Franklin Electric
FUELING SYSTEMS

STP-DHI
DISPENSER HOOK ISOLATION

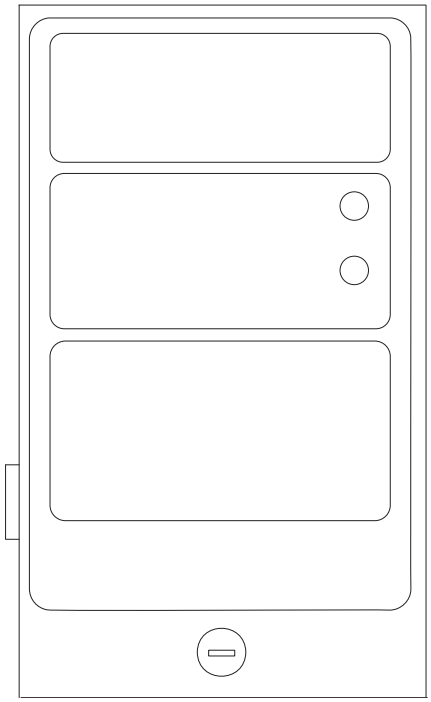
INSTALL / OWNER'S GUIDE

223844101 r6

DEVICE
STP-DHI 120 V Hook
STP-DHIB 240 V Hook

DISPENSER
HOOK ISOLATION

SCAN / CLICK



The information in this publication is provided for reference only. While every effort has been made to ensure the reliability and accuracy of the information contained in this document at the time of printing, we recommend that you refer to "franklinfueling.com" for the most current version of this document. All product specifications, as well as the information contained in this publication, are subject to change without notice. Franklin Electric does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of, or in any way connected with, installation, operation, use, or maintenance by using this document. Franklin Electric assumes no responsibility for any infringement of patents or other rights of third parties that may result from use of this document or the products. We make no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Copyright © 2026 Franklin Electric Co., Inc., Madison, WI 53718. All world rights reserved. No part of this publication may be stored in a retrieval system, transmitted, or reproduced in any way, including, but not limited to, photocopy, photograph, magnetic, or other record, without the prior written permission of Franklin Electric.

For technical support, please contact:
Franklin Electric Technical Support
Web: franklinfueling.com/support-center
Tel: +1 800 984 6266

For additional questions and concerns, please contact:
Franklin Electric
3760 Marsh Rd
Madison, WI 53718 USA
Web: franklinfueling.com
Tel: USA & Canada +1 800 225 9787 • Tel: UK +44 (0) 1473 243300
Tel: Mex 001 800 738 7610 • Tel: DE +49 6571 105 380 • Tel: CN +86 10 8565 4566

FE Petro is a registered trademark of Franklin Electric Co., Inc.
MagVFC, EcoVFC, and CableTight are trademarks of Franklin Electric Co., Inc.
Red Jacket is a registered trademark of Veeder-Root Company
Bussmann is a registered trademark of Eaton Corporation.
Littelfuse is a registered trademark of Littelfuse, Inc.
Veeder-Root is a trademark of Danaher Corporation.

223844101 r6

CONVENTIONS USED IN THIS DOCUMENT

This document includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides important supplementary information and instructions to avoid damaging hardware or a potential hazard.

⚠ **CAUTION**: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

⚠ **WARNING**: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

⚠ **DANGER**: This indicates an imminently hazardous situation that will result in death if not avoided.

OPERATING PRECAUTIONS

Franklin Electric equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this document. Before working with or installing the equipment covered in this document, or any related equipment, read this entire document, particularly the following precautions:

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

⚠ **CAUTION**: Use only original Franklin Electric parts. Substituting non-Franklin Electric parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

⚠ **WARNING**: Follow all codes that govern the installation and service of this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while installing or servicing this product. Refer to this document (and documentation for related equipment) for complete installation and safety information.

⚠ **WARNING**: Before entering a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors may cause dizziness/unconsciousness, and if ignited, can explode causing serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while work is in process. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before resuming work. Always have another person standing by for assistance.

⚠ **WARNING**: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

⚠ **WARNING**: Always secure the work area from moving vehicles. The equipment in this document is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck or other vehicle to block access to the work area.

⚠ **DANGER**: Inspect the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If any potential ignition sources are identified, implement proper safety measures.

Contents

1 Introduction 1
1.1 Regulatory Compliance 1
1.2 Documentation 1
1.2.1 Symbol Legend 1
2 Safety/Security 2
2.1 General Safety Information 2
2.2 Documentation Availability 2
2.3 Installation & Service Access 2
2.4 Hazard Assessment 3
2.5 Required Personal Protective Equipment (PPEs) 3
2.6 Qualifications and Responsibilities 3
2.6.1 Qualifications for Certification 3
2.6.2 Responsibilities 4
3 Pre-Installation Overview 5
3.1 Upon Receipt of Item(s) 5
3.1.1 Storage & Transit Information 5
3.2 Technical Overview 5
3.2.1 Specifications 6
3.2.1.1 Certifications & Approvals 6
3.2.1.2 Dimensions 6
3.2.1.3 Wire Size / Run Table 7
3.2.2 Required Tools 7
4 Installation 8
4.1 Install Instructions 8
5 Troubleshooting 10
6 Appendix 11
6.1 Related Documents 11
6.2 Service Parts 11
6.3 Wiring Diagrams 12
6.3.1 STP-DHI (120 VAC) General Wiring 12
6.3.2 STP-DHIB (240 VAC) General Wiring 12
6.3.3 STP-DHI-CBS (120 VAC) Wiring 13
6.3.4 STP-DHIB-CBBS (240 VAC) Wiring 13
6.4 Notes 14

Intentionally Blank

1 Introduction

1.1 Regulatory Compliance

IMPORTANT INFORMATION - FOLLOW ALL INSTRUCTIONS

- The products contained within in this guide shall only be assembled and installed by a qualified person (see §2.6). *Use of non-qualified personnel, or any deviations from these recommended procedures, could result in damage or malfunction.*
- For Operating Parameters (including Electrical & Environmental), see §3.2.1
- For Certifications & Approvals see §3.2.1.1
- For Required Tools, see §3.2.2
- For Wiring Diagrams, see §6.3

1.2 Documentation

- Instructions of this document are in English. All other language versions are translations of this original document.
- Information given in this document is provided as a guide only.
  - The Illustrations depict a typical setup and are for instruction and description purposes only.
  - It is the installer's responsibility to ensure that correct and safe procedures are followed at the worksite.
- This document and related documents are available from Franklin Electric at www.franklinfueling.com.

1.2.1 Symbol Legend


Wear Protective Headwear


Wear Eye Protection


Wear Protective Gloves


Refer to instruction guide


Ensure Continuous Ventilation


Disconnect main plug from electrical outlet


Connect an earth terminal to the ground


Disconnect before carrying out maintenance or repair


General Warning


Warning: Electricity


No open flame; Fire, open ignition source and smoking prohibited


Wear High-Visibility Clothing


Wear Protective Clothing


Wear Safety Footwear


Ventilate Before & During Entering


Lockout/Tagout Electrical Equipment


Warning: Industrial vehicles


Warning: Flammable Material

2 Safety/Security

2.1 General Safety Information

- Procedures in this document are only to be performed by people qualified and certified to perform them (see §2.3 and §2.6).
- Personnel working on or with energized equipment must be authorized by relevant regulatory bodies to carry out such work and must have the appropriate training. Check with your employer and relevant regulatory body's rules for working with energized equipment.
- Obey all local laws, rules, regulations, and instructions in this document. In case of inconsistency or contradiction between information contained in this document and any laws, rules and regulations, obey the stricter of the two.
- Keep unqualified personnel at a safe distance during installation.
- If it is necessary to remove safety/security devices, immediately reinstall the safety/security devices after completing the work.

2.2 Documentation Availability

Upon installation completion, this document shall be transferred by the qualified installer or service technician to the site owner, operator, or other responsible person of the facility where the installation is done.

- Save this guide for future use, and make sure to provide it to anyone who services or removes this equipment (see §2.3).
- Always reference the guide(s) that came with the equipment for a complete list of installation and safety precautions. The most current Franklin Electric documentation can be found online at www.franklinfueling.com.

2.3 Installation & Service Access

Certified Installer or Service Technician*

Only Franklin Electric certified installers and service technicians are allowed to service or install the STP/IST. *See §2.6 for information on certification training.*

If the STP/IST is serviced by someone who is not a Franklin Electric certified installer or service technician,* ***your warranty will be void.*

2.4 Hazard Assessment

Prior to beginning work and prior to recommencing work after leaving and returning to the worksite, *a worksite pre-job hazard assessment* ***must be performed*** *to identify safety and environmental needs.* At a minimum, this hazard assessment should:

- Identify possible hazards and risks.
- Identify the safety needs of the job.
- Identify the correct procedures, practices and equipment.
- Eliminate unsafe conditions and actions from the worksite.
- Identify the need for personal protective equipment.
- Inspect equipment before use.
- Confirm sheaths of all cables are secured and undamaged.
- Confirm plugs and connectors are properly connected and serviceable.
- Perform ongoing risk assessment during the project

2.5 Required Personal Protective Equipment (PPEs)

These PPEs are required during all phases of installation.


Wear Protective Clothing


Wear Eye Protection


Wear High-Visibility Clothing


Wear Protective Gloves


Wear Protective Headwear


Wear Safety Footwear

2.6 Qualifications and Responsibilities

Completion of this course is required *before certification test access will be granted for* ***any other course (online or live):***

- Fuel System Installation Safety

2.6.1 Qualifications for Certification

To be considered “qualified”, individuals shall pass training from the following certification training courses (online or live) for the process or processes to be performed:

- Forecourt Specialist
  - Submersible Pump
- Additional Training
  - Compliance Testing

FE Online or Live Certification Training

SCAN / CLICK

2.6.2 Responsibilities

The following responsibilities are for guidance only and are not limited to those listed here. It is the responsibility of:

- The owner of the install site(s) to ensure that all STP/IST installers and service technicians shall be certified (see §2.6.1), follow all local laws, rules and regulations, along with the instructions and the specifications listed in this document.
- The certified installer(s) and service technician(s) to know the STP/IST and its safe use.
- The certified installer(s) and service technician(s) to have and maintain a valid Franklin Electric training certification (see §2.6.1).

3 Pre-Installation Overview

3.1 Upon Receipt of Item(s)

- Verify all items are in accordance with the order.
- Check all items for damage.
- If any item shows damage or is not in accordance with the order, inform Franklin Electric *immediately*.
- Remove the packaging material.
    - Follow all local laws, rules and regulations regarding disposal of discarded parts, packaging material or items and any subsequent components.

3.1.1 Storage & Transit Information

- Rough handling (drops, impacts, crushing, dragging, etc.) during storage or transit may damage the Dispenser Hook Isolation device and affect its safe operation.

3.2 Technical Overview

The FE PETRO® Guardian Series® Dispenser Hook Isolation (DHI) device prevents electrical feedback between dispenser hook circuits as required by most electrical codes. The DHI device isolates dispenser hook signals from one another, assisting in the prevention of:

- Electrical feedback from dispenser hook circuits during servicing.
- Damage caused by cross-phasing of dispenser hook circuits.
- Some of the negative effects caused by dispenser voltage leakage on the hook signal circuit.

The advantages of the DHI are:

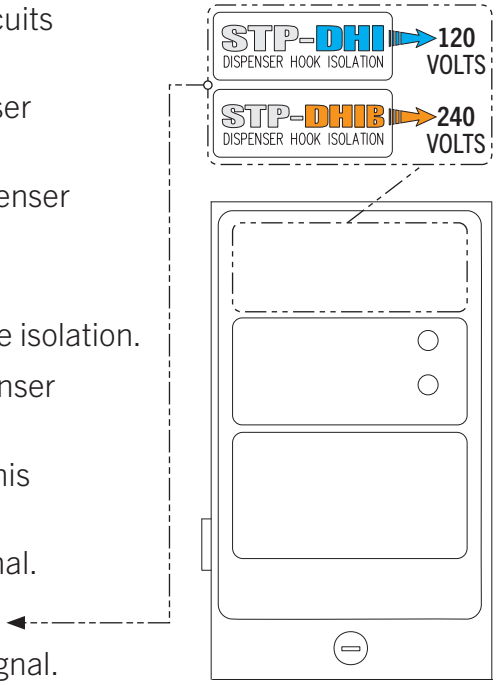
- No mechanical relays are required to achieve isolation.
- The ability to troubleshoot or service a dispenser without disabling all dispensers.

NOTE: The reference to "DHI" or "DHI device" in this document refers to either the:

- STP-DHI with a *120 VAC* dispenser hook signal.

  OR

- STP-DHIB with a *240 VAC* dispenser hook signal.



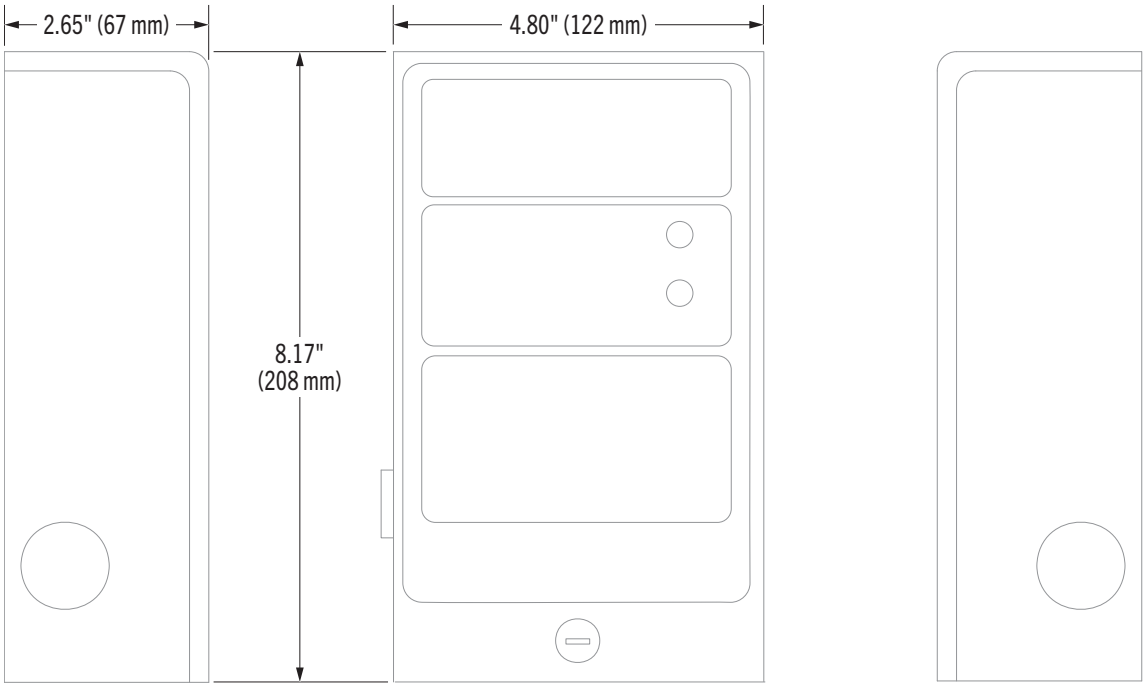
3.2.1 Specifications

Item	Specification
Model(s)	» STP-DHI » STP-DHIB
Enclosure Size	See §3.2.1.2
Inputs from Dispenser	(8) optically isolated inputs » (1) STP-DHI/STP-DHIB required per product grade for up to 8 dispensers
STP-DHI Input	» 120 VAC @ 30 A, input from line power » (8) 120 VAC @ 10 mA, inputs from dispenser hook signals
STP-DHIB Input	» 240 VAC @ 30 A, input from line power » (8) 240 VAC @ 10 mA, inputs from dispenser hook signals
Output Fuse Rating	1 A @ 250 VAC, fast-acting
Surge protection	300 VAC
Maximum Ambient Temperature Rating	120 °F (49 °C)
LED indicator	When source power is applied and dispenser hook signals are present
Compatibility	Compatible with any submersible pump controller

3.2.1.1 Certifications & Approvals

Agency	Certification

3.2.1.2 Dimensions



3.2.1.3 Wire Size / Run Table

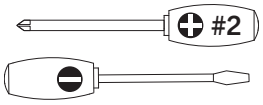
IMPORTANT: All wiring must conform to guidelines in accordance with all federal, state, and local codes. *Failure to comply with all applicable guidelines could result in an unsafe installation.* Use the following table for maximum wire length to wire gauge ratios for submersible wiring:

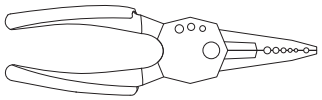
NOTE: Values shown are nominal equivalents. *Metric sizes are standardized cross-sectional areas (mm²) and are not exact conversions of AWG diameters.*

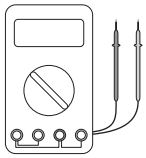
Wire Size – AWG (mm²)	Maximum Run – ft. (m)
10 (5.3)	650.0 (198.1)
12 (3.3)	400.0 (121.9)
14 (2.1)	250.0 (76.2)

3.2.2 Required Tools

⚠ **WARNING**: Ensure that all tools used are properly insulated and rated for the task being performed to prevent the risk of electrical damage or harm.







4 Installation



⚠ WARNING:

- INSTALL IN NON-HAZARDOUS LOCATION
- ELECTRIC SHOCK HAZARD – This isolation controller has up to nine power supply connection points, ***one*** *120 or 240 VAC 1-phase 50/60 Hz* ***and up to eight*** *120 or 240 VAC 1-phase 50/60 Hz* from dispensers. *Failure to disconnect all power supply connection points before servicing this isolation controller, the submerged turbine pump, or any other equipment connected to this controller may result in death or serious injury.*
    - Verify power to interconnected controllers or other equipment is not present before servicing that equipment.
    - Verify power to submerged turbine pump is not present before servicing submerged turbine pump.
    - Failure to do so may result in death or serious injury.
    - Always use lockout/tagout of power sources during the servicing of the controller or the submerged turbine pump.

IMPORTANT:

- Read, understand, and follow information in §2 and §3 *before beginning any process in this section.*
- Always use safe electrostatic discharge practices when connecting/removing power and any work associated with making electrical connections to the DHI device and related connected components.

NOTE:

- If the DHI device does not operate correctly or there are any questions concerning installation or service, contact Franklin Electric Technical Support.
- When the installation is complete, ensure this guide is left with the site owner, operator or other responsible person of the facility where the installation is done (see §2.2).

4.1 Install Instructions

1. Perform a facility/worksite approved Lockout/Tagout procedure for the circuit breakers to be connected to the DHI device and related systems (de-energize).
2. Install the STP/IST per the STP/IST Fixed and Variable Length Install and Owner's Guide using the appropriate control box.
3. Remove the cover of the DHI device and securely mount the base indoors to a wall or other suitable surface.

NOTE:

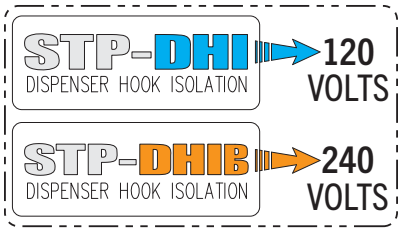
- See the following table for wiring diagram specifics and reference the applicable diagram for the following installation instructions.
- For Supply connection (see §3.2.1.3), use wire rated for at least 90°C (194°F).

Device Application	Voltage (VAC)	Reference
STP-DHI general wiring	120	§6.3.1
STP-DHIB general wiring	240	§6.3.2
STP-DHI-CBS wiring	120	§6.3.3
STP-DHIB-CBBS wiring	240	§6.3.4

4. Connect the Input Power *(either "**a**" or "**b**")* to the DHI device Input terminals:
   a. 120 VAC (Supply & Neutral) *for STP-DHI.*

      OR

   b. 240 VAC (Supply & Return) *for STP-DHIB.*



5. Connect the Hook Output *(either "**a**" or "**b**")* to the DHI device Output terminals:
   a. 120 VAC (Supply & Neutral) *for STP-DHI.*

      OR

   b. 240 VAC (Supply & Return) *for STP-DHIB.*

   NOTE: The Hook Outputs of the DHI device will be connected to the Hook Signal terminals of the controller for the STP/IST.
6. Connect the Dispenser Hook Signal power wires *(either "**a**" or "**b**")* to the DHI device terminals:
   a. 120 VAC (Supply & Neutral) *for STP-DHI.*

      OR

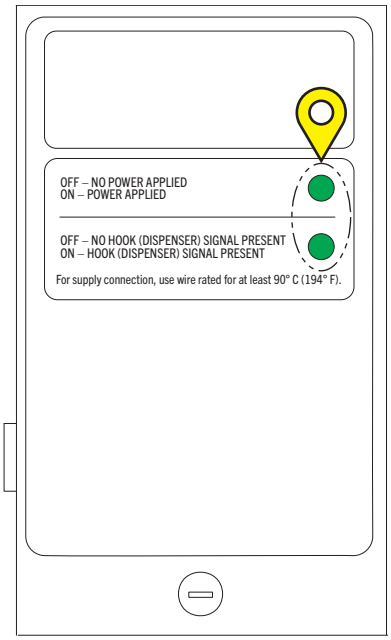
   b. 240 VAC (Supply & Return) *for STP-DHIB.*
7. Repeat Step 6 for each Dispenser Hook Signal to be connected, with a maximum of up to 8 dispensers per DHI device.

   NOTE: Multiple DHI devices may be connected together if more than 8 Dispenser Hook Signal terminals are needed. See wiring diagrams in §6.3.1 (120 VAC) or §6.3.2 (240 VAC) for details.
8. Connect the Ground wire to one of the green grounding terminals on the base of the DHI device housing.

   ⚠ **WARNING**: Not installing a Ground wire increases the risk of potentially lethal electrical shock and equipment failure.
9. Reinstall the DHI device cover securely to the base of the DHI device.
10. After completing all wiring connections, apply power.

5 Troubleshooting

To aid field service personnel, the DHI device is equipped with LEDs (📍) on the front panel that display normal operating conditions. The following is a definition of the operating LED displays.



LEDs Active (On)

LED Position	LED Status	Description
Top	On	Power is applied to the DHI device.
Bottom	On	Dispenser Hook Signal is present.

LEDs In-Active (Off)

LED Position	LED Status	Possible Cause	Action
Top	Off	No Input Power to the DHI device.	1. Check for power at the Input Power terminals: a. **STP-DHI** = 120 VAC b. **STP-DHIB** = 240 VAC
Bottom	Off	Blown fuse or no Dispenser Hook Signal present.	1. Shut off the power and check for a blown fuse. c. If the fuse is blown, replace fuse. d. If operating correctly, continue with next step. 2. Verify Dispenser Hook Signal power is applied, when requested, at terminals for each dispenser that is connected. *The power should be:* e. **STP-DHI** = 120 VAC f. **STP-DHIB** = 240 VAC 3. If no Dispenser Hook Signal is present, troubleshoot the Dispenser Signal per dispenser manufacturer's recommendations.

⚠ WARNING:

- Replace fuse with 250 VAC, 1 A Fast acting type (see §6.2). Some examples are:
  - Bussman® – p/n **ACG-1**
  - Littelfuse® – p/n **312001**
- Do not use 32 V automotive fuses. *Failure to do this could result in damage to this controller as well as to other equipment connected to it.*

6 Appendix

6.1 Related Documents

Documentation can be found online at www.franklinfueling.com.

Part Number	Description
223987102	TPGC-220 Install Guide
223987103	SPGC-220 Install Guide
223987104	TPGC-380 Install Guide
228001101	MagVFC™ Install/Owner's Guide
228001102	EcoVFC™ Install/Owner's Guide
228180033	EVO™ 600/6000 Series Console Install Guide
228180061	EVO™ 600/6000 Programming Guide
10000009501	VFGC-220 Install Guide

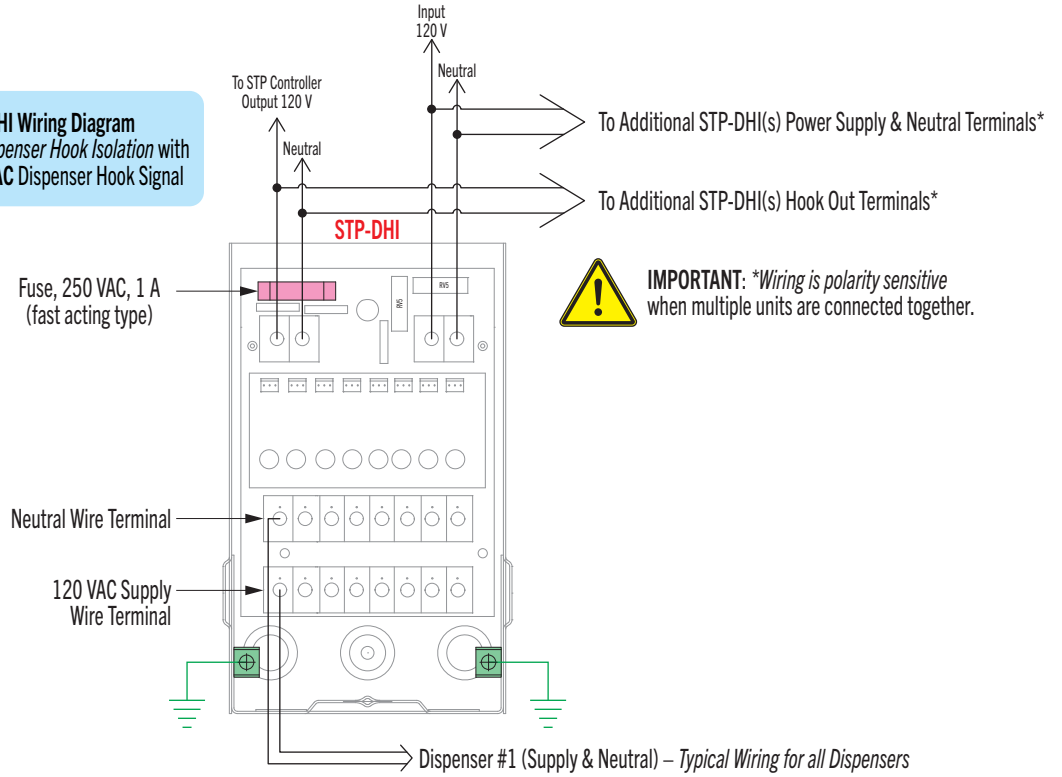
6.2 Service Parts

Item	Part Number
Circuit board assembly – DHI (120 VAC)	223885901
Circuit board assembly – DHIB (240 VAC)	223885910
Fuse (fast-acting type) – 250 VAC, 1 A	10000026753

6.3 Wiring Diagrams

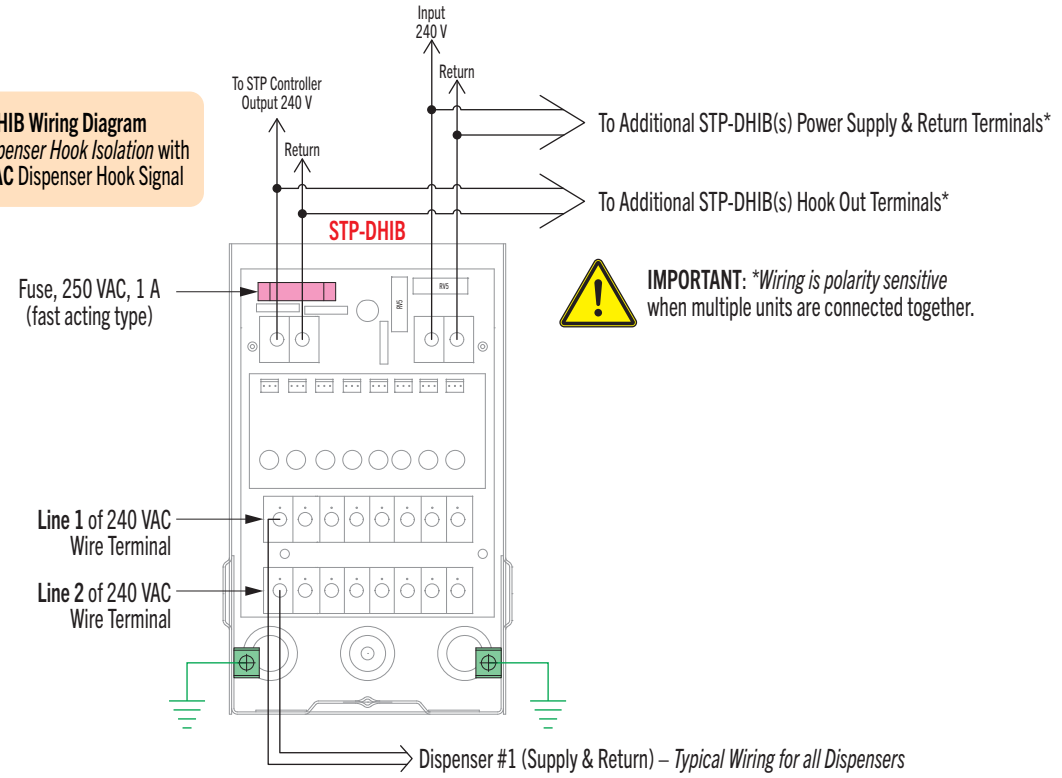
6.3.1 STP-DHI (120 VAC) General Wiring

STP-DHI Wiring Diagram
for *Dispenser Hook Isolation* with
120 VAC Dispenser Hook Signal



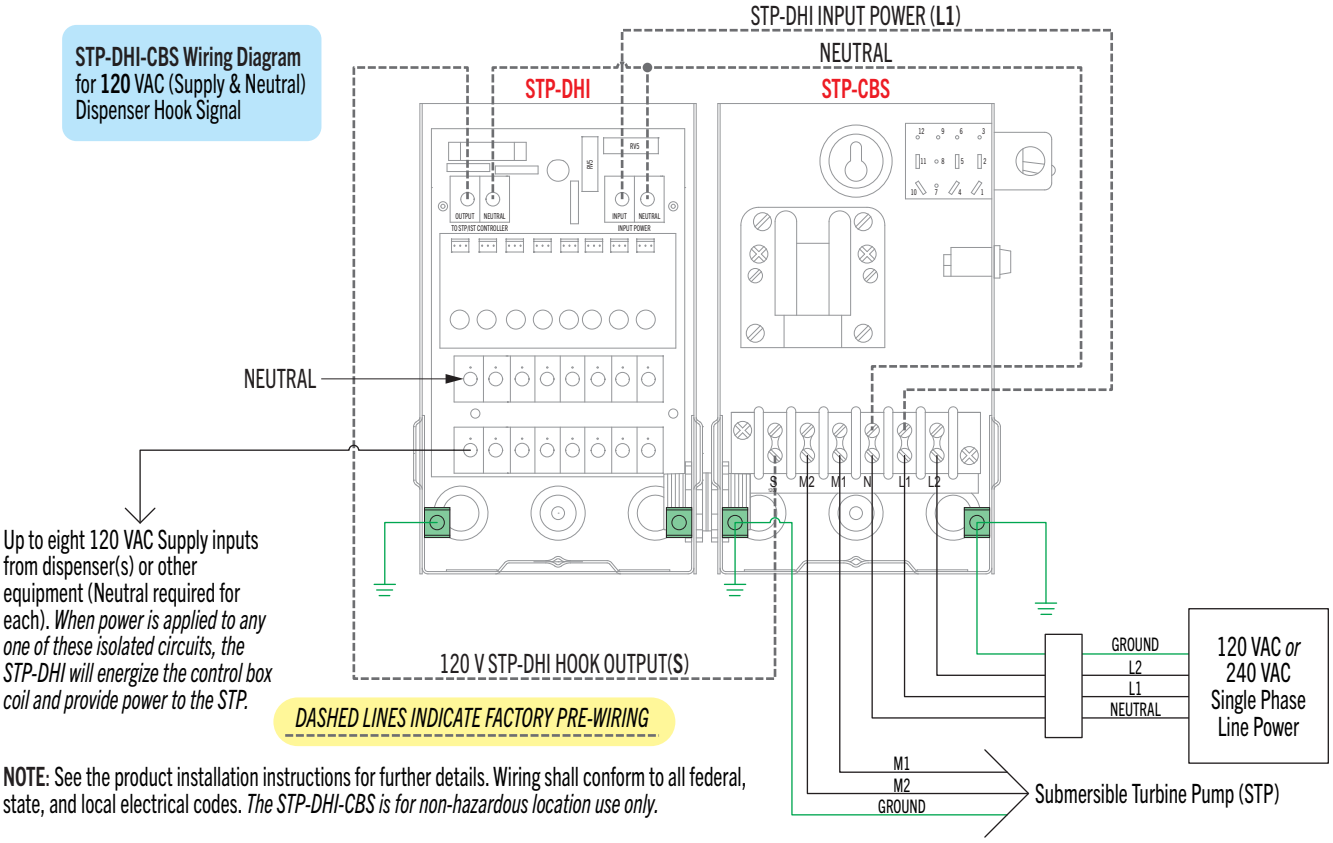
6.3.2 STP-DHIB (240 VAC) General Wiring

STP-DHIB Wiring Diagram
for *Dispenser Hook Isolation* with
240 VAC Dispenser Hook Signal



6.3.3 STP-DHI-CBS (120 VAC) Wiring

STP-DHI-CBS Wiring Diagram for **120** VAC (Supply & Neutral) Dispenser Hook Signal



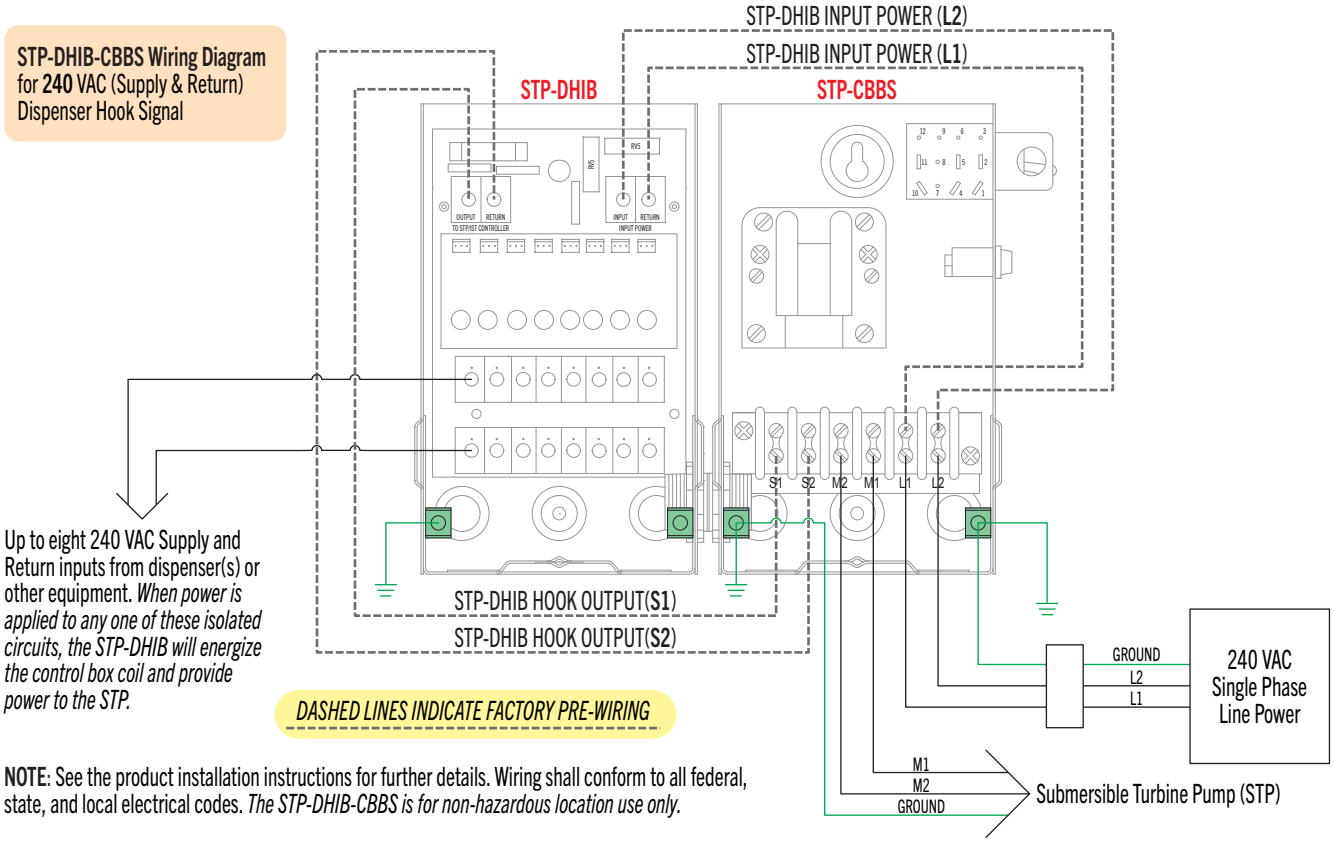
Up to eight 120 VAC Supply inputs from dispenser(s) or other equipment (Neutral required for each). *When power is applied to any one of these isolated circuits, the STP-DHI will energize the control box coil and provide power to the STP.*

DASHED LINES INDICATE FACTORY PRE-WIRING

NOTE: See the product installation instructions for further details. Wiring shall conform to all federal, state, and local electrical codes. *The STP-DHI-CBS is for non-hazardous location use only.*

6.3.4 STP-DHIB-CBBS (240 VAC) Wiring

STP-DHIB-CBBS Wiring Diagram for **240** VAC (Supply & Return) Dispenser Hook Signal



Up to eight 240 VAC Supply and Return inputs from dispenser(s) or other equipment. *When power is applied to any one of these isolated circuits, the STP-DHIB will energize the control box coil and provide power to the STP.*

DASHED LINES INDICATE FACTORY PRE-WIRING

NOTE: See the product installation instructions for further details. Wiring shall conform to all federal, state, and local electrical codes. *The STP-DHIB-CBBS is for non-hazardous location use only.*

6.4 Notes



223844101 r6

May 26, 2026