Pressure Management Control

TLS-450PLUS Consoles for Veeder-Root Polisher

Install, Setup, & Operation Manual



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This equipment complies with the requirements in Part 15 of the FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

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

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 installation when proof of date of installation 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 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 and at no charge to the purchaser. **LAMPS, FUSES, AND LITHIUM BATTERIES ARE NOT COVERED UNDER THIS WARRANTY.**

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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 installation when proof of the date of installation is provided or fifteen (15) months from the date of manufacture when proof of date of installation is not provided. We warrant that the lithium batteries (excluding EVR BATTERY PACK) shall be free from defects in material and workmanship for a period of three (3) months from date of invoice. 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. **LAMPS AND FUSES ARE NOT COVERED UNDER THIS WARRANTY.**

PRESSURE MANAGEMENT CONTROL (PMC)

For components used in PMC systems (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 PMC 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 PMC components installed after the initial PMC 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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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 installation when proof of the date of install is provided or fifteen (15) months from the date of manufacture when proof of date of installation is not provided. The replacement EVR Battery Pack warranty period will be the REMAINING warranty period of the original EVR Battery Pack. LAMPS, FUSES, AND LITHIUM BATTERIES OTHER THAN THE EVR BATTERY PACK, ARE NOT COVERED UNDER THIS WARRANTY.

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Introduction

This manual provides instructions to install, setup and operate the components of Veeder-Root Pressure Management Control (PMC) equipment. The PMC feature is an option for the TLS console platform, and as such, many of the installation/setup/operation instructions for non-PMC specific tasks are covered in the TLS-450PLUS supplied literature. Do not us the manual when PMC is installed with ISD. Use the TLS-450PLUS ISD & Operations Manual 577013-484 (Balance) or 55714-461 (Assist).

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 to be available for use by contractor or government inspectors.
 - b. Universal Sensor Module (USM) is required to monitor 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.
- Vapor Pressure Sensor (one per site) install as per Vapor Pressure Sensor installation manual shipped with sensor, setup following instructions in this manual.
- Veeder-Root Vapor Polisher or Healy CAS If installing the Vapor Polisher, follow the instructions in the Vapor Polisher Installation and Maintenance Guide (P/N 577013-920), setup following instructions in this manual. The canister can only be installed in systems with a vapor recovery vent stack fitted with a UL Listed pressure/vacuum (P/V) valve that complies with California Air Resources Board (CARB) requirements.
- The total leak rates for P/V valves, shall be less than or equal to: 0.17 CFH at +2.0 inches H2O, 0.63 CFH at -4.0 inches H2O.
- If installing the Healy CAS, follow instructions in the accompanying manual(s). There is no TLS-450PLUS setup required for the Healy CAS.

Related Manuals

The manuals in Table 1 below are included for reference.

Table 1: Related Manuals/Drawings

V-R Manual	Part Number
TLS-450PLUS Console Site Prep & Installation Manual	577014-073
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/PMC 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 Consoles	331940-106

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:

Veeder-Root Contractor	Installer	ATG Technician	VR Vapor Products	TLS-450PLUS EVR for CA
Certification Requirements	Certification ⁶	Certification'	Certification ⁸	Certification
Install ¹ ISD	X	X	X	Х
Install PMC	X	Х	X	Х
Install CCVP	X	Х	X	Х
Install Wireless ISD/PMC	X	Х	Х	Х
Installation Checkout ²		X	Х	Х
ATG Startup ³ / Training ⁴ / Service ⁵		X	X	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	X	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
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 Provide supervised field experience in service techniques and operations ⁵ Troubleshoot and provide routing maintenance ⁶ UST Monitoring Systems – Installer (Level 1) ⁷ Certified UST Monitoring Technician ⁸ VR Vapor Products				

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.

Safety Precautions

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



WARNING



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.

Example Site Diagrams

Figure 1 shows an example site with a TLS-450PLUS controlled vapor processor.



Figure 1. Example Site Diagram - TLS Console Controlled V-R Vapor Processor (PMC only)

Setup

Introduction

This section describes how to program the TLS-450PLUS for PMC using the front panel graphical user interface (GUI). The procedures in this manual follow standard TLS-450PLUS console setup programming methods. All PMC-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 test results at assessment time, 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.

\bigcirc	System Status	0 Warning(s) 06/06/2022 07:47 AM
	Setup Date and Time	Share O
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	C Enabled Disabled
	NTP Server	pool.ntp.org
		Test
	·	•

1. Touch Menu>Setup>Date and Time (see Figure 2).

Figure 2. 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 2.
- 4. Touch the check button v to save your choices.

Device Setups

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

ATMOSPHERIC PRESSURE (ATM) SENSOR SETUP

The ATM Pressure Sensor is factory installed on the USM/ATM Module (P/N 0332818-006). At least one USM/ ATM Module must be installed in the console. You must configure at least one USM/ATM Module for use by the Vapor Polisher or a PMC Setup Fail will occur. NOTE: if more than one ATM Pressure Sensor is installed, only one ATM Pressure Sensor needs to be configured.

1. Touch ATM Pressure Sensor in the Devices list (Figure 3) to display the ATM Sensor setup screen (Figure 4).

000	MISSING HOSE SETUP		0 Warning(s) 02/1	1/2020 02:28 PM
\mathbf{a}	Probe	Ground Water Sensor	Vac Sensor	🖶 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		
	Type B Sensor	Vapor Pressure Sensor		
Probe	Probe			

Figure 3. Accessing ATM Pressure Sensor Setup Screen

Touch the Address drop down box to select the address of a USM module ATM sensor. (The ATM on an USM module is located at address 17.). Touch the Label field to open the keypad and enter a name to identify the sensor (e.g., ATM Sensor). Touch the Enabled radio button to configure the ATM Sensor. Touch the check button v to save your choice.

NOTICE After saving, the Serial Number of this ATM is now visible.

	\bigcirc	Pm 1: PUMP OUT 10/01/20	22 11:04 PM
-		Setup Devices	< Share 🔘
	Home	Configured Enabled Disabled 	
	Favorites	Address B1.S1.17	
	Menu	Label ATM Sensor	
	Actions	Serial Number 1050625617	\mathbf{X}
U	1 Atmp Sensor	ATM Pressure Sensor	• ×

Figure 4. ATM Sensor Setup Screen

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 5) to open the VPS sensor setup screen (Figure 6).

000	MISSING HOSE SETUP		0 Warning(s)	02/11/2020 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	
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 5. 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 Olisabled	
Favorites	Address	B1.S3.4	•
Menu	Label	VaporSensor1	
Actions	Serial Number	0105062884	×
UP Sensor	Vapor Prossura		
Sensor	Sensor	<u>PPP</u>	

Figure 6. 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.
- 3. Notice after saving, the Vapor Pressure sensor serial number is now visible (see Figure 6).

VAPOR VALVE SETUP

1. Touch Vapor Valve in the Menu>Setup>Devices list (Figure 7) to open the Vapor Valve setup screen (Figure 8)

\bigcirc	Pm 1: PUMP OUT		10 Warning(s) 08/16	/2022 11:39 PM
\bigcirc	Probe	Ground Water Sensor	Vac Sensor	< Share 🔾
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	LV/MDIM		
Actions	Type A Sensor	ATM Pressure Sensor		
	Type B Sensor	Vapor Pressure Sensor		
Probe	Probe			

Figure 7. Accessing Vapor Valve Setup Screen

000	Pm 1: PUMP OUT	08/16/2022 11:44 PM
	Setup Devices	< Share 🔾
Home	Configured 🔵 Enabled 🖲 Disabled	* 12
Favorites	Address B1.S4.1	*
Menu	Label Vapor Valve	
Actions	Serial Number 0000000000	×
Vapor Valve	Valve	

Figure 8. Example Vapor Valve Setup Screen

- 2. Touch the Address drop-down box and select the address of the Vapor Valve. Touch the Label field and enter the label text for the Vapor Valve on the keypad (e.g., Vapor Valve) then touch the green check button to accept the label. Touch the Enabled radio button to configure the Vapor Valve. Touch the check button ✓ to save your choices.
- 3. Notice after saving the Vapor Valve serial number is now visible (see Figure 9).

000	Pm 1: PUMP OUT	08/16/2022 11:45 PM
	Setup Devices	< Share 🔾
Home	Configured Enabled Disabled 	
Favorites	Address B1.S4.1	•
D Menu	Label Vapor Valve	
Actions	Serial Number 0105063041	×
(1) Vapor Value	Vapor	
Valve	Valve	

Figure 9. Example Vapor Valve Completed Setup Screen

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 set up 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

0	MISSING HOSE SETUP	0 Warning(s) 5 Alarm(s)	02/11/2020 02:57 PM
	Setup Vapor General	General	😑 Print (0)
Home	Assessment Time	11 V Hours 59 V Minutes PM V	
Favorites	Pressure Sensor	Not Assigned 💌	
Menu			
Actions			X

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

 to save your choice.

VAPOR MANAGEMENT

Processor

1. Touch Setup>Vapor Management>Processor (see Figure 12).



Figure 12. Vapor Management Setup Screen

2. Touch the Type drop-down box and select Veeder-Root Polisher (see Figure 13)). Notice the Vapor Valve field self populates when there is a Vapor Valve configured (as in this example).

000	MISSING RELAY SETUP	1 Warning 1 Alarm(s	(s) 11/13/2023 09:50 AM
	Setup Vapor Management	Processor	< Share 🔾
Home	Туре	eeder-Root Polisher	*
Favorites	Ext Input 1 -		
O	Ext Input 2 -		
Menu	Vapor Valve	/V 1: VapValve1	×

Figure 13. Vapor Management Processor Setup Screen

3. Touch the check button v to save your processor choice.

SINGLE CARB PMC SETUP PRINTOUT

[GUI only; Not available in Web view]

For CARB PMC Setup, a single printout for the California Air Resources Board (CARB) can be generated.

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

The "CARB PMC" Printout:

- 1. Via Menu > Setup > Generate Setup, select the Setup Group option of "CARB PMC."
- 2. Touch the "Generate" button to create the printout (see Figure 14).



Figure 14. General Setup Screen with Example CARB PMC Printout

Diagnostics

PMC Device Diagnostic Screens

ATMOSPHERIC SENSOR OVERVIEW

1. Touch Menu>Diagnostics>Atmospheric Sensor>Overview to display the Atmospheric Sensor overview screen (see Figure 16).



Figure 15. Accessing the Atmospheric Sensor Overview Screen

00	Pm 2: PUMP OUT					08/30/202	2 11:57	РМ
	Diagnostics Atmos	spheric Sensor	Overview		< Share C			
Home	General							
	Туре	St	atus		Serial I	Number	Da	
Favorites	61-ATMOSPHERIC	SENSOR PR	ESSURE FAUL	105	0625617	00/		
0	4						+	
Menu	Constants							
	Model	Dev	vice Code	SI	ope	Of	fset	
Actions	0		18	2	2000	3	0000	
	Communication							
(1)	Samples Read	Samples Used	Parity Erro	ors Part	ial Read	Comm.	Erro	
Atmp	14886	13618	3	0	0			
sensor	4						•	-

Figure 16. Atmospheric Sensor Overview Screen - Page 1

2. The four tables in this screen display status information for the selected Atmospheric Sensor. Touch the scroll down arrow to view the rest of the Atmospheric Sensor data tables (see Figure 17).

000	Pm 3:	PUMP C	UT							08/30/2	2022 11:5	7 PM
	Diagnostics Atmo			heric Sei	nsor C)verview	· >				< Sha	are O
Home	Cons	tants										
		M	lodel		Devi	ce Code		SI	ope		Offset	
Favorites			0			18	3	2	000		30000	
	Com	municat	ion									
V	Sa	mples I	Read	Sampl	es Used	l Par	ity Erro	rs F	artial R	ead	Comm.	
Menu		1	4887		1361	9		0		0		
Actions	4										•	
Actions	Chan	inel										
$\left(1 \right)$	#	0	1	2	3	4	5	6	7	8	9	
Atmp	00	B409	0001	73A0	4651	3E9F	0012	0101	0001	D1FC	0040	
Sensor	10	80C4	8084	A350								-

Figure 17. Atmospheric 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.

VAPOR PRESSURE SENSOR OVERVIEW

1. Touch Menu>Diagnostics>Vapor Pressure Sensor>Overview to display the Vapor Pressure Sensor Overview screen (see Figure 19).



Figure 18. 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			< Sha	re 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	Errors	Partial R	ead (Comm. Erro	
(1)	41889	378	81	0		0		
VP Sensor	4						•	
	Channel							-

Figure 19. 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 20).

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 20. 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.

VAPOR VALVE OVERVIEW

1. Touch Menu>Diagnostics>Vapor Valve>Overview to display the Vapor Valve Overview screen (see Figure 22).



Figure 21. Accessing the Vapor Valve Overview Screen

••	Pm 1: PUMP OUT					/	08/30	/2022 11:03 F
	Diagnostics Vapor	Valve Ov	verview	\rangle				< Share
Home	General							
	Туре	Status			Serial	Number	Valve P	osition
avorites	90-VAPOR VALVE	COMMUNIC	ATION A	LARM	105	0625610	Closed	
D	4							
Menu	Constants				1			
	Devi	ce Code		Model		F	irmware	Version
ctions		14		1				1
	Communication							
1)	Samples Read	Samples	Used	Parity E	rrors	Partial	Read	Comm.
Vapor	22763		20420		0		0	
valve	4							

Figure 22. Vapor Valve Overview Screen - Page 1

2. The four tables in this screen display status information for the selected Vapor Valve. Touch the scroll down arrow to view the rest of the Vapor Valve data tables (see Figure 23).

	Pm 3:	PUMP O	UT							08/30/2	2022 11:0	5 P
	Diagn	ostics	Vapor V	alve	Overviev	v >					< Sha	re
Home				14			1				1	
	Com	municati	on									harmon
\star	Sa	mples R	ead	Sampl	es Used	Par	ity Erro	rs P	artial R	ead	Comm.	
vorites		22	2763		20420	1		0		0		
	4										•	
Menu	Chan	nel										
	#	0	1	2	3	4	5	6	7	8	9	
tions	00	B71A	0000	0000	0000	0000	0000	0000	0000	01EF	002A	
	10	3520	7D00	0163	0111	002A	3520	0003	4774	464A	3E9F	
1)	20	000E	0520	0001	0001	0001	A03C	00E0	0144	8104	80E4	
anor	30	00C0	00C0	AC42	0000	0000	0000	0000	0000	0000	0000	
/alve	40	0000	0000	0000	0000	0000						

Figure 23. Vapor Valve 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

Touch Menu>Diagnostics>PMC>Status (Figure 24) to open the PMC Status screen (Figure 25).



Figure 24. Accessing PMC Status Diagnostic Screen

Diagnostics PMC Status Home PMC Version 01.04 Vapor Pressure [iwc] 0.000
Home PMC Version 01.04 Vapor Pressure [iwc] 0.000
Vapor Pressure [iwc] 0.000
Load [%] 12.7
Effluent Emissions [LB/KGAL] 0.00
Actions Daily Throughput [GALS] 1
Vapor Processor Mode Automatic
Position Requested Closed

Figure 25. PMC Status Diagnostic Screen (Scroll Down to View Additional Fields)

AUTOMATIC MODE

If PMC mode is in AUTOMATIC, PMC will control flow through the Vapor Polisher using its vapor control valve. The control algorithms will monitor tank pressure, vapor temperature and carbon temperature to monitor carbon canister loading. Typically the valve opens to relieve the pressure and begin loading the canister. When the UST pressure becomes negative the valve opens and the purging process begins. The valve closes when the canister either reaches capacity or is empty after purging.

MANUAL MODE

If PMC mode is in MANUAL, touch the **Actions** button to manually set the valve to be opened (Set Requested: OPEN) or closed ((Set Requested: CLOSED). This feature tests the operation of the valve without waiting for the Vapor Polisher to reach loading or purging thresholds. It also provides the necessary controls to perform 2" decay tests. The current UST ullage space vapor pressure is available in this screen.

When set to Manual Mode, the system will reset to Automatic Mode after 4 hours.

SWITCHING BETWEEN VAPOR PROCESSOR MODES

With the Vapor Polisher Mode in Automatic, touch the **Actions** button to switch the PMC Mode to Manual (see Figure 26), or when in Manual Mode, touch the **Actions** button to set the vapor valve Open or Closed and /or touch 'Set VP Mode: Automatic' to exit Manual Mode.



Figure 26. Manually Switching Between PMC Modes

Vapor Monitor - Clear Test After Repair

Since PMC 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 Vapor Processor 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. 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).

EXAMPLE PROCEDURE

1. The Vapor Monitor posts a Vapor Leak Fail alarm. Navigate to Diagnostics>Vapor Monitor>Clear Test After Repair (see Figure 27).



Figure 27. 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 Processor (Figure 28).



Figure 28. Select Test Type

3. Touch the **Clear Test** button to clear the test (Figure 29).

000	✓ Data Retrieved		2 Warning(s) 3 Alarm(s)	02/14/2021 07:59 AM
	Diagnostics Vapor Monitor	Clear Test After Repair	0	< Share 🔾
Home	Test Type	Vapor Processor	•)
Favorites	Last Clear	Never		
0		Clear Test		
Menu				
Actions				
Actions				

Figure 29. Clear Test

4. A Confirmation Message dialog box appears.



Figure 30. Confirmation Message Dialog Box

5. Touch the dutton 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.

6. The date and time in the Last Clear field updates (see Figure 31).



Figure 31. Last Clear Field Updates

7. Touch the Share drop-down arrow to print out the updated Clear After Test Repair history (GUI only) (Figure 32).

02/14/21 8:00 AM	
TLS450 Plus 123 Main Street City, State Phone #	
VAPOR PROCESSOR TESTS	: 04/04/21

Figure 32. Clear After Test Repair History Printout

Operations

Alarms

The TLS console is continuously monitoring the vapor recovery system and PMC sensors for alarm conditions.

PMC Alarm Summary

Table 2 contains a listing of the PMC generated alarms including a brief description of each and associated front panel indicator.

Displayed Message	Description	Light Indicator	Suggested Troubleshoot- ing ¹
VP EMISSION WARN	Mass emission exceeded the certified daily threshold.	Yellow	Ensure Polisher is in Automatic Mode. Resolve
VP EMISSION FAIL	2nd consecutive mass emission failure	Red	Alarms.
PMC SETUP FAIL	PMC is not configured or missing components.	Red	Ensure that all required components are installed and operational.
PMC SENSOR FAULT	Component used by PMC has failed or reported an error condition. See Troubleshooting section for complete description of sensors and associated conditions that can cause a sensor fault.	Red	Check for Device Alarm or Fault.

Table 2. PMC Alarm Summary

¹Refer to the Troubleshooting Section of this manual and the ISD/PMC Troubleshooting Guide 577014-463.

Table 3. Wireless Related Sensor Alarms

Displayed Message	Devices	Light Indicator	Description	Suggested Troubleshooting
BATTERY WARNING	Vapor Valve, Vapor Pressure Sensor and Probe	Yellow	Device transmitter reports battery status as 'Replace' for 24 hours	Remove and replace battery pack

Reports - PMC Status

1. You can access and view the PMC Status report from the TLS console front panel by touching Menu>Reports>PMC>Status (see Figure 33 and Figure 34).



Figure 33. Accessing PMC Report

me					
	General				
	PMC Version	01.04	1		
	Effluent Emissions Test	PASS	(0.00 LB	S/1KG)	
rites	PMC Sensor Self Test	PASS			
	PMC Setup Self Test	PASS			
	Daily Throughput	4432	GALS		
nu	PMC MONITORING TEST PASS/FAIL THRES	HOLDS			
			PERIOD	BELOW	AB
ons	VAPOR PROCESSOR MASS EMISSION FAI	L	1DAYS		0.32 LBS/
	•				•

Figure 34. PMC Status Report Example

2. Touch the Share button and select Print to printout the PMC Status report (see Figure 35).

04/02/21 4:54 PM	
PMC STATUS REPORT	
GENERAL	
PMC VERSION EFFLUENT EMISSIONS TEST PMC SENSOR SELF TEST PMC SETUP SELF TEST DAILY THROUGHPUT	01.04 PASS (0.00 LBS/1KG) PASS FAIL 1 GALS
PMC MONITORING TEST PAS	S/FAIL THRESHOLDS
	PERIOD BELOW ABOVE
VAPOR PROCESSOR MASS EM FAIL	IISSION 1DAYS 0.32 LBS/1KG

Figure 35. PMC Status Report Printout

Viewing PMC Reports via RS-232 Connection

COMM MODULES

Table 4 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 4. 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 36).



Figure 36. 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 36) can be used for any combination of Comm Modules found in Table 5 or Table 10 as appropriate.

		C	omm Slot	1	(Comm Slot	2	C	omm Slot	3
	Comm	N	Iodule Po	rt	I	Module Po	rt	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	С	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		NC	С	NC	NC	С	NC	NC	C	NC
RS-485 Dual Port*	Serial	С	С	NC	С	С	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		NC	С	NC	NC	С	NC	NC	C	NC
CDIM	ым	C	NC	NC	С	NC	NC			
IFSF LON		C	NC	NC	С	NC	NC	С	NC	NC
 An unclearable alarm will Configurable by jumpers (see 	be posted Figure 3	if this Comn 7 and Table 6	n Module is 6.)	in Slot 3.		•	•	-	•	

Table 5. 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 37 for Port/Jumper locations and to Table 6 for Tri-Comm Module port configurations.



Figure 37. Tri-Comm Module Ports/Jumper Locations

Item	Ро	rt 1	Port 2	Port 3
Communication Type	RS-232 c (Dependent upon j	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	Config	gurable	Configurable	Fixed at: • 8 Data Bits, • No Parity, • 1 Stop Bit. • Data Rate (configurable)

Table 6. Tri-Comm Module Port Configuration

Typical TLS-450PLUS RS-232 DB9 connector pin outs are shown in Figure 38.

Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

Figure 38. 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 39 below.



Figure 39. 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 40).

Figure 40. 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	O Enabled Disabled			
	Security Code)	
	RS232 End of Message	🔵 Enabled 💿 Disabled			
	ETX Characters Computer	[0x03]		-	

Figure 41. 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 42). 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	•)	
Serial		Parity	NO PARITY	•	-	

Figure 42. 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 43).



Figure 43. 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 44. PuTTY Terminal Window

SENDING CONSOLE COMMANDS

Table 7 shows four important PMC console commands: IV8000, IV8200, IV8800, 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.

NOTICE If you want to see the characters of the command as you type them in, look for a setting in your terminal emulator 'Echo typed characters locally', and set it active.

If the RS-232 Security Code is disabled - press and hold the **Ctrl** key while you press the **A** key, then type in IV8000. 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 000016IV8000.

If you have local echo enabled you will see the typed command on the screen: \bigcirc IV8000 followed by the response (report) from the console. The \bigcirc symbol indicates Ctrl A and the \bullet 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 ©IV8000©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
Vapor Processor Runtime Diagnostic Report ² (See example Figure 45)	<soh>IV8000</soh>
Vapor Processor Status Report ² (See example Figure 46)	<soh>IV8200</soh>
Vapor Valve Diagnostic Report ² (See example Figure 47)	<soh>IB6100</soh>
Daily Vapor Polisher Diag- nostic Report (See example Figure 48)	<pre><soh>IV8800yyyymmddnnnn Where: yyyy = year number, e.g., 2003, mm = month number (01 = January, 02 = February, etc.), dd = day of the month, nnnn = num- ber of records after the date entered (9999 = all).</soh></pre>
Non-Priority Alarm History Report (See example Figure 49)	<soh>I11100</soh>
Priority Alarm History Report (See example Figure 50)	<soh>I11200</soh>

Table 7: Serial Commands for PMC Reports

¹<SOH> = Control A. For more information on TLS console serial commands, refer to the V-R Serial Interface Manual. ²Not available for FFS-CAS Processor or Hirt VCS 100.

Figure 45 shows an example V-R Vapor Polisher Runtime Diagnostic Report and Table 8 explains the IV8000 report's event codes (not available with FFS-CAS or Hirt VCS 100).

IV8000 OCT 24, 2	2023 9:49E	PM	
TLS_450 U: VEEDER-ROO 125 POWDE SIMSBURY,	ST DT TEST LAE R FOREST DF CT 06070	3	
VAPOR POL	ISHER		
VALVE EVE	TN	PRESSURE	
DATE-TIME		"WC	EVENT CODE
10-21-23	6:59AM	1.301	OPEN FILL
10-21-23	7:06AM	1.037	CLOSE NEAR FULL
10-21-23	7:21AM	1.307	OPEN FILL
10-21-23	7:28AM	1.046	CLOSE NEAR FULL
10-21-23	7:46AM	1.300	OPEN FILL
10-21-23	7:51AM	0.973	CLOSE NEAR FULL
10-21-23	8:39AM	-0.261	OPEN PURGE
10-21-23	8:46AM	0.014	CLOSE NEAR FULL
10-21-23	8:52AM	-0.264	OPEN PURGE
10-23-23	7:25PM	-0.517	CANISTER EMPTY
10-23-23	7:27PM	-0.492	CLOSE PURGE Hi P
10-24-23	5:36AM	0.752	OPEN FILL
10-24-23	11:45AM	-0.450	CANISTER EMPTY
10-24-23	11:47AM	-0.425	CLOSE PURGE Hi P
10-24-23	12:16PM	0.832	OPEN FILL
10-24-23	6:43PM	-0.409	CANISTER EMPTY
10-24-23	6:45PM	-0.313	CLOSE PURGE Hi P
10-24-23	9:49PM	0.753	OPEN FILL

Figure 45. Vapor Polisher Runtime Diagnostics Report - Serial to PC Format

Event Code	Cause	Event Code	Cause
NO EVENT	The valve changed state outside of the car- bon canister algorithm.	CLOSE NEAR FULL	Canister load is between 80 and 100% and pressure is <1.05.
CLOSE TEST	Manual operation of the valve	OPEN PURGE	Canister load is >0% and pressure <-0.25
OPEN TEST	Manual operation of the valve	OPEN EXCESS PURGE	Canister load is 0%, Excess purge is incomplete, pressure <-1.5, time is between 6AM and 4PM.
CLOSE PURGE HI P	The canister state is in excess purge and the pressure is above -0.5.	OPEN FILL	 Canister valve is open for loading: When pressure is greater than or equal to 0.75 IWC and Canister load is less than 80%. Pressure is greater than or equal to 1.3 IWC and Canister load is greater than 80%.
CLOSE PURGE TIME	The canister state is in excess purge and the time is outside 6AM to 4PM.	CLOSE CVLD TEST	Valve was closed to collect data for PMC contamina- tion leak test.
CLOSE FORCE PURGE	Canister is in startup period. Loading with pressures <+1.05 is not allowed until startup period is complete.	CLOSE LIMIT	Valve closed because canister has reached allowable extended capacity loading limit.
CANISTER EMPTY	Canister was loaded above 1% and purged to 0%. No valve state change.	CANISTER FULL	No valve state change. The canister load passed from below 95% to/thru the 100% point and not yet at day's emission limit.
CLOSE EMPTY	Excess purging has completed.		

 Table 8: Vapor Processor Runtime Diagnostic Report Event Codes

Figure 46 shows an example Vapor Processor Status Report (not available with FFS-CAS or Hirt VCS 100).

IV8200 DEC 8, 2010 4:29 AM			
<site name=""> <site address=""> <site address=""> <site address=""></site></site></site></site>			
VAPOR PROCESSOR STATUS REPORT			
PMC VERSION: XX.XX			
ASSESSMENT TIME: DEC 7, 2010 11:59 PM			
VAPOR PROCESSOR TYPE: VEEDER-ROOT POLISHER			
PMC MONITORING TEST PASS/FAIL THRESHOLDS	DEDIOD	DELON	ADOVE
VAPOR PROCESSOR MASS EMISSION FAIL	1DAYS		0.32 LBS/1KG
EFFLUENT EMISSIONS TEST : PASS (0.00 LBS/	/1KG)		
DAILY THROUGHPUT : 6989 GALS			

Figure 46. Vapor Processor Status Report - Serial to PC Format

Figure 47 shows an example Vapor Valve Diagnostic report.

```
IB61vv
JAN 22, 2020 3:11 PM
VAPOR VALVE DIAGNOSTIC REPORT
VV 1:VAPOR VALVE 1
VAPOR VALVE
SERIAL NUMBER
                47466902
VALVE POSITION CLOSED
BATTERY
                 FULL
                            (only if wireless)
OPEN CAP
               CHARGED
CLOSE CAP
               CHARGED
AMBNT TEMP
                70.12 F
OUTLET TEMP
                72.34 F
SENSOR FAULTS
 VALVE COMMAND FAULT
                          (only active reason(s) for alarm/warning
                          are listed)
CAP NOT CHARGING FAULT
CAP NOT HOLDING FAULT
REF RESISTOR FAULT
VAPOR RESISTANCE FAULT
TEMPERATURE RANGE FAULT
DATA NOISE FAULT
VALVE NOISE FAULT
NONE
<ETX>
```

Figure 47. Vapor Valve Diagnostic Report - Serial to PC Format

Figure 48 shows an example Daily Vapor Polisher Diagnostic report.

IV8800 OCT 2, 2008 2:58 PM PMC DAILY VAPOR POLISHER DIAGNOSTIC LOAD PRGE MIN% MAX% SELF EMISSION DATE/TIME HRS HRS LOAD LOAD TEST TEST 08-10-02 14:58:58 3.1 2.5 15 69 WARN FAIL

Figure 48. Daily Vapor Polisher Diagnostic Report - Serial to PC Format

Figure 49 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 50 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
                                        ALARM TYPE
                                                                 STATE
ID CATEGORY DESCRIPTION
                                                                             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 ALARM
        CLEAR
        11-17-10
        11:46AM

        OVERFILL ALARM
        ALARM
        11-17-10
        11:45AM

t 2 tank
              91 OCTANE
           91 OCTANE
t 2 tank
```

Figure 50. Priority Alarm History Report - Serial to PC Format

Troubleshooting

PMC Setup Fail

A PMC Setup Fail warning occurs when the PMC setup is not complete. Follow the diagnostic steps in Table 9 below to resolve this issue.

Step	Procedure
1	Gasoline Tanks Configured and Enabled?
2	ATM Sensor Configured and Enabled?
3	Vapor Valve installed, Configured and Enabled?
4	In Setup>Vapor Management>Processor: Is the Vapor Valve assigned?
5	In Setup>Vapor General>General: Is the Vapor Pressure Sensor assigned?
6	Exiting out of Setup will cause the TLS Console System Self-Test.
7	If alarm does not clear, contact Veeder-Root Technical Support at (800) 323-1799.

Table 9: PMC Setup Fail Diagnostic Procedure

PMC Sensor Faults

Table 10 contains a listing of the PMC Device generated alarms including their cause and suggested troubleshooting. TLS Console PMC alarms may be interspersed amongst non-PMC alarms, please see TLS Series manuals for more information.

Fault Message	Devices	Cause	Suggested Troubleshooting	
	Vapor Valve, Vapor		Check wiring and connections of device in alarm	
Communication Alarm	Tank Probe, Atmospheric Pressure Sensor	Device not communicating with TLS	Power cycle the TLS	
			Verify device addressing in Setup>Devices	
Pressure Fault Alarm	Atmospheric Pres- sure Sensor	The pressure readings are invalid (out-of-range, or have not changed for an extended period of time).	USM/ATM Module Group (P/N 0332812-006) may need to be replaced. ATM sensor may be faulty. Contact VR Technical Support for further assistance.	

Table 10. PMC Device Fault Summary

Fault Message	Devices	Cause	Suggested Troubleshooting
Valve Command Fault		The valve fails calibration	
Valve Noise Fault		The valve fails calibration due to data noise. If successful, calibration cannot be completed in 24 hours the alarm posts.	
Cap (Capacitor) Not Charging		Vapor valve capacitor does not initially charge within 60 minutes, or subsequent recharges after 15 minutes.	
Cap (Capacitor) Not Holding Fault	Vapor Valve	Vapor valve capacitor discharges when idle (i.e., not resulting from an open/close request) more than 3 times in 24 hours.	Check installation of all Vapor Valve components including Thermal Probe and Vapor Sensor Assembly. Refer to manual 577013-920. Call V-R Technical Support if further assistance is needed.
Reference Register Fault		At least 1 of the 4 reference resistors is out- of-range repeatedly.	
Vapor Sensor Resistance Fault		The vapor sensor resistance reads out-of- range repeatedly.	
Temperature Range Fault		Outlet temperature reads out-of-range repeatedly.	
Data Noise Fault		Frequent noise is affecting sensor readings for more than 30 minutes.	

Table 10. PMC Device Fault Summary

Wireless Related Sensor Alarms

The TLS RF Wireless 2 System (W2) features two-way communication utilizing a client/server architecture. When the Veeder-Root Polisher Vapor Valve uses this type of technology, the following alarm may occur:

Displayed Message	Description	Light Indicator	Suggested Troubleshooting
BATTERY WARNING	Vapor Valve transmitter reports battery status as 'Replace' for 24 hours.	Yellow	Remove and replace battery pack.

VP Emission Alarm

In the event that a VP EMISSION WARNING is present when the valve is in Automatic mode for 24 hours and there are no PMC Sensor Fault alarms on the system, notify Veeder-Root Technical Support.

Example PMC reports

IB6100 FEB 4, 2008 1:09 PM s 2:Vapor valve	IB6100 FEB 4, 200 s 2:Vapor va	8 1:09 PM lve	IB6100 FEB 4, s 2:Vap	2008 1:09 PM or valve
VAPOR VALVE SERIAL NUMBER 123456 VALVE POSITION: OPEN OPEN CAP: CHARGED CLOSE CAP: CHARGED AMBNT TMP: 65.08 F OUTLET TMP: 75.05 F SENSOR FAULTS: VALVE COMMAND FAULT	VAPOR VALVE SERIAL NUMBE VALVE POSITI OPEN CAP: CLOSE CAP: AMBNT TMP: OUTLET TMP: SENSOR FAULT CAP NOT HOLD	R 123456 ON: OPEN CHARGED CHARGED 65.08 F 75.05 F S: ING	VAPOR V. SERIAL I VALVE P OPEN CA CLOSE C. AMBNT TI OUTLET SENSOR I CAP NOT	ALVE NUMBER 123456 OSITION: OPEN P: CHARGED AP: CHARGED MP: 65.08 F TMP: 75.05 F FAULTS: CHARGING
IB6100 FEB 4, 2008 1: s 2:Vapor valve VAPOR VALVE SERIAL NUMBER VALVE POSITION: OPEN CAP: CLOSE CAP: AMBNT TMP: OUTLET TMP: SENSOR FAULTS: TEMPERATURE RANGE	09 PM 123456 OPEN CHARGED CHARGED 65.08 F 75.05 F	IB6100 FEB 4, 2008 s 2:Vapor valve VAPOR VALVE SERIAL NUMBER VALVE POSITION: BATTERY: OPEN CAP: CLOSE CAP: AMBNT TMP: OUTLET TMP: SENSOR FAULTS: TEMPERATURE RAN	1:09 PM 123456 OPEN FULL CHARGED 65.08 F 75.05 F GE	''Wireless' vapor ' valve example

Figure 51. PMC Report Examples



