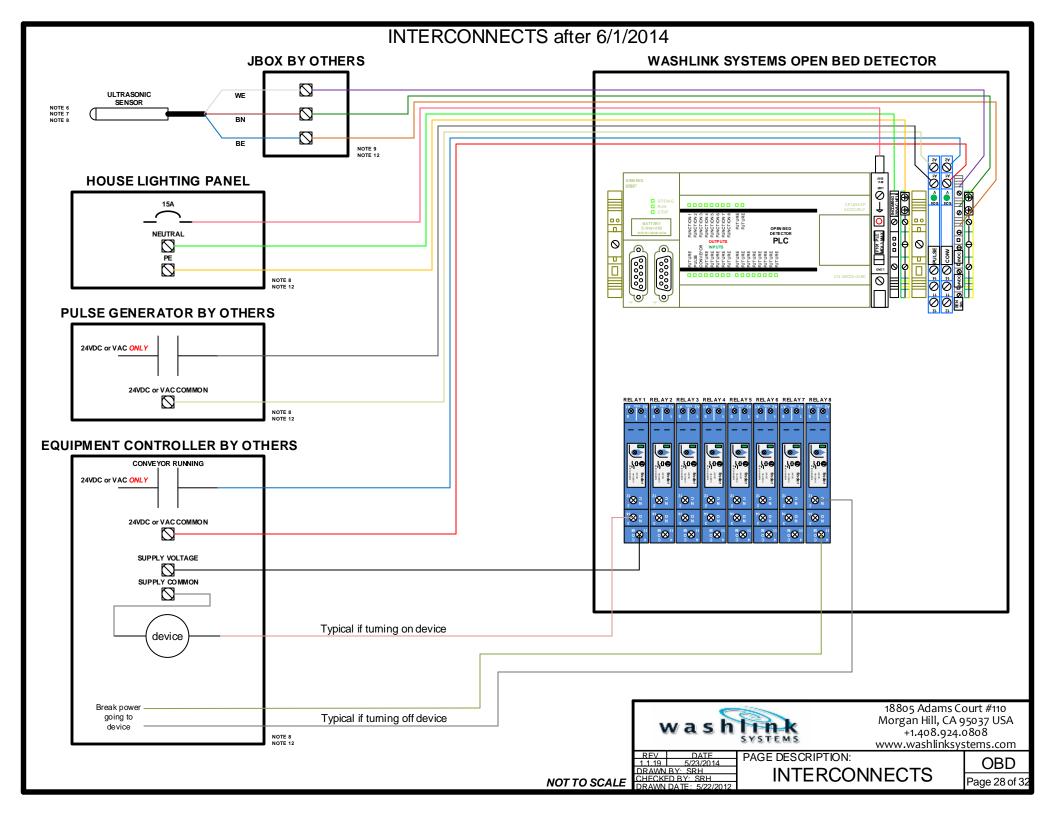


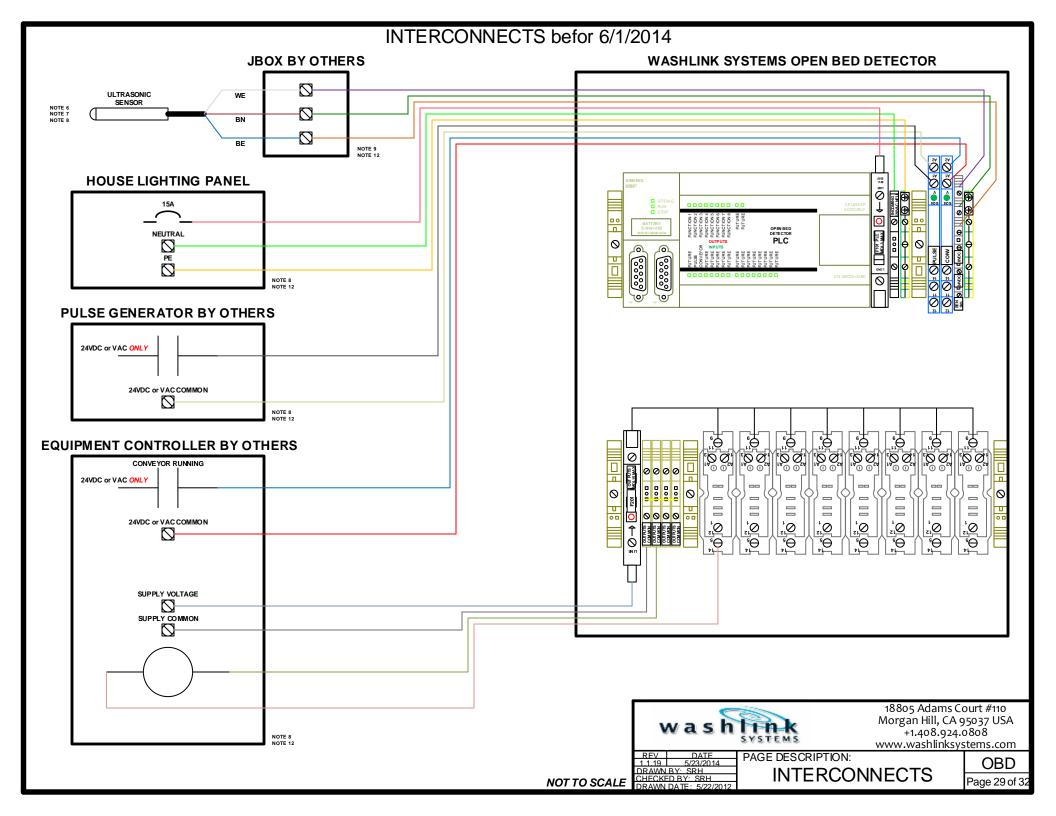
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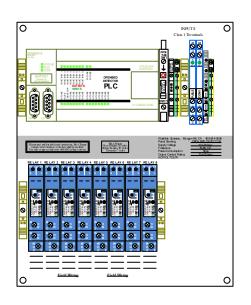
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DRAWN DATE: 5/22/2012

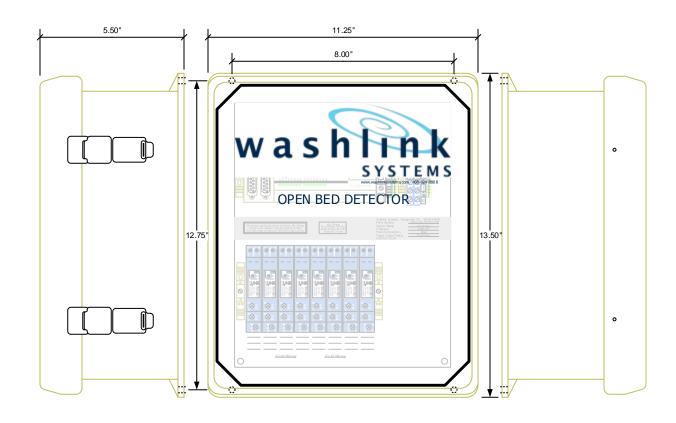
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LAYOUT after 6/1/2014





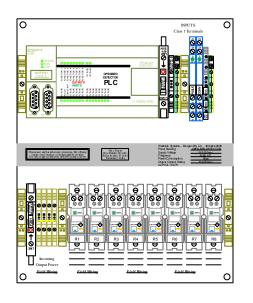


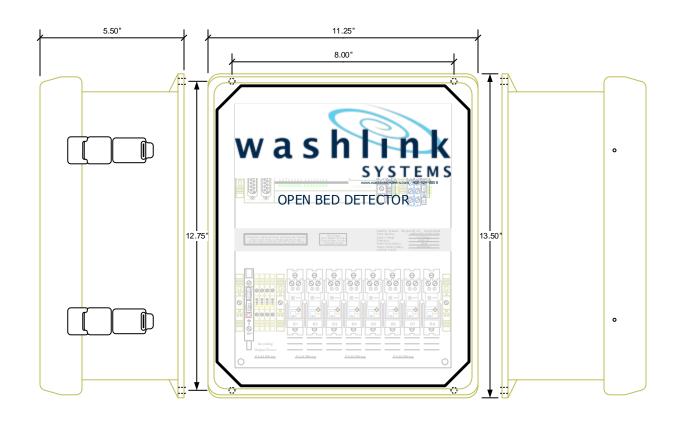
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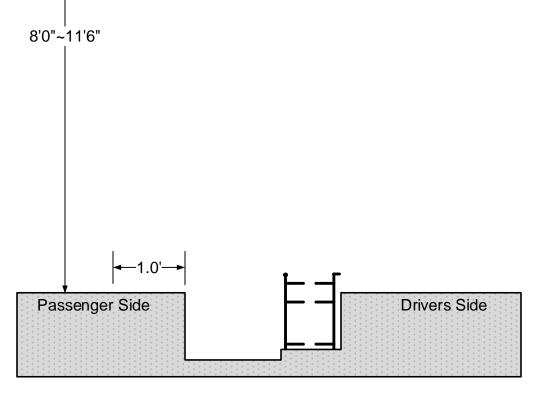
Sensor Mounting

The sensor will typically be mounted in the same area as the enter eye. The only requirement is it be mounted prior to any equipment it is controlling with enough room for open bed detection.

Mount sensor between 8' and 11'6"' off the finish floor on the passenger side approximately 1' in from the conveyor pit.

The sensor MUST read a solid flat surface and if it is over the conveyor pit, you MUST put a solid plate/cover for it to read correctly.

NOTE: if you need to lengthen the cable, it MUST be a shielded cable with the connections soldered.





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Sensor Install

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