Vapor Bus International

A Wabtec company

Engineered Bus Door Systems

CLASS Diagnostic Software
User Manual
Revision 3.30 B

CLASS Diagnostic Software

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Table of Contents

1 Definitions

- ***DFO*** (**D**oor **F**ully **O**pen) is determined by activation of a switch or sensor when the door reaches the fully open position.

- The ***Drunk Alarm*** mode is activated by a specific input (IN2 or /IN2).

  When activated, if the door is both fully closed and is not enabled, the appropriate sensors will be activated for short bursts at recurring intervals.

  Any targets seen at those times will be annunciated by means of a specific output (*OUT2 MSU* for CLASS 2, */DA-O* for CLASS 3)

  The ***Drunk Alarm*** Mode activation will be temporarily ignored any time the door is not fully closed or is enabled - during that time normal operation of the sensors will take place.

- The ***MSU*** is the **M**iddle **S**ensor **U**nit.

- **TARGET:** An object detected by CLASS' sensing system.

  Fixed Target: a Target that is part of CLASS' "fixed" environment, i.e., always present. Fixed Targets may be permanently programmed by the installer or may be automatically determined by CLASS at turn-on

  Acquired Target: a Target that is not "fixed"; typically a passenger.

- ***TTO*** (**T**ouch **T**o **O**pen) is an operational state of the CLASS controller. In the TTO state, the door has been unlocked or authorized (typically the Green Light is on) and CLASS is waiting for a target detection (or a signal from 5 degree switch that the door has been pushed open beyond its activation point). Upon either of those events, CLASS will issue a Door Open Request.

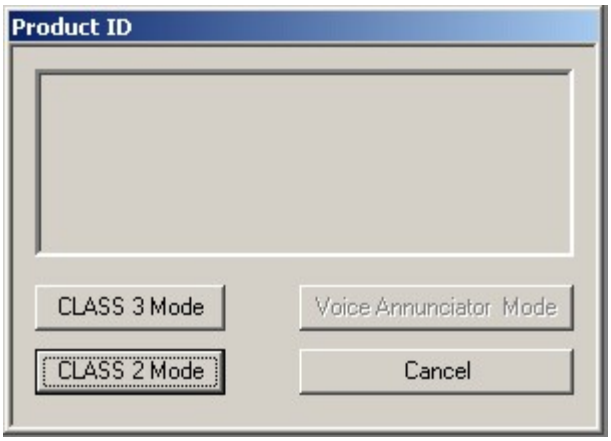
  See No 5° Open for an exception to the above.

  Normally, Panel Sensors are active in the TTO state; the MSU may also be activated depending on MSU TTO Mode

- The ***Status Light*** will be turned on when CLASS detects an error condition. (Note CLASS will continue to function.)

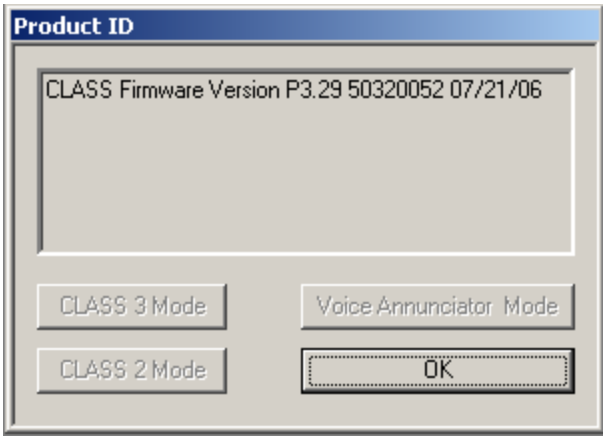
2 Product ID

Connected to CLASS 2 Controller:



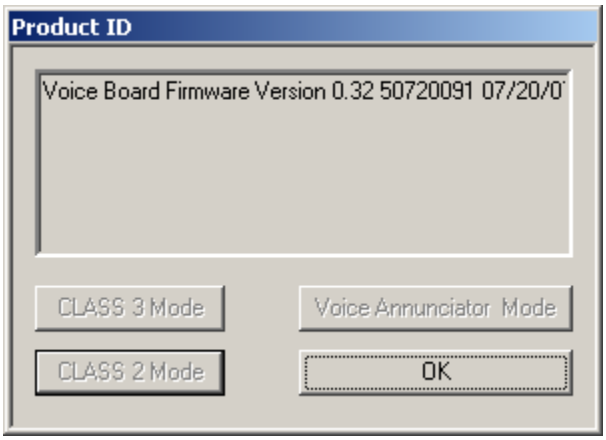
To initiate communication: Press the *CLASS 2 Mode* Button

Connected to CLASS 3 Controller:

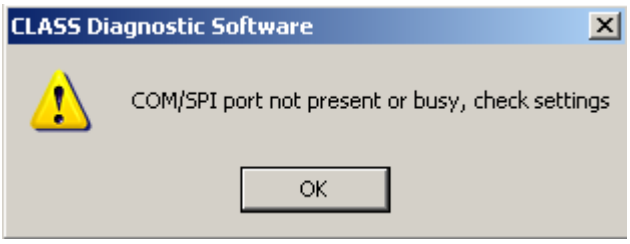


To initiate communication: If the Cancel/OK button says "OK", press it to continue. Otherwise, press the *CLASS 3 Mode* Button

Connected to Voice Annunciator:

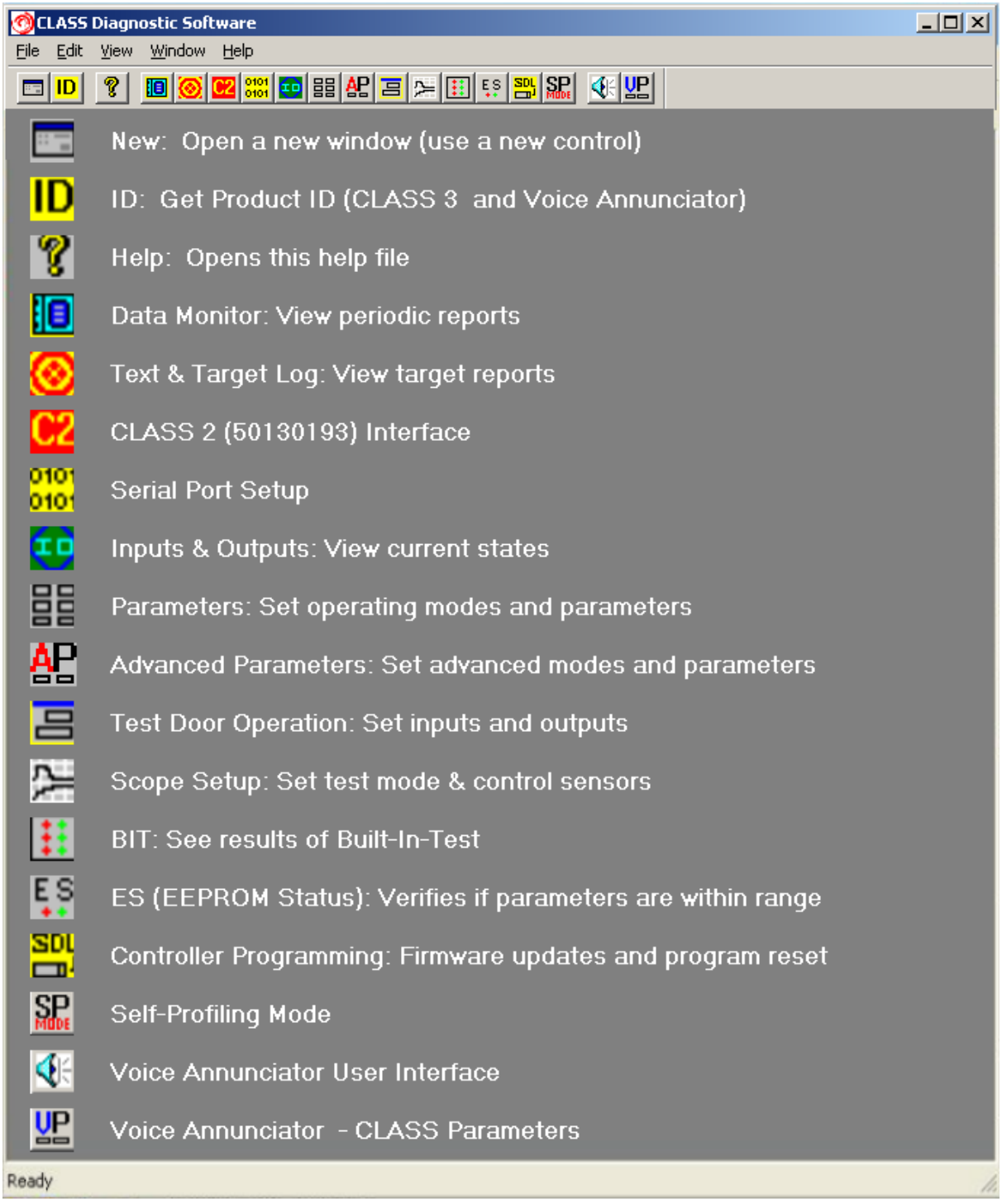


To initiate communication: If the Cancel/OK button says "OK", press it to continue. Otherwise, press the *Voice Annunciator Mode* Button



If, instead of connecting, the warning message is seen, it indicates that there is something in the computer running the CLASS Diagnostic that is preventing access to the COM (serial) port. This is usually caused by some other software program (such as a PDA or Blackberry interface) having "grabbed" the COM port. It is NOT a problem with the CLASS Diagnostic, and must be rectified by the user before the CLASS Diagnostic program can be used. Typically this is solved by closing the program using the port and restarting the CLASS Diagnostic.

3 Toolbar Buttons



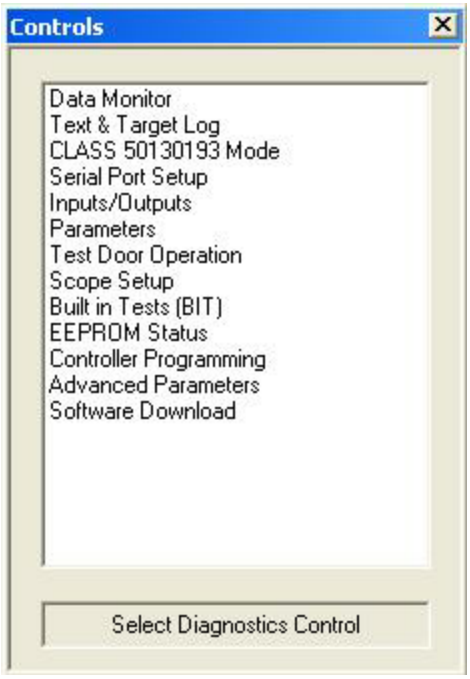
4 Controls Window

The diagnostic's various "windows", such as *Parameters*, *Scope Setup*, etc., are known as controls

To select any control, use the Menu Bar to select either:

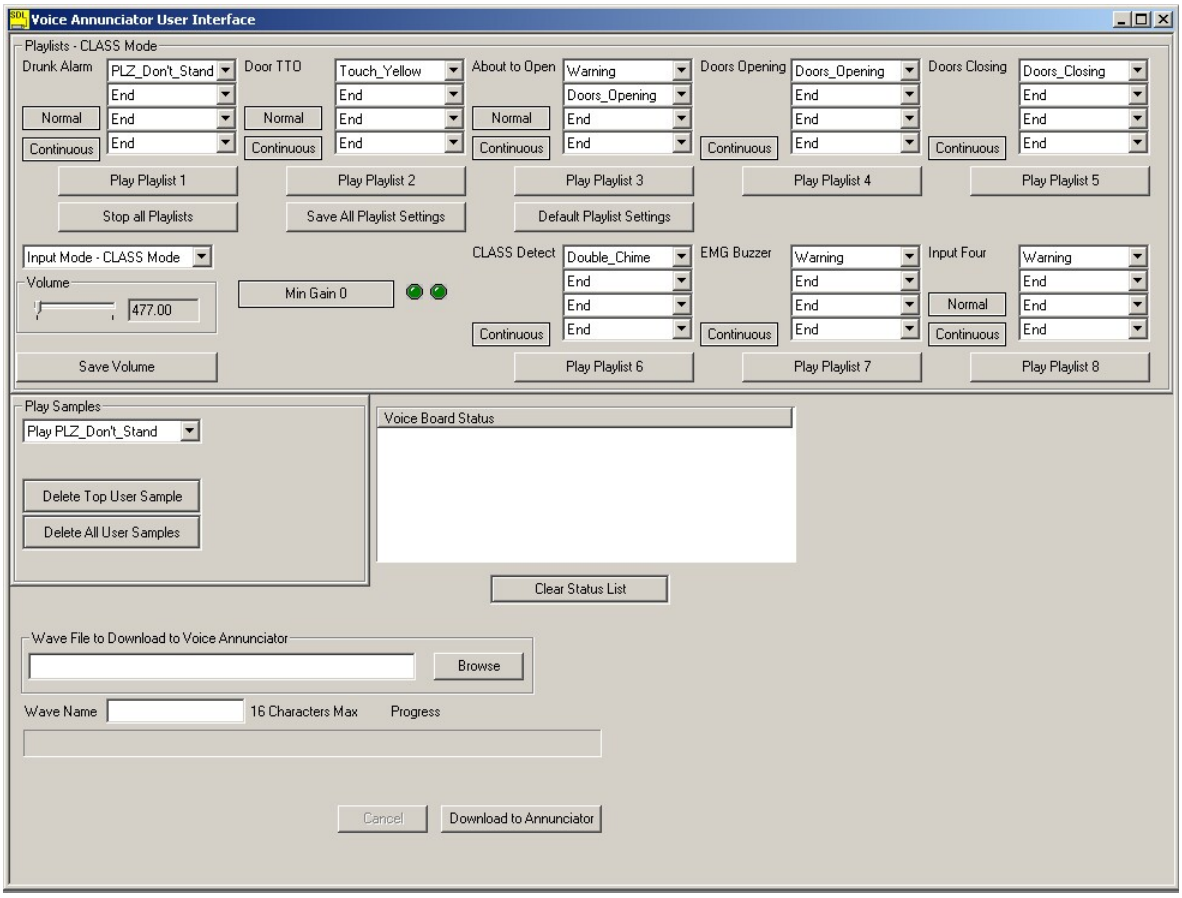
File➔New or *Window➔New Window*

Then double-click on the desired control.



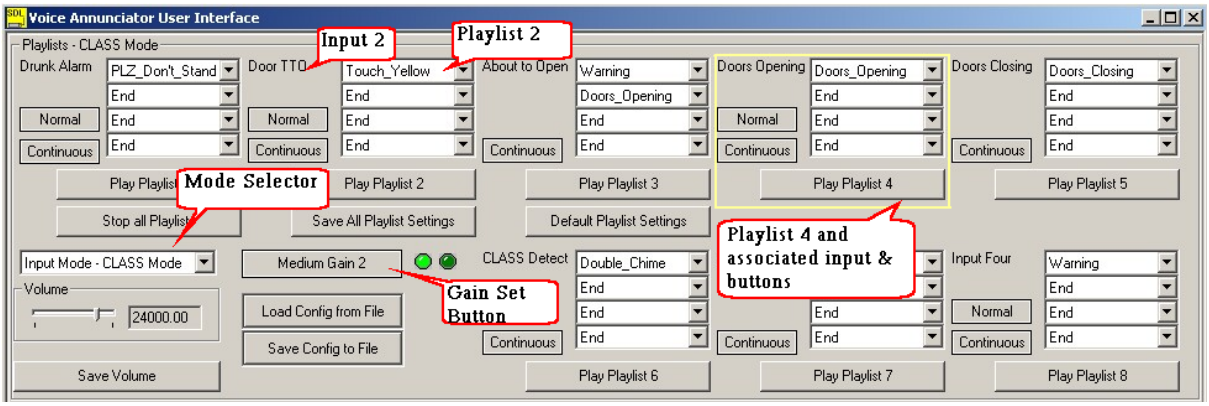
5 Voice Annunciator

The Voice Annunciator User Interface is composed of two major sections: a *Setup* section at the top, and a *Message Play & Download* section at the bottom.



- **For Voice Annunciator setup with CLASS, see VA - Setup for CLASS** 7
- **For Voice Annunciator Stand-Alone operation, see VA - Setup for Stand-Alone** 9
- **For Voice Annunciator setup with a PLC, see VA - Setup for PLC Encoding** 11
- **For playing and saving messages, see VA - Message Play & Download** 13
- **For Wiring, see VA - Wiring** 14

5.1 VA - Setup for CLASS



To configure the Voice Annunciator for operation with a CLASS™ controller:

1. Select ***CLASS Mode*** from the Mode Selector drop-down list as shown:

- When CLASS Mode is selected, eight playlists will be available. Each playlist allows the selection of up to four messages.

- Each playlist will have an associated CLASS controller input (shown at the upper left of the playlist), an associated *Once/Continuous* button, and may have an associated *Normal/Invert* button.

2. For each playlist, when the associated CLASS controller input activates, the messages shown in the playlist will be played in sequence (top to bottom). Each message will be played in turn until the first "End" is reached. Any message listed after an "End" will be ignored.

Note: Input 4 (Playlist 8) is not controlled by CLASS. It is an independent input and can be connected to non-CLASS systems. Typical usage is to connect it to the door Emergency. See VA - Wiring 14 for I4 (Input 4) connection details.

- If the associated ***Once/Continuous*** button is set to Continuous, the message sequence will play continuously as long as the associated input is active. Otherwise the sequence will play once per input activation. Click the button to change it.

- The ***Normal/Invert*** button sets the desired activation state: Normal means that the associated playist is played when the input becomes active, Invert means that the playlist will be played when the input deactivates. (A typical Invert usage is for an Emergency input switch which in normal operation is held closed; when an

Emergency handle is pulled the switch opens. In that case, opening the switch would de-activate the input and thus play the playlist.)

3. Playlists may be changed by clicking the desired playlist message drop-down and choosing from the available messages:

Note: Messages ending in "ESP" are in Spanish.

4. Playlists may be played by clicking the associated button, such as 

.

5. Adjust the volume by setting the Volume Slider and using the Gain Set Button. The Gain Set Button allows gain values of 0 (Min) to 3(Max). For each Gain setting, the Volume slider will control the level within the minimum and maximum values of the selected Gain value.

Suggested setting: Volume = 24000, Medium Gain 2

6. Click 

or 

when settings are complete, or changes will be lost.

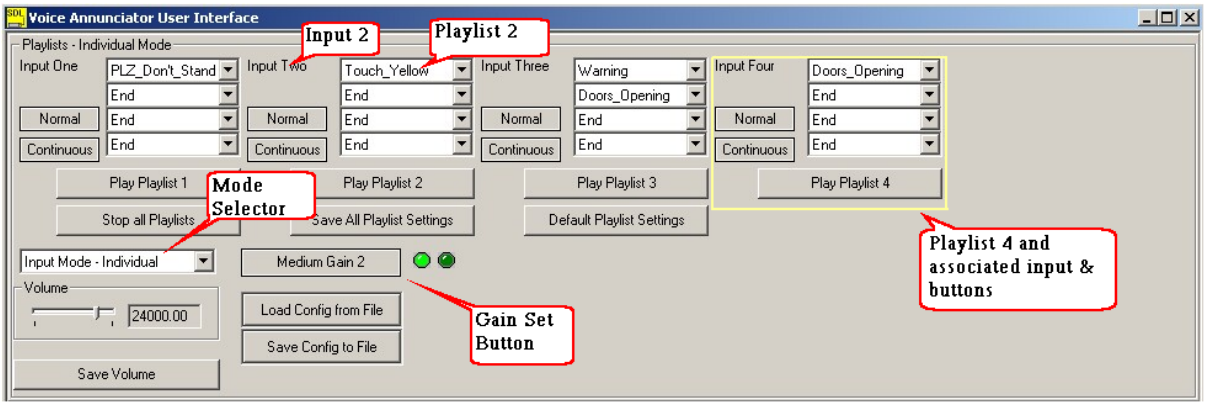
7. Clicking 

allows the user to create and/or select a file in which current parameter values will be saved.

8. Clicking 

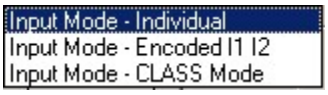
allows the user to select a file whose values will be loaded as parameter values in the laptop diagnostic for editing and/or saving to the Voice Annunciator.

5.2 VA - Setup for Stand-Alone



To configure the Voice Annunciator for Stand-Alone operation:

1. Select ***Individual*** from the Mode Selector drop-down list as shown:



- When Individual Mode is selected, four playlists will be available. Each playlist allows the selection of up to four messages.

- Each playlist will have an associated input (shown at the upper left of the playlist), an associated *Once/Continuous* button, and may have an associated *Normal/ Invert* button.

2. For each playlist, when the associated input activates, the messages shown in the playlist will be played in sequence (top to bottom). Each message will be played in turn until the first "End" is reached. Any message listed after an "End" will be ignored.

- If the associated ***Once/Continuous*** button is set to Continuous, the message sequence will play continuously as long as the associated input is active. Otherwise the sequence will play once per input activation. Click the button to change it.

- The ***Normal/Invert*** button sets the desired activation state: Normal means that the associated playist is played when the input becomes active, Invert means that the playlist will be played when the input deactivates. (A typical Invert usage is for an Emergency input switch which in normal operation is held closed; when an Emergency handle is pulled the switch opens. In that case, opening the switch would de-activate the input and thus play the playlist.)

3. Playlists may be changed by clicking the desired playlist message drop-down and

choosing from the available messages:

Note: Messages ending in "ESP" are in Spanish.

4. Playlists may be played by clicking the associated button, such as 

.

5. Adjust the volume by setting the Volume Slider and using the Gain Set Button. The Gain Set Button allows gain values of 0 to 3. For each Gain setting, the Volume slider will control the level within the minimum and maximum values of the selected Gain value.

Suggested setting: Volume = 24000, Medium Gain 2

6. Click 

or 

when settings are complete, or changes will be lost.

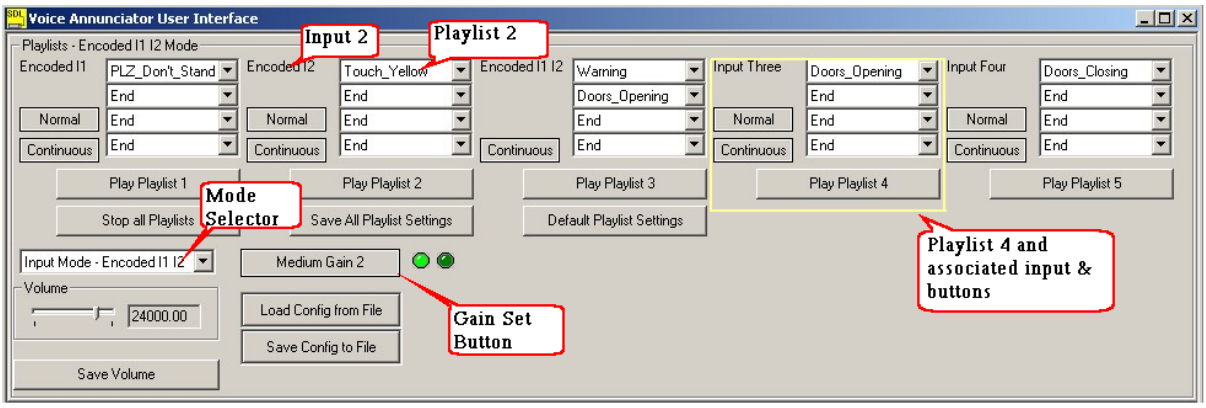
7. Clicking 

allows the user to create and/or select a file in which current parameter values will be saved.

8. Clicking 

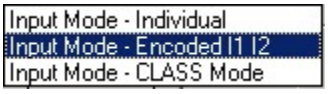
allows the user to select a file whose values will be loaded as parameter values in the laptop diagnostic for editing and/or saving to the Voice Annunciator.

5.3 VA - Setup for PLC Encoding



To configure the Voice Annunciator for PLC Encoded operation:

1. Select ***Encoded I1 I2*** from the Mode Selector drop-down list as shown:



- When Individual Mode is selected, five playlists will be available. Each playlist allows the selection of up to four messages.

- Each playlist will have an associated input (shown at the upper left of the playlist), an associated *Once/Continuous* button, and may have an associated *Normal/ Invert* button. For the PLC Encoded case, the first three playlists' associated inputs are binary-encoded results of two physical inputs (I1 and I2). Playlists 4 and 5 are associated with physical inputs 3 and 4 (I3 & I4).

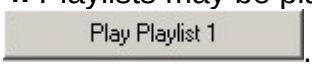
2. For each playlist, when the associated input activates, the messages shown in the playlist will be played in sequence (top to bottom). Each message will be played in turn until the first "End" is reached. Any message listed after an "End" will be ignored.

- If the associated ***Once/Continuous*** button is set to Continuous, the message sequence will play continuously as long as the associated input is active. Otherwise the sequence will play once per input activation. Click the button to change it.

- The ***Normal/Invert*** button sets the desired activation state: Normal means that the associated playist is played when the input becomes active, Invert means that the playlist will be played when the input deactivates. (A typical Invert usage is for an Emergency input switch which in normal operation is held closed; when an Emergency handle is pulled the switch opens. In that case, opening the switch would de-activate the input and thus play the playlist.)

3. Playlists may be changed by clicking the desired playlist message drop-down and choosing from the available messages:

Note: Messages ending in "ESP" are in Spanish.

4. Playlists may be played by clicking the associated button, such as 

.

5. Adjust the volume by setting the Volume Slider and using the Gain Set Button. The Gain Set Button allows gain values of 0 to 3. For each Gain setting, the Volume slider will control the level within the minimum and maximum values of the selected Gain value.

Suggested setting: Volume = 24000, Medium Gain 2

6. Click 

or 

when settings are complete, or changes will be lost.

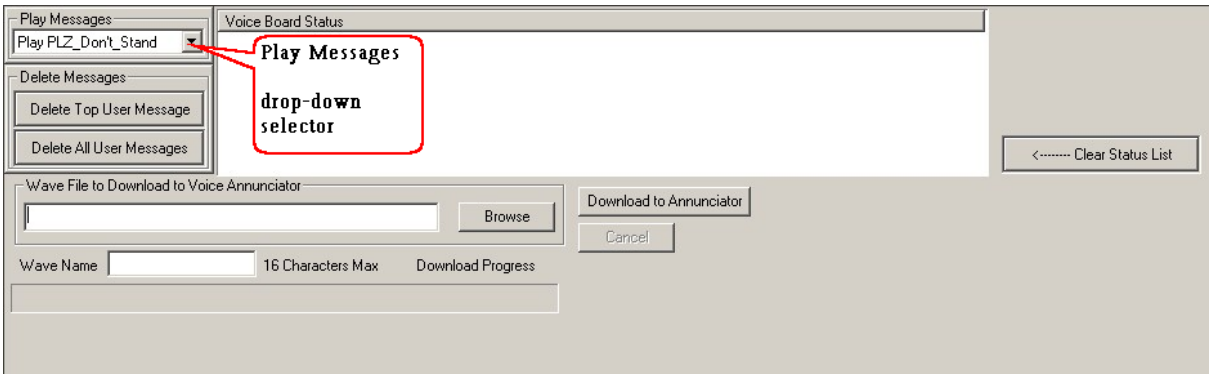
7. Clicking 

allows the user to create and/or select a file in which current parameter values will be saved.

8. Clicking 

allows the user to select a file whose values will be loaded as parameter values in the laptop diagnostic for editing and/or saving to the Voice Annunciator.

5.4 VA - Message Play & Download



Playing Messages:
Select the Message to be played in the ***Play Messages*** drop-down selector. The message will play when selected.

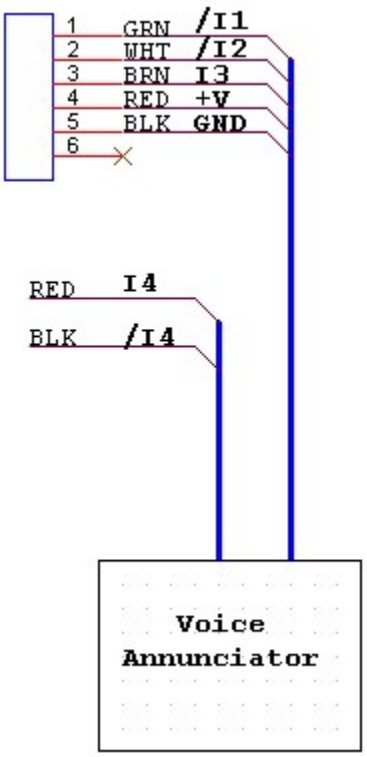
Saving Custom Messages:
Custom messages must be externally created; allowable file formats are as follows:
- Audio Sample Rates (KHz): 8.000, 11.025, 22.050, 44.100
- Audio Sample Sizes: 8 bit, 16 bit
- Channels: 1 (Mono)
- Audio Format: PCM
- File type: RIFF WAV
- Maximum file size: <1MB
- Maximum custom message storage space (total for all custom messages): 1MB

Messages initially provided are 11.025KHz, 16 bit, and do not subtract from custom message storage space.

To save a custom message:
1. Either type the file name in the ***Wave File to Download...*** box or Click the ***Browse*** button and select the wav file you wish to upload.
2. Adjust the ***Wave Name*** as desired (maximum sixteen characters)
3. Click ***Download to Annunciator***.
4. Wait for the ***Download Finished*** notification. The custom message is now saved.

Deleting Custom Messages:
- Click ***Delete Top User Sample*** and select ***Yes*** on the ***Proceed*** pop-up to delete the last sample saved. If there are no user samples, nothing will be deleted.
- Click ***Delete All User Samples*** and select ***Yes*** on the ***Proceed*** pop-up to delete all user-saved samples. If there are no user samples, nothing will be deleted.

5.5 VA - Wiring



6 Reference - CLASS Wiring

6.1 Sensor Wiring

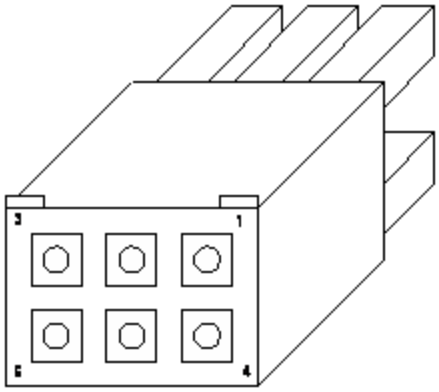
Panel Sensors (P4 & P6):

Pin #	Wire Colors	Signal
1	Red	POWER
2	Green or Orange*	SEND
3	Black	GROUND
4	White or Brown*	ECHO
5	Shield	SHIELD

Center Sensor (P5):

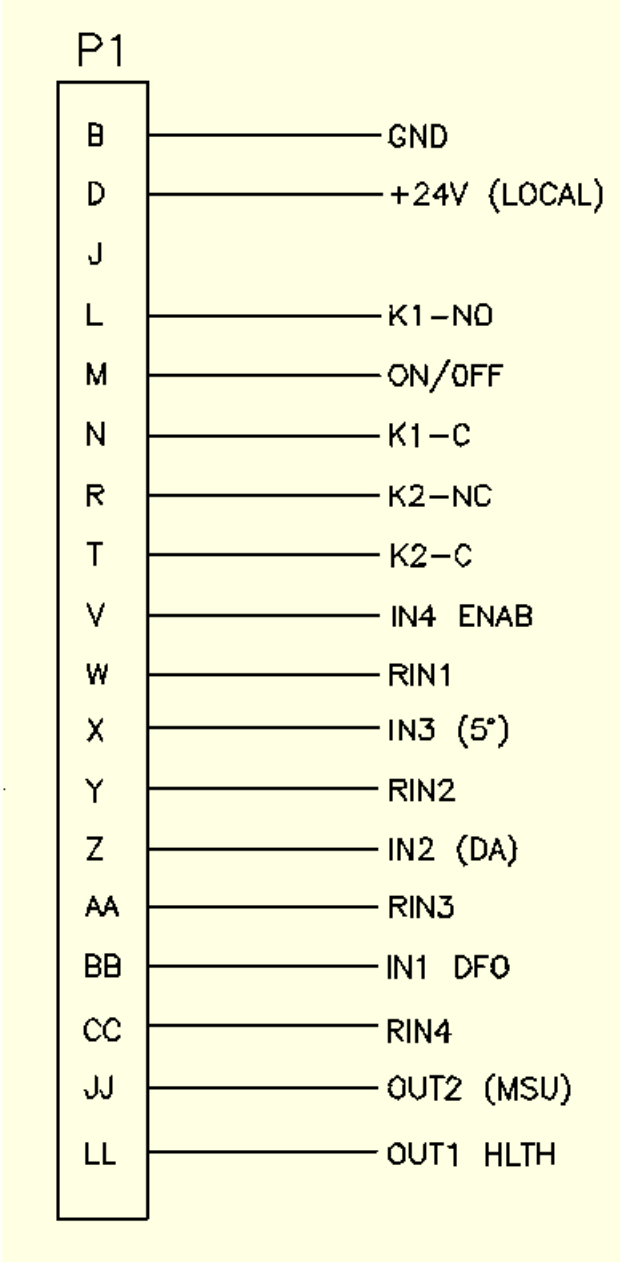
Pin #	Wire Colors	Signal
6	Red	POWER
5	Green or Orange*	SEND
4	Black	GROUND
3	White or Brown*	ECHO
2	Shield	SHIELD

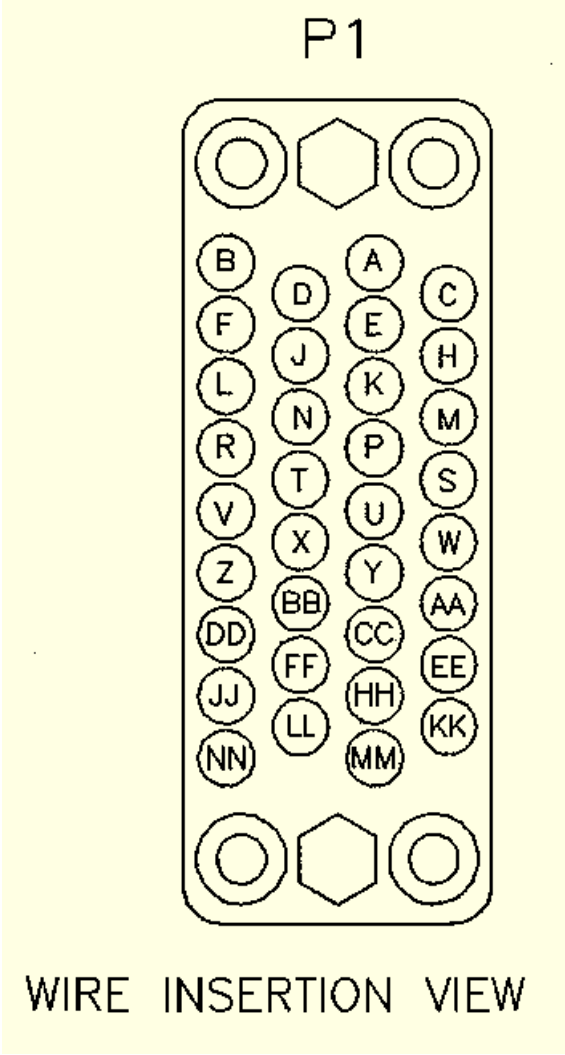
***** Sensor Cable may be Red, Black, Orange, Brown, Shield
or Red, Black, Green, White, Shield



Pin insertion view shown above.
Top right is #1, top left is #3
Bottom right is #4, bottom left is #6

6.2 CLASS 2 Main Connector (P1)

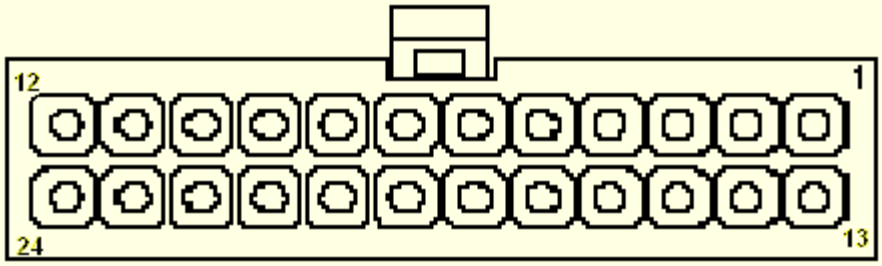




6.3 CLASS 3 Main Connector (P1)

P1

1	DFO
2	/DFO
3	DAI
4	/DAI
5	DNC
6	/DNC
7	ENA
8	/ENA
9	/STA
10	/DAO
11	/RCY
12	/OPN
13	OPN
14	RCY
15	K2C
16	K2NC
17	/TGT
18	PWR
19	K1C
20	K1-O
21	SWPW
22	On12
23	On24
24	GND



Pin Insertion View

Refer to TB08-03-192 (CLASS™ Installation and Setup User Manual) for signal details.

6.3.1 CLASS 3 Input Wiring

Inputs to CLASS 3 are treated differently than inputs to CLASS 2. Inputs to CLASS 3 have more flexibility and require no special firmware settings (such as NPN mode).

Where CLASS 2 had 4 individual inputs, CLASS 3 has 4 pairs of inputs. Each pair has one of the pair designed for a signal switched to +V; the other is designed for a signal switched to GND. (Note that +V can be 12V or 24V nominal.)

Inputs to CLASS 3 are named functionally, and in each pair include a "/" as the first character of the name for the input designed for a signal switched to GND.

The names are:

DFO	&	**/**DFO	(IN1 & /IN1)
DAI	&	**/**DAI	(IN2 & /IN2)
DNC	&	**/**DNC	(IN3 & /IN3)
ENA	&	**/**ENA	(IN4 & /IN4)

There are four possible variations of input connection types. The following table shows the four types and how inputs to CLASS 3 are to be connected for various input types. Note that unlike CLASS 2, each input is unique, that is, any input can be utilized with any of the four possible connection types.

In the table, the input designed for a signal switched to +V is designated as ***INx***, where *x* represents 1 to 4.
The input designed for a signal switched to GND is designated as ***/INx***.

Actuation Type	**Connect Switch to:**	**Also Connect:**	**Safe End:**
Switch closes to +V when active	**INx**	-	**/INx**
Switch closes to GND when active	**/INx**	-	**INx**
Switch opens from +V when active	**INx**	**/INx to GND**	-
Switch opens from GND when active	**/INx**	**INx to +V**	-

Examples:

1. Enable provides +24V when green light is on:
   connect Enable to **ENA**

2. DNC switch closes to GND when door is fully closed:
   connect DNC-N.O to **/DNC**

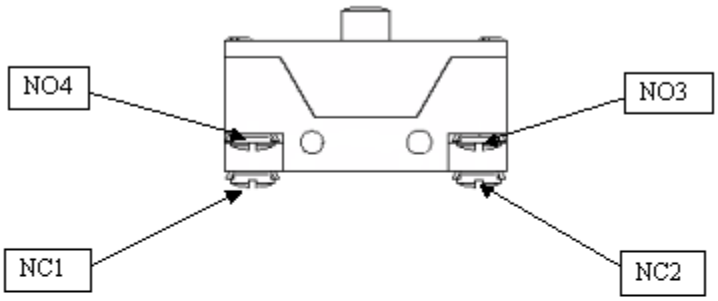
3. DFO switch opens from +24V when door is fully open:
   conect DFO-N.O. to **DFO**; connect GND to **/DFO**

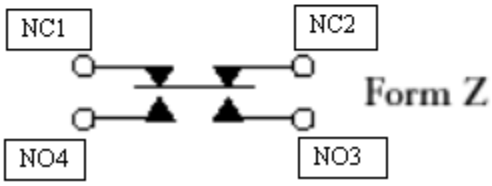
6.4 Switch Connections

6.4.1 Type 14

Type 14 Double-Break Snap-Action Switch

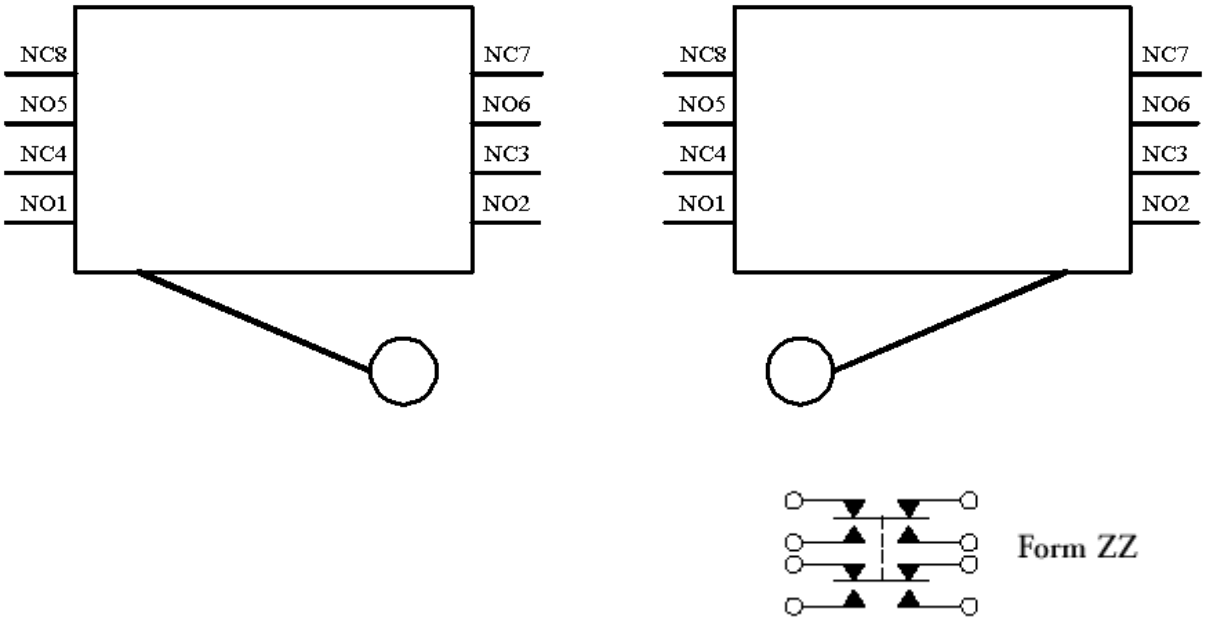
Operation:
When the plunger is released, the shorting bar connects NC1 to NC2.
When the plunger is pressed, the shorting bar moves, disconnecting NC1 from NC2, and connects NO3 to NO4.





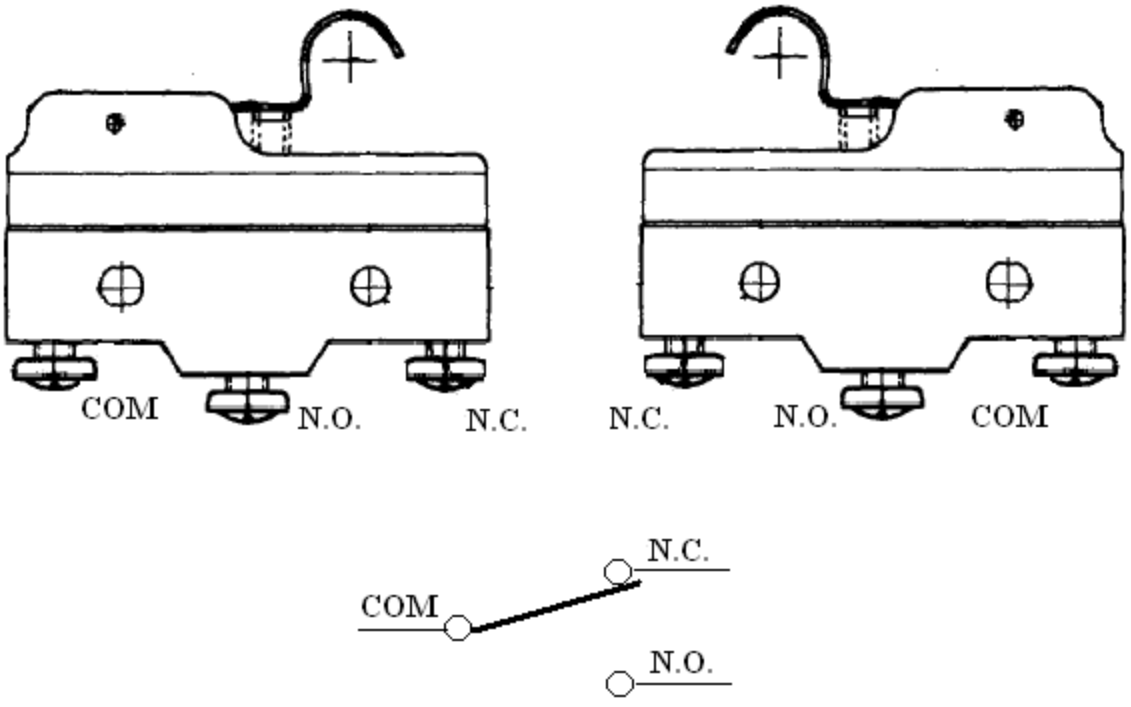
6.4.2 Type 22

Type 22 Snap-Action Switch (with or without roller follower)



6.4.3 Type CZ

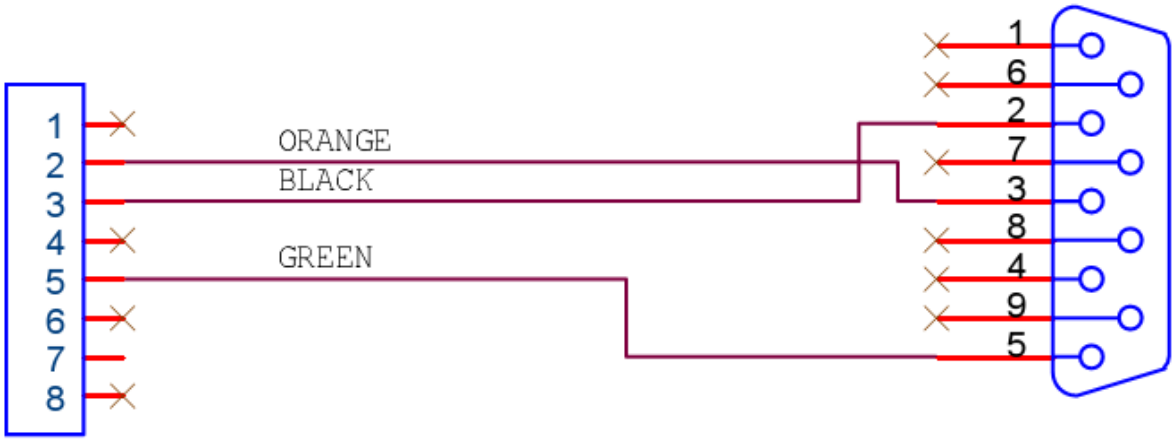
S.P.D.T Limit Switch Type CZ (may also be configured with roller follower)



6.5 RJ45 to DB9F Adapter Wiring

Typical DB9 Female to RJ45 Female Modular Adapter:

Wiring for CLASS™ Interface:



Vapor Part Number: 50520029-01

7 Revisions

Version A
-Initial Release

Version B
- Added Load/Save Config to VA Setup Screens