In-Station Diagnostics (ISD)

TLS-450PLUS Consoles for Healy and ARID Assist

Install, Setup, & Operation Manual



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INSTALLATION IN THE STATE OF CALIFORNIA

Please refer to the Vapor Recovery Certification Phase II EVR Executive Orders at the California Air Resources Board website (www.arb.ca.gov) for the latest manual revisions pertaining to Executive Orders VR-202 (Assist Phase II EVR System Including ISD System), VR-203 (Balance Phase II EVR System) or VR-204 (Balance Phase II EVR System Including ISD System).

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TLS-450PLUS MONITORING SYSTEM

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IN-STATION DIAGNOSTICS (ISD)

For components used in ISD systems Air Flow Meter, Vapor Pressure Sensor, Software, TLS RF, Wireless Repeater, Wireless Transmitter & Wireless Receiver), excluding **LAMPS, FUSES, AND LITHIUM BATTERIES**, the following warranty applies:

We warrant that this product shall be free from defects in material and workmanship and is compliant with all applicable performance standards and specifications for which it has been certified, for a period of one (1) year from the date of ISD start-up when proof of the date of install is provided or twenty-four (24) months from the date of manufacture when proof of date of installation is not provided. During the warranty period, we and or our representative will repair or replace the product, if determined by us to be defective, at the location where the product is in use, at no charge to the purchaser.

For ISD components installed after the initial ISD start-up, we warrant that these products shall be free from defects in material and workmanship and is compliant with all applicable performance standards and specifications for which it has been certified, for a period of one (1) year from the date of installation when proof of the date of install is provided or fifteen

(15) months from date of manufacture when proof of date of installation is not provided. We will repair or replace the product if the product is returned to us; transportation prepaid by user, within the warranty period, and is determined by us to be defective.

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Introduction

In-Station Diagnostics (ISD) is designed to monitor the collection and containment of gasoline vapors by vapor recovery equipment using the Veeder-Root (V-R) TLS-450PLUS console platform, sensor inputs, and dispenser fuel events. The ISD feature provides test reports, generates alarms following test/equipment failures, and finally, shuts down the site upon the occurrence of designated alarms.

This manual provides instructions to set up, and operate the special components of the Veeder-Root ISD discussed in the Site Requirements section below. The ISD feature is an option for the TLS-450PLUS console platform, and as such, many of the setup/operation instructions for non-ISD specific ATG tasks (e.g., tank inventory, line leak detection, etc.) are covered in TLS-450PLUS/TLS4 Operator's Manual or using TLS-450PLUS Online Help.

NOTICE Revision or reprogramming of the TLS may require notification of the local Certified Unified Program Agency (CUPA).

Site Requirements

Below are the requirements for all vapor recovery systems except where noted.

- 1. TLS-450PLUS installed as per TLS-450PLUS Site Prep and Install manual 577014-073. Required TLS-450PLUS modules are listed below.
 - a. A dedicated comm port is required by the Regulator for obtaining ISD reports.
 - b. An Input/Output Module (IOM) or optional 7 Amp Relay Module is required to shut down each gasoline line or gasoline dispenser upon activation of certain ISD alarms. These alarms can also be assigned to a Line or 7A relay in Automatic Events>Device Tasks setup to shut down the gasoline line or gasoline dispenser install as per instructions shipped with module. Setup ISD Shutdown Alarms in Automatic Events section of this manual.

If an ARID Permeator Vapor Processor is being used, two (2) additional external inputs are required. The vapor processor's Active and Fault signals will each need to be connected to an input.

- c. ISD requires dispenser transactions to be collected. Refer to TLS Consoles Point-of-Sale (POS) Application Guide (P/N 577013-401) and TLS-450PLUS / TLS4 Operator's Manual (P/N 577014-110). Console DIM requirement is dependent on dispenser type installed on site.
- d. Universal Sensor Module (USM) is required to monitor Air Flow Meters, Vapor Valve and Vapor Pressure Sensor (up to 16 devices per module). USM/ATM Module Group for TLS-450PLUS (P/N 0332812-006) may be used and or required for SVCM or PMC.
- One V-R Mag probe in each of the gasoline tanks being monitored install as per installation manual shipped with device, setup following instructions in TLS-450PLUS / TLS4 Operator's Manual or using the TLS-450PLUS Online Help.
- Air Flow Meters (one for each gasoline dispenser) install as per ISD Flow Meter installation manual shipped with meter, setup following instructions in this manual.
- Vapor Pressure Sensor (one per site) install as per ISD Pressure Sensor installation manual shipped with sensor, setup following instructions in this manual.

Supported Vapor Recovery System

Table 1 lists V-R supported vapor recovery systems.

| Table 1. | Vapor | Recovery | System |
|----------|-------|----------|--------|
|----------|-------|----------|--------|

| Name | CARB Executive Order | |
|-----------------------------------|----------------------|--|
| Healy Assist EVR, ARID Assist EVR | VR-202 | |

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and set up the equipment discussed in this manual:

| | | | | TLS-450PLUS | |
|--|---|--|---|-----------------------------|--|
| Veeder-Root Contractor Certification Requirements | Installer Certification ⁶ | ATG Technician Certification ⁷ | VR Vapor Products Certification ⁸ | EVR for CA Certification | |
| Install ¹ ISD | X | X | Х | Х | |
| Install PMC | X | Х | Х | Х | |
| Install CCVP | X | X | Х | Х | |
| Install Wireless ISD/PMC | X | X | Х | Х | |
| Installation Checkout ² | | Х | Х | Х | |
| ATG Startup ³ / Training ⁴ / Service ⁵ | | X | Х | Х | |
| ISD Startup / Training / Service | | | Х | Х | |
| PMC Startup / Training / Service | | | Х | Х | |
| CCVP Startup / Training / Service | | | Х | Х | |
| Wireless ISD/PMC Startup / Training / Service | | | Х | Х | |
| Install Pressure Sensor (ATG) | X | х | Х | х | |
| Maintain Pressure Sensor (ATG) | | Х | Х | Х | |
| Calibrate Pressure Sensor (ATG) | | Х | Х | Х | |
| Clear ATG Pressure Sensor Alarm (ATG) | | Х | Х | Х | |
| Clear ISD/PMC Alarms (ISD/PMC) | | | Х | Х | |
| Clear ISD/PMC Alarms (ISD/PMC) X X ¹ Perform wiring and conduit touting; equipment mounting ² Inspect wiring and conduit routing; equipment mounting ³ Turn power on, program and test the systems 4 ⁴ Provide supervised field experience in service techniques and operations 5 ⁵ Troubleshoot and provide routing maintenance 6 ⁶ UST Monitoring Systems – Installer (Level 1) 7 ⁷ Certified UST Monitoring Technician 8 | | | | | |

All service personnel on site must comply with all recommended safety practices identified by OSHA and your employer.

Review and comply with all the safety warnings in this an any related documents, and any other Federal, State, or Local requirements

Warranty Registrations may only be submitted by selected Distributors.

Related Manuals

The manuals in Table 2 below are included for reference.

| V-R Manual | Part Number |
|--|-------------|
| TLS-450PLUS Console Site Prep & Installation Manual | 577014-073 |
| ISD Assist Vapor Flow Meter Installation Guide | 577013-796 |
| Vapor Pressure Sensor for Vent Stacks Installation Guide | 577014-019 |
| Pressure Sensor Installation Guide | 577013-797 |
| TLS-450PLUS / TLS4 Operator's Manual | 577014-110 |
| ISD Troubleshooting Manual - TLS-450PLUS | 577014-463 |
| TLS RF Wireless 2 System (W2) Installation and Maintenance Guide | 577013-964 |
| TLS-450PLUS Console Board and Software Replacement/ Upgrade | 577014-076 |
| TLS-450PLUS Console Module Replacement Instructions | 577014-077 |
| Descriptive System Document IECEx TLS-450PLUS Con- soles | 331940-106 |

Table 2. Related Manuals/Drawings

Safety Precautions

The following symbols may be used throughout this manual to alert you to important safety hazards.



| | The console contains high voltages which can be lethal. It is also connected to low power devices that must be kept intrinsically safe. | | | |
|--|---|--|--|--|
| | Turn power Off at the circuit breaker. Do not connect the console AC power supply until all devices are installed. | | | |
| | FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH. | | | |
| | RESULTING IN SERIOUS INJURY OR DEATH. | | | |

Example Site Diagrams

Figure 1 shows an example of site with a TLS-450PLUS with Healy Assist no vapor processor.



Figure 1. Example Site Diagram



Figure 2 shows an example site with a TLS-450PLUS to ARID Permeator processor connections.

Figure 2. Example Site Diagram w/TLS-450PLUS and ARID Permeator Processor

ARID PERMEATOR WIRING CONNECTION

An example ARID Permeator wiring connection to the TLS-450PLUS console I/O Module is shown in Figure 3. The ARID Permeator is configured in Setup>Devices>External Input.



Figure 3. Example ARID Permeator Wiring Connection

Gasoline Pump and Line Requirements

All gasoline STPs (Pumps) have the following set up requirements via Setup> Pump and Lines. Each gasoline tank must be assigned to a pump via Setup> Pump and Lines> Pumps. The created pump must then be assigned to a line via Setup> Pump and Lines> Lines. These pump/line assignments are required to properly setup the ISD Shutdown Requirements.

ISD Shutdown Requirements

For ISD on the TLS-450PLUS, the gasoline lines must be able to be shut down for required ISD Site/Hose Alarms. Dispenser relays may be used to shut down gasoline dispensers for Hose Alarms.

The TLS-450PLUS setup requires at least one Line to shut down for required ISD alarms, otherwise the 'Missing Relay' warning will post. Ensure that all gasoline Lines/Hoses are configured to shut down on required ISD Site/ Hose Alarms. Hoses may also be shut down using dispenser relays. ISD Shutdown Requirements is accomplished using Automatic Events Setup. Refer to Table 3 for required ISD Shutdown Alarms.

| Alarm | Days to Failure | Shutdown Required | | |
|---|-----------------|-----------------------|--|--|
| ISD DEGRD PRES WARN | 30 | Optional | | |
| ISD DEGRD PRES FAIL | - | Yes | | |
| ISD GROSS PRES WARN | 7 | Optional | | |
| ISD GROSS PRES FAIL | - | Yes | | |
| ISD VAPOR LEAK WARN | 7 | Optional | | |
| ISD VAPOR LEAK FAIL | - | Yes | | |
| ISD SENSOR OUT WARN | 7 | Optional | | |
| ISD SENSOR OUT FAIL | - | Optional ¹ | | |
| ISD SETUP WARN | 7 | Optional | | |
| ISD SETUP FAIL | - | Optional ¹ | | |
| hnn: DEGRD COLLECT WARN | 7 | Optional | | |
| hnn: DEGRD COLLECT FAIL | - | Yes | | |
| hnn: GROSS COLLECT WARN | 1 | Optional | | |
| hnn: GROSS COLLECT FAIL | - | Yes | | |
| hnn: FLOW COLLECT WARN | 1 | Optional | | |
| hnn: FLOW COLLECT FAIL | - | Yes | | |
| ISD VP STATUS WARN | 1 | Optional | | |
| ISD VP STATUS FAIL | - | Yes | | |
| ISD VP PRES WARN | 1 | Optional | | |
| ISD VP PRES FAIL ² | - | Yes | | |
| | | | | |
| Assist EVR Systems Only | | | | |
| Balance EVR Systems Only | | | | |
| Vapor Processor Required | | | | |
| ¹ Shutdown is optional for these alarm conditions and it is recommended that they be enabled. ² 'Required for Shutdown' applies for sites equipped with HIRT and ARID Permeator. | | | | |

| Table 3 | ISD | Shutdown | ∆larms |
|----------|-----|------------|----------|
| Table 5. | 130 | Silutuowii | AIAIIIIS |

Setup

Introduction

This section describes how to program the TLS-450PLUS for In-Station Diagnostics using the graphical user interface (GUI). The procedures in this manual follow standard TLS-450PLUS console setup programming methods. All ISD-related equipment must be installed at the site and connected to the TLS console prior to beginning the setups covered in this section. As with all TLS connections, you cannot change sensor wiring or module slots after programming or the system will not recognize the correct data. Reference the section entitled "Probe and Sensor Field Wiring" in the TLS-450PLUS Site Prep and Install manual (P/N 577014-073) for rewiring precautions.

Date/Time Setup

This screen lets you enter the current date and time for the console. It is especially important to update the time when setting up the console.

It is very important when entering the date and time, you do not set it into the future. A future date and time will affect the proper posting of ISD reports, even after making any corrections. Should this situation occur, contact Veeder-Root Tech Support.

NOTICE Prior to setting Date and Time on initial startup, you must remove the protective tab underneath the backup battery. This tab is yellow with an X printed on it. The battery can be found on the PC board inside the left front door of the console. Date and Time will not be entered correctly if this yellow tab is not removed.

| \circ | System Status | 0 Warning(s) 06/06/2022 07:47 AN |
|-----------|---------------------|----------------------------------|
| | Setup Date and Time | Share (|
| Home | Current Date | 06/06/2022 |
| Favorites | Current Time | 7 V Hours 28 V Minutes AM V |
| Menu | Time Zone | (UTC-07:00) US/Pacific |
| Actions | NTP | O Enabled O Disabled |
| | NTP Server | pool.ntp.org |
| | | Test |
| | | • |

1. Touch Menu>Setup>Date and Time (see Figure 4).

Figure 4. Date and Time Setup Screen

- 2. Ensure the Current Date and Current Time field entries are correct.
- 3. Ensure the Time Zone entry is (UTC-07) US/Pacific as shown in Figure 4.
- 4. Touch the check button v to save your choices.

Device Setups

Touch Menu>Setup>Devices to assign addresses and other information for the ISD devices that will be monitored by the TLS-450PLUS, i.e. Air Flow Meter, Atmospheric Pressure Sensor, Vapor Pressure Sensor and Vapor Valve.

AIR FLOW METER SETUP

1. Touch the Devices selection (Figure 5).

| 000 | Menu | | 0 Warning(s) x rm(s) 02/11/2020 02:26 PM |
|-----------|--------------------------|-----------|---|
| Home | Diagnostics | Devices | Print (0) |
| • | Overview | Display | |
| Favorites | Reports | Headers | |
| Menu | 😧 Setup | Inventory | |
| Actions | Software Maintenance | Overview | |
| 1 | System Administration | Printers | • |
| Probe | | Product P | |

Figure 5. Accessing Device Setup

2. Touch the Air Flow Meter button in the Devices list (Figure 6) to display the Air Flow Meter setup screen (Figure 7).

| 000 | MISSING HOSE SETUP | | 0 Warning(s) 02 | /11/2020 02:28 PM |
|------------|--------------------|-----------------------|-----------------|-------------------|
| \bigcirc | Probe | Ground Water Sensor | Vac Sensor | e Print (0) |
| Home | Relay | Vapor Sensor | Air Flow Meter | - - |
| Favorites | External Input | MAG Sensor | Vapor Valve | |
| 0 | Temp Sensor | Line Pressure Sensor | HC Sensor | |
| Menu | Liquid Sensor | LVDIM | | |
| Actions | Type A Sensor | ATM Pressure Sensor | | |
| | Type B Sensor | Vapor Pressure Sensor | | |
| Probe | Probe | | | |

Figure 6. Accessing Air Flow Meter Setup Screen

3. In the Address drop-down box select the address for the Air Flow Meter 1 (Figure 7). Touch the Label field to open the keypad and enter a name to identify the Air Flow Meter that refers to its Dispenser/FP location (e.g., AFM FP1-2), then touch the Enabled radio button to configure the device. Touch the volume v

| 000 | Pm 3: PUMP OUT 08/25 | /2022 01:32 AM |
|-------------------|--|----------------|
| | Setup Devices | < Share 🖸 |
| Home | Configured Enabled Disabled | |
| Favorites | Address B1.S3.1 | |
| D Menu | Label AFM FP1-2 | |
| Actions | Serial Number 0105062881 | × |
| | 2 | |
| Air Flow Meter | Air Flow Meter | • 🔀 |

Figure 7. Air Flow Meter Setup Screen

4. On the device ribbon at the bottom of the screen, touch the next Air Flow Meter to be setup, configuring it as in shown Step 3 above for AFM 1, and continuing until all of the site's Air Flow Meters are configured.

VAPOR PRESSURE SENSOR SETUP

The Vapor Pressure Sensor (VPS) monitors the vapor pressure in the ullage space of the underground gasoline storage tanks. Only one VPS sensor needs to installed and configured for the site.

1. Touch Vapor Pressure Sensor in the Menu>Setup>Devices list (Figure 8) to open the VPS sensor setup screen (Figure 9).

| 000 | MISSING HOSE SETUP | | 0 Warning(s) 02/1 | 1/2020 02:28 PM |
|------------|--------------------|-----------------------|-------------------|-----------------|
| \bigcirc | Probe | Ground Water Sensor | Vac Sensor | 🖶 Print (0) |
| Home | Relay | Vapor Sensor | Air Flow Meter | - |
| Favorites | External Input | MAG Sensor | Vapor Valve | |
| O | Temp Sensor | Line Pressure Sensor | HC Sensor | |
| Menu | Liquid Sensor | LVDIM | | X |
| Actions | Type A Sensor | ATM Pressure Sensor | | |
| | Type B Sensor | Vapor Pressure Sensor | | |
| Probe | Probe | | | • × |

Figure 8. Accessing Vapor Pressure Sensor Setup Screen

| 00 | Pm 3: PUMP OUT | | 08/25/2022 01:43 AM |
|------------------|----------------|----------------------|---------------------|
| BA | Setup Devices | | < Share O |
| Home | Configured | • Enabled 🔿 Disabled | |
| Favorites | Address | B1.53.4 | • |
| D Menu | Label | VaporSensor1 | |
| Actions | Serial Number | 0105062884 | × |
| | Vapor 1 | | |
| Sensor | Sensor | <u>AAA</u> | |

Figure 9. Vapor Pressure Sensor Setup Screen

2. Touch the Address drop down box and select the address of the VPS sensor. Touch the Label field and enter the label text for the sensor on the keypad then touch the green check button to accept the label. Touch the Enabled radio button to configure the sensor. Touch the check button 🗹 to save your choices. Notice after saving, the Vapor Pressure Sensor serial number is now visible.

Vapor Recovery Setup

You must choose the appropriate data sheet from Appendix A for the vapor recovery system installed at your facility (e.g., Single or Multi-Hose Dispensers) and record in those sheets, all the unique information from sensors/ hose positions, prior to beginning the TLS-450PLUS setup procedure below.

VAPOR GENERAL SETUP

1. Go to Menu>Setup>Vapor General>General (Figure 10) to setup Assessment Time and Vapor Pressure Sensor selection (Figure 11).



Figure 10. Accessing Vapor General: General Screen



Figure 11. Vapor General: General Setup Screen

Assessment Time defines when vapor assessment is scheduled to begin using the last 24 hours of data. Select
the Vapor Pressure Sensor configured in the Pressure Sensor drop-down box and touch the check button

 Image: sensor configured in the Pressure Sensor drop-down box and touch the check button
 Image: sensor configured in the Pressure Sensor drop-down box and touch the check button

VAPOR COLLECTION SETUP

Go to Menu>Setup>Vapor Collection to access the Vapor Collection setup screens (Figure 12).



Figure 12. Accessing Vapor Collection Setup Screens

General

Touch General to access the Vapor Collection General setup screen (Figure 13).

| \bigcirc | System Status | | 0 Warning(s) 0 Alarm(s) | 08/19/2022 02:09 AM |
|------------|------------------------|--------------------|----------------------------|---------------------|
| | Setup Vapor Collection | General | | < Share 🔾 |
| Home | EVR Type | 🔵 Balance 💿 Assist | | |
| Favorites | Balance Type | VST | • | |
| 0 | Assist Type | Vapor Vac | • | |
| Menu | Accept High ORVR | ○ Enabled | | X |
| Actions | Nozzle Type | VST | v | |
| | A/L Range Max | 1.15 | | |
| | A/L Range Min | 0.95 | | |

Figure 13. Example Vapor Collection General Setup Screen

Configure the following fields depending on the site's EVR Type selection:

- EVR Type Balance (default) or Assist
- · Balance Type This field is only available when the EVR Type is set to Balance. Choices are VST
- Assist Type This field is only available when the EVR Type is set to Assist. Choices are Vapor Vac, Wayne Vac, Healy Vac.
- Accept High ORVR Enabled or Disabled (default). If the 'Estimated ORVRS >> EXPECTED' message is
 posted to the Miscellaneous Event Log, then set to Enabled.
- Nozzle Type VST (default) This field is only available when the EVR Type is set to Balance. Choices are: VST
- A/L Range Max This is the upper limit of the A/L ratio operating range of the nozzle. This field is only
 populated when the EVR Type is set to Assist. This limit is 1.15 and is not programmable. When the EVR
 Type is set to Balance this field is blank.
- A/L Range Min This is the Lower limit of the A/L ratio operating range of the nozzle. This field is only
 populated when the EVR Type is set to Assist. This limit is 0.95 and is not programmable. When the EVR
 Type is set to Balance this field is blank.

Touch the check button \checkmark to save your choices.

Hose Labels

1. Touch the down arrow in the Crumb path below to return to the Vapor Collection setup screen (Figure 14).



Figure 14. Accessing Vapor Collection Hose Labels Setup Screens

2. Touch Hose Labels to access the Vapor Collection Hose Labels setup screen (Figure 15).

| \bigcirc | MISS VAPOR FLOW MTR | | 0 Warning() 5 Alarm(s) | 02/11/202 | 20 03:21 PM |
|------------|------------------------|---------------|---------------------------|-----------|-------------|
| | Setup Vapor Collection | Hose Labels 💿 | | | 🖶 Print (0) |
| Home | 1 | UNASSIGNED | | - | |
| * | 2 | BLEND3 | | | |
| Favorites | 3 | REGULAR | |) | |
| Menu | 4 | MID GRADE | |) | Ě |
| Actions | 5 | PREMIUM | |) | × |
| | 6 | GOLD | | | |
| | 7 | BRONZE | | | |

Figure 15. Vapor Collection Hose Labels Setup Screen

You can select a default hose label from this list or you can edit a hose label if necessary; it does not change the functionality of the selection. You can open Online Help for further explanation. Touch the check button \checkmark to save your choices.

Hose Settings

- **NOTICE** See Appendix A: Site EVR/ISD Equipment Location Worksheet: You are advised to fill in all of the appropriate information about your installed equipment, complete the TLS console's Hose Settings setup.
- 1. Touch Vapor Collection in the Crumb path to return to the Vapor Collection setup screen (Figure 16). Touch Hose Settings to access the Vapor Collection Hose Settings setup screen (Figure 17).
- **NOTICE** If while saving a Hose Setting setup and a pop up message window appears, refer to the Actions>Help for assistance.



Figure 16. Accessing Vapor Collection Hose Settings Setup Screen

| 000 | At 1: PRESSURE FAULT ALM | 1 Warning(s) 3 Alarm(s) | 08/16/2022 12:28 AM |
|-----------|--------------------------|----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 💿 | < Share 🔾 |
| Home | Configuration | C Enabled Disabled | |
| Favorites | Label | UNASSIGNED | |
| Menu | FP Label | | |
| Actions | Air Flow Meter | NOT ASSIGNED • | |
| 1 | | | |
| Hose | | | |

Figure 17. Vapor Collection Hose Settings Setup Screen

2. Set Configuration radio button to Enabled (see Figure 18).

| 000 | Ln 1: LINE OUT | | 1 Warning(s) 3 Alarm(s) | 08/16/2022 12:28 AM |
|-----------|------------------------|----------------------|----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 🕤 | | < Share 🔾 |
| Home | Configuration | ● Enabled ○ Disabled | | * |
| Favorites | Label | UNASSIGNED | • | |
| Menu | FP Label | | | |
| Actions | Air Flow Meter | NOT ASSIGNED | T | × |
| Hose | | | | |

Figure 18. Vapor Collection Hose Settings Setup

3. Touch the drop-down arrow in the Label field and select the Hose Label from the list (see Figure 19).

| | Ln 1: LINE OUT | | 1 Warning(s) 3 Alarm(s) | 08/16/2022 12:28 AM |
|-------------------|------------------------|----------------------|----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 🕤 | | < Share 🖸 |
| Home | Configuration | ● Enabled ○ Disabled | | * |
| Favorites | Label | UNASSIGNED | • |) |
| | EP Label | UNASSIGNED | - | |
| Menu | | BLEND3 | | |
| | Air Flow Meter | REGULAR | | × |
| Actions | | MID GRADE | | |
| \bigcirc | | PREMIUM | | |
| $\mathbf{\nabla}$ | | GOLD | | (8) |
| Hose | | BRONZE | - | 🔊 🕨 💌 |

Figure 19. Vapor Collection Hose Settings Setup

4. Enter the FP Label number for this hose that is located on the dispenser (see Figure 21).

| | PMC SENSOR FAULT | | 1 Warning(s) 3 Alarm(s) | 08/16/2022 12:28 AM |
|-----------|------------------------|----------------------|----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 🕤 | | < Share 🔾 |
| Home | Configuration | ● Enabled ○ Disabled | | * |
| Favorites | Label | BLEND3 | • | * |
| Menu | FP Label | 1 | | • 🗹 |
| Actions | Air Flow Meter | NOT ASSIGNED | • | × |
| 1 Hose | | | | |

Figure 20. Vapor Collection Hose Settings Setup

5. Touch the drop-down arrow in the Air Flow Meter field and select the AFM associated with this hose (see Figure 21).

| | At 1: PRESSURE FAULT ALM | 1 Warning(s) 3 Alarm(s) | 08/16/2022 12:28 AM |
|-----------|--------------------------|----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 🕤 | < Share 🔾 |
| Home | Configuration | • Enabled Olisabled | * |
| Favorites | Label | BLEND3 |)* |
| Menu | FP Label | 1 |)* |
| | Air Flow Meter | Af 1: Flow Meter 1-2 | |
| Actions | | NOT ASSIGNED | |
| (1) | | Af 1: Flow Meter 1-2 | |
| Hose | | Af 2: Flow Meter 3-4 | |

Figure 21. Vapor Collection Hose Settings Setup

6. Touch the check button \checkmark to save your save your selections (see Figure 22).

| $\bigcirc \bigcirc \bigcirc$ | I 1: DEVICE OUT ALARM | 3 Warning(s) 18 Alarm(s) | 08/16/2022 01:35 AM |
|------------------------------|------------------------|-----------------------------|---------------------|
| | Setup Vapor Collection | Hose Settings 💿 | < Share 🔿 |
| Home | Configuration | Enabled Disabled | |
| Favorites | Label | BLEND3 | • |
| Menu | FP Label | 1 | |
| Actions | Air Flow Meter | Af 1: Flow Meter 1-2 | |
| 1 Hose | | | |

Figure 22. Vapor Collection Hose Settings Setup

- 7. Repeat this procedure for all appropriate hoses by selecting the hose number icons on the bottom selection ribbon.
- **NOTICE** After saving an edit made for a hose in Hose Setup, a pop-up message will show and advise that the action will clear the Hose Mapping. Be sure to re-map the edited hose. This can be done after all hoses are configured and Enabled.



Figure 23. Confirm Hose Map Clear Message

NOTICE If a Hose Settings is Enabled but not complete, or Hose Mapping not complete, a Hose Setup Data Warning will post (Example: h 3: SETUP DATA WARNING). Via Reports> Alarms> Active, select the hose alarm, then via Actions select Setup Data Warning to see the details of the warning.

Hose Mapping - Assisted Mode

1. Touch Menu>Setup>Vapor Collection>Hose Mapping (Figure 24).Touch Hose Mapping to access the Vapor Collection Hose Mapping setup screen (see example in Figure 25).



Figure 24. Accessing Vapor Collection Hose Mapping Setup Screen

| | Ln 2: LINE OUT | | | | 08/1 | 5/2022 10:54 PM |
|---|-----------------------|--------|-----------|--------|------|-----------------|
| | Setup Vapor Collectio | n Hose | Mapping 🔿 | | | < Share 🔿 |
| / | Hose | FP | FP Label | Meters | AFM | Locked |
| | h 1: BLEND3 | | 1 | | 1 | Yes |
| | h 2: BLEND3 | | 2 | | 1 | Yes |
| | h 3: BLEND3 | | 3 | | 2 | Yes |
| | h 4: BLEND3 | | 4 | | 2 | Yes |
| 5 | | | | | | |
| | | | | | | |

Figure 25. Vapor Collection Hose Mapping Setup Screen

2. Assisted mapping is easier on a site with previous events recorded on all fuel meters. However, we recommend that you shut down dispensing during assisted hose mapping. Ensure that all Hoses are not Locked. Touch the Actions button and select Unlock All (see Figure 26).

NOTICE If there is a hose you do not want to map at this time, lock that hose. You can map that hose position later.



Figure 26. Unlock Hoses

3. Go to the selected fueling point for hose 1 (see example in Figure 27). This example shows dispenser with four gasoline products via 1 hose. This hose has a Hose Label of Blend 3. There are two straight grades and two blended grades.



Figure 27. Example Dispenser Fuel Position 1



4. Begin the mapping process by dispensing a 0.25 to 0.5 gallons of the Straight Grade (87) into an approved container. Stop the dispense and wait approximately 90 seconds until the Hose Mapping screen (see Figure 28) assigns/displays the FP (Fueling Position – Logical); and the first Meter (Fuel Meter) number into

the h 1: Blend3 Meters column. In this example "0" will post. Meter numbers can be "0 through 5". A blended meter number will always be 9".

NOTICE The FP column (Fueling Position Logical), is determined by the TLS. It may or may not match the FP Label (Fuel Position number located on the dispenser).





Figure 28. Example First Meter Mapped for Hose 1 - Straight Grade 87

5. Next, we will map the Straight Grade 93, by dispensing 0.25 to 0.5 gallons. Wait approximately 30 seconds until the Hose Mapping screen (see Figure 29) assigns/displays the second Meter number into the h 1: Blend3 Meters column. In this example "1" will post.

| | System Status | | | 0 Warning(s 0 Alarms(s) | 06/06/2022 | 01:01 PM |
|-------------------|---------------------------------------|----|----------|----------------------------|------------|----------|
| $\mathbf{\Omega}$ | Setup Vapor Collection Hose Mapping O | | | Share O | | |
| Home | Hose | FP | FP Label | Meters | AFM | Locked |
| | ✓h 1: BLEND3 | | 1 | 0, 1 | 1 | No |
| Envoritor | h 2: BLEND3 | | | | 1 | No |
| Favorites | h 3: BLEND3 | | | | 2 | No |
| | h 4: BLEND3 | | | | 2 | No |
| Menu Actions | | | | | | |

Figure 29. Example Second Meter Mapped for Hose 1 - Straight Grade 93



6. Next, we will map the Blended Grade 89. Dispense a 0.5 to 1.0 gallons. Wait approximately 30 seconds until the Hose Mapping screen (ref. Figure 30) assigns/displays the third Meter number into the h 1: Blend3 Meters

column. In this example "9" will post.

| | Syste | m Status | | | 0 Warning(s 0 Alarms(s) | 06/06/2022 | 01:01 PM |
|-----------------|---------------------|----------------|--------|-------------|----------------------------|------------|-----------|
| | Setup | Vapor Collecti | on Hos | e Mapping O | | | < Share 🕥 |
| Home | Hose | | FP | FP Label | Meters | AFM | Locked |
| | <mark>⊻</mark> h 1: | BLEND3 | 1 | 1 | 0, 1, 9 | 1 | No |
| | □h 2: | BLEND3 | | | | 1 | No |
| Favorites | 🗌 h 3: | BLEND3 | | | | 2 | No |
| | □h 4: | BLEND3 | | | | 2 | No |
| Menu Actions | | | | | | | |

Figure 30. Example Third Meter Mapped for Hose 1 - First Blended Grade 87

NOTICE You may have to repeat the dispense several times if Fueling Position (logical) or (Fuel) Meter does not display after waiting 30 seconds. Check mapping carefully if you repeat dispenses.

- 7. Next, dispense 0.5 to 1.0 gallons of Blend Grade 91. Wait approximately 30 seconds. Since this is the second Blended Grade for this hose, no other meter will post since meter 9 has already posted for a blend grade.
- 8. Once completing mapping all product grades to the hose, lock that hose via the Actions dialog box (see Figure 31 and Figure 32).



Figure 31. Locking Completed Hose Map

9.

| | System Status | 0 Warning(s) 0 Alarms(s) 06/06/2022 01:01 PM | | | | |
|-----------------|----------------------|---|-------------|---------|-----------|--------|
| Home | Setup Vapor Collecti | on Hos | e Mapping O | | < Share 💟 | |
| | Hose | FP | FP Label | Meters | AFM | Locked |
| | ✓ h 1: BLEND3 | 1 | | 0, 1, 9 | 1 | Yes |
| Eavoritoe | h 2: BLEND3 | | | | 1 | No |
| ravontes | h 3: BLEND3 | | | | 2 | No |
| | h 4: BLEND3 | | | | 2 | No |
| Menu Actions | | | | | | |
| | | | | | | |

Figure 32. Example Hose 1 Hose Map Locked

- 10.Continue with the next hose in numeric hose order, dispensing the appropriate amount of product, checking the screen for information to populate, and then locking that hose.
 - Once the mapping process is complete, review your map.
 - Have all gasoline hoses been mapped?
 - Is the Hose ID and Hose FP Label correct?
 - Is Hose Label selection correct?
 - Is Air Flow Meter assignment correct?
 - · Are the expected number of fuel meters assigned to a hose?
 - After completing hose mapping, ensure that all hoses are locked (see Figure 33).

| | Setup Vapor | Collection Hose | Mapping 🗢 | | | 🕻 Share 🔿 |
|-----------|-------------|-----------------|-----------|--------|-----|-----------|
| Home | Hose | FP | FP Label | Meters | AFM | Locked |
| | h 1: BLEND | 3 1 | 1 | 0,1,9 | 1 | Yes |
| | h 2: BLEND | 3 2 | 2 | 0,1,9 | 1 🕟 | Yes |
| | h 3: BLEND | 3 3 | 3 | 0,1,9 | 2 | Yes |
| Favorites | h 4: BLEND | 3 4 | 4 | 0,1,9 | 2 | Yes |
| Menu | | | | | | |
| Actions | | | | | | |

Figure 33. Example Completed and Locked Meter Map

NOTICE If a Hose Settings is Enabled but not complete, or Hose Mapping not complete, a Hose Setup Data Warning will post (Example: h 3: SETUP DATA WARNING). Via Reports>Alarms> Active, select the hose alarm, then via Actions select Setup Data Warning to see the details of the warning.

Hose Mapping - Manual Mode

NOTICE If while saving a selected Hose mapping screen and a pop up message window appears, refer to the Actions> Help for assistance.

Manual hose mapping can be used with the Hose Locked or Unlocked. To manually map or make an edit to a hose map, knowledge of the FP (Logical) and the Meter (Fuel Meter) number is needed.

Example: After using Assist Mode to create the Hose Mapping Hose Map, it was discovered that Straight Grade 93 was skipped when mapping h 3: Blend3. Fuel Meter "1" needs to be added (see Figure 34).

| 000 | PMC SENSOR FAULT | | | | 5 Warning(s) 06/06/2022 01:01 PM | | | |
|--------------|------------------|------------------|----------|-----------|----------------------------------|-----|---------|--|
| | Setup | Vapor Collection | Hose Map | oping 🗢 🔿 | | < | Share 🔿 | |
| Home | Hose | | FP | FP Label | Meters | AFM | Locked | |
| | □h 1: | BLEND3 | 1 | 1 | 0,1,9 | 1 | Yes | |
| | _h 2: | BLEND3 | 2 | 2 | 0,1,9 | 1 🕏 | Yes | |
| | □h 3: | BLEND3 | 3 | 3 | 0,9 | 2 | Yes | |
| Favorites | □h 4: | BLEND3 | 4 | 4 | 0,1,9 | 2 | Yes | |
| \mathbf{O} | | | | | | | | |
| Menu | | | | | | | | |
| Actions | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Figure 34. Example Missing Meter Map for Hose 3

1. To correct the hose 3 map manually, select h 3: Blend3 to be edited (see Figure 35).

| \bigcirc | System Status | | | 0 Warning(s) 0 Alarm(s) 06/08/2022 10:10 PM | | | |
|-----------------|------------------------|--------|----------|--|---------|-----|--------|
| | Setup Vapor Collection | | Hose Map | oping 🔿 🔿 | < Share | | |
| Home | Hose | | FP | FP Label | Meters | AFM | Locked |
| | □h 1: | BLEND3 | 1 | 1 | 0,1,9 | 1 | Yes |
| | _h 2: | BLEND3 | 2 | 2 | 0,1,9 | 1 | Yes |
| | <mark>√</mark> h 3: | BLEND3 | 3 | 3 | 0,9 | 2 | Yes |
| Favorites | □h 4: | BLEND3 | 4 | 4 | 0,1,9 | 2 | Yes |
| Menu Actions | | | | | | | |

Figure 35. Example Hose 3 Selected for Editing

1. Touch Actions > Edit Selected [Web: Click Edit button] to open the hose 3 edit screen (see Figure 36 and Figure 37).



Figure 36. Example Selecting Hose 3 for Editing

| Edit H | lose 3 | | | × e C |
|--------|------------|--------------|---|-------|
| Hor | Logical FP | 3 | • | e d |
| Favor | Meter 1 | 0 | • | |
| C | Meter 2 | 9 - BLEND | • | |
| Mei | Meter 3 | Not Assigned | • | |

Figure 37. Hose 3 Edit Screen

2. For Meter 3, select Fuel Meter "1" from the drop down and touch the check button 🗹 to save the screen.

| OO PI | 3: COMMUNICATIO | N ALARM | | 08/17/2022 05:42 AM | | |
|----------|-----------------|-----------|---|---------------------|--|--|
| Edit H | lose 3 | | | X re C | | |
| or | Logical FP | 3 | • | ed | | |
| | Meter 1 | 0 | • | | | |
| | Meter 2 | 9 - BLEND | • | | | |
| er | Meter 3 | 1 | * | | | |
| (tit | | | | × | | |

Figure 38. Enter Missing Meter Number for Hose 3

3. Verify that h 3: Blend3 correction was made (see Figure 39).

| | PMC SENSOR FAULT | | | 5 Warning(s) 06/06/2022 01:01 PM | | | | |
|--------|-------------------------------------|--------|----|----------------------------------|-----------|-----|--------|--|
| | Setup Vapor Collection Hose Mapping | | | pping 🗢 🔿 | < Share C | | | |
| Home | Hose | | FP | FP Label | Meters | AFM | Locked | |
| inc | □h 1: | BLEND3 | 1 | 1 | 0,1,9 | 1 | Yes | |
| | _h 2: | BLEND3 | 2 | 2 | 0,1,9 | 1 🕅 | Yes | |
| | □h 3: | BLEND3 | 3 | 3 | 0,1,9 | 2 | Yes | |
| orites | □h 4: | BLEND3 | 4 | 4 | 0,1,9 | 2 | Yes | |
| tions | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Figure 39. Verify Corrected Hose 3 Meter Map

NOTICE Depending on changes made to an existing Hose Map, it may be necessary to select "Reset Hose Map and Hose Settings" option in Actions, to default values, to clear the entire Hose Mapping and Hose Setting screens. Then proceed to create all the Hoses in Hose Settings, and re-map all the hoses in the Hose Mapping screen.

VAPOR MANAGEMENT

There are two options available. Option #1: Healy Assist or Option #2: ARID Permeator vapor processor installed. Please follow the appropriate option below.

Option 1 - Healy Assist

1. Touch Setup>Vapor Management>Processor (see Figure 40).



Figure 40. Vapor Management Setup Screen
2. Ensure Type is selected as None (default)(see Figure 41).



Figure 41. Vapor Management Processor Setup Screen

Option # 2: ARID Permeator Vapor Processor

If ARID Permeator vapor processor is being used, two (2) External Inputs (ARID FAULT and ARID ACTIVE) are required for the ARID Permeator. Note: If either of these two External Inputs are not set up, a MISSING VP INPUT will post immediately on leaving the Setup menu.

External Input Setups

- 1. Navigate: Menu > Setup > Devices; Select External Input (see Figure 42). Configure and enable the first external input.
- Address = Select address location of External Input
- Label = ARID FAULT
- **Type** = Vapor Processor
- Orientation = Normally Closed
- Save

| 000 | MISSING VP INPUT | 2 Warning(s) 4 Alarm(s) | 03/22/2024 02:19 AM |
|-----------|------------------|----------------------------|---------------------|
| | Setup Devices | | < Share C |
| Home | Configured | Enabled Disabled | |
| Favorites | Address | B1.51.1 | |
| Menu | Label | ARID FAULT | |
| | Туре | Vapor Processor 🔻 | \mathbf{X} |
| Actions | Orientation | Normally Closed | |
| External | External | 2 3 4 5 6 | |

Figure 42. External Input (ARID FAULT) Setup

- 2. Configure and enable the second external input (see Figure 43)
- Address = Select the address location of the second external input
- Label = ARID ACTIVE
- **Type** = Vapor Processor 2
- **Orientation** = Normally Open
- Save

| 000 | MISSING VP INPUT | 2 Warning(s) 4 Alarm(s) | 03/22/2024 02:19 AM |
|-------------------|-------------------|----------------------------|---------------------|
| | Setup Devices | | < Share C |
| Home | Configured | ● Enabled ○ Disabled | |
| Favorites | Address | B1.51.2 v | |
| (D) Menu | Label | ARID ACTIVE |) |
| | Туре | Vapor Processor 2 | |
| Actions | Orientation | Normally Open | |
| 2 | | | |
| External Input | External Input | | 🟐 🔸 💌 |

Figure 43. External Input (Active Signal) Setup

ARID Permeator Vapor Processor Setup

Navigate: Menu > Setup > Vapor Management > Processor; Select the Vapor Processor type (see Figure 44).

• **Type** = Arid Permeator

NOTICE The Ext Input 1 and Ext Input 2 fields will self-populate with the required inputs ID # and Label if already configured and Enabled in Setup > Devices.

Save

| 000 | PMC SETUP FAIL | 5 Warning(s) 4 Alarm(s) | 03/04/2024 05:36 AM |
|-----------|-------------------------------|----------------------------|---------------------|
| | Setup Vapor Management Proces | sor | < Share 🔾 |
| Home | Type Arid Perm | eator 🔻 |) |
| Favorites | Ext Input 1 I 1 | | |
| 0 | Ext Input 2 I 2 | | |
| Menu | Vapor Valve | | × |
| | | | |
| | | | |
| | | | |



Automatic Events Setup: (Shutdown Requirements (ISD)

These instructions will illustrate the minimum setup requirements as per Pump Mode to complete the ISD Shutdown Requirements.

For In-Station Diagnostics (ISD), the California Air Resources Board (CARB) requires that gasoline dispensing be shut down for specific ISD Site Alarms and Hose Alarms (See Table 3, Page 5). This can be accomplished by assigning the required ISD Site Alarms and Hose Alarms to an Automatic Event for each gasoline line. For Hose alarms this can also be accomplished by assigning the required Hose Alarms to an Automatic Event for each dispenser relay.

NOTICE ISD only applies to gasoline tanks:

- 1. The TLS-450PLUS considers a tank to be a gasoline tank if its thermal coefficient is greater than or equal to 0.00060 and less than or equal to 0.00079. (Typically, the thermal coefficient for a gasoline tank is programmed to 0.000700.)
- 2. All gasoline tanks must be assigned to a pump and that pump has to be assigned to a line. A tank cannot be assigned to a relay in the TLS-450PLUS.

PUMP MODE SETUPS

These steps are required for ISD Shutdown as per pump mode.

Available Pump Modes in **Setup > Pumps and Lines> Pumps**:

Setup > Automatic Events: (Pump Mode = TLS Pump Control): Pump is controlled locally by the console. There are two ways of controlling a pump: 1) with a relay or 2) with a Pump Controller (**This includes PLLD**).

Setup > Automatic Events: (Pump Mode = Pump Sense): The console senses if the pump is active when a pump request signal is sent to turn on/off the pump (this signal also acts as a tank "active" signal to the console).

Setup > Automatic Events: (Pump Mode = External Pump Control): Pump is controlled externally to the console and identifies tanks that are line manifolded together.

Automatic Events: (Pump Mode = TLS Pump Control) - This includes PLLD

These are the steps required for ISD Shutdown if pump mode selected = TLS Pump Control

Available Pump Modes in **Setup > Pumps and Lines > Pumps**:

TLS Pump Control: Pump is controlled or actuated locally by the console. This includes control by Intelligent Pump Control. There are two ways of controlling a pump: 1) with a relay or 2) with a Pump Controller.

PUMP MODE = TLS PUMP CONTROL

- 1. For each Pump on a Gasoline line:
 - a. Via: **Setup > Devices > Relay**:
 - i. Configure/Enable a Relay
 - ii. Set the Type to Pump Control Output
 - b. Via: **Setup > Devices > External Input**:
 - i. Configure/Enable an External Input
 - ii. Set the Type to Pump Sense
 - iii. Set the Orientation to Normally Open

c. Via: Setup > Pumps and Lines > Pumps:

- i. Configure/Enable a Pump
- ii. Set the Mode to TLS Pump Control
- iii. Assign the appropriate Tank to the Pump
- iv. Set the Pump Control to the appropriate Relay
- v. Set the Pump Sense to the appropriate External Input
- 2. For each Gasoline Line:

a. Via: Setup > Pumps and Lines > Lines:

- i. Configure/Enable a Line
- ii. Assign the appropriate gasoline Pump(s) to the Line

b. Via: **Setup > Automatic Events > Device Tasks**:

Add a task for required ISD Site Alarms

NOTICE California Air Resources Board (CARB) requires that gasoline dispensing shut down for specific ISD Site Alarms and Hose Alarms (See Table 3 on page 8).

- i. Set the Device to the Gasoline Line
- ii. Select each required ISD Site Alarm as a Trigger
- iii. Hose Site Shutdown Option (if available): select the Hose Alarms for each Gasoline Hose as a Trigger



Figure 45. Example Device Task - TLS Pump Control (No Dispenser Relay(s))

- 3. Dispenser Relay Shutdown Option: For each Dispenser Relay:
 - a. Via: Setup > Devices > Relay:
 - i. Configure/ Enable Relay
 - ii. Set the Type to Standard
 - iii. Set the Orientation to Normally Closed
 - b. Via: Setup > Automatic Events > Device Tasks:
 - a. Add a task for each Dispenser Relay:
 - i. Set the Device to the Relay
 - ii. Select each required Hose Alarm for the appropriate Gasoline Hose(s) as a Trigger



Figure 46. Example Device Task - TLS Pump Control (With Dispenser Relay(s))

Automatic Events: (Pump Mode = Pump Sense)

These are the steps required for ISD Shutdown If pump mode selected = Pump Sense.

Available Pump Modes in **Setup > Pumps and Lines > Pumps**:

Pump Sense: The console senses if the pump is active when a pump request signal is sent to turn on/off the pump (this signal also acts as a tank "active" signal to the console).

PUMP MODE = PUMP SENSE

- 1. For each Pump on a Gasoline Line:
 - a. Via: **Setup > Devices > Relay**:
 - i. Configure/Enable a Relay to supply power to pump control device
 - ii. Set the Type to Standard
 - iii. Set the Orientation to Normally Closed

b. Via: Setup > Devices > External Input:

- i. Configure/Enable an External Input (Pump Sense) for the pump
- ii. Set the Type to Pump Sense
- iii. Set the Orientation to Normally Open

c. Via: **Setup > Pumps and Lines > Pumps**:

- i. Configure/Enable a Pump
- ii. Set the Mode to Pump Sense
- iii. Assign the appropriate Tank to Pump
- iv. Set the Pump Sense to the appropriate External Input
- 2. For each Gasoline Line:
 - a. Via: Setup >Pumps and Lines > Lines:
 - i. Configure / Enable a Line
 - ii. Assign the appropriate gasoline Pump(s) to the Line
 - b. Via: Setup > Automatic Events > Device Tasks:

Add a task for required ISD Site Alarms

NOTICE California Air Resources Board (CARB) requires that gasoline dispensing shut down for specific ISD Site Alarms and Hose Alarms (See Table 3 on page 8).

- i. Set the Device to the Gasoline Line
- ii. Select each required ISD Site Alarm as a Trigger
- iii. Hose Site Shutdown Option: Select the Hose Alarms for each Gasoline Hose as a Trigger



Figure 47. Example Device Task - Pump Sense (No Dispenser relay(s))

3. For each Relay setup in Step 1a above:

a. Via: Setup > Automatic Events > Device Tasks:

Add a Task for LINE OUT alarm:

- i. Set the Device to the Relay
- ii. Select LINE OUT for the appropriate Line as a Trigger



Figure 48. Example Device Task - Pump Sense: Line Out (No Dispenser relay(s))

4. Dispenser Relay Shutdown option: For each Dispenser Relay:

a. Via: Setup > Devices > Relay:

- i. Configure/Enable Relay
- ii. Set the Type to Standard
- iii. Set the Orientation to Normally Closed

b. Via: Setup > Automatic Events > Device Tasks:

Add a task for each Dispenser Relay:

- i. Set the Device to the Relay
- ii. Set each required Hose Alarm for the appropriate Gasoline Hose(s) as a Trigger





Automatic Events: (Pump Mode = External Pump Control)

These are the minimal steps required for ISD Shutdown if pump mode selected = External Pump Control. Refer to the appropriate manual(s) for further information as needed.

Available Pump Modes in **Setup > Pumps and Lines > Pumps**:

External Pump Control: Pump is controlled externally to the console.

PUMP MODE = EXTERNAL PUMP CONTROL

- 1. For each Pump on a Gasoline Line:
 - a. Via: Setup > Devices > Relay:
 - i. Configure/Enable a Relay to supply power to pump control device
 - ii. Set the Type to Standard
 - iii. Set the Orientation to Normally Closed

b. Via: Setup > Pumps and Lines > Pumps:

- i. Configure/Enable a Pump
- ii. Set the Mode to External Pump Control
- iii. Assign the appropriate Tank to Pump
- 2. For each Gasoline Line:

a. Via: Setup > Pumps and Lines > Lines:

- i. Configure/Enable a Line
- ii. Assign the appropriate gasoline Pump(s) to the Line
- b. Via: Setup > Automatic Events > Device Tasks:

Add a task for required ISD Site Alarms:

NOTICE California Air Resources Board (CARB) requires that gasoline dispensing shut down for specific ISD Site Alarms and Hose Alarms (See Table 3 on page 8).

- i. Set the Device to the Gasoline Line
- ii. Select each required ISD Site Alarm as a Trigger
- iii. Hose Site Shutdown Option: Select the Hose Alarms for each Gasoline Hose as a Trigger



Figure 50. Example Device Task - External Pump Control (No Dispenser Relay(s))

3. For each Relay setup in Step 1a above:

a. Via: Setup > Automatic Events > Device Tasks:

Add a task for a LINE OUT alarm:

- i. Set the Device to the Relay
- ii. Select LINE OUT for the appropriate Line as a Trigger





4. Dispenser Relay Shutdown option: For each Dispenser Relay:

a. Via: **Setup > Devices > Relay**:

- i. Configure/Enable Relay
- ii. Set the Type to Standard
- iii. Set the Orientation to Normally Closed

b. Via: Setup > Automatic Events > Device Tasks:

Add a task for each Dispenser Relay:

- i. Set the Device to the Relay
- ii. Select each required Hose Alarm for the appropriate Gasoline Hose(s) as a Trigger



Figure 52. Example Device Tasks – External Pump Control (With Dispenser Relay(s))

Single CARB EVR/ISD Setup Printout

NOTICE GUI only; Not available in Web view

For **CARB EVR / ISD** setup, a single printout for the **EVR / ISD** setup for the California Air Resources Board (CARB) can be generated.

This is the same as EVR / ISD setup printout format that can be created with the TLS-350 console.

The "CARB EVR / ISD" Printout:

- 1. Via Menu > Setup > Generate Setup, select the Setup Group option of "CARB EVR / ISD" (see Figure 53
- 2. Touch the "Generate" button to create the printout (see Figure 54).

| 000 | System Status | 0 Warning(s) 0 Alarm(s) | 09/15/2023 06:42 AM |
|-----------|-----------------------|----------------------------|---------------------|
| | Setup Generate Setup | | < Share 🔾 |
| Home | 1 Setup Group | CARB EVR / ISD | • |
| Favorites | Device Type Selection | Select a Device | • |
| Menu | Destination | Printer | • |
| | 2 | Generate | |
| Actions | | | |
| | | | |

Figure 53. Generate Setup Screen

```
EVR/ISD SETUP
                               EVR TYPE = Type of Enhanced Vapor Recovery (EVR)
EVR TYPE: BALANCE
                               equipment at the site.
                               EVR NOZZLE TYPE = Type of EVR nozzles installed
BALANCE NOZZLE TYPE
                               at the dispensers.
VST
VAPOR PROCESSOR TYPE
                               VAPOR PROCESSOR TYPE =
VEEDER-ROOT POLISHER
                              Name of vapor processor type if applicable.
ANALYSIS TIMES
                               ANALYSIS TIMES =
                               The Assesment Time when the vapor assessment is
TIME: 11:59 PM
                              scheduled to begin using the last 24 hours of data.
DELAY MINUTES: 1
ACCEPT HIGH ORVR:
                              ACCEPT HIGH ORVR =
                               If estimated number of ORVR dispenses is greater than
DISABLED
                               expected, this is Enabled, otherwise it is set to Disabled.
ISD HOSE TABLE
ID FP FL HL AA RR
                              ID = Hose Number
_____
                              FP = Mapped Logical Fuel Position Number as
01 01 01 02 01 00
                                 recognized by the TLS Console (UU = Unassigned)
02 02 02 02 01 00
                             FL = Fuel Position Label (Number) as displayed on
03 03 03 02 02 00
                                 the dispenser (UU = Unassigned)
04 04 04 02 02 00 HL = Hose Label ID assigned
05 05 05 02 03 00
                             AA = Air Flow Meter ID assigned
06 06 06 02 03 00
                              RR = Relay assigned to shutdown dispenser
ISD AIRFLOW METER MAP
ID SERIAL NUM LABEL
_____
 1 105062881 Flow Meter
                              ID = Air Flow Meter Sensor Number assigned
 2 105062882 Flow Meter
                              Serial Number = Air Flow Meter's Serial Number
 3 105062883 Flow Meter
                              LABEL = Air Flow Meter Name
ISD FUEL GRADE HOSE MAP
   1 2 3 4
FP MHH MHH MHH AA
   _____
01 001 101 901 U U 1
                              FP = Mapped Logical Fuel Position Number
02 002 102 902 U U 1
                              MHH = Fuel Meter (M) and Hose Number (HH) for Product
                                  (UU = Unassigned)
03 003 103 903 U U 2
04 004 104 904 U U 2
                              AA = Air Flow Meter assigned to Fuel Position (FP)
05 005 105 905 U U
                      3
06 006 106 906 U U 3
LABEL TABLE
 _____
 1: UNASSIGNED
                              # = Label ID Number
 2: BLEND3
                              Labels ID 2 thru 10 are User definable
 3: REGULAR
 4: MID GRADE
 5: PREMIUM
 6: GOLD
 7: BRONZE
 8: SILVER
 9: BLEND2
10: BLEND4
```



Diagnostics

ISD Device Diagnostic Screens

AIR FLOW METER OVERVIEW

1. Touch Menu>Diagnostics>Air Flow Meter>Overview (see Figure 55) to display the Air Flow Meter Overview screen (see Figure 56).



Figure 55. Accessing the Air Flow Meter Overview Screen

| 000 | Pm 1: PUMP OUT | | | | | 08/30 | 0/2022 11:43 | PM |
|-----------|---------------------|-------|-------------|--------------|---------|---------------|--------------|-----|
| | Diagnostics Air Flo | w Met | er Overv | iew | | | < Share | • C |
| Home | General | | | | | | | - |
| | Туре | | Status | Serial | Number | Flow Volu | ıme [gal] | |
| Favorites | 57-AIR FLOW METE | R | NORMAL | 010 | 5062881 | | 0.000 | |
| 0 | Constants | | | | | | | |
| Menu | Device Code | C | ounts Per M | Ailli Gallon | Se | conds Between | Samples | |
| | 1 | | | 28 | | | 5 | |
| Actions | Communication | | | | | | | |
| | Samples Read | San | nples Used | Parity E | rrors | Partial Read | Comm. | |
| (1) | 10742 | | 9802 | ! | 0 | 0 | | |
| Air Flow | • | | | | | | • | |
| meter | Channel | | | | | | | - |

Figure 56. Air Flow Meter Overview Screen - Page 1

The four tables in this screen display status information for the selected Air Flow Meter. Touch the scroll down arrow to view the rest of the Air Flow Meter data tables (see Figure 57).

| 000 | Ln 3: | LINE OU | т | | | | | | | 08/30/ | 2022 11:4 | 3 P |
|------------|-------|---------|----------|---------|---------|---------|-----------|-------|----------|--------|-----------|-----|
| RA | Diagn | ostics | Air Flow | / Meter | Overv | view | | | | | < Sha | ire |
| Home | | | 1 | cour | | unin Gu | 28 | 5000 | nus bet | weens | 5 | |
| \bigcirc | Com | municat | ion | | | | | | | | | |
| Favorites | Sa | mples F | Read | Sampl | es Used | Pai | rity Erro | ors P | artial R | ead | Comm. | |
| | | 1 | 0742 | | 9802 | 2 | | 0 | | 0 | | |
| Menu | 4 | | | | | | | | | | • | |
| a | Chan | inel | | | | | | | | | | |
| Actions | # | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| | 00 | B420 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |
| (1) | 10 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |
| Air Flow | 20 | 0000 | 6493 | 0000 | CD03 | 001C | 3BA0 | 21E1 | 0643 | 0001 | 01F4 | |
| Meter | 30 | 6E3B | 1D63 | 0324 | 80C4 | 8084 | 871C | | | | | |

Figure 57. Air Flow Meter Overview Screen - Page 2

2. Touching Actions>Help opens the Online Help to view descriptive information about the data in the tables for this device.

VAPOR PRESSURE SENSOR OVERVIEW

1. Touch Menu>Diagnostics>Vapor Pressure Sensor>Overview to display the Vapor Pressure Sensor Overview screen (see Figure 59).



Figure 58. Accessing the Vapor Pressure Sensor Overview Screen

| 00 | Pm 3: PUMP OUT | | | | | 08/ | 31/2022 12:04 | 1 AM |
|--------------|-------------------|----------------|-------------|--------|-----------|-----------|---------------|------|
| | Diagnostics Vapor | Pressure Senso | or Overvie | w O > | | < Share O | | |
| Home | General | | | | | | | - |
| | Туре | S | tatus | Serial | Number | Date | Pressure | |
| Favorites | 58-VAPOR PRESS | SENSOR N | ORMAL | 010 | 5062884 | 00/00 | -0.700 | |
| | Constants | | | | | | | |
| Menu | Model | D | evice Code | | Slope | | Offset | |
| | 0 | | 4 | | 1308 | • | 18316 | |
| Actions | Communication | | | | | | | |
| | Samples Read | Samples Use | ed Parity I | Errors | Partial R | lead (| Comm. Erro | |
| (1) | 41889 | 378 | 81 | 0 | | 0 | | |
| VP Sensor | 4 | | | | | | • | |
| | Channel | | | | | | | - |

Figure 59. Vapor Pressure Sensor Overview Screen - Page 1

2. The four tables in this screen display status information for the selected Vapor Pressure Sensor. Touch the scroll down arrow to view the rest of the Vapor Pressure Sensor data tables (see Figure 60).

| 00 | Pm 2: | PUMP O | UT | | | | | | | 08/31/2 | 2022 12:0 | 5 AM |
|-----------|--------|---------|---------|---------|---------|---------|----------|-----------|----------|---------|-----------|-------|
| | Diagno | ostics | Vapor P | ressure | Sensor | Overvi | ew 🔿 | \rangle | | | < Sha | are 🔿 |
| Home | | M | lodel | | Devi | ce Code | | SI | ope | | Offset | |
| | | | 0 | | | 4 | ł | 1 | 308 | | 18316 | |
| Favorites | Com | municat | ion | | | | | | | | | |
| | Sa | mples F | Read | Sampl | es Used | Par | ity Erro | ors P | artial R | ead | Comm. | |
| Menu | | 4 | 1893 | | 37885 | 5 | | 0 | | 0 | | |
| | 4 | | | | | | | | | | • | |
| Actions | Chan | nel | | | | | | | | | | |
| | # | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| (1) | 00 | B50B | 43F8 | DD06 | 0002 | BEC1 | 21E4 | 0643 | 0004 | 051C | 478C | |
| VP | 10 | 17B1 | 0084 | 80C4 | 80A4 | 0104 | 1AB9 | 1560 | 06A8 | 06A8 | 478C | |
| Sensor | 20 | 706C | 0032 | 0400 | 4751 | | | | | | | - |

Figure 60. Vapor Pressure Sensor Overview Screen - Page 2

3. Touching Actions>Help opens the Online Help to view descriptive information about the data in the tables for this device.

PMC Status - Healy Assist

Touch Menu>Diagnostics>PMC>Status (Figure 61) to open the PMC Version screen (Figure 62).



Figure 61. Accessing PMC Status Diagnostic Screen

| | System Status | 0 Warning(s) 0 Alarm(s) | 08/19/2022 02:01 AM |
|-----------|------------------------|----------------------------|---------------------|
| | Diagnostics PMC Status | | < Share 🔾 |
| Home | PMC Version 01.04 | | |
| Favorites | | | |
| Menu | | | |
| Actions | | | |
| | | | |
| | | | |

Figure 62. PMC Version Screen Example

PMC Status - ARID Assist

Touch Menu>Diagnostics>PMC>Status (Figure 61) to open the PMC Status screen (see Figure 63). See Help via Actions button for further details of screen.

| 000 | ISD SETUP WARN | | 1 Warning(s) 4 Alarm(s) | 10/20/2 | 2023 10:40 PM |
|-----------------|-----------------------|--------|----------------------------|---------|---------------|
| | Diagnostics PMC Stat | us | | ß | < Share O |
| Home | PMC Version | 01.04 | | | |
| Favorites | Vapor Pressure [iwc] | -0.700 | | | |
| 0 | Vapor Processor State | Off | | | |
| Menu Actions | Vapor Processor Fault | Normal | | | |

Figure 63. Example ARID PMC Status Screen

Vapor Monitor - Clear Test After Repair

Since ISD monitoring tests operate on sensor data gathered over a fixed time interval (calendar days), in normal operation, following a repair, it will be necessary for an Authorized Service Contractor (ASC) to perform a CLEAR TEST AFTER REPAIR (CTAR). This function clears specific posted warnings and alarms for the selected ISD tests. This will prevent data for the selected Test Type prior to the Last Clear Date/Time posted from being used at the next Assessment Time. The result will be a 'No Test' until the correct amount (days) of new data are available for the cleared test(s). Using this feature will result in a logged entry in the ISD 'Shutdown & Misc. Event Log'. The customer would be expected to retain evidence that a repair was performed.

EXAMPLE PROCEDURE

1. The Vapor Monitor posts a Vapor Leak Fail alarm. Navigate to Diagnostics>Vapor Monitor>Clear Test After Repair (see Figure 64).



Figure 64. Vapor Monitor Clear Test After Repair Screen

2. In the Test Type drop-down box, scroll down to test type to clear, in this example, Vapor Leak (Figure 65).



Figure 65. Select Test Type

3. Touch the Clear Test button to clear the test (Figure 66).

| 000 | MISSING REL | AY SETUP | 1 Warn 3 Alarn | n(s) 10/03/20 | 22 12:21 AM |
|-----------|-------------|---------------|---------------------------|---------------|-------------|
| | Diagnostics | Vapor Monitor | Clear Test After Repair 🕤 | \rangle | < Share 🖸 |
| Home | | Test Type | Vapor Leak | • | |
| Eavorites | | Last Clear | Never | | |
| | | FP Label | | | |
| Menu | | | Clear Test | | |
| Actions | | | Override Shutdown | | |

Figure 66. Clear Test

4. A Confirmation Message dialog box appears.



Figure 67. Confirmation Message Dialog Box

- 5. Touch the ✓ button to clear the warnings and alarms for the selected test. This will prevent data for the selected Test Type prior to the Last Clear Date/Time posted from being used at the next Assessment Time. Using this feature will result in a 'TEST MANUALLY CLEARED' logged entry in the ISD 'Shutdown & Misc. Event Log' and the Last Clear field will also update.
- 6. The date and time in the Last Clear field updates (see Figure 68).

| | h 1: FLOW COLLECT FAIL | | 10/03/2022 12:31 AM |
|------|--------------------------|---------------------------------|---------------------|
| | Diagnostics Vapor Monito | r 🔷 Clear Test After Repair 😋 🔪 | Share 😋 |
| Home | Test Type | Vapor Leak | • |
| | Last Clear | 10/03/2022 12:23 AM | R |
| | FP Label | | |
| Menu | | Clear Test | |
| E | | Override Shutdown | |
| | | | |

Figure 68. Last Clear Field Updates

7. Touch the Share drop-down arrow to print out the updated Clear After Test Repair history (GUI only) (Figure 69).

| TLS 450 UST | |
|-----------------------|-----|
| VEEDER-ROOT TEST LAB | |
| 125 POWDER FOREST DR | |
| SIMSBURY, CT 06070 | |
| , | |
| TEST FAIL CLEAR DATES | |
| CONTAINMENT OVER PRES | s |
| 01-01-70 12:00:00 A | м 🥖 |
| VAPOR LEAKAGE TEST | |
| 10-03-22 12:23:36 A | м |
| SENSOR OUT TEST | |
| 01-01-70 12:00:00 A | M |
| SETUP TEST | |
| 01-01-70 12:00:00 A | M |
| PROCESSOR STATUS TEST | |
| 01-01-70 12:00:00 A | м |
| VAPOR COLLECTION TEST | |
| FP: 1 h: 1 BLEND3 | |
| 01-01-70 12:00:00 A | М |
| FP: 2 h: 2 BLEND3 | |
| 01-01-70 12:00:00 A | м |
| FP: 3 h: 3 BLEND3 | |
| 01-01-70 12:00:00 A | м |
| FP: 4 h: 4 BLEND3 | |
| 01-01-70 12:00:00 A | м |
| | |

Figure 69. Clear After Test Repair History Printout

8. Notice - The Vapor Collection test type lets you to clear a collection test on specific fuel position hoses (see Figure 70).

| 000 | Ln 1: LINE O | UT | | 1 Warning(s) 20 Alarm(s) | 10/03/2022 12:32 AM |
|-----------|--------------|---------------|-------------------------|-----------------------------|---------------------|
| | Diagnostics | Vapor Monitor | Clear Test After Repair | 0 | < Share 🔾 |
| Home | | Test Type | Vapor Collection | • | |
| Favorites | | Last Clear | | | |
| Menu | | 8 | ▼ 📝 FP01 - Never | - | |
| | | FP Label | FP02 - Never | | |
| Actions | | | FP03 - Never | | |
| | | | FP04 - Never | - | |
| | | | Clear Test | | , • |
| | | | | | |

Figure 70. Clearing Vapor Collection Test By Hose

Vapor Monitor - Hose Events

1. Touch Menu>Diagnostics>Vapor Monitor (Figure 71), then touch Hose Events (Figure 72).



Figure 71. Selecting Vapor Monitor Hose Events

2.



Figure 72. Vapor Monitor Hose Events Screen

3. Touch the Actions button, then select a Fuel Position (FP) and Hose (item 1 Figure 73), Hose # (item 2) and touch the \checkmark button to display the vapor collection events for the selected hose (fig).



Figure 73. Selecting Fuel Position and Hose

| 00 | L 1: | SENS | OR | OUT AL | ARM. | | | 4 Warnii 13 Alarn | ng(s) h(s) Jul | 11 2022 10:53 | АМ |
|-----------|------|--------|------|--------|----------|----|------------|----------------------|-------------------|---------------|-----|
| | Diag | gnosti | cs | Vapo | r Monito | r | Hose Event | s C | | < Shar | e 🔿 |
| Home | | | | | | | FP: 1 - h | 1: BLEND3 | | | |
| nome | # | Date | /Tin | ne | | | Duration | A/L | Vapor | Fuel | |
| | 1 | Jul | 04 | 2022 | 07:21 | AM | 118 | 4.23 | 59.18 | 14.00 | |
| Envorites | 2 | Jul | 04 | 2022 | 07:31 | AM | 181 | 1.49 | 17.90 | 12.00 | |
| ravorites | 3 | Jul | 04 | 2022 | 07:42 | AM | 133 | 0.35 | 3.19 | 9.00 | |
| | 4 | Jul | 04 | 2022 | 07:49 | AM | 97 | 0.22 | 1.35 | 6.00 | |
| Menu | 5 | Jul | 04 | 2022 | 07:59 | AM | 157 | 1.59 | 34.91 | 22.00 | |
| | 6 | Jul | 04 | 2022 | 08:08 | AM | 97 | 0.22 | 1.35 | 6.00 | |
| | 7 | Jul | 04 | 2022 | 08:12 | AM | 97 | 0.45 | 5.46 | 12.00 | |
| Actions | 8 | Jul | 04 | 2022 | 08:21 | AM | 151 | 1.66 | 33.20 | 20.00 | |
| | 9 | Jul | 04 | 2022 | 08:41 | AM | 109 | 0.29 | 2.06 | 7.00 | |
| | 10 | Jul | 04 | 2022 | 09:05 | AM | 145 | 1.87 | 41.25 | 22.00 | |
| | 11 | Jul | 04 | 2022 | 09:12 | AM | 181 | 0.51 | 6.63 | 13.00 | |
| | 12 | Jul | 04 | 2022 | 09:19 | AM | 145 | 0.38 | 3.83 | 10.00 | |
| | 13 | Jul | 04 | 2022 | 09:25 | AM | 157 | 0.75 | 15.10 | 20.00 | - |

Figure 74. Vapor Collection Hose Events Screen

This diagnostic screen contains vapor collection performance by hose events. In this screen you can verify, over time, vapor collection results on a selected hose. Recorded hose events on the screen are qualified as follows:

- · Single hose dispenses from the selected dispenser
- Fuel dispenses greater than 3.0 gallons
- A/L ratio between 0.0 and 5.0.

It may take a few minutes after a dispense for the event to show in the data.

- If there was a recent Clear Test After Repair (CTAR) performed, the data shown is from all dispense events since last CTAR was performed.
- The data on this screen is the same as shown on the Hose Histogram (Web GUI only).

To refresh the data shown on the 450PLUS GUI, touch the **Actions** button>Select FP/Hose #> [In the Web GUI refresh data by selecting **Refresh**].

ISD Operability Test Procedures

The following procedures shall be used at field sites to determine the operability of the Veeder-Root ISD system to satisfy the requirements documented in <u>VAPOR RECOVERY CERTIFICATION PROCEDURE, CP-201,</u> <u>CERTIFICATION PROCEDURE FOR VAPOR RECOVERY SYSTEMS AT GASOLINE DISPENSING</u> <u>FACILITIES</u>. Testing the ISD equipment in accordance with this procedure will verify the equipment's operability for Vapor Containment Monitoring and Vapor Collection Monitoring.

Veeder-Root's TLS console ISD System Self-Test Monitoring algorithms are designed to verify proper selection, setup and operation of the TLS console modules and sensors and will not complete and report passing test results in the event of a failure of components used in the system. Completed ISD monitoring tests are evidence that:

- The system was properly powered for data collection
- All necessary ISD sensors were setup and connected
- All necessary ISD sensors were operating within specification
- All internal components including TLS console modules were properly setup and operating within specification

Veeder-Root recommends printing a copy of the 'ISD Status Events (Monthly)' and 'ISD CARB Daily' reports periodically to determine that compliance tests are being completed in accordance with local and state regulations.

Vapor Pressure Sensor Verification Test

See EO VR 202 Exhibit 9 for the Pressure Sensor Verification Test.

Vapor Flow Meter Operability Test

See EO VR 202 Exhibit 9 for the ISD Vapor Flow Meter Operability Test Procedure.

Readiness/Function Code

The TLS-450PLUS ISD software shall store a code upon first completing a full diagnostic check of all monitored components and systems. This is applicable when the ISD feature is initially setup or when power is restored.

The TLS will store a readiness code following power-up and once a day at the ISD test time until the ISD feature is fully operational (ready). There are five fields that make up the Result Code, ABCDE, defined below.

ISD equipment self-tests Field:

A - ISD feature setup test. Failing this test indicates one or more ISD setup parameters are incorrect.

B - ISD data streams performance test. Failing this test indicates that there is either:

- One or more ISD sensor-out alarms.
- One or more data streams have been missing for a 24 hour period.

ISD tests:

C - Collection Gross A/L (or Flow Performance) – All hoses

- D Containment Gross Over Pressure & Vapor Leakage
- E Vapor Processor All vapor processor tests (if Vapor Processor is installed)

Result Codes by Priority:

P – Pass

F – Fail

N – No Test

Standard ISD test codes that represent multiple devices (e.g. collection tests on all hoses) are the combined individual test results (e.g. any test with an 'F' result yields a combined tests result of 'F', etc., so that a combined 'P' only results when all tests are 'P').

The Readiness code is reported on every power up. If any of the results do not pass ('P'), the Readiness code is updated daily, until all tests pass.

TLS-450PLUS ISD is considered ready once all five readiness code parameters report pass ('P'), at which point a readiness code is no longer recorded until triggered by the next power up event.

The readiness code is available via the ISD Monthly Report - printout if queued in the most recent 10 events:

Shutdown & Misc. Event LogAction or NameDateTimeDescription2002/03/0523:59ReadinessCodeISD:PPEVR:EVR</

Under the heading "Action or Name" the following can be used based on the Readiness Code reported:

| Date | Time | Descriptio | n | | | | Action or Name |
|------------|-------|------------|------|----|------|------|---------------------------|
| 2002/12/26 | 21:59 | Readiness | ISD: | ΡP | EVR: | PPPP | EVR/ISD System Ready |
| 2002/12/26 | 21:59 | Readiness | ISD: | ΡP | EVR: | NNNN | EVR Readiness Pending |
| 2002/12/26 | 21:59 | Readiness | ISD: | ΡF | EVR: | NNNN | Check ISD Sensors |
| 2002/12/26 | 21:59 | Readiness | ISD: | FN | EVR: | NNNN | Check Setup Configuration |

Descriptions should support readiness code conditions, prioritized left to right.

An ISD Monthly Report printout example is shown in Figure 75.

.

| γ |
|---|
| |
| копсе Events At least 1 action EVENT for every failure listed above |
| Vapor Recovery System is ready |
| ISD monitor is ready |
| |

Figure 75. ISD Monthly Report - Printout Example

REPORT ACCESS PRINTING

- ISD CARB Monthly (see Figure 82).
- ISD Status Events (Monthly) (see Figure 88).

Operations

Alarms

The TLS console is continuously monitoring the vapor recovery system and ISD sensors for alarm conditions such as excessively high or low vapor collection, containment system vapor leakage and equipment problems.

ALARM MESSAGES

ISD monitoring tests operate once each day. Warning and failure conditions are posted at the designated posting time after the tests are complete.

Warnings

WARNINGS indicate when attention is required. When a WARNING is posted a warning alarm event is logged in the ISD reports, posted on the status bar of the GUI and printed to the printer if setup in Automatic Events. If the condition persists, a WARNING will remain active for a 1, 7 or 30 day warning period depending on the test type.

Failures

If a WARNING condition persists, a FAILURE alarm will be posted after the warning period and THE SITE DISPENSING EQUIPMENT IS SHUT DOWN (see RESTARTING STATION AFTER ISD SHUTDOWN for instructions on restarting dispensing). When a FAILURE is posted a failure alarm event is logged in the ISD reports, posted on the status bar of the GUI and printed to the printer if setup in Automatic Events.

RESTARTING STATION AFTER ISD SHUTDOWN ALARMS

NOTICE Consult state and local regulations prior to restarting equipment.

After one of the ISD Shutdown Alarms occurs press Menu>Diagnostics>Vapor Monitor>Clear Test After Repair, to display the screen below and press the **Override Shutdown** button, then touch the **Confirm** message to continue operation of the site after the alarm has posted (see Figure 76). If the site or dispenser(s) are not shut down, this button is grayed out, otherwise press to override a shutdown in effect and resume dispensing. Dispensing resumes, the alarm light continues to flash, and any alarm messages display until the alarm has been cleared. A 'PUMPS MANUALLY RE-ENABLED' event is entered in the 'Shutdown & Misc Event Log'.

| | Vp 1: ISD VP PRES | 10/18/2019 08:26 PM | |
|-----------|---------------------|-----------------------------------|------------------|
| | Diagnostics Vapor M | Ionitor Clear Test After Repair 🕤 | Print (0) |
| Home | | | |
| | Test Type | Containment Pressure | ▼ |
| Favorites | FP Label | FP01-h 2,h 4 | T |
| Menu | Last Clear | Never | |
| | | Clear Test | |
| Actions | | | |
| | | Override Shutdown | |

Figure 76. Clear Test After Repair Screen

ALARM LOGS

Alarms will be recorded in the Warning Log or Failure Log of the monthly reports, which can be viewed electronically or via the integral printer (if queued in the most recent 10 events). The following example shows an excerpt from an electronically accessed monthly report.

| _ | | | | | | | |
|---|-----------|-------|------------|-------------------|--------|----------------|-------|
| | Warning A | larms | | | | | |
| | Date | Time | Desc | ription | | Reading | Value |
| | 2022/01/0 | 23:59 | VAPOR VAPO | OR CONTAINMENT L | EAKAGE | С FH @ 2 " W С | 14 |
| | 2022/01/0 | 23:59 | A/L RATIO | DEGRADATION | | FP2 MID | 0.69 |
| | 2022/12/3 | 23:59 | VAPOR VAPO | OR CONTAINMENT LE | AKAGE | СЕН @ 2 " W С | 13 |
| | 2022/12/3 | 23:59 | A/L RATIO | DEGRADATION | | FP2 MID | 0.67 |
| | Failure A | larms | | | | | |
| | Date | Time | Desc | ription | | Reading | Value |
| | 2022/01/0 | 23:59 | A/L RATIO | GROSS BLOCKAGE | | FP1 REG | 0.06 |
| | 2022/01/0 | 23:59 | A/L RATIO | DEGRADATION | | FP1 REG | 0.14 |
| | 2022/01/0 | 23:59 | A/L RATIO | GROSS BLOCKAGE | | FP1 MID | 0.13 |
| | 2022/01/0 | 23:59 | A/L RATIO | DEGRADATION | | FP1 MID | 0.15 |
| | | | | | | | |

Figure 77. Monthly Report Warning & Failure Log Example

ALARM SEQUENCE

Each ISD monitoring test operates once a day on sensor data gathered over a fixed time interval and with a minimum required number of monitored events. The interval is a fixed number of calendar days depending on the test being run. As an example, the A/L Degradation Vapor Collection Monitoring test requires seven calendar days of data and at least 30 fueling events. In this example, each daily test result represents a test based on the prior seven days' time period. When a test first fails, a warning is posted and a warning event is logged. If this condition persists for seven more consecutive days, an alarm is posted, a failure alarm event is logged and the site is shut down. If the condition continues, additional failure events are logged and the site will remain shut down.

ISD ALARM SUMMARY

Table 4 summarizes the ISD Alarms.

NOTICE Alarms with footnote 2 will result in a site shutdown.

| Displayed Message | ISD Monitoring Category | Cause | Suggested Troubleshooting ¹ | |
|-------------------------------------|----------------------------|--|--|--|
| ISD VAPOR LEAK WARN | Containment | Vapor Leakage Detection test warning | •Exhibit 7 Nozzle Bag Test •Exhibit 9/10 Operability Test | |
| ISD VAPOR LEAK FAIL ² | Containment | Vapor Leakage Detection test - 8th consecutive failure | •T.P. 201.1E-PVV Test •Exhibit 4 Clean Air Separator Test •TP-201.3 | |
| ISD GROSS PRESS WARN | Containment | Gross Over-Pressure test warn- ing | •Are ball valves for the clean air sep- arator in the correct position? | |
| ISD GROSS PRESS FAIL ² | Containment | Gross Over-Pressure test - 8th consecutive failure | •Is the ball valve hear the pressure sensor in the correct position? •Exhibit 7 Bag Test | |
| ISD DEGRD PRESS WARN | Containment | Degradation Over-Pressure test warning | •T.P. 201.1E-PVV Test •T.P. 201.3 •Look for problems using one or more of the following VR-202 procedures/ tests: Dispenser Integrity Test B-3 (i.e. 'Plumbing Tightness' test), Exhibit 4, Exhibit 5, Exhibit 9 (pressure sensor only) or Flow Rate Verification per sec- tion 1.2.3. | |
| ISD DEGRD PRESS FAIL ² | Containment | Degradation Over-Pressure test - 30th consecutive failure | •T.P. 201.3 •Look for problems using one or more of the following VR-202 procedures/ tests: Dispenser Integrity Test B-3 (i.e. 'Plumbing Tightness' test), Exhibit 4, Exhibit 5, Exhibit 9 (pressure sensor only) or Flow Rate Verification per sec- tion 1.2.3. | |
| ISD VP STATUS WARN ^{4,5} | Processor | Failure of Vapor Processor Effluent Emissions | Troubleshooting Guide | |
| ISD VP STATUS FAIL ^{2,4,5} | Processor | 2nd Consecutive Failure of Vapor Processor Status test | •VP Emissions Test | |
| ISD VP PRESS WARN ⁶ | Processor | 90 th percentile of 1 day ullage pressure exceeds 2.3 IWC | Exhibit test for HIRT or ARID | |
| ISD VP PRESS FAIL ⁶ | Processor | 2 nd consecutive failure of Vapor Processor Over-Pressure test | | |
| VP EMISSION WARN ^{3,4,6} | Processor | Mass emission exceeded the certified threshold | •Troubleshooting Guide | |
| VP EMISSION FAIL ^{3,4,6} | Processor | 2nd Consecutive Mass Emis- sion test failure | •Exhibit 11 | |

Table 4. ISD Alarm Summary

| Displayed Message | ISD Monitoring Category | Cause | Suggested Troubleshooting ¹ | |
|--------------------------------------|----------------------------|---|--|--|
| hnn: FLOW COLLECT WARN | Collection | 1-Day Gross A/L Test warning | | |
| hnn: FLOW COLLECT FAIL ² | Collection | 1-Day Gross A/L Test failure - 2nd consecutive failure | | |
| hnn: GROSS COLLECT WARN | Collection | 1-Day Gross A/L Test warning | •Visually inspect hanging hardware at | |
| hnn: GROSS COLLECT FAIL ¹ | Collection | 1-Day Gross A/L Test failure - 2nd consecutive failure | e Exhibit 7 Nozzle Bag Test •VR-202 Exhibit 5 | |
| hnn: DEGRD COLLECT WARN | Collection | 7-Day Degradation A/L Test warning | | |
| hnn: DEGRD COLLECT FAIL ² | Collection | 7-Day Degradation A/L Test - consecutive failure | | |
| ISD SENSOR OUT WARN | Self-Test | ISD Sensor Out Self-Test warn- ing | Confirm ISD sensor & module installa- | |
| ISD SENSOR OUT FAIL | Self-Test | ISD Sensor Out Self-Test 8th failure | tion. | |
| ISD SETUP WARN | Self-Test | Failure of Setup Test | Confirm FVR/ISD programing per Setu | |
| ISD SETUP FAIL | Self-Test | 8th consecutive failure of Setup Test | section. | |

| Table 4. | ISD Alarm | Summarv | (Continued) |
|----------|-----------|----------|---|
| 14010 11 | | • anna y | (••••••••••••••••••••••••••••••••••••• |

¹ See TLS-450PLUS ISD Troubleshooting Manual P/N 577014-463 for a complete list of suggestions.

² ISD Shutdown Alarms - see "Restarting Station After ISD Shutdown Alarms" on page 53.

³ This warning will result in an ISD VP Status Warn.

⁴Veeder-Root Polisher

⁵Does not apply to Healy CAS or Hirt VCS 100

⁶Hirt VCS 100

OTHER ALARMS

Table 5 summarizes additional alarms that may be posted by ISD related equipment. These alarms are not critical to vapor recovery functionality, but could indicate erroneous setup or equipment malfunction. Table 6 lists a wireless related sensor alarm.

NOTICE Additional TLS console alarms listed in the TLS-450PLUS Console Troubleshooting Guide (P/N 577014-075) may be posted and may lead to an ISD shutdown alarm if persistent.

| Displayed Message | Set Condition | Clear Condition |
|--------------------------|---|---|
| MISSING RELAY SETUP | At least one gasoline line/relay to shut down on required ISD alarms. | Complete required shutdown alarms via Settings> Automatic Events> Device Tasks for all vapor recovery (gasoline) products. |
| MISSING TANK SETUP | There are no vapor recovery (gasoline) tanks defined, or at least one gasoline pump (STP) does not have a gasoline tank assigned to it. | Complete gasoline tank setup, verify ther- mal coefficients. Ensure ISD shutdown requirements are complete. |
| MISSING HOSE SETUP | The Hose Mapping needs at least one Hose mapped. | Complete the Hose Mapping. |
| hnn: AIR FLOW MTR SETUP | Incoming transaction from a hose with an unavailable Air Flow Meter. | Ensure assigned Air Flow Meter is config- ured Enabled for the specific hose. |
| MISSING VAPOR PRES SEN | There is no Vapor Pressure Sensor configured Enabled or assigned to ISD. | Complete Vapor Pressure Setup and assign VPS in Setup> Vapor General> General . |
| MISSING AIR FLOW MTR | At least one AFM must be assigned to a Config- ured/Enabled Hose. | Assign an AFM to all Configured/ Enabled Hose(s) in Hose Settings. |
| afnn: CHK VAPOR FLOW MTR | Failure of locked rotor test - possible locked Air Flow Meter. | Locked rotor test passes or Air Flow Meter deconfigured, or test cleared. |

| Table | 5. | Other | Alarms |
|-------|----|-------|--------|
| | | | |

Table 6. Wireless Related Sensor Alarm

| Displayed Message | Devices | Description | Suggested Troubleshooting |
|-------------------|------------------------------------|---|------------------------------------|
| BATTERY WARNING | Vapor Valve, VPS, AFM and Probe | Device transmitter reports battery status as 'Replace' for 24 hours | Remove and replace battery pack |

Table 7 summarizes Hose Setup warning messages.

| Message | Cause | Action | |
|---|---|---|--|
| Label Not Assigned | Missing hose label selection | | |
| FP Label Not Set Fuel Position label not set. | | Check hose settings in Setup>Vapor | |
| Air Flow Meter Not Assigned | Air Flow Meter not selected and assigned to the hose. | Concolion>nose dealings | |
| Assigned Air Flow Meter Not Configured | Air flow meter is assigned to a hose but is disabled in Device Setup. | Check Air Flow Meter setup in Setup>Device>Air Flow Meter | |
| Meter Not Mapped | Fuel meter not mapped to hose. | Check meter mapping in Setup>Vapor Collection>Hose Mapping | |

Table 7. Hose Setup Data Warning Messages

PMC ALARM SUMMARY

Table 8 contains a listing of the PMC generated alarms including their displayed message and cause. TLS Console PMC alarms may be interspersed amongst non-PMC alarms.

| Displayed Message | ISD Monitoring Category | Cause | Suggested Troubleshooting |
|----------------------|-------------------------------|--|--|
| PMC SETUP FAIL | Self-Test | PMC setup is incomplete. Check configuration. [ISD Only] When a PMC SETUP FAIL is posted, an ISD SETUP WARN will be posted at assessment time. If the condition exists for 8 consecutive days an ISD SETUP FAIL will be posted | Verify that all required components are installed and operational. PMC Only configuration requires: At least one Gasoline Probe/Tank installed and configured. One Vapor Pressure Sensor installed and configured. One Vapor Valve installed and configured and configured. One Vapor valve installed and configured. ATM Sensor configured and enabled. [Veeder-Root Polisher] ATIM Sensor configured and enabled. [Veeder-Root Polisher] [ARID has 2 inputs] [HIRT has 1 input] See Table 9 below for Setup Fail Diagnostic Procedure |
| PMC SENSOR FAULT | Self-Test | This fault will post along with an alarm for specific components used by PMC that has failed or reported a fault condition. See below. COMMUNICATION ALARM Sensor: Vapor Valve, Vapor Pressure Sensor, Atmospheric Pressure Sensor PRESSURE FAULT ATM Sensor: Atmospheric Pressure Sensor PROBE OUT Device Tank (If all gasoline tanks have PROBE OUT alarm) | Check for Sensor Device Alarm or Fault. Vapor Valve, Vapor Pressure Sensor, Atmospheric Pressure Sensor, posting a fault condition. Follow Actions listed in TLS-450PLUS online Help to resolve issue. |
| MISSING VP INPUT | Self-Test | An external input for the vapor processor cannot be found. | Check setup in Devices> External Input HIRT requires 1 External Input: Type as Vapor Processor ARID requires 2 External Inputs: Types as Vapor Processor and Vapor Processor 2 Check setup in Setup > Vapor Management > Processor Type as Vapor Processor 2 Orientation Normally Open |
| VP EMISSIN WARN | Processor | 90th percentile of 1 day ullage pressure exceeds 2.3 IWC | Exhibit test for ARID Permeator Proces- |
| VP EMISSION FAIL | Processor | 2nd consecutive failure of vapor processor | sor or HIHI |

Table 8: TLS-450PLUS (PMC) Alarm Troubleshooting Summary

A PMC Setup Fail warning occurs when the PMC setup is incomplete. Check configuration. Follow the diagnostic steps in Table 9 below to resolve this issue.

| Step | Procedure |
|------|---|
| 1 | Gasoline Probe/Tank installed and configured? |
| 2 | ATM Sensor installed and configured? (Veeder-Root Polisher only) |
| 3 | Vapor Valve installed and configured? (Veeder-Root Polisher only) |
| 4 | Vapor Pressure Sensor installed and configured? |
| 5 | In Setup>Vapor Management>Processor: Is the Vapor Processor Type assigned? |
| 6 | In Setup>Vapor General>General: Is the Vapor Pressure Sensor assigned? |
| 7 | For ARID and HIRT processors, are the required External Inputs con- figured? |
| 8 | Exiting out of Setup will cause the TLS Console System Self-Test. |
| 9 | If alarm does not clear, contact Veeder-Root Technical Support at (800) 323-1799. |

Table 9. PMC Setup Fail Diagnostic Procedure

Reports

There are two main reports (CP-201 required) that are stored by the ISD system: the Monthly Status Report (CARB Monthly), stored for 12-months, and the Daily Status Report (CARB Daily), stored for 365 days. You can access and view or print out ISD reports from the TLS console front panel by touching Menu>Reports>ISD (see Figure 78). In addition, there are three additional reports available with ISD; Daily Collection; Daily Containment; and Status Events Monthly.



Figure 78. Accessing ISD Reports

- The Daily Status Report (CARB Daily) includes:
 - Maximum and minimum ullage pressures
 - Results of the Vapor Containment Monitoring Gross (75th percentile), Degradation (95th percentile) ullage pressure test and Vapor Leakage Detection (CVLD) tests
 - Vapor Collection monitoring test results for each fueling position
- The Monthly Status Report (CARB Monthly) includes:
 - ISD operational up-time (as a percentage)
 - EVR/ISD system pass time (as a percentage)
 - Last 10 Warnings log
 - Last 10 Failures log
 - Last 10 Misc. Events log
- Daily Collection Report includes daily results of:
 - ISD EVR Status
 - % Up Time
 - Vapor Collection Monitoring test results for each gasoline fueling position.
 - The printout will also include the ISD Status Report.

• Daily Containment Report includes daily results of:

-ISD EVR Status

-Vapor Containment Monitoring Gross (75th percentile), Degradation (95th percentile) with Max and Min daily pressures.

- Vapor Leakage Detection (CVLD)
- The printout will also include the ISD Status Report
- Status Events (Monthly) Report (The selected day range: Status Report includes:
 - Status Report
 - Warning Alarms
 - Failure Alarms
 - Shutdown & Misc. Event Log

NOTICE Additional report details can viewed within reports by touching the Actions button and then touching Help.

VIEWING AND PRINTING CARB DAILY REPORT

On the TLS-450PLUS screen, touch Menu>Reports>ISD>CARB Daily (see Figure 79 and Figure 80).



Figure 79. Accessing CARB Daily Report

Touch the **Actions** button to select a date/range then touch the **Check** button to accept the date/range and view the report.





Touch the Share button down arrow and touch Print to print out the report on the console printer (see Figure 81).

| 09/23/22 12:01 AM | COLLECTION TESTS |
|---|--|
| ISD DAILY REPORT | A/L(#) A/L(#) |
| TLS 450PLUS 123 Main Street City, State Phone # 09-23-22 12:01 AM EVR TYPE: VACUUM ASSIST ISD VERSION 01.07 | FP 1: BLEND3 PASS 0.93(179) 0.93(179) FP 2: BLEND3 NOTEST N (0)N N (0)N FP 3: BLEND3 WARN BLKD(253)W 0.00(253)W FP 4: BLEND3 FAIL BLKD(265)F 0.00(284)W |
| REPORT DATE: 08-19 ISD VERSION 01.07 OVERALL STATUS FAIL EVE CONTAINMENT FASS EVE COLLECTION FAIL | SELF TEST SETUP TEST PASS SENSOR OUT TEST PASS |
| STACEL 0 of 0 NOTEST SELF TEST PASS ISD MONITOR UP-TIME 100% | LAST 10 FAILURES 09-12-22 23:59 ISD SENSOR OUT FAIL |
| CONTAINMENT TESTS GROSS 95% 0.6 "WC DGRD 75% 0.2 "WC UNDOD UNIX" | 09-12-22 23:59 MISSING RELAY SETUP |
| MAX 0.9 "WC MIN -2.7 "WC | LAST 10 WARNINGS 09-12-22 23:59 MISSING RELAY SETUP |
| | |

Figure 81. Example CARB Daily Report Printout

VIEWING AND PRINTING CARB MONTHLY REPORT

On the TLS-450PLUS screen, touch Menu>Reports>ISD>CARB Monthly (see Figure 78 and Figure 82).

Touch the **Actions** button to select a date/range then touch the **Check** button to accept the date/range and view the report.



Figure 82. Example CARB Monthly Report

Touch the Share button down arrow and touch Print to print out the report on the console printer (see Figure 83).

| 10/07/22 12:02 AM | + |
|--|--|
| ISD MONTHLY REPORT | 10-05 0:00 ISD VAPOR LEAK WARN |
| TLS 450PLUS 123 Main Street City, State Phone # | 10-05 0:00 FP03 BLEND3 DEGRD COLLECT WARN 0.59 10-04 0:00 ISD VAPOR LEAK WARN |
| 10-07-22 12:02 AM | 10-04 0:00 FP03 BLEND3 DEGRD COLLECT WARN 0.61 |
| EVR TYPE: VACUUM ASSIST ISD VERSION 01.07 | 10-03 0:00 ISD VAPOR LEAK WARN |
| REFORT DATE: OCT 2022 OVERALL STATUS FAIL EVR CONTAINMENT FAIL EVR COLLECTION WARN STAGE1 1 of 1 NOTEST SELF TEST FASS ISD MONITOR UP-TIME:100% EVR/ISD PASS TIME: 0% | 10-02 0:00 ISD VAPOR LEAK WARN 10-01 0:00 ISD VAPOR LEAK WARN LAST 10 FAILURES |
| DATE TIME DEVICE HOSE DESCRIPTION VALUE | 10-07 0:00 ISD VAPOR LEAK FAIL |
| LAST 10 WARNINGS | LAST 10 MISC EVENTS |
| 10-07 0:00 FP03 BLEND3 DEGRD COLLECT WARN 0.53 | |
| 10-06 0:00 ISD VAPOR LEAK WARN | |
| 10-06 0:00 FP03 BLEND3 DEGRD COLLECT WARN 0.57 | |
| · · · · · · · · · · · · · · · · · · · | |

Figure 83. Example CARB Monthly Report Printout
VIEWING AND PRINTING DAILY COLLECTION REPORT

On the TLS-450PLUS screen, touch Menu>Reports>ISD>Daily Collection (see Figure 78 and Figure 84).

Touch the **Actions** button to select a Period/Range then touch the **Check** button to accept the Period/Range and view the report.

| \bigcirc | ISD VAPOR LEA | K FAIL | 2 Warning(s) 2 Alarm(s) | 10/08/202 | 2 12:03 AM | | |
|------------|-----------------------------------|---------------------------------|----------------------------|----------------------------------|--------------------------|---------------|---------------|
| | Reports ISD | Daily Colleg | tion | 0 | | | < Share 🔿 |
| Home | Status Codes: ((ISD-W)ISD Sel | W)Warn (F)Fai f-Test Warning | (D)Degrada (ISD-F)ISD | ition Fail (G) Self-Test Fail | Gross Fail (N)No Test | | |
| | | | | | | Curr | ent Month |
| Favorites | Date | ISD EVR Status | % Up Time | FP1 BLEND3 | FP2 BLEND3 | FP3 BLEND3 | FP4 Blend3 |
| | 10/01/2022 | WARN | 100% | 0.89 | 0.90 | 0.78 | 0.97 |
| | 10/02/2022 | WARN . | 100% | 0.92 | 0.95 | 0.70 | 0.95 |
| Menu | 10/03/2022 | WARN | 100% | 1.06 | 1.04 | 0.56W | 0.93 |
| | 10/04/2022 | WARN | 100% | 1.05 | 0.82 | 0.54W | 0.95 |
| | 10/05/2022 | WARN | 100% | 1.06 | 1.04 | 0.52W | 0.93 |
| Actions | 10/06/2022 | FAIL | 100% | 1.05 | 0.82 | 0.49W | 0.95 |
| | 10/07/2022 | FAIL | 100% | 1.06 | 1.04 | 0.23W | 0.93 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Figure 84. Example Daily Collection Report

Touch the Share button down arrow and touch Print to print out the report on the console printer (see Figure 85).

| 10/08/22 | 12:19 7 | М | | | | |
|-----------|---------------------|--------|-----------|----------|----------|------------|
| TLS 450PI | LUS | | | | | |
| 123 Main | Street | | | | | |
| City, Sta | ate | | | | | |
| Phone # | | | | | | |
| | | | | | | |
| ISD STATU | JS REPOR | RΤ | | | | |
| SELECTED | RANGE : | | | | | |
| 10/01/202 | 22 12:00 |) AM - | - 10/08, | 2022 12 | 2:19 AM | |
| | | | | | | |
| EVR TYPE | | | VACUU | 4 ASSIS | r | |
| ISD TYPE | | | 01.07 | | | |
| VAPOR PRO | DCESSOR | TYPE | NONE | | | |
| OVERALL S | STATUS | TTOT | FAIL | | | |
| EVR VAPOR | COLLEC | .IION | WARN | | | |
| LVR VAPOR | CONTAL TOP TIP_1 | TME | 1008 | | | |
| EVB/ISD F | PASS TIM | (E | 0% | | | |
| | | | | | | |
| ISD COLLE | ECTION H | REPORT | r | | | |
| | | | | | | |
| Status Co | odes: (N | V)Warn | 1 (F) Fa: | il (D)De | egradat: | ion Fail |
| (G) Gross | Fail (I | (N) N= | TSD Se. | LI-Test | warning | (ISD-F)ISD |
| Sett-test | . rall | (N) NO | lest | | | |
| | | \$ IIP | FPI | FP2 | FP3 | FD4 |
| DATE | STATUS | TIME | BLEND3 | BLENDS | BLENDS | BLEND3 |
| | | | | | | |
| 10/01/22 | WARN | 100% | 0.89 | 0.90 | 0.78 | 0.97 |
| 10/02/22 | WARN | 100% | 0.92 | 0.95 | 0.70 | 0.95 |
| 10/03/22 | WARN | 100% | 1.06 | 1.04 | 0.56W | 0.93 |
| 10/04/22 | WARN | 100% | 1.05 | 0.82 | 0.54W | 0.95 |
| 10/05/22 | WARN | 100% | 1.06 | 1.04 | 0.52W | 0.93 |
| 10/06/22 | FAIL | 100% | 1.05 | 0.82 | 0.49W | 0.95 |
| 10/07/02 | FAIL | 100% | 1.06 | 1.04 | 0.23W | 0.93 |
| | | | | | | |

Figure 85. Example Daily Collection Report Printout

VIEWING AND PRINTING DAILY CONTAINMENT REPORT

On the TLS-450PLUS screen, touch Menu>Reports>ISD>Daily Containment (see Figure 79 and Figure 86).

Touch the **Actions** button to select a Period/Range then touch the **Check** button to accept the Period/Range and view the report.

| \mathbf{O} | System Statu | s | | | (| 0 Warning(s) 0 Alarm(s) | 10/08/2 | 022 12:32 A | м |
|--------------|------------------------------|-------------------------|--------------------|----------------------------------|--------------------------------|----------------------------|---------|-------------|-----|
| | Reports IS | D Daily | Conta | inment | 0 | | | < Share | 0 |
| Home | 7 Results » | Show | 25 🔻 | results per page | 00 | Page 1 | ▼ of 1 | Ð | 0 |
| | Status Codes (ISD-W)ISD S | : (W)Warn elf-Test W | (F)Fail /arning | (D)Degradatio (ISD-F)ISD Self | n Fail (G)Gro -Test Fail (N | oss Fail)No Test | | Current Mor | nth |
| Favorites | Date | ISD EVR Status | % Up Time | Gross 95% | Dgrd 75% | Max iwc | Min iwc | Leak CFH | Pr |
| | 10/01/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| Menu | 10/02/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| | 10/03/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| Actions | 10/04/2022 | PASS | 100% | -0.0 | -0.1 | -4.9 | -5.0 | 0 | |
| | 10/05/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| | 10/06/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| | 10/07/2022 | PASS | 100% | 0.0 | -0.2 | -5.0 | -5.0 | 0 | |
| | | | | | | | | | |
| | 4 | | | | | | | | • |

Figure 86. Example Daily Containment Report

Touch the Share button down arrow and touch Print to print out the report on the console printer (see Figure 87).

| TLS 450PLUS | | | | | | | | | | |
|--|--|--|--|---|--|--|---|---------------------|--|--|
| 123 Main Street | | | | | | | | | | |
| City, State | | | | | | | | | | |
| Phone # | | | | | | | | | | |
| ISD STATUS REPORT | | | | | | | | | | |
| SELECTED RA | ANGE : | | | | | | | | | |
| 10/01/2022 | 12:00 AM | 4 - 1 | 0/08/2 | 022 12 | 52 AI | 1 | | | | |
| | | | | | | | | | | |
| EVR TYPE | | v | ACUUM 1 | ASSIST | | | | | | |
| ISD TYPE | | 0 | 1.07 | | | | | | | |
| VAPOR PROCI | ESSOR TY | PE NO | ONE | | | | | | | |
| OVERALL ST | ATUS | P | ASS | | | | | | | |
| EVR VAPOR (| COLLECTI | ON PA | ASS | | | | | | | |
| EVR VAPOR (| CONTAINM | ENT PA | ASS | | | | | | | |
| TSD MONITOR HD_TIME 100% | | | | | | | | | | |
| ISD MONITOR | EVR/ISD PASS TIME 100% | | | | | | | | | |
| EVR/ISD PA: | SS TIME | 1 | 00% | | | | | | | |
| EVR/ISD PA: | SS TIME | 1 | 00% | | | | | | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN | SS TIME | 1 PORT | 00% | | | | | | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIN | SS TIME | 1 PORT | 00% | | | | | | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIN Status Code | SS TIME NMENT REI es: (W)Wa | l PORT arn (1 | 00% F)Fail | (D) Dec | grada | ion 1 | Fail | | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIN Status Code (G)Gross Fa | SS TIME NMENT RE es: (W)Wa ail (ISD | l PORT arn (1 -W)ISI | 00% F)Fail D Self | (D)De Test 1 | grada Varnin | tion 1 ng (I | Fail 5D-F)] | ISD | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Code (G)Gross Fa Self-Test 1 | SS TIME NMENT RE es: (W)Wa ail (ISD- Fail (N)1 | l PORT arn (: -W)ISI No Te: | 00% F)Fail D Self st | (D)De(-Test 1 | grada Varnii | tion l ng (I | Fail SD-F)] | ISD | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Code (G)Gross Fa Self-Test 1 | SS TIME NMENT RE ail (ISD- Fail (N)1 | l PORT arn (1 -W)ISI No Te: ISD | 00% F)Fail D Self: st | (D) Dee -Test 1 | grada Varnii | tion l ng (I | Fail SD-F)] | ISD | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Code (G)Gross F: Self-Test 1 | SS TIME NMENT RE es: (W)Wa ail (ISD- Fail (N)I | l PORT arn (: -W)IS! No Te: ISD %UP | 00% F)Fail D Self st GROSS | (D)De(-Test 1 DGRD | grada Narni: MAX | tion 1 ng (I MIN | Fail SD-F)] LEAK | ISD VAPC | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Codd (G)Gross F Self-Test) DATE | SS TIME NMENT RE SS: (W)Wail (ISD Fail (N)I SISD EVR STATUS | l PORT arn (: -W)ISJ No Te: ISD %UP TIME | DO% F)Fail D Self st GROSS 95% | (D)De(-Test 1 DGRD 75% | grada Varnin MAX "WC | tion) ng (I MIN "WC | Fail 5D-F)1 LEAK CFH | ISD VAPC PRCS | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Code (G)Gross F4 Self-Test 1 DATE 10/01/2022 | SS TIME NMENT REI ail (ISD- Fail (N)I ISD EVR STATUS PASS | l PORT arn (1 -W)ISI No Tes ISD %UP TIME 100% | DO% F)Fail D Self st GROSS 95% 0.0 | (D)Dec -Test 1 DGRD 75% -0.2 | gradat Narnin MAX "WC -5.0 | MIN MIN -5.0 | Fail 5D-F)1 LEAK CFH 0 | USD VAPC PRCS | | |
| ISD MONITON EVR/ISD PA: ISD CONTAIN Status Code (G)Gross FA Self-Test 1 DATE 10/01/2022 10/02/2022 | NMENT REP SS TIME NMENT REP Es: (W) Wa ail (ISD Fail (N)I ISD EVR STATUS PASS PASS | I PORT Arn (: -W)ISI No Te: ISD %UP TIME 100% 100% | 00% F)Fail D Self st GROSS 95% 0.0 0.0 | (D) De(-Test 1 DGRD 75% -0.2 -0.2 | yrada Marnin MAX "WC -5.0 -5.0 | MIN MIN WC -5.0 -5.0 | Fail SD-F)] LEAK CFH 0 0 | USD VAPC PRCS | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIL Status Code (G)Gross F Self-Test 1 DATE 10/01/2022 10/02/2022 | NMENT REJ SS TIME NMENT REJ ail (ISD Fail (N)I ISD EVR STATUS PASS PASS PASS | 1) PORT arn () -W)ISS No Te: ISD %UP TIME 100% 100% | 00% F)Fail D Self st GROSS 95% 0.0 0.0 0.0 | (D) De -Test 1 DGRD 75% -0.2 -0.2 -0.2 | MAX MAX "WC -5.0 -5.0 -5.0 | MIN "WC -5.0 -5.0 -5.0 | Fail SD-F)] LEAK CFH 0 0 0 | ISD VAPC PRCS | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIL Status Code (G)Gross F: Self-Test 1 DATE 10/01/2022 10/02/2022 10/03/2022 | NMENT REJ SS TIME NMENT REJ ail (ISD- Fail (N)1 ISD EVR STATUS PASS PASS PASS PASS | 1) PORT arn () -W)ISJ No Te: ISD %UP TIME 100% 100% 100% | F)Fail D Self: st GROSS 95% 0.0 0.0 0.0 0.0 | (D) Det -Test 1 DGRD 75% -0.2 -0.2 -0.2 -0.2 -0.1 | MAX "WC -5.0 -5.0 -5.0 -4.9 | MIN "WC -5.0 -5.0 -5.0 -5.0 | Fail SD-F)I LEAK CFH 0 0 0 0 | USD VAPC PRCS | | |
| ISD MONITOD EVR/ISD PA: ISD CONTAIN Status Code (G)Gross Fr Self-Test) DATE 10/01/2022 10/02/2022 10/03/2022 10/04/2022 | NMENT REI NMENT REI es: (W)W4 hil (ISD- Fail (N)I ISD EVR STATUS PASS PASS PASS PASS PASS | 1) PORT arn () -W)ISJ No Te: ISD %UP TIME 100% 100% 100% | F)Fail D Self- st GROSS 95% 0.0 0.0 0.0 -0.0 0.0 | (D) Det -Test 1 DGRD 75% -0.2 -0.2 -0.2 -0.2 -0.1 -0.2 | MAX "WC -5.0 -5.0 -5.0 -4.9 -5.0 | MIN "WC -5.0 -5.0 -5.0 -5.0 -5.0 | Fail 5D-F)1 LEAK CFH 0 0 0 0 0 | USD VAPC PRCS | | |
| ISD MONITO EVR/ISD PA: ISD CONTAIL Status Code (G)Gross F. Self-Test 1 DATE 10/01/2022 10/02/2022 10/03/2022 10/04/2022 | MMENT REI ail (ISD- Fail (N)I ISD EVR STATUS PASS PASS PASS PASS PASS PASS | 10 PORT -W)IS! No Te: ISD %UP TIME 100% 100% 100% | F)Fail D Self- st GROSS 95% 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | (D) Det -Test 1 DGRD 75% -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 | MAX "WC -5.0 -5.0 -4.9 -5.0 -5.0 | MIN "WC -5.0 -5.0 -5.0 -5.0 -5.0 -5.0 | Fail SD-F)1 LEAK CFH 0 0 0 0 0 0 0 0 | USD VAPO PRCS | | |

Figure 87. Example Daily Containment Report Printout

VIEWING AND PRINTING STATUS EVENTS (MONTHLY) REPORT

On the TLS-450PLUS screen, touch Menu>Reports>ISD>Status Events (Monthly) (see Figure 78 and Figure 88).

Touch the **Actions** button to select a Period/Range then touch the **Check** button to accept the Period/Range and view the report. Scroll down to view the complete report.

| $\bigcirc \bigcirc \bigcirc$ | ISD VAPOR LEAK | FAIL | | 3 Warning(s) 3 Alarm(s) | 10/08/2022 0 | 01:01 | AM | |
|------------------------------|----------------|----------|-------------------|----------------------------|--------------|-------|-----|--|
| | Reports ISD | Status E | vents (Monthly) 🗢 | | < | Shar | e O | |
| Home | | | | | Current Mo | nth | | |
| | STATUS | | | | | | | |
| (\star) | EVR Type | | | Vacuum Assist | | | | |
| Favorites | ISD Type | | | 01.07 | | | | |
| | Vapor Proces | sor Type | | None | | | | |
| | | | | | | | | |
| Menu | Overall State | us | | FAIL | | | | |
| | EVR Vapor Co | llection | | WARN | | | | |
| | EVR Vapor Co | ntainmen | t | FAIL | | | | |
| Actions | ISD Monitor | Up-Time | | 100% | | | | |
| | EVR/ISD Pass | Time | | 0% | | | | |
| - | WARNING ALAF | RMS | | | | | | |
| | DATE / TI | ME | DESCRIPTION | | READING | v | | |
| | 10/08/2022 1 | 12:00AM | A/L RATIO DEGRAD | ATION | FP3 BLEND3 | | - | |

Figure 88. Example Status Events (Monthly) Report

Touch the Share button down arrow and touch Print to print out the report on the console printer (see Figure 89).

| TLS 450PLUS | * |
|--|----------------------------|
| 123 Main Street | 2022-10-04 00:00:16 |
| City, State | VAPOR CONTAINMENT LEAKAGE |
| Phone # | GROSS FAIL |
| ISD STATUS REPORT | 2022-10-03 00:00:07 |
| | VAPOR CONTAINMENT LEAKAGE |
| SELECTED RANGE: | GROSS FAIL |
| 10/01/2022 12:00 AM - 10/07/2022 1:09 AM | |
| | 2022-10-02 00:00:10 |
| EVR TYPE VACUUM ASSIST | VAPOR CONTAINMENT LEAKAGE |
| ISD TYPE 01.07 | GROSS FAIL |
| VAPOR PROCESSOR TYPE NONE | |
| OVERALL STATUS FALL | 2022-10-01 00:00:13 |
| FVR VAPOR COLLECTION WARN | VAPOR CONTAINMENT LEAKAGE |
| EVE VAPOR CONTAINMENT FAIL | CROSS FAIL |
| TSD MONITOR UD_TIME 1008 | GROSS FAIL |
| FUD (TED DAGE TIME 08 | FAILURE ALADMO |
| EVR/ISD PASS TIME 0% | FAILORE ALARMS |
| TED STATUS PEROPT | 2022 10 07 00:00:08 |
| ISD STATUS REPORT | 2022-10-07 00:00:08 |
| MARWING ALARYG | VAPOR CONTAINMENT LEARAGE |
| WARNING ALARMS | GROSS FAIL |
| 2022-10-07 00:00:08 | SHUTDOWN & MISC. EVENT LOG |
| VAPOR CONTAINMENT LEAKAGE | |
| GROSS FAIL | 2022-10-07 00:00:08 |
| 2022-10-07 00:00:08 | |
| A/L RATIO DEGRADATION | |
| FP3 BLEND3 : 0.53 | |
| 10 222020 1 0100 | |
| 2022-10-06 00:00:13 | |
| VAPOR CONTAINMENT LEAKAGE | |
| GROSS FAIL | |
| | |
| 2022-10-05 00:00:10 | |
| VAPOR CONTAINMENT LEAKAGE | |
| GROSS FATL | |
| | |
| | |

Figure 89. Example Status Events (Monthly) Report Printout

Viewing ISD Reports via RS-232 Connection

COMM MODULES

Table 10 lists Comm Modules for the TLS-450PLUS designed and manufactured by Veeder-Root.

| Part No. | Item |
|------------|---|
| 332818-001 | SiteFax/Modem Single Port Module |
| 333460-001 | Ethernet Module (Factory Installed Slot 4 Only) |
| 333477-001 | USB module (Factory installed Slot 5 Only) |
| 332866-001 | RS-232 Single Port Module (also used for EDIM or Satellite S-SAT or Satellite H-JBox Modules apps.) |
| 332868-001 | RS-232 Dual Port Module (also used for EDIM or Satellite S-SAT or Satellite H-JBox Modules apps.) |
| 332867-001 | RS-485 Single Port Module |
| 332869-001 | RS-485 Dual Port Module |
| 333807-002 | Tri-Comm Module |
| 333140-001 | CDIM Module |
| 333651-001 | IFSF LON Module |

Table 10. Communication Bay Modules

COMM MODULE SLOTS

The Comm Bay is divided into 5 slots numbered from 1 to 5 going from left to right. Only slots 1-3 are available for user selectable Comm Modules. Slots 4 and 5 are fixed and cannot be changed (see Figure 90).



Figure 90. TLS-450PLUS Console - Fixed Comm Modules

COMM MODULE PORT CONFIGURATIONS

NOTICE To avoid attaching a Comm Module cable to a non-configurable (NC) port, identify the configurable (C) ports of any Comm Module being installed. Also verify the Comm cable port connections to Comm Modules in slots 4 and 5. Record all Comm port connections for use at setup.

User-selectable Comm Port configurations will depend on features ordered. Slots 1-3 (Figure 90) can be used for any combination of Comm Modules found in Table 11 or Table 10 as appropriate.

| | | Comm Slot 1 | | (| 2 | Comm Slot 3 | | | | |
|--|---|----------------------------|---------------|------------------------------------|----------------------------|---------------|------------------------------------|----|---------------|----|
| | Comm | P | Module Port | | Module Port | | | N | /lodule Po | rt |
| Comm Module | Туре | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| RS-232 Single Port (also EDIM, Satellite S-SAT and Satellite H-JBox apps.) | | NC | C | NC | NC | С | NC | NC | С | NC |
| RS-232 Dual Port (also EDIM, Satellite S-SAT and Satellite H-JBox apps.)* | | С | C | NC | С | С | NC | | | |
| RS-485 Single Port | 1 | NC | С | NC | NC | С | NC | NC | С | NC |
| RS-485 Dual Port* | Serial | C | С | NC | С | C | NC | | | |
| RS-232/RS-485 Dual Port* | | C (RS-232) | C (RS-485) | NC | C (RS-232) | C (RS-485) | NC | | | |
| Tri-Comm | | C* (RS-232) (RS-485) | C (RS-485) | C (Mini USB inquiry only) | C* (RS-232) (RS-485) | C (RS-485) | C (Mini USB inquiry only) | NC | C (RS-485) | NC |
| SiteFax / Modem | 1 | NC | С | NC | NC | C | NC | NC | С | NC |
| CDIM | ым | C | NC | NC | С | NC | NC | | | |
| IFSF LON | | С | NC | NC | С | NC | NC | С | NC | NC |
| = An unclearable alarm wil * = Configurable by jumpers (se | = An unclearable alarm will be posted if this Comm Module is in Slot 3. * = Configurable by jumpers (see Figure 91 and Table 12.) | | | | | | | | | |

Table 11. Configurable (C) / Non-Configurable (NC) Ports for Selectable Comm Modules (Comm Bay Slots 1 - 3 Only)

If using a Tri-Comm Module (slots 1 or 2 only), refer to Figure 91 for Port/Jumper locations and to Table 12 for Tri-Comm Module port configurations.



Figure 91. Tri-Comm Module Ports/Jumper Locations

| Item | Port 1 | | Port 2 | Port 3 |
|---|--|---|--|--|
| Communication Type | RS-232 c (Dependent upon | or RS-485 jumper positioning) | RS-485 (Only) | Mini USB/Inquiry Only |
| Connector Type | RJ-45 RJ-45 | | RJ-45 | Mini USB |
| Cable Pin Outs | RS-232 • Pin 1 – DCD • Pin 2 – RXD • Pin 3 – TXD • Pin 4 – DTR • Pin 5 – GND • Pin 6 – DSR • Pin 7 – RTS • Pin 8 – CTS | RS-485 • Pin 2 – RS-485B • Pin 3 – RS-485A • Pin 5 – GND | RS-485 •Pin 5 – GND •Pin 6 – RS-485 A •Pin 7 – RS-485 B | |
| Data Bit Parity Stop Bit Data Rate | Confiç | Configurable | | Fixed at: • 8 Data Bits, • No Parity, • 1 Stop Bit. • Data Rate (configurable) |

Table 12. Tri-Comm Module Port Configuration

Typical TLS-450PLUS RS-232 DB9 connector pin outs are shown in Figure 92.

| in Signal | Pin | Signal |
|---------------------|-----|------------------------|
| Data Carrier Detect | 6 | Data Set Ready |
| Received Data | 7 | Request to Send |
| Transmitted Data | 8 | Clear to Send |
| Data Terminal Ready | 9 | Ring Indicator |
| i Signal Ground | | |

Figure 92. TLS-450PLUS RS-232 Connector Pin Outs

CONNECTING LAPTOP TO TLS-450PLUS

1. Connect your laptop to one of the TLS-450PLUS RS-232 Comm port using one of the methods shown in the in Figure 93 below.



Figure 93. Connecting Laptop to TLS-450PLUS for Serial Communication

If using a USB to DB9 Serial adapter cable (P/N 576040-170), or equivalent, you will need to follow the instructions shipped with the adapter cable.

SETTING UP THE TLS-450PLUS SERIAL PORT FOR ISD REGULATOR ACCESS

| 000 | System Status | | 0 Warning(s) 0 Alarm(s) 02/28/ | 2024 07:52 AM |
|-----------|---------------------|----------------------|-----------------------------------|---------------|
| | Setup Communication | Serial Port | | < Share 😋 |
| Home | ID | 3 | | • |
| Favorites | Configured | Enabled Obisabled | | |
| 0 | Label | Laptop Communication | | |
| Menu | Usage | RS232 | • | X |
| Actions | Baud Rate | 9600 | • | _ |
| 3 | Data Bits | 7 | • | |
| Serial | | | Ø | • × |

1. On the TLS-450PLUS touch Menu>Setup>Communication>Serial Port. (Figure 94).

Figure 94. Example Serial Port Setup Screen

2. Verify that the Usage entry is RS-232 and copy the settings, especially Baud Rate, Data Bits, Parity and Stop Bits which you will use to set up a terminal emulator such as PuTTY.

| | System Status | | 0 Warning(s) 0 Alarm(s) | 02/28/20 | 24 07:52 AM |
|-----------|----------------------------|----------------------|----------------------------|----------|-------------|
| | Setup Communication | Serial Port | | < | < Share 🔾 |
| Home | ID | 3 | | - | |
| Favorites | Configured | ● Enabled ○ Disabled | | | |
| 0 | Label | Laptop Communication | | | |
| Menu | Usage | R5232 | • | | |
| Actions | Baud Rate | 9600 | • | | |
| | Data Bits | 7 | • |) | |
| | Parity | ODD PARITY | • |) | |
| | Stop Bits | 1 | · |) | |
| | Use Handshaking | NO HANDSHAKING | • |) | |
| | Serial Command Security | 🔵 Enabled 💿 Disabled | | | |
| | Security Code | | | | |
| | RS232 End of Message | 🔵 Enabled 💿 Disabled | | | |
| | ETX Characters Computer | [0x03] | | | |

Figure 95. Example Serial Port 3 Setup Screen

If installing a Tri-Comm module, the serial ID for Port 3 (Mini-USB / Inquiry Only) will usually show as ID 5 or 9 (see Figure 96). Fields that are specific and non-configurable for this port are pre-populated and grayed out.

| 000 | System Status | | | 0 Warning(s) 0 Alarm(s) | May 28 20 | 24 04:48 PM |
|-----------|---------------|----------|-----------------------|----------------------------|-----------|-------------|
| | Setup Commun | ication | Serial Port | | 4 | < Share 🔘 |
| Home | | ID | 9 | | - | |
| Favorites | Con | figured | ● Enabled ○ Disabled | | | |
| 0 | | Label | Laptop /Inquiry Only | |) | |
| Menu | | Usage | Mini-USB/Inquiry Only | • |) | X |
| Actions | Ba | ud Rate | 9600 | v |) | |
| 9 | D | ata Bits | 8 | Ŧ |) | |
| Serial | | Parity | NO PARITY | • | - | |

Figure 96. Example of Tri-Comm Module Mini-USB / Inquiry Only Setup Screen

SETTING UP COMMUNICATION BETWEEN LAPTOP AND TLS-450PLUS

- 1. There are many free, open source, terminal emulator, serial console, and network file transfer applications that work with Windows computers. PuTTY is such a program it can be downloaded using the link below: https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html
- 2. Determine which laptop COM port you will use to connect to the TLS-450PLUS and ensure to use the proper cables and connectors as per the TLS console communication and laptops port types. (See Figure 92)
 - a. Right click Start and then click Device Manager.
 - b. In the Device Manager screen click the expand arrow (>) next to Ports (COM & LPT). If Ports (COM & LPT) is not showing in 'Device Manager', look for unknown devices or a yellow exclamation point (see Figure 97).



Figure 97. Laptop Device Manager

- i. Right click choose "Uninstall" this device.
- ii. Scan for new devices.

- iii. If the yellow exclamation point reappears install the manufacturer's driver for the device.
- iv. If there are no unknown devices and the port is a USB device unplug and plug the device back in.
- v. If no change, try another port if available.
- vi. If still no change, reboot the machine.
- c. Open your preferred terminal program. be sure to select the correct serial port and set the proper baud rate data bits stop bits and parity.
- d. Open a new session with the correct settings.

After clicking the Open button, the terminal window opens in which you enter desired commands (see Figure 97).



Figure 98. PuTTY Terminal Window

SENDING CONSOLE COMMANDS

Table 13 shows four important ISD console commands: IV0700, IV0200, IV0100, and IB6100. The <SOH> shown in the table means that you must press and hold the **Ctrl** key while you press the **A** key.

For example, you want to see the Daily Report Details for the last 10 days.

If the RS-232 Security Code is disabled - press and hold the **Ctrl** key while you press the **A** key, then type in IV0700010. If the RS-232 Security Code is enabled (e.g., 000016) you must enter the security code before the command - press and hold the **Ctrl** key while you press the **A** key, then type in 000016IV0500010.

If you have local echo enabled you will see the typed command on the screen: ©IV0700010 followed by the response (report) from the console. The © symbol indicates Ctrl A and the ♥ symbol indicates the end of the response.

If the console recognizes the command the response displays as soon as the command is typed in.

If the console does not recognize the command you would see something like ©IV0700010 ©9999FF1B' which indicates the console did not recognize the command.

All responses (Reports) can be printed or saved to a file. See the terminal program's help file for instructions.

| Report Type | Serial Command (PC to Console) ¹ |
|--|---|
| Daily Report Details (See example Figure 99) | <soh>IV0700ddd Where ddd = number of days, 001 = yesterday and today, 002 = two days ago, etc.</soh> |
| Monthly Status Report (See example Figure 100) | <soh>IV0200yyyymm Where yyyy = year number, e.g. 2003, mm = month number, 01 = Jan- uary, 02 = February, etc.</soh> |
| Alarm Status (See example Figure 101) | <soh>IV0100</soh> |
| Non-Priority Alarm History Report (See example Figure 102) | <soh>I11100</soh> |
| Priority Alarm History Report (See example Figure 103) | <soh>I11200</soh> |

¹<SOH> = Control A. For more information on TLS console serial commands, refer to the V-R Serial Interface Manual.

| VU/UU AR 1 SITE SITE CITY,, PHONE MMM 1 SD DP SD DP SD TY SD TY VR TY SD MC VR RAI VR VP SD MC VR/IS | ANAME) STREET ST DD, YYI MILY RE VPE: VI VPE: VI PROCES LL STAT | 1 12:2 T) YY HH:1 EPORT 1 ACUUM 2 C.XX SSOR T FUS | O AM MM XM) DETAILS ASSIST YPE: NO | S | | | | | | | | |
|---|--|--|--|---|--|--|--|--|---|--|---|--|
| AR J SITE SITE CITY, PHONE MMM I SD DF SD DF VR TY SD TY APOR VERAI VR VF SD MC VR VF SD MC VR I SD MC | NAME) STREET ST) DD, YYD AILY RE YPE: VP YPE: XX PROCES LL STAT APOR CO DNITOR | IZ:2 I) YY HH:1 SPORT I ACUUM I C.XX SSOR T FUS | MM XM) DETAILS ASSIST YPE: NO | S | | | | | | | | |
| SITE SITE CITY,, PHONE MMM I SD DF SD TY APOR VR TY SD MC VR APOR VR APOR VR APOR VR APOR | NAME) STREES ST) DD, YYI AILY RE YPE: VA YPE: VA PROCES LL STATA APOR CO ONITOR | T) YY HH:1 SPORT 1 ACUUM 3 K.XX SSOR T TUS | MM XM) DETAIL: ASSIST YPE: NO | S | | | | | | | | |
| SITE SITE CITY, PHONE MMM 1 SD DP SD DP SD DP VR TY SD TY APOR VERAI VERAI SD MC VR/IS | NAME) STREES ST) DD, YYI AILY RE YPE: VP YPE: VP YPE: XX PROCES LL STAT APOR CO ONITOR | T) YY HH:1 SPORT I ACUUM X (.XX SSOR T TUS | MM XM) DETAIL ASSIST YPE: NO | S | | | | | | | | |
| SITE CITY, PHONE MMM I SD DF SD DF SD TY APOR VERAI VERAI VERAI VERAI VERAI VERAI | STREEN ST) DD, YYI AILY RE YPE: VF YPE: XX PROCES LL STAT APOR CO ONITOR | r) YY HH:1 SPORT 1 ACUUM 1 K.XX SSOR T TUS | MM XM) DETAIL ASSIST YPE: NO | S | | | | | | | | |
| CITY, PHONE MMM I SD DP SD DP SD TY SD TY VR VP SD MC VR/IS tatus | .ST) DD, YYI AILY RE YPE: VF YPE: XX PROCES LL STATAN APOR CO ONITOR | YY HH: SPORT I ACUUM X (.XX SSOR T FUS | MM XM) DETAILS ASSIST YPE: NO | S | | | | | | | | |
| PHONE MMM 1 SD DF VR TY SD TY APOR VERAI VR VF SD MC VR/IS | E) AILY RE (PE: VP (PE: X) PROCES LL STAT APOR CO DNITOR | YY HH: EPORT I ACUUM I C.XX SSOR T FUS | MM XM) DETAILI ASSIST YPE: NO | S | | | | | | | | |
| MMM 1 SD DP VR TY SD TY SD TY APOR VERAI VR VP SD MO VR/IS | DD, YYI AILY RE YPE: VA YPE: XA PROCES LL STAI APOR CO DNITOR | YY HH: EPORT I ACUUM I K.XX SSOR T FUS | MM XM) DETAIL: ASSIST YPE: NO | S | | | | | | | | |
| SD DA VR TY SD TY APOR VERAI VR VA SD MC VR/IS | AILY RE YPE: VP YPE: XX PROCES JL STAT APOR CO DNITOR | EPORT I ACUUM I K.XX SSOR T' FUS | DETAIL: ASSIST YPE: NO | S | | | | | | | | |
| SD D# VR TY SD TY APOR VERAI VR V# SD MC VR/IS | AILY RE YPE: VA YPE: XA PROCES LL STAT APOR CO NNITOR | ACUUM A ACUUM A K.XX SSOR T FUS | DETAIL: ASSIST YPE: NO | S | | | | | | | | |
| VR TY SD TY APOR VERAI VR V <i>P</i> SD MC VR/IS | YPE: VA YPE: XX PROCES LL STAT APOR CO NNITOR | ACUUM I K.XX SSOR T' FUS | ASSIST YPE: NO | | | | | | | | | |
| VR TY SD TY APOR VERAI VR V <i>P</i> SD MC VR/IS | (PE: VA (PE: X) PROCES L STAT APOR CO DNITOR | ACUUM 3 K.XX SSOR T TUS | ASSIST YPE: NO | | | | | | | | | |
| SD TY APOR VERAI VR V <i>P</i> SD MC VR/IS | PROCES L STAT | (.XX SSOR T FUS | YPE: NO | | | | | | | | | |
| APOR VERAI VR V <i>I</i> SD MC VR/IS | PROCES L STAT APOR CO DNITOR | SSOR T | YPE: NO | | | | | | | | | |
| VERAI VR V <i>I</i> SD MC VR/IS | L STAT | rus | | O VAPOR | R PROC | ESSOR | | | | | | |
| VERAI VR V <i>H</i> SD MC VR/IS | L STAT APOR CO NITOR | rus | | | | 20001 | | | | | | |
| VR VA SD MO VR/IS | APOR CO NITOR | 100 | | • F) | ATT. | | FU | R VAP | OR COLL | CTTON | · FATL | |
| SD MC VR/IS tatus | NITOR OC | איי איי | WF NT | • Di | 122 | | 1. | 10 0111 | 011 00000 | 1011010 | | |
| SD MC VR/IS tatus | MIIOR | | AD N I | .11 | 100 | | CT. | NCE T | TRANCE | | 0 of 21 | 0 0300 |
| VR/18 | | UP-TI | ME | :11 | JU⊰ | | 51 | AGE I | TRANSFI | 2K2: 3 | 9 OI 3: | 9 PA55 |
| tatus | SD PASS | 5 TIME | | : 1 | 52% | | | | | | | |
| tatus | | | | | | | | | | | | |
| | Codes | s: (W)1 | Warn (1 | F)Fail | (D) De | egrada | tion F | 'ail (| G)Gross | Fail | | |
| ISD-W |)ISD S | Self-T | est Wa | rning | (ISD-F | 7)ISD | Self-T | est F | ail (N)1 | lo Test | t | |
| | | | | | | | | | | | | |
| | ISD | ISD | C01 | NTAINM | ENT TE | STS | - | STAGE | | C01 | LLECTI(| ON TESTS |
| | EVR | %UP | GROSS | DGRD | MAX | MIN | LEAK | Ι | VAPOR | FP1 | FP2 | FP3 |
| ATE | STATUS | S TIME | 95% | 75% | "WC | "WC | CFH | XFR | PRCSR | BLEND | BLEND | BLEND |
| 2/10 | PASS | 5 100% | -1.4N | -3.1N | -1.1 | -5.0 | ON | PASS | | 1.09 | 1.10 | 1.11 |
| 2/11 | PASS | 5 100% | -1.7N | -3.5N | 0.4 | -5.0 | ON | PASS | | 1.05 | 1.14 | 1.06 |
| 2/12 | PASS | 3 100% | -1.7N | -3 4N | -1.2 | -5.0 | 0N | | | 1.06 | 1.07 | 1.05 |
| 2/13 | PAG | 3 100% | -1 8N | -3 AN | -1 0 | -5.0 | 2N | PASS | | 1 08 | 1 10 | 1 00 |
| 2/10 | DACO | 2 1000 | -1 6N | -3 3M | -0.3 | -5.0 | 210 | DACC | | 1 05 | 1 00 | 1 00 |
| 2/14 | PAGE | 5 100% | -1.0N | -3.3N | 1 2 | -J.U | 211 | PAGG | | 1.03 | 1 11 | 1.00 |
| 2/13 | PASS | 5 100% | -1.JN | -3.3N | 1.3 | -5.0 | 2 | PASS | | 1.07 | 1.11 | 1.05 |
| 2/10 | PASS | 5 1008 | -1.2 | -3.UN | -0.3 | -5.0 | 3 | PASS | | 1.06 | 1.10 | 1.14 |
| 2/17 | PASS | 5 100% | -1.2 | -2.9N | 0.0 | -5.0 | 3 | PASS | | 1.06N | 1.10N | 1.14 |
| 2/18 | PASS | 5 100% | -1.0 | -2.9N | 1.0 | -5.0 | 3 | PASS | | 1.06N | 1.10N | 1.06 |
| 2/19 | PASS | 5 100% | -0.9 | -2.9N | 1.6 | -5.0 | 4 | PASS | | 1.06N | 1.10N | 1.09 |
| 2/20 | PASS | 5 100% | -0.6 | -2.7N | 2.9 | -5.0 | 4 | PASS | | 1.06N | 1.10N | 1.03 |
| 2/21 | PASS | 5 100% | -0.6 | -2.7N | 1.1 | -5.0 | 1 | PASS | | 1.06N | 1.10N | 1.13 |
| 2/22 | PASS | 5 100% | 0.1 | -2.5N | 3.1 | -5.0 | 0 | PASS | | 1.06N | 1.10N | 1.03 |
| 2/23 | PASS | 5 100% | 0.1 | -2.6N | 0.9 | -5.0 | 0 | PASS | | 1.06N | 1.10N | 1.04 |
| 2/24 | PASS | 5 100% | 0.2 | -2.6N | 0.9 | -5.0 | 0 | PASS | | 1.08 | 1.09 | 1.07 |
| 2/25 | W | 100% | 0.8 | -2.3N | 2.8 | -5.0 | 0 | PASS | | 1.10 | 1.11 | 1.08 |
| 2/26 | F | 100% | 1.1 | -2.2N | 5.0 | -5.0 | 0 | PASS | | 1.10 | 1.12 | 1.11 |
| 2/27 | F | 100% | 1.0 | -2.4N | -0.8 | -5.0 | 0 | PASS | | 1.11 | 1.13 | 1.11 |
| 2/28 | PASS | 5 100% | 1.0 | -2.4N | 0.3 | -5.0 | 0 | PASS | | 1.09 | 1.16 | 1.08 |
| 2/29 | PASS | 3 100% | 0.9 | -2.3N | 1.6 | -5.0 | 0 | PASS | | 1.01 | 1.14 | 1.08N |
| -, -, | | | | | | | - | | | | | |
| 001 | LECTIO | N TES | rs-nati | LY AVE | RAGE 4 | HOSE A | /T. RDT | TO | | | | |
| 501 | FP4 | FP5 | FP6 | FP7 | FPR | FPQ | FD10 | | 1 FD10 | | | |
| ATE | BLEND | BLEND | BLEND | BLEND | BLENC |) BLEM | D BIFN | ID BLF | ND BLEM | 1 | | |
| 2/10 | 1 1 2 | 1 03 | 0 07 | 1 0/ | 1 07 | 1 15 | 1 00 | 1 1 0 | 8 1 05 | | | |
| ∠/⊥U 2/11 | 1 00 | 1.03 | 1 0.27 | 1.04 | 1 00 | 1.00 | 1.03 | · 1.0 | U 1.00 | | | |
| 2/11 2/12 | 1 10 | 1.04 | 1.04 | 0.90 | 1.03 | 1.00 | 1.00 | 1.1 | 4 1.U/ 2 1.04 | | | |
| 2/12 | 1.10 | 1.03 | 1.04 | 1.04 | 1.00 | 1.09 | 1.10 | 1.0 | o 1.04 | | | |
| 2/13 | 1.06 | 1.11 | 1.04 | 1.07 | 1.09 | 1.08 | 1.09 | 1.1 | 5 1.08 | | | |
| 2/14 | 1.05 | 1.07 | 1.05 | 1.07 | 1.02 | 1.07 | 1.08 | 1.1 | 5 I.UG | | | |
| 2/15 | 1.07 | 1.04 | 1.04 | 0.94 | 1.09 | 1.05 | 1.08 | 1.1 | 3 1.07 | | | |
| 2/16 | 1.09 | 1.08 | 1.06 | 1.05 | 1.10 | 1.06 | 1.13 | 1.0 | 3 1.04 | | | |
| 2/17 | 1.08 | 1.05 | 1.05 | 1.06 | 1.08 | 1.13 | 1.10 | 1.1 | 0 1.07 | | | |
| 2/18 | 1.08 | 1.06 | 1.05 | 1.03 | 1.08 | 1.00 | 1.09 | 1.0 | 5 1.09 | | | |
| 2/19 | 1.09 | 1.11 | 1.04 | 1.01 | 1.08 | 1.06 | 1.08 | 1.0 | 6 1.05 | | | |
| 2/20 | 1.07 | 1.07 | 1.05 | 1.05 | 1.10 | 1.12 | 1.10 | 1.1 | 1 1.07 | | | |
| 2/21 | 1.08 | 1.10 | 1.06 | 1.00 | 1.07 | 1.13 | 1.16 | 5 1.0 | 9 1.09 | | | |
| 2/22 | 1.08 | 1.04 | 1.09 | 1.05 | 1.09 | 1.06 | 1.10 | 1.1 | 1 1.10 | | | |
| 2/23 | 1.06 | 1.17 | 1.09 | 1.06 | 1.12 | 1.09 | 1.14 | 1.1 | 2 1 08 | | | |
| 2/24 | 1.10 | 1.12 | 1.08 | 0.98 | 1.08 | 1 11 | 1 15 | 1 1 | 1 1 02 | | | |
| 2/24 | 1 10 | T.TC | T.00 | 1 07 | 1 06 | 1 00 | 1 14 | , 1.1 ; 1.0 | ⊥ ⊥.∪Z 3 1 ∩⊑ | | | |
| 2/23 | 1 11 | DIADE | DINDE | 1.07 | 1 10 | 1.09 | 1.10 | 1.0 | J 1.05 | | | |
| 2/20 | 1.11 | DIKDE | DLKDF | 1.00 | 1.10 | 1.11 | 1.10 | 1.0 | o 1.05 | | | |
| | 1.12 | BLKDF | RTKDL | 1.08 | 1.08 | 1.06 | 1,15 | 1.1 | 3 1.U9 | | | |
| 2/21 | 1.08 | 1.11 | 1.08 | 1.07 | 1.07 | 1 10 | 1.18 | 1.0 | 5 1.08 | | | |
| 2/28 | | | | | | 1.10 | | | | | | |
| | VTE 2/10 2/11 2/12 2/13 2/14 2/15 2/16 2/17 2/17 2/20 2/21 2/22 2/24 2/25 2/26 2/27 2/28 2/29 COI ATE 2/10 2/12 2/12 2/13 2/14 2/25 2/24 2/25 2/16 2/17 2/12 2/13 2/14 2/25 2/24 2/25 2/16 2/17 2/17 2/20 2/21 2/22 2/24 2/15 2/16 2/17 2/22 2/24 2/25 2/26 2/27 2/28 2/29 2/20 2/21 2/22 2/24 2/25 2/26 2/27 2/27 2/28 2/29 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/21 2/17 2/28 2/29 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/21 2/21 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2/21 2/27 2/28 2/29 2 | <pre>MTE STATUG: 2/10 PAS: 2/10 PAS: 2/11 PAS: 2/12 PAS: 2/12 PAS: 2/12 PAS: 2/14 PAS: 2/15 PAS: 2/16 PAS: 2/16 PAS: 2/16 PAS: 2/16 PAS: 2/16 PAS: 2/10 PAS: 2/20 PAS: 2/21 PAS: 2/22 PAS: 2/22 PAS: 2/24 PAS: 2/25 W 2/26 F 2/27 F 2/27 F 2/26 PAS: 2/29 PAS: 2/29 PAS: 2/20 PAS: 2/20 PAS: 2/21 1.08 2/14 1.05 2/15 1.07 2/16 1.09 2/17 1.08 2/19 1.09 2/12 1.08 2/22 1.08 2/23 1.06 2/24 1.10 2/24 1.10</pre> | <pre>HTE STATUS TIME //10 PASS 100% //11 PASS 100% //11 PASS 100% //12 PASS 100% //13 PASS 100% //14 PASS 100% //15 PASS 100% //16 PASS 100% //16 PASS 100% //16 PASS 100% //17 PASS 100% //17 PASS 100% //20 PASS 100% //20 PASS 100% //21 PASS 100% //22 PASS 100% //22 PASS 100% //27 F 100% //27 PASS 100% //27 PASS 100% //27 PASS 100% //27 F 100% //27 PASS 100% //27 F 100% //27 F 100% //27 F 100% //26 H 100% //21 1.03 1.04 1.11 1.09 1.04 //11 1.09 1.04 //12 1.03 1.05 //15 1.07 1.07 //21 1.08 1.06 //17 1.08 1.05 //17 1.08 1.05 //17 1.08 1.05 //17 1.08 1.01 //20 1.07 1.07 //21 1.08 1.01 //22 1.08 1.04 //22 1.06 1.17 //22 1.08 1.04 //22 1.06 1.17 //22 1.08 1.04 //22 1.06 1.17 //24 1.10 1.12 //25 1.10 BLKDM</pre> | NTE STATUS TIME STATUS TIME STATUS STATUS | NTE STATUS TIME 938 738 2/10 PASS 100% -1.4N -3.1N 2/11 PASS 100% -1.4N -3.1N 2/12 PASS 100% -1.6N -3.4N 2/12 PASS 100% -1.6N -3.4N 2/12 PASS 100% -1.6N -3.4N 2/13 PASS 100% -1.6N -3.4N 2/15 PASS 100% -1.6N -3.4N 2/16 PASS 100% -1.2 -2.9N 2/17 PASS 100% -1.2 -2.9N 2/10 PASS 100% -0.6 -2.7N 2/20 PASS 100% 0.1 -2.6N 2/21 PASS 100% 0.1 -2.6N 2/22 PASS 100% 0.1 -2.6N 2/24 PASS 100% 0.1 -2.4N 2/25 N 100% 0.8 | <pre>NTE STATUS TIME 99% /S* "MC 2/10 PASS 100% -1.4N -3.1N -1.1 2/11 PASS 100% -1.7N -3.4N -1.2 2/13 PASS 100% -1.7N -3.4N -1.2 2/13 PASS 100% -1.8N -3.4N -1.2 2/13 PASS 100% -1.8N -3.4N -1.2 2/15 PASS 100% -1.8N -3.4N -1.3 3/15 PASS 100% -1.2 -3.0N -0.3 2/17 PASS 100% -1.2 -3.0N -0.3 2/17 PASS 100% -1.2 -2.9N 1.0 2/19 PASS 100% -0.6 -2.7N 1.1 2/22 PASS 100% -0.6 -2.7N 1.1 2/22 PASS 100% 0.1 -2.5N 3.1 2/27 PASS 100% 0.1 -2.4N 0.3 2/29 PASS 100% 1.0 -2.4N 0.3 2/12 1.00 3 0.97 1.04 1.04 2/11 1.09 1.04 1.04 1.07 1.09 2/14 1.05 1.07 1.05 1.07 2/15 1.07 1.04 1.04 0.98 1.03 2/12 1.10 1.09 1.04 1.04 1.06 2/13 1.06 1.11 1.04 1.07 1.09 2/14 1.05 1.05 1.05 1.00 2/17 1.08 1.05 1.05 1.00 2/21 1.08 1.04 1.09 1.05 1.00 2/21 1.06 1.17 1.09 1.06 1.02 2/24 1.00 1.07 1.05 1.07 2/24 1.00 1.04 1.09 1.05 1.00 2/24 1.00 1.04</pre> | <pre>NTE STATUS TIME 9% /s% "%C "%C "%C %C //1 PASS 100% -1.4N -3.1N -1.1 -5.0 //1 PASS 100% -1.7N -3.4N -1.2 -5.0 //1 PASS 100% -1.7N -3.4N -1.2 -5.0 //1 PASS 100% -1.8N -3.4N -1.0 -5.0 //1 PASS 100% -1.6N -3.3N -0.3 -5.0 //1 PASS 100% -1.6N -3.3N -0.3 -5.0 //1 PASS 100% -1.2 -3.0N -0.3 -5.0 //1 PASS 100% -1.2 -2.9N 1.0 -5.0 //1 PASS 100% -0.9 -2.9N 1.0 -5.0 //1 PASS 100% -0.9 -2.9N 1.0 -5.0 //2 PASS 100% -0.6 -2.7N 2.9 -5.0 //2 PASS 100% 0.1 -2.6N 0.9 -5.0 //2 PASS 100% 0.1 -2.4N 0.3 -5.0 //2 PASS 100% 0.1 -2.4N 0.3 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -1.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -1.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -1.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -2.3N 1.6 -5.0 //2 PASS 100% 0.9 -1.3N 1.6 -5.0</pre> | <pre>XTE STATUS TIME 95% /3% "WC "WC UCH 2/10 PASS 100% -1.4N -3.1N -1.1 -5.0 ON 2/11 PASS 100% -1.7N -3.4N -1.2 -5.0 ON 2/12 PASS 100% -1.6N -3.4N -1.0 -5.0 2N 2/14 PASS 100% -1.6N -3.4N -1.0 -5.0 2N 2/15 PASS 100% -1.6N -3.3N -0.3 -5.0 3 2/17 PASS 100% -1.2 -3.0N -0.3 -5.0 3 2/17 PASS 100% -1.2 -2.9N 1.0 -5.0 3 2/17 PASS 100% -1.0 -2.9N 1.0 -5.0 3 2/17 PASS 100% -0.9 -2.9N 1.0 -5.0 3 2/19 PASS 100% -0.6 -2.7N 1.1 -5.0 1 2/22 PASS 100% -0.6 -2.7N 1.1 -5.0 1 2/22 PASS 100% 0.1 -2.6N 0.9 -5.0 0 2/24 PASS 100% 0.2 -2.6N 0.9 -5.0 0 2/24 PASS 100% 0.1 -2.8N 3.1 -5.0 0 2/25 N 100% 0.9 -2.3N 1.6 -5.0 0 2/26 F 100% 1.0 -2.4N 0.3 -5.0 0 2/27 F 100% 1.0 -2.4N 0.3 -5.0 0 2/29 PASS 100% 0.9 -2.3N 1.6 -5.0 0 2/21 1.0 1.09 1.04 1.04 1.07 1.05 1.09 2/11 1.09 1.04 1.04 1.06 1.09 2/14 1.05 1.07 1.05 1.07 1.02 1.07 1.06 2/15 1.07 1.05 1.07 1.02 1.07 1.05 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.05 1.07 1.05 1.07 1.02 2/14 1.04 1.04 1.07 1.08 1.03 2/17 1.08 1.05 1.05 1.06 1.08 1.13 1.06 2/12 1.08 1.04 1.09 1.05 1.00 2/14 1.04 1.07 1.05 1.07 2/21 1.08 1.06 1.05 1.00 1.07 2/21 1.08 1.06 1.05 1.00 1.07 2/21 1.08 1.04 1.07 1.05 1.07 1.02 2/21 1.08 1.04 1.09 1.05 1.09 2/14 1.05 2/14 1.04 1.07 1.05 1.07 1.02 2/21 1.08 1.04 1.09 2/24 1.04 1.09 1.05 2/24 1.04 1.04 1.07 1.05 1.07 2/24 1.04 1.04 1.07 1.08 1.06 1.06 2/24 1.04 1.09 1.05 1.00 2/24 1.04 1.09 1.04 1.04 1.04 1.04 1.04 1.04 1.04 2/2 2.08 2/24 1.04 1.09 1.05 1.00 1.07 1.13 1.6 2/2 2.10 2/2 1.08 2.04 2.09 2.09 2.09 2.09 2.09 2.09 2.09 2.09</pre> | NTE STATUS TIME 95% 758 "MC "WC WC Ch Ark 2/10 PASS 100% -1.4N -3.1N -1.1 -5.0 ON PASS 2/11 PASS 100% -1.7N -3.4N -1.2 -5.0 ON 2/12 PASS 100% -1.6N -3.4N -1.2 -5.0 ON 2/11 PASS 100% -1.6N -3.3N -1.3 -5.0 2N PASS 2/15 PASS 100% -1.2 -3.0N -3.5.0 3 PASS 2/16 PASS 100% -1.2 -2.9N 1.0 -5.0 3 PASS 2/17 PASS 100% -1.2 -2.9N 1.0 -5.0 3 PASS 2/17 PASS 100% -0.6 -2.7N 1.1 -5.0 PASS 2/20 PASS 100% 0.1 -2.6N 0.9 -5.0 < | <pre>XTE STATUS TIME 95% /5% "WC 'WC CCH XER PACLSM 2/10 PASS 100% -1.4N -3.1N -1.1 -5.0 ON PASS 2/11 PASS 100% -1.7N -3.4N -1.2 -5.0 ON 2/13 PASS 100% -1.6N -3.4N -1.0 -5.0 2N PASS 2/14 PASS 100% -1.6N -3.4N -1.0 -5.0 2N PASS 2/15 PASS 100% -1.6N -3.3N -0.3 -5.0 2N PASS 2/16 PASS 100% -1.2 -3.0N -0.3 -5.0 3 PASS 2/17 PASS 100% -1.2 -2.9N 1.0 -5.0 3 PASS 2/17 PASS 100% -1.2 -2.9N 1.0 -5.0 3 PASS 2/17 PASS 100% -1.0 -2.9N 1.0 -5.0 3 PASS 2/17 PASS 100% -0.6 -2.7N 1.1 -5.0 1 PASS 2/20 PASS 100% 0.1 -2.5N 3.1 -5.0 0 PASS 2/22 PASS 100% 0.1 -2.5N 3.1 -5.0 0 PASS 2/22 PASS 100% 0.1 -2.6N 0.9 -5.0 0 PASS 2/22 PASS 100% 0.1 -2.6N 0.9 -5.0 0 PASS 2/22 PASS 100% 0.1 -2.6N 0.9 -5.0 0 PASS 2/24 PASS 100% 0.2 -2.4N 0.3 -5.0 0 PASS 2/25 N 100% 0.8 -2.3N 2.8 -5.0 0 PASS 2/26 F 100% 1.1 -2.2N 5.0 -5.0 0 PASS 2/27 F 100% 1.0 -2.4N -0.8 -5.0 0 PASS 2/27 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/27 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/28 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/29 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/27 F 100% 1.0 -2.4N 0.3 -5.0 0 PASS 2/29 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/21 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/22 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/21 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/22 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/21 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/22 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/21 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/22 PASS 100% 0.9 -2.3N 1.6 -5.0 0 PASS 2/21 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.</pre> | NTE STATUS TIME 95% 75% "MC "MC "MC HALEND PLASE DUB 2/10 PASS 100% -1.4N -3.1N -1.1 -5.0 0N PASS 1.05 2/11 PASS 100% -1.7N -3.4N -1.2 -5.0 0N PASS 1.05 2/12 PASS 100% -1.6N -3.4N -1.0 -5.0 2N PASS 1.06 2/15 PASS<100% | VITE STATUS TIME 95% "MC WC WC KC KH PRISE BLERNU BLERNU |

Figure 99. ISD Daily Report Details - Serial to PC Format

| IV0200 MAR 1, 2 | 2004 12:20 |) AM | | | | | | | | |
|---|--|---|--|---|---------------------|-------------------------------------|--|---------------------------------|--------------|---|
| (SITE NAM (SITE STF (CITY,ST) (PHONE) (MMM DD, | ME) REET) YYYY HH:1 | MM XM) | | | | | | | | |
| ISD MONTH | ILY STATU | 5 REPORT | | | | | | | | |
| EVR TYPE: ISD TYPE: VAPOR PRO | : VACUUM A : XX.XX DCESSOR T | ASSIST YPE: NO VA | APOR PR | OCESSOR | | | | | | |
| OVERALL S | STATUS | (T))III | :FAIL | | EVR V | VAPOI | R COLI | LECTI | ON :FA | IL |
| EVR VAPOF ISD MONIT EVR/ISD F | R CONTAIN FOR UP-TIN PASS TIME | MENT. | :100% : 85% | | STAGI | EIS | FRANSE | ERS: | 39 of | 39 PASS |
| CARB EVR | CERTIFIE | O OPERATII | IG REQU | IREMENTS | | | | | | |
| VAPOR COI | LECTION A | ASSIST SYS | STEM A/ | L RANGE | | MIN 0.9 | √ 95 | MAX 1.1 | .5 | |
| ISD MONIT | TORING TE: | ST PASS/FA | AIL THR | ESHOLDS | | I | PERIOD |) | BELOW | ABOVE |
| VAPOR COL VAPOR COL | LECTION A | ASSIST SY: ASSIST SY: | STEM A/3 STEM A/3 | l gross fa L degradat | IL ION F2 | AIL | 1DAYS 7DAYS | 5 | 0.33 0.81 | 1.90 1.32 |
| VAPOR CON VAPOR CON VAPOR CON STAGE I V | JTAINMENT JTAINMENT JTAINMENT JAPOR TRAI | GROSS FA: DEGRADAT: LEAK DETI NSFER FAI: | IL, 95t ION, 75 SCTION S L, 50th | h PERCENTI th PERCENT FAIL @2"WC PERCENTIL | LE ILE G E | | 7DAYS 30DAYS 7DAYS 20MINS | 5 | | 1.30"wcg 0.30"wcg 8.50cfh 2.50"wcg |
| WARNING A DATE 04-02-27 04-02-27 04-02-26 04-02-25 04-02-25 | ALARMS TIME 23:59:00 23:59:00 23:59:00 23:59:00 23:59:00 | DESCRIPT A/L RATIO A/L RATIO A/L RATIO A/L RATIO A/L RATIO | ION DEGRA DEGRA DEGRA DEGRA DGROSS GROSS | DATION DATION DATION BLOCKAGE BLOCKAGE | | RE <i>I</i> FP FP FP FP | ADING 6 BLE 5 BLE 5 BLE 6 BLE 5 BLE | END END END END END | VA B B | LUE 0.80 0.76 0.79 LKD LKD |
| FAILURE A | ALARMS | | | | | | | | | |
| DATE 04-02-27 | TIME 23:59:00 | DESCRIPT: A/L RATIO | ION GROSS | BLOCKAGE | | RE/ FP | ADING 6 BLE 5 BIE | END | VA B | LUE LKD |
| 04-02-26 | 23:59:00 23:59:00 23:59:00 | A/L RATIO |) GROSS) GROSS) GROSS | BLOCKAGE BLOCKAGE | | FP FP | 6 BLE 5 BLE | END END | B | LKD LKD |
| 04-02-26 SHUTDOWN | 23:59:00 & MISCELI | A/L RATIO |) GROSS /ENTS | BLOCKAGE | | FΡ | 5 BLE | END | В | LKD |
| DATE | TIME | DESCRIPT | EON | | | AC | CION/N | IAME | | |
| 04-02-27 | 23:59:00 | A/L RATIO | GROSS | BLOCKAGE | | DISA | ABLED | FP 0 | 6 BLEN | D |
| 04-02-27 | 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE DISABLED FP 05 BLEND 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE DISABLED FP 06 RUEND | | | | | | | | | |
| 04-02-26 | 23:59:00 | A/L RATIO |) GROSS | BLOCKAGE | | DISA | ABLED | FP 0 | 5 BLEN | D |
| 04-02-15 | 04-02-15 23:59:00 READINESS ISD:PP EVR:PP ISD & EVR READY | | | | | | | | | |
| 04-02-14 | 04-02-14 23:59:00 READINESS ISD:PP EVR:PN EVR READINESS PENDING | | | | | | | | NG | |
| 04-02-13 | 23:59:00 | READINES | 5 ISD:P | P EVR:PN | | EVR | READI | INESS INESS | PENDI | NG |
| 04-02-11 | 23:59:00 | READINES | 5 ISD:P | P EVR:PN | | EVR | READI | NESS | PENDI | NG |
| 04-02-10 | 23:59:00 | READINES | S ISD:P | P EVR:PN | | EVR | READI | NESS | PENDI | NG |

Figure 100. ISD Monthly Status Report - Serial to PC Format

IV0100 MAR 1, 2004 12:05 AM (SITE NAME) (SITE STREET) (CITY,ST) (PHONE) (MMM DD, YYYY HH:MM XM) ISD ALARM STATUS REPORT EVR TYPE: VACUUM ASSIST ISD TYPE: XX.XX VAPOR PROCESSOR TYPE: NO VAPOR PROCESSOR :PASS OVERALL STATUS EVR VAPOR COLLECTION : PASS EVR VAPOR CONTAINMENT :PASS ISD MONITOR UP-TIME STAGE I TRANSFERS: 2 of 2 PASS :100% EVR/ISD PASS TIME :100% WARNING ALARMS DATE TIME DESCRIPTION READING VALUE 04-02-27 23:59:01 A/L RATIO DEGRADATION FP 6 BLEND 0.80 04-02-27 23:59:01 A/L RATIO DEGRADATION 04-02-26 23:59:00 A/L RATIO DEGRADATION FP 5 BLEND 0.76 FP 5 BLEND 0.79 04-02-25 23:59:01 A/L RATIO GROSS BLOCKAGE 04-02-25 23:59:01 A/L RATIO GROSS BLOCKAGE FP 6 BLEND BLKD FP 5 BLEND BLKD FAILURE ALARMS DATE TIME DESCRIPTION READING VALUE 04-02-27 23:59:01 A/L RATIO GROSS BLOCKAGE FP 6 BLEND BLKD 04-02-27 23:59:01 A/L RATIO GROSS BLOCKAGE FP 5 BLEND BLKD 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE FP 6 BLEND BLKD -FP 5 BLEND BLKD SHUTDOWN & MISCELLANEOUS EVENTS ACTION/NAME TIME DESCRIPTION DATE DISABLED FP 06 BLEND DISABLED FP 05 BLEND DISABLED FP 06 BLEND 04-02-27 23:59:01 A/L RATIO GROSS BLOCKAGE 04-02-27 23:59:01 A/L RATIO GROSS BLOCKAGE 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE 04-02-26 23:59:00 A/L RATIO GROSS BLOCKAGE DISABLED FP 05 BLEND 04-02-15 23:59:00 READINESS ISD:PP EVR:PP ISD & EVR READY 04-02-14 23:59:00 READINESS ISD:PP EVR:PN EVR READINESS PENDING 04-02-13 23:59:00 READINESS ISD:PP EVR:PN 04-02-12 23:59:00 READINESS ISD:PP EVR:PN EVR READINESS PENDING EVR READINESS PENDING 04-02-11 23:59:00 READINESS ISD:PP EVR:PN EVR READINESS PENDING 04-02-10 23:59:00 READINESS ISD:PP EVR:PN EVR READINESS PENDING

Figure 101. ISD Alarm Status Report - Serial to PC Format

Figure 102 shows an example Non-Priority Alarm History Report.

```
I11200
DEC 9, 2010 4:20 AM
<Site Name>
<Site Address>
<Site Address>
<Site Address>
NON-PRIORITY ALARM HISTORY
ID CATEGORY DESCRIPTION
                              ALARM TYPE
                                                 STATE DATE
                                                                 TIME
                              LOW TEMP WARNING
t 3 tank
            DIESEL
                                                CLEAR 12-08-10 3:00PM
                              LOW TEMP WARNING ALARM 12-08-10 3:00PM
t 3 tank
            DIESEL
                              HIGH PRODUCT ALARM CLEAR 12-08-10
            DIESEL
t 3 tank
                                                                 3:00PM
t 3 tank
           DIESEL
                               HIGH PRODUCT ALARM ALARM 12-08-10 2:56PM
   SYSTEM
                               PRINTER ERROR CLEAR 11-17-10 10:51AM
   SYSTEM
                               PAPER OUT
                                                CLEAR 11-17-10 10:51AM
   SYSTEM
                               PAPER OUT
                                                 ALARM 11-17-10 10:50AM
                               PRINTER ERROR
                                                 ALARM 11-17-10 10:50AM
   SYSTEM
```



Figure 103 shows an example Priority Alarm History Report.

```
I11100
DEC 9, 2010 4:20 AM
<Site Name>
<Site Address>
<Site Address>
<Site Address>
PRIORITY ALARM HISTORY
                                                    STATE
ID CATEGORY DESCRIPTION
                                ALARM TYPE
                                                              DATE
                                                                      TIME
T 2 TANK 91 OCTANE
                                PROBE OUT
                                                    CLEAR 12-08-10 7:55PM
t 2 tank
             91 OCTANE
                                PROBE OUT
                                                    ALARM 12-08-10 7:07PM
                                OVERFILL ALARMCLEAR11-17-1011:46AMOVERFILL ALARMALARM11-17-1011:45AM
t 2 tank
           91 OCTANE
         91 OCTANE
t 2 tank
```

Figure 103. Priority Alarm History Report - Serial to PC Format

Appendix A: Site EVR/ISD Equipment Location Worksheet

You should create a table listing each hose, fueling point, Air Flow Meter's serial number, etc.. This information will be required when you perform the EVR/ISD Setup hose/meter dispenses. This appendix contains blank worksheets for sites with single- and multi-hose dispensers. You are advised to fill in all of the appropriate information about your installed equipment, complete the TLS console's Hose Settings setup, then perform the product meter ID dispensing setup procedure.

Single-Hose Fueling Position Dispensers

| | FILL OUT - USE TO SETUP HOSE TABLE | | | | | | Assist Mode Check List | | | |
|-----------------|------------------------------------|--------------------|--|------------------------|----------------------------------|-----|------------------------|-----|--|--|
| Hose | | Hose | | | Product Dispense(s) ⁷ | | | | | |
| ID ¹ | FP ² | Label ³ | AFM ID ⁴ & AFM Serial Number ⁵ | AFM Label ⁶ | 1st | 2nd | 3rd | 4th | | |
| 1 | | Blend | | | | | | | | |
| 2 | | Blend | | | | | | | | |
| 3 | | Blend | | | | | | | | |
| 4 | | Blend | | | | | | | | |
| 5 | | Blend | | | | | | | | |
| 6 | | Blend | | | | | | | | |
| 7 | | Blend | | | | | | | | |
| 8 | | Blend | | | | | | | | |
| 9 | | Blend | | | | | | | | |
| 10 | | Blend | | | | | | | | |
| 11 | | Blend | | | | | | | | |
| 12 | | Blend | | | | | | | | |
| 13 | | Blend | | | | | | | | |
| 14 | | Blend | | | | | | | | |
| 15 | | Blend | | | | | | | | |
| 16 | | Blend | | | | | | | | |

¹Each hose must have a unique number (1 - 99).

²This is the Fuel Position Label which is the visible number on the outside of the dispenser (1 -2 digits).

³The hose label is always Blend for single-hose dispensers.

⁴The AFM ID number associated in Device Setup.

⁵This is the serial number on the Air Flow Meter (1 per dispenser).

⁶This is the AFM label entered in Device Setup (1 per dispenser and must be in the format shown, e.g., AFM FP1&2 - where 1 and 2 refer to the one [or two] numbers on the outside of the dispenser).

⁷After you have entered the contents of columns 1 - 5 enter as needed in Hose Settings setup, you now must follow Assist Mode Mapping procedure and dispense from each gas meter AND one blend grade that feeds each hose. Enter a check beneath each product following a dispense from the hose.

| FILL OUT - USE TO SETUP HOSE TABLE | | | | | | Assist Mode Check List | | | |
|------------------------------------|----|-------|----------------------------|-----------|-----|------------------------|---------|------|--|
| Hose | | Hose | | | Pi | roduct D | ispense | e(s) | |
| ID | FP | Label | AFM ID & AFM Serial Number | AFM Label | 1st | 2nd | 3rd | 4th | |
| 17 | | Blend | | | | | | | |
| 18 | | Blend | | | | | | | |
| 19 | | Blend | | | | | | | |
| 20 | | Blend | | | | | | | |
| 21 | | Blend | | | | | | | |
| 22 | | Blend | | | | | | | |
| 23 | | Blend | | | | | | | |
| 24 | | Blend | | | | | | | |
| 25 | | Blend | | | | | | | |
| 26 | | Blend | | | | | | | |
| 27 | | Blend | | | | | | | |
| 28 | | Blend | | | | | | | |
| 29 | | Blend | | | | | | | |
| 30 | | Blend | | | | | | | |
| 31 | | Blend | | | | | | | |
| 32 | | Blend | | | | | | | |
| 33 | | Blend | | | | | | | |
| 34 | | Blend | | | | | | | |
| 35 | | Blend | | | | | | | |
| 36 | | Blend | | | | | | | |

| FILL OUT - USE TO SETUP HOSE TABLE | | | | | | | Assist Mode Check List | | | |
|------------------------------------|----|-------|----------------------------|-----------|-----|---------|------------------------|------|--|--|
| Hoso | | Hoso | | | Pr | oduct D |)ispens | e(s) | | |
| ID | FP | Label | AFM ID & AFM Serial Number | AFM Label | 1st | 2nd | 3rd | 4th | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | / | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | / | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | | | | | | | |
| | | Blend | | AFM FP & | | | | | | |
| | | Blend | | | | | | | | |

| | FILL OUT - USE TO SETUP HOSE TABLE | | | | | | | |
|-------------------------|------------------------------------|----------------------------|--|------------------------|----------------------------------|--|--|--|
| Hose ID ¹ | FP ² | Hose Label ³ | AFM ID ⁴ & AFM Serial Number ⁵ | AFM Label ⁶ | Product Dispense ⁷ | | | |
| | | | | AFM FP& | | | | |
| | - | | | AFM FP& | | | | |

Multi-Hose Fueling Position Dispensers

¹Each hose must have a unique number (1 - 99).

²This is the Fuel Position Label which is the visible number on the outside of the dispenser (1 -2 digits).

³The hose label is the grade.

⁴The AFM ID number associated in Device Setup.

⁵This is the serial number on the Air Flow Meter (1 per dispenser).

⁶This is the AFM label entered in Device Setup (1 per dispenser and must be in the format shown, e.g., AFM FP<u>1&2</u> - where 1 and 2 refer to the one [or two] numbers on the outside of the dispenser).

⁷After you have entered the contents of columns 1 - 5 enter as needed in Hose Settings setup, you now must follow Assist Mode Mapping procedure and dispense from each hose. Enter a check in this column following a dispense from the hose.

| | FILL OUT - USE TO SETUP HOSE TABLE | | | | | | |
|------------|------------------------------------|---------------|----------------------------|-----------|---------------------|--|--|
| Hose ID | FP | Hose Label | AFM ID & AFM Serial Number | AFM Label | Product Dispense | | |
| | | | | | | | |
| | | | | | | | |
| | | | | AFM FP& | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | AFM FP& | | | |
| | - | | | | | | |
| | - | | | | | | |
| | - | | | | | | |
| | - | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| | Assist Mode Check List | | | | |
|------------|---------------------------|---------------|----------------------------|-----------------------------------|---------------------|
| Hose ID | FP | Hose Label | AFM ID & AFM Serial Number | AFM Label | Product Dispense |
| | - | | - | | |
| | - | | | | |
| | - | | | AFM FP& | |
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| | Assist Mode Check List | | | | |
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| FILL OUT - USE TO SETUP HOSE TABLE | | | | | Assist Mode Check List |
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