VEEDER-ROOT

TLS Consoles Point of Sale (POS)

Application guide

TLS POS

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Introduction

This guide provides assistance in selecting Dispenser Interface Modules (DIMs) that enable a properly fitted TLS Console to interface supported Point-of-Sale (POS) devices and provide enhanced product inventory and/or product vapor recovery monitoring. Veeder-Root offers two console upgrades that interface with POS devices.

BIR and ISD Console Options

Business Inventory Reconciliation (BIR) is a console option that automatically collects dispensing data, in-tank inventories and deliveries, and reconciles the totals at the end of each shift, day, and month. When used with AccuChart™, an automatic tank calibration feature, BIR enhances reconciliation accuracy by comparing the tank's metered sales data to the tank's probe data.

In-Station Diagnostics (ISD) is a console option that enables the TLS Console to continuously monitor the vapor recovery equipment and Enhanced Vapor Recovery (EVR) systems at gasoline dispensing facilities, maintain test records, provide test reports, and generate warnings or alarms following equipment failures.

TLS-450PLUS

IN-STATION DIAGNOSTICS (ISD)

- TLS-450PLUS with ISD Software Feature option
- 11.0 or later software
- A Mag 1 (0.1 gph) magnetostrictive (standard or Mag Plus) probe is required for each gasoline tank. The Mag 1 probe for alternative fuels is also supported.
- Support for up to 36 fueling stations
- Dispenser Interface Module - For electronic dispensers, one DIM is required for each TLS-450PLUS. Up to 3 DIMs can be installed to support sites with multiple POS systems. For mechanical dispensers, the TLS-450PLUS can support up to 5 mechanical DIMs. Each mechanical DIM supports up to 12 mechanical dispensers.
- DIM installation kit - One installation kit may be required for each DIM. The installation kits vary for each DIM and include all required adapter boxes and cables.
- Additional ISD monitoring equipment as defined by the site's requirements, e.g., dispenser mounted Air Flow Meters and Vapor Pressure Sensor, etc. - refer to appropriate ISD Installation Manual.

BUSINESS INVENTORY RECONCILIATION (BIR)

- Support for up to 72 fueling positions
- Support for up to 6 meters (hoses) per fueling position
- Support for manifolded tanks
- Support for blending dispensers that separately meter each product prior to blending. Gilbarco, Tokheim, and Wayne electronic blending dispensers are supported. Dispensers that blend fuel prior to the metering process, such as Schlumberger electronic blending dispensers and mechanical dispensers fitted with fixed-ratio blenders are not supported.
- EDIM is Standard equipment on the TLS-450PLUS through the Dual RS-232 communications module. Port can be programmed as a EDIM (Standard in Console).

Manifolded Tank Applications

- Maximum number of tanks in a set: unlimited
- Maximum number of siphon manifold tanks: number of tanks divided by 2. Limit: 8

- Manifolded set tank capacity: unlimited

- No requirements on diameter differences, no 6 inch limit.

Reconciliation reports will be generated for the manifolded set as a single product. Individual adjusted delivery reports will be provided followed by an adjusted manifolded delivery report.

TLS-450PLUS System Requirements for BIR

The following components are required to perform BIR:

- TLS-450PLUS with BIR option

- Version 2.X or higher software (TLS-450), Version 6.X or higher software (TLS-450PLUS)

- Mag 1 (0.1 gph) magnetostrictive (standard or Mag Plus) probe in each tank. The Mag 1 probe for alternative fuels is also supported.

- A Dispenser Interface Module (DIM) - The DIM allows the TLS-450 to interface to most Gilbarco, Wayne, and 3rd Party POS systems that implement the VR BIR Protocol (ALLIED ANDI, EXCENTUS, BENNETT). For electronic dispensers, one DIM is required for each TLS-450. Up to 3 DIMs can be installed to support sites with multiple POS systems.

- DIM installation kit - One installation kit may be required for each DIM (ref. Table , "," on page 7). The installation kits vary for each DIM and include all required adapter boxes and cables.

TLS-350R

TLS-350R WITH BIR ONLY

- Support up to 36 fueling positions
- Support up to 6 meters (hoses) per fueling position
- Support manifolded tanks
- Support blending dispensers that separately meter each product prior to blending. Gilbarco, Tokheim, and Wayne electronic blending dispensers are supported.
- Do not support dispensers that blend fuel prior to the metering process. Schlumberger electronic blending dispensers, and mechanical dispensers fitted with fixed-ratio ratios are not supported.

TLS-350R with ISD only

- Supports up to 36 fueling positions
- Supports up to 6 meters (hoses) per fueling position
- Supports manifolded tanks
- Supports all blending dispensers in this guide, including those in this guide labeled as not to be used with BIR.
- Must monitor all petrol fueling positions.
- Does not monitor diesel fueling positions.

Manifolded Tank Applications for BIR

The TLS-350R can perform automatic BIR on tanks in a siphon-manifolded set. However, to perform AccuChart, the following requirements must be met:

1. Maximum of 2 tanks in a set.

2. Maximum of 4 sets of siphon-manifolded tanks.

3. The combined tank capacity of a set shall not exceed 30,000 gallons.

4. The diameters of the tanks in a set shall not differ by more than 6 inches.

5. The manifolding method must be siphon, not line, manifolding.

Reconciliation reports will be generated for the manifolded set as a single product. Individual adjusted delivery reports will be provided followed by an adjusted manifolded delivery report.

Both Version 310 software (or later), and a Memory Expansion Module are required to perform BIR for manifolded tanks.

TLS-350R SYSTEM REQUIREMENTS FOR BIR AND ISD

Business Inventory Reconciliation

- TLS-350R with BIR option

- A Mag 1 (0.1 gph) magnetostrictive (standard or Mag Plus) probe is required for each tank that will be monitored and reconciled. The Mag 1 probe for alternative fuels is also supported.

- ECPU board with the following software versions;

   - w/106 [or later] software for BIR,

   - w/311 [or later] software <u>and</u> a Memory Expansion Module for BIR with manifolded tanks, or

   - w/116 or 316 [or later] software for BIR with variance analysis

- Dispenser Interface Module
  For electronic dispensers, one DIM is required for each TLS-350R. Up to 3 DIMs can be installed to support sites with multiple POS systems. For mechanical dispensers, the TLS-350R can support up to 8 mechanical DIMs. Each mechanical DIM supports up to 4 mechanical dispensers.

  One installation kit may be required for each DIM (ref. Table , "," on page 7). The installation kits vary for each DIM and include all required adapter boxes and cables.

In-Station Diagnostics

- TLS-350R with ISD option

- ECPU2 board with 325 or later software and a NVMEM203 board.

- A Mag 1 (0.1 gph) magnetostrictive (standard or Mag Plus) probe is required for each gasoline tank. The Mag 1 probe for alternative fuels is also supported.

- Dispenser Interface Module - For electronic dispensers, one DIM is required for each TLS-350R. Up to 3 DIMs can be installed to support sites with multiple POS systems. For mechanical dispensers, the TLS-350R can support up to 8 mechanical DIMs. Each mechanical DIM supports up to 4 mechanical dispensers.

- DIM installation kit - One installation kit may be required for each DIM (ref. Table , "," on page 7). The installation kits vary for each DIM and include all required adapter boxes and cables.

- Additional ISD monitoring equipment as defined by the site's requirements, e.g., dispenser mounted Air Flow Meters and Pressure Sensor, console Smart Sensor Modules, etc. - refer to appropriate ISD Installation Manual for specifics.

Supported POS Systems

The TLS-450PLUS and TLS-350R consoles can interface to many POS terminals as well as the Veeder-Root mechanical dispenser (TLS-350R only). This guide provides specific information on each application. The supported POS systems are shown in Table 1.

Table 1. Supported POS Systems

Manufacturer	POS/Dispensing System	TLS-450PLUS	TLS-350R
Gilbarco	TCRG, TCRG2, T-11, T-12, TS-1000, PAM, G-Site, Passport, Storemaster, SmartCrind, ANDI, CFN2, Excentus	X	X
Tokheim	MEMS IV, MEMS V, Vision 100/200, DHC with all other POS, CFN2, ANDI, Columbus, Schlumberger MicroMax XPIC/DHC, 67/A - 98, 67/B		X
Wayne	Wayne Site Controller, Excentus, ANDI	X	X
	IDPOS	X	X
Schlumberger	MicroMax/Pro series, MicroMax/Allied, SAM/XPIC, ANDI		X
GasBoy	CFN2 & ProfitPoint, CFN1, ANDI		X
Bennett	92D		X
Mechanical, Mechanical noncomp, or Mechanical V-R meter	CFN2, Petrovend, ANDI	X	X

OTHER APPLICATIONS

Many POS / dispenser systems are similar to those identified in this guide. Veeder-Root is constantly evaluating and supporting new applications. If your application is not listed in this guide, contact your Veeder-Root Sales Representative.

Introduction

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BIR and ISD Console Options

Business Inventory Reconciliation (BIR) is a console option that automatically collects dispensing data, in-tank inventories and deliveries, and reconciles the totals at the end of each shift, day, and month. When used with AccuChart™, an automatic tank calibration feature, BIR enhances reconciliation accuracy by comparing the tank's metered sales data to the tank's probe data.

In-Station Diagnostics (ISD) is a console option that enables the TLS Console to continuously monitor the vapor recovery equipment and Enhanced Vapor Recovery (EVR) systems at gasoline dispensing facilities, maintain test records, provide test reports, and generate warnings or alarms following equipment failures.

TLS-450PLUS

IN-STATION DIAGNOSTICS (ISD)

- TLS-450PLUS with ISD Software Feature option

- 11.0 or later software

- A Mag 1 (0.1 gph) magnetostrictive (standard or Mag Plus) probe is required for each gasoline tank. The Mag 1 probe for alternative fuels is also supported.

- Support for up to 36 fueling stations

- Dispenser Interface Module - For electronic dispensers, one DIM is required for each TLS-450PLUS. Up to 3 DIMs can be installed to support sites with multiple POS systems. For mechanical dispensers, the TLS-450PLUS can support up to 5 mechanical DIMs. Each mechanical DIM supports up to 12 mechanical dispensers.

- DIM installation kit - One installation kit may be required for each DIM. The installation kits vary for each DIM and include all required adapter boxes and cables.

- Additional ISD monitoring equipment as defined by the site's requirements, e.g., dispenser mounted Air Flow Meters and Vapor Pressure Sensor, etc. - refer to appropriate ISD Installation Manual.

BUSINESS INVENTORY RECONCILIATION (BIR)

- Support for up to 72 fueling positions

- Support for up to 6 meters (hoses) per fueling position

- Support for manifolded tanks

- Support for blending dispensers that separately meter each product prior to blending. Gilbarco, Tokheim, and Wayne electronic blending dispensers are supported. Dispensers that blend fuel prior to the metering process, such as Schlumberger electronic blending dispensers and mechanical dispensers fitted with fixed-ratio blenders are not supported.

- EDIM is Standard equipment on the TLS-450PLUS through the Dual RS-232 communications module. Port can be programmed as a EDIM (Standard in Console).

Manifolded Tank Applications

- Maximum number of tanks in a set: unlimited

- Maximum number of siphon manifold tanks: number of tanks divided by 2. Limit: 8

International Forecourt Standards Forum Dispenser Interface Module (IFSF) - TLS-450PLUS, TLS-350R

- Required for TLS consoles that are connected to IFSF networks.
- Uses Echelon 2-wire FTT10-A medium, as defined by the IFSF standards.
- There are 3 LEDs on this board:
  - Green LED On when IFSF board is transmitting information to the TLS.
  - Red LED On when TLS is transmitting information to the IFSF board.
  - Amber LED Off indicates normal state of the IFSF board processor.
- There are no LED indicators for network communication.

TCP/IP DIM (TDIM) - TLS-450PLUS

- Installs in a communication port of the TLS-450PLUS to communicate with or monitor Wayne IDPOS dispenser, Allied Site Controllers and Gilbarco Controllers.
- Minimum system requirements for TDIM module operation:
  - Console system software: Version 4H or higher
  - Network connection to a PC requires a hub. Connecting to a hub requires a straight CAT 5 cable
  - Direct connection to a PC requires an Ethernet crossover cable
  - Connection to a LAN or WAN
- There is no communication alarm for this module.
- TLS-450PLUS hardware is standard equipment.

TCP/IP DIM Module (TDIM) - TLS-350R

- Installs in a communication port of the TLS-350R to communicate with or monitor the Wayne IDPOS dispenser.
- Minimum system requirements for TDIM Module operation:
  - Console system software: Version 15 or higher - Version 21 or higher is recommended
  - Network connection to a PC requires a hub. Connecting to a hub requires a straight CAT 5 cable
  - Direct connection to a PC requires an Ethernet crossover cable
  - Connection to a LAN or WAN
- There are 2 LEDs on the PC board of this module:
  - Green LED indicates that the TDIM module is transmitting information to the TLS.
  - Red LED indicates the TLS is transmitting information to the TDIM module.
- There is no communication alarm for this module.

DIM And Installation Kit Ordering Guide

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	TLS-350R	
Bennett	92D	None	330404-040	848705-XXX	N	Y	For Bennett 92D controllers. DIM kit has 2 CABs in it. One CAB is needed per current loop. Only one or two dispensers are on one current loop.
Gasboy	CFN2 & Profit Point	None	331001-003	331088-XXX	N	Y	A Gasboy site controller version 2.0 or later is required. A Gasboy junction box Gasboy part # C05020 should be ordered for installation. No Blending. Network POS Required.
	ANDI, ALLIED ANDI, ALLIED NEXTGEN	Standard In Gauge	330280-001	None required	Y	Y	Allied ANDI. Gilbarco dispenser with T-14 (Australia). PEC with 8850. POSTEC with RCC. Wayne with Marketer 2000 (Sweden).
	CFN1	None	331001-002	331088-XXX	N	Y	This is a TLS-350 RS-422 interface to the Network. NOT to be used for BIR or ISD applications.
	Radiant	Standard In Gauge	330280-001	None required	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	TLS-350R	
Gilbarco	TCRG	330020-665	330404-020	848702-XXX	Y	Y	Model TCRG PA0180-121
	TCRG2				Y	Y	Model TCRG2 PA0180-121
	T-11				Y	Y	Model T-11 PA0132-XXXX and PA0141-XXXX
	T-12				Y	Y	Model T-12 PA0188-XXXX
	Excentus				Y	Y	Excentus Dispenser Tank Monitor Interface Kit (Excentus P/N 080-Veeder Root Kit) is required.
	TS-1000	330020-665	330404-020	848722-XXX	Y	Y	One kit is needed per dispenser current loop.
	PAM				Y	Y	For controller with a RS-485 Distribution Box, use kit P/N 848741-XXX.
	G-Site	Standard In Gauge	330280-401	331063-XXX	Y	Y	To support this DIM and the TLS-350R, the G-site must be upgraded to include the EMC interface. Uses Controller types C2, C15, 486 and Pentium Site controllers.
	Passport, Passport/ EDH				Y	Y	Verify BIR protocol is in version of Passport software used at customer's site.
	Storemaster	330020-665	330404-020	848741-XXX	Y	Y	One Gilbarco Dispenser Distribution Box PA0133000 should be available. Up to 12 Highliner/MPD Fueling positions are supported. An Autogas Storemaster POS and Autogas 507 controller are required.

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	TLS-350R	
Gilbarco (Cont'd.)	SmartCrind	Standard In Gauge	330020-538	None required	Y	Y	TCPIP Interface for Gilbarco SmartCrind dispensers only. Wal-Mart is currently the only customer ordering this interface for this dispenser.
	ANDI, ALLIED ANDI, ALLIED NEXTGEN		330280-001	None required	Y	Y	Allied ANDI. Gilbarco dispensers with T-14 (Australia). PEC with 8850. POSTEC with RCC. Wayne with Marketer 2000 (Sweden)
	CFN2	None	331001-003	331088-XXX	N	Y	A Gasboy site controller version 2.0 or later is required. A Gasboy junction box Gasboy part # C05020 should be ordered for installation. Single product dispensers only. No Blending.
	Wayne Nucleus	330020-665	330404-200	848722-XXX	Y	Y	Wayne Nucleus POS with Gilbarco Dispensers.
	Radiant	Standard In Gauge	330280-001	None	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.
	Verifone Commander		330280-001	None	Y	Y	Requires Verifone 13652-01 Connector(450PLUS) or Verifone 13581-01 Connector (350) & V/R 331134-xxx cable.
	Wayne Fusion	None	330280-001	None	N	Y	

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	TLS-350R	
Mechanical	CFN2	None	331001-003	331088-XXX	Y	Y	A Gasboy site controller version 2.0 or later is required. A Gasboy junction box Gasboy part # C05020 should be ordered for installation. Single product dispensers only. No Blending. Network POS required.
Mechanical Mechanical non-comp, or Mechanical V-R meter	Petrovend	330020-800	331214-001	None	Y	Y	One or more pulser/totalizer kits are needed PN 787491-003. Each mech DIM supports up to 4 mech dispensers. Up to 8 may be installed in the high power compartment of the TLS-350R. Other modules installed will reduce the number of slots available.

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	TLS-350R	
Mechanical	None	330020-800	331214-001	None	Y	Y	One or more pulser/ totalizer kits are needed PN 787491-003. Each mech DIM supports up to 4 mech dispensers. Up to 8 may be installed in the high power compartment of the TLS-350R. Other modules installed will reduce the number of slots available.
	ANDI	Standard In Gauge	330280-001	None	Y	Y	Allied ANDI. Gilbarco dispensers with T-14 (Australia). PEC with 8850.POSTEC with RCC. Wayne with Marketer 2000 (Sweden).
	Radiant	Standard In Gauge	330280-001	None	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.
Schlumberger	ANDI, ALLIED ANDI, ALLIED NEXTGEN	Standard In Gauge	330280-001	None	Y	Y	Allied ANDI. Gilbarco with T-14 (Australia). PEC with 8850. POSTEC with RCC. Wayne with Marketer 2000 (Sweden).
	Radiant	Standard In Gauge	330280-001	None	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.

Table 2.- Dispenser DIM and Installation Kits

| Dispenser | Dispenser Controller/ POS Type | TLS-450PLUS DIM P/N w/Console | TLS-350R DIM P/N w/Console | DIM Install Kit P/N | Console Compatibility | | Notes |
					TLS-450PLUS	TLS-350R	
Tokheim	MEMS IV, MEMS V, Vision 100/200, DHC with all other POS	None	330280-201	331390-XXX	N	Y	Use 331354-001 for 67A/B or 98 instead. This DIM is being phased out. A Tokheim Dedicated Hose Controller (DHC) is required, and should have software version 5.6 dated 11/89 or later.
	CFN2	None	331001-003	331088-XXX	N	Y	A Gasboy site controller version 2.0 or later is required. A Gasboy junction box Gasboy part # C05020 should be ordered for installation. Single product dispensers only. No Blending[1]
	ANDI, ALLIED ANDI, ALLIED NEXTGEN	Standard In Gauge	330280-001	None	Y	Y	Allied ANDI. Gilbarco dispenser with T-14 (Australia). PEC with 8850. POSTEC with RCC. Wayne with Marketer 2000 (Sweden).
	67/A - 98	None	331354-001	331391-XXX	N	Y	Tokheim controller only.
	67/B			848744-XXX			
	Columbus	Standard in Gauge	330280-001	None	Y	Y	For Rockport cable kits order Quantity (2) 320449-18 from Tokheim. For Digi/Stargate order Quantity (2) 320449-9 Cable kits from Tokheim.
	Radiant	Standard in Gauge	330280-001	None	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.

Table 2.- Dispenser DIM and Installation Kits

Dispenser	Dispenser Controller/ POS Type	TLS-450PLUS DIM P/N w/Console	TLS-350R DIM P/N w/Console	DIM Install Kit P/N	Console Compatibility		Notes
					TLS-450PLUS	**TLS-350R**	
Wayne	Wayne Site Controller	330020-665	330404-010	848703-XXX	Y	Y	A Wayne site controller and Wayne dispensers are required. Any POS may be connected to the Wayne site controller.
	ANDI, ALLIED ANDI, ALLIED NEXTGEN	Standard in Gauge	330280-001	None	Y	Y	Allied ANDI. Gilbarco dispenser with T-14 (Australia). PEC with 8850. POSTEC with RCC. Wayne with Marketer 2000 (Sweden).
	Excentus	330020-665	330404-010	848702-XXX	Y	Y	Excentus Dispenser Tank Monitor Interface Kit (Excentus P/N 080-Veeder Root Kit) is required.
	IDPOS	Standard in Gauge	330020-501	None	Y	Y	TCPIP interface for Wayne IDPOS dispensers only
	Radiant	Standard in Gauge	330280-001	None	Y	Y	Radiant Systems Series P1550 set-up on the TLS must have a DIM string programmed in. The DIM string is B9DNHG and needs to be programmed in DIM Diagnostics. You will need to use a twisted pair RJ-11 cable to the port on the POS with the pin outs of 2,3,7.
	Verifone Commander	None	330280-001	None	N	Y	
	Wayne Fusion	None	330280-001	None	N	Y	

[1]This restriction does not apply to ISD only installations.

DIM Installation Examples

Various example DIM installation diagrams are shown in Figure 1 below for reference only. For specific DIM installation details, refer to the appropriate Veeder-Root DIM installation manual.
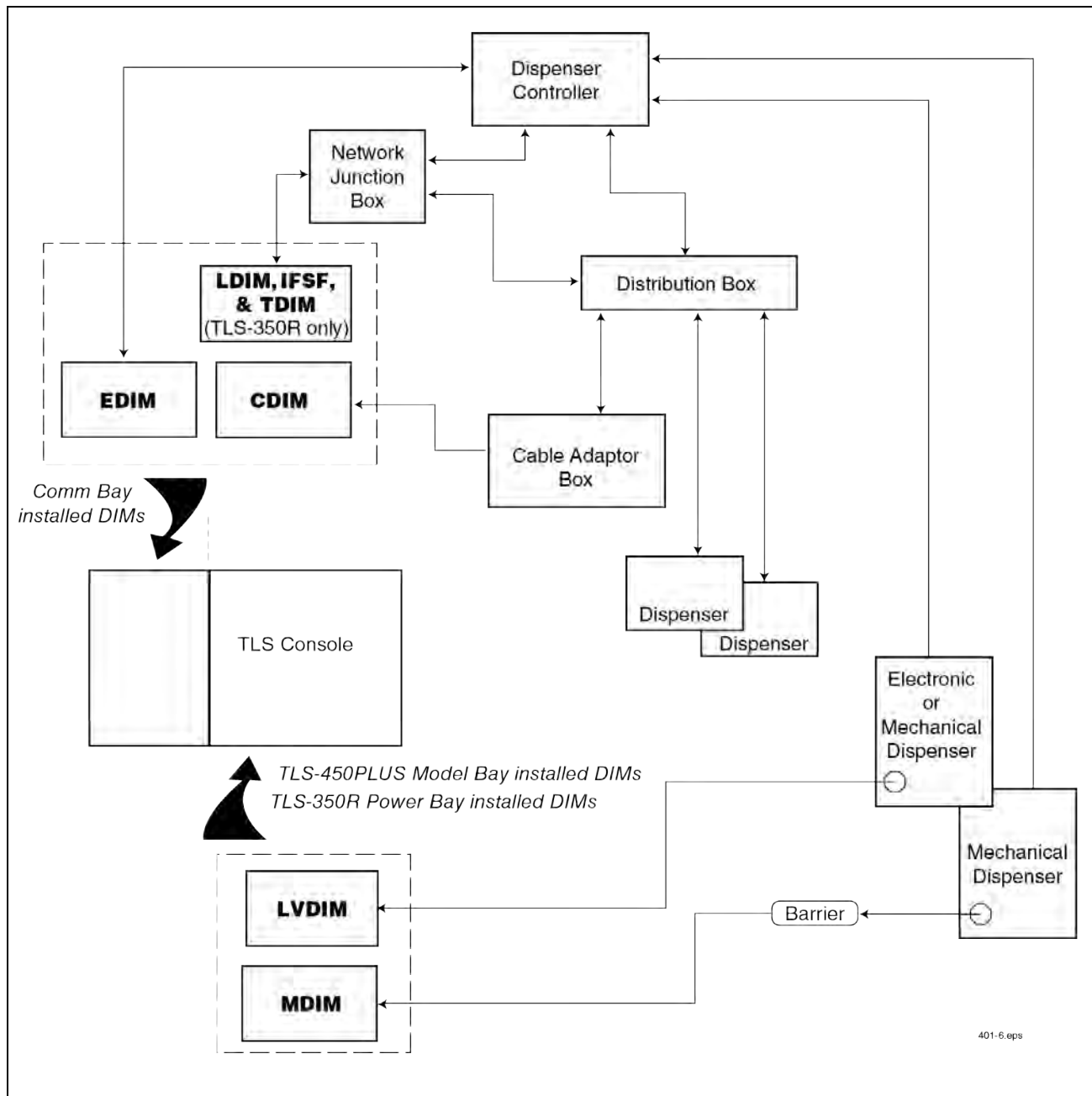

Figure 1.   Simplified DIM Connections to Various Dispensing Systems

Gilbarco TCRG, TCRG2, T-11, and T-12 POS Systems

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR

- TLS-450PLUS System software Version 6.x (or higher)

TLS-350R with BIR Software Requirements

- System software Version 17 (or higher)
- Peripheral controller software 002B (or later)
- DIM software 349634-003C (or later)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the Transac POS:

- One Gilbarco Current Loop Dispenser Interface Module for up to 3 current loops
- One Gilbarco dispenser distribution box PA0133000
- One Gilbarco Transac DIM installation kit required per current loop. Up to 16 fueling positions are supported per current loop.

The following POS consoles are supported:

- Transac-1e1 (PA0132, PA0141)
- Transac-12 (PA0134, PA0142)
- Transac-12A (PA0151, PA0152)
- Transac-12B (PA0173)
- Transac-12C (PA0188)
- Transac-12G (PA0203)
- TCRG (PA0180-121)
- TCRG2 (PA0180-121)
- Excentus Reward Fuel Controller™, Gilbarco Dispenser Interface, V1.0.160

SPECIFIC LIMITATIONS

Only Gilbarco electronic dispensers are supported. Also, dispensers that feature a blender and a single-product dispenser at one fueling position are not supported.

In-Dispenser credit card readers (CRINDS) or G-Site systems are not supported by the Gilbarco CDIM.

Other POS systems that use Gilbarco dispensers and the Gilbarco Pump Access Module (PAM) may also be supported - contact Veeder-Root for assistance.

Special Note on T-11/T-12 Pre-Pay Applications

In T-11/T-12 Pre-Pay applications, cashiers should be urged to close out each transaction promptly. Failure to close-out promptly can cause the TLS-350R to delay reconciliation reports, and impact the system's ability to maximize tank calibration.

WIRING DIAGRAM FOR A TRANSAC CURRENT LOOP INTERFACE

A PA0133 distribution box is shown in Figure 2 below. Other box models are slightly different.
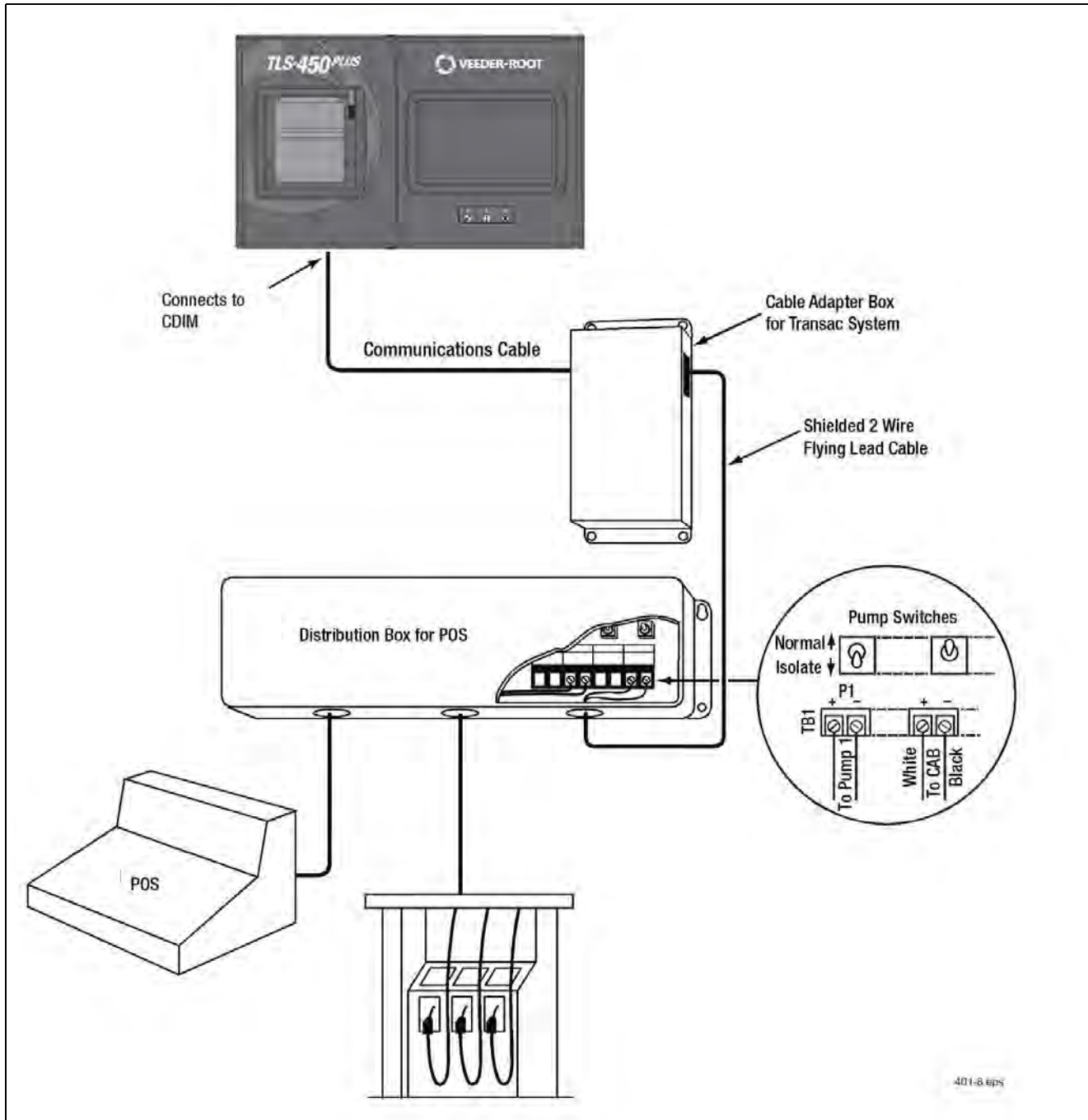

Figure 2.   Transac Series Current Loop Interface Installation Example

WIRING DIAGRAM FOR AN EXCENTUS CURRENT LOOP INTERFACE
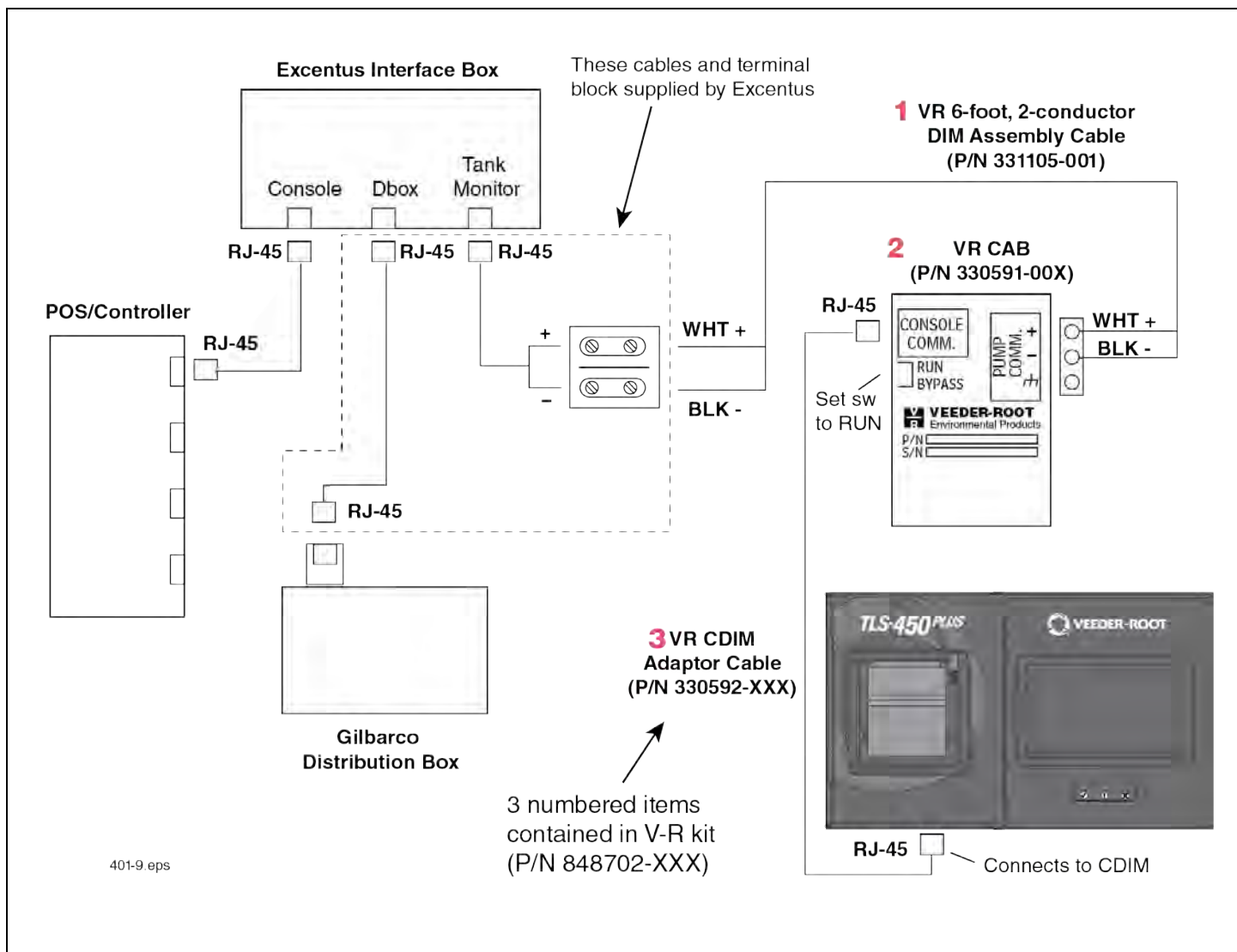

Figure 3. Excentus Current Loop Interface Installation Example

Gilbarco TS-1000 POS and PAM Systems

The Veeder-Root Gilbarco TS-1000 DIM and DIM installation kit supports the Gilbarco TS-1000 and any POS system using the Gilbarco PAM (Pump Access Module) dispenser controller and Gilbarco dispensers.

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR Software Requirements

• TLS-450PLUS System software Version 6.x (or higher)

TLS-350R with BIR Software Requirements

• System software Version 17 (or higher)
• DIM software 349634-003C (or later)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the TS-1000 POS:
• One Gilbarco Current Loop Dispenser Interface Module for up to 3 current loops
• One installation kit for each current loop

GILBARCO POS AND DISPENSING SYSTEM REQUIREMENTS

• Gilbarco dispenser distribution box, PA02420000000
• Gilbarco dispenser distribution box, PA02610000010
• Gilbarco dispenser distribution box, PA02610000020
• Gilbarco pump controller, model PA02410000000
• Gilbarco Transac System 1000 Console, model PA0240000000
• Gilbarco Transac System 1000 Console, model PA02400001010
• Excentus Reward Fuel Controller™, Gilbarco Dispenser Interface, V1.0.160 (Excentus P/N 080 - Veeder Root Kit) is required.

SPECIFIC LIMITATIONS

• Up to 48 Gilbarco single product or blending dispenser fueling positions are supported. Dispensers that feature a blender and a single-product dispenser at one fueling position are not supported.
• Only Gilbarco dispensers are supported.
• In-dispenser credit card readers in these POS systems are not supported by the Gilbarco Current Loop Dispenser Interface Module.
• The Gilbarco Current Loop Dispenser Interface Module does not support Gilbarco G-Site applications.

WIRING TO A UNIVERSAL DISTRIBUTION BOX INTERFACE

The diagram in Figure 4 is a typical interconnection diagram for a PAM or Transac System 1000 interface (a PA0261 distribution box is shown, the PA0241 is slightly different).
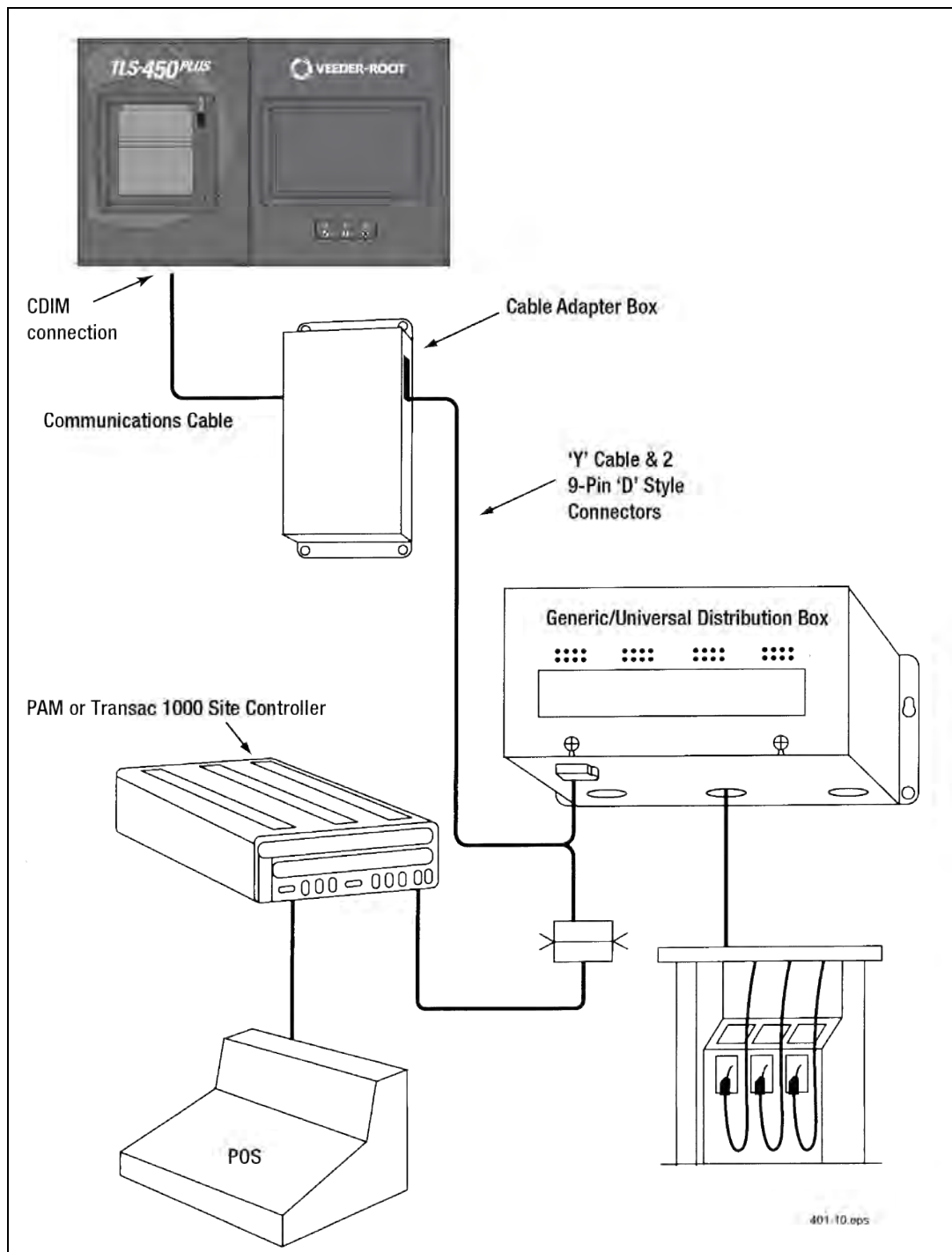
Figure 4.   Universal Distribution Box Interface Installation Example

Gilbarco G-Site™ POS Systems

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR Software Requirements

• TLS-450PLUS System software Version 6.x (or higher)

TLS-350R with BIR Software Requirements

• System software Version 17 (or higher)
• DIM software 349634-003C (or later)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the G-Site POS:
• One Gilbarco Interface Module
• One installation kit for each current loop

SPECIFIC LIMITATIONS

Up to 72 fueling positions are supported by the TLS-450PLUS, and up to 36 Gilbarco Uni-Hose/MPD fueling positions are supported by the TLS-350R.

In-dispenser credit card readers (CRINDS) are supported.

To support a DIM and the TLS-350R, the G-Site must be upgraded to include EMC interface capability. This has been released in the following G-Site versions (EMC Interface capability will be released into the Generic G-Site version 6):
• Exxon - version 25.0.243
• Shell - version 33.1.23
• Chevron Canada - version 8.1.10

The 331063-xxx installation kit contains two gender mender adapters. One gender mender is used for PC G-SITE applications while both are used for C-2 G-SITEs. The gender mender adapters are not identical. As shown in Figure 5, be sure to use the correct part at the connection points for your particular installation.

WIRING DIAGRAM
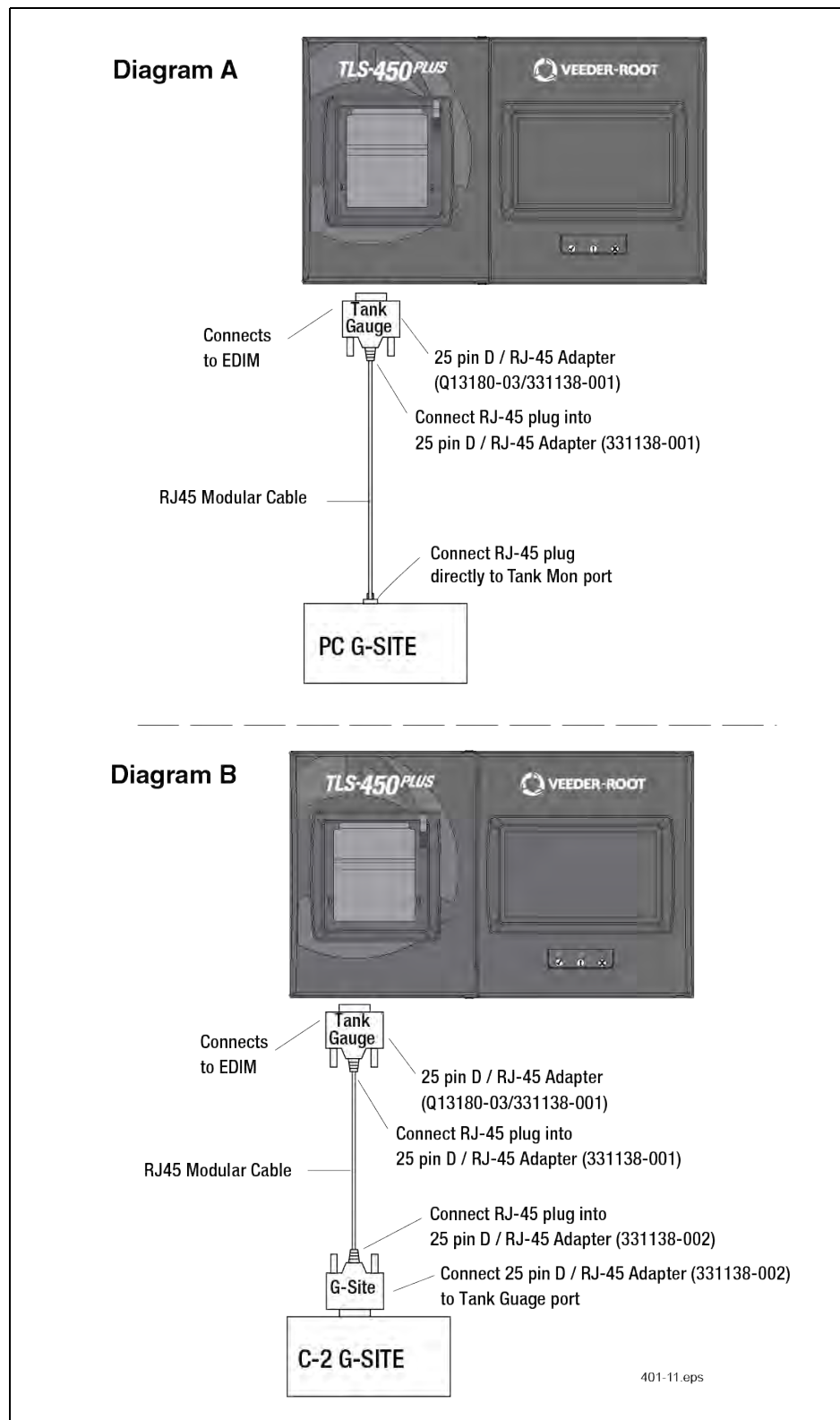
G-Site wiring examples are shown in Figure 5 below:

Diagram A

Connects to EDIM

Tank Gauge

25 pin D / RJ-45 Adapter (Q13180-03/331138-001)

Connect RJ-45 plug into 25 pin D / RJ-45 Adapter (331138-001)

RJ45 Modular Cable

Connect RJ-45 plug directly to Tank Mon port

PC G-SITE

Diagram B

Connects to EDIM

Tank Gauge

25 pin D / RJ-45 Adapter (Q13180-03/331138-001)

Connect RJ-45 plug into 25 pin D / RJ-45 Adapter (331138-001)

RJ45 Modular Cable

Connect RJ-45 plug into 25 pin D / RJ-45 Adapter (331138-002)

Connect 25 pin D / RJ-45 Adapter (331138-002) to Tank Guage port

G-Site

C-2 G-SITE

401-11.eps

Figure 5.   G-Site Installation Examples

AutoGas Storemaster and Gilbarco Dispenser Systems

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR Software Requirements

• TLS-450PLUS System software Version 6.x (or higher)

TLS-350R with BIR Software Requirements

• System software Version 17 (or higher)
• DIM software 349634-003C (or later)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the AutoGas Storemaster system:
• One Gilbarco Interface Module (for up to 3 current loops)
• One installation kit for each current loop other than RS-422/RS-485 OR One Gilbarco installation kit for each RS-422/RS-485 current loop

GILBARCO POS AND DISPENSING SYSTEM REQUIREMENTS
• Gilbarco Dispenser Distribution Box PA-2420000000
• Gilbarco Dispenser Distribution Box PA02610000010
• Gilbarco Dispenser Distribution Box PA02610000020
• Gilbarco Dispenser Distribution Box PA0281XXXXXX0

An AutoGas 507 controller is required with the AutoGas Storemaster POS.

SYSTEM LIMITATIONS
• Up to 36 Gilbarco single product or blending fueling positions are supported.
• Only Gilbarco dispensers are supported.
• The Gilbarco current loop dispenser interface module does not support Gilbarco G-Site applications.

The Cable Adapter Box install kits are designed to be installed on either a Gilbarco 2-wire distribution box input using 9-pin 'D shell' style connectors or a Gilbarco RS-422/RS-485 input to the distribution box, also using 9-pin 'D shell' style connectors.

To identify the distribution input communication type, refer to the Gilbarco Universal Distribution Box Installation Manual (MDE2713) noting the position choices for jumper 12 and 10 on the Universal Distribution Box Card which is communicating to the PAM, POS, or computer controlling the hydraulic dispenser status. Both of these jumpers should be in the horizontal position. (If vertical, the pump input is RS-422 and that kit should be used [see Table on page 7]).

INSTALLATION NOTES
Example wiring diagrams are shown in Figure 6 to Figure 9 below.
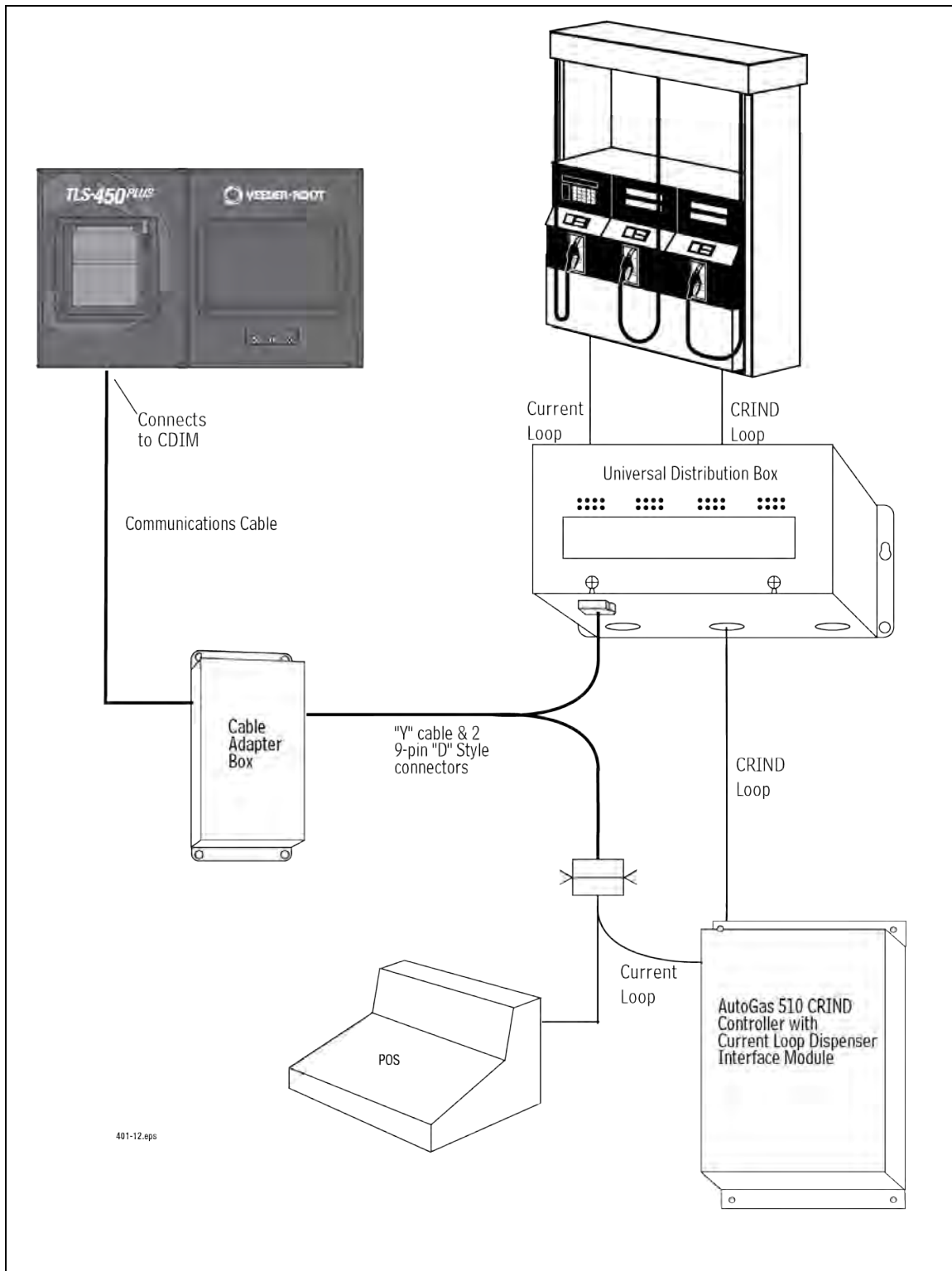
Figure 6.   AutoGas 510 CRIND Controller with Current Loop Interface Installation Example
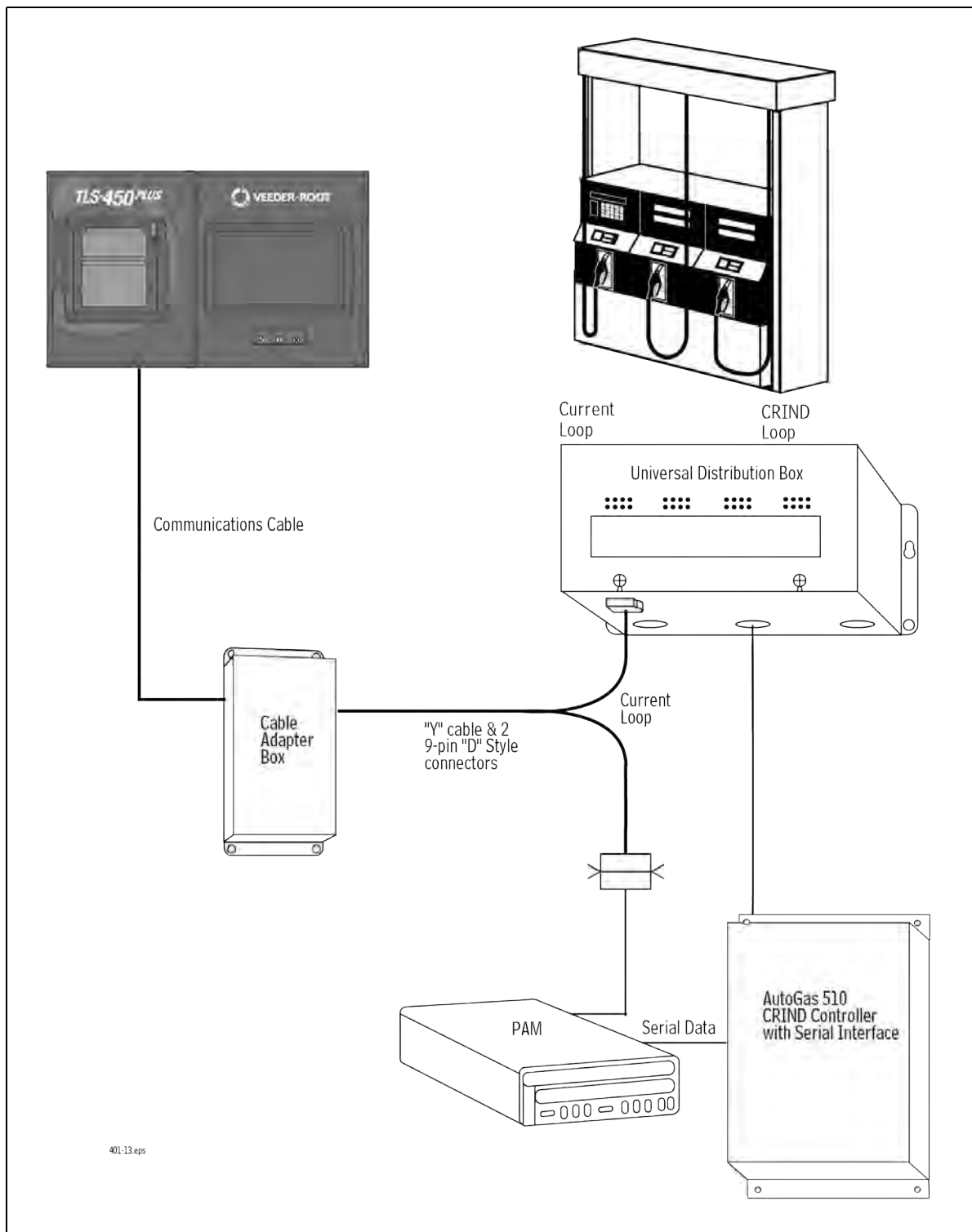
Figure 7.   AutoGas 510 CRIND Controller with Serial Interface Installation Example
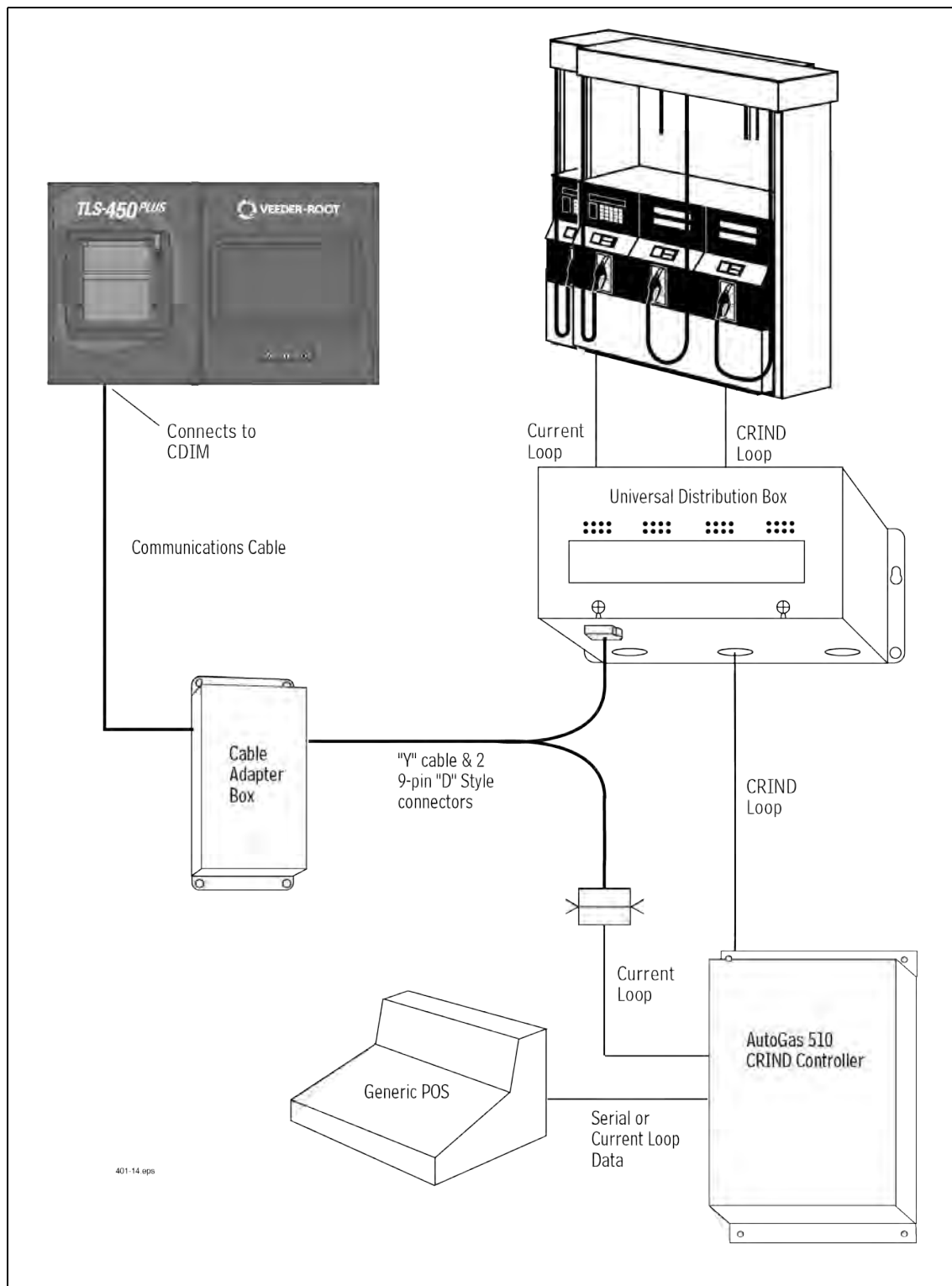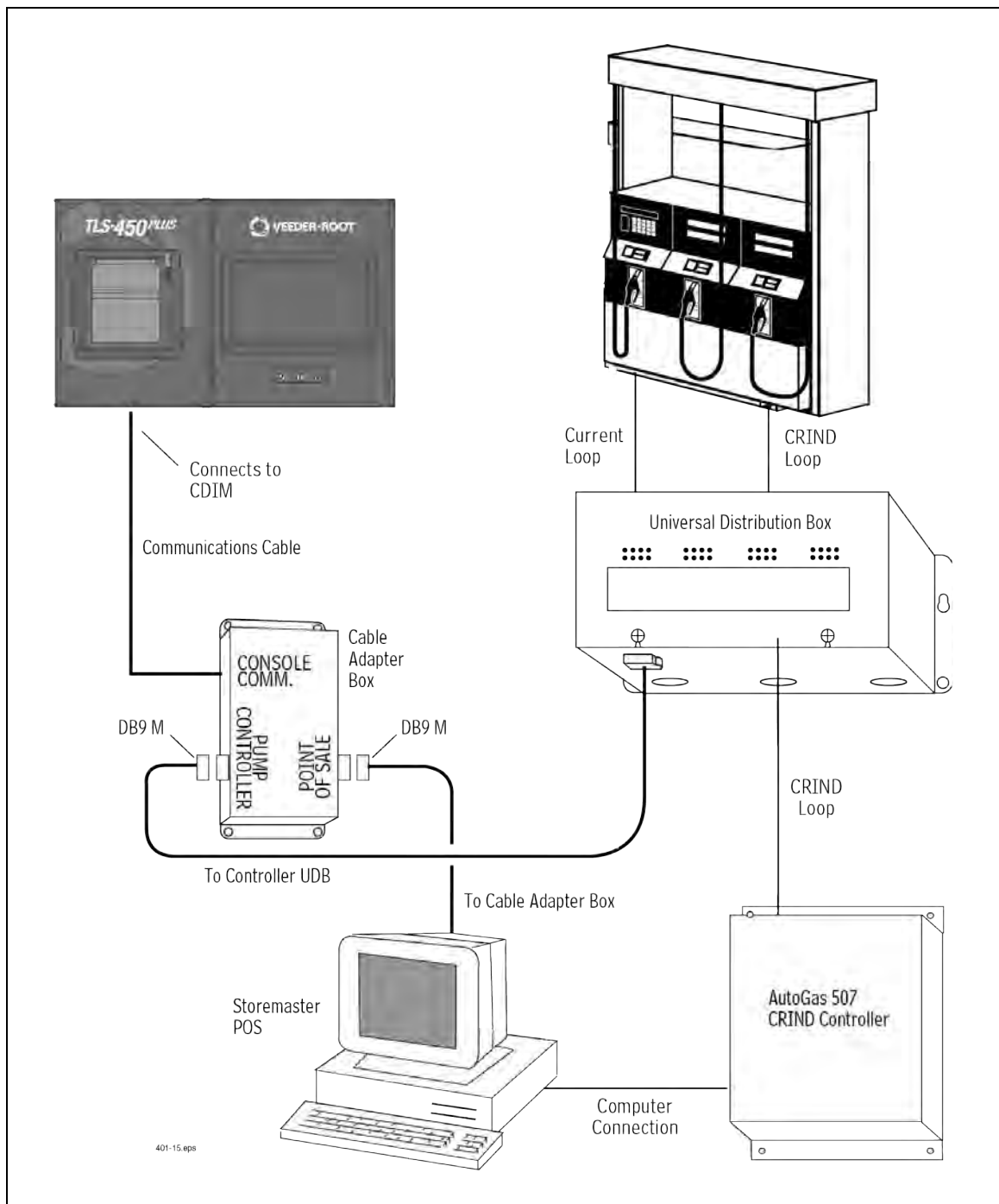
Figure 8.   AutoGas 510 CRIND Controller Installation Example

Connects to
CDIM

Communications Cable

Cable
Adapter
Box

DB9 M

DB9 M

To Controller UDB

To Cable Adapter Box

Storemaster
POS

401-15.eps

Current
Loop

CRIND
Loop

Universal Distribution Box

CRIND
Loop

AutoGas 507
CRIND Controller

Computer
Connection

Figure 9.   AutoGas 507 CRIND Controller Installation Example

Gilbarco SmartCrind Dispenser Systems

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR Software Requirements

TLS-450PLUS System software Version 6.X (or higher)

TLS-350R with BIR Software Requirements

• System software Version 17 (or higher)
• DIM software 349806-001 (or higher)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the SmartCrind network:
• One TCP/IP (TDIM) Interface Module
• Ethernet cable

SYSTEM LIMITATIONS
• Up to Gilbarco single product or blending fueling positions are supported.
• Only Gilbarco SmartCrind dispensers are supported.

INSTALLATION NOTES

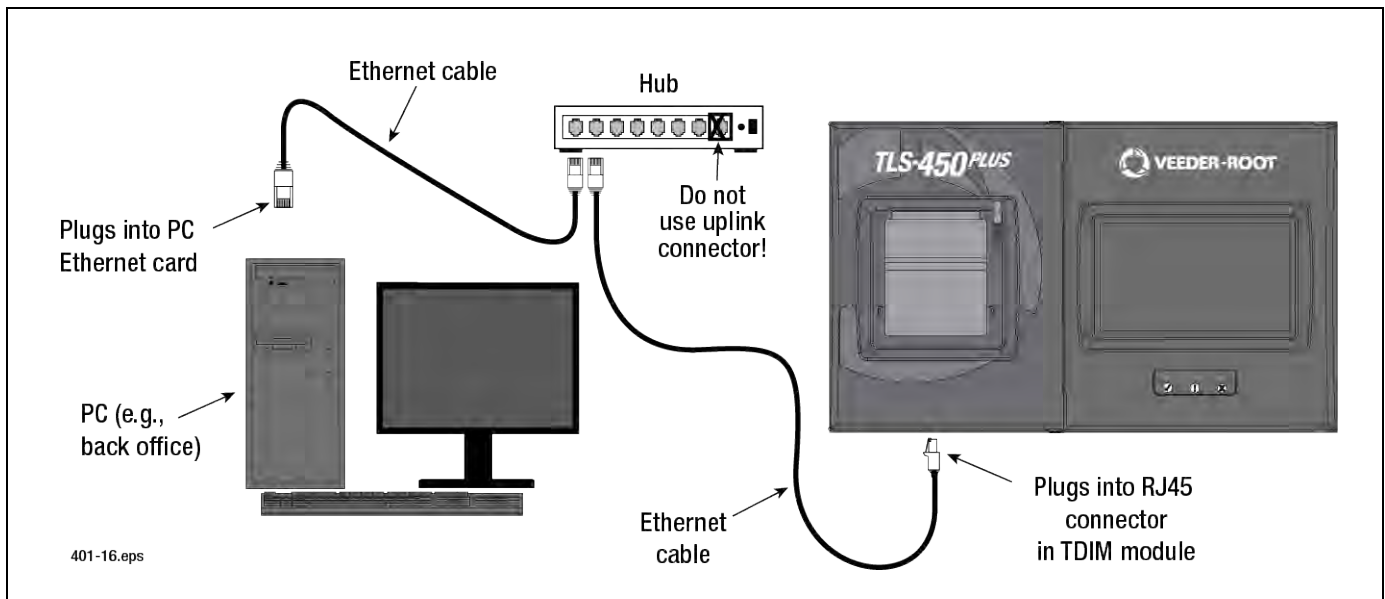Example wiring diagrams are shown in Figure 10 below.

Figure 10.   SmartCrind Installation Example

Wayne Dispensing Systems

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-450PLUS with BIR Software Requirements

• TLS-450PLUS System software Version 6.x (or higher)

TLS-350R with BIR Software Requirements

• System software Version 17 (or higher)
• Peripheral controller software 330269-00B (or higher)

VEEDER-ROOT HARDWARE REQUIREMENTS

The required DIMs and installation kits for use with Wayne Dispensing systems are listed in Table 2 on page 7.

POS SYSTEM REQUIREMENTS AND LIMITATIONS

Current Loop Installations (TLS-350R/ TLS-450PLUS)
• A Wayne site controller and Wayne dispensers are required.
• Any POS system may be connected to the Wayne site controller.
• The dispensers may feature electronic card readers.

TDIM Installations
• Wayne IDPOS dispenser software 2.29 (TLS-350R and TLS-450PLUS)

SUPPORTED WAYNE SYSTEMS

• Wayne 186 System with Site Controller model 880179-001 and Dispenser Data Box (CAB) model DD/
  SY2400/08.
• Wayne 386 System with Site Controller model WP/SC and Dispenser Data Box (CAB) model WP/DD.

SUPPORTED WAYNE POS TERMINALS

• Wayne 186 based 2400
• Wayne 186 based Plus 2
• Wayne 186 based Plus 3
• Wayne 386

In addition, third party POS vendors supply POS systems that interface to Wayne Site Controllers and dispensers. The Wayne DIM supports POS systems that interface to the Site Controller using a Wayne Pump Interface Board (PIB). A partial list of these systems include:
• GasBoy
• Omron
• Panasonic
• S.A.S.I.
• Suntronics
• Verifone
• EDS C-Serve

The third party POS system will be supported by the Veeder-Root DIM if it communicates to the Wayne Site Controller using the Wayne PIB.

INSTALLATION NOTES

All Wayne electronic blenders are supported.

An example Wayne interconnection diagram for current loop installations is shown in Figure 11. An example Wayne connection diagram for IDPOS dispenser installations is shown in Figure 12. Figure 13 contains an example of CAB connections in a Wayne Nucleus Data Box.
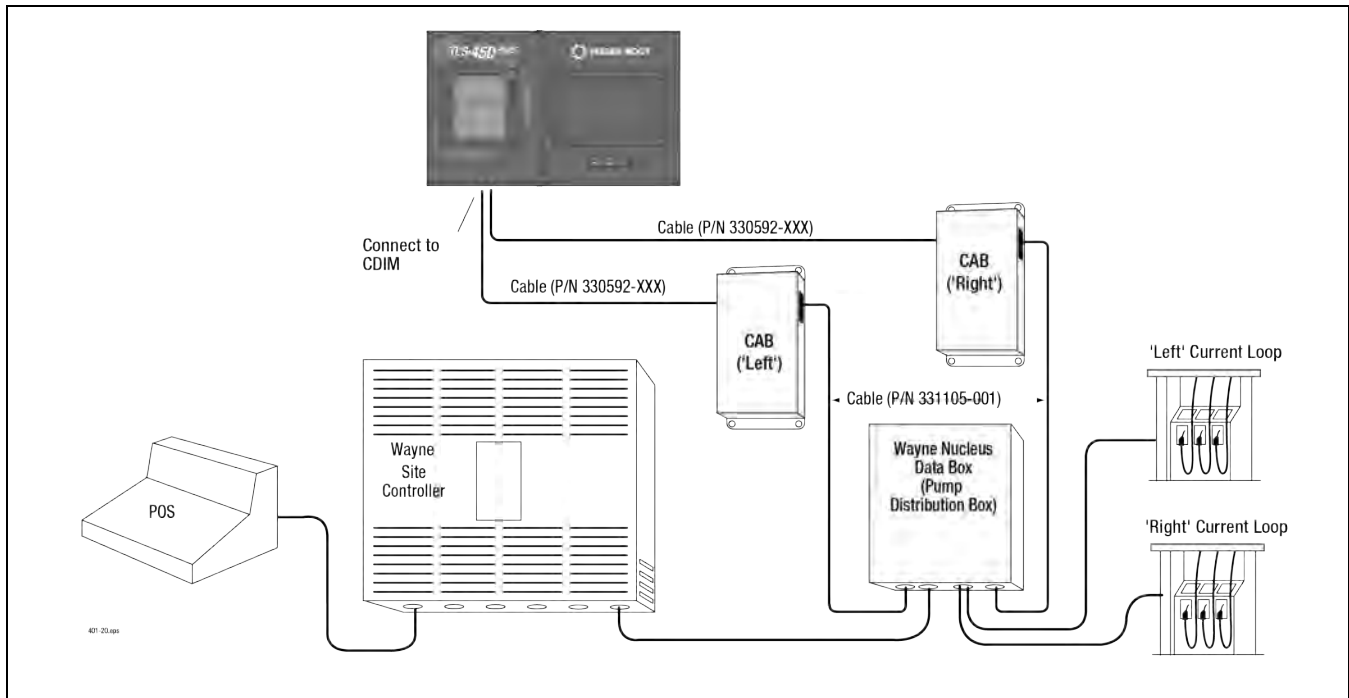

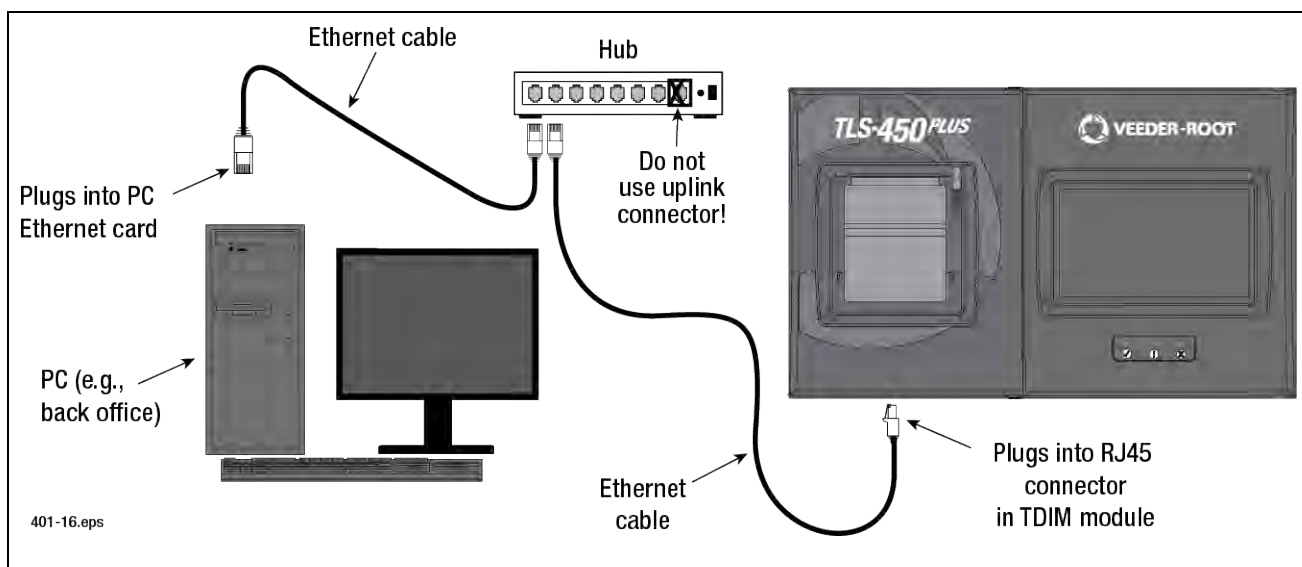**Figure 11.   Wayne Dispenser Data Box Current Loop Installation Example (TLS-450PLUS and TLS-350R)**

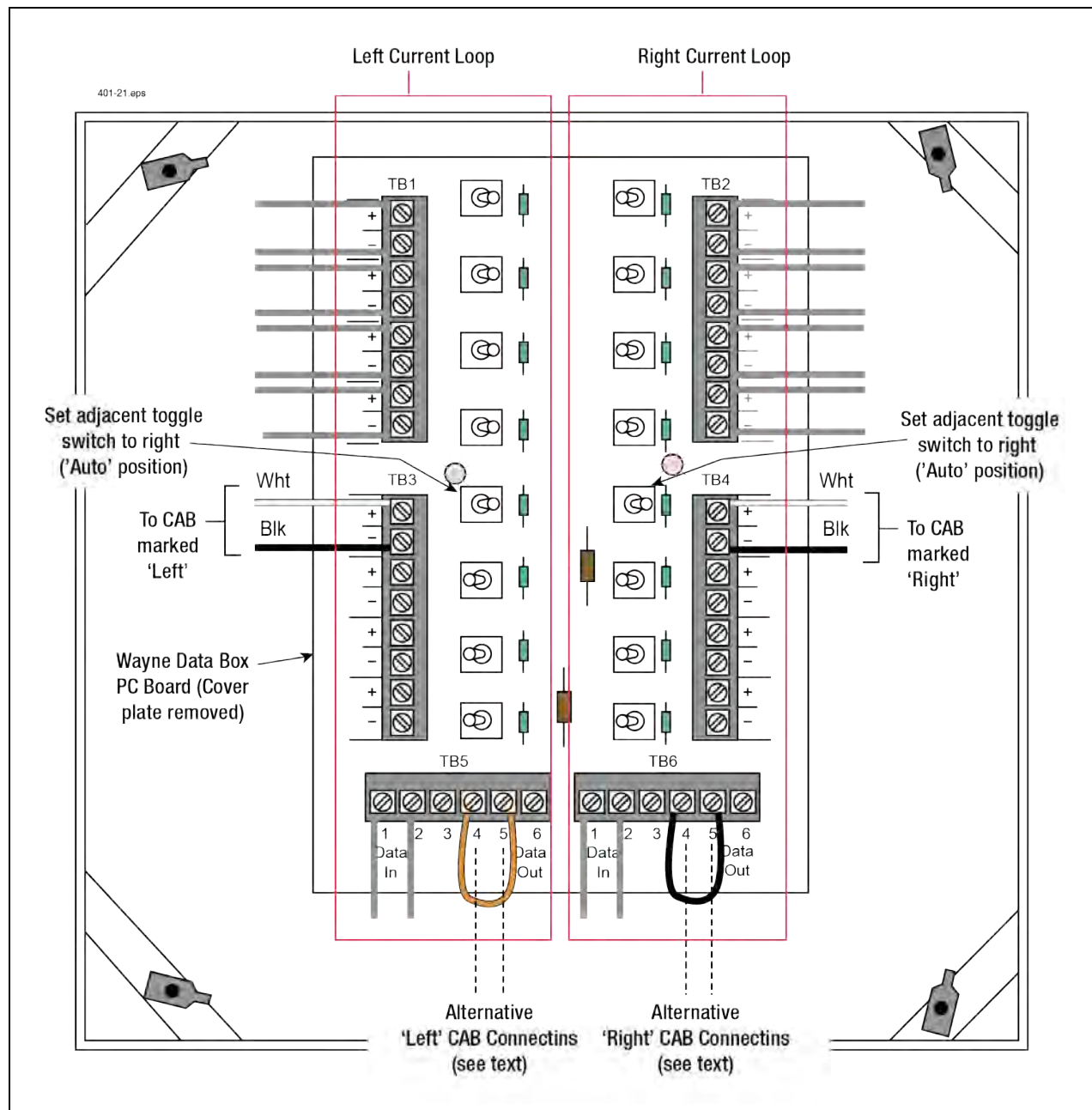**Figure 12.   Wayne IDPOS Dispenser Installation Example (TLS-450PLUS and TLS-350R)**

Figure 13.   Example CAB Connections in Wayne Nucleus Data Box (TLS-350R Only)

Bennett POS System - TLS-350R Only

The information collected via the interface allows TLS-350R business inventory reconciliation to compare tank totals to fuel transactions for end of day, end of shift, or end of month, running variances.

VEEDER-ROOT SOFTWARE REQUIREMENTS

- System software Version 17 (or higher)
- Peripheral controller software 330269-00B (or later)
- DIM software 349780-001A (or later)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the Bennett POS system:

- One Bennett Current Loop Dispenser Interface Module for up to 6 fueling positions
- One installation kit (for every 2 current loops (up to 12 fueling positions)

BENNETT SYSTEM LIMITATIONS

TLS-350R with BIR and TLS-350R with BIR and ISD

- Only non-blending, type 92D dispensers with Orpak controllers are supported.

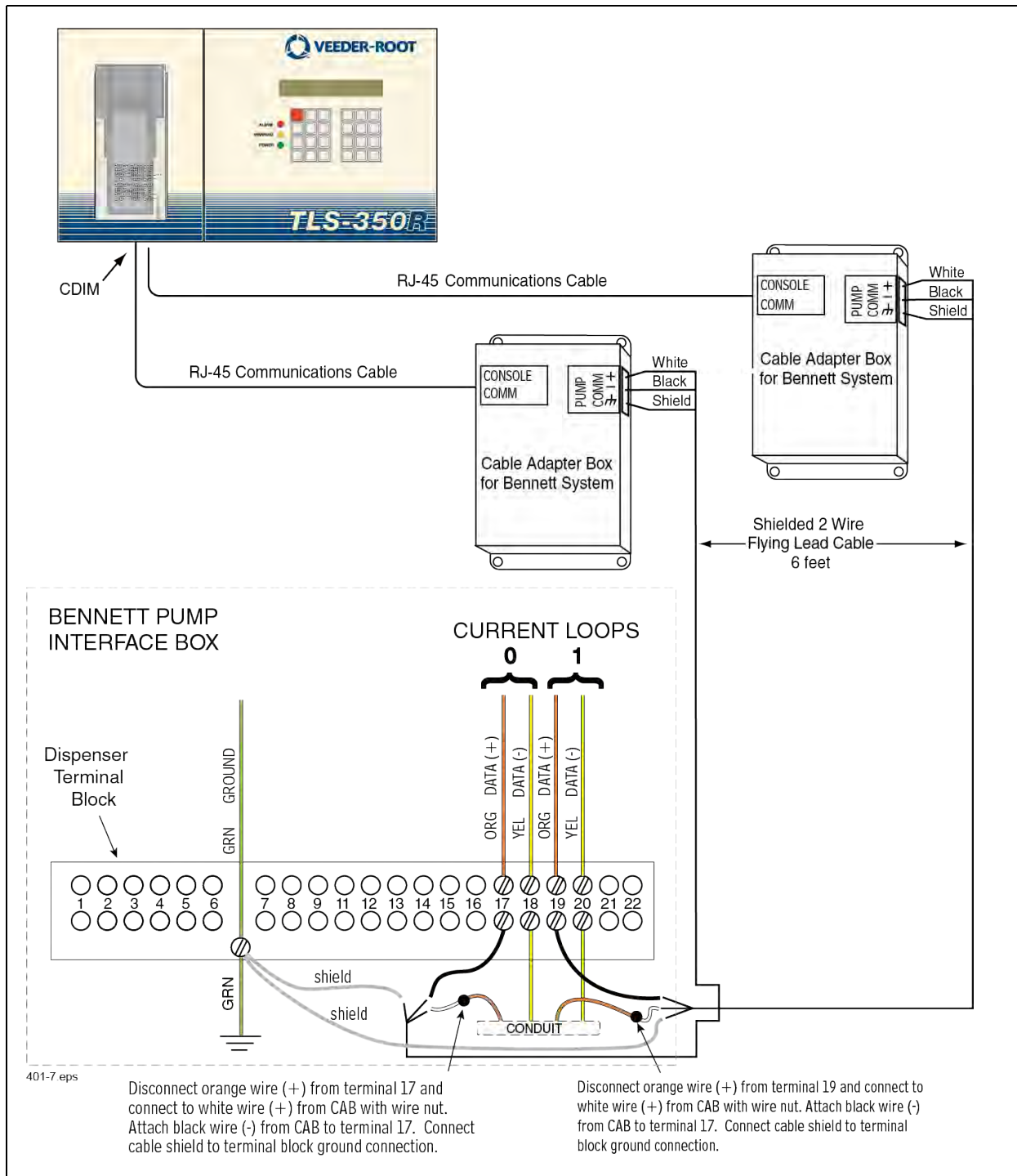### TLS-350R with ISD

- All type 92D dispensers with Orpak controllers are supported.

INSTALLATION NOTES

The interface to Bennett dispensing equipment requires one CAB per dispenser current loop (for up to 6 fueling positions) and one Bennett DIM installation kit for every 2 current loops. Typically one or two loops are required for a single dispenser having two fueling positions. For this reason the interface kit includes two CABs with supportive cabling. Supportive cabling required is sold in lengths, which are identified in the last three digits of the kit form number. The length requirement is determined by the distance between the components.

Figure 14 is an example Bennett dispenser connection diagram. Each CAB has a three position input and a RJ-45 cable output to a dispenser loop. Use the "PUMP COMM" input side and the RJ-45 cable output.

Figure 14.   Bennett Pump Fuelomat Dispenser Interface Installation Example

GasBoy CFN Systems - TLS350R Only

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-350R with BIR Software Requirements
• System software Version 17 (or higher)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the Gasboy CFN system:
• One Gasboy Dispenser Interface Module
• One installation kit

GASBOY SYSTEM REQUIREMENTS FOR BIR INTERFACE

• Console must be Site Controller II, version 2.0 or later and have "Send All Messages" feature.
• GasBoy junction box (P/N C05020).
• All Profit Point Broadcast messaging enabled.
• Non-blended dispensers (not a restriction for ISD only applications).

CONNECTING TO THE SITE CONTROLLER II

The TLS-350R must be connected to the Console Loop of the Site Controller II to receive BIR data from the CFN (see Figure 15).
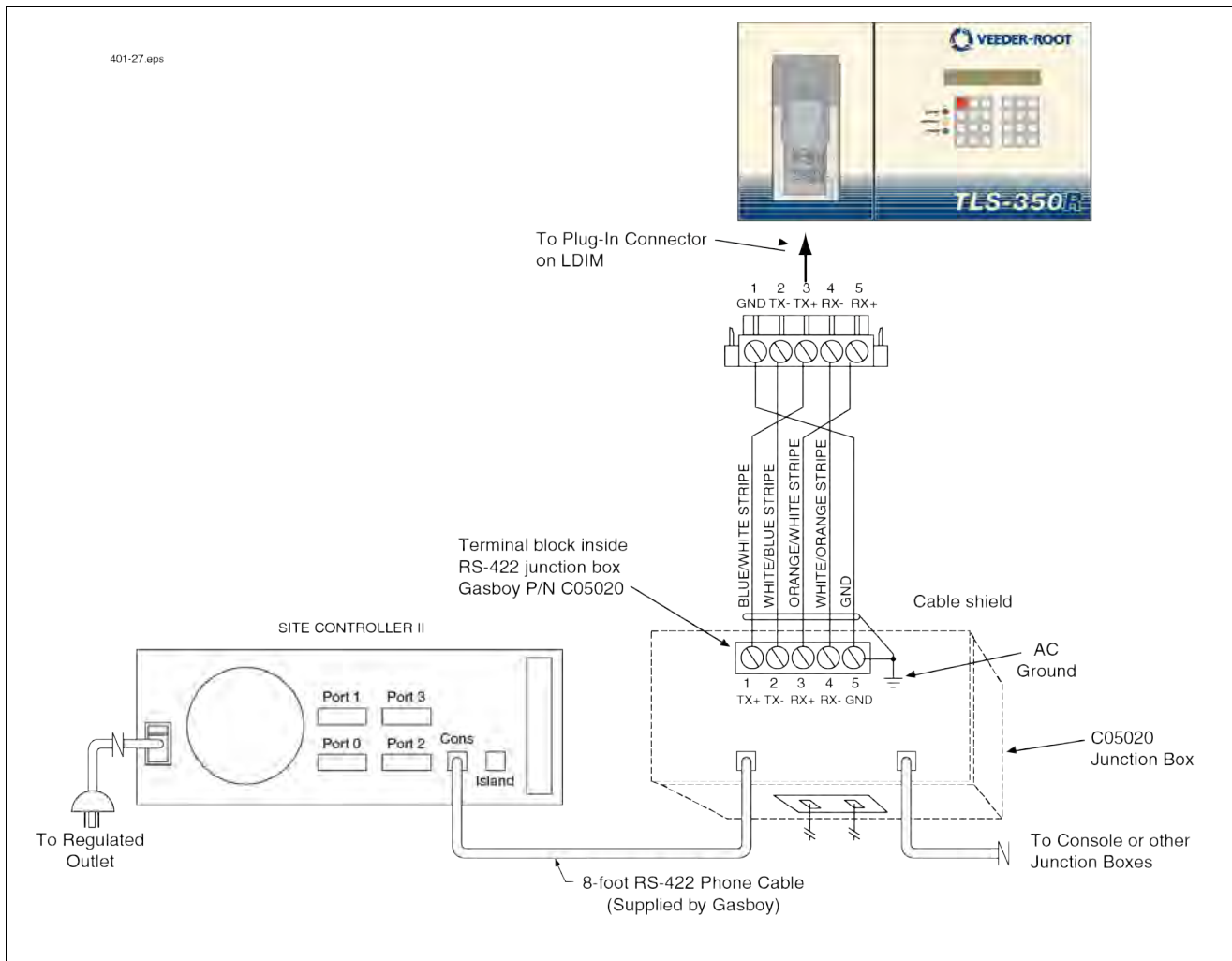
Figure 15.   TLS-350R - Gasboy Console Loop Connection Example

Schlumberger POS Systems - TLS350R Only

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-350R with BIR Software Requirements
• System software Version 17 (or higher)
• Peripheral controller software 002B (or higher)
• DIM software 330435-001 (or higher)

VEEDER-ROOT HARDWARE REQUIREMENTS (REF. TABLE 2)

The following equipment is required to interface the TLS to the Schlumberger POS system:
• One Schlumberger Current Loop Dispenser Interface Module (for up to 32 fueling positions), or One Schlumberger SAM Dispenser Interface Module (for up to 36 fueling positions)
• One installation kit, for one of the following POSs; MicroMax/Allied, Pro Series/XPIC/SAM, or MicroMax/XPIC/DHC

SYSTEM LIMITATIONS

Schlumberger SAM Controllers or Highway systems, are not supported by this DIM. In-dispenser credit readers are supported by the Schlumberger DIM. Blending of any type is not supported by the Schlumberger DIM (not a restriction for ISD only applications).

MICROMAX/ALLIED HARDWARE REQUIREMENTS

• An Allied Protocol Box (PCB) or an Allied Station Site Controller (SSC) box.
• Schlumberger MicroMax POS console (other POS terminals are not supported).
• Schlumberger, Gilbarco, Wayne, or Tokheim dispensers may be used.
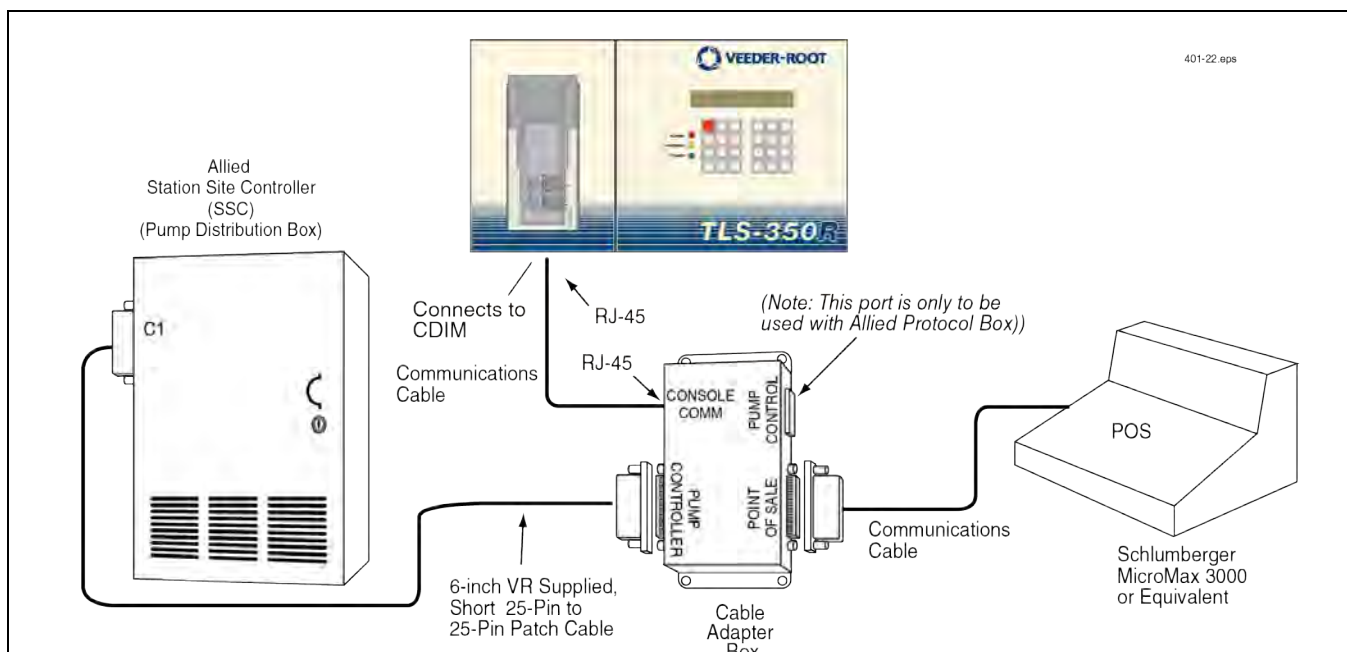
INSTALLATION NOTES

Figure 16.   TLS-350R - MicroMax POS with Allied Station Site Controller Box Current Loop Interface Installation Example
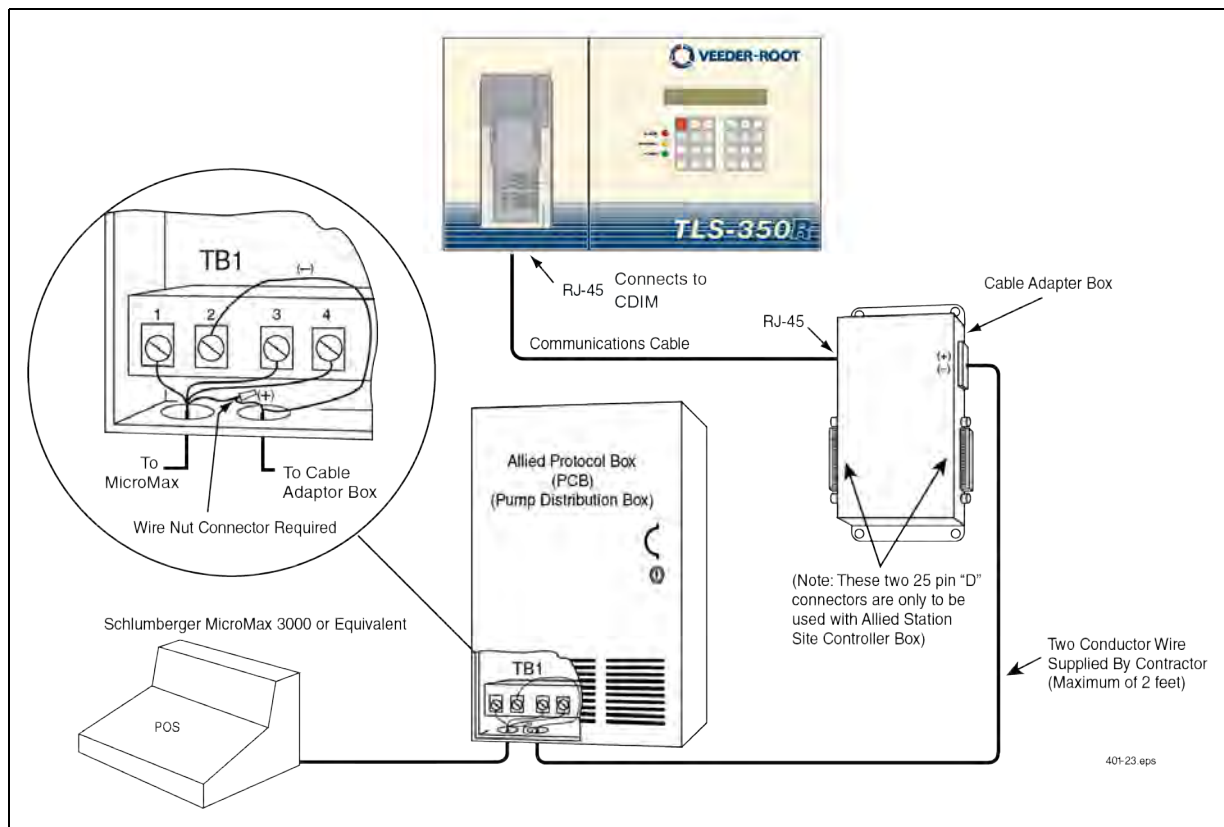
Figure 17.   TLS-350R - MicroMax POS with Allied Protocol Box Current Loop Interface Installation Example
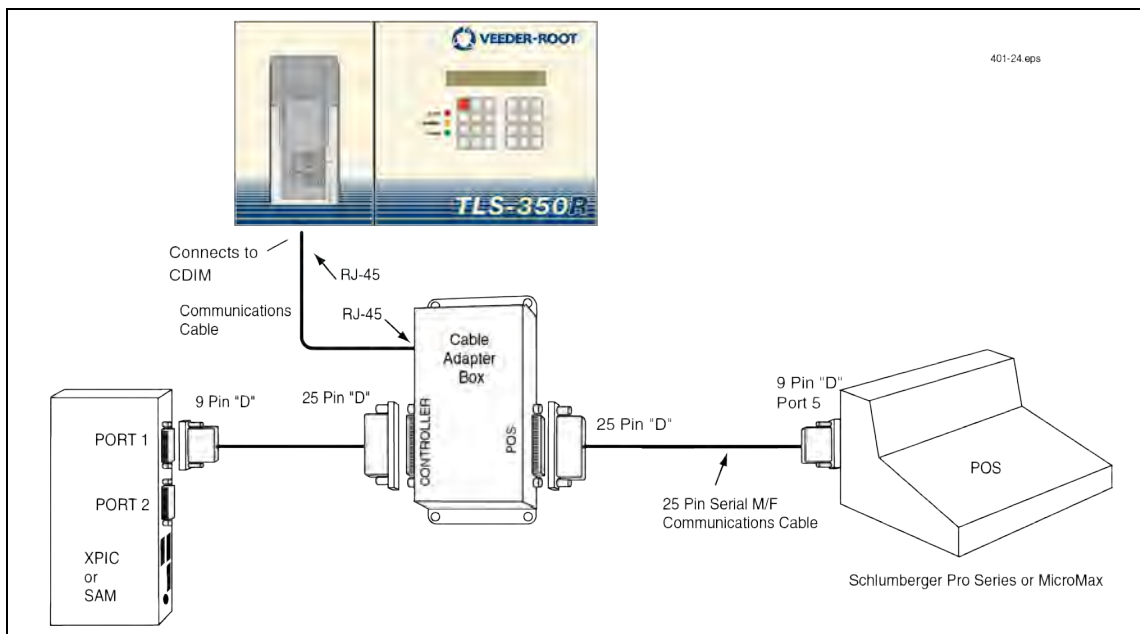

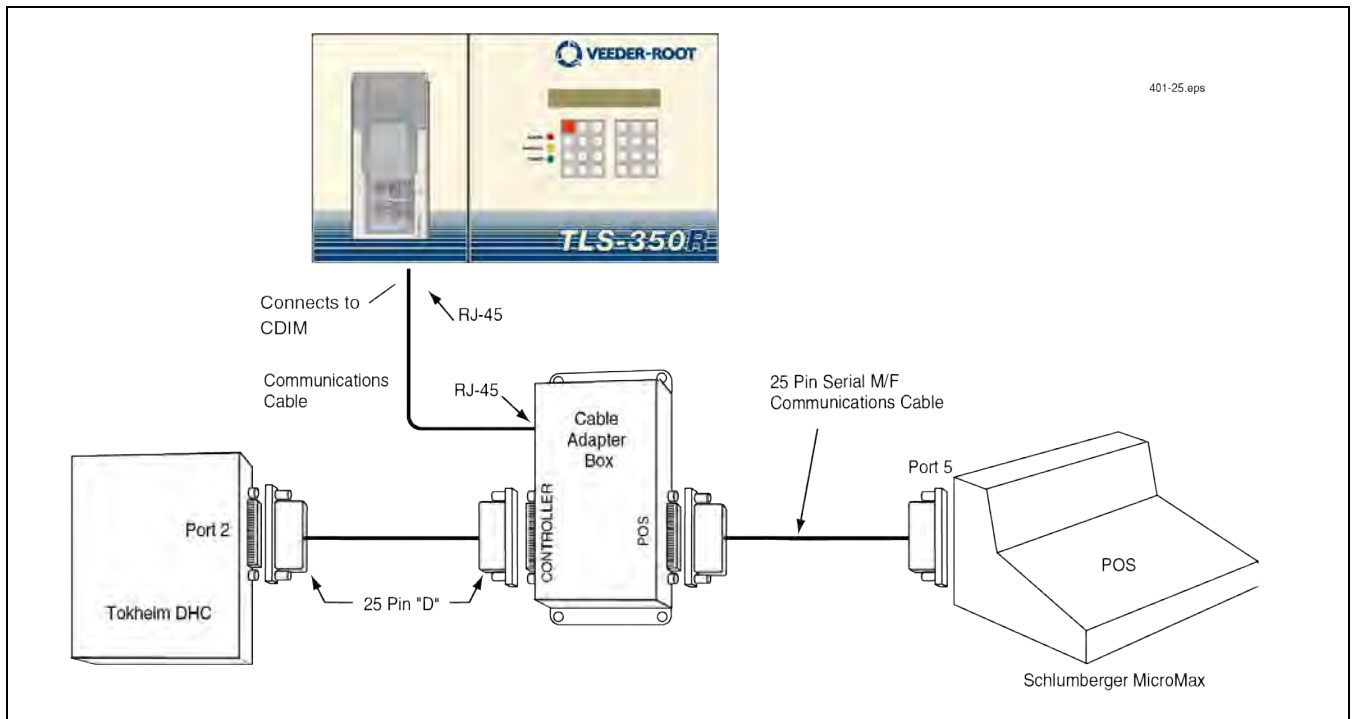**Figure 18.   TLS-350R - Pro Series or MicroMax POS w/SAM or XPIC Controller Box & RS-232 CAB Interface Install Ex.**

Figure 19.   TLS-350R - MicroMax POS with Tokheim DCHC Controller Box and RS-232 CAB Interface Installation Example
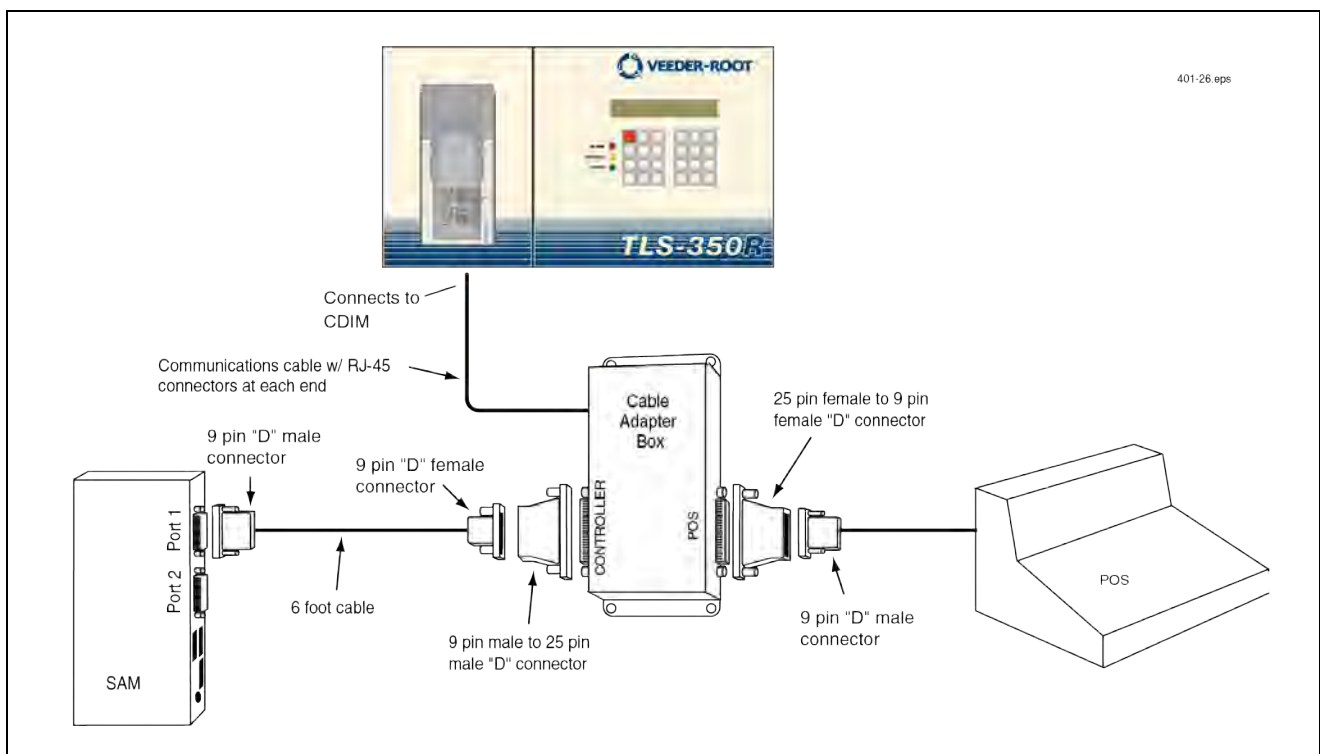

Figure 20.   TLS-350R - Verifone with SAM and RS-232 CAB Interface Installation Example

Tokheim Dispensing Systems - TLS-350R Only

- Tokheim Vision 100/200, MEMS IV, or MEMSV controllers
- CFN2 controllers
- ANDI or Columbus controllers
- Schlumberger MicroMax XPIC/DHC
- 67/A - 98 or 67/B controllers

TLS CONSOLE SOFTWARE REQUIREMENTS

TLS-350R with BIR Software Requirements
- System software Version 17 (or higher)

VEEDER-ROOT HARDWARE REQUIREMENTS

Specific DIMS and installation kits are listed in Table 2 on page 7.

TOKHEIM DHC REQUIREMENTS

- SCS 1200 default setting for serial port J2
- SCS 9600 default setting for serial port J4
- Version 5, rev 6, dated 11/1989 (or later)

The Tokheim DHC itself can be:
- Standalone (and used with a third party POS). or
- An internal component of a Tokheim Vision 100 Vision 200, MEMS IV, or MEMS V Console

SPECIFIC LIMITATIONS

Only Tokheim dispensers are supported. Tokheim electronic blenders are supported. The dispensers may feature electronic card readers. Mechanical blenders that blend fuel prior to the metering process are not supported (not a restriction for ISD only applications).

OTHER POS CONSOLES

Other POS consoles that interface to the Tokheim DHC may also be supported. Contact Veeder-Root for assistance.

INSTALLATION NOTES

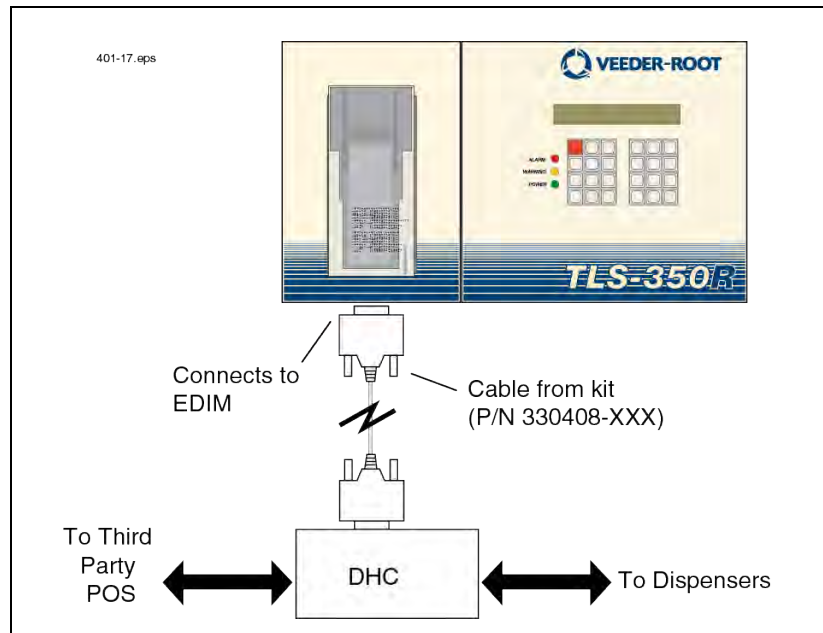Connection examples for Tokheim dispenser systems are shown in Figure 21 - Figure 23 below.

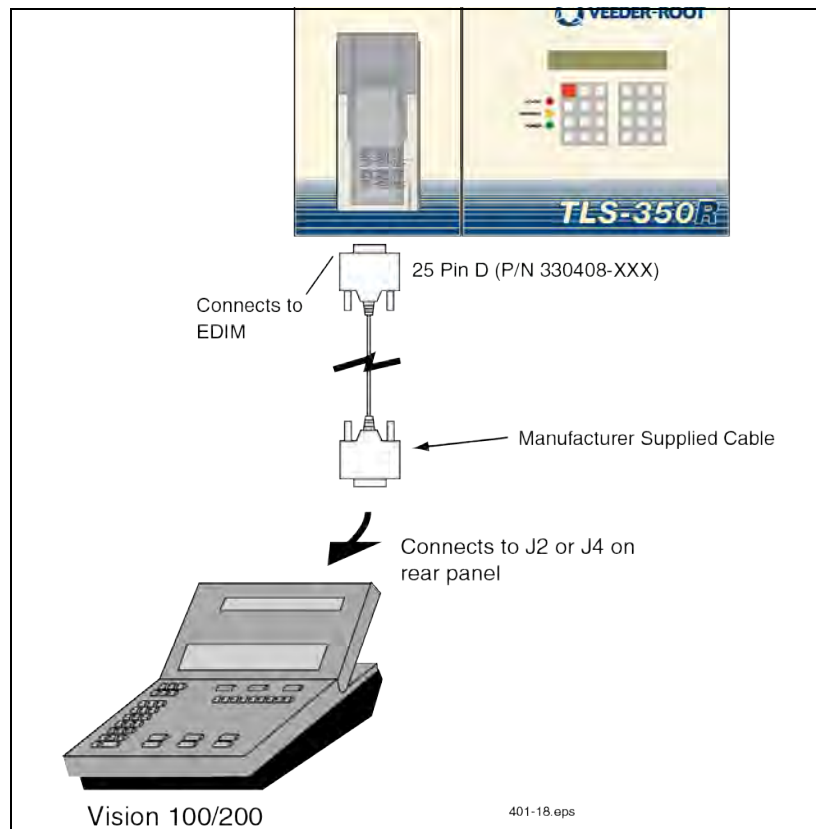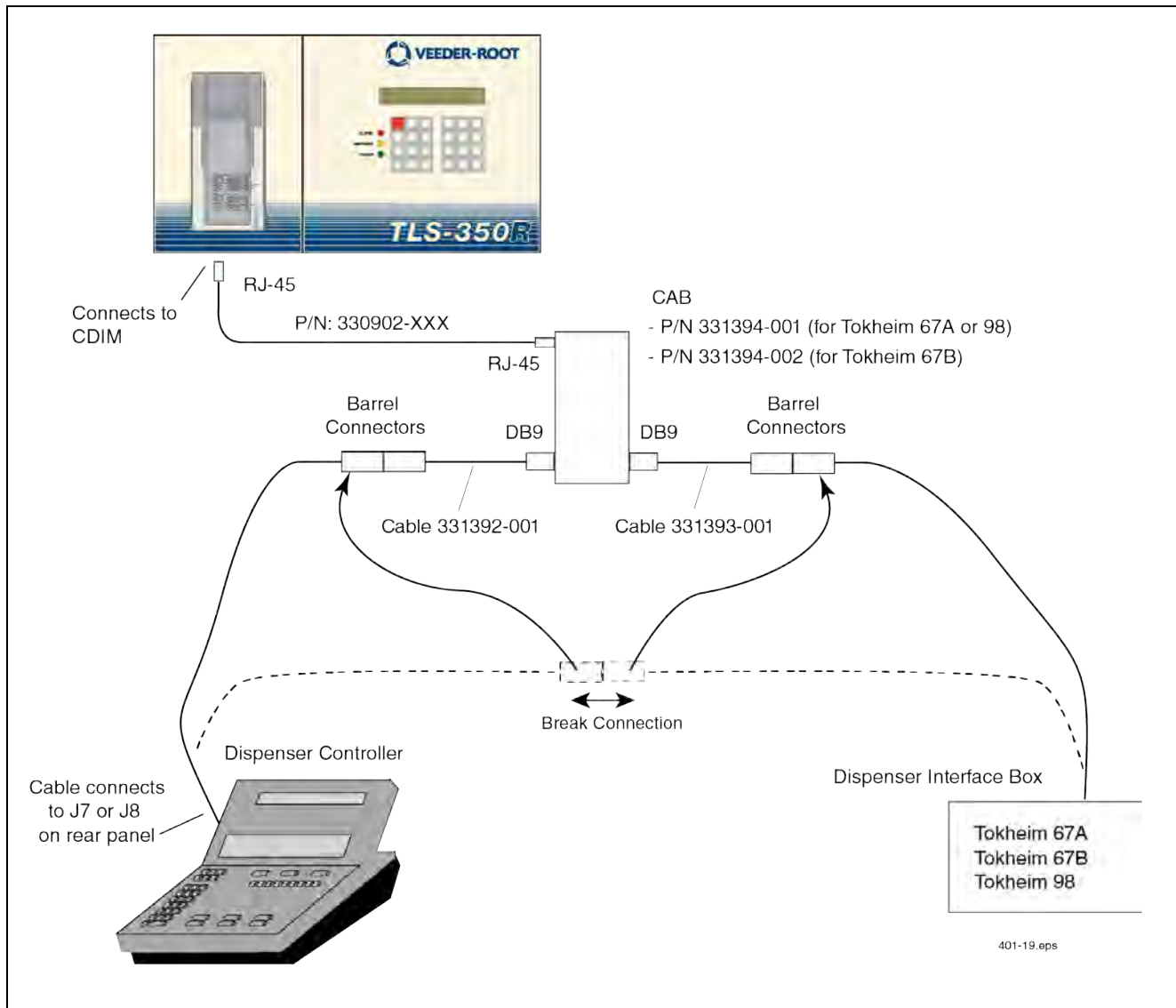**Figure 21.   TLS-350R - Tokheim DHC Standalone Installation Example**

Figure 22.   TLS-350R - Tokheim Vision 100/200 Installation Example

Figure 23.   Tokheim Dispenser Controller with Single CAB Installation Example

BIR Protocol DIM

POS SYSTEM REQUIREMENTS AND LIMITATIONS

Any POS system can conform to established Veeder-Root protocol, to allow the TLS to collect the metered sales data necessary to perform BIR and AccuChart tasks.

This protocol is separate and distinct from the inventory protocol commonly used by POS and other systems to collect inventory data from Veeder-Root TLS Consoles.

Table 3 lists POS systems known to have implemented the Veeder-Root protocol, and thus support BIR protocol DIM.

Table 3. POS Systems Supporting BIR Protocol DIM

Manufacturer	System	TLS-350R	TLS-450PLUS	DIM Type
Allied	NeXGen, AEGIS and SSC Controllers	X	X	[1]TDIM or EDIM
Gilbarco	T-14 (Australia)	X	X	EDIM
PEC	8850	X	X	EDIM
POSTEC	RCC	X	X	EDIM
Wayne	Marketer 2000 (Sweden) / Fusion	X	X	EDIM
NCR/Radiant	Tiger or Panther Controller	X	X	EDIM
Retalix	Site Controller	X	X	EDIM

[1]*TDIM is using the TLS and site controller TCP/IP network connection with an assigned specified port to send dispenser transactions from the site controller to the TLS via customer's TCP/IP network. No RS-232 connection is required.*

Mechanical Dispensers

TLS-450PLUS MDIM APPLICATIONS

Up to 12 single product fueling positions are supported per module, and a maximum of 4 modules (48 fueling positions) per system are supported. Requires a pulser/totalizer or pulse transmitter and a safe barrier device for each fueling position.

Only Veeder-Root mechanical dispensers are supported.

TLS-350R MDIM APPLICATIONS

Up to 4 single product fueling positions are supported per module, and a maximum of 8 modules (32 fueling positions) per system are supported. Requires a pulser/totalizer or pulse transmitter and a safe barrier device for each fueling position.

Only Veeder-Root mechanical dispensers are supported.

Typical Wiring to Mechanical Dispensers

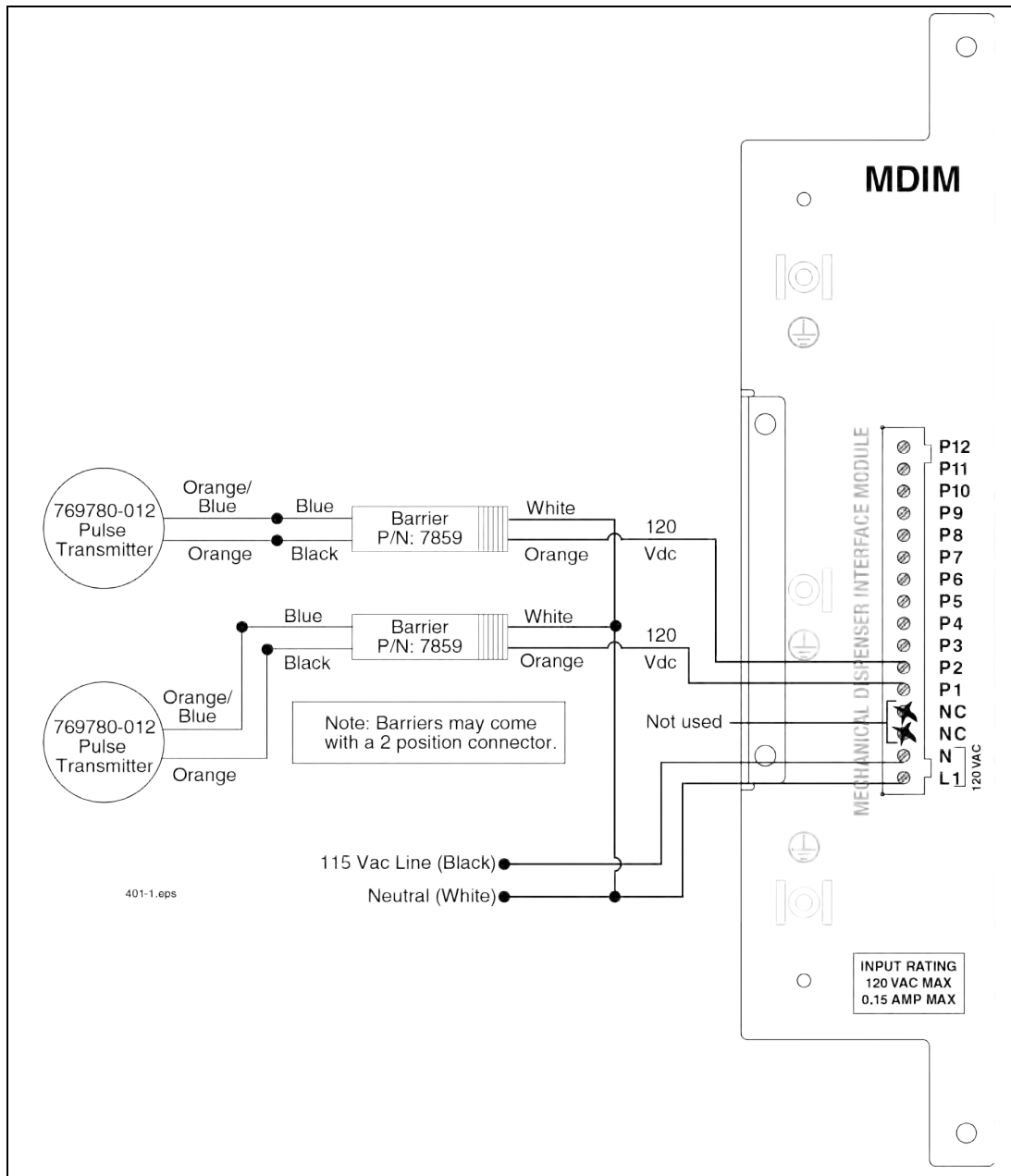Figure 24 through Figure 26 contain some wiring examples for mechanical dispensers.
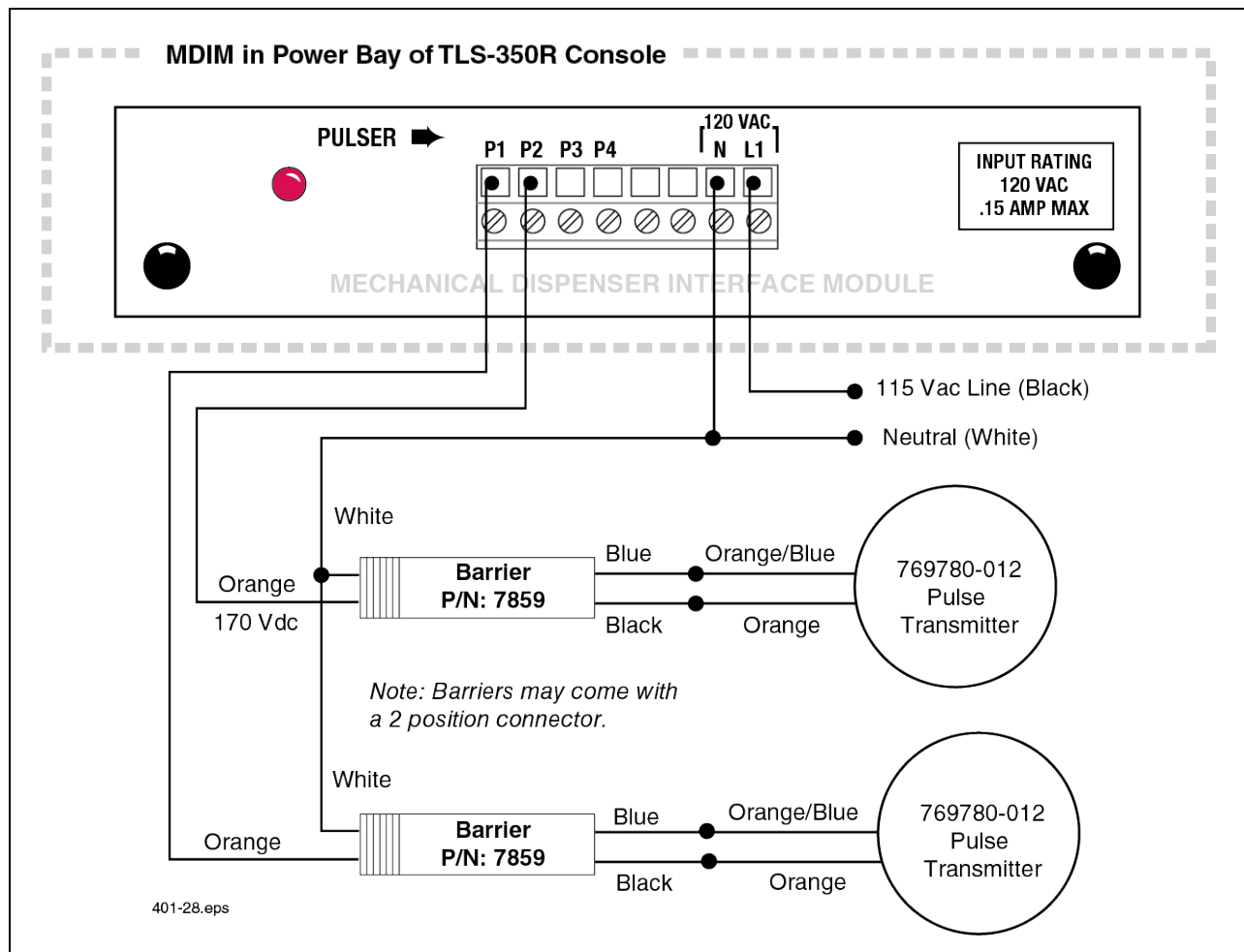
Figure 24.   Wiring Diagram of TLS-450PLUS MDIM Using Two 1871/7697 Series Pulse Transmitters & Required Barriers

MDIM in Power Bay of TLS-350R Console

PULSER ➡

P1 P2 P3 P4

120 VAC
N   L1

INPUT RATING
120 VAC
.15 AMP MAX

MECHANICAL DISPENSER INTERFACE MODULE

● 115 Vac Line (Black)

● Neutral (White)

White

Orange

170 Vdc

Barrier
P/N: 7859

Blue   Orange/Blue

Black   Orange

769780-012
Pulse
Transmitter

Note: Barriers may come with
a 2 position connector.

White

Orange

Barrier
P/N: 7859

Blue   Orange/Blue

Black   Orange

769780-012
Pulse
Transmitter

401-28.eps

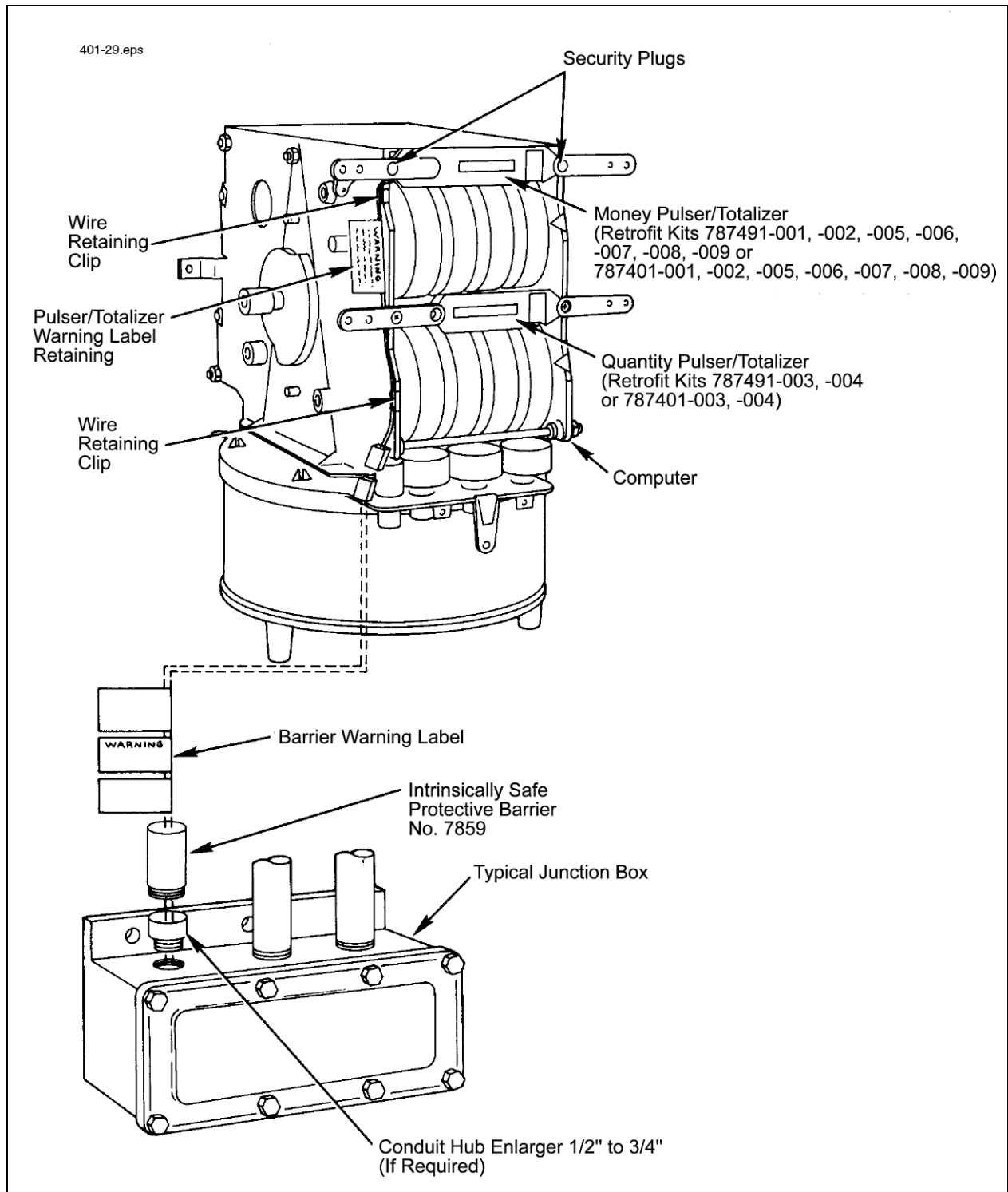**Figure 25.   Wiring Diagram of TLS-350 MDIM Using Two 1871/7697 Series Pulse Transmitters and Required Barriers**

401-29.eps

Security Plugs

Wire Retaining Clip

Money Pulser/Totalizer (Retrofit Kits 787491-001, -002, -005, -006, -007, -008, -009 or 787401-001, -002, -005, -006, -007, -008, -009)

Pulser/Totalizer Warning Label Retaining

Quantity Pulser/Totalizer (Retrofit Kits 787491-003, -004 or 787401-003, -004)

Wire Retaining Clip

Computer

Barrier Warning Label

Intrinsically Safe Protective Barrier No. 7859

Typical Junction Box

Conduit Hub Enlarger 1/2" to 3/4" (If Required)

Figure 26.   Example Mechanical Dispenser Application Using 7874 Series Pulser/Totalizer

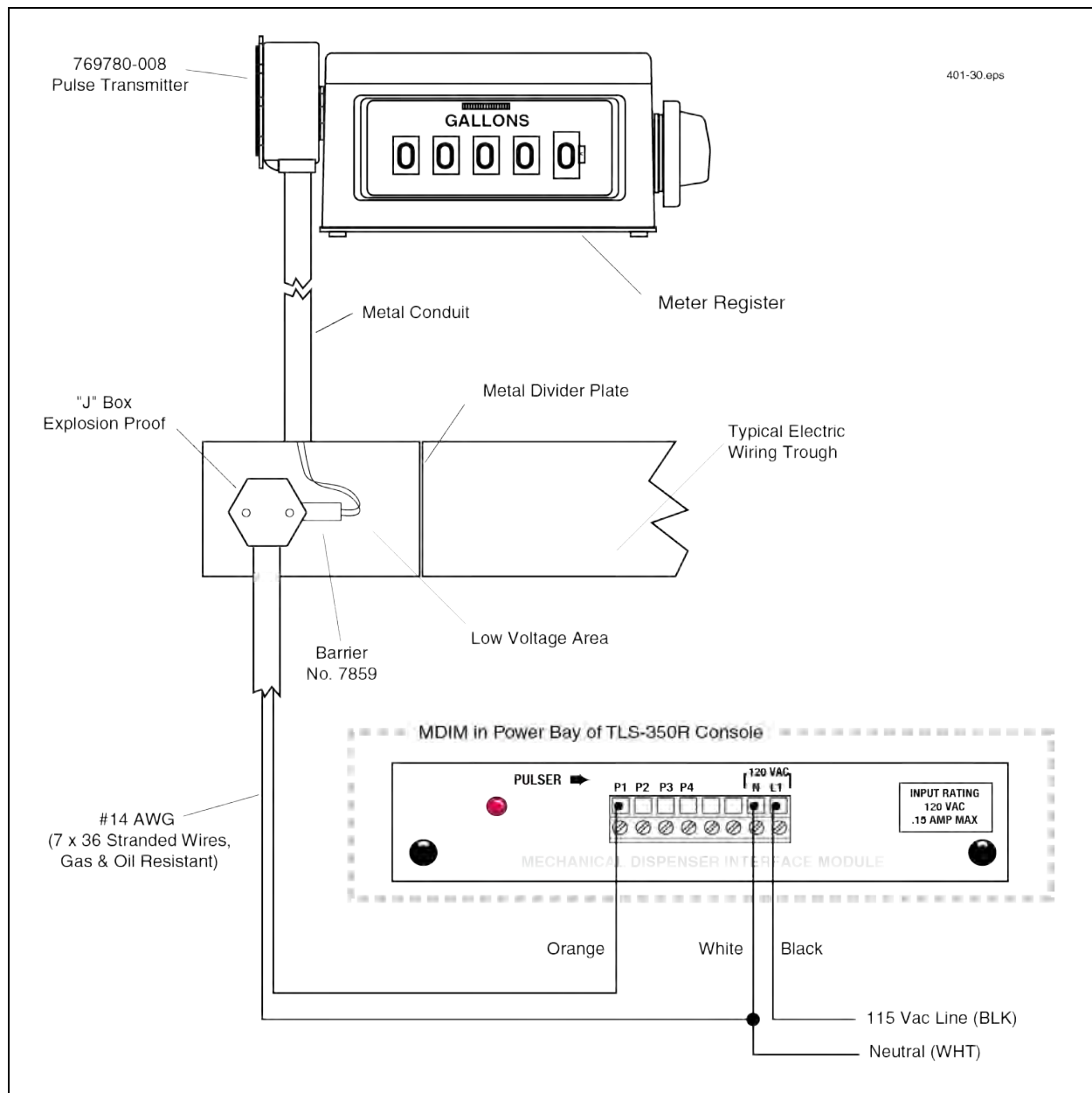## Typical Wiring for Meter Stand Applications
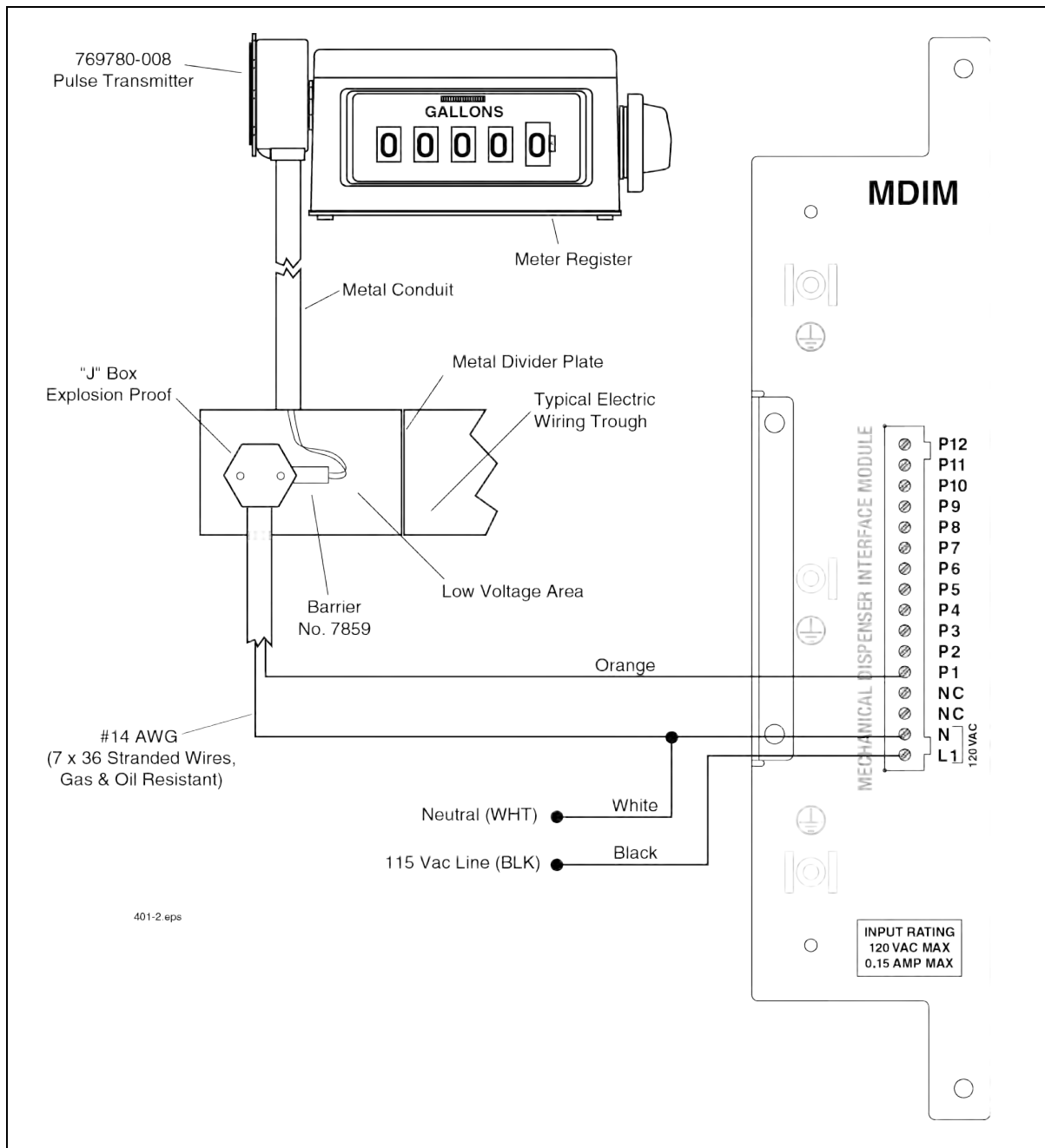
Figure 27.   Example TLS-450PLUS Meter Stand Application Using 1871/7697 Series Pulser/Totalizer

Figure 28.   Example TLS-350R Meter Stand Application Using 1871/7697 Series Pulser/Totalizer

LVDIM Applications

• TLS-450 /TLS-450PLUS- Up to 12 single product fueling positions are supported per module, and a maximum of 4 modules (48 fueling positions) per system are supported.

• TLS-350 - Up to 4 single product fueling positions are supported per module, and a maximum of 8 modules (32 fueling positions) per system are supported.

PETROVEND SYSTEM 2 CONTROLLER

LVDIM is connected to the PV270 pump relay board (in the System 2 controller) and thence to the pulsers (see Figure 29).

PetroVend 4-conductor shielded cable (part no. 12-1026) must be used to connect to pulsers; or you must run #18 AWG gas, oil, and fire-resistant wire in metal conduit (separate from high-voltage wiring) to the pulsers.
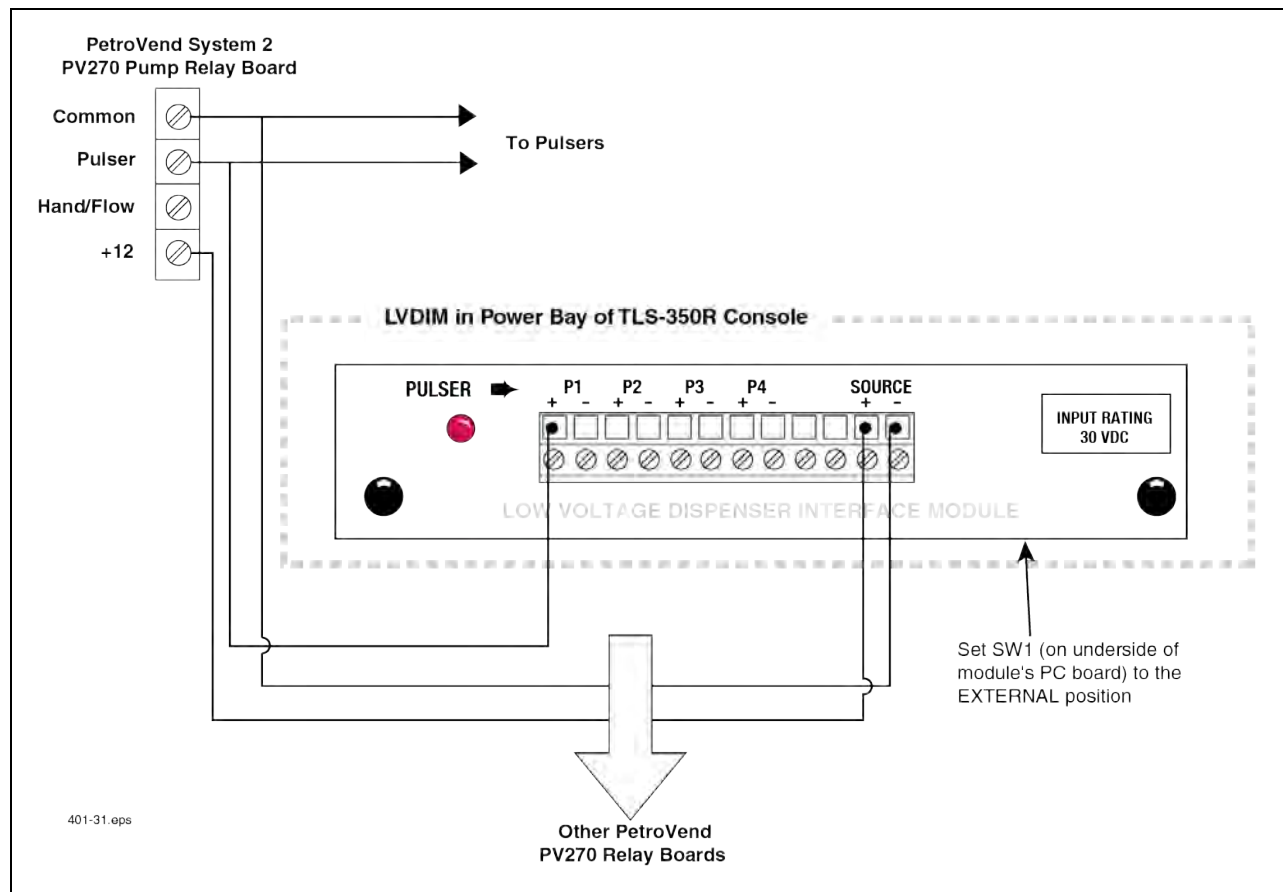

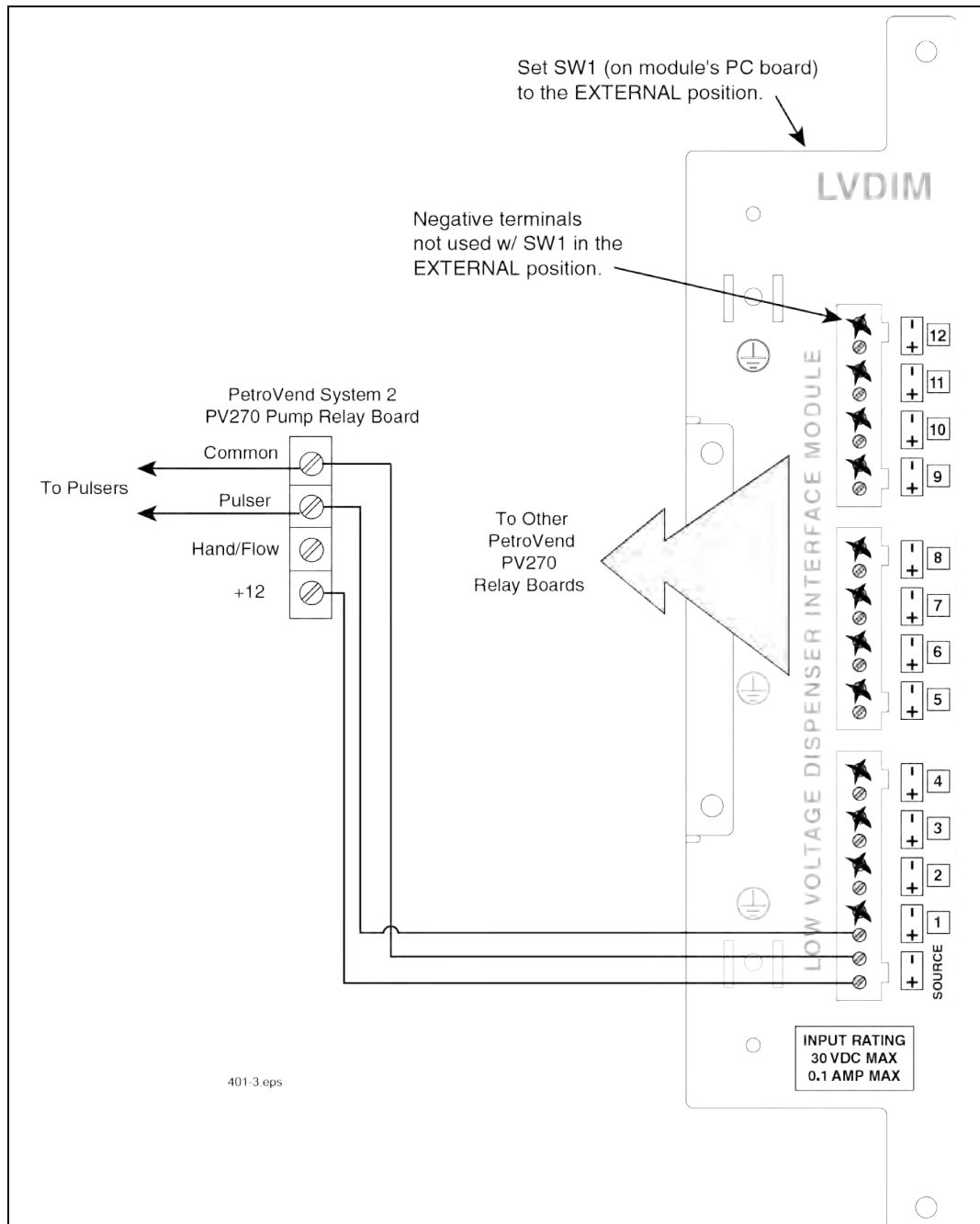**Figure 29.   TLS-350R LVDIM with PetroVend System 2 Site Controller Installation Example**

KRAUS MICON 200 ELECTRONIC DISPENSERS

⚠ **Caution! Kraus Micon Applications Are Not U.L. APPROVED.**

Each dispenser must provide "volume" pulser output to LVDIM. Installer will have to pull special shielded, UL/CSA type #18 AWG RS-422/485 style, gas, oil, and fire resistant twisted pairs in metal conduit.

LVDIM is connected to the DC junction box inside the Micon 200 electronic dispenser head and thence to the pulsers.

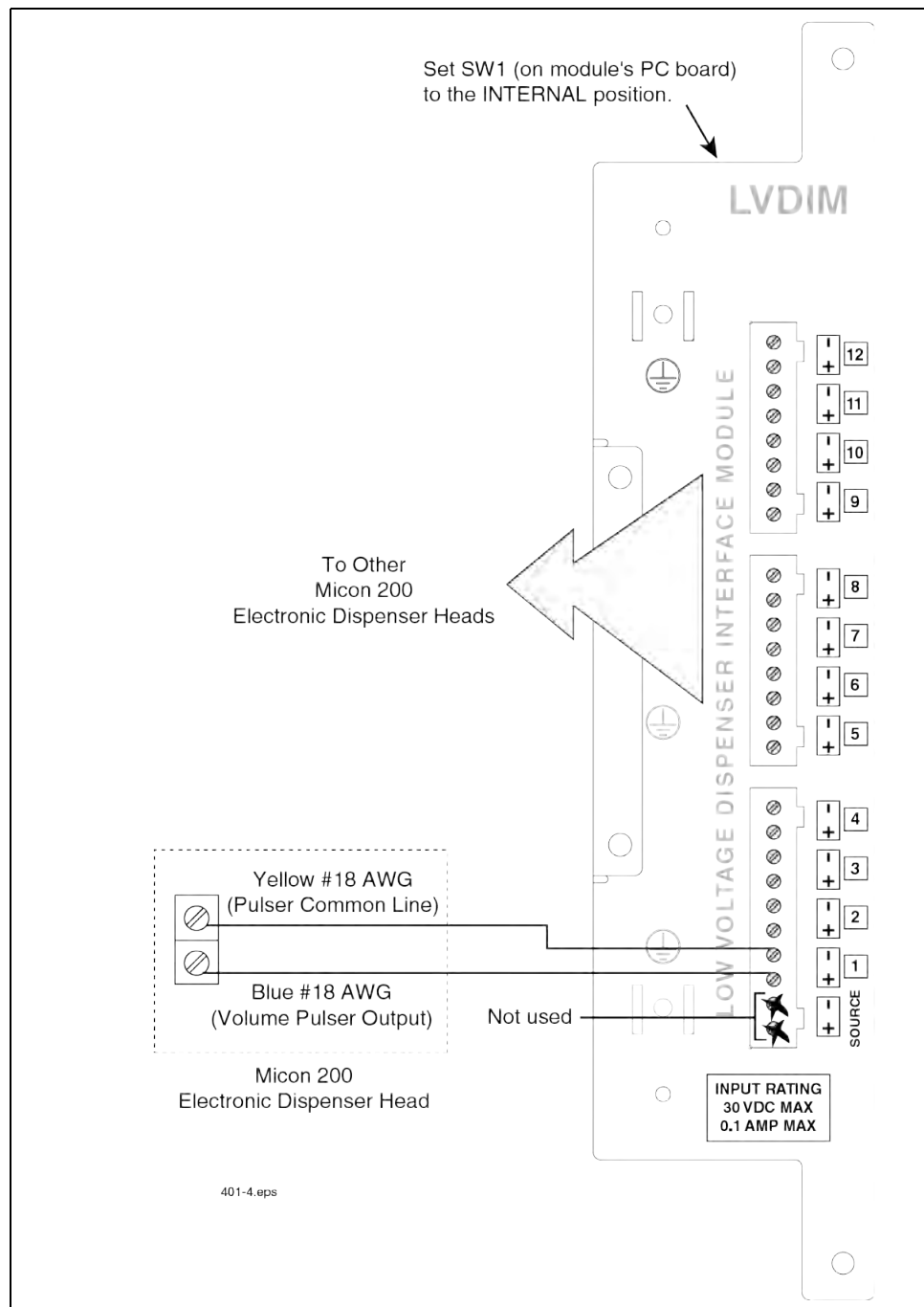**Figure 30.   TLS-450PLUS LVDIM with PetroVend System 2 Site Controller Installation Example**

)

Figure 31.   TLS-450PLUS LVDIM with Kraus Micon 200 Series Electronic Dispensers (Not UL Approved) Installation Example
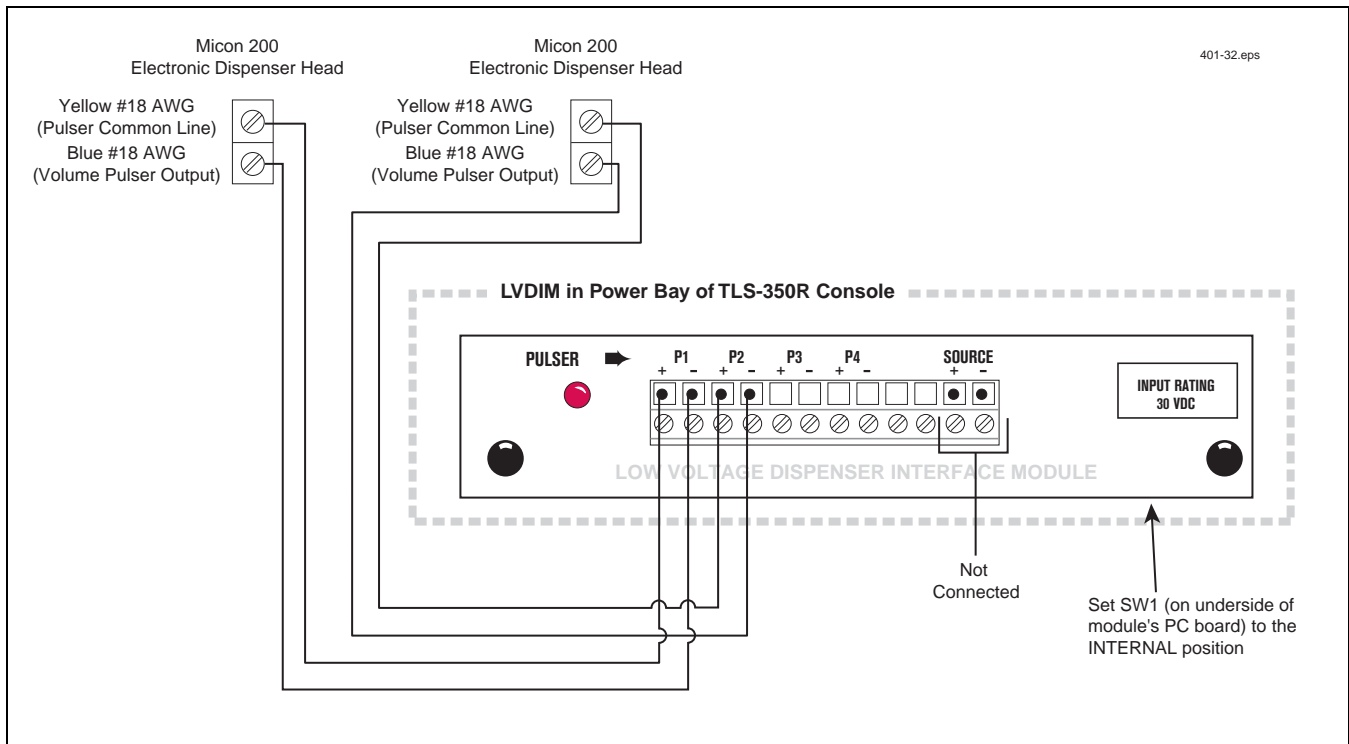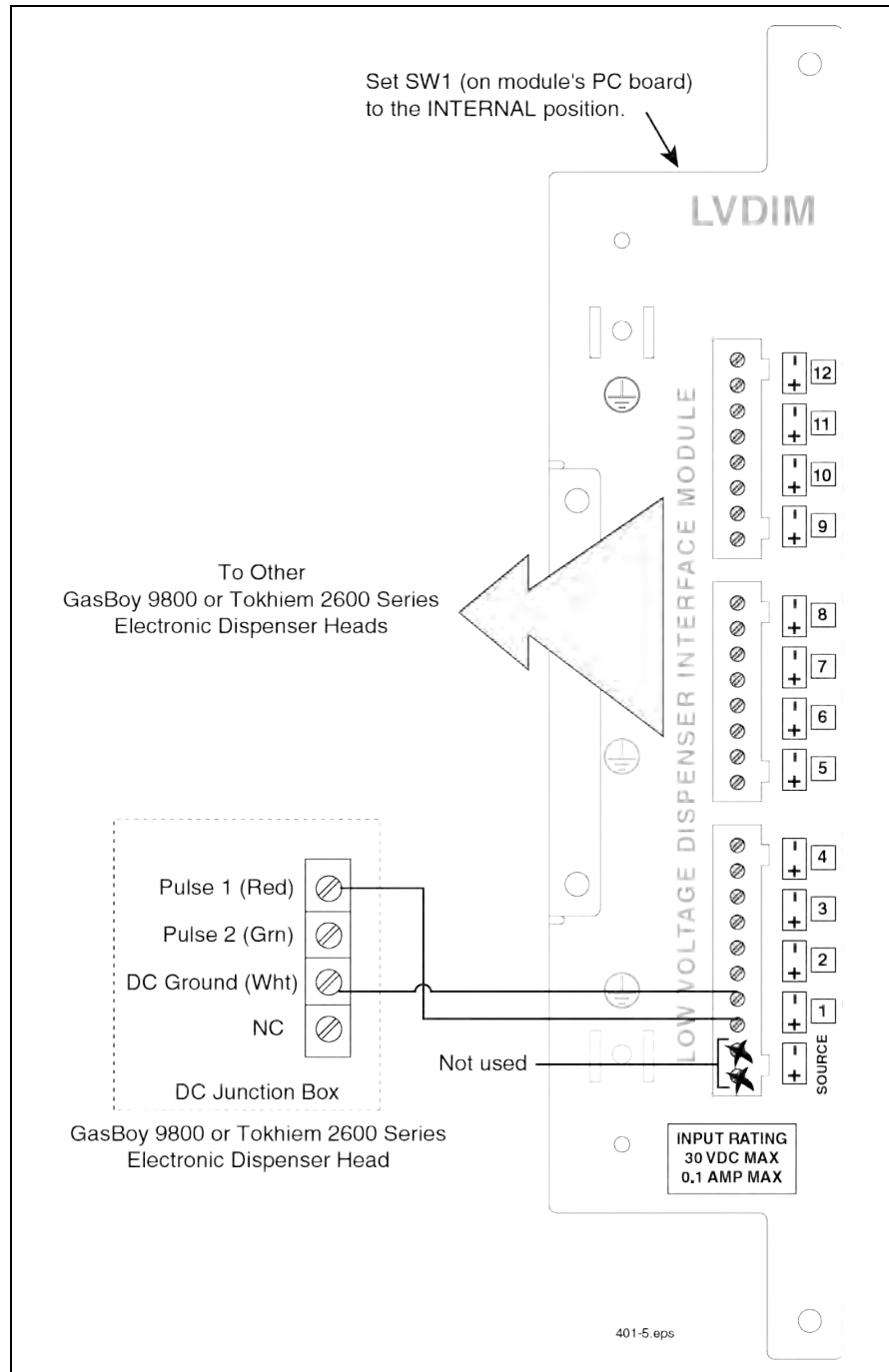
Figure 32.   TLS-350 LVDIM with Kraus Micon 200 Series Electronic Dispensers (Not UL Approved) Installation Example

WIRING TO GASBOY 9800 OR TOKHEIM 2600 SERIES ELECTRONIC DISPENSERS

Special shielded UL/CSA type #18 AWG RS-422/485 style, gas, oil, and fire resistant twisted pairs must be pulled between pulsers and LVDIM module in metal conduit.

**Figure 33.   TLS-450PLUS LVDIM with GasBoy 9800 or Tokheim 2600 Series
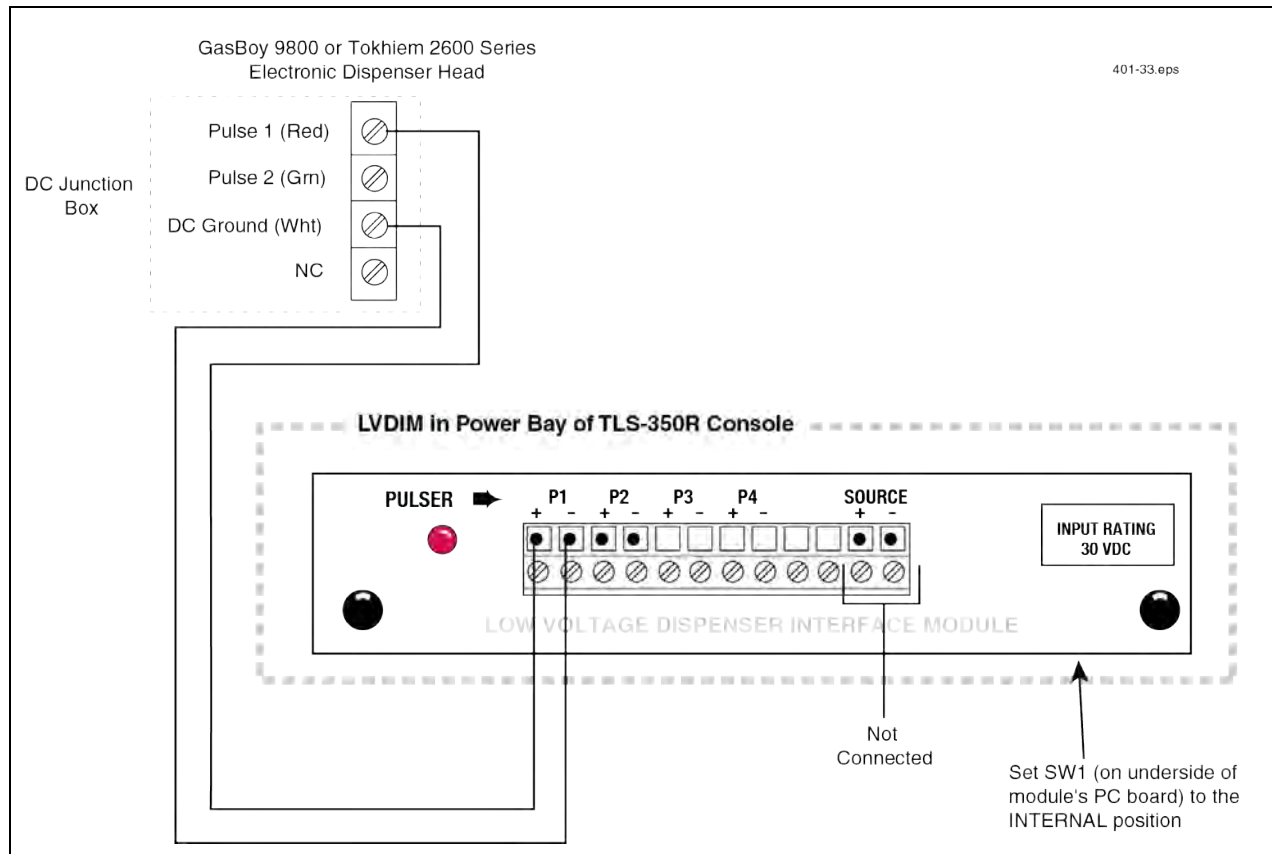Electronic Dispenser Head Installation Example**

Figure 34.   TLS-350R - LVDIM w/GasBoy 9800 or Tokheim 2600 Series Electronic Dispenser Head Install Example