

Wayne / Bennett CDIMs

Installation Guide

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FCC INFORMATION

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Introduction

General

This manual contains instructions to connect a Veeder-Root TLS-350R Console to Wayne or Bennett current loop dispenser controllers. Components you will install include a Current Loop Dispenser Interface Module (CDIM), Cable Adapter Boxes (CABs), and interconnection cables.

Wayne / Bennett CDIMs and Installation Kits

Wayne and Bennett CDIMs and installation kits discussed in this manual are shown in Table 1.

Table 1.- Wayne / Bennett CDIM and Installation Kit Guide

Dispenser	Dispenser Controller/ POS Type	DIM P/N w/console	DIM P/N as Upgrade	CAB-to-Console Cable Length (ft)	DIM Install Kit P/N	Notes
Wayne	Wayne Site Controller	330404-010	847490-410 (CDIM)	5	848703-005 ¹	A Wayne site controller and Wayne dispensers are required. Any POS may be connected to the Wayne site controller. All Wayne electronic blenders are supported including Nucleus.
				10	848703-010 ¹	
				25	848703-025 ¹	
				50	848703-050 ¹	
				100	848703-100 ¹	
				200	848703-200 ¹	
Bennett	92D	330404-040	847490-440 (CDIM)	5	848705-005 ²	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.
				10	848705-010 ²	
				25	848705-025 ²	
				50	848705-050 ²	
				100	848705-100 ²	
				200	848705-200 ²	

¹Kits contain 2 CABs, two 6-ft CAB-to-dispenser controller cables (P/N 331105-001), and two CAB-to-console cables (P/N 330592-XXX).

²Kits contain 2 CABs, two 6-ft CAB-to-dispenser controller cables (P/N 331105-001), two CAB-to-console cables (P/N 330592-XXX), and 2 wirenuts.

Wayne CDIM Operating Requirements

The following equipment is required to interface to a Wayne POS System:

1. TLS-350R with BIR Console (Memory Expansion Module, Part 330532-001 is required in the console for siphon-manifolded tanks, or for more than 8 tanks).
2. One Wayne CDIM for up to 24 fueling positions (see Table 1 on page 1).
3. One Wayne DIM Installation Kit (see Table 1 on page 1).

TLS-350R SOFTWARE REQUIREMENTS

1. System software: 349511-109-A, or 309-A (or higher)
2. Peripheral Controller Software: 330269-00B (or higher)
3. DIM Software: 349633-02A (or higher). Extended RAM option required only for Version 310-A (BIR for Manifolded Tanks) or consoles having more than eight probes.
4. Parameter String: when operating in the metric mode, the last “G” should be replaced with an “M”. Refer to the Veeder-Root TLS-350R System Setup manual for further information.

SYSTEM LIMITATIONS

1. If blending, 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.

2. Only Wayne dispensers are supported.

Note: in-dispenser credit card readers are supported by the Wayne Current Loop Dispenser Interface Module.

WAYNE HARDWARE REQUIREMENTS

A Wayne Site Controller and Wayne dispensers are required. Table 2 lists model designations of supported Wayne equipment.

Table 2.- Supported Wayne Systems

Wayne System	Model Numbers	Terminals
186	880179-001	Site Controller
	DD/SY2400/08	Dispenser Data Box (CAB)
386	WP/SC	Site Controller
	WP/DD	Dispenser Data Box (CAB)

WAYNE POS TERMINALS

The following Wayne POS terminals are supported:

- Wayne 186 Based 2400
- Wayne 186 Based Plus 2
- Wayne 186 Based Plus 3
- Wayne 386

In addition, third-party vendors supply POS systems that interface to Wayne Site Controllers and dispensers. The Wayne CDIM supports the POS system that interfaces to the Site Controller using a Wayne Pump Interface Board (PIB). A partial list of these systems follows:

- Gas Boy
- Omron
- Panasonic
- S.A.S.I.
- Suntronics

- Verifone
- EDS C-Serve

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

Bennett CDIM Operating Requirements

The following equipment is required to interface to a Bennett POS System:

1. TLS-350R with BIR Console (Memory Expansion Module, Part 330532-001, is required in the console for siphon-manifolded tanks, or for more than 8 tanks).
2. One Bennett Current Loop Dispenser Interface Module (CDIM) for up to 6 fueling positions (see Table 1 on page 1)
 - Each module supports up to three CABs
 - Maximum of three CDIMs per console
3. One Bennett CDIM Installation Kit for every 2 current loops (see Table 1 on page 1).

TLS-350R SOFTWARE REQUIREMENTS

1. System software: 110-XX/310-XX, or higher.
2. Peripheral controller software: 330269-00B, or higher.
3. DIM software: 349780-001A, or higher.
4. Parameter String: when operating in the metric mode, the last “G” should be replaced with an “M”. Refer to the Veeder-Root TLS-350R System Setup manual for further information.

SYSTEM LIMITATIONS

Only Type 92D Dispensers are supported with Orpak Controllers and no blending.

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.

Related Manuals





For additional information about installation and setup of Veeder-Root components, you should reference the documents below:

- | | |
|------------|---|
| 576013-879 | TLS-350R Site Prep and Installation Guide |
| 577013-401 | TLS-350R POS Application Guide |





576013-623	TLS-350R System Setup Manual
577013-528	TLS-350R Serial Comm Module Installation Guide

Safety Symbols

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

 <p>EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.</p>	 <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>
 <p>TURN POWER OFF Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>	 <p>READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>

Safety Warnings

 WARNING	
  	<p>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.</p> <ol style="list-style-type: none"> 1. Read all instructions and symbol warnings. 2. Turn power off before installing this kit.

Wayne / Bennett CDIM Installation

1. Open the left-hand door of the TLS-350R console by unscrewing the left-top and left-bottom locking bolts.
2. To retain current programming, be sure that the ECPU board battery switch is set to "ON" (SW1 in the closed position - see Figure 1). To avoid electrical shock or damage to components when accessing the battery switch, avoid touching any circuit components with your hand or any conductive tool.

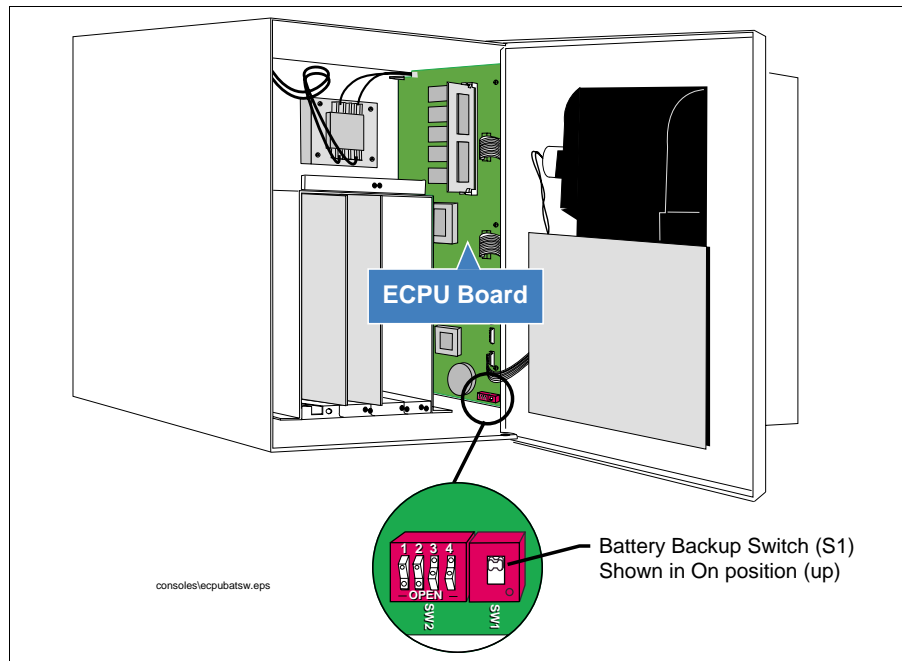


Figure 1. TLS-350R Console ECPU Board Battery Switch



3. Turn console power Off.



4. Avoid shorting high voltage across any component or module to the intrinsically safe section of the console. This could result in an explosion near the device.
5. Open the left-hand door of the console by unscrewing the left-top and left-bottom torx screws.
6. Remove the blank cover plate from an open slot in the communication compartment. Important Note: CDIMs can only be installed in slots 1, 2, or 3 of the console's Comm Bay card cage (Figure 2).

If your console has a snap connector which secures the cover plate in the card cage, pull it out and lift out the cover plate.

If your console has "knockout" cover plates, open the printer door and insert a flat blade screw driver in the slot provided in the front of the cover plate you are removing and twist it to break the front set of metal securing tabs (Figure 2). Once the front tabs are broken, carefully rock the loosened end of the plate until the rear set of securing tabs break. Remove and discard the cover plate.

7. Slide the new Wayne or Bennett CDIM into the open slot (Figure 2) until the 24-pin female connector on the rear edge of the board seats in the 24-pin male connector on the motherboard. Do not apply excessive force when installing the module. With your thumb, push in the black retaining fastener on the end plate until it snaps into the hole in the card cage.
8. When you are finished, make sure any unused slots in the comm cage have a blank end plate installed.
9. Check that the three CDIM RJ-45 jacks are accessible through the slot opening at the bottom of the console once the CDIM is installed.

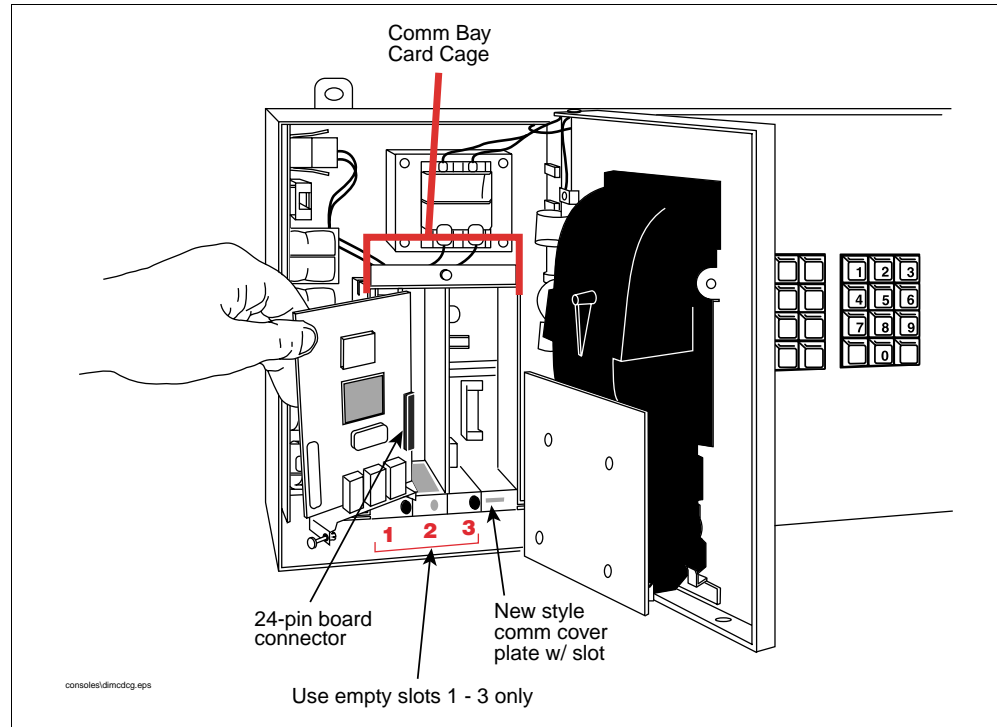


Figure 2. TLS-350R Console CDIM Installation

Installing the Wayne or Bennett CAB



WARNING! Wiring from the CAB to the console must be physically separated from any other wiring or conduits. Any unused wire should be coiled up.

The CAB's cable connections and physical dimensions are shown in Figure 3. .

1. Mount the CAB in a non-hazardous location using either the 3M "hook and loop" pads provided in the kit, or with suitable fasteners in the mounting tabs on the CAB. Choose a surface that is clean, dry, and oil-free and within 5 feet from the dispenser data box (because the connecting cable [P/N 331105-001] is 6 feet long).

To use the 3M "hook and loop" pads, remove the backing paper from the back of the pad. 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. Mark one CAB 'Left Current Loop' and mark the second CAB 'Right Current Loop'.

2. To activate the CAB, make sure the Run/Bypass slide switch on the left side of the CAB is in the "RUN" position. When troubleshooting pump controller problems, move the Run/Bypass switch to the "BYPASS" position to isolate the CAB from the pump controller circuit.

Connecting CAB to Wayne or Bennett CDIM in Console

1. Get a cable from the kit with RJ-45 connectors at each end (P/N 330592-XXX).

Attach one end of this cable to the CONSOLE COMM connector on the (left side of) the CAB. Attach the other end to one of the empty RJ-45 connectors in the base of the Wayne or Bennett CDIM you installed in the console.

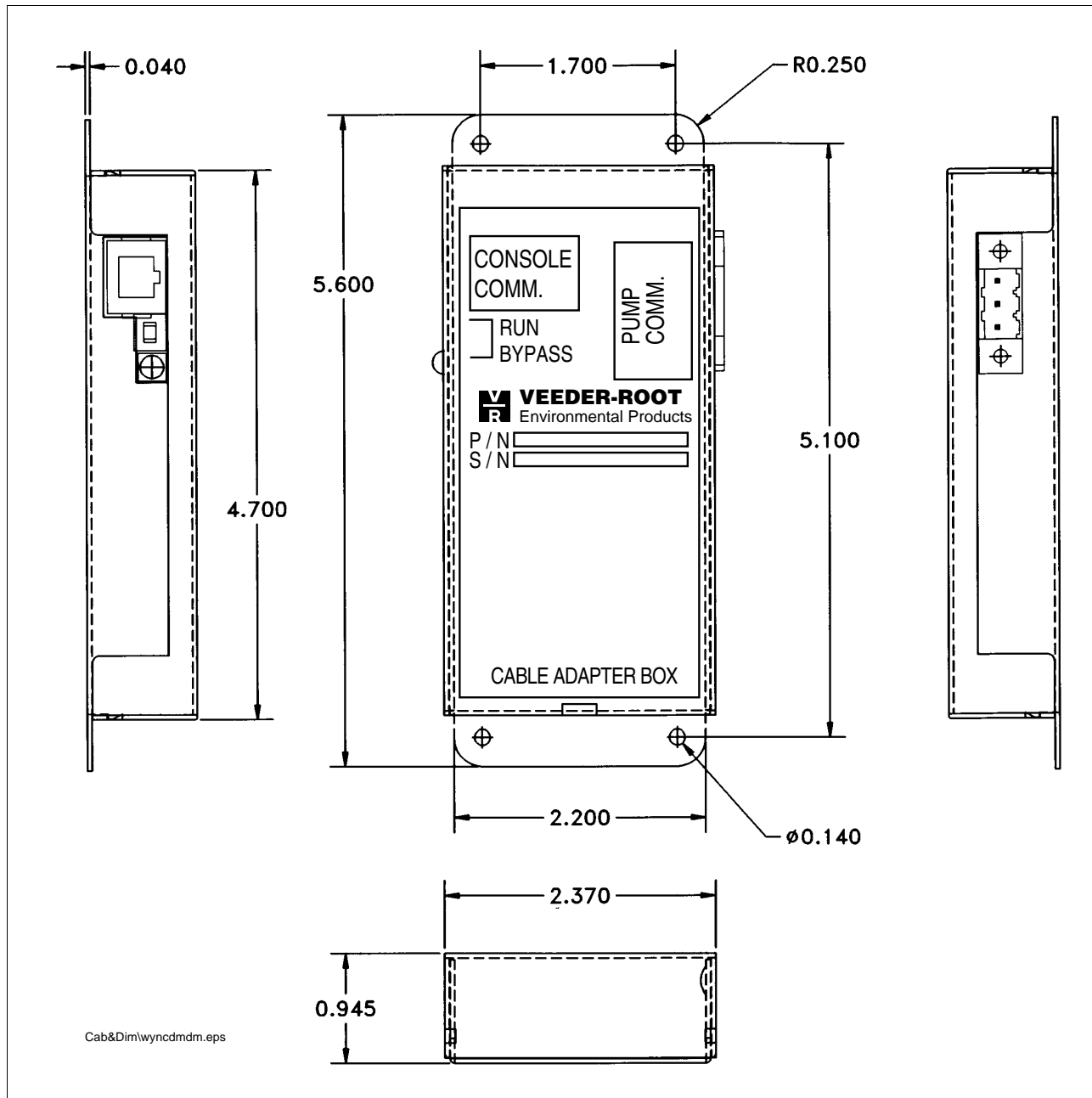


Figure 3. Cable Adapter Box Dimensions

Wayne CDIM Cable Connections

Connecting the Wayne CAB to the Dispenser D-Box

NATIONAL ELECTRICAL CODE COMPLIANCE

The following information is for general reference and is not intended to replace recommended National Electrical Code procedures. It is important for the installer to understand that electrical equipment and wiring located in Class I, Division 1 and 2 installations shall comply with the latest appropriate Articles found in the National Electric Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A).

An example Wayne dispenser connection diagram is shown in Figure 4.

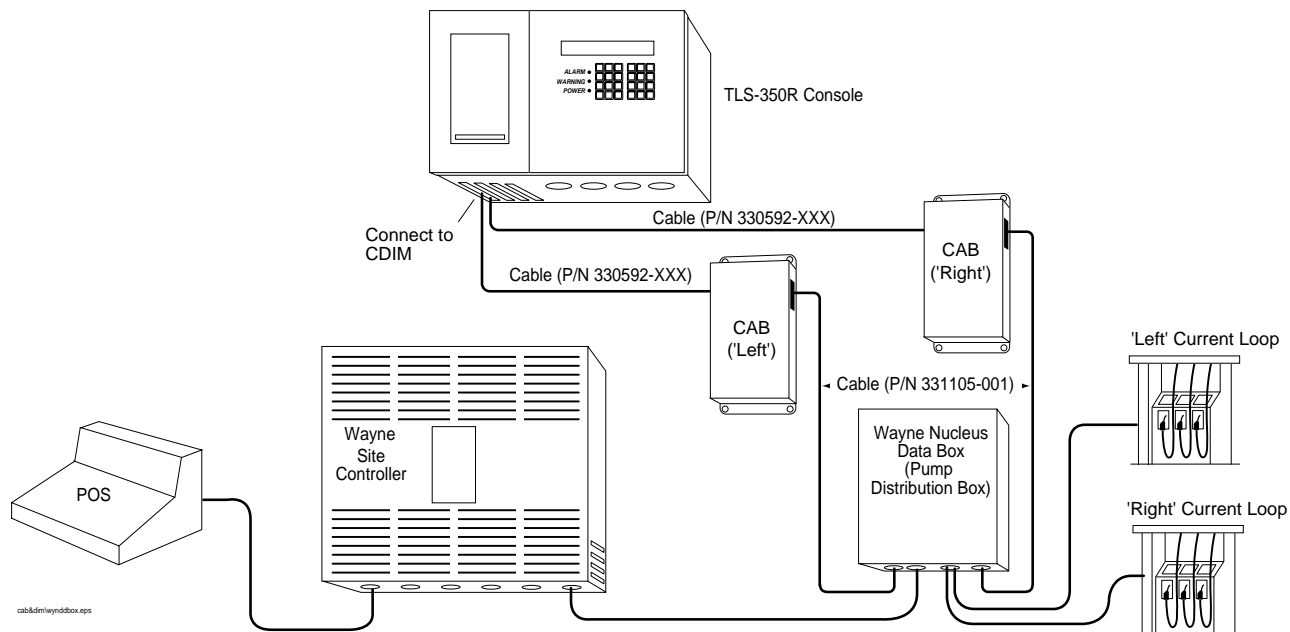


Figure 4. Example Wayne Dispenser Data Box Current Loop

CONNECTING TO LEFT/RIGHT DISPENSER CURRENT LOOPS

Open the Wayne Data Box and remove the slotted cover plate to access the dispenser connection terminal blocks. Identify the two separate current loops inside the Wayne Data Box (see Figure 5). In a typical installation, some dispensers are wired to the left side current loop (terminal blocks TB1 and TB3) and some dispensers are wired to the right side current loop (terminal blocks TB2 and TB4). Usually you will find an unused pair of terminals on each current loop for the two CABs.

Connect the 'Left Current Loop' CAB to the Wayne Data Box

1. Get a 6-foot cable from the install kit with the 3-connector plug on one end and stripped wire leads on the other end (P/N 331105-001). Plug the 3-connector plug end of the cable into the Pump Comm jack on the side of the CAB you marked 'Left Current Loop'. If necessary, trim off the shield/drain wire at the stripped wire end of the cable because it is not used.

2. Select an unused pair of terminals on the left current loop (on TB1 or TB3). Connect the stripped white wire from the CAB to the positive side (+) terminal of the pair. Connect the stripped black wire from the CAB to the negative (-) terminal of the pair. Each pair of +/- terminals has a Pump Bypass/Auto toggle switch mounted to the right of it. Throw the toggle switch adjacent to the CAB connected terminals to the right position ("AUTO").

Connect the 'Right Current Loop' CAB to the Wayne Data Box

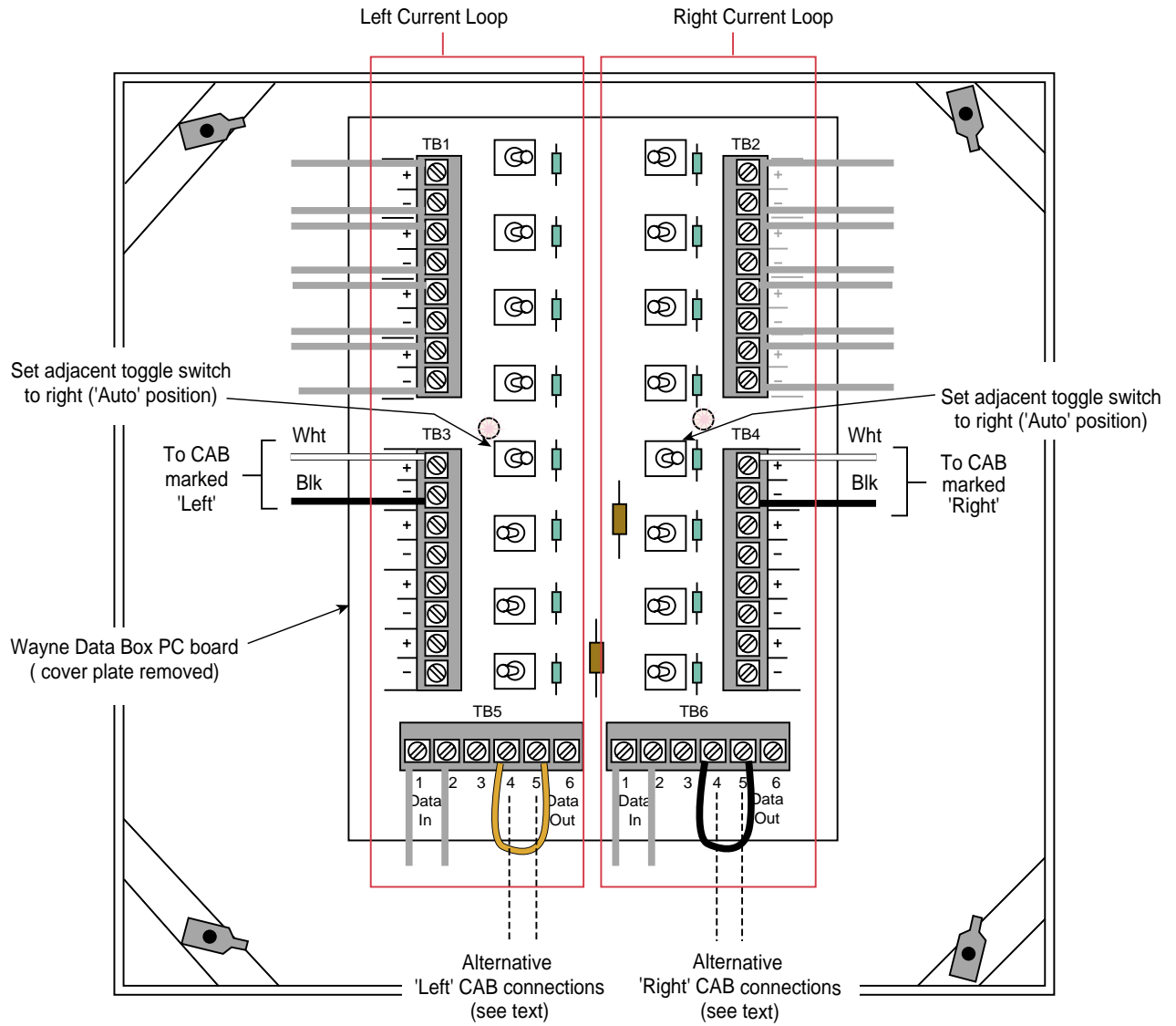
1. Get the second 6-foot cable from the install kit with the 3-connector plug on one end and stripped wire leads on the other end (P/N 331105-001). Plug the 3-connector plug end of the cable into the Pump Comm jack on the side of the CAB you marked 'Right Current Loop'. If necessary, trim off the shield/drain wire at the stripped wire end of the cable because it is not used.
2. Select an unused pair of terminals on the right current loop (on TB2 or TB4). Connect the stripped white wire from the CAB to the positive side (+) terminal of the pair. Connect the stripped black wire from the CAB to the negative (-) terminal of the pair. Each pair of +/- terminals has a Pump Bypass/Auto toggle switch mounted to the left of it. Throw the toggle switch adjacent to the CAB connected terminals to the right position ("AUTO").

Alternative CAB Connection

If ALL 8 terminal pairs in the Wayne Data Box are in use on one loop, you can connect the CAB to the terminal block at the bottom of the PC board (TB5 [for left current loop] or TB6 [for right current loop]) (see Figure 4).

When there are no pump transactions in progress, remove the jumper wire between terminals 4 and 5 of the appropriate terminal block (TB5 or TB6). Connect the white wire from the CAB to terminal 5, and connect the black wire from the CAB to terminal 4. You do not set a Pump Bypass/Auto toggle switch when using TB5 or TB6. Normal station operation may now resume.

Note: Do not disconnect the dispenser communication wiring during a customer transaction because doing so may result in a loss of dispenser data. It may also cause the dispenser controller system to hang up.



cab&dim\wvnd\dxwr.eps

Figure 5. Example CAB connections in Wayne Nucleus Data Box

Bennett CDIM Cable Connections

The Bennett Pump Interface supports single product dispensing with Horizon 9400 Series dispenser models, when an active two-wire loop is available for communications listening to the dispenser communications volume information. The information collected by the interface allows TLS-350R Business Inventory Reconciliation to compare tank totals to fuel transaction for end of day, end of shift, or end of month, running variances. This particular Interface solution for Bennett dispensing equipment requires one CAB per dispenser communications loop. Typically one or two loops are required for a single dispenser having two fueling positions. For this reason the Interface kit includes two CAB(s) 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 measured from the dispenser communication loop termination to the TLS-350R console.

National Electrical Code Compliance

The following information is for general reference and is not intended to replace recommended National Electrical Code procedures. It is important for the installer to understand that electrical equipment and wiring located in Class I, Division 1 and 2 installations shall comply with the latest appropriate Articles found in the National Electric Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A).

Connecting the Bennett CAB to the Dispenser Current Loop

1. Locate dispenser two-wire loop termination points, typically a screw type terminal strip located with-in a box mounted close to the fueling equipment on the wall. Typical boxes which include loop termination:
 - Bennett Pump Interface Box - Fuelomat (see Figure 6).
 - Bennett Pump Terminal Strip Box 1-16, 17-36 (see Figure 7).
 - Bennett Pump Interconnect Box Model 405E (see Figure 8).
2. Looking at the terminal strip where all dispenser field wiring terminate for 2-wire loop communications, determine the number of loops that are in operation. Two conductors labeled (+) positive and (-) negative are considered a single loop starting from the number one position of the terminal strip. Each loop found will require a single Veeder-Root CAB. A single kit includes two CAB which supports two loops. You may find that a loop can support one or two dispensers, this will depend mostly on the installation practices of the equipment in your area.
3. Get the 2-wire shielded cable (P/N 331105-001) from the kit which has a 3-conductor plug on one end and stripped wire on the other. If necessary, trim off the shield/drain wire at the stripped wire end of the cable because it is not used.
 - a. Attach the 3-conductor plug end of the cable to the PUMP COMM connector (on right side) of the CAB (ref. Figure 3 on page 7).
 - b. Route other end of the cable with the stripped ends to the dispenser loop termination point within the Bennett dispenser distribution box.
 - c. Check that the CAB's RUN/BYPASS switch is in the RUN position (ref. Figure 3 on page 7). If necessary set switch to RUN. (Note: when switch is in "BYPASS" the status LED will be ON, when switch is in "RUN" the LED will flash when pump communications are present).
4. Complete all fueling transactions in process. Important: Do not disconnect the dispenser communication wiring during a customer transaction because doing so may result in a loss of dispenser data. It may also cause the dispenser controller system to hang up.

Do not start any new transactions until the following connections are made. Select loop consisting of positive (+) orange and a negative (-) yellow wire. Remove the positive (+) orange wire and use a wire nut (576008-461) to connect it to the positive (+) white wire from the CAB. Complete the loop by attaching the negative (-) black wire from the CAB to the positive (+) position on the terminal strip. Dispenser communications should resume.
5. Repeat this process for each loop and CAB.

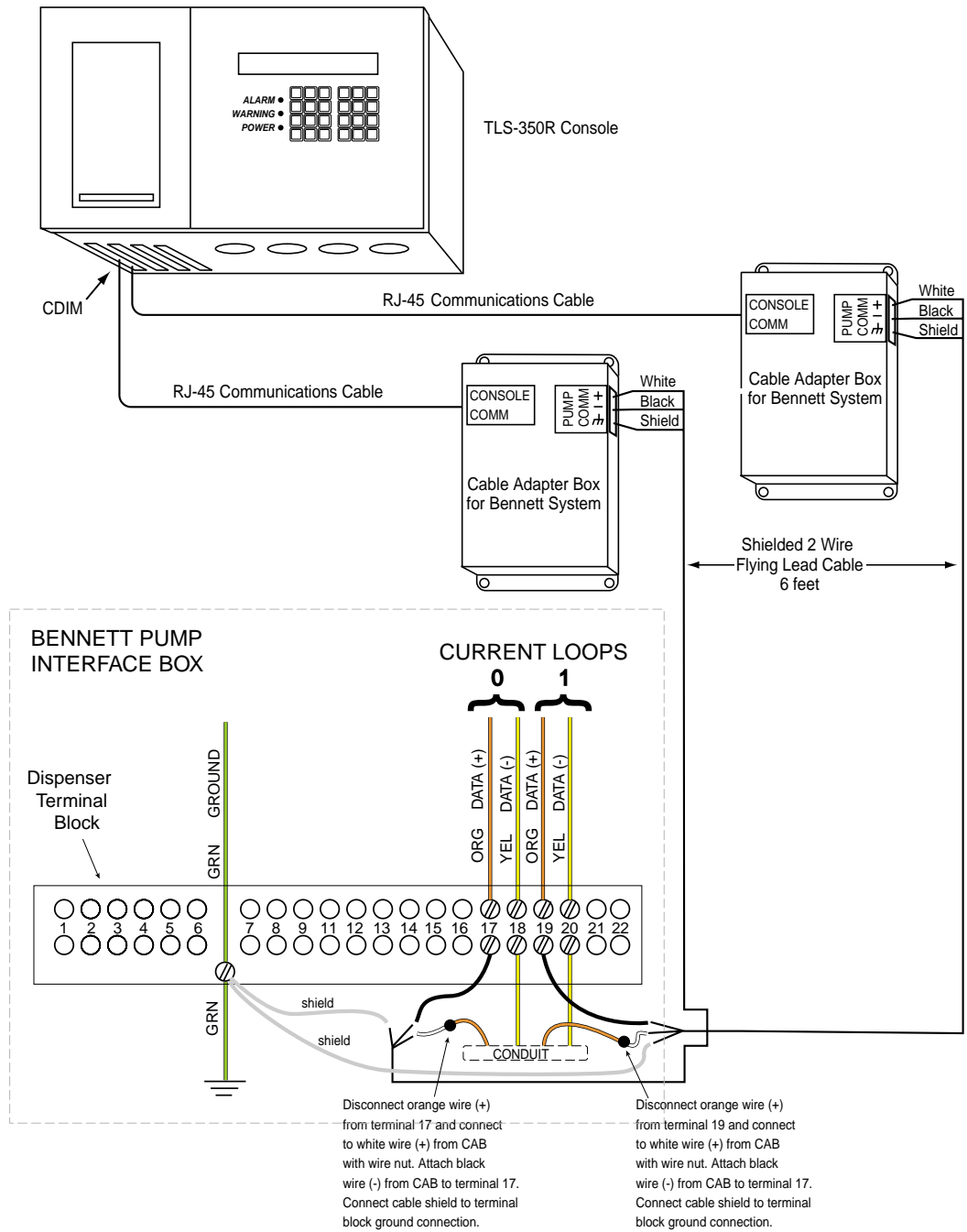


Figure 6. Example Bennett Pump Fuelomat Installation Diagram

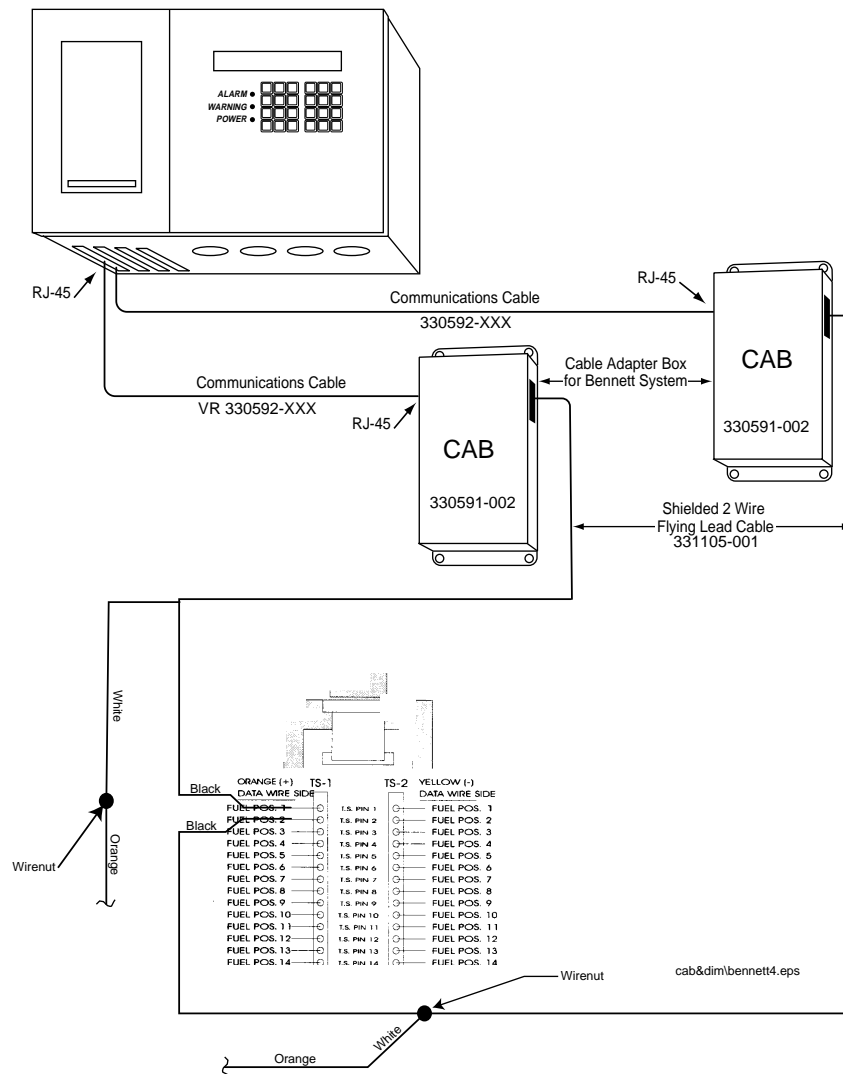


Figure 7. Example Bennett Pump Terminal Strip Installation Diagram

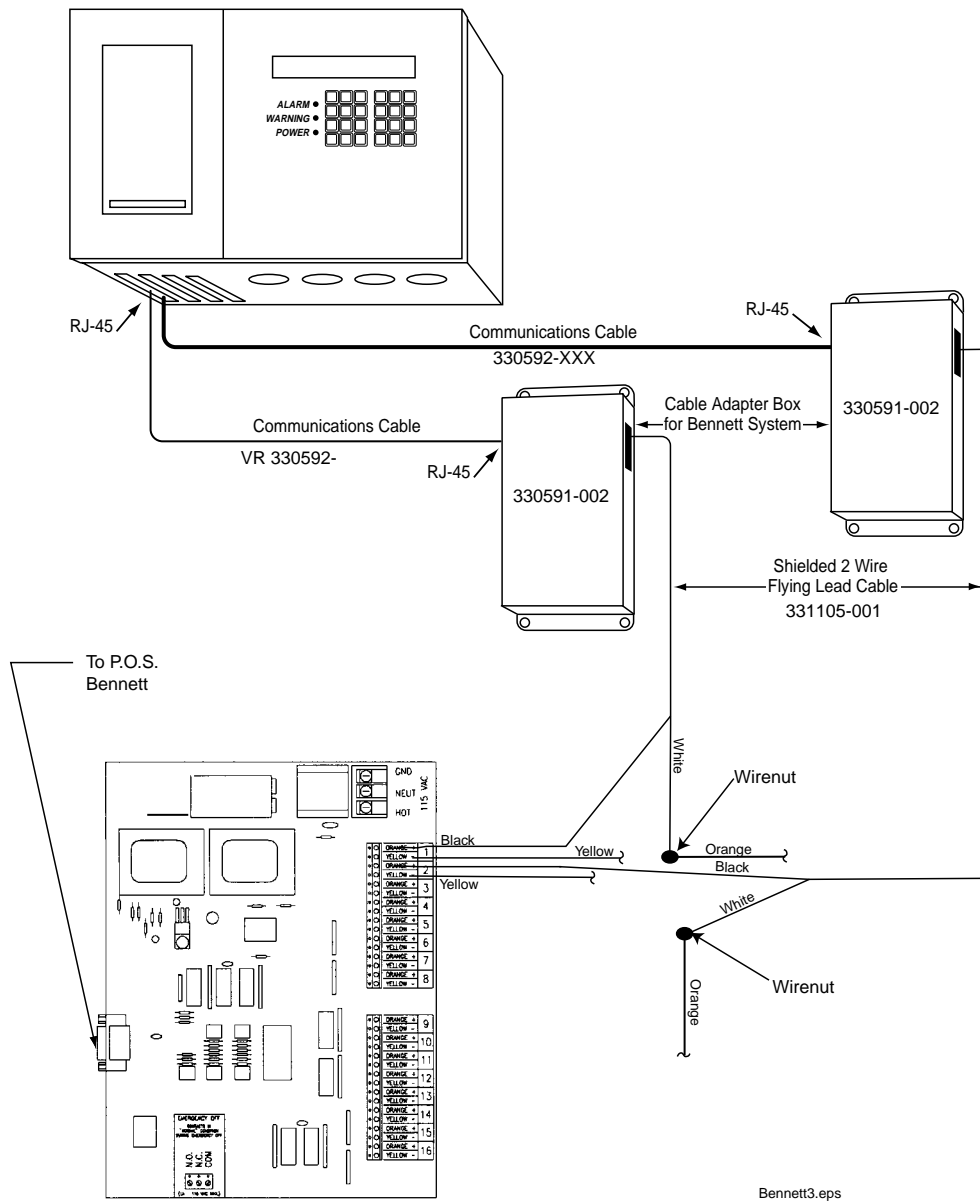


Figure 8. Example Bennett Pump Interconnect Box Model #405E

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