

The SmarTek Video Detection System (SVS-1) User Guide-Part B Using SVS Setup and Monitor Version 3

31 May 2011



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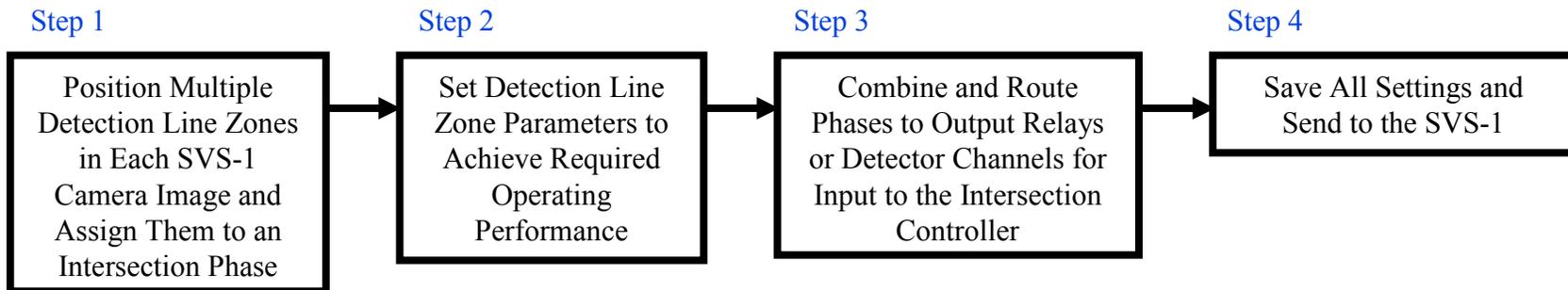
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SVS-1 – Setup Process Overview

The primary function of the SVS Monitor and Setup Program is to provide the SVS-1 installer the means to quickly and easily setup Detection Line Zones within each camera image field, group Detection Line Zones by assigning them to a Phase, and then combine and route each Phase to the intersection controller.



- Up to 30 Detection Line Zones
- Each line zone is directional
- Multiple line zones are placed (drawn) in each lane and assigned a phase number
- Line zones located in the left turn lane are identified by the phase number assigned to them

- Line Zone parameters are set to default values providing excellent performance in almost all situations
- Line Zone parameters may be “tuned” to deal with special situations thus providing maximum operating flexibility

- Phases are routed to output relays or detector channels for input to the intersection controller
- Each phase may have a unique detection delay or extension applied before being combined and routed to the controller detector channel input.

- Parameters are sent to each SVS-1 camera channel’s non-volatile memory to be stored and used (even after power cycle or system reset)
- Parameters may also be stored in a user named PC file
- This 4 step process is repeated for each SVS-1 camera channel



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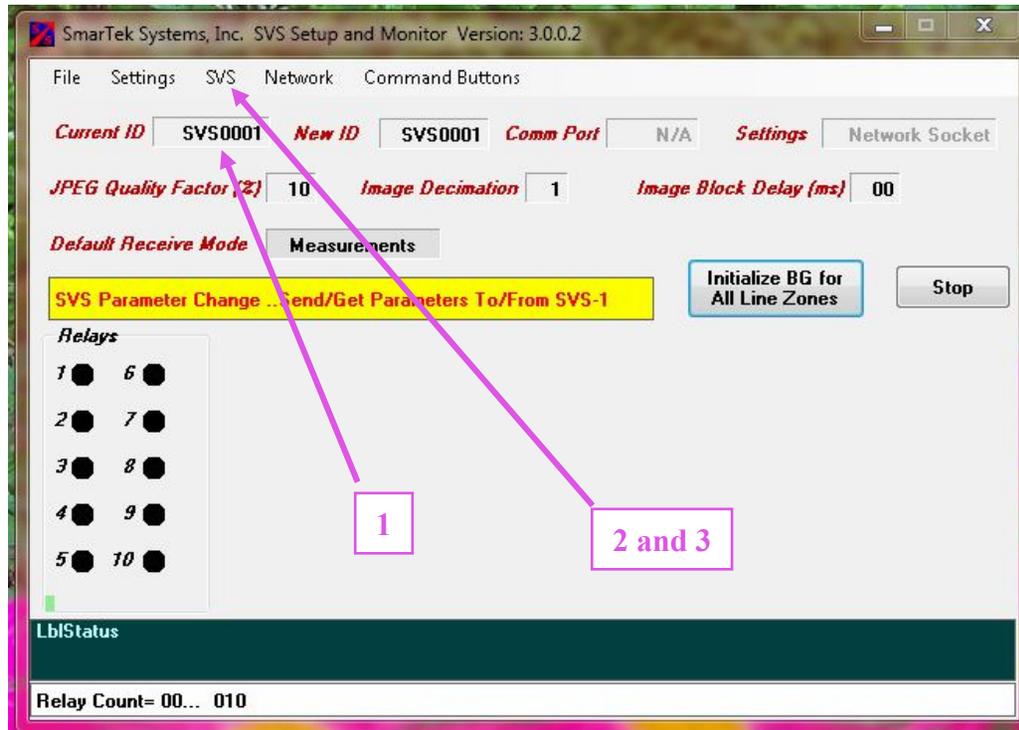
SVS-1 – Opening the SVS Set Line Zones Window

After camera installation and connection to the SVS-1 Video Image Detection System, run SVS Monitor and Setup and choose the appropriate connection between the SVS-1 and the Windows PC being used. If setting up the SVS-1 shelf mount processor (up to six camera channels), click the network button. If setting up the SVS-1 single camera card, click the RS-232 button.



SVS-1 – Opening the SVS Set Line Zones Window

If a network connection is selected, set the SVS-1 IP address and Port number in the SVS Network Connection screen. Click the **Connect** button and note the connection status to make sure a connection was made. Keep the Network Connection Window open.



- 1) Click in the upper/lower part of the **Current SVS ID** field to select the SVS ID (Camera Channel).
- 2) Click the **SVS/Get SVS Parameters** menu item. The yellow parameter warning label goes away.
- 3) Click the **SVS/Get Image for Zone Setup** menu item to open the Zone Setup window.



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Setting up the SVS-1 using SVS Setup and Monitor Version 3 (PC Required)

After clicking the **SVS/Get Image for Zone Setup** menu item to open the Zone Setup window, the following steps outline the setup procedure:

- 1) The Main Setup display has several options. For initial SVS-1 setup, first click the **Draw LZs** button to proceed to the Draw Line Zones display to draw each detection line zone (create multiple line zones for each lane) and then assign or group line zones to an intersection phase. After all desired detection line zones have been drawn and grouped in phases, set line zone parameters by clicking the **Default Parameters-All LZs** button. Typically, predetermined (default) parameters are used for most applications. After setting parameters, return to the Main Setup display.
- 2) From the Main Setup display, proceed to the Set Output display by clicking the **Set Output** button to specify the detector interface type, combine phases into vehicle presence relays, and then route them to output detector channels. After setting the output relay signals, return to the Main Setup display.
- 3) From the Main Setup display, proceed to the Set Video Out Text display by clicking the **Set Text Display** button to specify the video monitor text and to specify its position in the output video image. After setting the output video text, return to the Main Setup display.
- 4) After the SVS-1 setup is complete, click the **OK** button to exit Setup and return to the SVS main display.
- 5) Settings must now be sent to the corresponding SVS-1 camera processing channel (SVS0001, SVS0002, etc.) to remove the yellow parameter mismatch warning flag. This is done by clicking the **SVS/Send SVS Parameters** menu item on the main SVS display.

Important Note: The setup procedure uses familiar mouse “point and click” techniques. For most displays and buttons, clicking in the **upper/lower** portion of the button field will **increment/decrement** the selected detection zone, the parameter to be changed, the phase to be assigned, or the parameter value being set.



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Main Setup Display



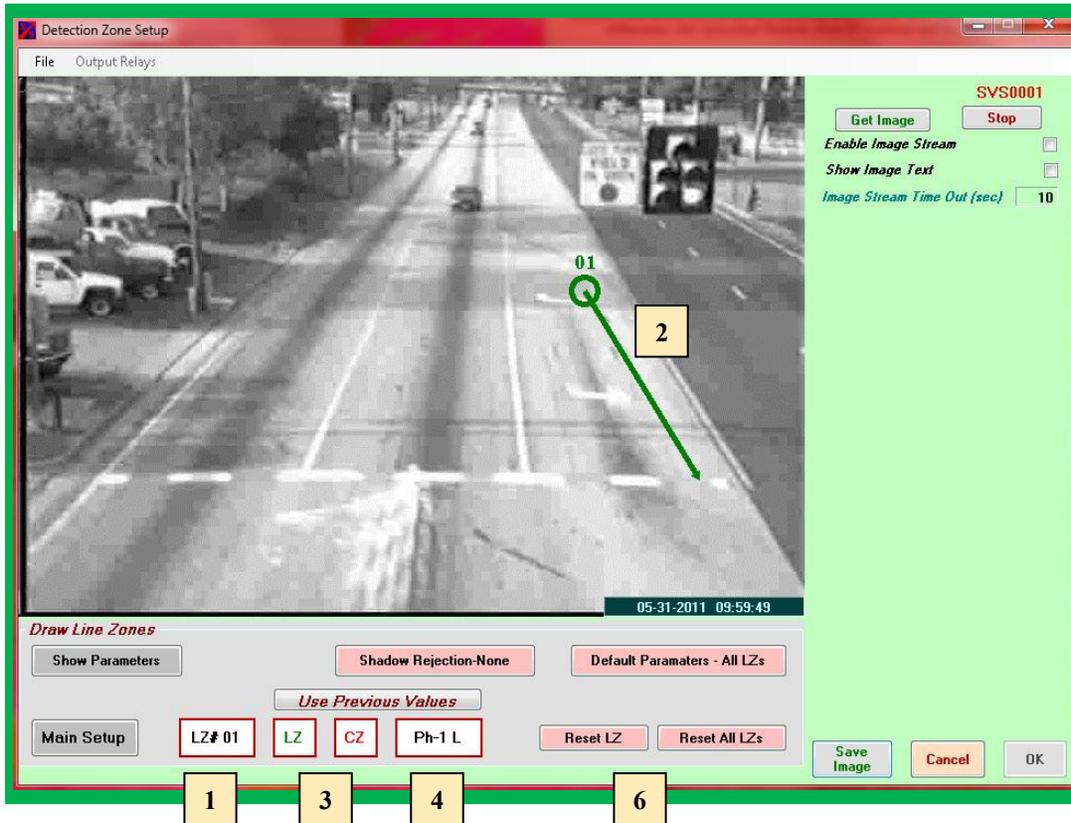
When setting up an SVS-1 camera channel for detection, the user should proceed by first **Drawing Line Zones**, then **Setting LZ Parameters**, then **Setting Detector Output**, and finally **Setting the descriptive text for the Output Video Display**. Click **Draw Line Zones** button.



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Draw Line Zones



Phase assignment Codes:

Ph-1L	Ph-5L	Ph-9L	Ph-13L	L designates Left Turn Lane
Ph-6T	Ph-2T	Ph-14T	Ph-10T	T designates Thru Lane
Ph-6R	Ph-2R	Ph-14R	Ph-10R	R designates Right Turn Lane

Ph-3L	Ph-7L	Ph-11L	Ph-15L	Note: The "T" and "R" designation allows for later applying detection delay and/or extension to the right turn and/or thru lanes before combining them into one relay.
Ph-8T	Ph-4T	Ph-16T	Ph-12T	
Ph-8R	Ph-4R	Ph-16R	Ph-12R	

Clicking in the upper/lower part of the button field will increment/decrement the value or the selection.

Set Line Zone Position, Size and Phase Group:

- 1) Click the **LZ=** button to select the line zone to draw. If the previous line zone has been assigned a phase, clicking the **Use Previous Values** button will assign that phase to the currently selected line zone.
- 2) Draw the Line Zone position by left clicking (hold down left button) at the down road end of the Line Zone and drawing the Line Zone to the up road end (at this end, release the left button).
- 3) Click the **LZ** and **CZ** buttons to show (**green**) or not show (**red**) the line zone and/or the circle zone in the output video monitor signal.
- 4) Click the **Ph-** button to assign the selected line zone to a specific phase (i.e. LZs 1, 2, and 3 may be assigned to phase 1L if they are in the Left Turn lane).
- 5) Repeat steps 1 thru 4 to set as many zones as is needed. Each lane should have multiple Line/Circle Zones.
- 6) To reset the selected line zone or all line zones, click the **Reset** or **Reset All** button respectively.

Steps 1 thru 4 may be repeated as many times as necessary until the position, size, and assignments are satisfactory.



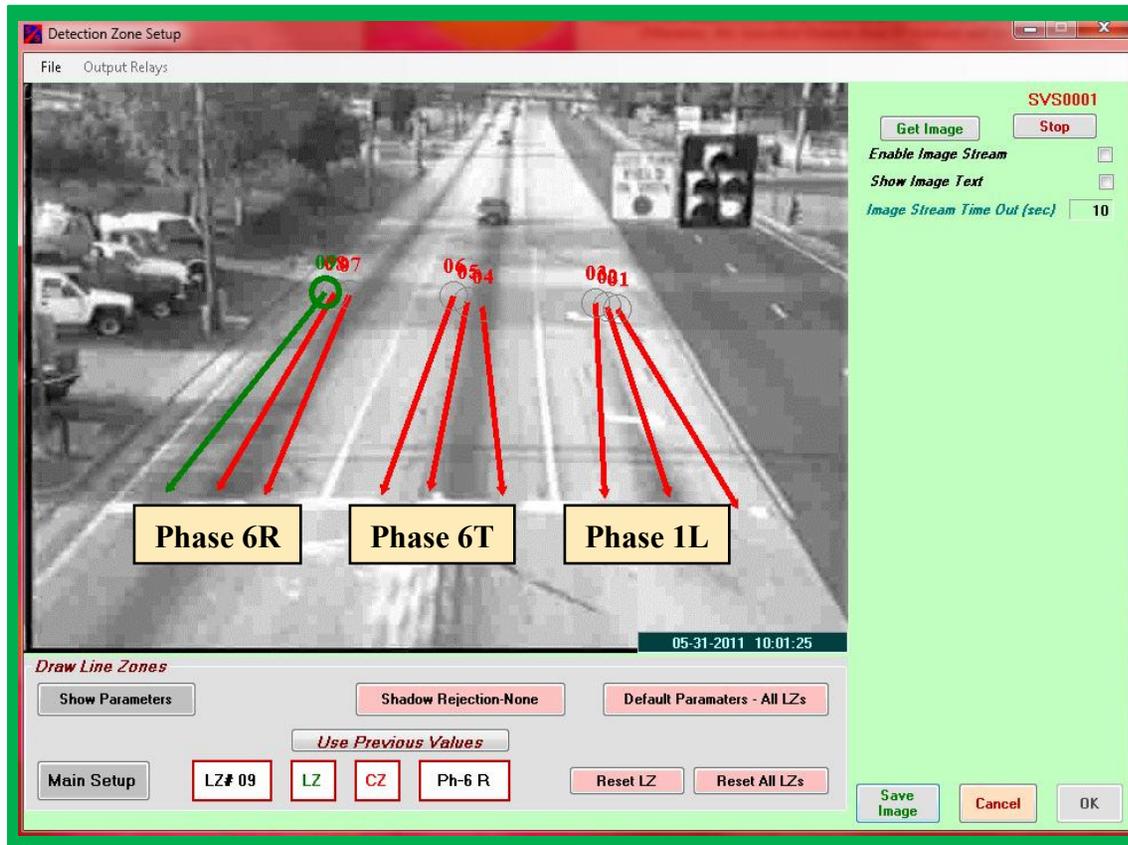
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Draw Line Zones



SVS-1 detection is directional, hence, be sure the direction arrow on each line zone is pointed in the correct direction of travel.

The selected line zone is shown in green, all others are shown in red (show in output video) or gray (not show in output video).

After drawing all line zones and grouping by phase, click the **Main Setup** button to return to the Main Setup Display.

Clicking in the upper/lower part of the button field will increment/decrement the value or the selection.

Phase assignment Codes:

Ph-1L	Ph-5L	Ph-9L	Ph-13L	L designates Left Turn Lane
Ph-6T	Ph-2T	Ph-14T	Ph-10T	T designates Thru Lane
Ph-6R	Ph-2R	Ph-14R	Ph-10R	R designates Right Turn Lane

Ph-3L	Ph-7L	Ph-11L	Ph-15L	Note: The "T" and "R" designation allows for later applying detection delay and/or extension to the right turn and/or thru lanes before combining them into one relay.
Ph-8T	Ph-4T	Ph-16T	Ph-12T	
Ph-8R	Ph-4R	Ph-16R	Ph-12R	



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Setting Detection Zone Parameters

The sensitivity parameters for each Line Zone and its associated Circle Zone are displayed to the right of the camera image. For most installations, default parameter values provide excellent performance. These settings are easily selected for all Line/Circle Zones as follows:

Click this button to display LZ parameters

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Parameter	Value	Action
Detection Threshold	8.0	All
Enable TO(s)	2	All
Har HP Frequency	70	All
Det Enable Threshold	5	All
Det Enable Thr Night	0	All
No Motion TO (min)	2	All
Motion Thres Factor	1.5	All
BG Match Threshold	5.0	All
No Motion Threshold	3.0	All
BG Select En Har Thr	20	All
RE Select Threshold	30	All
Circle Zone Radius	12	All
CZ Quantize Thres	15	All
CZ Threshold (%)	12.0	All
Meas Alpha	0.200	All
Line Zone Length (Pixels)	199	

- 1) Click the **Default Parameters- All LZs** button below the Image display
- 2) Click **Main Setup** button to return to the Main Setup display

For cameras with high contrast settings, it may be necessary to set the shadow rejection to **Low**, **Medium**, or **High** depending on contrast settings. The **Shadow Rejection** setting is for all line zones and the default setting is **None**. To change shadow rejection, click the **Shadow Rejection** button until it reads the setting desired. Note that shadow rejection processing is enabled even if the rejection setting is set to None.

Note: Each parameter for each zone may be changed by selecting the zone and then clicking in the upper/lower part of the parameter value field to increment/decrement the value. To set a specific parameter to the displayed value for all Line/Circle Zones, click the **All** button to the right of the parameter field.



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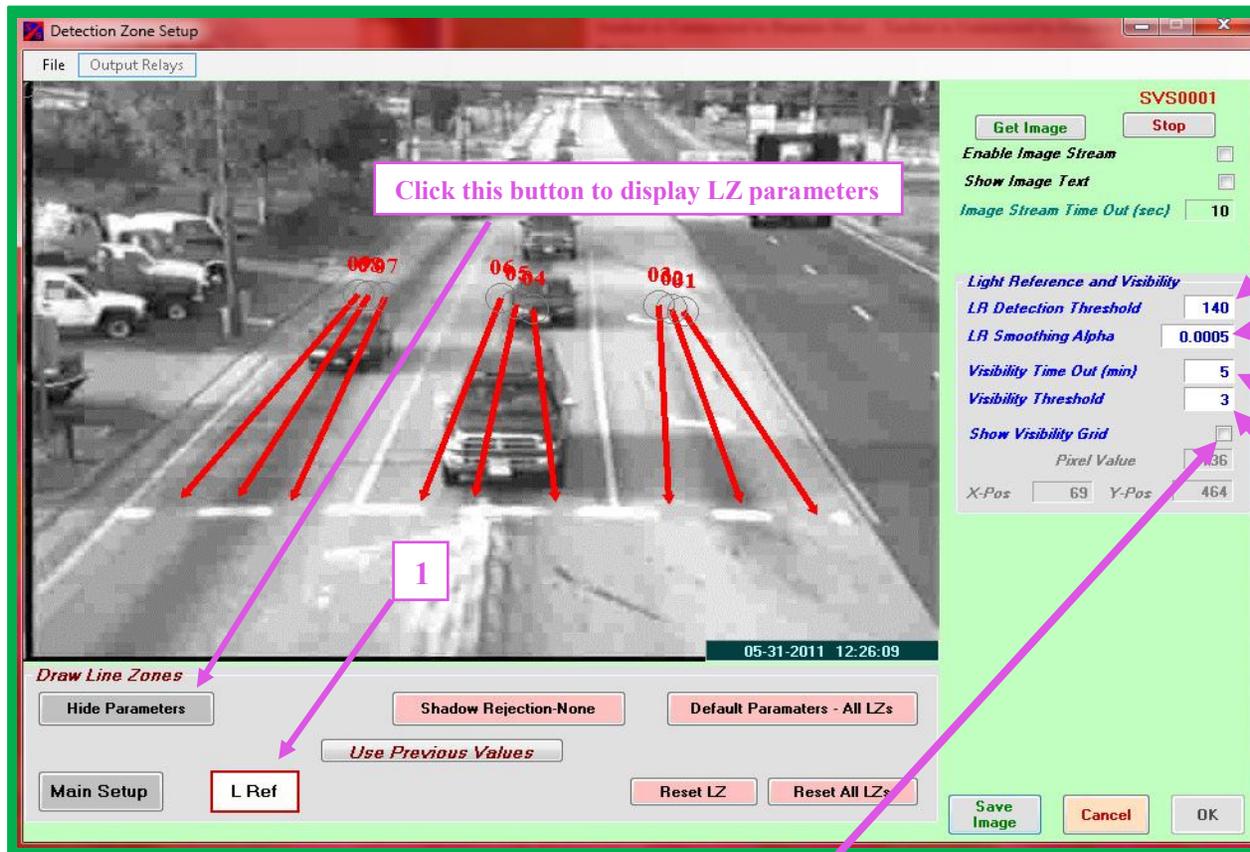
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Setting Light Reference and Visibility Parameters

Each Light Reference parameter and/or each Visibility parameter may need to be adjusted after observing the Image Histogram to determine the position of the dominant peak during daylight periods. Each parameter may be changed by clicking in the upper/lower part of the parameter value field to increment/decrement the value.



- 1) Select the Light Reference by clicking the **LZ =** button below the camera image until L Ref appears.
- 2) Set the Light Reference Detection Threshold to 140.
- 3) Set the Light Reference Smoothing Alpha to 0.0005.
- 4) Set the Visibility Time Out to 5 Minutes.
- 5) Set the Visibility Threshold to 3, 4, or 5 (default is 3).

After completing the parameter setup, click the **Main Setup** button to return to the Main Setup display.

The **Show Visibility Grid** Check Box specifies whether to show the Visibility Reference Grid in the Output Video signal. The Visibility Reference Grid shows up as 5 green horizontal lines in the output video display.



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Setting Output - Example Scenario Summary

From the Main Setup display, proceed to the Set Output display by clicking the **Set Output** button. This display is used to specify the detector interface type, combine phases into vehicle presence relays, and then route them to output detector channels. After setting up the output relay signals, return to the Main Setup display by clicking the **Main** button.

The following list provides a summary of several SVS-1 Output setup examples which are shown in the slides that follow.

1) **Type-170** Detector/Controller Interface with 4 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**

2) **Type-170** Detector/Controller Interface with 2 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**

3) **BIU #1 Card file** Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



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Setting Output Example Scenario Summary (Continued)

- 4) **BIU #1 Card file** Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 4 used, and 3 Phases (Line Zone Groups)
 - Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D5**
 - Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D6**
 - Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D6**

- 5) **BIU #1 Card file** Detector/Controller Interface with 2 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)
 - Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**
 - Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**
 - Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**

- 6) **BIU #1 SDLC** Detector/Controller Interface with 3 Phases (Line Zone Groups)
 - Phase **5L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D7**
 - Phase **2T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D8**
 - Phase **2R**, Detection Delay=2 sec, Detection Extension=0, Route to Detector Channel **D8**



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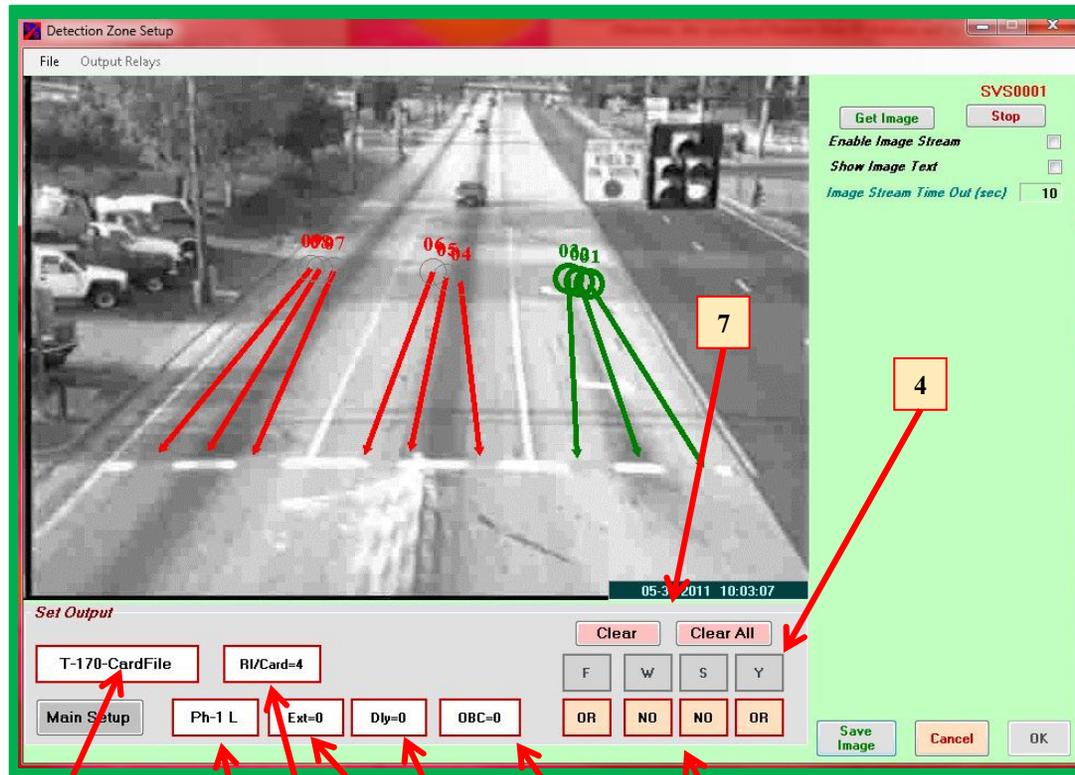
Scenario 1 Set Output Relays

Type-170 Detector/Controller Interface with 4 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (**Type-170**).
- 2) Click the **Ph-** button to select Phase group **1L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 .
- 4) After selecting the RI/Card=4, the number of card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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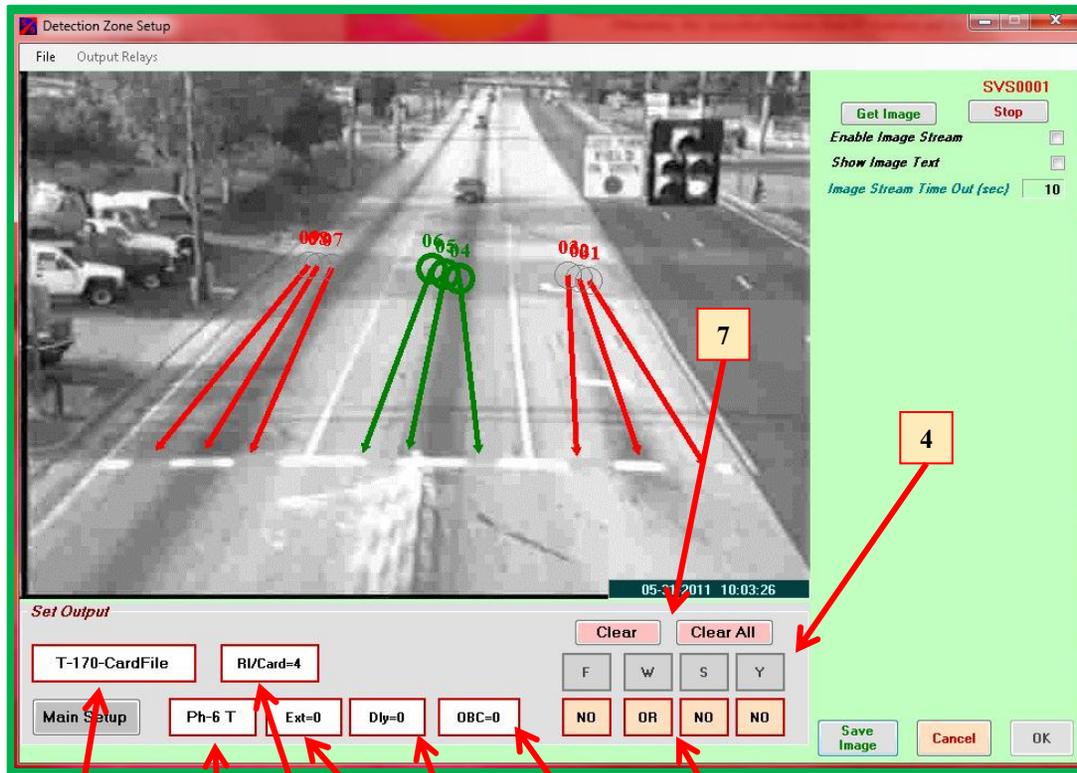
Scenario 1 Set Output Relays

Type-170 Detector/Controller Interface with 4 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

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Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (Type-170).
- 2) Click the **Ph-** button to select Phase group **6T**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 .
- 4) After selecting the RI/Card=4, the number card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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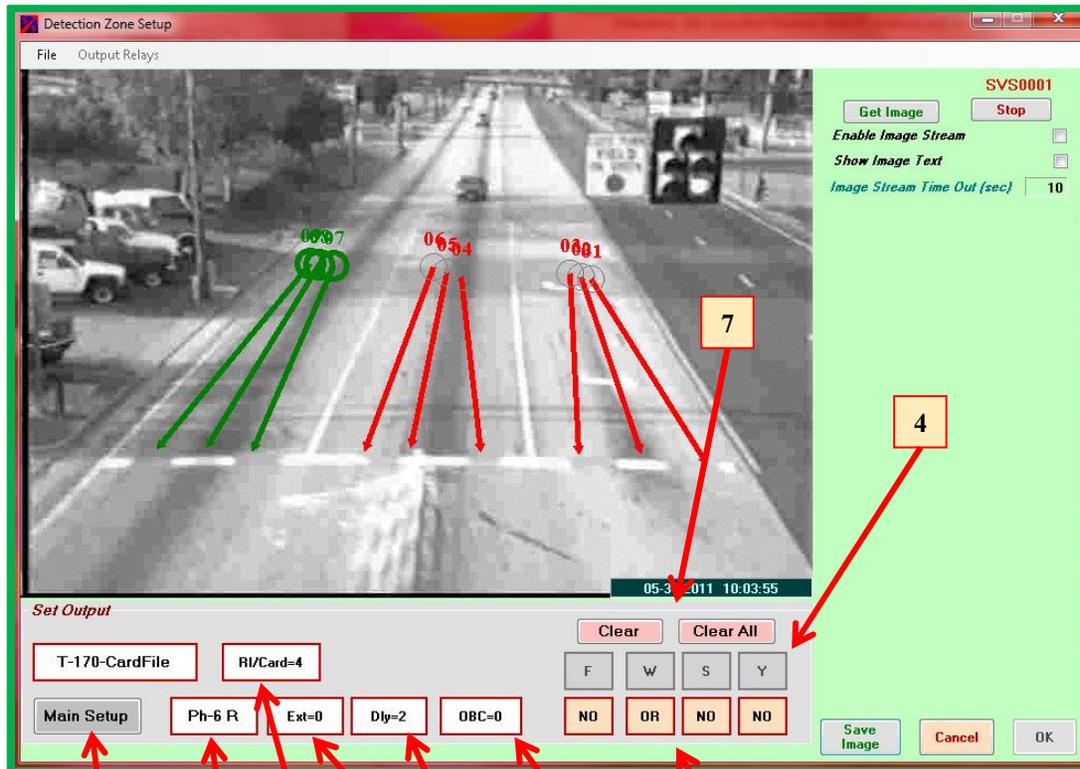
Scenario 1 Set Output Relays

Type-170 Detector/Controller Interface with 4 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (Type-170).
- 2) Click the **Ph-** button to select Phase group **6R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 .
- 4) After selecting the RI/Card=4, the number card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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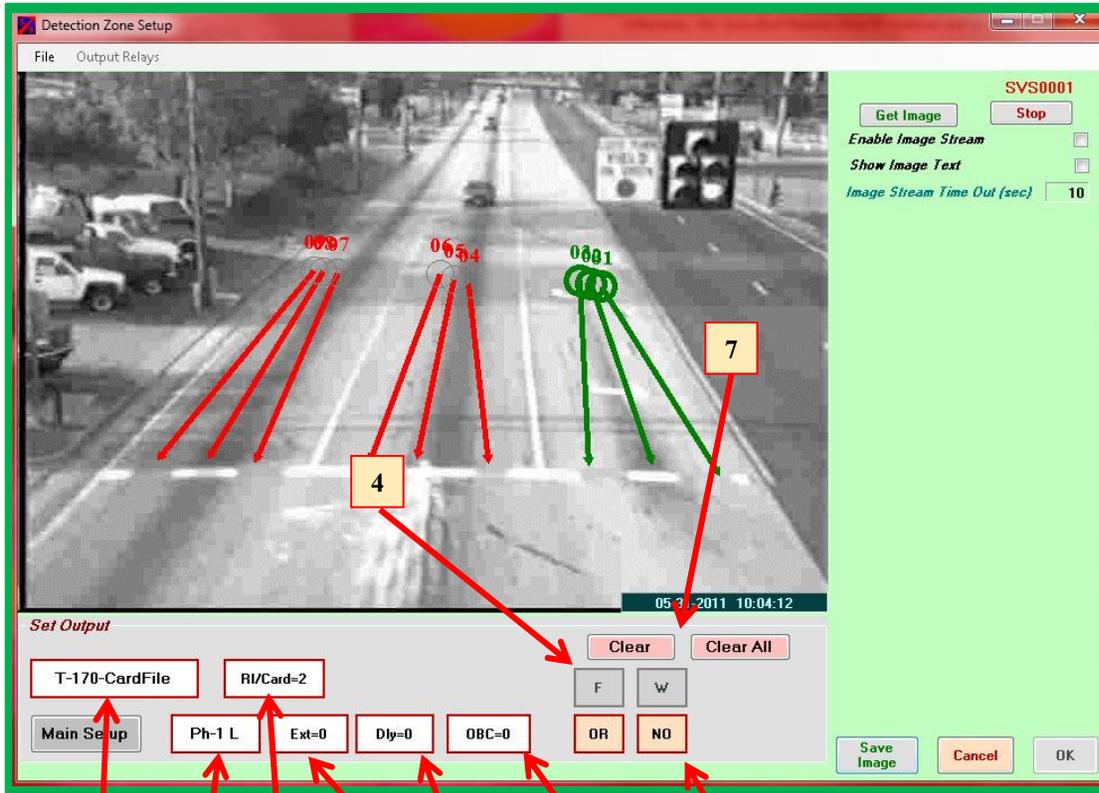
Scenario 2 Set Output Relays

Type-170 Detector/Controller Interface with 2 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (Type-170).
- 2) Click the **Ph-** button to select Phase group **1L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 .
- 4) After selecting the RI/Card=4, the number card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (N=**Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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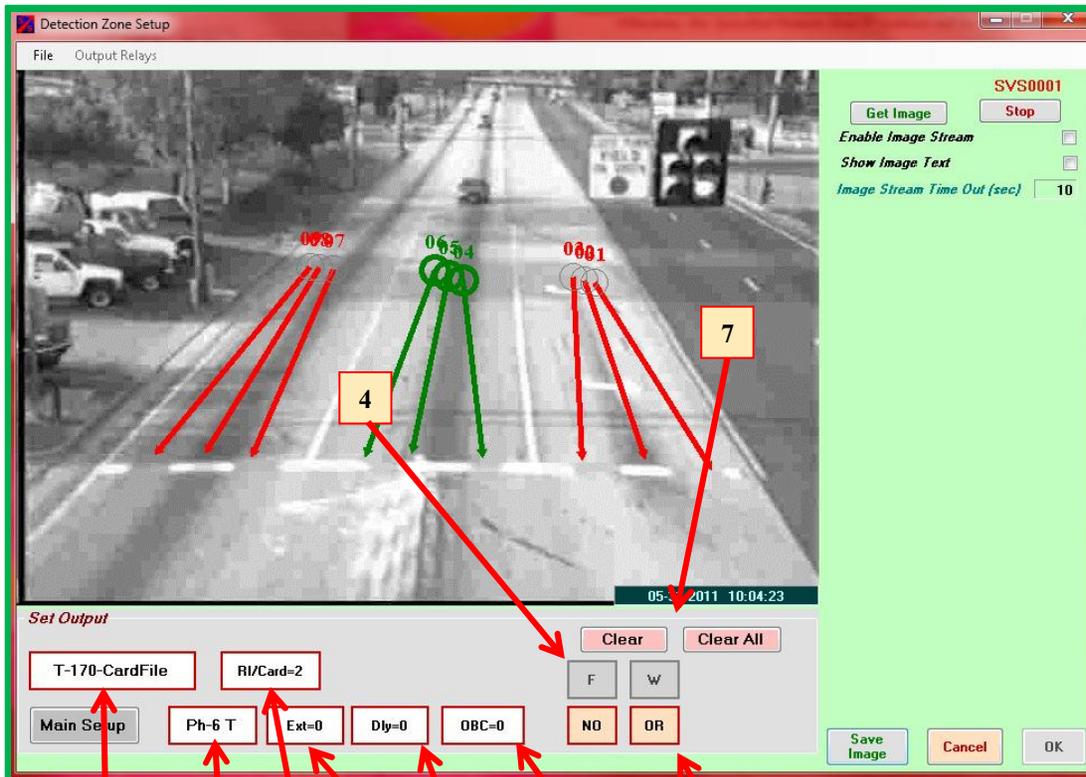
Scenario 2 Set Output Relays

Type-170 Detector/Controller Interface with 2 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (Type-170).
- 2) Click the **Ph-** button to select Phase group **6T**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 .
- 4) After selecting the RI/Card=4, the number card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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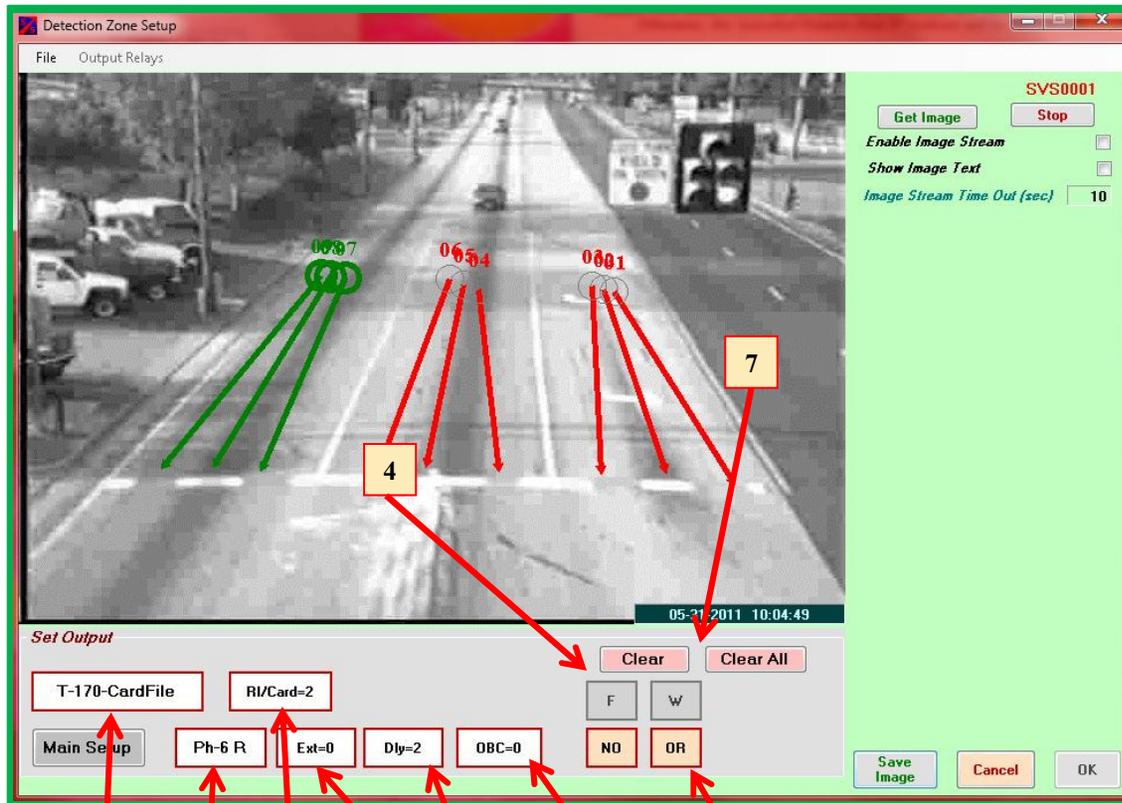
Scenario 2 Set Output Relays

Type-170 Detector/Controller Interface with 2 Relays per SVS-1 card and 3 Phases (Line Zone Groups)

Phase **1L**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **F**

Phase **6T**, Detection Delay=0 sec, Detection Extension=0, Route to Card Edge **W**

Phase **6R**, Detection Delay=2 sec, Detection Extension=0, Route to Card Edge **W**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (Type-170).
- 2) Click the **Ph-** button to select Phase group **6R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 .
- 4) After selecting the RI/Card=4, the number card edge relays (F,W,etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Card Edge Relays.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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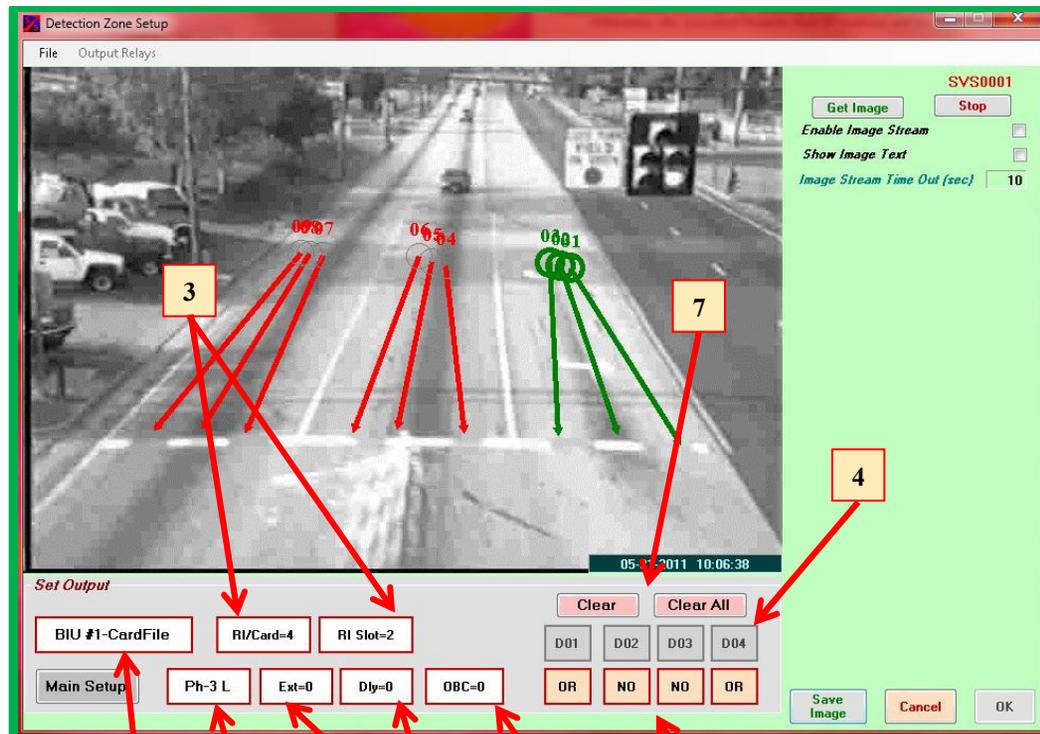
Scenario 3 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **3L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 2.
- 4) After selecting the RI/Card=4 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (N=**Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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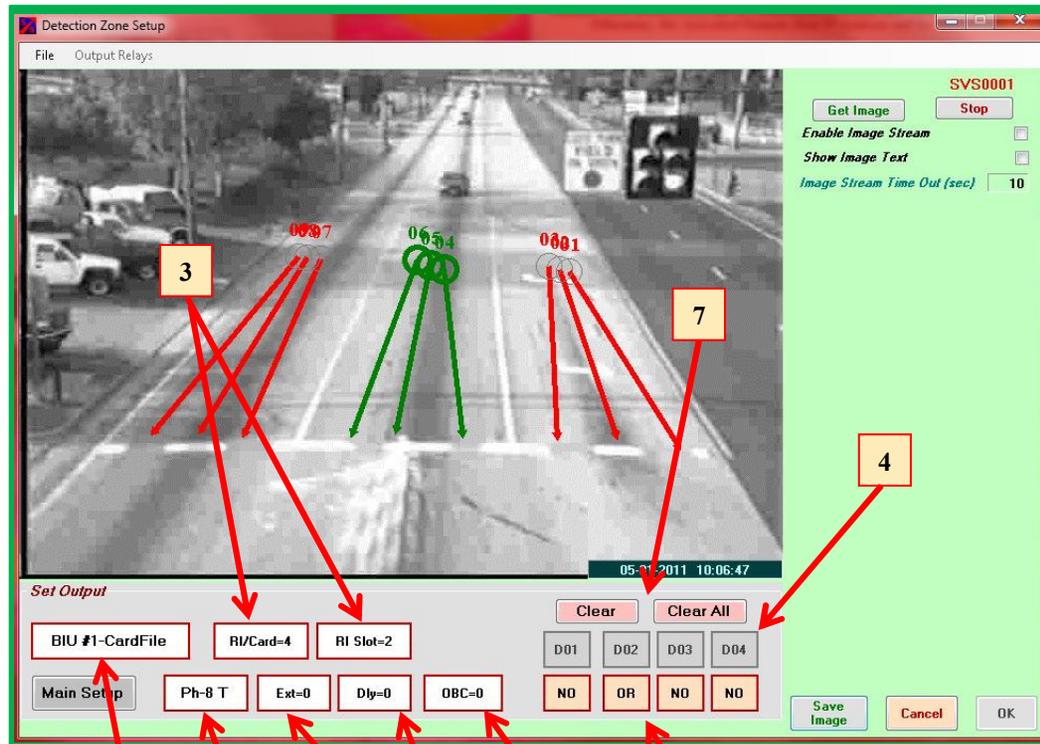
Scenario 3 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

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Select Detector Interface and Route Relays:

1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).

2) Click the **Ph-** button to select Phase group **8T**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.

3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 2.

4) After selecting the RI/Card=4 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.

5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.

6) Click **N, Or, And** button to select logic for combining (N=Not Used) Phase Groups into Detector Channels.

7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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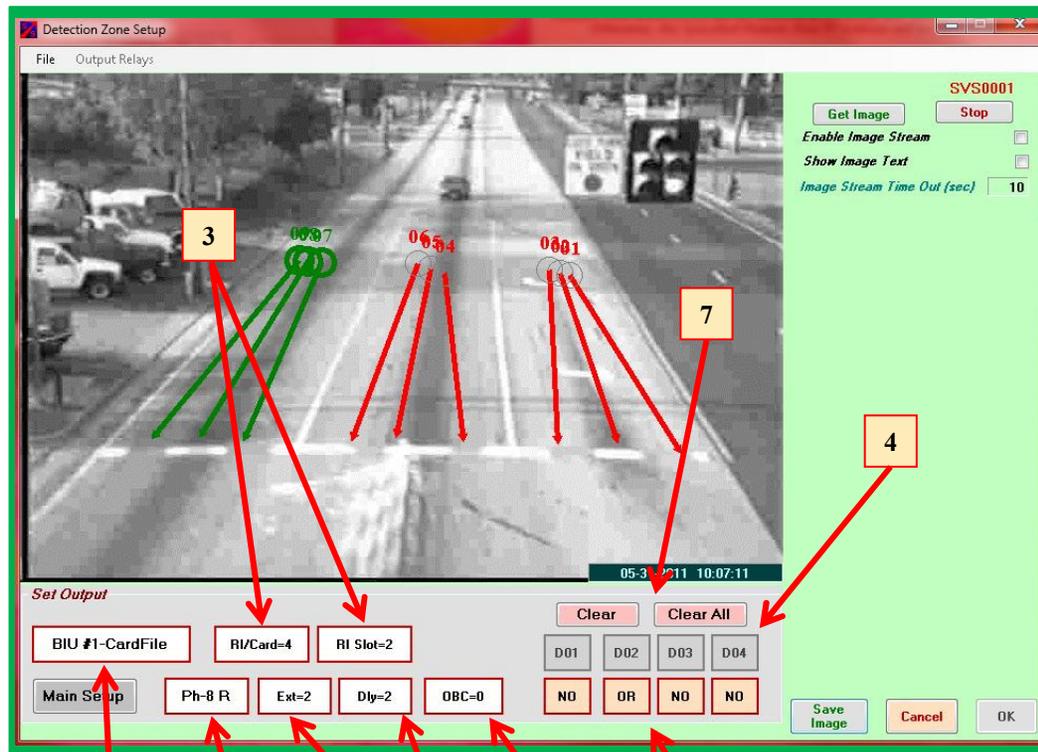
Scenario 3 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **8R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 2.
- 4) After selecting the RI/Card=4 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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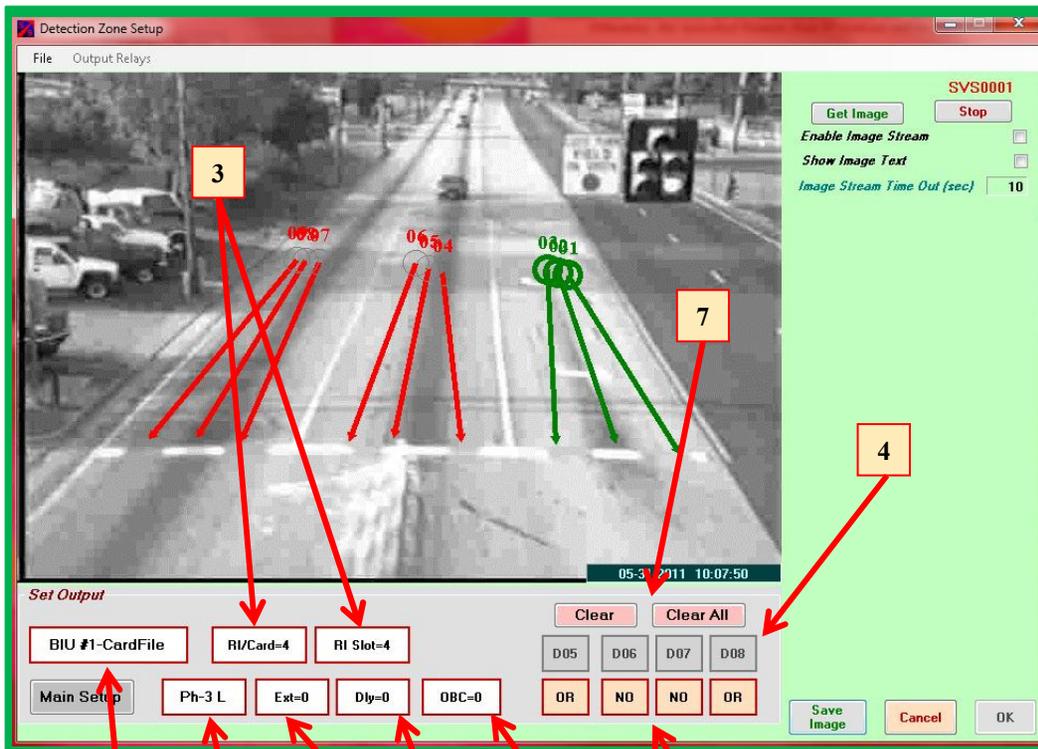
Scenario 4 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 4 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D5**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D6**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D6**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **3L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 4.
- 4) After selecting the RI/Card=4 and the RI Slot=4, the number detector channels (D5, D6, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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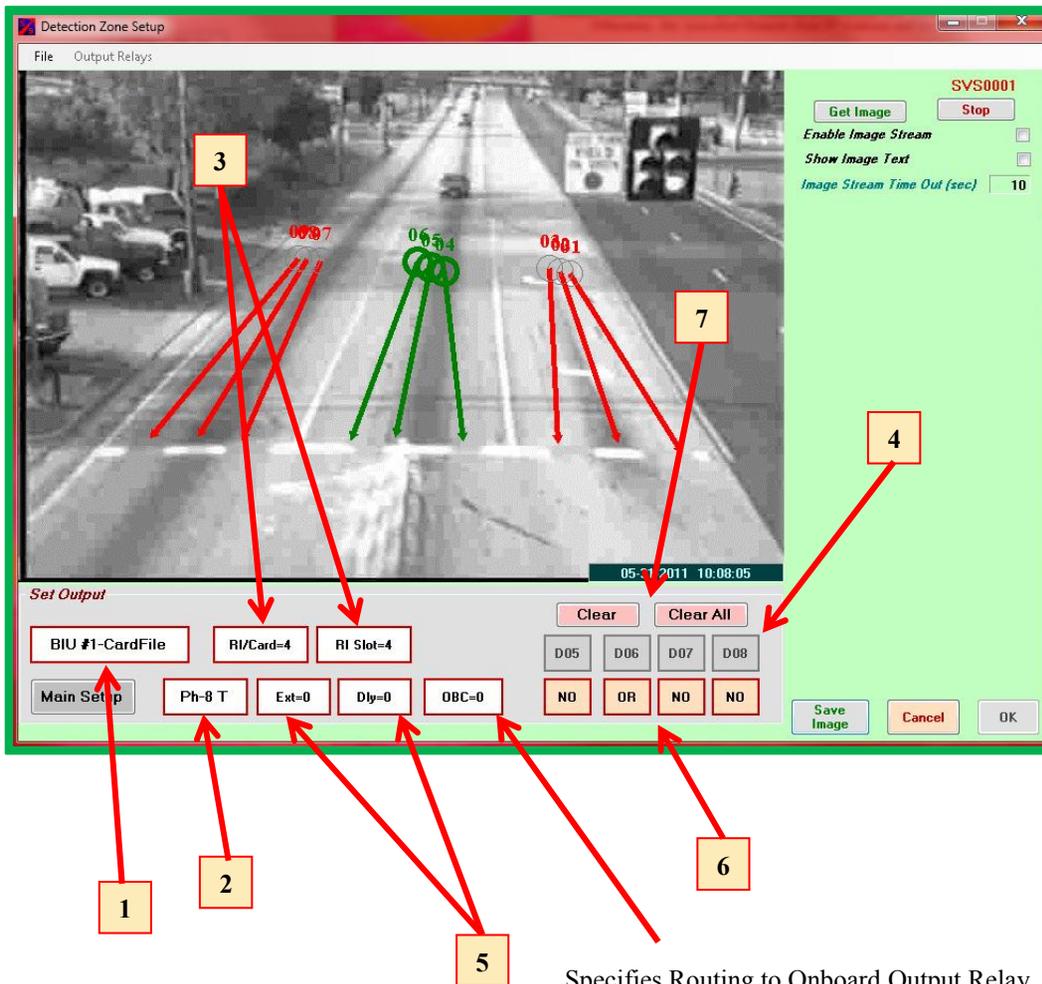
Scenario 4 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 4 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D5**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D6**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D6**



Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **8T**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 4.
- 4) After selecting the RI/Card=4 and the RI Slot=4, the number detector channels (D5, D6, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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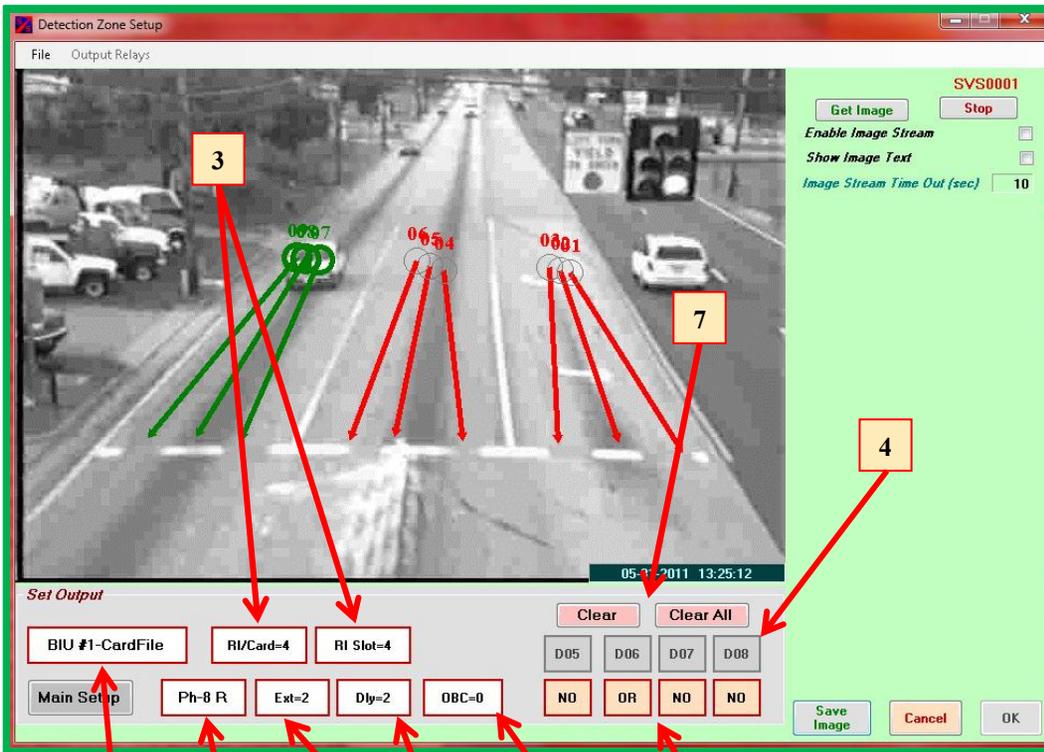
Scenario 4 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 4 Relays per SVS-1 card, Slot 4 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D5**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D6**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D6**



Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **8R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 4 . Click the **RI Slot=** to select the card file slot used= 4.
- 4) After selecting the RI/Card=4 and the RI Slot=4, the number detector channels (D5, D6, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.

Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1



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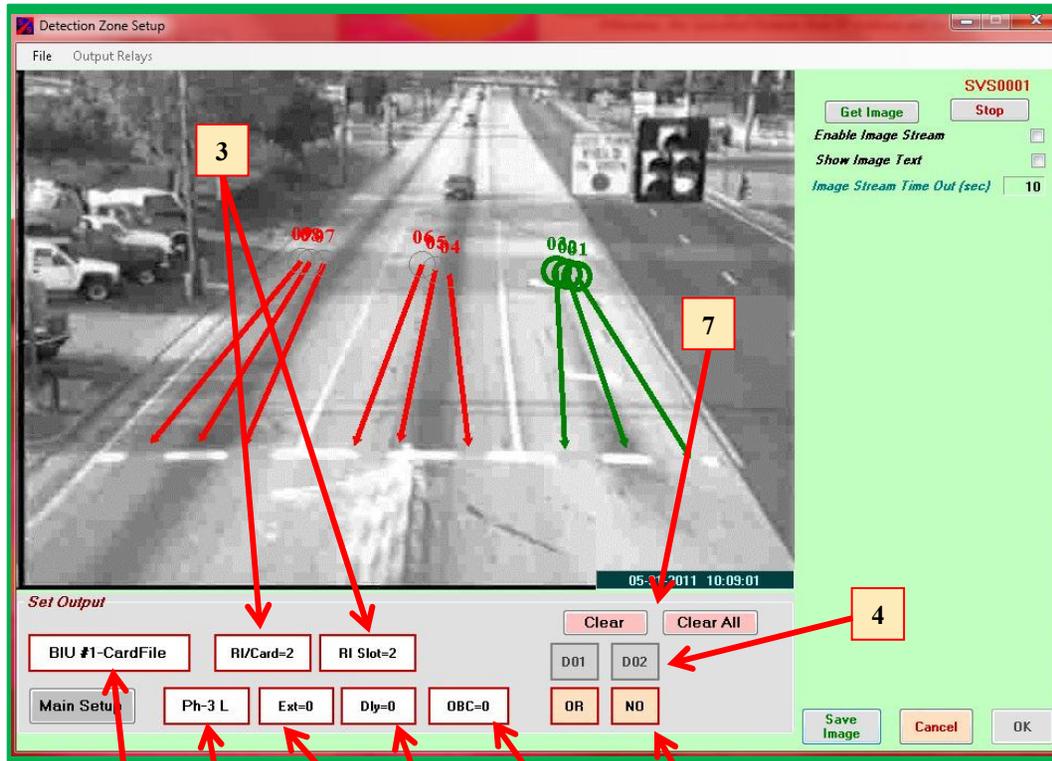
Scenario 5 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 2 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **3L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 . Click the **RI Slot=** to select the card file slot used= 2.
- 4) After selecting the RI/Card=2 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (N=**Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.

Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1



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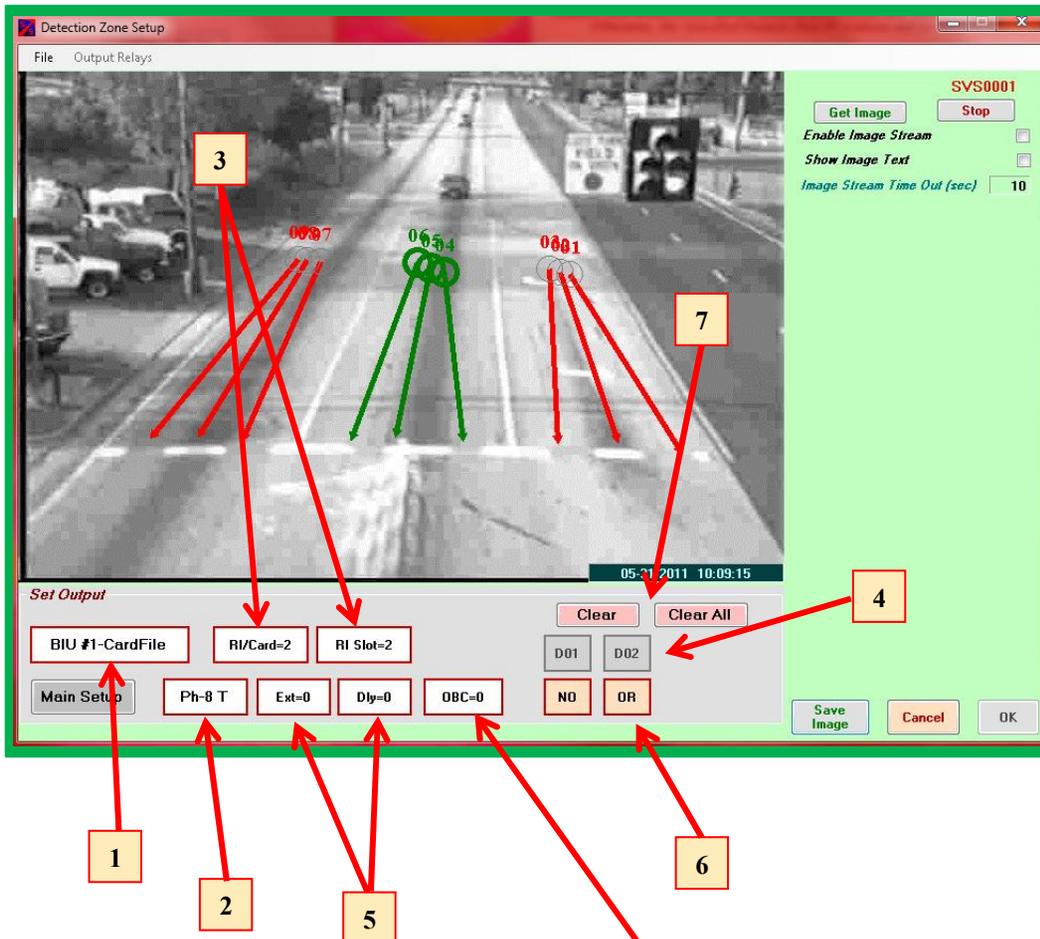
Scenario 5 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 2 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **8T**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 . Click the **RI Slot=** to select the card file slot used= 2.
- 4) After selecting the RI/Card=2 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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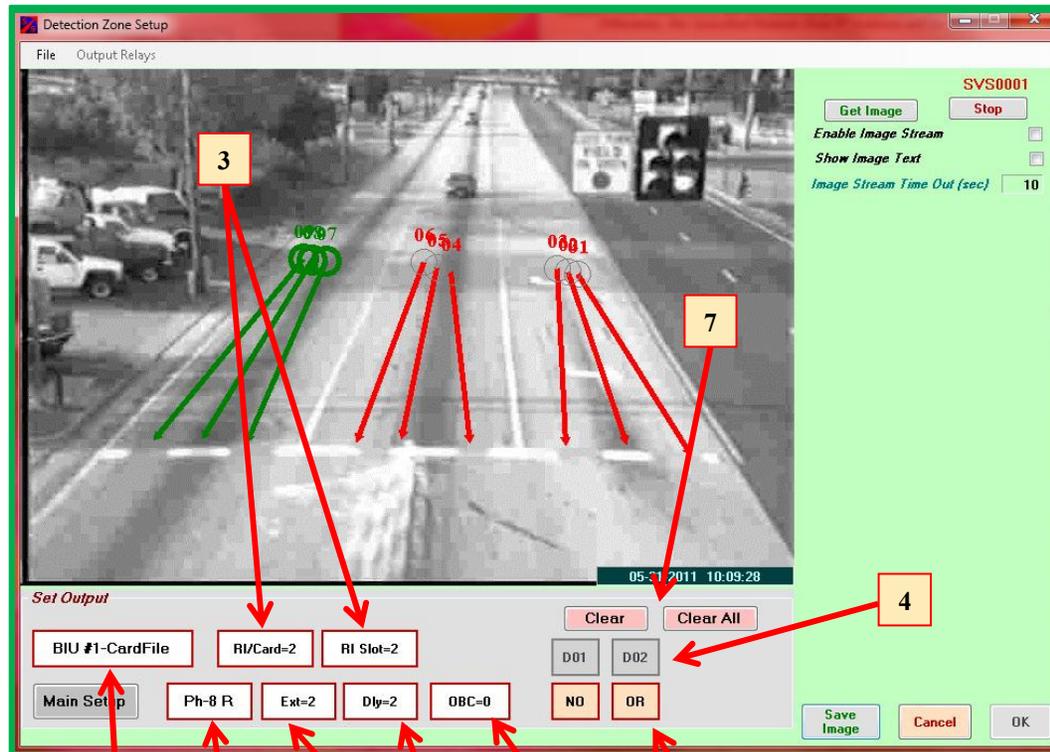
Scenario 5 Set Output Relays

BIU #1 Card file Detector/Controller Interface with 2 Relays per SVS-1 card, Slot 2 used, and 3 Phases (Line Zone Groups)

Phase **3L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D1**

Phase **8T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D2**

Phase **8R**, Detection Delay=2 sec, Detection Extension=2, Route to Detector Channel **D2**



Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 Card File).
- 2) Click the **Ph-** button to select Phase group **8R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **RI/Card=** button to select the number of relays per card = 2 . Click the **RI Slot=** to select the card file slot used= 2.
- 4) After selecting the RI/Card=2 and the RI Slot=2, the number detector channels (D1, D2, etc.) that are shown changes corresponding to this selection.
- 5) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 6) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.
- 7) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.

Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1



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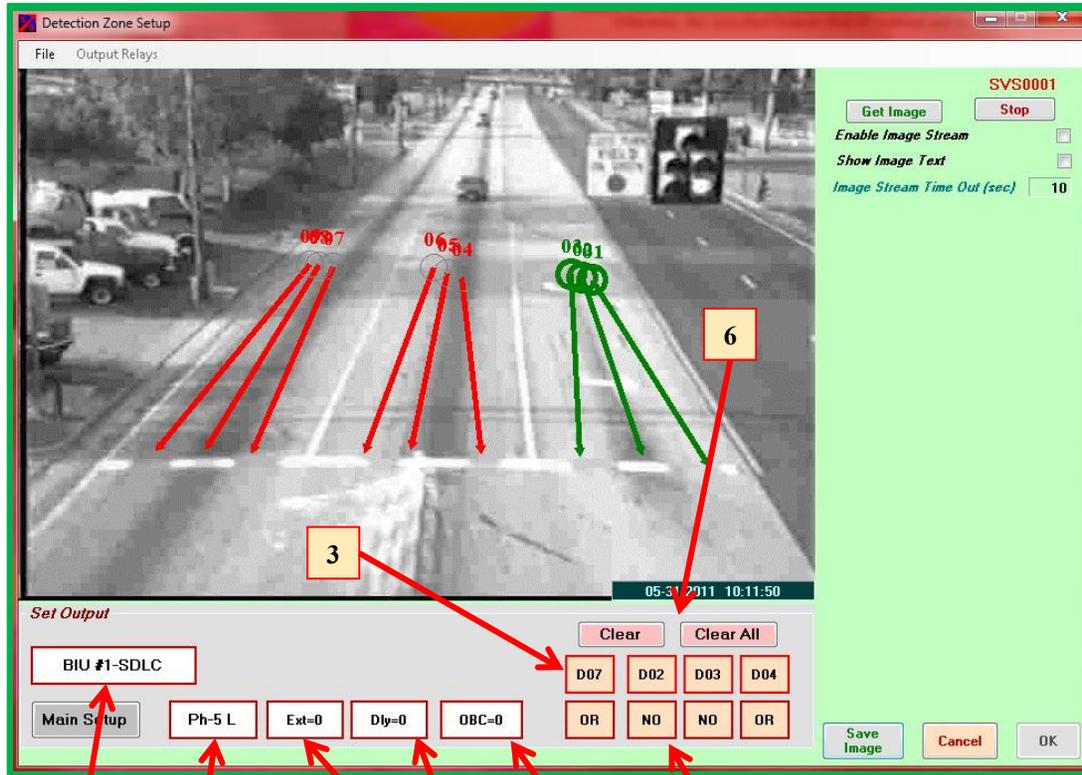
Scenario 6 Set Output Relays

BIU #1 SDLC Detector/Controller Interface with 3 Phases (Line Zone Groups)

Phase **5L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D7**

Phase **2T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D8**

Phase **2R**, Detection Delay=2 sec, Detection Extension=0, Route to Detector Channel **D8**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 SDLC).

2) Click the **Ph-** button to select Phase group **5L**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.

3) Click the **D** button to select the detector channel (D7) this phase is routed to in the SDLC message.

4) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.

5) Click **N, Or, And** button to select logic for combining (**N=Not Used**) Phase Groups into Detector Channels.

6) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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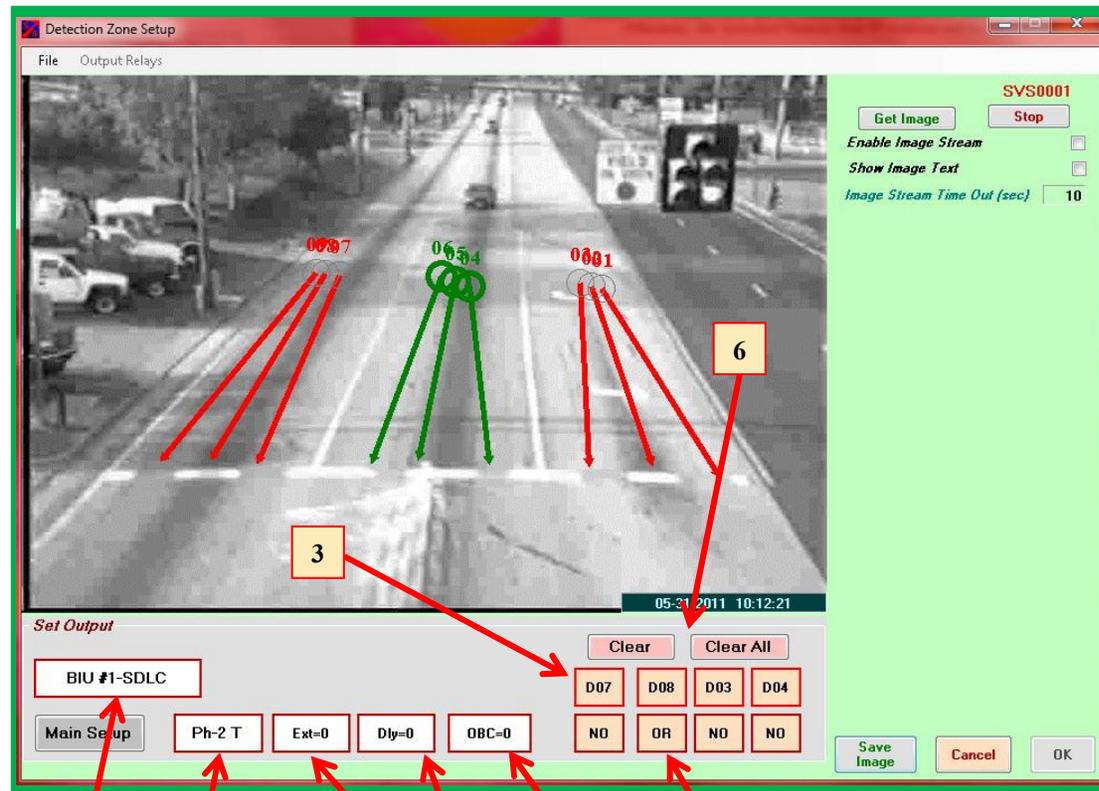
Scenario 6 Set Output Relays

BIU #1 SDLC Detector/Controller Interface with 3 Phases (Line Zone Groups)

Phase **5L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D7**

Phase **2T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D8**

Phase **2R**, Detection Delay=2 sec, Detection Extension=0, Route to Detector Channel **D8**



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4

Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 SDLC).

2) Click the **Ph-** button to select Phase group 2T. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.

3) Click the **D** button to select the detector channel (D8) this phase is routed to in the SDLC message.

4) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.

5) Click **N, Or, And** button to select logic for combining (N=Not Used) Phase Groups into Detector Channels.

6) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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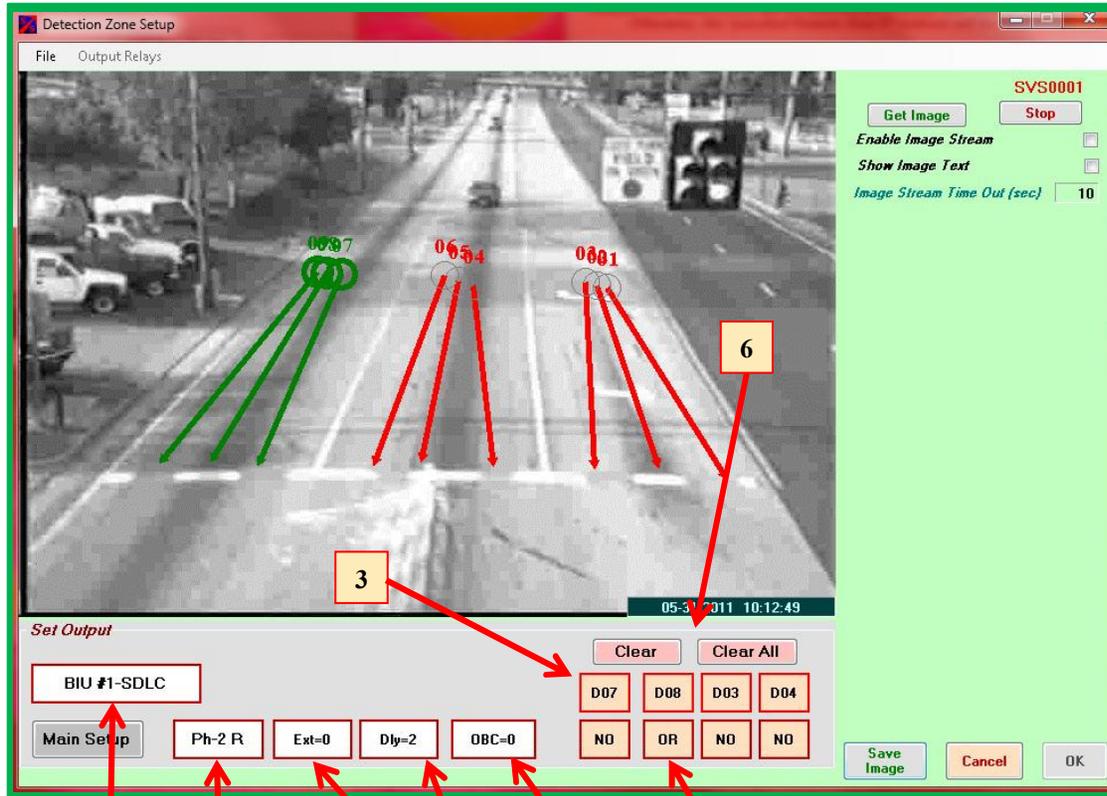
Scenario 6 Set Output Relays

BIU #1 SDLC Detector/Controller Interface with 3 Phases (Line Zone Groups)

Phase **5L**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D7**

Phase **2T**, Detection Delay=0 sec, Detection Extension=0, Route to Detector Channel **D8**

Phase **2R**, Detection Delay=2 sec, Detection Extension=0, Route to Detector Channel **D8**



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Specifies Routing to Onboard Output Relay Connector (1, 2, ..., 10 0-Disables) for shelf mount SVS-1

Select Detector Interface and Route Relays:

- 1) Click the **Detector Interface** button to select the type of detector/controller interface to be used (BIU #1 SDLC).
- 2) Click the **Ph-** button to select Phase group **2R**. Note that the line zones corresponding to the selected phase group turn green. All others are magenta.
- 3) Click the **D** button to select the detector channel (D8) this phase is routed to in the SDLC message.
- 4) Click the **Ext=** and the **Dly=** to select the Detection Extension in seconds and the Detection Delay in seconds.
- 5) Click **N, Or, And** button to select logic for combining (N=Not Used) Phase Groups into Detector Channels.
- 6) To clear the settings for the selected Phase group or for all Phase groups click the **Clear** or the **Clear All** button.



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Set Output Video Text Display

This display is used to enter descriptive text which may be set to show on the output video image. Enter descriptive text in the text box below the image. To change the text position, click on the text label in the image area (do not hold the button down) and move the mouse pointer to the new location and click again. The **X=** and **Y=** labels show the position in pixels and may also be used to change the text position by clicking in the upper/lower part of the field to increment/decrement the values. Holding the shift key down while clicking will increase the increment/decrement value. Click the **Show-** button to turn the text **On** or **Off** in the output video image. Click the **Main Setup** button to return to the Main Setup display.

Detection Zone Setup

File Output Relays

SmarTek Systems...This is Descriptive Text

X=0, Y=0

X=719, Y=479

SVS0001

Get Image Stop

Enable Image Stream

Show Image Text

Image Stream Time Out (sec) 10

05-31-2011 10:13:19

Set Display Text

Video Out Text Here SmarTek Systems...This is Descriptive Text
(Maximum of 56 Characters)

Main Setup To reposition output text, left click on text then move to new position, and left click again to set.

X=13 Y=9 Show-ON

Save Image Cancel OK



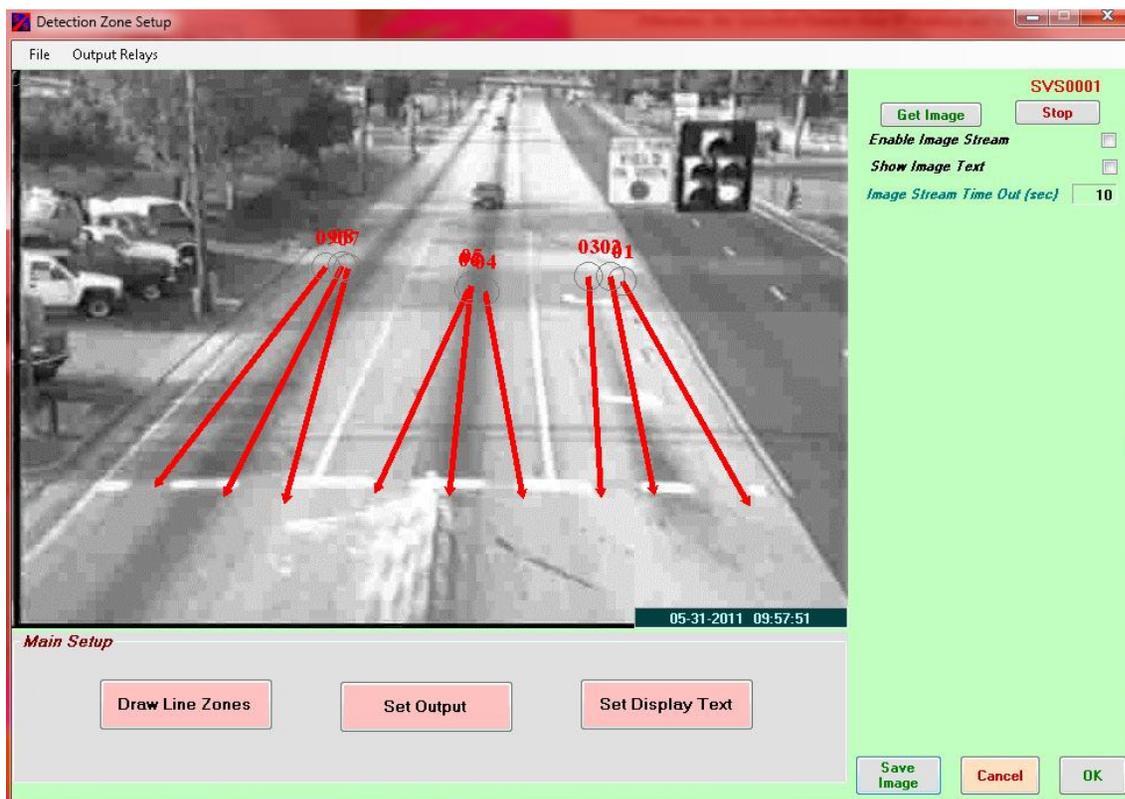
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Closing Setup Windows and Saving Setup Parameters

Next, click the **OK** button on the Detection Zone Setup window to capture the settings and close the window.

In addition to the Set Output display previously described, the Detection Line Zone Mapping display may also be used to combine Detection Line Zones and assign them to Phases and then route the Phases to output detector channels. If the Set Output display is used as the primary means to setup the SVS output, then the Detection Line Zone Mapping display may serve as a summary display to review the settings. To open this display from the Set Zones display click the **Output Relays/Set Output Relays** menu item.



Note that settings must be sent to the corresponding SVS-1 camera processing channel (SVS0001, SVS0002, etc.) to remove the yellow parameter mismatch warning flag.

Assigning Line Zones to a Phase and Routing to the Output Detector Channels

This display may also be used to combine Detection Line Zones (columns) and assign them to a Phase (rows) on the left half of the display. The right half of the display is then used to combine Phases (via ANDing or ORing) and route them (rows) to Detection Channels (columns- D01, D02, etc.). If the Set Output display is used as the primary means to setup the SVS output, then this display may serve as a summary display to review the settings. To open this display from the Set Zones display click the **Output Relays/Set Output Relays** menu item.

Current Camera Channel ID

Detection Line Zone Number

Output Interface Type Selection

Phase Number	1	5	10	15	20	25	30	Def Ext (sec)	Def Delay (sec)	OR Relay Conn	D01	D02	D03	D04	D05	D06	D07	D08
1 L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 T	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
6 R	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Phase Label

Use to Clear All Check Boxes for Phases and/or Detector Channel Routing

Output Detector Channel or RL Card Edge



Parameters across the bottom of the window specify the location and display of Site Text in the output video signal. The video image upper left position is (0,0) while the lower right is (719,479).

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Combining Line Zones and Assigning Them to a Phase

This display is used to combine and assign multiple Detection Line Zones to each Phase. The Detection Line Zone to Phase Mapping Matrix has the Phase label on the vertical axis and the Detection Line Zone # on the horizontal axis. Each checked box specifies that a Detection Line Zone (column) will contribute to a Phase (row).

Current Camera Channel ID **Phase Label** **Check Boxes Specify Detection Line Zones Assigned to Phase** **Detection Line Zone Number**

Phase Number	1	5	10	15	20	25	30	Def Ext (sec)	Def Delay (sec)	OB Conn
1 L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	1
6 T	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	2
6 R	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	3
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0				

Specifies Mapping to Onboard Output Relay Connector (1, 2, ..., 10 0-No mapping to Onboard Output Relay)

Specifies Each Phase Detection Delay in Seconds

Specifies Phase Detection Extension in Seconds

Clear All Line/Lane Group Check Boxes Active High

Combine Line Zones to Lane Groups (left side rows) Using Check Boxes (OR'ed).
Combine/Route Lane Groups to Detector Channel (right side columns) Using Check Boxes.

Show Site/Camera Text X (Text-Upper Left) 30 Y (Text-Upper Left) 450

Site Camera Text SVS0001...Phases 1L, 6T, and 6R.....

In this example Detection Line Zones 1, 2, and 3 are combined to form Phase 1L. Likewise, Line Zones 4, 5, and 6 are combined to form Phase 6T and Line Zones 7, 8, and 9 are combined to form Phase 6R.

Note: Intersection Phase labels may be changed by clicking in the upper/lower part of each Phase label field. The L, T, R usage in the phase label indicates Left Turn, Thru, and Right Turn respectively..



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Routing/Mapping Each Phase to an On Board Connector Relay Position

The three columns at the center of the window are used to set the Detection Extension (seconds) and the Detection Delay (seconds) for each Phase, and the mapping or routing of each Phase to an output relay position of the Green On Board Connector on the shelf mount SVS-1 rear panel. This connector has 10 output relays and can be used when no external relay interface (cards in a card file or BIU/SDLC) is used. **The OB connector applies only to the shelf mount SVS-1.**

SVS0001 *Detector Interface* BIU #1-CardFile Relays Per RI Card: 4 Relays Per RI Card: 4
 Main RI Slot #: 2 Aux RI Slot #: 4

Phase Number	Line Zone Number	Det Ext (sec)	Det Delay (sec)	OB Relay Conn	D1	D2	D3	D4	D5	D6	D7	D8
1 L	1 5 10 15 20 25 30	0	0	1	<input type="checkbox"/>							
6 T		0	0	2	<input type="checkbox"/>							
6 R		0	0	3	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							
None		0	0	0	<input type="checkbox"/>							

Clear All Line/Lane Group Check Boxes Active High Clear All Detector Routing Check Boxes
 { 0 - Column is OR'ed } { A - Column is AND'ed }

Show Site/Camera Text X (Text-Upper Left) 30 Y (Text-Upper Left) 450 OK
 Site Camera Text SVS0001...Phases 1L, 6T, and 6R..... Save Image Cancel

- 1) Click the “Clear All Detector Routing Check Boxes” button to clear all of the right side routing check boxes.
- 2) Click in each OB Relay Connector field to select the output relay position. More than one Phase can be mapped/routed to the same On Board Connector output relay position (0 disables).
- 3) The example shown routes Phase-1L to position 1, Phase-6T to position 2, and Phase-6R to position 3 of the On Board green connector.
- 4) Note that a Phase from any active SVS-1 camera channel (SVS0001, SVS0002, etc.) can also be routed to a relay position in the On Board Connector.

Routing Each Phase to a BIU Detector Channel Using SVS Relay Interface Cards

SVS0001 *Detector Interface* **BIU #1-CardFile**

Relays Per RI Card: 2 Relays Per RI Card: 2
Main RI Slot #: 2 Aux RI Slot #: 4

Phase Number	Line Zone Number										Def Ext (sec)	Def Delay (sec)	OR Conn	D1		D2		D5		D6	
	1	5	10	15	20	25	30	O	A	O				A	O	A	O	A			
1 L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6 T	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
6 R	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	5	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Clear All Line/Lane Group Check Boxes Active High

Combine Line Zones to Lane Groups (left side rows) Using Check Boxes (OR'ed).
Combine/Route Lane Groups to Detector Channel (right side columns) Using Check Boxes.

Show Site/Camera Text X (Text-Upper Left) 30 Y (Text-Upper Left) 450

Site Camera Text SVS0001...Phases 1L, 6T, and 6R.....

Clear All Detector Routing Check Boxes (O - Column is OR'ed) (A - Column is AND'ed)

OK Save Image Cancel

- 1) Click the **Clear All Detector Routing Check Boxes** button to clear all of the right side routing check boxes. Click the **Detector Interface** field to select BIU# 1-CardFile.
- 2) Click in the **Relays per SVS-RI Card** field to select the number of relays per card.
- 3) Click in the **Det Main/Aux SVS-RI Slot #** fields to select the card file slots to use.
- 4) Note that choosing the RL card slot position, sets the Detector Channels available (column header labels D1, D2, etc.) for use (per the TS-2 Specification).
- 5) Click each routing check box (right side check boxes) to specify which Phases will be combined (Or'ed or And'ed) and routed to each Detector Channel. For this example, Phase-1L is routed to Detector Channel 1 (D1), Phase-6T is routed to D2, and Phase-6R has a Detection Delay of 5 seconds and is also routed (Or'ed) to D2. Note: Only the Main SVS Relay Interface card is used.



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Routing Each Phase to SVS Relay Interface Card Edges for a Type 170 Card file

1 (points to 'Clear All Detector Routing Check Boxes')

2 (points to 'Relays Per RI Card' field)

3 (points to 'Main SVS - RI' header)

4 (points to routing checkboxes)

1 (points to 'Clear All Detector Routing Check Boxes' button)

- 1) Click the **Clear All Detector Routing Check Boxes** button to clear all of the right side routing check boxes. Click the **Detector Interface** field to select T-170-CardFile.
- 2) Click in the **Relays per SVS-RI Card** field to select the number of Relays per card.
- 3) Note that choosing the Detector Interface as Type 170 reveals the card edge signals (F, W, S, Y) available for use. Refer to *SVS User Guide Part C* for Type 170 card file signal routing.
- 4) Click each routing check box (right side check boxes) to specify which Phases will be combined (Or'ed or And'ed) and routed to each card edge. For this example, Phase-1L is routed to edge F and Phase-6T and Phase-6R are routed to W on the Main SVS-RL card. The AUX SVS-RL card is not used.



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Routing Each Phase to a BIU-SDLC Detector Channel

SVS0001 *Detector Interface* **BIU #1-SDLC** *SDLC BIU Detector Channel Specification*

Phase Number	Line Zone Number						Def Ext (sec)	Def Delay (sec)	OR Relay Conn	D01	D02	D03	D04	D05	D06	D07	D08	
	1	5	10	15	20	25				30	O	A	O	A	O	A	O	A
1 L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 T	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
6 R	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 Active High

 (O - Column is OR'ed) (A - Column is AND'ed)

Combine Line Zones to Lane Groups (left side rows) Using Check Boxes (OR'ed).
Combine/Route Lane Groups to Detector Channel (right side columns) Using Check Boxes.

Show Site/Camera Text X (Text-Upper Left) Y (Text-Upper Left)

Site Camera Text

- 1) Click the **Clear All Detector Routing Check Boxes** button to clear all of the right side routing check boxes. Click the **Detector Interface** field to select BIU# 1-SDLC.
- 2) Click each routing check box (right side check boxes) to specify which Phases will be combined (Or'ed or And'ed) and routed to each Detector Channel.
- 3) Click in each **Detector Channel** field to specify the BIU detector channel (D01 to D16).
- 4) For this example, Phase-1L is routed to Detector Channel 1 (D01), Phase-6T and Phase-6R are routed to D02.



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Closing Setup Windows and Saving Setup Parameters

Detection Line Zone Mapping to Detection Channels Setup

SVS0001 *Detector Interface* T-170-CardFile Relays Per RI Card 2 Relays Per RI Card 2

Phase Number	Line Zone Number						Det Ext (sec)	Det Delay (sec)	OB Relay Conn	Main SVS - RI		Aux SVS - RI	
	1	5	10	15	20	25				30	F	W	F
1 L	<input checked="" type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
6 T	<input checked="" type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
6 R	<input checked="" type="checkbox"/>	0	0	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
None	<input type="checkbox"/>	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Clear All Line/Lane Group Check Boxes Active High Clear All Detector Routing Check Boxes

Combine Line Zones to Lane Groups (left side rows) Using Check Boxes (OR'ed).
Combine/Route Lane Groups to Detector Channel (right side columns) Using Check Boxes.

Show Site/Camera Text X (Text-Upper Left) 30 Y (Text-Upper Left) 450

Site Camera Text SVS0001...Phases 1L, 6T, and 6R.....

OK Save Image Cancel

After assigning/reviewing Detection Line Zones to Phases and then routing them to a Detector Channel, click the **OK** button on the Detector Line Zone Mapping window to capture the settings and close the window.

Detection Zone Setup

File Output Relays

SVS0001

Get Image Stop

Enable Image Stream

Show Image Text

Image Stream Time Out (sec) 10

05-31-2011 09:57:51

Main Setup

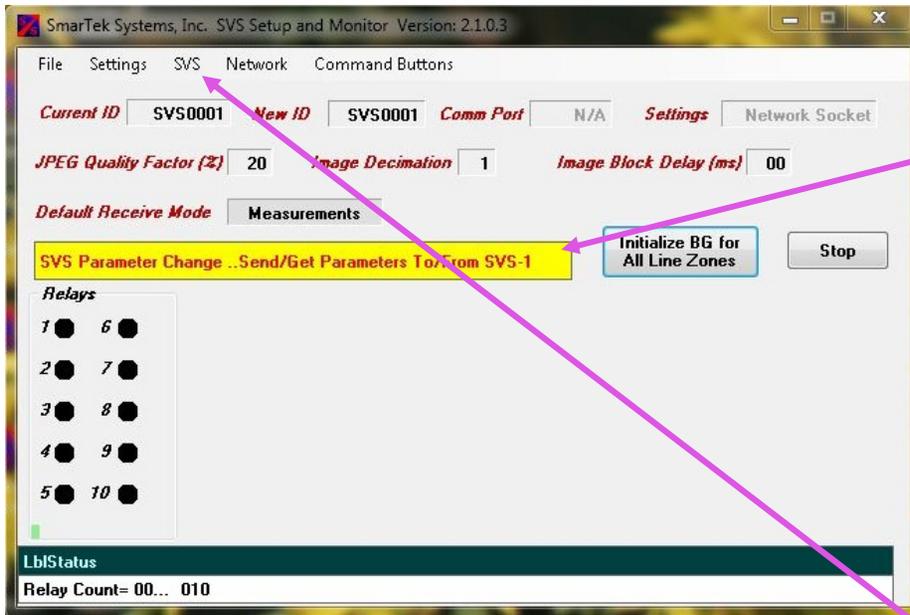
Draw Line Zones Set Output Set Display Text

Save Image Cancel OK

Next, click the **OK** button on the Detection Zone Setup window to capture the settings and close the window.

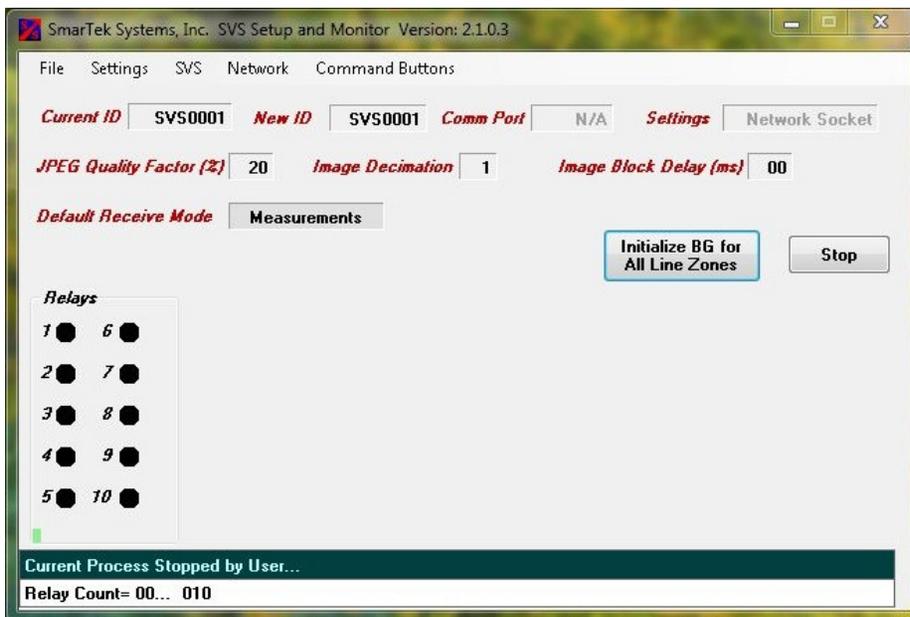
Note that these settings must be sent to the corresponding SVS-1 camera processing channel (SVS0001, SVS0002, etc.) to remove the yellow parameter mismatch warning flag.

SVS-1 – Sending Parameters to a Specific SVS-1 Camera Processing Channel (SVS ID)



After setting up all Line Zones, Circle Zones, the Light Reference Parameters, and the Detection Zones to Relay Mapping, settings must be sent to the corresponding SVS-1 camera processing channel (SVS0001, SVS0002, etc.) to remove the yellow parameter mismatch warning flag.

Use **SVS/Send SVS Parameters** menu item.



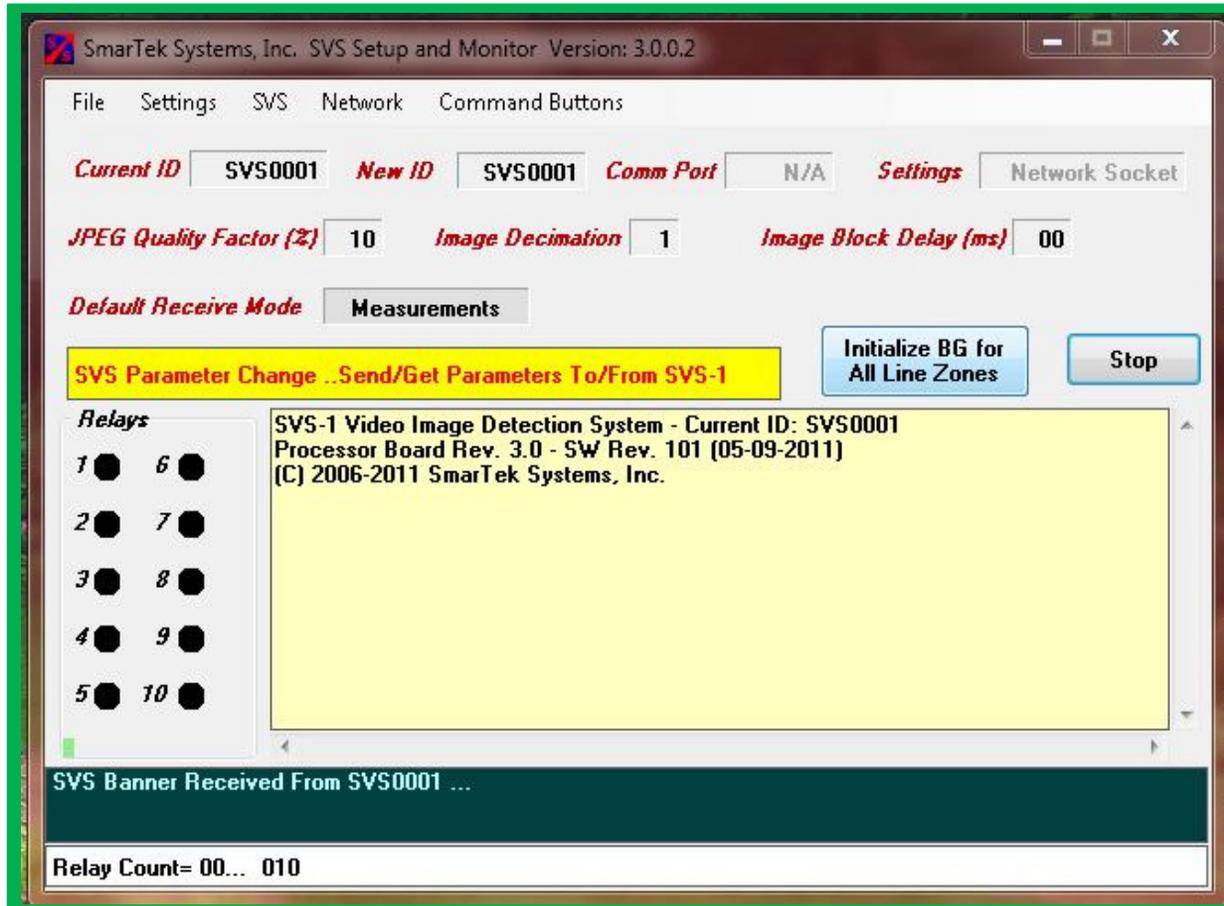
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SVS-1 Banner Display



From the SVS main display, click the **Settings/Visible Message Window** menu item to open the message window. Then click the **SVS/Get Banner** menu item. This display shows the SVS-1 Current ID, the Processing Hardware Revision Number and the current Software Version Number.

SVS-1 – Detection Zone Sensitivity Parameters

The sensitivity parameters for each Line Zone and associated Circle Zone are displayed to the right of the camera image. Choose a zone by clicking 1 of 30 option buttons in the Zone Select Frame (below the image). The following sections provide detailed descriptions for each of the Line Zone/Circle Zone parameters.

Detection Threshold – Specifies Line Zone detection sensitivity and may be adjusted by changing the Detection Threshold value . Increasing the Detection Threshold will decrease sensitivity. The Line Zone Detection Threshold default value is 10.0.

Detection Enable Time Out (Enable T0 (s)) – Specifies the amount of time that a line zone detection is enabled after a circle zone detection is made. The circle zone is at the up road end of a line zone, hence, for directional detection, the circle zone should “fire” first and then the line zone “fires”. Additionally, this parameter specifies the maximum amount of time that is allowed to pass for a detection on the down road half of a line zone after a detection on the up road half of a line zone. Again for directional detection, the up road half of a line zone should “fire” before the down road half of a line zone “fires”. The Detection Enable Time Out default value is 2 seconds.

Note: Setting the Detection Enable Time Out to 221 enables Circle Zone Detection only. When this parameter is set to 221, the Enable TO (s) label is shown in red.

Detection Enable Threshold – Default value is 2 for Thru lanes, default is 5 for Left turn lanes. All Lanes **Det Enable Thr. Night is 0.**

Shadow Edge Width – Default value is 0.

Harmonic High Pass Frequency and Detection Enable Thresholds – Specify parameters that are used to fine tune vehicle presence detection performance, vehicle absent background estimation, and shadow rejection performance. The default value for the Harmonic High Pass Frequency parameter is 70. The default value for the Detection Enable Threshold (used during daytime lighting) is 2. The default value for the Detection Enable Threshold-Night (used during low light conditions) is 0. The Detection Enable parameter is used to reduce false detections of shadows caused by adjacent lane vehicles. Increasing the value of this parameter, increases shadow discrimination, however, making this value too large will degrade vehicle presence detection performance.

After setting the parameters for a specific Line Zone (and corresponding Circle Zone), the parameters for all other zones may be set to the same values using the **Set Parameters for All Zones** button. This does not change positions of the zones, just the sensitivity parameters.



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SVS-1 – Detection Zone Sensitivity Parameters (continued)

No Motion Timeout – Specifies the amount of time in minutes that must pass in the absence of detectable motion before the system samples the Line Zone pixel values to test and update the Line Zone background. The value for this parameter must be greater than the amount of time vehicles sit stationary at a red traffic light. The default value for this parameter is 1 minute. Increase this value for urban intersections (which use a longer cycle time) and decrease this value for rural intersections (which use a shorter cycle time).

Motion Threshold Factor – Specifies the multiplication factor used with the Circle Zone Motion Detector Threshold for detecting vehicle motion in a Line Zone. The default value for this parameter is 1.5.

Background Match Threshold – Specifies the error threshold to be used when testing a current sample of LZ pixel values to determine if they represent background. The default value for this parameter is 5.0.

No Motion Threshold - Specifies the threshold used for each Line Zone motion detector to determine the absence of vehicle motion in the line zone. The default value for this parameter is 4.0.

Background Selection Enable Harmonic Threshold – Specifies the Harmonic Threshold used to enable Line Zone pixel values selection for testing and updating the LZ background. The default value for this parameter is 10 for Thru lanes, default for left turn lanes is 20.

RE Select Threshold–The default value for this parameter is 30 for all lanes. Do not change without first consulting SmarTek Systems' personnel.

After setting the parameters for a specific Line Zone (and corresponding Circle Zone), the parameters for all other zones may be set to the same values using the **Set Parameters for All Zones** button. This does not change positions of the zones, just the sensitivity parameters.



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SVS-1 – Setting Detection Zone Sensitivity Parameters (continued)

Circle Zone Radius– Specifies the size of the Circle Detection Zone. The circle zone is located at the up road end of the corresponding Line Detection Zone and is used as part of the directional detection criterion. The Circle Zone size is dependent on the specific image of the intersection stop line area. The Circle Zone radius should be chosen so that it's diameter is approximately 1/5 the width of the lane it resides in. The default value is 12.

Circle Zone Quantization Threshold – Specifies the pixel value quantization threshold to be used to determine which pixels contained in the circle zone are used for processing to obtain the Circle Zone detection measurement. The default value is 15.

Circle Zone Detection Threshold – Specifies Circle Zone detection sensitivity and may be adjusted by changing the Circle Zone Threshold value . Increasing the Circle Zone Threshold will decrease sensitivity. Circle Zone Detection Threshold default value is 12%.

Measurement Alpha – Specifies the smoothing factor to apply to all detection measurements (Circle Zone and Line Zone measurements). The default value for the Measurement Alpha is 0.200.

After setting the parameters for a specific Line Zone (and corresponding Circle Zone), the parameters for all other zones may be set to the same values using the Set Parameters for All Zones button. This does not change positions of the zones, just the sensitivity parameters.



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SVS-1 – Setting Light Reference Parameters and Visibility Parameters

The parameters for the Light and Visibility Reference are displayed to the right of the camera image. Choose the Light Reference by clicking LR option button in the Zone Select Frame (below the image). The following section provides detailed descriptions for each of the Light Reference and Visibility parameters.

Light Reference Detection Threshold– Specifies the threshold that the position of the dominant image histogram peak is compared to for determining lighting conditions (day or night). The Light Reference Threshold value is set slightly below the position of the image histogram dominant peak during day time light conditions. The default value is 140.

Light Reference Smoothing Alpha – Specifies the smoothing filter coefficient for the image histogram. The default value is 0.0005.

Visibility Time Out – Specifies the amount of time to wait when there are no vehicle detections before determining visibility conditions. The default value is 5 minutes.

Visibility Threshold – Specifies the threshold for comparing the visibility measurement variable (low value for no visibility and high value for good visibility). Setting the threshold too high may cause visibility false alarms. During a “No Visibility” condition, all Output Relay states are set to active indicating failure. The default value for the Visibility Threshold is 3.

Show Visibility Reference Grid – Specifies whether to show the Visibility Reference Grid in the Output Video signal. The Visibility Reference Grid shows up as 5 green horizontal lines in the output video display. Default is unchecked to NOT show the grid.



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