V. Call Delay / Call Extension Control:

The two, twelve-position DIP switches labeled **CHAN 1** and **CHAN 2** located on the front panel are used to program Call Delay and/or Call Extension. To turn any of these DIP switches ON, push the switch to the left.

i. CALL EXTENSION (EXTEND) (DIP switches 1, 2, 3, 4, 5, and 6):

DIP switches 1, 2, 3, 4, 5, and 6 are used to control the amount of time a CALL output is extended. The values ¼, ½, **1**, **2**, **4**, and **8** that appear to the left of the DIP switches are assigned to a DIP switch when it is turned ON. When a DIP switch is turned *OFF*, its value is 0. By adding the values of each DIP switch that is turned *ON*, effective values of 0 to 15.75 can be achieved indicating the amount of Extension time (in seconds) that has been selected for the channel. The factory default setting of all of these switches is OFF (no Extension time programmed). The following table contains examples of switch selections and Extension time settings.

SWITCH						SWITCH VALUES (EXTENSION TIME PROGRAMMED)
1 (¼ Sec)	**2** (½ Sec)	**3** (1 Sec)	**4** (2 Sec)	**5** (4 Sec)	**6** (8 Sec)	
OFF	OFF	OFF	OFF	OFF	OFF	0 + 0 + 0 + 0 + 0 + 0 = **0.00**
ON	OFF	OFF	OFF	OFF	OFF	¼ + 0 + 0 + 0 + 0 + 0 = **0.25**
OFF	ON	OFF	OFF	OFF	OFF	0 + ½ + 0 + 0 + 0 + 0 = **0.50**
OFF	ON	OFF	ON	OFF	OFF	0 + ½ + 0 + 2 + 0 + 0 = **2.50**
OFF	OFF	ON	OFF	ON	OFF	0 + 0 + 1 + 0 + 4 + 0 = **5.00**
ON	OFF	ON	OFF	ON	OFF	¼ + 0 + 1 + 0 + 4 + 0 = **5.25**
OFF	ON	OFF	ON	OFF	ON	0 + ½ + 0 + 2 + 0 + 8 = **10.50**
ON	ON	ON	ON	ON	ON	¼ + ½ + 1 + 2 + 4 + 8 = **15.75**

ii. CALL DELAY (DELAY) (DIP switches 7, 8, 9, 10, 11, and 12):

DIP switches 7, 8, 9, 10, 11, and 12 are used to control the amount of time a CALL output is delayed. The values **1**, **2**, **4**, **8**, **16**, and **32** that appear to the left of the DIP switches are assigned to a DIP switch when it is turned ON. When a DIP switch is turned *OFF*, its value is 0. By adding the values of each DIP switch that is turned *ON*, effective values of 0 to 63 can be achieved indicating the amount of Delay time (in seconds) that has been selected for the channel. The factory default setting of all of these switches is OFF (no Delay time programmed). The following table contains examples of switch selections and Delay time settings.

SWITCH						SWITCH VALUES (DELAY TIME PROGRAMMED)
7 (1 Sec)	**8** (2 Sec)	**9** (4 Sec)	**10** (8 Sec)	**11** (16 Sec)	**12** (32 Sec)	
OFF	OFF	OFF	OFF	OFF	OFF	0 + 0 + 0 + 0 + 0 + 0 = **0**
ON	OFF	OFF	OFF	OFF	OFF	1 + 0 + 0 + 0 + 0 + 0 = **1**
OFF	ON	OFF	OFF	OFF	OFF	0 + 2 + 0 + 0 + 0 + 0 = **2**
OFF	ON	OFF	ON	OFF	OFF	0 + 2 + 0 + 8 + 0 + 0 = **10**
OFF	OFF	ON	OFF	ON	OFF	0 + 0 + 4 + 0 + 16 + 0 = **20**
ON	OFF	ON	OFF	ON	OFF	1 + 0 + 4 + 0 + 16 + 0 = **21**
OFF	ON	OFF	ON	OFF	ON	0 + 2 + 0 + 8 + 0 + 32 = **42**
ON	ON	ON	ON	ON	ON	1 + 2 + 4 + 8 + 16 + 32 = **63**

Operating Instructions

Model T-210 Series

TWO-CHANNEL DIP SWITCH PROGRAMMABLE LOOP DETECTOR WITH DELAY AND EXTENSION TIMING
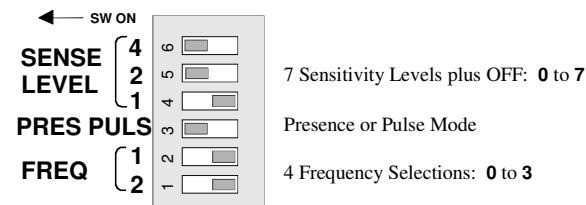
I. General:

The Model T-210 is a scanning, two-channel, shelf mount loop detector with Delay and Extension timing. Once the detector is connected to an appropriately wired harness, it will begin to operate. The detector automatically tunes itself and is operational within two seconds after application of power or after being reset. Full sensitivity and hold time require approximately 30 seconds of operation. The detector is fully self-compensating for environmental changes and loop drift over the full temperature range and the entire loop inductance range. The Model T-210 is available with solid state or relay outputs.

The operation of each channel is independent and is programmed using one of two, front panel mounted, six-position DIP switches. Each channel has a single, dual color (green / red) Detect / Fail LED indicator. The LED provides an indication of the channel's output state and loop failure conditions. OUTPUT STATE conditions are indicated when the Detect / Fail LED is illuminated in a green state. LOOP FAILURE conditions are indicated when the Detect / Fail LED is illuminated in a red state. The Model T-210 also has a TEST mode that verifies proper operation of the outputs, LED indicators, DIP switches, and loop-oscillator circuitry.

II. Operating Controls:

i. Front Panel Mounted Programming DIP Switches:

The two, six-position DIP switches located on the front panel that are labeled **1**, and **2** affect each channel independently. To turn one of these DIP switches ON, push the switch to the left.

SW ON

SENSE LEVEL — 7 Sensitivity Levels plus OFF: **0** to **7**

PRES PULSE — Presence or Pulse Mode

FREQ — 4 Frequency Selections: **0** to **3**

Frequency (FREQ) (DIP Switches 1 and 2):

Each channel of the Model T-210 detector has four (4) frequency selections that allow altering the resonant frequency of the loop circuit. DIP switches 1 and 2 are used to select the frequency for a given channel. The values (**1** and **2**) to the left of the DIP switches are assigned to the switch when the switch is ON. If the switch is OFF, the switch has a value of zero (0). By adding the switch *ON* and *OFF* values, the two switches will combine for values from 0 to 3 that indicate one of the four Frequency selections. The following table is a reference for the switch settings and associated frequency selections.

NOTE: After changing any frequency switch setting(s), it is necessary to reset the detector by momentarily changing one of the other switch positions.

Frequency	Switch 2	Switch 1	Effective Value
HI *	OFF *	OFF *	0 + 0 = **0** *
MED HI	ON	OFF	1 + 0 = **1**
MED LO	OFF	ON	0 + 2 = **2**
LO	ON	ON	1 + 2 = **3**

* Factory default setting.

Presence / Pulse Mode (PRES PULS) (DIP Switch 3):

DIP switch 3 controls the output mode of each channel.

PRESENCE (**PRES**): When the switch is in the ON position, Presence Mode is selected. Presence Mode provides a Call hold time of at least four minutes (regardless of vehicle size) and typically one to three hours for an automobile or truck. This is the factory default setting and the most common setting.

PULSE (**PULS**): When the switch is in the *OFF* position, Pulse Mode is selected. Pulse Mode will generate a single 125 millisecond pulse output for each vehicle entering the loop detection zone. Any vehicle remaining in the loop detection zone longer than two seconds will be tuned out providing full sensitivity for the vacant portion of the loop detection zone. Full sensitivity for the entire loop detection zone is recovered within one second following the departure of any vehicle that has occupied the loop detection zone longer than two seconds.

Sensitivity (SENSE LEVEL) (DIP Switches) (DIP Switches 4, 5, and 6):

There are seven (7) selectable sensitivity levels plus OFF for each channel. The seven sensitivity levels and OFF setting are selected via DIP switches 4, 5, and 6 on each of the two front panel mounted six-position DIP switches. The values (**1**, **2**, and **4**) to the left of the DIP switches are assigned to the switch when the switch is ON. If the switch is OFF, the switch has a value of zero (0). By adding the switch *ON* and *OFF* values, the three switches will combine for values from 0 to 7 that indicate OFF or one of the seven Sensitivity Level selections. The following table is a reference for the switch settings and associated sensitivity selections.

NOTE: Changing the sensitivity level setting will RESET the detector channel.

Sense Level	-ΔL/L	Switch 4	Switch 5	Switch 6	Effective Value
0 (OFF)	OFF	OFF	OFF	OFF	0 + 0 + 0 = **0**
1	0.64%	ON	OFF	OFF	1 + 0 + 0 = **1**
2	0.32%	OFF	ON	OFF	0 + 2 + 0 = **2**
3	0.16%	ON	ON	OFF	1 + 2 + 0 = **3**
4	0.08%	OFF	OFF	ON	0 + 0 + 4 = **4**
5	0.04%	ON	OFF	ON	1 + 0 + 4 = **5**
6 *	0.02% *	OFF *	ON *	ON *	0 + 2 + 4 = **6** *
7	0.01%	ON	ON	ON	1 + 2 + 4 = **7**

* Factory default setting.

ii. Front Panel Mounted Pushbutton - Detector Reset:

A front panel mounted pushbutton labeled **RESET** is used to reset the detector. To reset the detector, press the pushbutton.

iii. Front Panel Mounted Pushbutton - Audible Detect Buzzer:

A front panel mounted pushbutton labeled **BUZZER** is used to enable an audible detect signal that is emitted any time a given channel's detection zone is occupied. To activate this feature, press the pushbutton. Only one channel can have this feature active at any given time. The first time the pushbutton is pressed, a short (50 millisecond) audible signal confirms the activation of the feature for Channel 1. The second time the pushbutton is pressed, two short (50 millisecond) audible signals confirm the activation of the feature for Channel 2. To deactivate this feature, press and hold the pushbutton for one second. A long (250 millisecond) audible signal confirms the deactivation of the feature. This feature will automatically turn off 15 minutes after activation.

NOTE: When operating in Pulse mode, the audible detect signal will cease if a vehicle occupies the detection zone for more than two seconds.

III. Reset:

To reset the detector, press the pushbutton labeled **RESET**. Changing the position of any of an individual channel's front panel mounted programming DIP switches (except the Frequency switches) resets the channel. The detector can also be reset by the reapplication of power after a power loss. Changes made to any of the Delay and/or Extension Timing DIP switches do not reset the detector.

IV. Detect / Fail Indicators:

The Model T-210 detector has a single two color (green / red) light emitting diode (LED) per channel to indicate a CALL output and/or the status of any current or prior loop failure conditions. A continuous ON (green) state indicates a CALL output. A continuous ON (red) state indicates that a current open loop failure condition or an inductance change condition of greater than +25% exists. This indication also generates a CALL output. A one Hz (red) flash rate indicates that a current shorted loop failure condition or an inductance change condition of greater than -25% exists. This indication also generates a CALL output. A flash rate of three 50 millisecond (red) flashes per second indicates a prior loop failure condition. A flash rate of three 50 millisecond (red) flashes per second followed by a single 750 millisecond (green) flash indicates a prior loop failure condition and a current CALL output (detect state).

If either channel has Delay and/or Extension Timing set, that channel's Detect / Fail LED will display one (or both) of two unique flash sequences [four flashes (green) per second - Delay Timing set; 16 flashes (green) per second - Extension Timing set], thus providing an alert that the channel has Delay and/or Extension Timing set and the feature is active.

If either channel has the audible detect feature activated, that channel's Detect / Fail LED will be illuminated in an orange state for any CALL output condition.

Detect / Fail LED	Meaning
Off	No Detect (No CALL Output)
Solid ON (Green)	Detect (CALL Output)
Solid ON (Orange)	Audible Detect Signal Activated, Detect (CALL Output)
Four flashes per second (Green)	Vehicle detected, Delay Timing active, No Detect (No CALL Output)
Four flashes per second (Orange)	Audible Detect Signal Activated, Vehicle detected, Delay Timing active, No Detect (No CALL Output)
16 flashes per second (Green)	Detection zone vacant, Extension Timing active, Detect (CALL Output)
Solid ON (Red)	Open Loop Failure or Inductance change condition of greater than +25% exists
One Hz flash rate (Red) (50% Duty Cycle)	Shorted Loop Failure or Inductance change condition of greater than -25% exists
Three 50 ms (Red) flashes per second	Loop Failure condition occurred but no longer exists
Three 50 ms (Red) flashes per second followed by a single 750 ms (Green) flash	Loop Failure condition occurred but no longer exists and Detect (CALL Output)
Three 50 ms (Red) flashes per second followed by a single 750 ms (Orange) flash	Loop Failure condition occurred but no longer exists, Audible Detect Signal Activated and Detect (CALL Output)
Three 50 ms (Red) flashes per second followed by four flashes per second (Green)	Loop Failure condition occurred but no longer exists and Vehicle detected, Delay Timing active, No Detect (No CALL Output)
Three 50 ms (Red) flashes per second followed by four flashes per second (Orange)	Loop Failure condition occurred but no longer exists, Audible Detect Signal Activated and Vehicle detected, Delay Timing active, No Detect (No CALL Output)
Three 50 ms (Red) flashes per second followed by 16 flashes per second (Green)	Loop Failure condition occurred but no longer exists and Detection zone vacant, Extension Timing active, Detect (CALL Output)