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Manual No: **577013-435** ● Revision: **F**

CDIM

Installation Guide

VEEDER-ROOT

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Introduction

General

This manual contains installation procedures for the installation of the Gilbarco Current Loop Dispenser Interface Module (DIM) in an existing TLS-350R with Business Inventory Reconciliation (BIR) and Inventory Management System, the Gilbarco Transac™ Series (TCR™-G, TCR™-G/2, Transac™ 11, Transac™ 12) DIM Installation Kits, the Gilbarco Transac System 1000™ (TS-1000) DIM Installation Kit, and other POS Applications with Gilbarco Dispensers. Also discussed in this manual are the kits needed to install a Veeder-Root Dispenser Interface Kit (P/N 848702-XXX) in a CCISTech Point of Sale (POS) system.

DIMs provide an interface for the TLS-350R to certain Point-of-Sale (POS) systems. The DIM allows the console to gather relevant dispensing information, including how much product has been dispensed from each fueling station.

DIM Installation Kits

DIM Installation Kits provide hardware and cable to interconnect the TLS-350R and DIM to the POS systems. The installation kits vary for each DIM, and include all adapter boxes and cables for installation. Different length cables are available. One or more installation kits are required, depending on the POS system or dispenser manufacturer.

Related Manuals

576013-879	TLS-350R Site Prep Manual
576013-623	TLS-350R System Setup Manual

Contractor Certification Requirements

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

Level 1 Contractors holding valid Level 1 Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

Level 2/3 Contractors holding valid Level 2 or 3 Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root Tank Monitoring Systems, including Line Leak Detection and associated accessories.

Warranty Registrations may only be submitted by selected Distributors.

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Safety Symbols

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions



Electricity

High voltage exists in, and is supplied to, the device. A potential shock hazard exists.



Explosive

Fuels and their vapors are extremely explosive if ignited.



Turn Power Off

Live power to a device creates a potential shock hazard. Always turn power off to the device and associated STPs when servicing unit.



Read all instructions and symbol warnings.

Safety Warnings

⚠ WARNING





You are working with a device in which potentially lethal voltages may be present.

Death or injury may result if safety precautions are not followed.

1. **Read all instructions and symbol warnings.**
2. **Turn power off before installing this kit.**

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Installation of Current Loop Dispenser Interface Module

Requirements

Installing interface modules in a TLS-350R monitor is a simple process. However, there are important points to remember:

1. For each module, a corresponding expansion slot must be available.
2. ALL unused expansion slots MUST be covered.
3. Only three slots are available in the communication compartment of the console.

DIM Installation

For additional information regarding the below steps, refer to the TLS-350R *Site Preparation and Installation Instructions Manual*.

Important ☞ *Communications Interface Module expansion slots 3 and 4 cannot be used at the same time, unless they are occupied by the RS-232 with auxiliary port interface module. Equipment malfunction will result if both slots are used.*









1. Read and follow all instructions carefully.
2. Open the left-hand door of the TLS-350R console by unscrewing the left-top and left-bottom locking bolts.
3. To retain current programming, be sure that the ECPU board battery switch is set to "ON" (see Figure 1 on page 4, but put in the up position). To avoid electrical shock or damage to components if accessing the battery switch, avoid touching any circuit components with your hand or any conductive tool or metallic jewelry.
4. Turn off power in the console system before installing the kit.
5. Avoid shorting high voltage across any component or module to the intrinsically safe section of the console. Shorting a high voltage across an intrinsically safe device could result in an explosion near the device.

Important ☞ *A maximum of three modules of any type can be used in the communication compartment. The module is to be installed in only the communications interface area of the console.*

6. Remove the existing retaining bracket panel from the communication compartment. One DIM can accept connections from three Cable Adapter Boxes.
7. Hold the DIM module (ordered separately) with its snap-in fastener positioned at the lower edge and carefully slide the module into its slot.

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8. To secure the module, press down on the snap-in fastener until its connector engages completely with the connector on the board. Do not apply excessive force when installing the module.
9. BE SURE ALL UNUSED SLOTS at the bottom of the communication compartment ARE COVERED!
10. Check that the three DIM jacks are accessible through the slot opening at the bottom of the console once installation is complete.

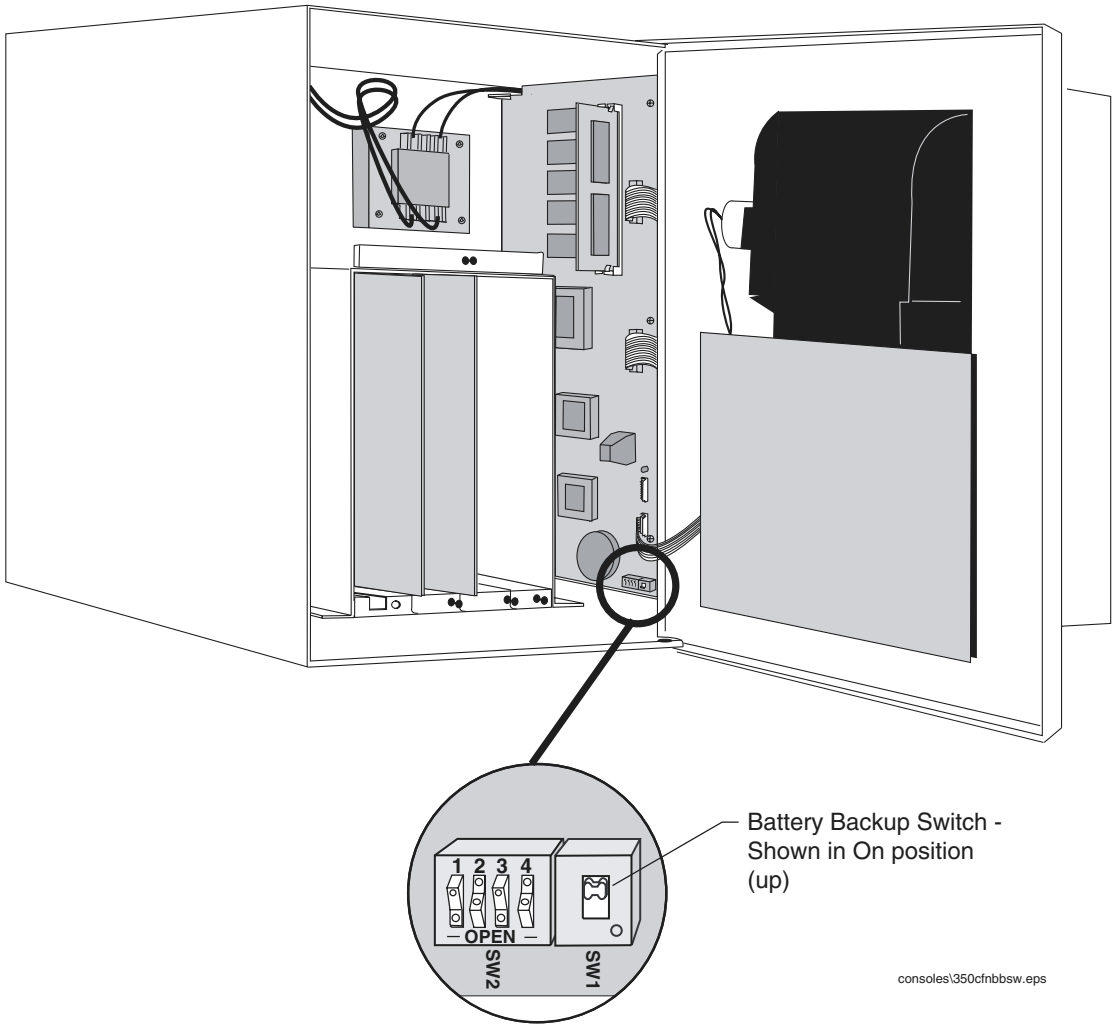


Figure 1. ECPU Board Battery Switch ON (SW1)

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The following shows placement of a DIM card into a module expansion slot (can only be installed in slots 1, 2, or 3):

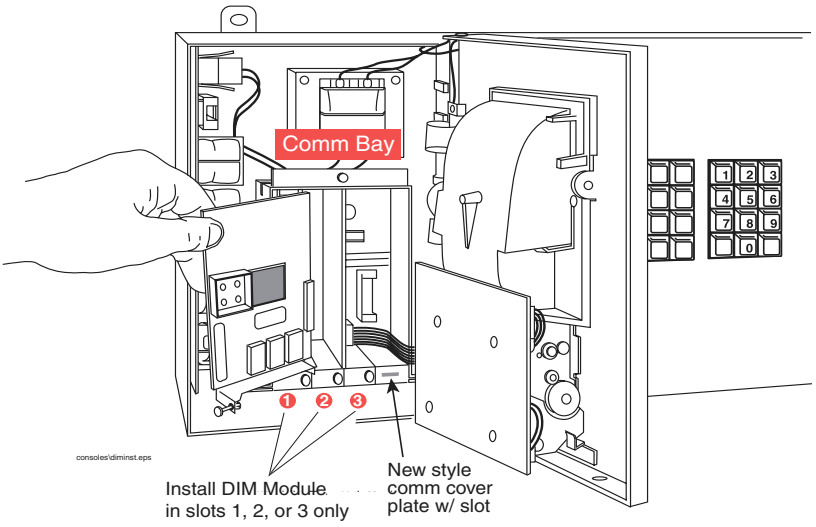


Figure 2. DIM Card Installation

Mounting the Universal Cable Adapter Box

Important ☞ *When wiring from the Cable Adapter Box (CAB) to the TLS-350R, keep wires physically separated by spacing them away from any other wiring or conduits. (Any unused wire should be coiled up.)*

Do not disconnect the dispenser communication wiring during a customer transaction because doing so may result in a loss of dispenser data.

The Cable Adapter Box (CAB) should be placed as close as possible (within 6 feet) to the dispenser distribution box (see Figure 5 on page 11 and Figure 6 on page 15).

1. To activate the CAB, make sure the slide switch is in the "RUN" position. When troubleshooting pump controller problems, move the CAB switch to the "BY-PASS" position. The CAB is now removed from the pump controller circuit.
2. Identify the four-conductor cable with the RJ-45 connectors on each end. This cable must be connected from the CAB to the DIM located in the communication section of the Tank Gauge. Connect the other end of the cable to one of the DIM RJ-45 port connectors. Any port connection can be used.

Important ☞ *The connection or disconnection of the four-conductor cable from the tank gauge has no influence on dispenser communications.*

3. Mount the CAB using either the 3M "hook and loop" pads provided in the kit, or utilize the mounting ears on the CAB (see Figure 3 on page 6 and Figure 4 on page 7). Place the adhesive side on the surface and press firmly into position. The adhesive must be allowed to set for a minimum of one hour before attaching or

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removing the CAB. Choose a surface that is clean, dry, and oil-free. For the 3M "hook and loop" pads, remove the backing paper from the back of the pad.

Important ☞ *The Cable Adapter Box can be mounted on any flat surface located indoors in a non-hazardous location.*

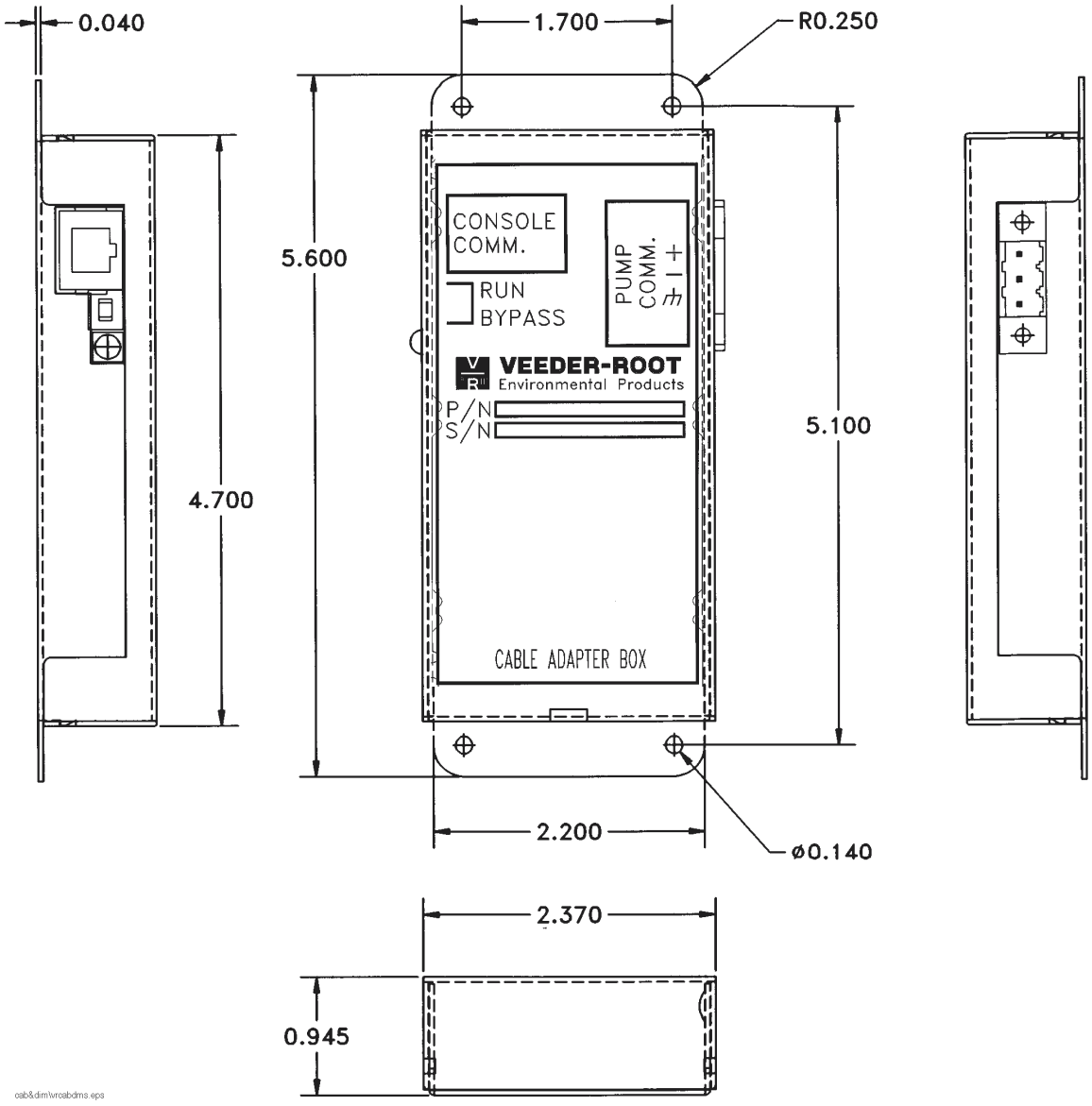


Figure 3. Dimensions of Transac Series and Transac 1000 Cable Adapter Box

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Important ☞ *The Cable Adapter Box can be mounted on any flat surface located indoors in a non-hazardous location.*

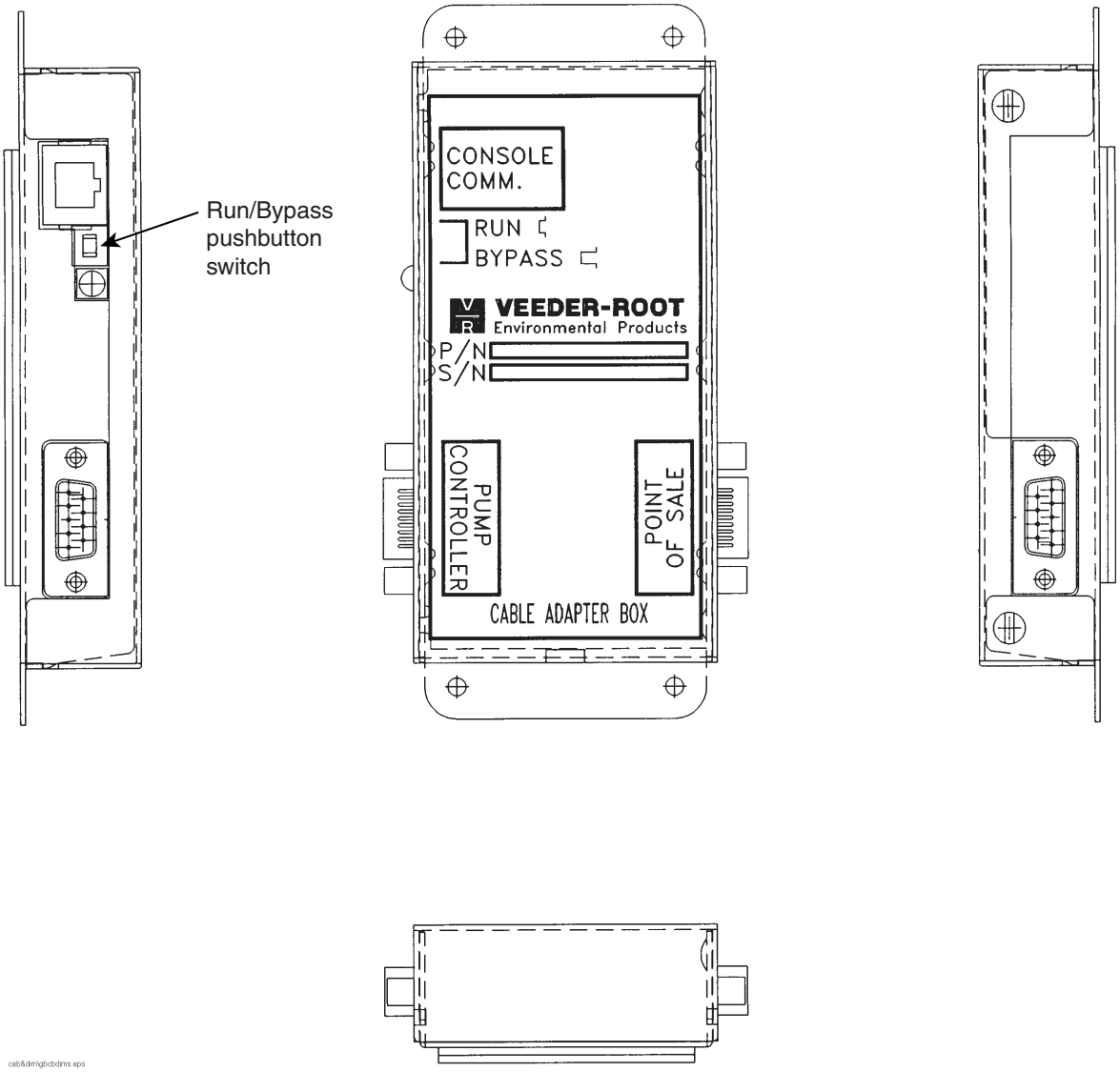


Figure 4. Dimensions of Other POS Applications (with Gilbarco Dispensers) Cable Adapter Box

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Gilbarco Transac Series Point-Of-Sale (POS)

System Requirements

Veeder Root Hardware Requirements:

The following equipment is required to interface to the Gilbarco POS System:

- ❑ TLS-350R console with Business Inventory Reconciliation (BIR)
- ❑ One Gilbarco Current Loop Dispenser Interface Module (DIM) for up to 3 current loops:

  Part No. 330404-020 when ordered with the console
  Part No. 847490-420 when ordered as an upgrade or replacement

- ❑ One or more Gilbarco Transac™ DIM Installation Kits, Part No. 848702-XXX (1 Kit required for each current loop monitored. Maximum of 16 fueling positions per current loop)

Table 1 (below) contains kit numbers based on length of the cable.

Table 1: Kit Numbers for Gilbarco Transac DIMs

Cable Lengths	Transac DIM Installation Kits
5-foot cable	848702-005
10-foot cable	848702-010
25-foot cable	848702-025
50-foot cable	848702-050
100-foot cable	848702-100
200-foot cable	848702-200

Besides cable, this kit contains one Cable Adapter Box.

Important ☞ *The installation kit includes a Cable Adapter Box (CAB) and cable to the TLS-350R. The CAB should be installed as close as possible to the pump distribution box. Select the shortest suitable cable, measuring from the CAB to the TLS-350R.*

TLS-350R Software Requirements:

- ❑ System Software: 349511-108-D (or higher)
- ❑ Peripheral Controller Software: 002B (or higher)
- ❑ DIM Software: 349634-1B (or higher)

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- ❑ Dispenser Module Data String is not required for gallons based transactions (Default String: BGEHDG). Change the current setup requirements for metric (liter) based transactions. Refer to the TLS-350R *System Setup* manual for further information.

Gilbarco Point-of-Sale (POS) Hardware Requirements:

Gilbarco Dispenser Distribution Box PA0133

As the following table indicates, DIM installation kits described in this manual support the following Gilbarco Point-of-Sale (POS) terminals:

Table 2: TCR™-G, TCR™-G/2, Transac™11, and Transac™12 Series POS Consoles

Model No.	POS Console
TCR™-G	PA0180-121
TCR™-G/2	PA0180-121
Transac™11	PA0132
Transac™11	PA0141
Transac™12	PA0134
Transac™12	PA0142
Transac™12A	PA0151
Transac™12A	PA0152
Transac™12B	PA0173
Transac™12C	PA0188
Transac™12G	PA0203

System Limitations

- ❑ The dispenser must separately meter each product prior to blending. The TLS-350R cannot provide reconciliation on dispensers that blend fuel prior to the metering process.
- ❑ Only Transac™12G, TCR™-G, and TCR™-G/2 consoles interface with electronic blenders where the dispenser meters each product separately.
- ❑ Only Gilbarco electronic dispensers are supported.
- ❑ The Gilbarco Current Loop Dispenser Interface Module does not support Gilbarco G-Site applications.

Important ☞ *In Transac™11 and Transac™12 Pre-Pay applications, cashiers should be urged to close out each transaction promptly. The required metered sales data is reported on close-out. Failure to close-out promptly can cause the TLS-350R to delay reconciliation reports, and impact the system's ability to improve tank calibration.*

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Wiring to the Standard Distribution Box

Important ☞ *When wiring from the Distribution Box to the Cable Adapter Box (CAB), keep wires physically separated by spacing them away from any other wiring or conduits. (Any unused wire should be coiled up.)*

To ensure proper operation of the BIR function of the TLS-350R, the switch on the CAB box must be in the "RUN" position.

1. Refer to Figure 5 on page 11 and identify an open dispenser connection point inside the distribution box. A Cable Adapter Box (CAB) must be wired into the current loop.
2. Use an unused pump position to connect the two-wire cable from the adapter box. At this position, determine which terminal block connection is the positive side (+) of the current loop and connect the white wire from the CAB to it. Connect the black wire to the negative side (-) of the current loop. Throw the pump switch to the "NORMAL" position.
3. If all of the pump positions are in use, connect the two-wire cable in series with one of the pumps in the distribution box. Choose any pump/dispenser position. Turn the switch for that position to "ISOLATE" the wire on the (-) side of the current loop. Splice this pump wire with the white wire from the CAB. Connect the black wire from the CAB to the (-) side of the terminal block. Secure the splice connections with appropriate sized wire nuts for the wires involved. Return the switch to the "NORMAL" position.

Important ☞ *Do not disconnect the dispenser communication wiring between the POS and the distribution box during a customer transaction. It can result in a loss of dispenser data.*

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The following is a typical interconnection diagram for a Transac™ Series Current Loop Interface (a PA0133 Distribution Box is shown, other models are slightly different).

Important ☞ *The below application can also be effected using a Generic Universal Distribution Box (see Figure 6). You must, however, use a "Y" cable to plug into the generic box.*

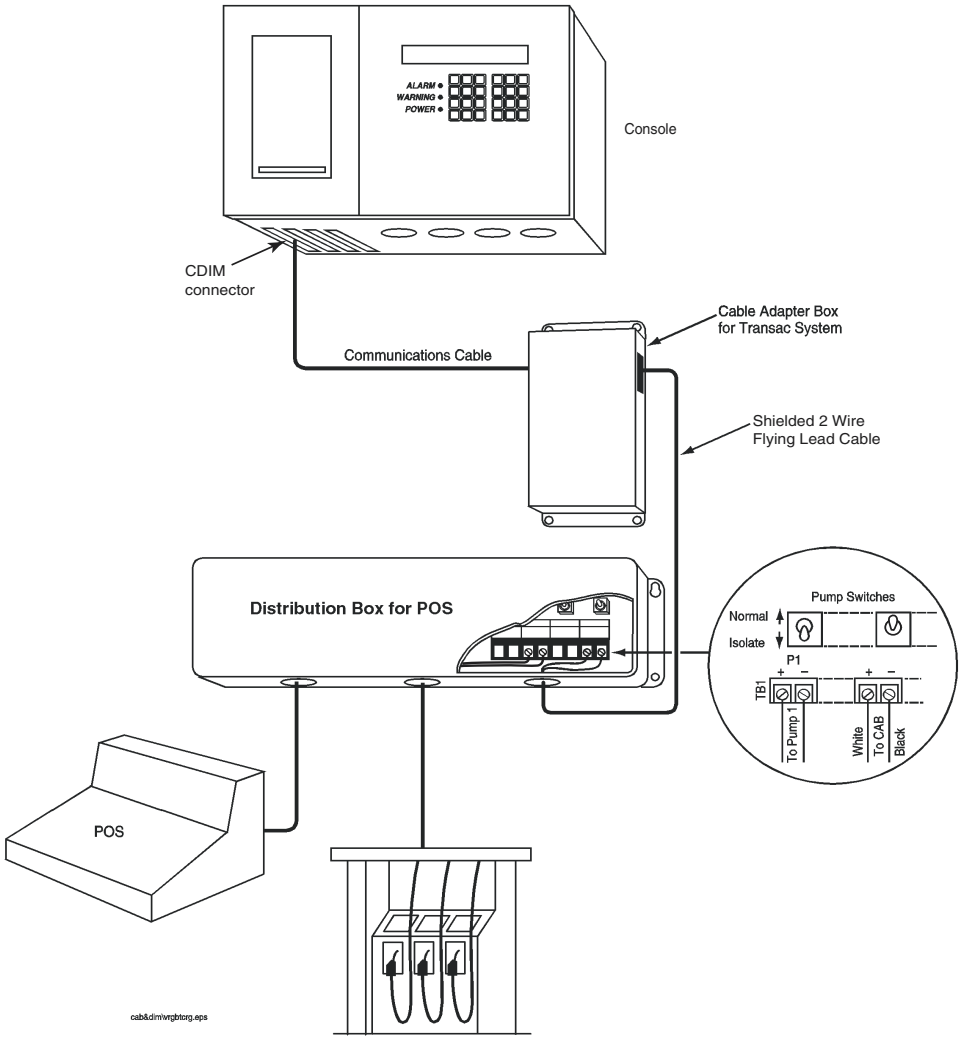


Figure 5. Transac Series Current Loop Interface

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Gilbarco Transac System 1000 Point-Of-Sale (POS)

System Requirements

Veeder-Root Hardware Requirements

The following equipment is required to operate the Gilbarco POS System:

- ❑ TLS-350R console with Business Inventory Reconciliation (BIR)
- ❑ One Gilbarco Current Loop Dispenser Interface Module (DIM) for up to 3 current loops:

  Part No. 330404-020 when ordered with the console
  Part No. 847490-420 when ordered as an upgrade or replacement

- ❑ One Gilbarco Transac System 1000™ (TS-1000) DIM Installation Kit, Part No. 848722-XXX for each current loop

The following table provides number of kits based on fueling positions:

Table 3: Number of Kits needed for Gilbarco Transac System 1000™ DIMs

Fueling Positions	Number of Kits	TS-1000 DIM Installation Kits
Up to 16	1 kit	848722-XXX
17-32	2 kits	848722-XXX
33-48	3 kits	848722-XXX

The following table provides kit numbers based on length of cable:

Table 4: Kit Numbers for Gilbarco Transac System 1000™ DIMs

Cable Lengths	TS-1000 DIM Installation Kits
5-foot cable	848722-005
10-foot cable	848722-010
25-foot cable	848722-025
50-foot cable	848722-050
100-foot cable	848722-100
200-foot cable	848722-200

Besides cable, each kit contains one Cable Adapter Box.

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Important ☞ *The installation kit includes a Cable Adapter Box (CAB) and cable to the TLS-350R. The CAB should be installed as close as possible to the pump distribution box. Select the shortest suitable cable, measuring from the CAB to the TLS-350R.*

Gilbarco POS and Dispensing System Requirements

For Transac System 1000™ POS Systems, the following equipment is supported:

- ❑ 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 PA02400000000
- ❑ Gilbarco Transac System 1000™ Console Model PA02400001010

System Limitations

- ❑ Up to 48 Gilbarco single product or blending dispenser fueling positions are supported.
- ❑ The dispenser must separately meter each product prior to blending. The TLS-350R cannot provide reconciliation on dispensers that blend fuel prior to the metering process.
- ❑ 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 the Universal Distribution Box

Important ☞ *When wiring from the Distribution Box to the Cable Adapter Box (CAB), keep wires physically separated by spacing them away from any other wiring or conduits. (Any unused wire should be coiled up.)*

To insure proper operation of the BIR feature, the switch on the Cable Adapter Box (CAB) must be in the "RUN" position.

1. Locate Distribution Box as seen in Figure 6 on page 15.

Important ☞ *The station's dispenser communications will be down during the next step. Customer should be advised that no fueling can take place.*

2. When station fueling is idle, break communication between Distribution Box and Transac System 1000™ Site Controller by removing nine-pin connector from the bottom left hand side of the Universal Distribution Box.

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3. Install the Veeder-Root Cable Adapter Box (CAB) nine-pin female connector in place of the original connector (at the bottom left side of the Universal Distribution Box.
4. To complete the in-line connection, take original female connector from Transac System 1000™ Site Controller and connect it to our male nine-pin connector from the CAB.

Important ☞ *Be sure to secure the cable connections with the connector mounting screws.*

Do not disconnect the dispenser communication wiring between the POS and the distribution box during a customer transaction. It can result in a loss of dispenser data.

5. At this time, dispenser communications should resume.

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The following is a typical interconnection diagram for a PAM or Transac System 1000 Current LoopInterface (a PA0261 Distribution Box is shown, the PA0241 is slightly different):

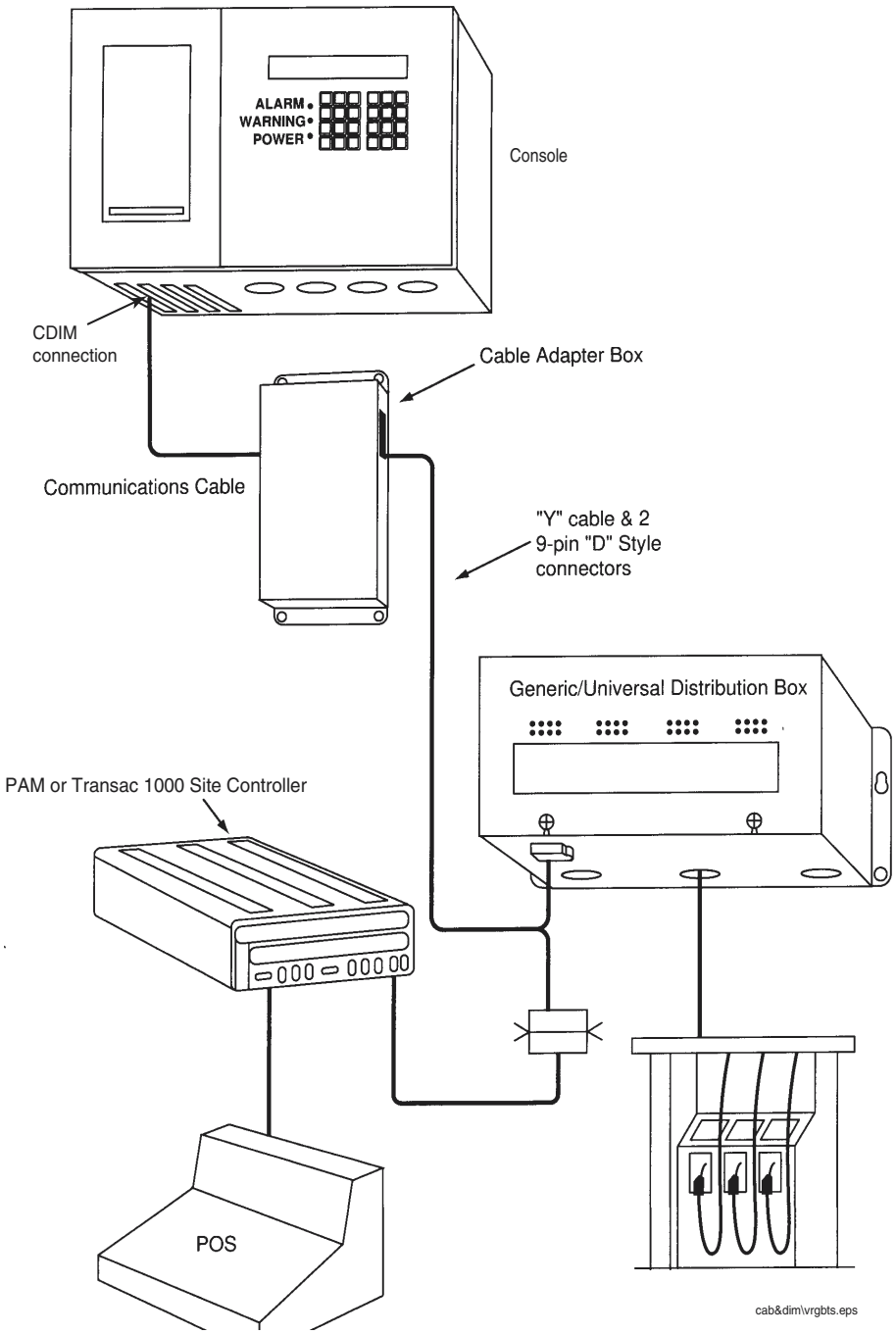


Figure 6. Universal Distribution Box Interface

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Other Point-Of-Sale (POS) Applications

System Requirements

Veeder-Root System Requirements

The following equipment is required to operate the Gilbarco POS System:

- ❑ TLS-350R console with Business Inventory Reconciliation (BIR)
- ❑ One Gilbarco Current Loop Dispenser Interface Module (DIM) for up to 3 current loops:

  Part No. 330404-020 when ordered with the console
  Part No. 847490-420 when ordered as an upgrade or replacement

- ❑ One Gilbarco Current Loop DIM Installation Kit, Part No. 848722-XXX for each current loop other than RS-422/RS-485
  OR
- ❑ One Gilbarco RS-422/RS-485 DIM Installation Kit, Part No. 848741-XXX for each RS-422/RS-485 current loop

The following table provides number of kits based on fueling positions:

Table 5: Number of Kits needed for Other POS Applications

Fueling Positions	Number of Kits	Current Loop DIM Installation Kits	RS-422/RS-485 DIM Installation Kits
Up to 16	1 kit	848722-XXX	848741-XXX
17-32	2 kits	848722-XXX	848741-XXX
33-48	3 kits	848722-XXX	848741-XXX

The following table provides kit numbers based on length of cable:

Table 6: Kit Numbers for Other POS Applications

Cable Lengths	Current Loop DIM Installation Kits	RS-422/RS-485 DIM Installation Kits
5-foot cable	848722-005	848741-005
10-foot cable	848722-010	848741-010
25-foot cable	848722-025	848741-025
50-foot cable	848722-050	848741-050
100-foot cable	848722-100	848741-100
200-foot cable	848722-200	848741-200

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Besides cable, each kit contains one Cable Adapter Box.

Important ☞ *The installation kit includes a Cable Adapter Box (CAB) and cable to the TLS-350R. The CAB should be installed as close as possible to the pump distribution box. Select the shortest suitable cable, measuring from the CAB to the TLS-350R.*

Gilbarco POS and Dispensing System Requirements

For other POS Applications with Gilbarco Dispensers, the following equipment is supported:

- ❑ Gilbarco Dispenser Distribution Box PA02420000000
- ❑ Gilbarco Dispenser Distribution Box PA02610000010
- ❑ Gilbarco Dispenser Distribution Box PA02610000020
- ❑ Gilbarco Dispenser Distribution Box PA0281XXXXXX0

System Limitations

- ❑ Up to 36 Gilbarco single product or blending fueling positions are supported.
- ❑ The dispenser must separately meter each product prior to blending. The TLS-350R cannot provide reconciliation on dispensers that blend fuel prior to the metering process.
- ❑ Only Gilbarco dispensers are supported.
- ❑ The Gilbarco Current Loop Dispenser Interface Module does not support Gilbarco G-Site applications.

Important ☞ *These Cable Adapter Box (CAB) installation kits are designed to be installed on either a Gilbarco Two-Wire Distribution Box input using nine-pin "D shell" style connections or a Gilbarco RS-422/RS-485 input to the Distribution Box, also using nine-pin "D shell" style connections.*

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, Point of Sale, or computer controlling the hydraulic dispenser status. Both of these jumpers should be in the horizontal position. (If vertical, the pump input is 422 and Kit No. 848741-XXX should be used.)

Wiring to the Universal Distribution Box

Important ☞ *To insure proper operation of the BIR feature, the switch on the Cable Adapter Box (CAB) must be in the "RUN" position.*

1. Locate Distribution Box as seen in Figure 6 on page 15.

Important ☞ *The station's dispenser communications will be down during the next step. Customer should be advised that no fueling can take place.*

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2. When station fueling is idle, break communication between the Distribution Box and the Pump Controller by removing nine-pin connector from the bottom left hand side of the Distribution Box
3. Install the Veeder-Root Cable Adapter Box (CAB) nine-pin female connector in place of the original connector.
4. To complete the in-line connection, take original female connector from Pump Controller and connect it to our male nine-pin connector from the CAB.

Important ☞ *Be sure to secure the cable connections with the connector mounting screws.*

Do not disconnect the dispenser communication wiring between the POS and the Distribution Box during a customer transaction. It can result in a loss of dispenser data.

5. At this time, dispenser communications should resume.

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The following is a typical interconnection diagram for an AutoGas 510 CRIND Controller with Current Loop Interface :

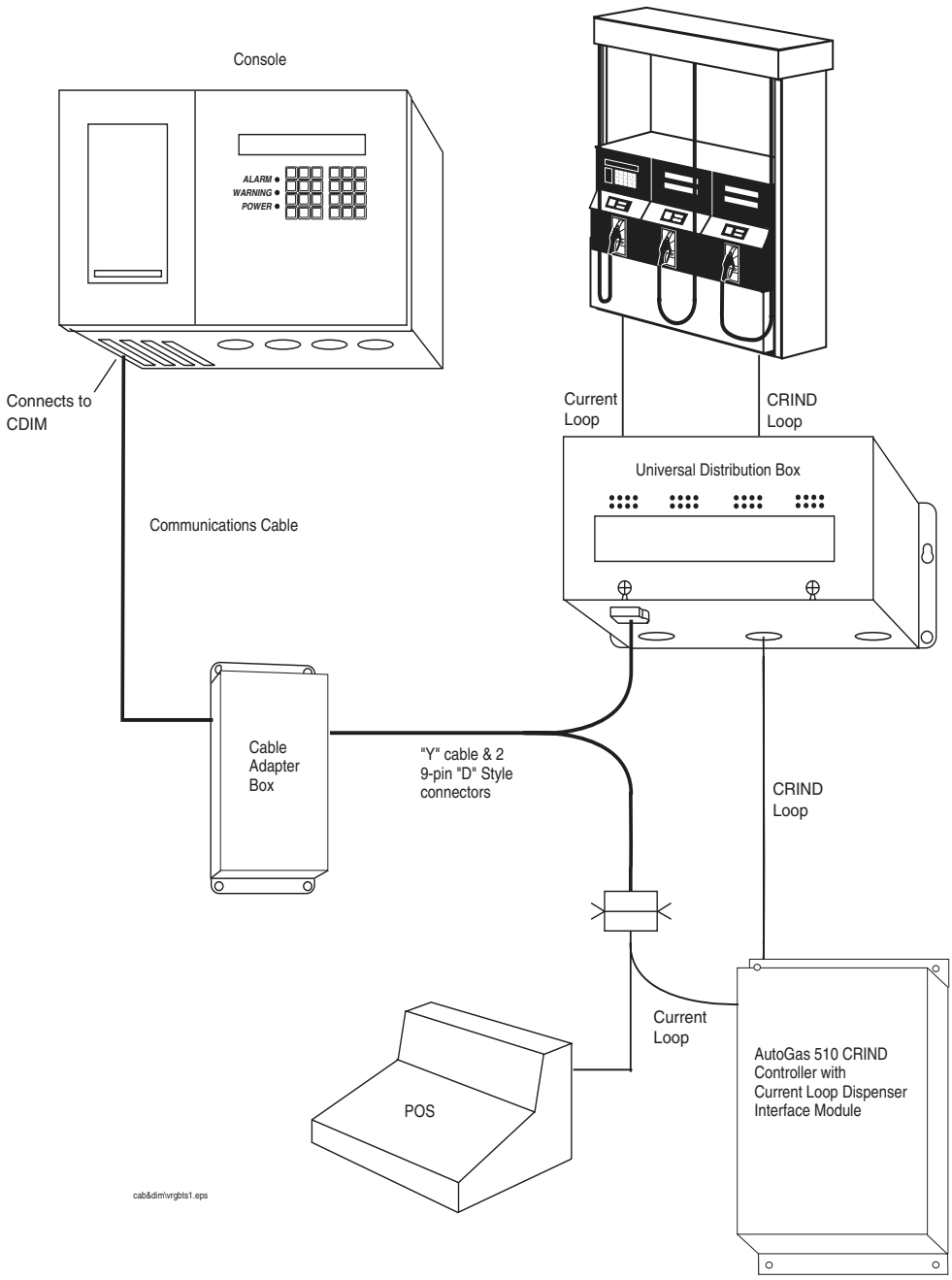


Figure 7. AutoGas 510 CRIND Controller with Current Loop Interface

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The following is a typical interconnection diagram for an AutoGas 510 CRIND Controller with Serial Interface:

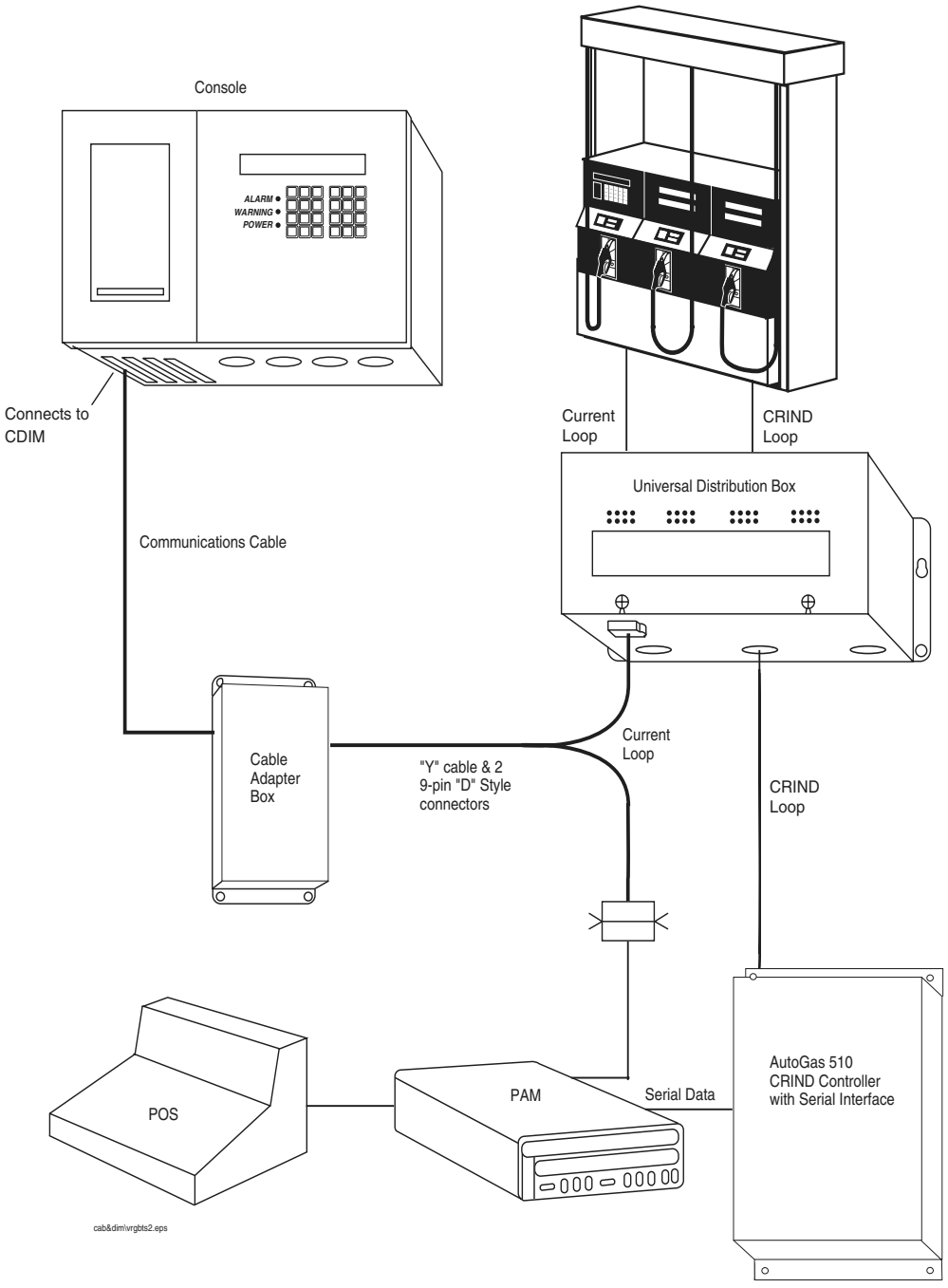


Figure 8. AutoGas 510 CRIND Controller with Serial Interface

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The following is a typical interconnection diagram for an AutoGas 510 CRIND Controller:

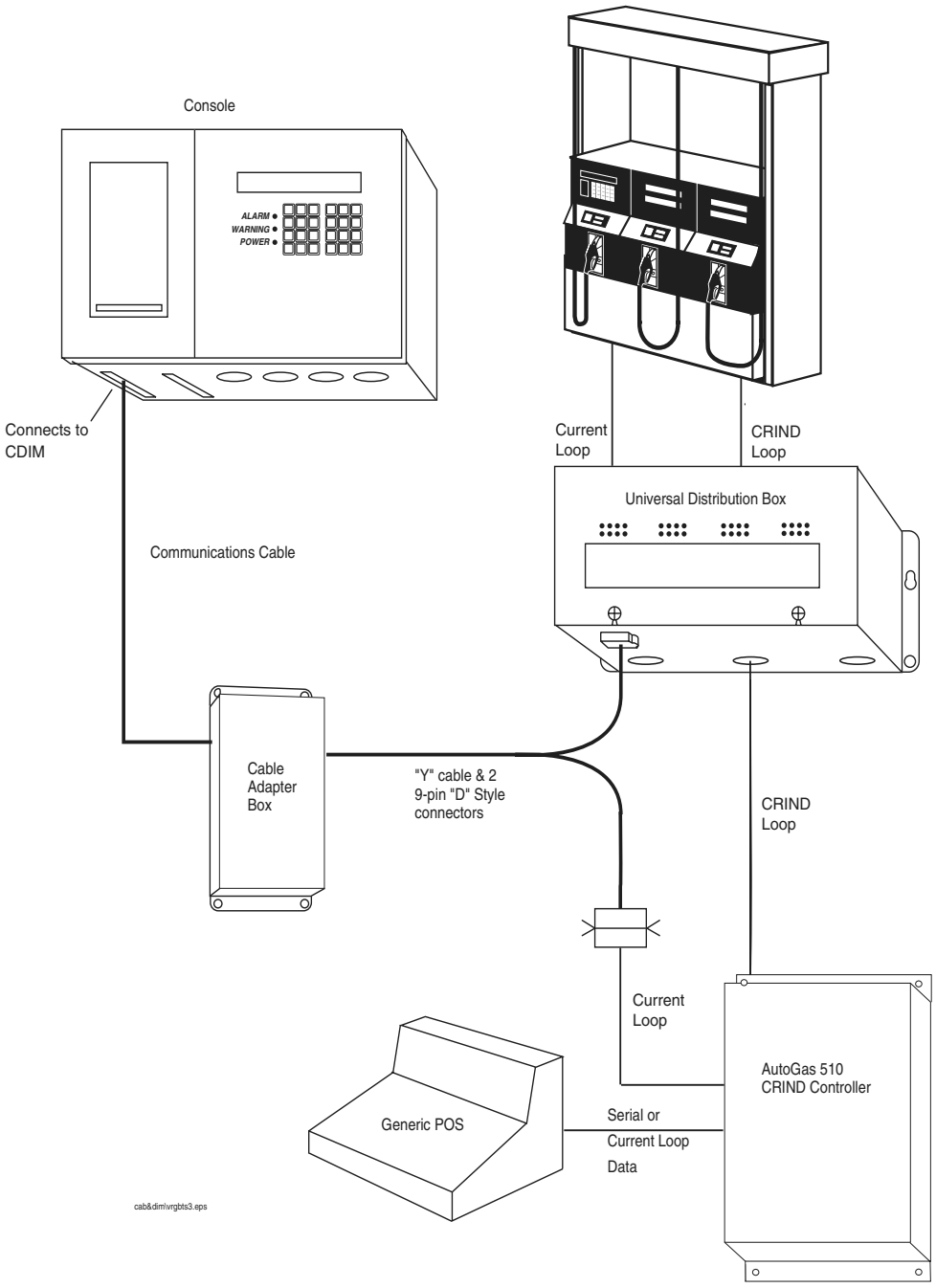


Figure 9. AutoGas 510 CRIND Controller

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Wiring to the RS-422/RS-485 Distribution Box

Important ☞ *When wiring from the RS-422/RS-485 Distribution Box to the Cable Adapter Box (CAB), keep wires physically separated by spacing them away from any other wiring or conduits. (Any unused wire should be coiled up.)*

To insure proper operation of the BIR feature, the switch on the Cable Adapter Box (CAB) must be in the "RUN" position.

1. Locate Distribution Box as seen in Figure 10 on page 23.

Important ☞ *The station's dispenser communications will be down during the next step. Customer should be advised that no fueling can take place.*

2. When station fueling is idle, break communication between the Distribution Box and the Pump Controller by removing the nine-pin connector from the bottom left hand side of the Distribution Box.
3. Connect the nine-pin connector (from the bottom left hand side of the Distribution Box) to the POS side of the CAB.
4. Connect the nine-pin female side of the serial cable (included with the kit) to the controller side of the CAB.
5. To complete the in-line connection, connect the nine-pin male side of the serial cable to the Distribution Box.

Important ☞ *Be sure to secure the cable connections with the connector mounting screws.*

Do not disconnect the dispenser communication wiring between the POS and the Distribution Box during a customer transaction. It can result in a loss of dispenser data.

6. At this time, dispenser communications should resume.

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The following is a typical interconnection diagram for an AutoGas 507 CRIND Controller:

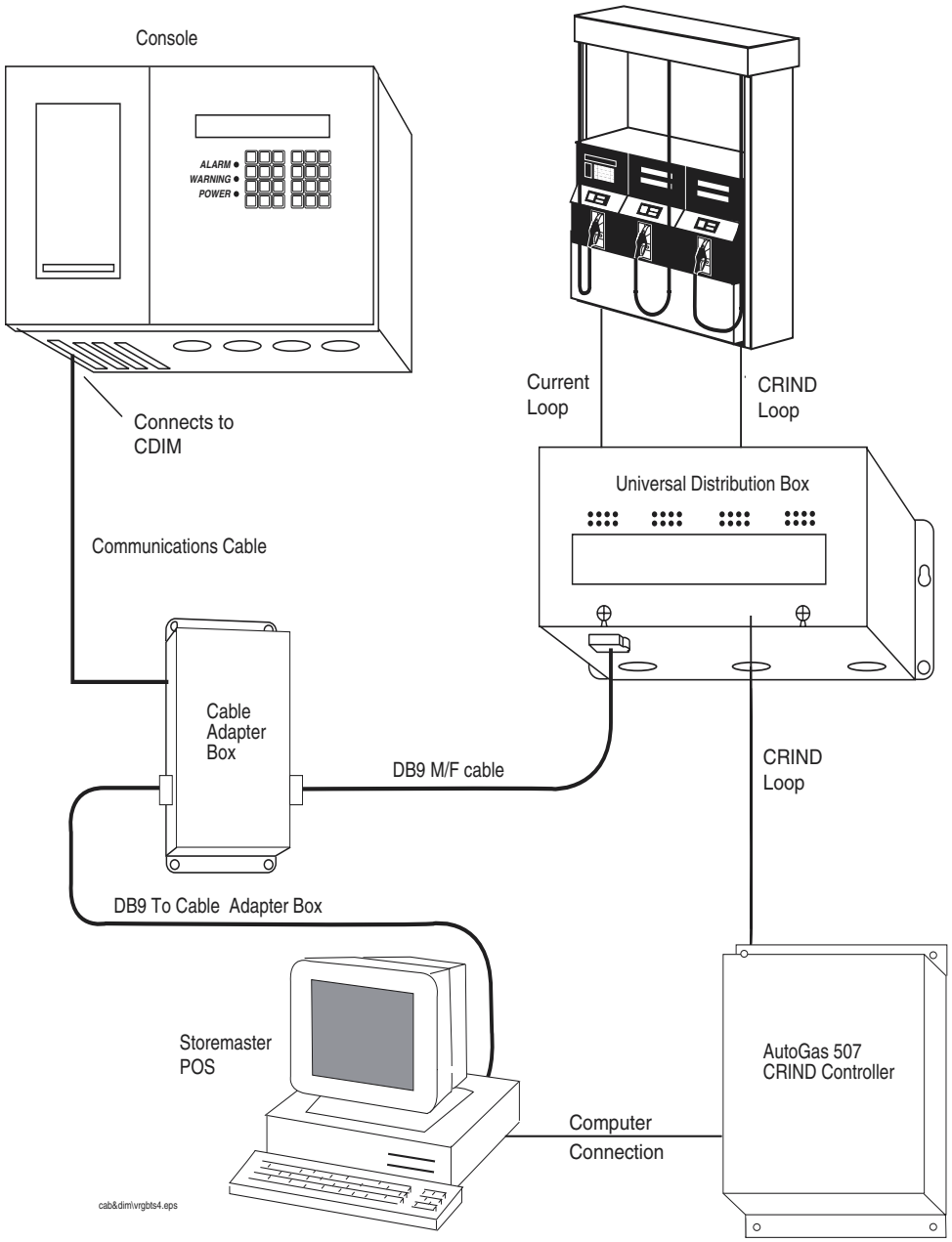


Figure 10. AutoGas 507 CRIND Controller

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CCISTech POS Kits

CCISTech POS Kit Installation Notes

The CCISTech POS system is an unusual combination of components: Wayne dispensers; a Gilbarco Distribution box; a CCISTech POS/Controller; a CCISTech Dispenser Tank Monitor Interface box; and a Veeder-Root Wayne CAB connected to a Wayne DIM in a TLS-350R Console.

The components discussed in this section are the CCISTech supplied Dispenser Tank Monitor Interface Kit (CCISTech P/N 080-Veeder Root Kit) and the Veeder-Root Dispenser Interface Kit (P/N 848702-XXX). The remaining components, including the TLS-350R with Wayne DIM, are assumed to be in place at the site.

Required Kits and Contents

Table 7 lists the components of the Veeder-Root Dispenser Interface Kit.

Table 7. Veeder Root Dispenser Interface Kit (P/N 848702-XXX)

Item	Qty.	Description	P/N
1	1	6-foot, 2-conductor DIM cable assembly	331105-001
2	1	CDIM Adaptor Cable	330592-XXX
3	1	Cable Adaptor Box	330591-002
4	1	CDIM Installation Guide	577013-435

Mounting the Cable Adapter Box

1. The Cable Adapter Box (CAB) from the Veeder-Root kit should be placed as close as possible (within 6 feet) to the CCISTech Interface box. The CAB can be mounted on any flat surface located indoors in a non-hazardous location. Mount the CAB using either the 3M “hook and loop” pads provided in the kit, or utilize the mounting ears on the CAB. Place the adhesive side on the surface and press firmly into position. The adhesive must be allowed to set for a minimum of one hour before attaching or removing the CAB. Choose a surface that is clean, dry, and oil-free. For the 3M “hook and loop” pads, remove the backing paper from the back of the pad.
2. To activate the CAB, make sure the slide switch is in the “RUN” position. When troubleshooting pump controller problems, move the CAB switch to the “BYPASS” position. The CAB is now removed from the pump controller circuit.

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The wiring connections to the CAB are discussed below. When wiring from the Cable Adapter Box (CAB) to the TLS-350R, keep wires physically separated from any other wiring or conduits.

Table 8 lists the components of the CCISTech supplied Dispenser Tank Monitor Interface kit.

Table 8. CCISTech Dispenser Tank Monitor Interface Kit (P/N 080-Veeder Root Kit)

Item	Qty.	Description	P/N
1	1	CCISTech Interface Box	DTIB2001-01
2	1	RJ-45 cable w/terminal block	N/A
3	1	RJ-45 M/M 8-wire straight through cable	N/A

Wiring Diagram

The instructions furnished by CCISTech in their 080-Veeder Root Kit should take precedence in these installations (reference the CCISLINK Wiring publication - Veeder Root Wiring Diagrams). Figure 11 is an example wiring diagram for Veeder-Root components in this application. Note that if the polarity is not marked on the CCISTech terminal block to which the CAB's DIM assembly cable attaches (item 1 in Figure 11), it may be necessary to swap the two wires if the system does not operate properly.

Do not disconnect the dispenser communication wiring during a customer transaction because doing so may result in a loss of dispenser data.

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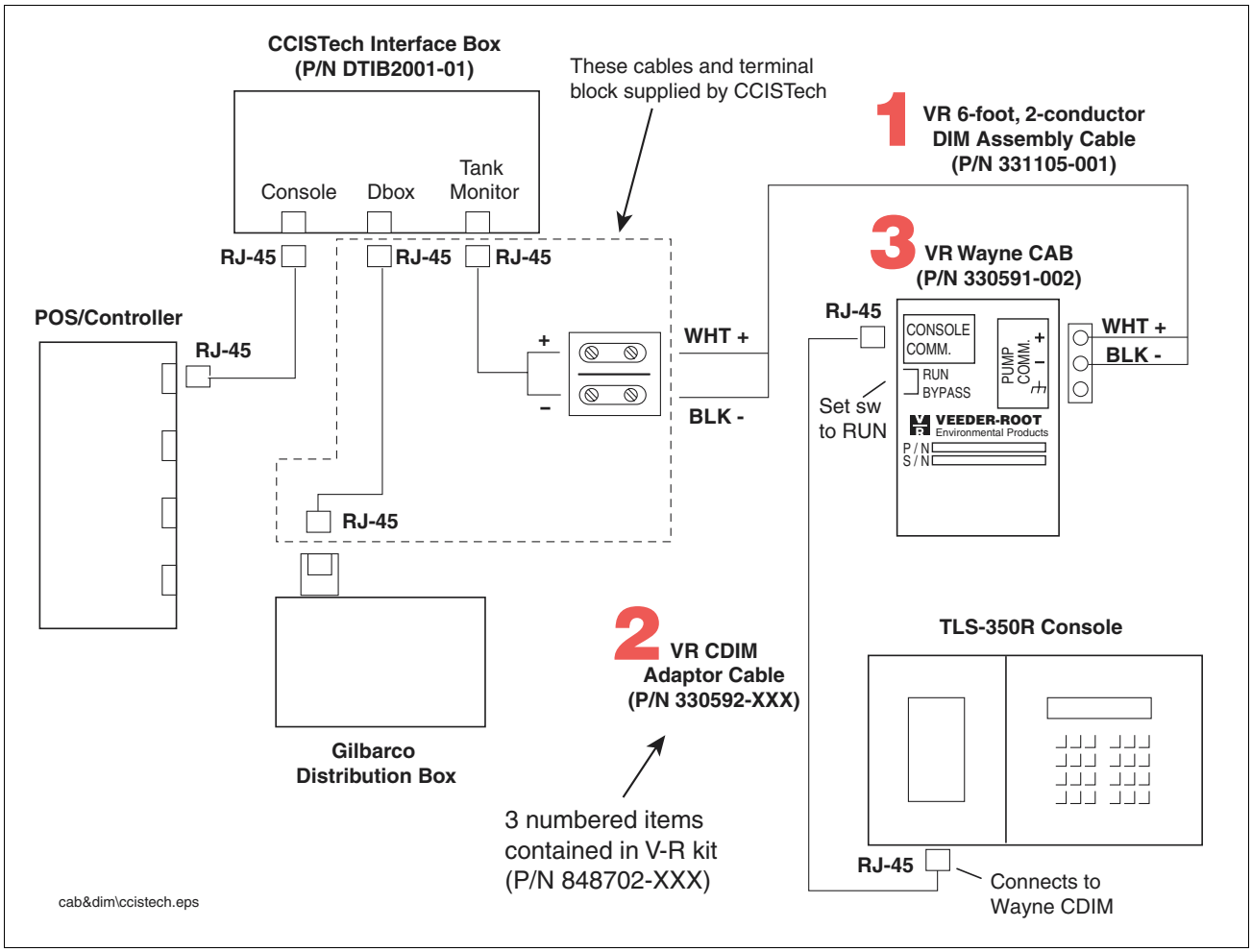


Figure 11. CCISTech POS Controller

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VEEDER-ROOT

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