


Console Description

The TLS-450PLUS Automatic Tank Gauge (ATG) is a powerful tool that allows fueling operations to run at peak efficiency, with an easy to understand navigation, streamlined inventory and compliance reporting, and powerful business analytics. It can monitor up to 64 tanks, or 32 tanks with BIR. Frequent releases of operating software for the TLS-450PLUS tank gauge assures that data is secure and software features are routinely updated and enhanced.

TLS-450PLUS Consoles, Standard Hardware & Software
Part # & Description

- 860091-301 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL
- 860091-302 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL
- 860091-401 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL
- 860091-402 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL
- 860091-001 TLS-450PLUS Console, No Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL
- 860091-002 TLS-450PLUS Console, No Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL

Standard Hardware & Application Software

Software – 333545-001 Application Software (must be ordered with Console) includes Web-enabled, Custom Alarm, On-Console Help, Extended Storage, TLS-Expansion, Static Leak Detection, 3GPH DPLLD

Hardware – 3 Port Ethernet Module (Comm Slot 4), 2-Port USB Module (Comm Slot 5), 3 module compartments

Devices

| Module Compatibility | Inputs per Module | iButton Req'd? | Console Slots | | | | TLS-XB 1 Slots | | | | TLS-XB 2 Slots | | | | TLS-XB 3 Slots | | | | Modules per System |
|---------------------------|-------------------|----------------|---------------|---|---|---|----------------|---|---|---|----------------|---|---|---|----------------|---|---|---|--------------------|
| | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| TLS-450PLUS System | | | | | | | | | | | | | | | | | | | |
| USM | 16 | POWER MODULES | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 16 |
| UIOM | 14 ¹ | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 16 |
| 10-Amp Relay | 6 | | | | | ● | | | | ● | | | | ● | | | | ● | 4 |
| MDIM | 12 | | ● | ● | ● | ● | ● | | | | | | | | | | | | 5 |
| LVDIM | 12 | | ● | ● | ● | ● | ● | | | | | | | | | | | | 5 |

¹=(14) total inputs include (5) AC Inputs, (5) Relay Contacts, (4) 12VDC Inputs

Communications
TLS-450PLUS Device & Communications Module Compatibility

| Module | | Console | | | | | | | | | | Modules per System | Type |
|----------------------------|-----------------------|----------------|----|----|----|----|----|----|----|----|----|--------------------|----------|
| | | 1 ⁴ | | 2 | | 3 | | 4 | | 5 | | | |
| | COMMUNICATION MODULES | P1 | P2 | P1 | P2 | P1 | P2 | P1 | P2 | P1 | P2 | | |
| TLS-450PLUS | | | | | | | | | | | | | |
| RS-232 | | | ● | | ● | | ● | | ● | | ● | 3 | Hardware |
| Dual RS-232 | | ● | ● | ● | ● | | | | | | | 3 | Hardware |
| RS-485 | | | ● | | ● | | ● | | ● | | ● | 3 | Hardware |
| Dual RS-485 ⁴ | | ● | ● | ● | ● | | | | | | | 3 | Hardware |
| RS-232/RS-485 ⁴ | | ● | ● | ● | ● | | | | | | | 3 | Hardware |
| Internal Modem | | | ● | | ● | | ● | | ● | | ● | 3 | Hardware |
| CDIM | | ● | | ● | | ● | | ● | | ● | | 2 | Hardware |
| EDIM ² | | ● | | ● | | ● | | ● | | ● | | 3 | Software |
| IFSF LON ³ | | ● | | ● | | ● | | ● | | ● | | 1 | Hardware |

¹=When placed in Slot 3, only Position 2 will be functional

²=EDIM can be programmed in any position with an RS-232 port - up to 3 per system

³=Can be combined with EDIM

⁴=Console ships standard with dual RS-232 or dual RS-232/RS-485 card in Slot 1

| TLS-450PLUS Device Modules | Part # & Description | | Maximum # of Modules per Console | # of Inputs per Module | Availability |
|--|--|---|--|--|--|
| | Universal Sensor Module (USM) Interface for all Probes, Sensors, and DPLLD | 332812-001 – Factory Installed Module 330020-619 – Spare Part Module | Up to 4 for each TLS-450PLUS and/or TLS-XB or a maximum of 16 modules per system | 16 | Sold Separately (either Factory Installed or as a Spare Part Module) |
| | Universal Input/Output Interface Module (UIOM) for Relay Control and Input Signal Monitoring | 332813-001 – Factory Installed Module 330020-620 – Spare Part Module | Up to 4 for each TLS-450PLUS and/or TLS-XB or a maximum of 16 modules per system | 5 dry contact output relays / 4 low voltage dry contact inputs / 5 high voltage inputs (<=240 VAC) | |
| | 10-Amp Relay Module has 6 high power outputs / 6 low voltage inputs / must be installed in slot 4 of TLS-450 PLUS and TLS-XB | 333564-001 – Factory Installed Module 330020-814 – Spare Part Module | Up to 1 for each TLS-450PLUS and/or TLS-XB or a maximum of 4 modules per system – <i>*Only installed in slot 4</i> | 4 | |
| | BIR/AccuChart LVDIM for TLS-450PLUS, 12 Inputs | 333581-001 – Factory Installed Module 330020-800 – Spare Part Module | | | |
| | BIR/AccuChart MDIM for TLS-450PLUS, 12 Inputs | 333582-001 – Factory Installed Module 330020-799 – Spare Part Module | | | |
| | | | | | |
| TLS-450PLUS Communications Modules | Part # & Description | | Maximum # of Modules per System | Availability | |
| | SiteFax™ Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS | 332818-001 – Factory Installed Module 330020-612 – Spare Part Module | Up to 3 per System | Sold Separately (either Factory Installed or as a Spare Part Module) For Spare Part “upgrade” kits, the BIR/AccuChart Feature Enhancement will be shipped on a Veeder-Root iButton adapter – P/N 330020-659 | |
| | Single RS-232 Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS | 332866-001 – Factory Installed Module 330020-613 – Spare Part Module | | | |
| | RS-232 Dual Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS | 332868-001 – Factory Installed Module 330020-617 – Spare Part Module | | | |
| | Single RS-232/RS-485 Dual Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS | 332870-001 – Factory Installed Module 330020-618 – Spare Part Module | | | |
| | BIR/AccuChart EDIM for TLS-450PLUS | 333149-001 – Factory Installed Module 330020-801 – Spare Part Module | 1 per System | | |
| | BIR/AccuChart CDIM for TLS-450PLUS, 3 Inputs | 333580-001 – Factory Installed Module 330020-802 – Spare Part Module | | | |
| | IFSF LON Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS | 333659-001 – Factory Installed Module 330020-828 – Spare Part Module | | | |
| TLS-450PLUS Optional Software | Part # & Description | | | | |
| | Continuous Statistical Leak Detection (CSLD) for TLS-450PLUS | | 332972-006 | | |
| | Ultimate Testing: Digital Line Leak Detection for TLS-450PLUS | | 332972-007 | | |
| | Risk Management: Digital Line Leak Detection for TLS-450PLUS | | 332972-008 | | |
| | Base Compliance: Digital Line Leak Detection for TLS-450PLUS | | 332972-009 | | |
| | Timed Sudden Loss Detection for TLS-450PLUS | | 332972-018 | | |
| | Vapor Collection Monitor for TLS-450PLUS | | 332972-021 | | |
| | DEF Recirculation Software Feature for TLS-450PLUS & DEF Temperature Sensor Installation Kit | | 332972-026 – Software 794380-210 – Install Kit | | |

| Specifications | |
|---|--|
| Operating Temperature | +32 to +104°F (0 to +40°C) |
| Storage Temperature | -40 to +158°F (-40 to +70°C) |
| Installation Location | NEMA 4 or indoors |
| Relative Humidity | 0-90% (non-condensing) |
| External Dimensions | 18.4" x 11" x 8.8" (46.74cm x 27.94cm x 22.35cm) |
| Construction | 16GA (0.060 in/0.1524 cm) powder coated steel |
| Console Power Wiring Requirements | AC Power Wiring – Wires carrying 120 or 240 VAC from power panel to the console should be #14 AWG (or larger) wire for line, neutral & chassis ground (3) ; and 4 sq. mm, rated for at least 90C for barrier ground. |
| Probe & Sensor to Console Wiring Requirements | <ol style="list-style-type: none"> 1. Wire Type – Shielded cable required regardless of conduit material or application. It must be rated less than 100 picofarad per ft manufactured with a suitable material such as Carol C2534 or Belden 88760, 8760, or 8770. 2. Wire Length – Maximum 1,000ft (304.8m) to meet intrinsic safety requirements. Improper system operation could result for runs over 1,000ft (304.8m). 3. Wire Gauges – Color coded – shielded cable used in all installations. Wires should be #14 - #18 AWG stranded copper wire and installed as Class 2 circuits. As an alternate method when approved by the local authority having jurisdiction, #22 AWG wire such as 88761 may be suitable with the following requirements: Wire run is less than 750ft (228.6m), Capacitance does not exceed 100 pF/ft; Inductance does not exceed 0.2 uH/ft. |
| System Power Requirements | AC Input – Universal AC power supply: 100 to 249 VAC, 50/60Hz, 2A max. |
| Display Specifications | 8" (20.32cm) Color WVGA LCD touch screen display |
| Connectivity Methods | Ethernet, Web Browser, Modem, Fax, Serial |
| Data Storage Features | SD card |
| Software Security Features | Centralized Device Management to protect your network of TLS-4XX consoles |
| Custom User Access | Front Panel Display control through user specific log-in; User defined roles to restrict access / functionality. Screen permissions can be limited to view, edit, perform |
| System Security | <ol style="list-style-type: none"> 1. Partitioned Ethernet Ports that can be used to separate user network from the internet 2. Port availability control: SSH Port (22), HTTPS Port (443), Serial Command Port (10001) 3. Reassign Port Numbers (i.e., HTTPS on 50443) 4. System Integrator CVE Scans & Fixes 5. Periodic System Updates to protect against persistent threats |
| Customized Alarm Features | Customizable for all alarms |
| Approvals | UL cUL, ATEX, IECEx, NEPSI, FCC, FMC, PESO, ANZEx, ULC, INMETRO, IQC, EAC, NWGLDE, and CEN |
| Third Party Evaluations | http://www.nwglde.org/evals/veeder_root_zf.html |
| Product Installation Guide | https://www.veeder.com/us/technical-document-library |

System Compatibilities Guide

| Feature/Console | TLS-450PLUS |
|--|---------------|
| CONSOLE DESIGN | |
| Modular/Expandable Features | • |
| LCD with Touch Screen (optional) | 8" WVGA Color |
| Integral Roll Printer | Optional |
| Universal Power Supply | • |
| INVENTORY CONTROL | |
| Graphical Inventory Status | • |
| Complete Inventory Reports | • |
| Programmable Auto Report Times | • |
| Inventory Increase Report | • |
| Timed Sudden Loss Detection | Optional |
| BUSINESS INVENTORY RECONCILIATION | |
| Shift-Based Reconciliation | Optional |
| Reconciliation by Tank | Optional |
| TANK CALIBRATION | |
| Multi-Pass Tank Calibration | Optional |
| Single-Pass / Metered Drop | Optional |
| Limited Range Calibration | Optional |
| Supports Multiple Tank Charts per Tank | Optional |
| Supports Multiple Line Manifold Tanks | Optional |
| Graphical / Text Calibration Diagnostics | Optional |
| Automatic and Manual Meter Mapping | Optional |
| IN-TANK LEAK TEST | |
| 0.1 GPH Tank Tightness Testing | • |
| 0.2 GPH Tank Tightness Testing | • |
| Continuous Statistical Leak Detection | Optional |
| Selectable Test Rates | • |
| Programmable Automatic Test Schedules | • |
| PASS, FAIL, or INVALID Indicators | • |
| LINE LEAK DETECTION | |
| Integral Line Leak Detector | Optional |
| Programmable Line Test Features | Optional |
| INTERSTITIAL/SUMP LEAK SENSING | |
| Tank Annulus | • |
| Sump | • |
| Dispenser Pan | • |
| Mag Sump | • |
| Sensor Location Identifiers | • |
| VAPOR WELL MONITORING | |
| Hydrocarbon Vapor Detection | • |
| High Water Level Alarm | • |
| GROUNDWATER MONITORING | |
| Hydrocarbon Liquid Detection | • |
| Low Water Alarm | • |
| AIR VAPOR MONITORING | |
| Vapor Collection Monitor | Optional |
| ALARMS | |
| Leak | • |
| Overflow | • |
| High Level | • |
| Sudden Loss | • |
| High Water | • |
| Low Inventory | • |
| Programmable Alarm Limits | • |

| Feature/Console | TLS-450PLUS | TLS-450PLUS with TLS-XB** |
|---|-------------|---------------------------|
| DATA COMMUNICATIONS | | |
| RS-232 | 5 | 5 |
| RS-485 | 3 | 3 |
| Fax Transmittal (SiteFax) | Optional | Optional |
| External USB 2.0 | 2 | 2 |
| Ethernet Ports | 3 | 3 |
| International Forecourt Standards Forum (IFSF) | 1 | 1 |
| SYSTEM CAPABILITIES | | |
| Manifold Tank Capability (Line & Siphon) | • | • |
| Height-Based Pump Priority Control for Manifoldded Tanks | • | • |
| Pump Alternate on the Fly | • | • |
| Self-Diagnostics | • | • |
| Emergency Generator Capability | • | • |
| Up to 3 Years Data Storage | • | • |
| FAX Notification On-Time or Event | Optional | Optional |
| Email Notification On-Time or Event | • | • |
| LCD with Touch Screen | Optional | Optional |
| On-Board Help | • | • |
| Custom Help | • | • |
| Custom Alarms | • | • |
| Environmental Reports (Compliance Reports Summary) | • | • |
| Sensor Reports | • | • |
| Sensor History Report by Period, Month, Week or Custom | • | • |
| Web-Enabled | • | • |
| System Duplicate | • | • |
| SYSTEM CAPACITIES* | | |
| Inputs | 64 | 256 |
| In-Tank Probes (Including Density) | 64 | 64 |
| In-Tank Probes with BIR | 32 | 32 |
| Digital Pressurized Line Leak Detectors (Additional Software Req'd) | 15 | 16 |
| 2-WIRE SENSORS | | |
| Magnetostrictive Discriminating Level Indicating Sump Sensor | 64 | 99 |
| Discriminating Dispenser Pan & Containment Sensors | 64 | 99 |
| Solid-State Non-Discr. Dispenser Pan & Containment Sensors | 64 | 99 |
| Sump Sensors | 64 | 99 |
| Position Sensitive Pan/Sump Sensor | 64 | 99 |
| Interstitial Sensor for Fiberglass Tanks | 64 | 99 |
| Solid-State Discr. Interstitial Sensors for Fiberglass Tanks | 64 | 99 |
| Alt. Ethanol Fluid Interstitial Sensors for Fiberglass Tanks | 64 | 99 |
| Interstitial Sensors for Steel Tanks | 64 | 99 |
| Microsensors | 64 | 99 |
| Position Sensitive Interstitial Sensor for Steel Tanks | 64 | 99 |
| Alt. Ethanol Fluid Solid-State Interstitial Sensor for Steel Tanks | 64 | 99 |
| Hydrostatic Sensors for Brine-Filled Double-Wall Tanks | 64 | 99 |
| Hydrostatic Sensor for Brine-Filled Double-Wall Sumps | 64 | 99 |
| Oil Water Separator Sensor | 64 | 99 |
| 3-WIRE SENSORS | | |
| Solid-State Discr. Dispenser Pan & Containment Sump Sensors | 32 | 99 |
| Groundwater Sensor | 32 | 99 |
| Vapor Sensor for Monitoring Wells | 32 | 99 |
| INPUT & OUTPUT | | |
| Output Relays | 21 | 32 |
| External Inputs Low Voltage | 16 | 64 |
| External Inputs High Voltage | 20 | 32 |
| 10-amp Relay | 4 | 16 |

* Indicates the maximum number of devices the system can handle if all slots/ positions are filled with that type of device.

** TLS-450PLUS with (3) three TLS-XB boxes

Notice

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

This publication contains proprietary information which is protected by copyright. All rights reserved. No part of this publication may be photocopied, reproduced, or translated to another language without the prior written consent of Veeder-Root.

Example Illustrations

Illustrations used in this guide for example sensor installations may contain components that are customer supplied and not included with the sensor. Please check with your Veeder-Root Distributor for recommended installation accessories.

Third Party Evaluations

Third party evaluations of the Veeder-Root sensors contained in this application guide can be found under the Veeder-Root vendor name on the National Work Group on Leak Detection Evaluations (NWGLDE) website:

<http://www.nwglde.org>