

## **Diamond Knowledge Base**

### **Phoenix Pres style sensor inputs using Relay/OC contact closure outputs from external sensors**

The Phoenix, Unicorn and Pegasus units allow for input of relay, open collector to ground, contact closure output from external sensors in either pulse or presence format. This allows the unit to accept inputs from other sensors such as an external loop detector, microwave radar, video, magnetometer or other type of external sensor with the aforementioned outputs. These inputs can allow the Phoenix to record count and classification data based on the signal outputs.

NOTE: Diamond Traffic does not endorse and is not affiliated with Wavetronix LLC. All references to Wavetronix products, trademarks or setup is for reference only.

The following is an example guide for using a Wavetronix SmartSensor HD model 125 and the Click! 100 Contact closure card to interface with the Phoenix II unit to collect Loop emulation data for speed and length classification.

Required Equipment:

Phoenix II (v4.06 or higher firmware)

Loop Board V4 (v1.12 or higher firmware)

Wavetronix SmartSensor HD model 125

Click! 200 Power and Serial Interface card Click! 100 contact closure card

Installation:

Installation of the SmartSensor HD is required, please refer to the Wavetronix user guide on how to install and calibrate the SmartSensor HD. Once connected to the Click! 200 the Click! 100 card can be linked via the din rail mount to interface with the Click! 200. Using the Smart IQ interface software, the unit will need to be setup to turn on loop emulation to enable the Click! 100 card to output presence style outputs. The default loop emulation settings should be the following:

20ft loop spacing, with 6ft diameter loops.

Helpful links for setting up your SmartSensor HD:

<http://www.wavetronix.com/products/smartsensor/125>

<http://www.wavetronix.com/support/>

Once the Wavetronix SmartSensor HD has been setup, calibrated and is registering outputs to the Click! 100, the Phoenix needs to be wired and connected to accept the inputs from the Click! 100 card. Wiring to the Click! 100 outputs requires a standard UPP loop harness connection, instead of connecting directly to inductive loops, the wires are terminated to the Click! 100 using the following table (see images below):

<b>Phoenix Loop Wiring Harness</b>	<b>Click! 100</b>	<b>Phoenix II Loop Input</b>
Green	1 Primary (top)	Loop 1
Red	2 Primary	Loop 3
	3 Primary	Loop 5
	4 Primary	Loop 7
White	1 Secondary (bottom)	Loop 2

Blue	2 Secondary	Loop 4
	3 Secondary	Loop 6
	4 Secondary	Loop 8
Blacks (all)	GND	

Once wired to the Click! 100 You can plug the Loop harness into the the Phoenix 1-4 loop input round connector.

Next, the Phoenix will need to be configured and programmed to recognize the contact closure inputs. Connect the Phoenix to the Centurion software (v1.35 build 16 or later) and follow the steps below:

Step #1: Connect to the Phoenix via serial using Centurion

Step #2: Choose start Collecting data and enter in the site information and proceed to Lane configuration

Step #3: In lane configuration, Change the "Sensors" to Pres-Pres for Classification and then set the Sensor Spacing to "20.0ft". Change the 1st and 2nd Pres Type to "Relay/OC" to set the unit to enable contact closure style inputs (see image below). Once all the lanes are configured complete the start collecting wizard to continue.

Step#4: Test the inputs using test sensor activation under the "Monitor Sensors & Traffic". You should be able to see the loop inputs trigger with the contact closure cards and verify classification accuracy using the "Monitor Traffic" option.

#### Troubleshooting:

**Sensor Misses:** If you start to receive SnMis 1,2, or 3 then it may be that the loop configurations are not correct or that the frequency of the detector is not stable. The classifier uses the first loop as the primary loop and the second loop as the secondary loop in each lane. Be sure to recheck your inputs and check the input table listing above for correct connections. If the connections are correct you may need to adjust the loop frequency values to match. The frequency values should all be similar and less than 3% off from input to input.

**No Signal:** Make sure all harness are plugged in and that the contact closure card is outputting signals (view LED indicators). Make sure the signal and ground wires are terminated correctly to the contact closure outputs.

**Speed or Length are off:** Check to make sure the Wavetronix or external sensor is calibrated and aligned. Check to make sure the loop emulation settings are correct (note: loop emulation on using the SmartSensor HD and Click! 100 seems to work best at 20ft sensor spacing emulation). Check to make sure the Phoenix II unit has the correct sensor and loop spacings.

**Ghost Counting or high sensor misses:** Check to make sure the harness has good connections and that the grounding of both the Phoenix II and the Click! cards is solid. Sensor misses may also be an artifact of the microwave radar sensor calibration and sensitivity. Check the SmartSensor user manual for more information.

