Introduction

Purpose

This manual provides installation information for the Universal Distribution Box (D-Box) PA0261. The D-Box provides an interface between Gilbarco® consoles with Two-wire Current Loop Interface (TWI) and dispensing units or Passport® controllers with RS-422 interface and dispensing units, CRIND®s, or G-CAT™s. This D-Box works with all Gilbarco electronic fuel dispensing consoles and controllers.

This manual also provides the installation instructions for the Expansion Kit [K93717 (only for T17651 Board)]. The kit allows you to add a second distribution board to the D-Box.

Intended Users

This manual is intended for Gilbarco-trained and certified Authorized Service Contractors (ASCs).

⚠ WARNING

Do not install this equipment unless you have proper training for installing equipment in a hazardous location.

Table of Contents

Required Tools and Materials

Following tools and materials are required for installing the universal D-Box:

- Drill
- Multimeter
- Needle Nose Pliers
- Flat-blade and Phillips®-head Screwdriver #2
- Wire Nuts
- Wire Stripper

Parts List

Following table lists the parts included in the Expansion Kit (K93717) for D-Box with single T17651 Printed Circuit Assembly (PCA):

Item #	Description	Part Number	Quantity
1	Printed Circuit Board (PCB) Assembly, D-Box	T17651-G1	1
2	Assembly, Cable Expansion PCB	R19262-G1	1
3	Assembly, Cable Two-wire J905/J102 D-Box	R18810-G1	1
4	Support, Circuit Board	Q10651-02	4
5	Assembly, Screw Lock [Connector, D-Subminiature (D-Sub)]	Q10437-07	2
6	Assembly, Cable, Mass Terminal Assembly (MTA) Pigtail	R19263-G1	2
7	Assembly, Cable, RS-422 J103/J905, D-Box	R19249-G1	1

Related Kits

Kit Number	Description
K9339-01	Pigtail Cable Kit for Transac® System 1000™ and PAM™ 1000 installation using field wiring to connect to D-Sub connectors for TWI inputs.

**Not for use with Passport.*

Required Reading

⚠ WARNING

Where fuels are involved, you are working in a dangerous environment of gasoline, gasoline vapor, and electricity. Failure to install this equipment in accordance with National Fire Protection Association (NFPA) 30A and NFPA 70® could result in severe injury or death.

Before installing the kits, read, understand, and follow:

- This manual.
- The National Electrical Code [NEC® (NFPA 70)].
- The automotive and marine service code (NFPA 30A).
- Any national, state, and local codes that may apply.

Failure to install the equipment in accordance with NFPA 30A and NFPA 70 may adversely affect the safe use and operation of the system.

For installation in Canada the installer must read and understand this manual, Canadian Standards Association (CSA) C22.1 Canadian Electrical Code and applicable federal, provincial, and local codes and regulations.

Related Documents

Document Number	Title	GOLD℠ Library
MDE-2072	Transac 12-G Communications Console Installation Manual	Transac Products
MDE-2383	Transac System 1000 Installation Manual	Transac Products
MDE-2531	Gilbarco Pump and Dispenser Start-up and Service	• Pump and Dispenser Start-up and Service • Service Manual
MDE-2537	PAM 1000 System Controller Installation	Transac Products
MDE-2538	Pigtail Two-wire Cable Kit K93391-01	Transac Products
MDE-2714	Universal Distribution Box [D-Box (PA0261XXXXXXX)] Service Manual	• Advantage® and Legacy® Models • POS Peripheral
MDE-2755	STP Control and Dispenser Isolation Relay Box (PA0287)	• Advantage and Legacy • Encore® and Eclipse® • Encore and Eclipse Installers

Note: Ensure to read and understand the installation documentation for the dispensers being connected to the D-Box.

Abbreviations and Acronyms

Term	Description
ASC	Authorized Service Contractor
AWG	American Wire Gauge
CRIND	Card Reader in Dispenser
CSA	Canadian Standards Association
D-Box	Distribution Box
D-Sub	D-Subminiature
ESD	Electrostatic Discharge
GOLD	Gilbarco Online Documentation
MTA	Mass Terminal Assembly
NEC	National Electrical Code
NFPA	National Fire Protection Association
PAM	Pump Access Module
PCA	Printed Circuit Assembly
PCB	Printed Circuit Board
POS	Point of Sale
RFI	Radio Frequency Interference
RGA	Returned Goods Authorization
STP	Submersible Turbine Pump
TWI	Two-wire Current Loop Interface
UL®	Underwriters Laboratories

Important Safety Information

Notes: 1) Save this Important Safety Information section in a readily accessible location.

2) Although DEF is non-flammable, Diesel is flammable. Therefore, for DEF cabinets that are attached to Diesel dispensers, follow all the notes in this section that pertain to flammable fuels.

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining, or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock, or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions
You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain, or service this equipment.

Emergency Total Electrical Shut-Off
The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING

The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access
Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuating, Barricading, and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones, or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

Read the Manual
Read, understand, and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call the Gilbarco Technical Assistance Center (TAC) at 1-800-743-7501. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations
Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Health Administration (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain, or service this equipment in accordance with these codes, regulations, and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts
Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol

This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words
These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury, or damage to the equipment:

DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires
Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF lines.

No Open Fire

Open flames from matches, lighters, welding torches, or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting, or using power tools, burning cigarettes, cigars, or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion, or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

⚠ WARNING

Gasoline/DEF ingested may cause unconsciousness and burns to internal organs. Do not induce vomiting. Keep airway open. Oxygen may be needed at scene. Seek medical advice immediately.

⚠ WARNING

DEF generates ammonia gas at higher temperatures. When opening enclosed panels, allow the unit to air out to avoid breathing vapors.
If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

⚠ WARNING

Gasoline inhaled may cause unconsciousness and burns to lips, mouth, and lungs. Keep airway open. Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled in eyes may cause burns to eye tissue. Irrigate eyes with water for approximately 15 minutes. Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled on skin may cause burns. Wash area thoroughly with clear water. Seek medical advice immediately.

⚠ WARNING

DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

Before You Begin

Read and understand all the safety information in “Important Safety Information” on page 4.

CAUTION

A properly grounded Electrostatic Discharge (ESD) wrist strap must be worn while servicing any electronic devices or components. Failure to use electrostatic precautions may damage electronic components and void warranty.

To prepare the site and dispenser for the installation, proceed as follows:

1. Inform the store manager at the site that the power will be shut down.
2. Turn off circuit breakers to the unit being serviced.
3. Barricade the unit to be worked on.
4. Match the parts received in the kit with “Parts List” on page 2.

⚠ WARNING

Failure to turn off the unit during installation may cause injury or bodily harm from electrical shock. Ensure that all power to the unit is switched off before opening the door to the unit and during kit installation.

Installing Universal D-Box

The D-Box provides an interface between Gilbarco consoles with TWI and third-party controllers with RS-422 interface and dispensing units, CRINDs, or G-CATs. The PCB(s) inside the D-Box includes jumper jacks which are used to select either the TWI or the RS-422 configuration. The required interface connector(s) to the controller is provided, with the D-Box.

Note: Interface cables between the D-Box and the console/controller are not included, and must be ordered separately. For proper length and type of cable required, refer to “Data Cabling Requirements” on page 17.

The D-Box houses the power supply transformer and a removable tray with either one or two PCBs. Each PCB contains a power supply, an opto-coupled current loop interface, an RS-422 interface, eight dispenser current loops, and automatic isolation circuitry.

Two four-channel MTA connectors are provided for each circuit board for field wiring (see Figure 8 on page 20). These are required only for T17651-G1 Boards. For M14301AXXX Board, field wires are directly terminated on box type connectors on board.

The Transac System 1000 and PAM 1000 controllers require this D-Box. One D-Box is needed for every 12 fueling positions (Transac System 1000 systems with three or four consoles require an additional D-Box).

D-Box - Controller Interface

D-Box with T17651 PCA

There are eight individual current data loops for dispensing units on each distribution board (see Figure 1 on page 8 to Figure 6 on page 13). D-Box with two boards can be configured as either:

- Two separate inputs with each input controlling eight data loops [see Figure 1 (iii) on page 8 and Figure 3 (iii) on page 10], or
- One input controlling 16 data loops [see Figure 1 (ii) on page 8 or Figure 3 (ii) on page 10].

Each data loop has both current regulation and automatic isolation circuitry. The dispenser data loop drivers operate from an unregulated 12 VDC supply at 45 mA for Gilbarco dispensers and CRINDs, or 20 mA for G-CATs. The applicable configuration is set by jump jacks on the distribution board(s) (see Figure 9 on page 20 to Figure 24 on page 20).

Each distribution board must be dedicated for use with either Gilbarco dispensing units, CRINDs, G-CATs, or consoles (for Transac System 1000 multiple consoles). Do not mix different current loop equipment on one distribution board.

D-Box with M14301 PCA

There are 16 current data loops for dispensing units on each board. This board can be configured as either:

- Two separate inputs with each input controlling eight data loops [see Figure 2 (iii) or Figure 4 (iii)], or
- One input controlling 16 data loops [see Figure 1 (ii) or Figure 4 (ii)].

When installing equipment, ensure that the boards are configured for 20 mA current loops if connecting G-CATs to the D-Box. Damage to the G-CAT MPU boards will occur if the jump jacks are not set correctly.

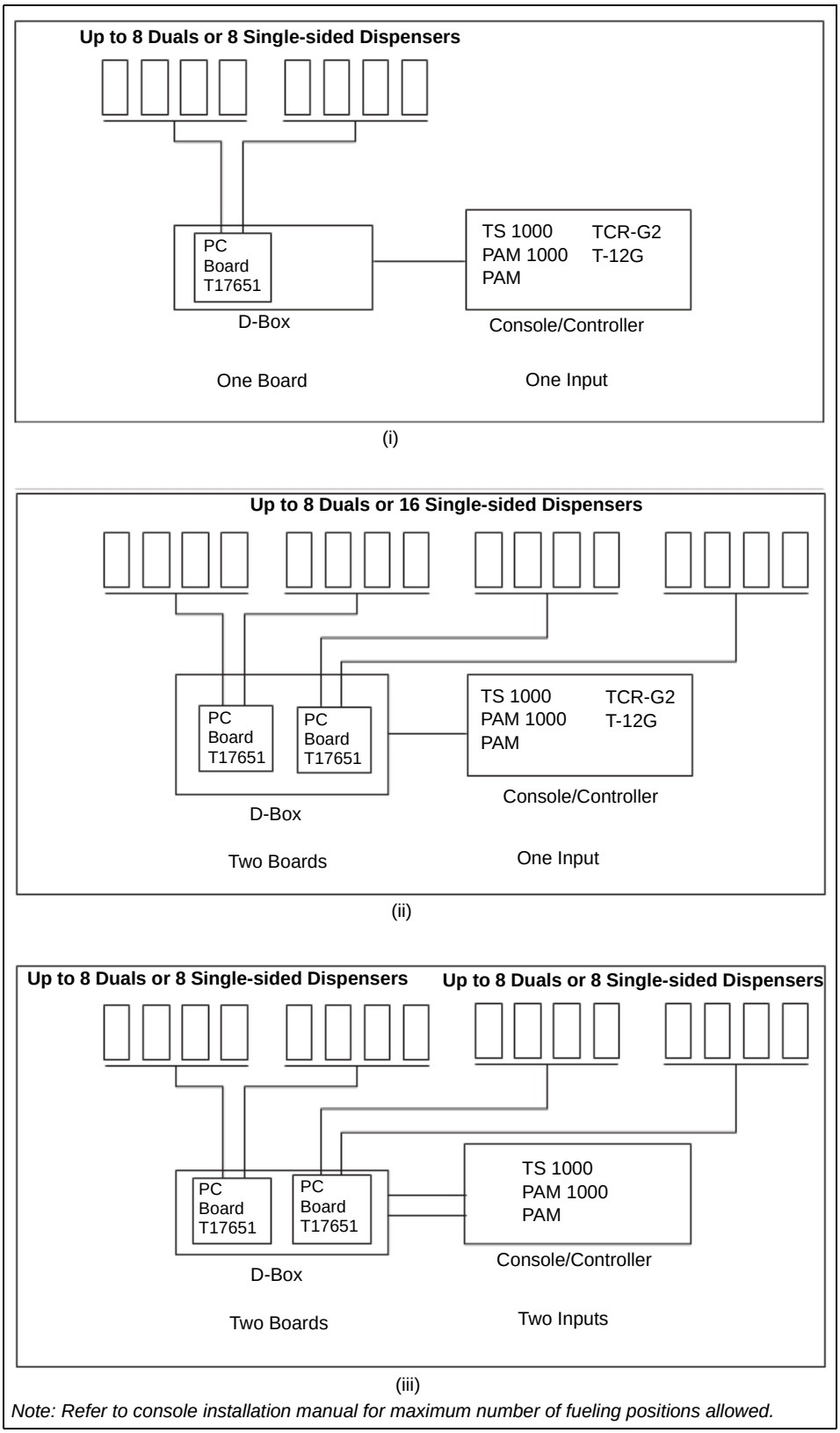
When installing equipment, connect only one dispenser or card reader to any one data loop channel. The wiring length between the D-Box and dispensers must not exceed 2600 feet, and requires stranded or solid 14 American Wire Gauge (AWG) wire. Do not use daisy chaining with this unit.

For Transac System 1000 multiple console installation, refer to *MDE-2538 Pigtail Two-wire Cable Kit K93391-01*.

D-Box Configurations

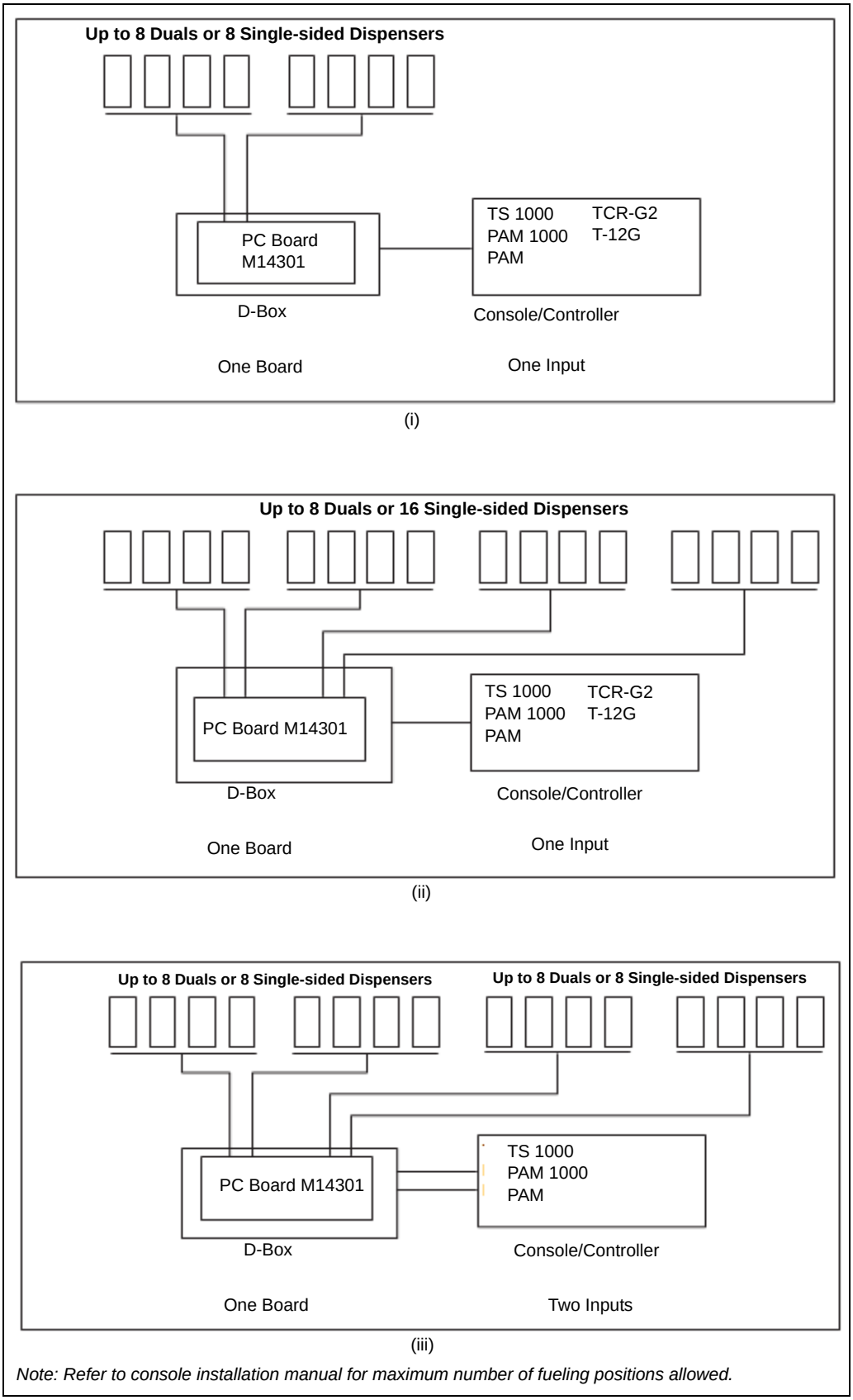
Following illustrations show the various D-Box interface configurations:

Figure 1: TWI Consoles and Controllers - 1



Note: Refer to console installation manual for maximum number of fueling positions allowed.

Figure 2: TWI Consoles and Controllers - 2



Note: Refer to console installation manual for maximum number of fueling positions allowed.

Figure 3: Passport with Dispensers - 1

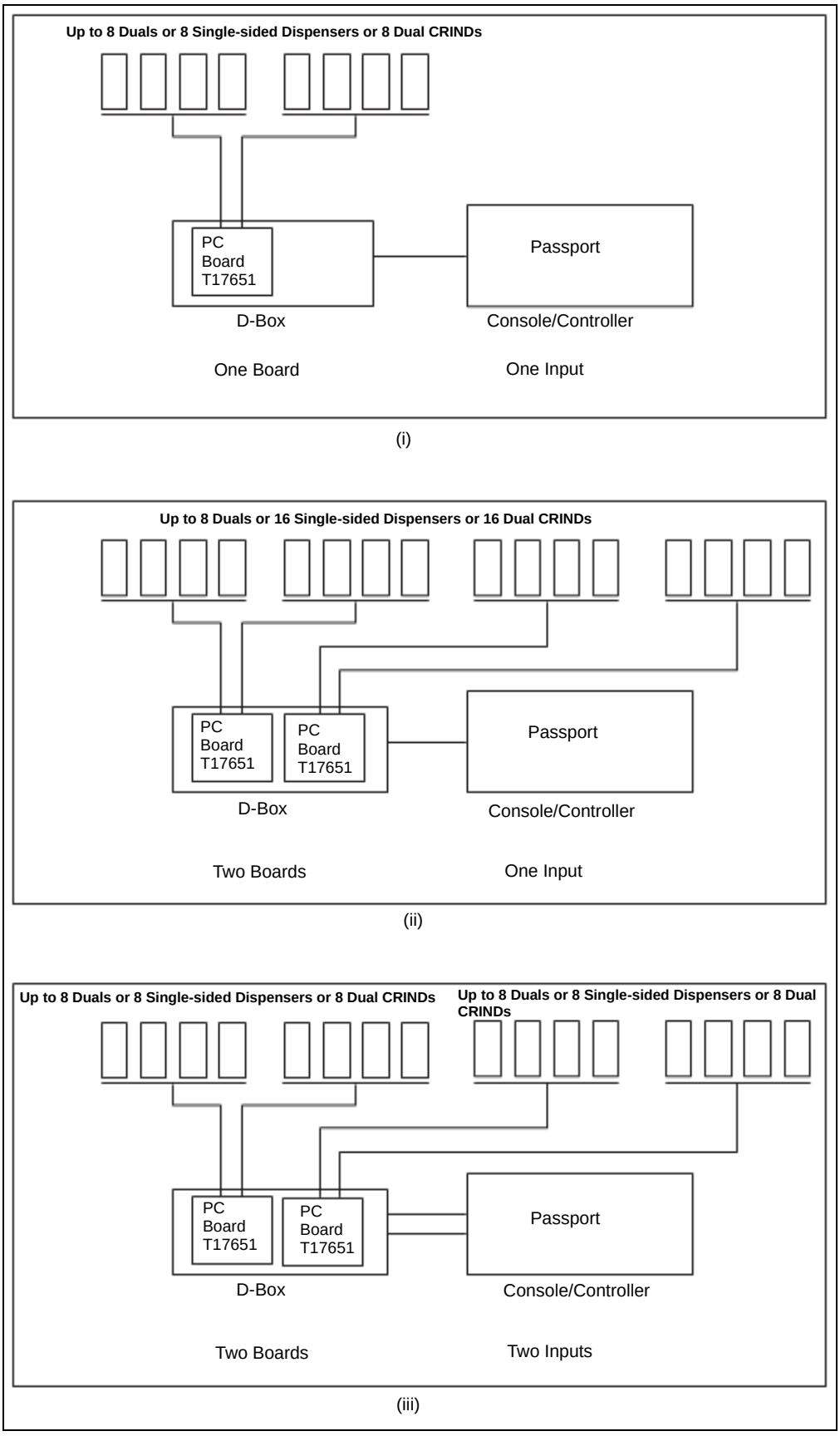


Figure 4: Passport with Dispensers - 2

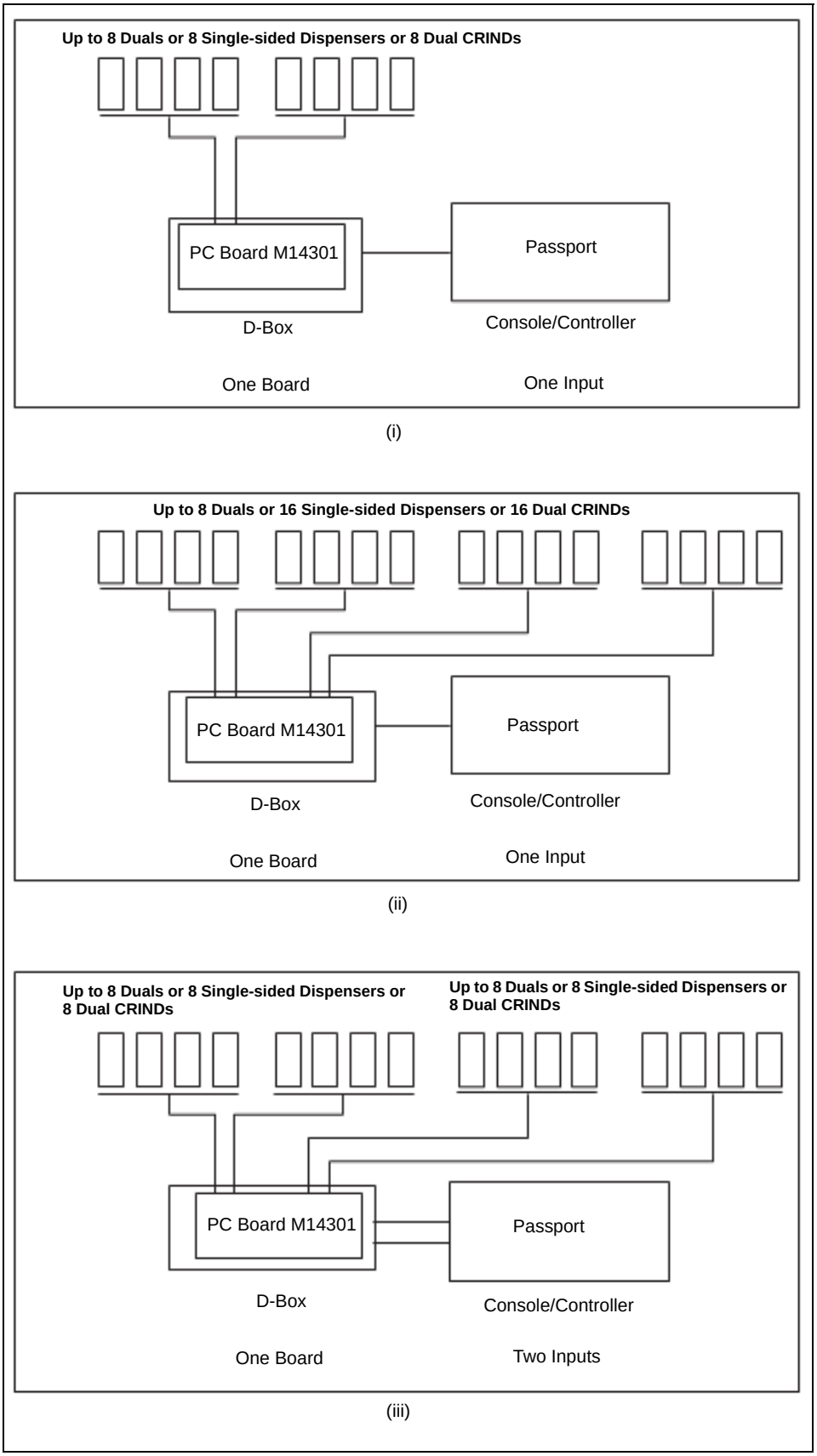


Figure 5: Passport with Dispensers, CRINDs, or G-CATs - 1

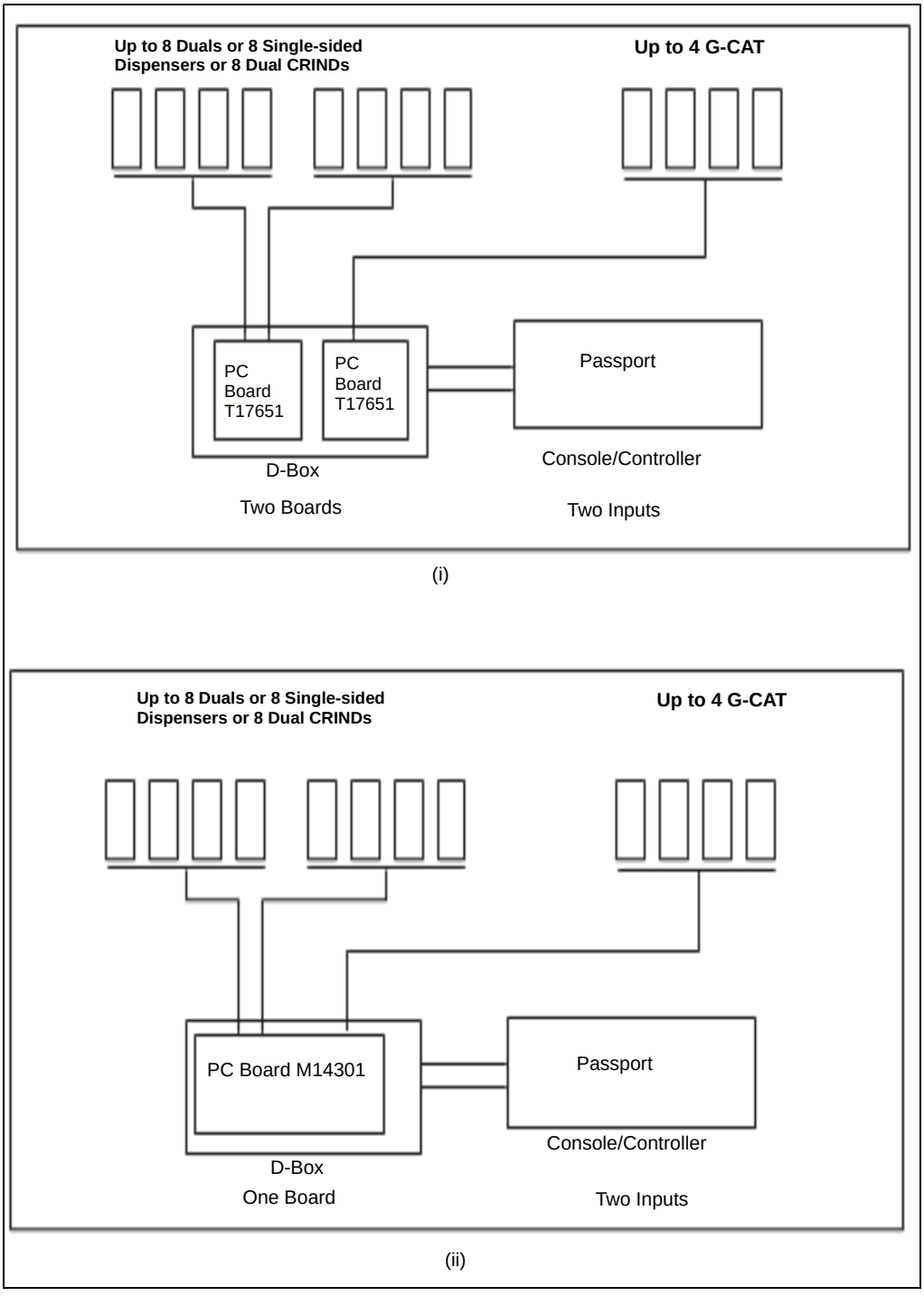
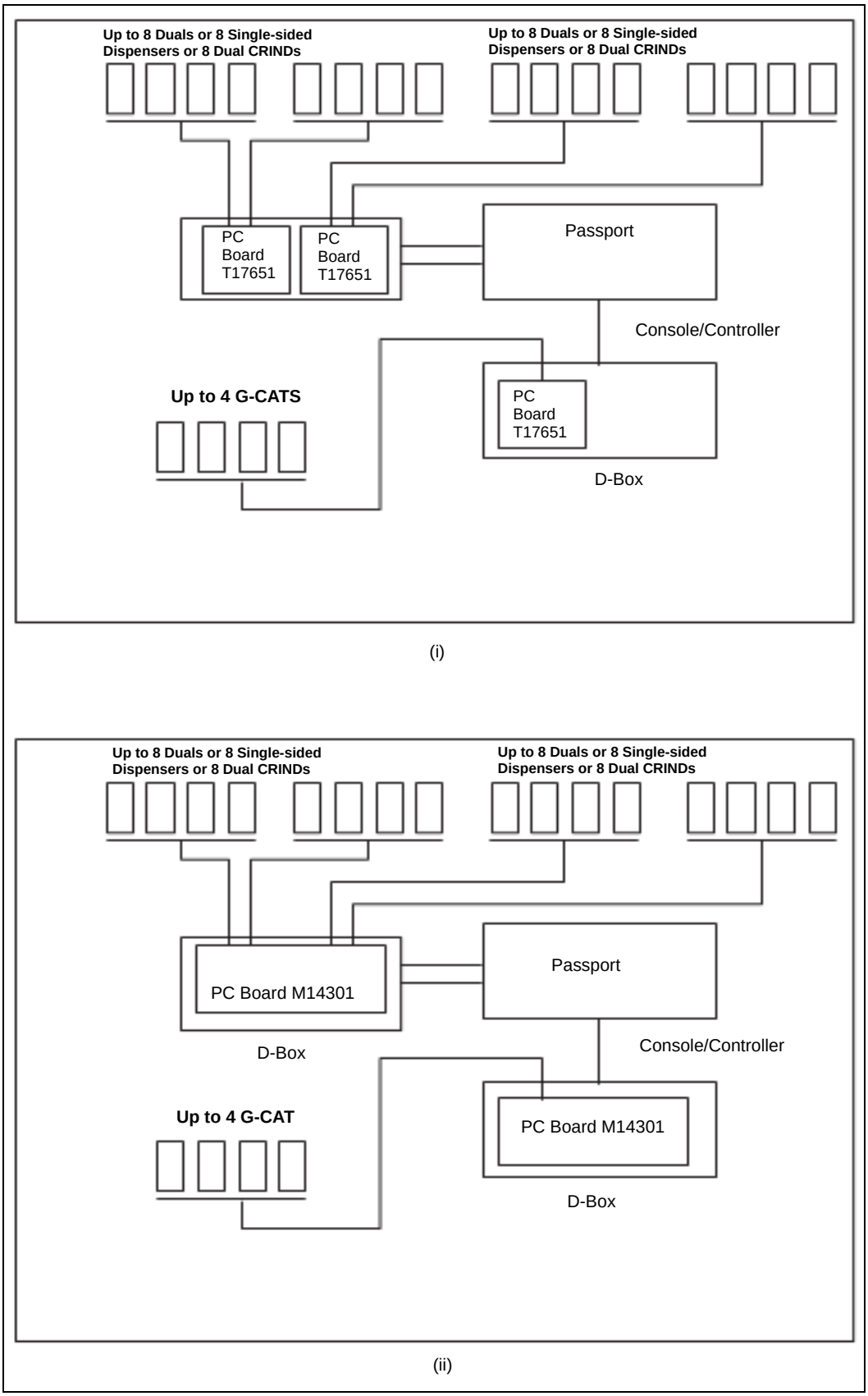


Figure 6: Passport with Dispensers, CRINDs, and G-CATs - 2



Model Number Breakdown

PA0261X00X0XX						
Model Number Prefix	**Voltage**	**Not Used**	**Housing**	**Not Used**	**Type of Board**	**Data Input**
PA0261 Universal D-Box	0 - 115 VAC 50/60 Hz 1 - 230 VAC 50/60 Hz	00	0 - Standard	0	3 - One PCB (M14301) 16 Loops 2 - Two PCBs (T17651) 16 Loops 1 - One PCB (T17651) 8 Loops	0 - Two wire 1 - RS-422 2 - Configurable Two-wire/RS-422

Configurations

Interface	#Boards	# Inputs	Factory Configured As
TWI	1	2	See Figure 2 (iii) on page 9 and Figure 14 on page 25
RS-422	1	2	See Figure 4 (iii) on page 11 and Figure 20 on page 31

Specifications

Dimensions	
Height	7 and 13/16”
Width	16 and 9/32”
Depth	5 and 15/32”
Weight	5 lbs

Dedicated Isolated Ground Receptacle	
USA/Canada	115 VAC nominal, 50/60 Hz
International	230 VAC nominal, 50/60 Hz

Current
0.5 A @ 115 VAC
0.25 A @ 230 VAC

Operating Environment	
Minimum Temperature	+32 °F (0 °C)
Maximum Temperature	+130°F (+55 °C)
Humidity	5-95% Rh (non-condensing)

Preparing for Installation

Unpacking Equipment

When the equipment arrives at the installation site, each unit should be unpacked and inspected for possible shipping damage. If damage is evident, it must be reported to the carrier. Shipping damage is not covered under Gilbarco's warranty policy. After visual inspection, place the unit back in its shipping carton to prevent undue exposure to the elements, and store indoors until ready for installation.

Returning of Components

Components returned to Gilbarco under warranty or for repairs are subject to severe shipping damage if not packaged properly. If original packing materials are unavailable, use a durable reinforced corrugated box and obtain suitable packing material such as "PAKON" polyfoam chips, polyurethane foam chips, or polystyrene foam chips. Fill bottom of box with at least 2 inches of packing material. Ensure that the component is firmly packed. It is also recommended that the package be fully insured.

All returned items must be accompanied by a Returned Goods Authorization (RGA) form. Remember to include return shipping information and a description of the malfunction.

Note: If the component arrives at Gilbarco in a damaged condition and it is ascertained that the damage was a direct result of improper packing, such damage will not be covered under the original factory warranty and the customer will be held responsible for the cost of the repair necessary to correct said damage.

Basic Site Criteria

Installation of the D-Box must be in accordance with the NEC NFPA 70, the Automotive and Marine Service Station Code NFPA 30A, and any state or local electrical requirements.

For Canadian installations use the Canadian Electrical Code CSA C22.1.

The site must be equipped with electric service allowing compliance with all installation requirements of a complete fueling system.

An enclosed weather-protected structure must be located on the site for housing the D-Box. Room ambient temperature must not exceed 130 °F (55 °C). This maximum temperature is allowed only if the equipment is allowed free air flow.

Megger testing of field wiring must be completed prior to connecting wires to the D-Box.

The data cabling between the D-Box and the system controller must be kept separate from all other power and control lines.

Physical Placement

Locate the D-Box in an area not subjected to extreme temperature variations. The ambient temperature must remain relatively constant. Do not install the D-Box in a position subject to direct sunlight. If conditions dictate, provide a suitable sunscreen.

The PA0261 D-Box is suitable for use over hazardous locations. The box must be installed at least 18 inches above the floor. Locate the D-Box in an area which minimizes the possibility of liquids being spilled onto it.

Allow several inches clearance on the left side of the D-Box for the AC power cord. Allow 2 inches clearance above the box for removing the cover.

Electrical Wiring Requirements

The receptacle providing power to the D-Box must be a properly installed isolated ground receptacle (Hubbell #IG5261 or equivalent). This type of receptacle is easily identified by its bright orange color and by the triangle embossed into the face of the outlet. The green grounding screw must be attached to the grounding conductor.

- All electrical wiring must conform to NEC and local wiring codes, as well as the criteria in this manual.
- One conduit from the breaker panel to the D-Box location is required. The conduit must contain three 14 AWG wires: 115 VAC Hot, Neutral, and Ground; or 230 VAC L1, L2, and Ground. Do not use the electrical conduit to provide earth ground.
- The circuit powering the D-Box must not power other devices. This circuit must not share a conduit with wiring for devices drawing high amperage (compressor, freezer, etc.) or devices that are sources of Radio Frequency Interference [RFI (TV, microwave, intercom, etc.)].
- The AC outlet must be within 6 feet of the D-Box (see Figure 7 on page 17). Do not use extension cords.

Note: For 230 VAC operation, a 9 feet detachable line cord is provided. It is the customer's responsibility to supply a plug for the cord, that meets local electrical codes and Underwriters Laboratories (UL) requirements.

Data Cabling Requirements

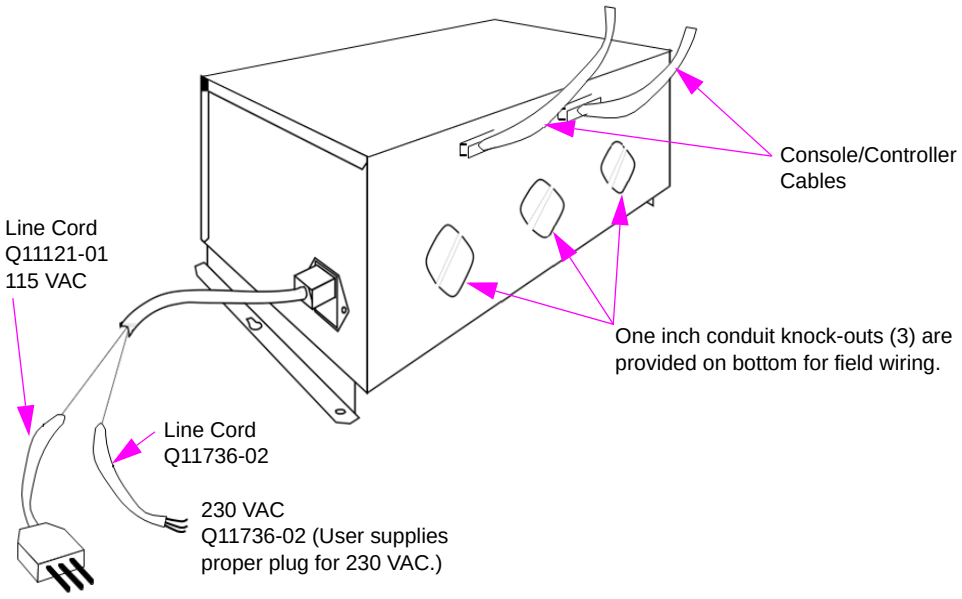
Following table lists the correct controller to D-Box data cable connections:

Interface	Controller	Cable Part #	Cable Length
TWI	PAM 1000 or Transac System 1000	Q11542-52	10’
TWI	PAM 1000 or Transac System 1000	Q11542-53	50’
TWI	PAM 1000 or Transac System 1000	Q11542-54	100’
TWI	PAM 1000 or Transac System 1000	K93391-01	Pigtail cable kit (use with 14 ga field wiring to extend to 2600’ maximum
TWI	Transac 12-G Console	R19000-02	6’ (use with 14 ga field wiring to existing channel on PA0133 D-Box)

Install all cables so that they are protected from damage or accidental disconnection. Route the cables along a wall or under a counter and secure with cable ties or suitable cable clamps.

Do not route data wires over fluorescent light, compressor wiring, etc., or near other sources of interference.

Figure 7: Cable Requirements



Note: An isolated receptacle that meets the local electrical code requirements is supplied by the user. The receptacle providing power to the PA0261 must be a properly isolated ground receptacle (Hubbell #IG 5261 or the equivalent). The green grounding screw must be attached to the grounding conductor.

Field Wiring Requirements

A wiring trough will be required in the vicinity of the D-Box for terminating the conduit runs from the dispensers. Three 1-inch knockouts are provided on the bottom of the D-Box for running conduit between the box and the wiring trough.

Use 14 AWG stranded wire for data wires to Gilbarco dispensing equipment. Leave plenty of wire exposed as a service loop in the wiring trough. 16 inches of exposed wire will be needed inside the D-Box.

When pulling wires, be careful to avoid damage to the insulation.

Installing D-Box

To install the D-Box, proceed as follows:

1. Loosen two screws on bottom front of D-Box and lift lid.

2. Carefully remove and discard any packing material from D-Box.

3. Disconnect cable from the distribution board(s) T17651 at P101 and P102 (or P103). Also disconnect wiring pigtails from P106 and P107. In case of M14301 Board, cables will be at P101 and P102A/B (or P103A/B). For connector locations, refer to Figure 10 on page 21.

⚠ CAUTION

Working on PCBs without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

4. Slide mounting tray [with circuit board(s)] up and out of the D-Box.
   Note: The boards are removed to avoid unnecessary damage to components while mounting the unit to the wall.

5. Mount D-Box to the wall.
   - Allow clearance on left side to connect AC cable.
   - Allow clearance above the D-Box so that the cover can be removed.

6. Mount AC receptacle within 6 feet of the D-Box.

7. Install conduit for data wires between the wiring trough and the D-Box. Pull data wires up into the D-Box leaving 16 inches of wire inside the D-Box. This allows for easy installation of wiring pigtails.

8. Connect data wires to wiring pigtails. In case of M14301 Board, wires will be directly terminated on box type connectors whereas in case of T17651 to wiring pigtails (see Figure 8 on page 20).

9. Replace mounting tray [with circuit board(s)]. Reconnect cables as required to the circuit board(s). For T17651 Board, reconnect P101, P102 or P103, P106, P107. For M14301 Board, reconnect P101, P102 A/B or P103A/B.

10 Connect data cable(s) to 9-pin D-Sub connectors. In case of T17651 Board, plug MTA Pigtails to the circuit board(s). In case of M14301 Board, connect cables directly to box connectors present on board.

11 Verify that the jump jack settings are correct for your configuration. For correct jump jack configuration, refer to "Jump Jack Configuration".

Note: When installing the universal D-Box for a RS-422 application (Passport), jump jack JP9 must be installed for the correct hardware configuration. Configure jump jack JP9 for 45 mA current loop for CRINDs/dispensers and 20 mA for use with G-CAT 2 and G-CAT 3.

Jump Jack Configuration

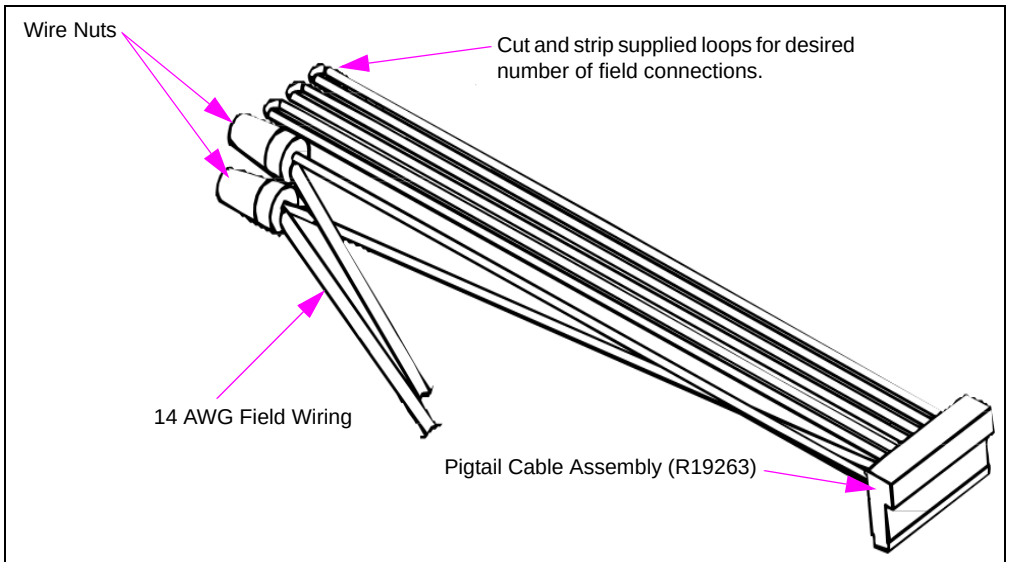
Configuration	1 Input/8 Loops	1 Input/16 Loops	2 Inputs/8 Loops Each
TWI: Dispensers	Figure 9 on page 20 and Figure 10 on page 21	Figure 11 on page 22 and Figure 12 on page 23	Figure 13 on page 24 and Figure 14 on page 25
RS-422: Dispensers or CRINDs	Figure 15 on page 26 and Figure 16 on page 27	Figure 17 on page 28 and Figure 18 on page 29	Figure 19 on page 30 and Figure 20 on page 31
RS-422: 8 Dispensers, 8 CRINDs			Figure 19 on page 30 and Figure 20 on page 31
RS-422: 8 Dispensers or CRINDs, 4 G-CATs			Figure 21 on page 32 and Figure 22 on page 33
RS-422: 4 G-CATs	Figure 23 on page 34 and Figure 24 on page 35		

12 Plug in AC power cord.

13 Change jump jacks (JP1-JP8) one at a time to the NORMAL position. Verify operation of card readers and/or dispensing units.

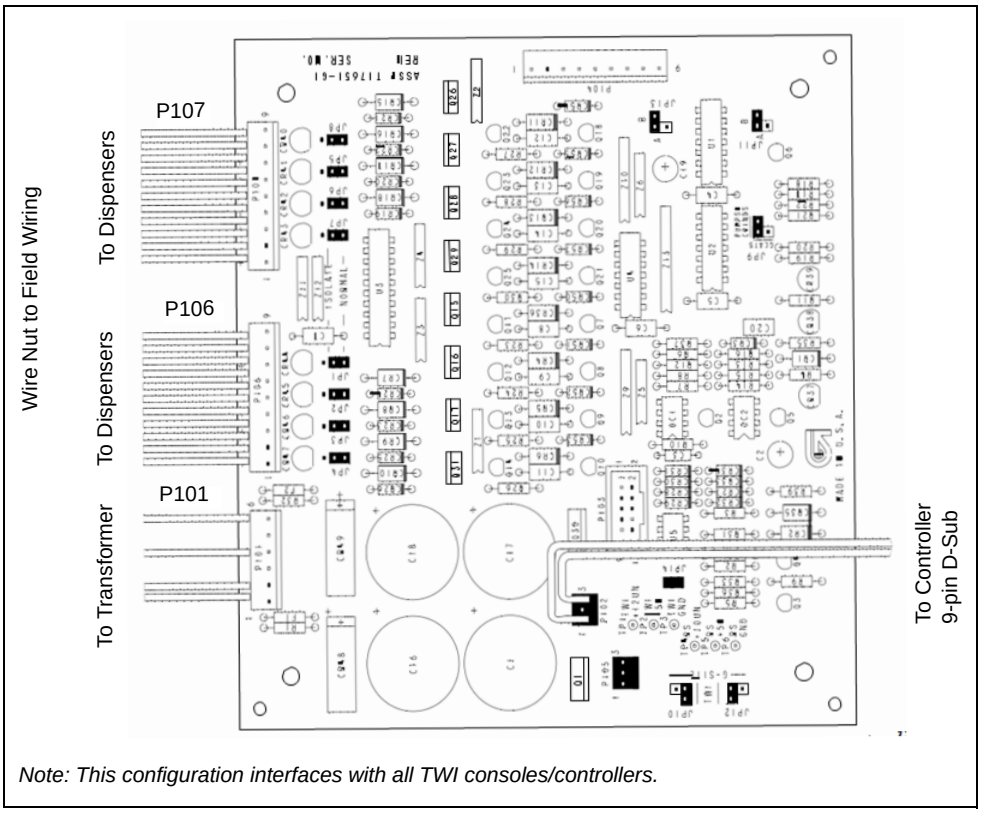
14 Replace D-Box cover and secure with screws.

Figure 8: Field Wiring to MTA Pigtails for T17651 Board



Note: If unused pigtail loops are cut, the exposed ends must be capped with wire nuts.

Figure 9: Jumper Settings - TWI Interface, Single T17651 Board, Single Input, 8 Loops



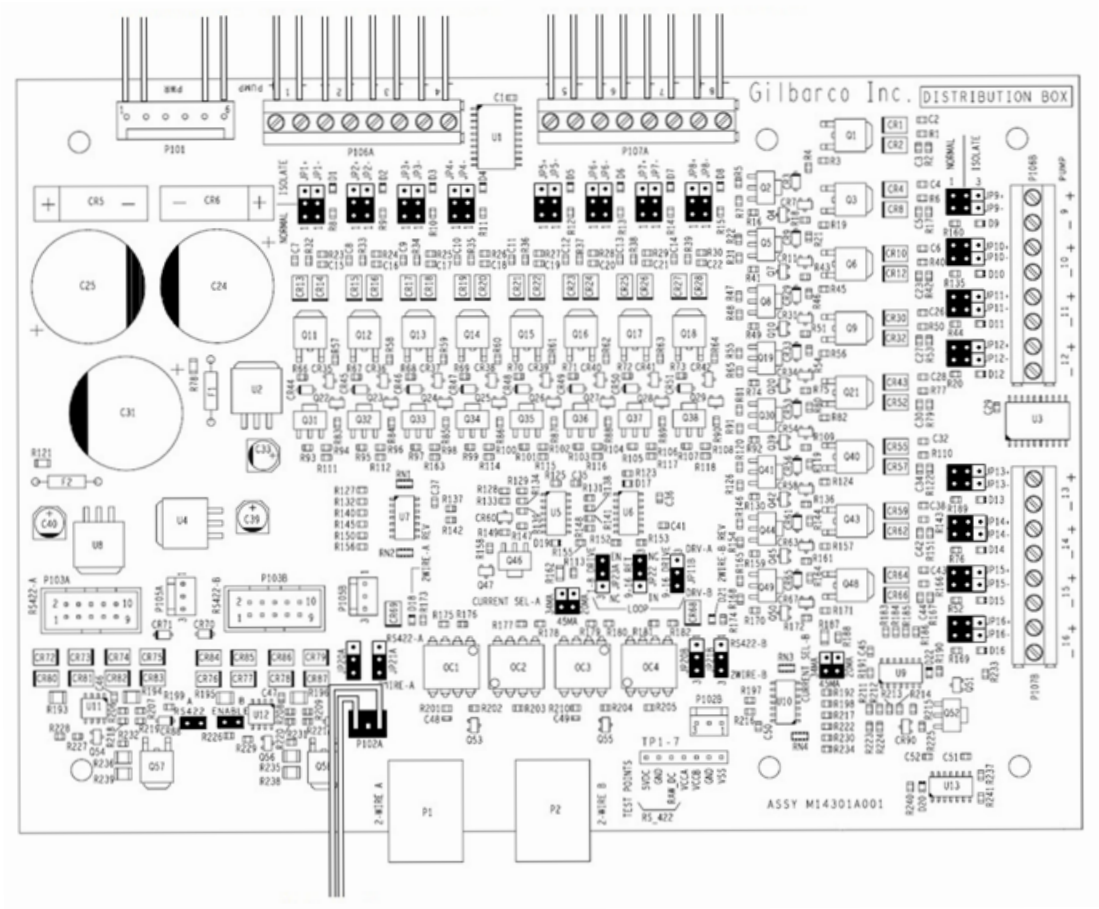
Note: This configuration interfaces with all TWI consoles/controllers.

Figure 10: Jumper Settings - TWI Interface, M14301 Board, Single Input, 8 Loops

P101
To Transformer

P106A
To Dispensers or
CRIND Devices

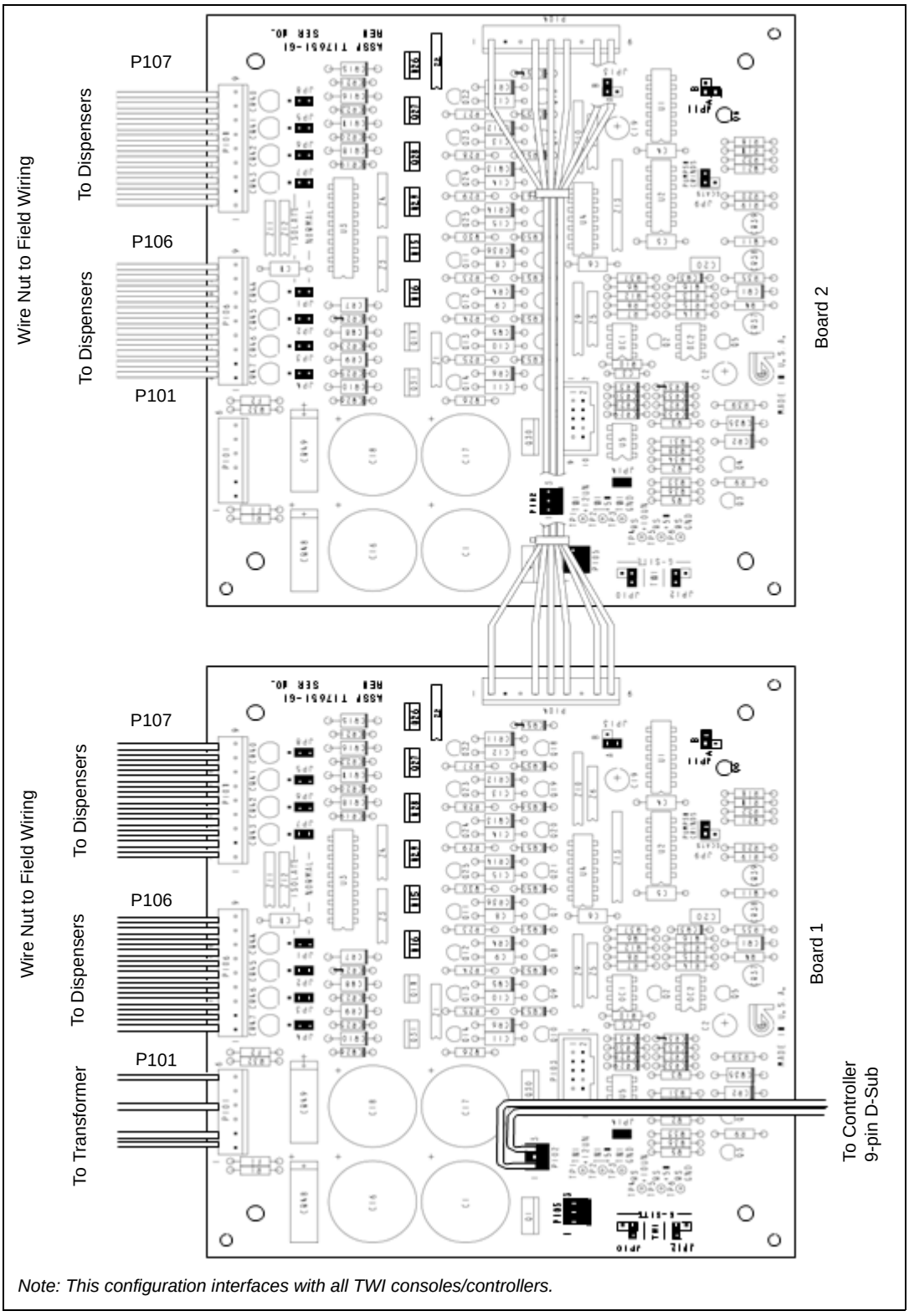
P107A
To Dispensers or
CRIND Devices



To Controller
9-pin D-Sub

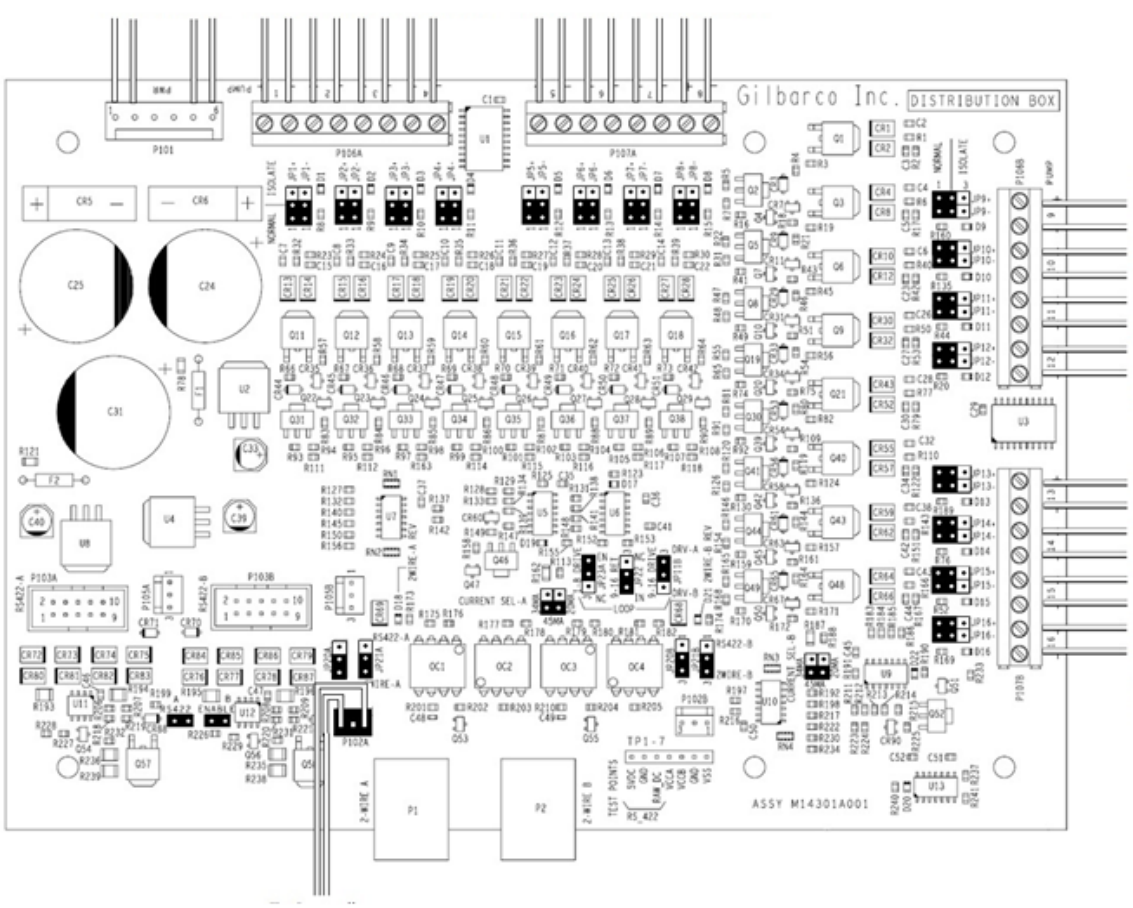
Note: This configuration interfaces with all TWI consoles/controllers.

Figure 11: Jumper Settings - TWI Interface, Dual T17651 Boards, Single Input, 16 Loops Total



Note: This configuration interfaces with all TWI consoles/controllers.

Figure 12: Jumper Settings - TWI Interface, M14301 Board, Single Input, 16 Loops Total



Note: This configuration interfaces with all TWI consoles/controllers.

Figure 13: Jumper Settings - TWI Interface, Dual T17651 Boards, Two Input of 8 Loops Each

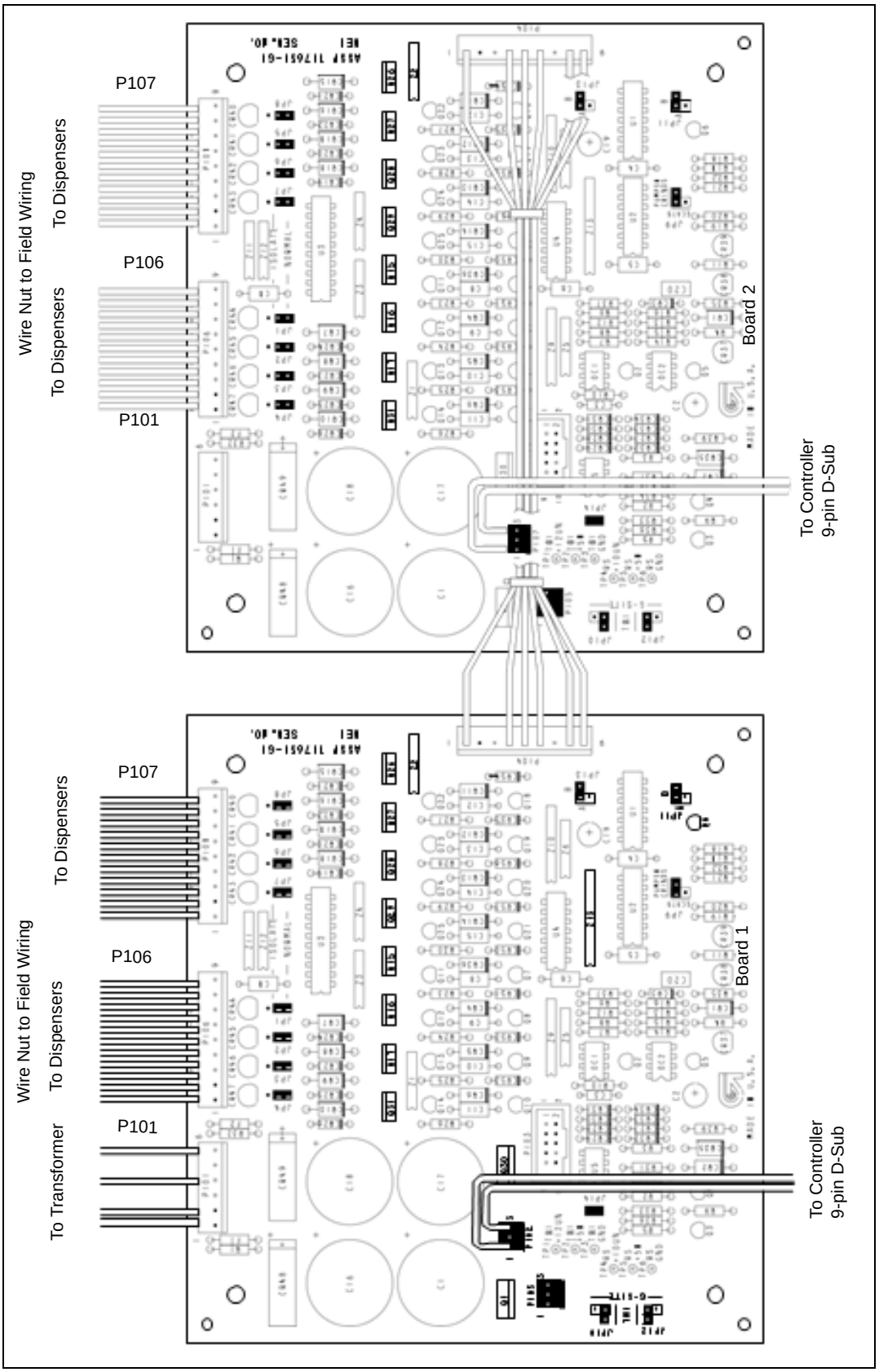


Figure 14: Jumper Settings - TWI Interface, M14301 Board, Two Input of 8 Loops Each

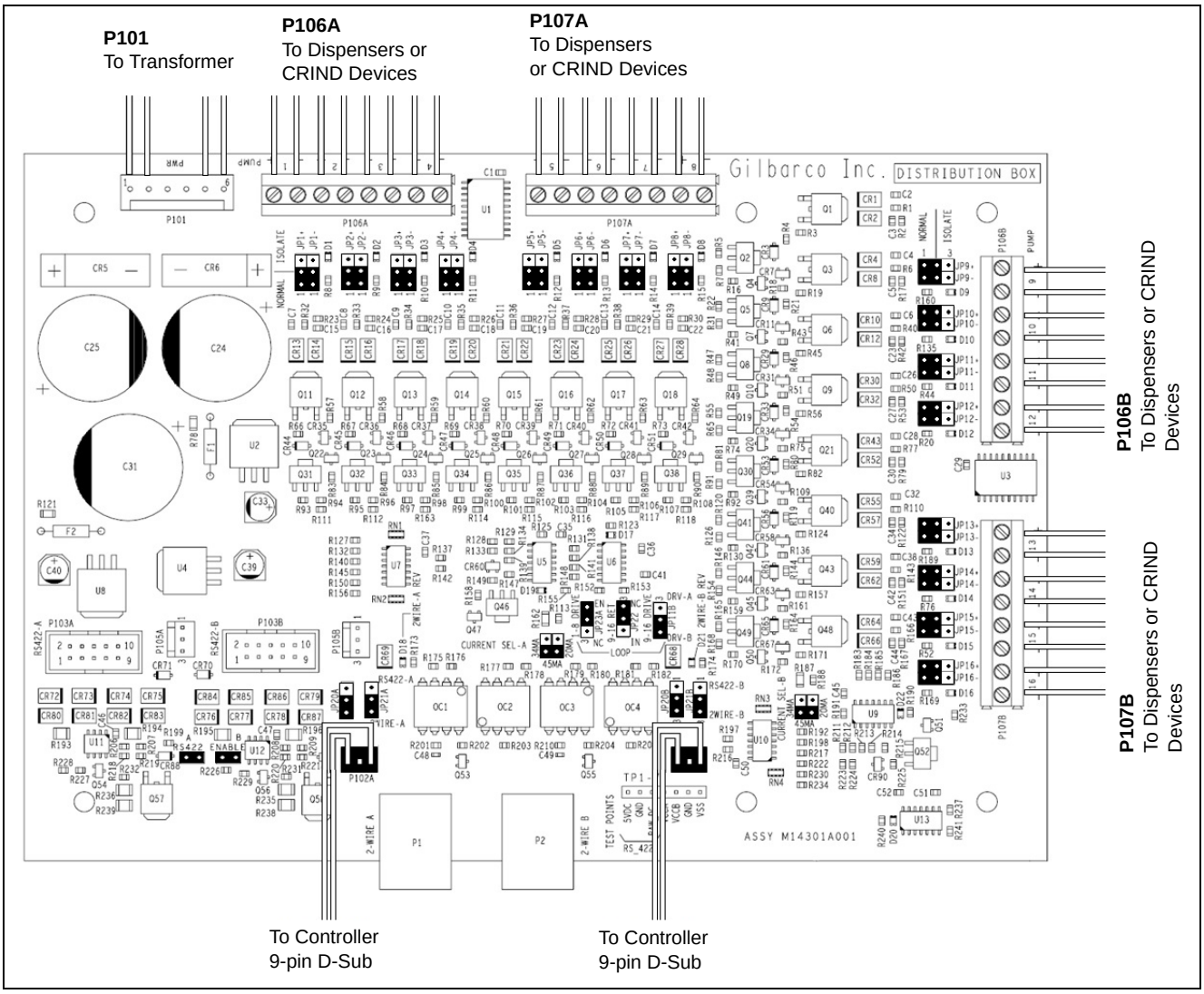


Figure 15: Jumper Settings - RS-422 Interface, Single T17651 Board, Single Input, 8 Loops

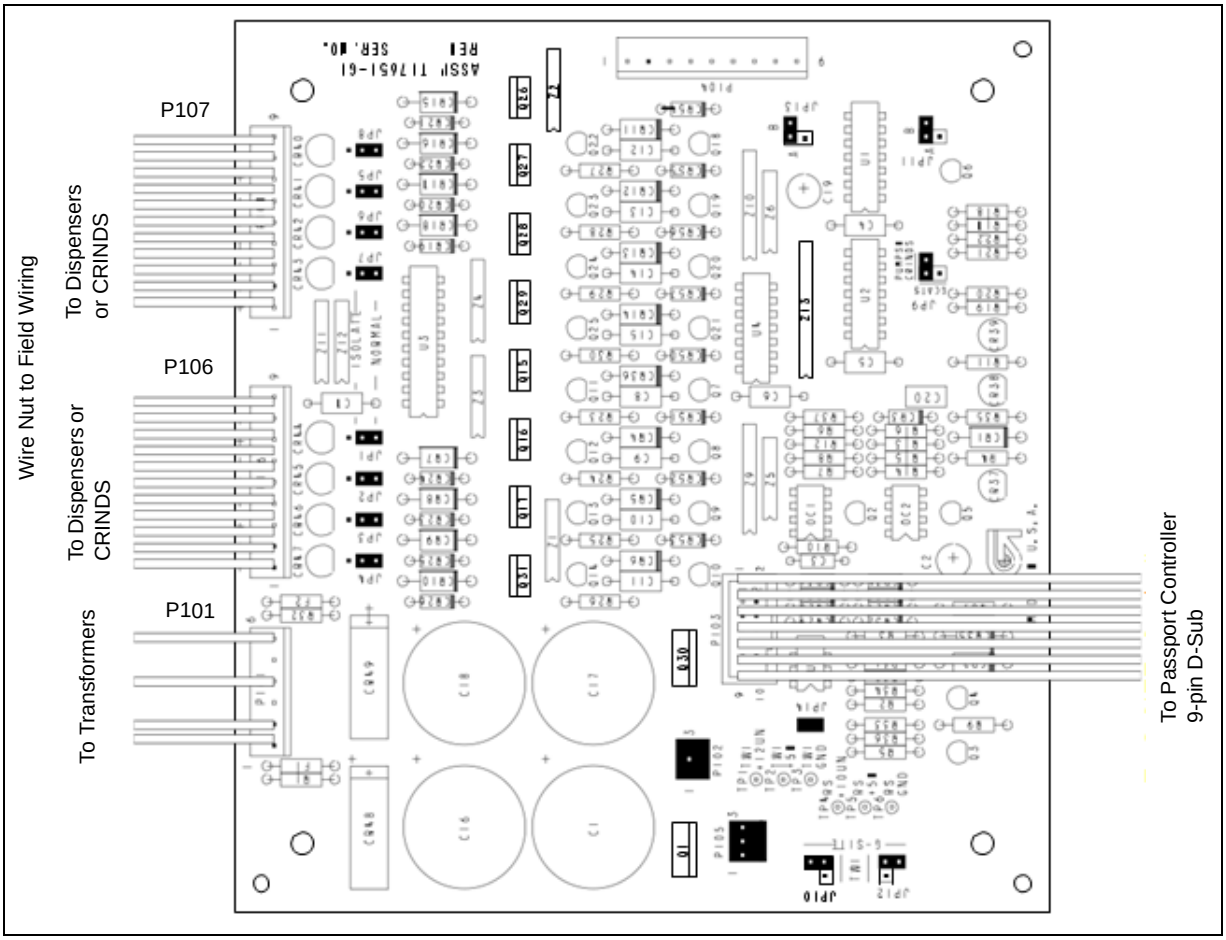


Figure 16: Jumper Settings - RS-422 Interface, M14301 Board, Single Input, 8 Loops

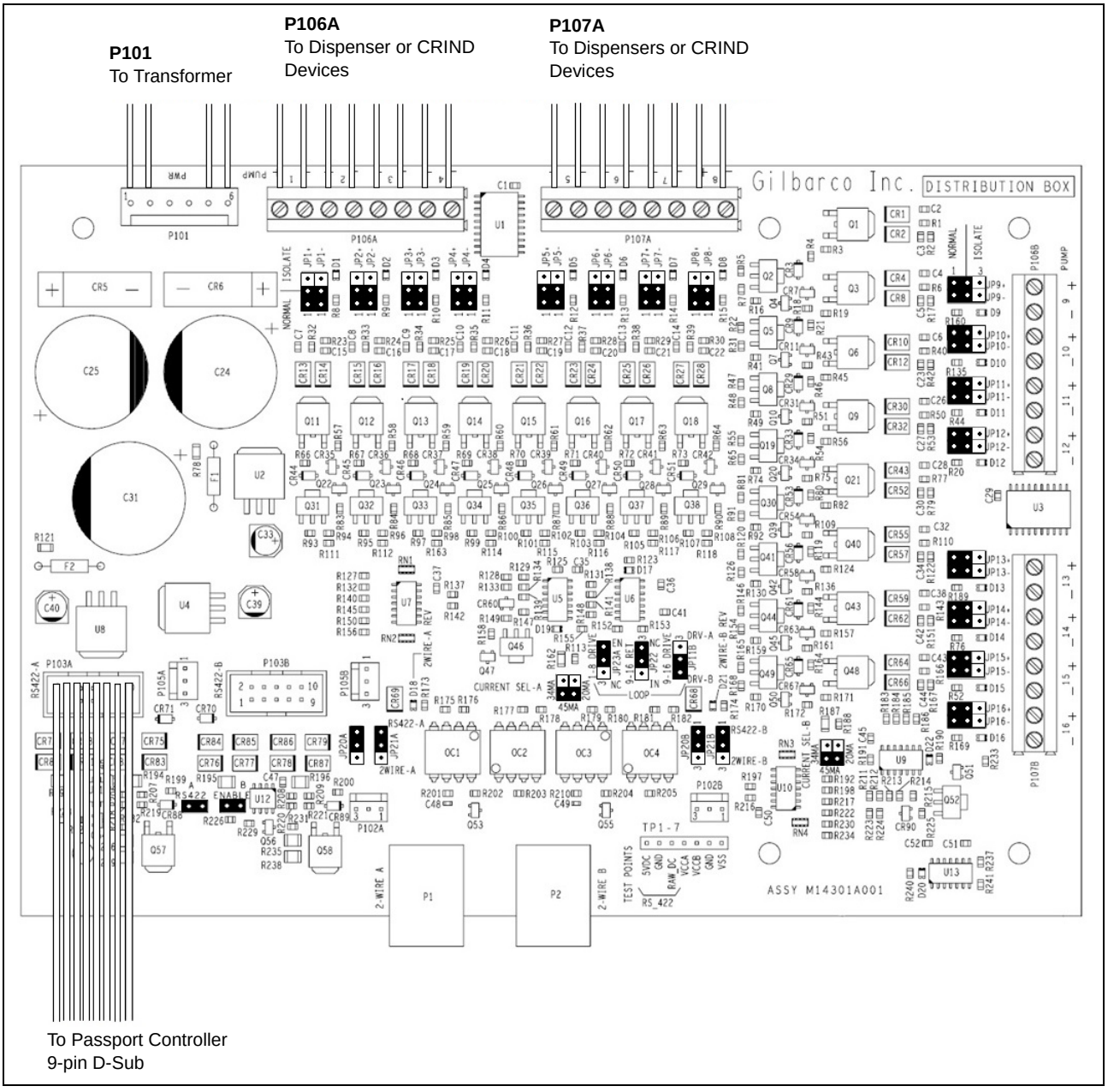


Figure 17: Jumper Settings - RS-422 Interface, Dual T17651 Boards, Single Input, 16 Loops Total

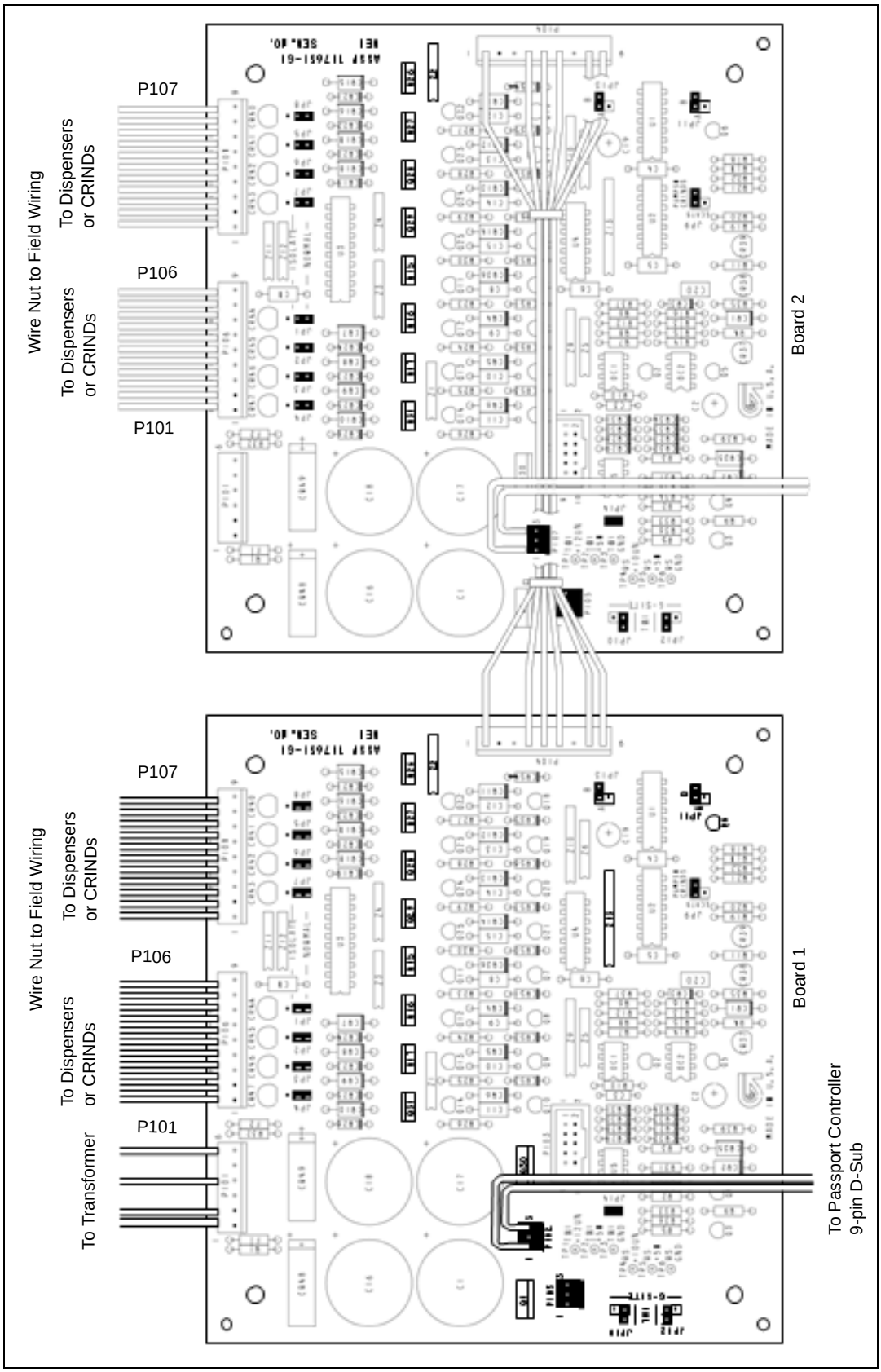


Figure 18: Jumper Settings - RS-422 Interface, M14301 Board, Single Input, 16 Loops Total

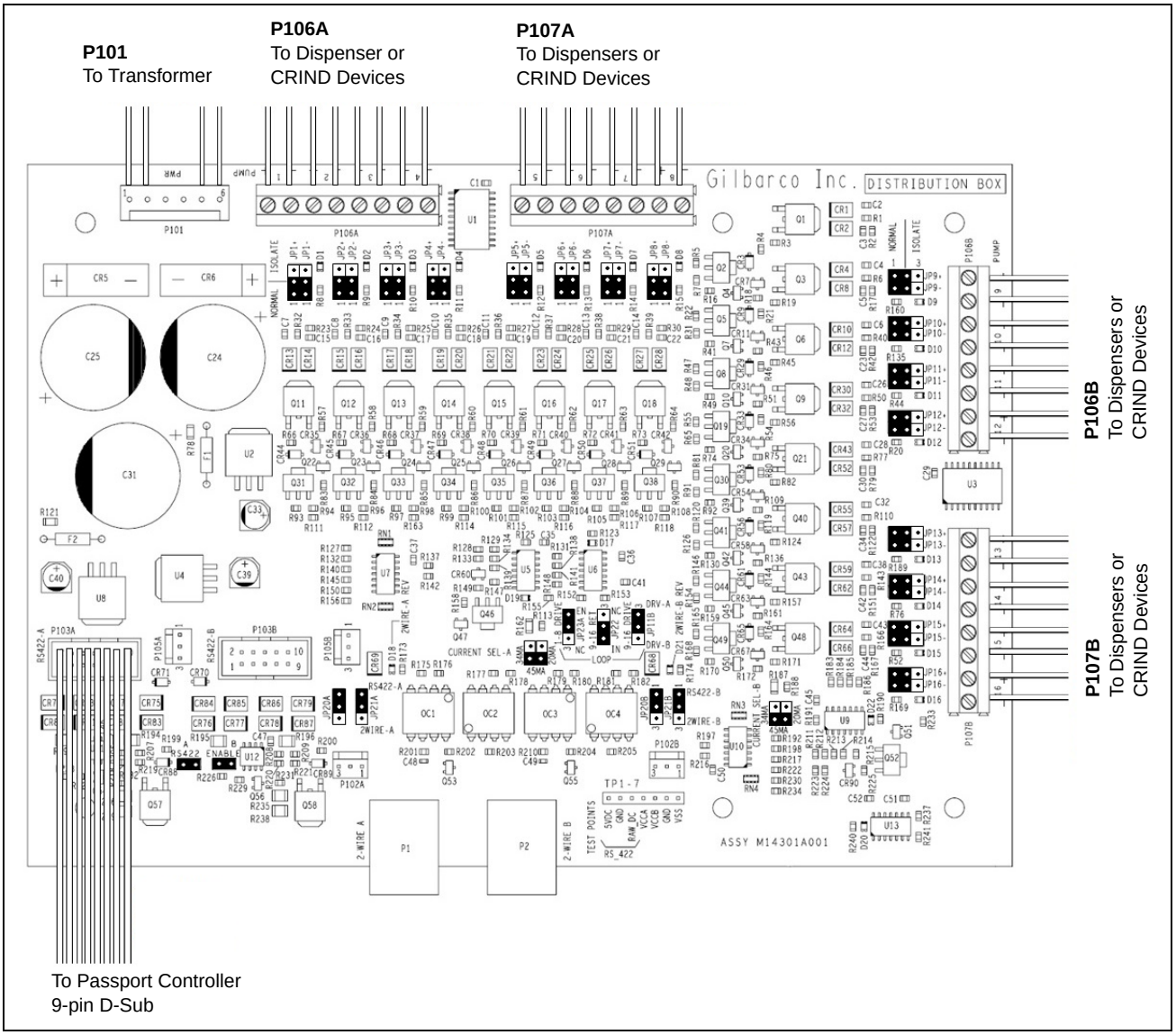


Figure 19: Jumper Settings - RS-422 Interface, Dual T17651 Boards, Two Inputs of 8 Loops Each

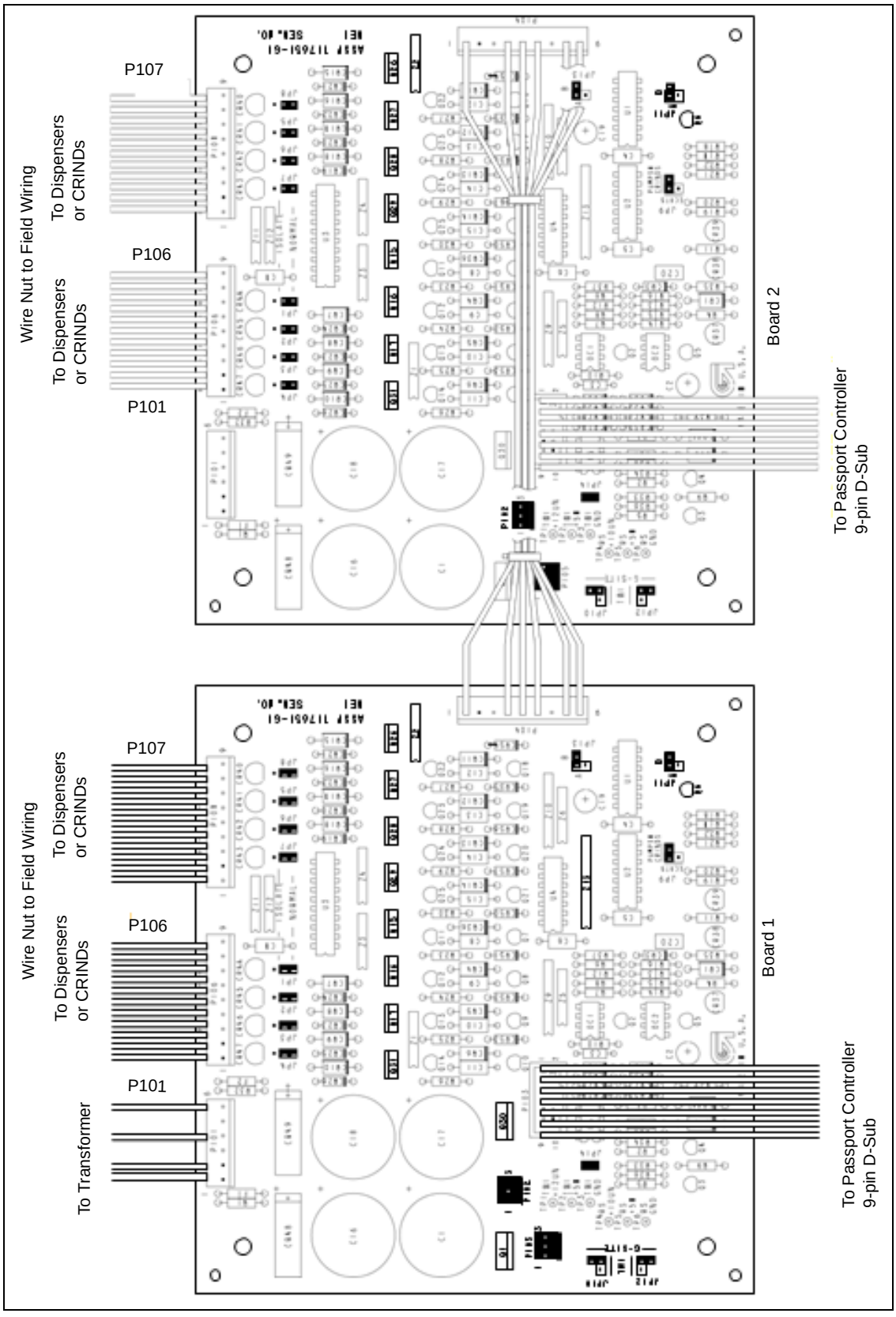


Figure 20: Jumper Settings - RS-422 Interface, M14301 Board, Two Inputs of 8 Loops Each

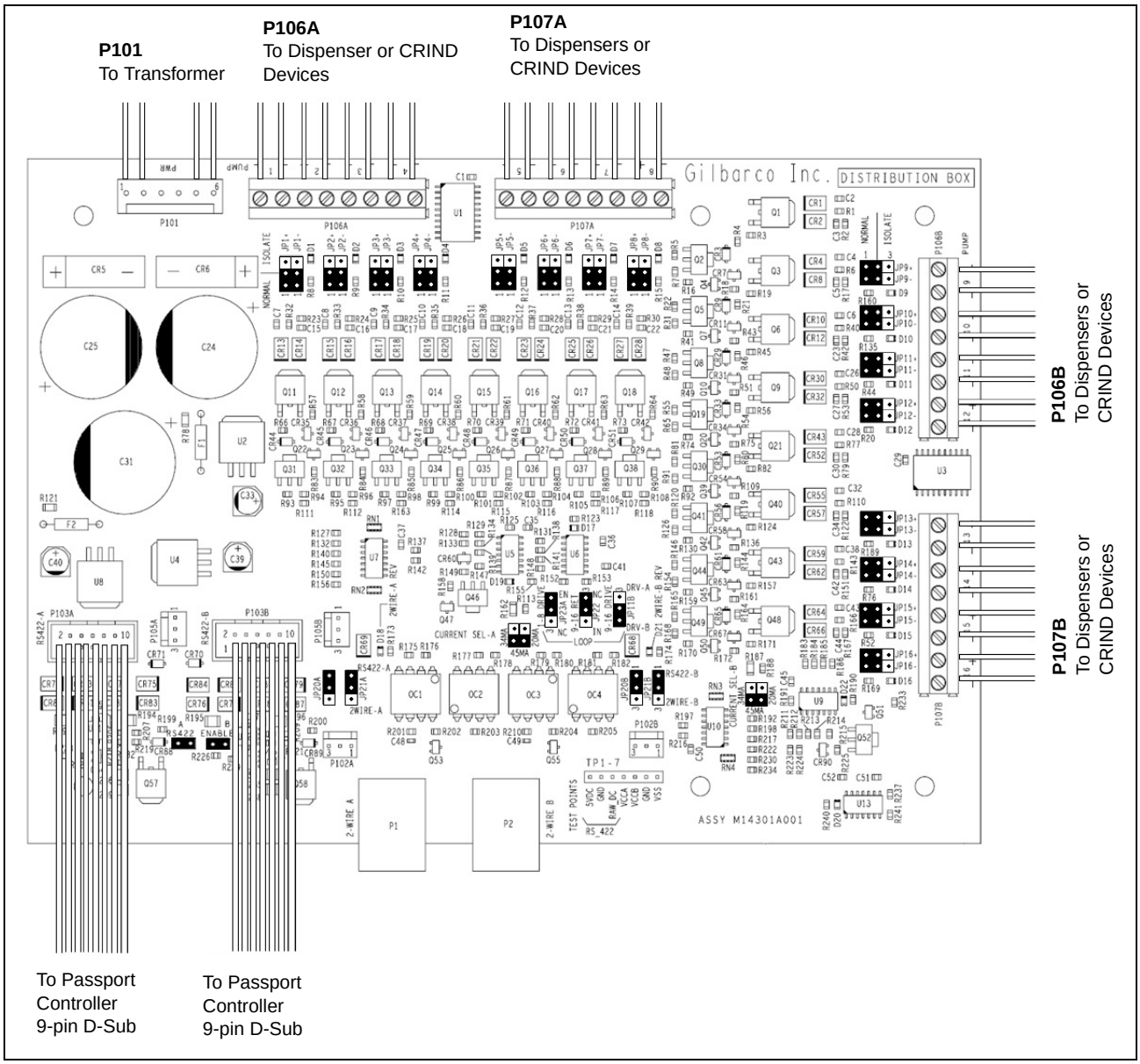


Figure 21: Jumper Settings - RS-422 Interface, Dual T17651 Boards, One Input Dispenser or CRINDs (8 Loops) and One Input G-CAT (4 Loops)

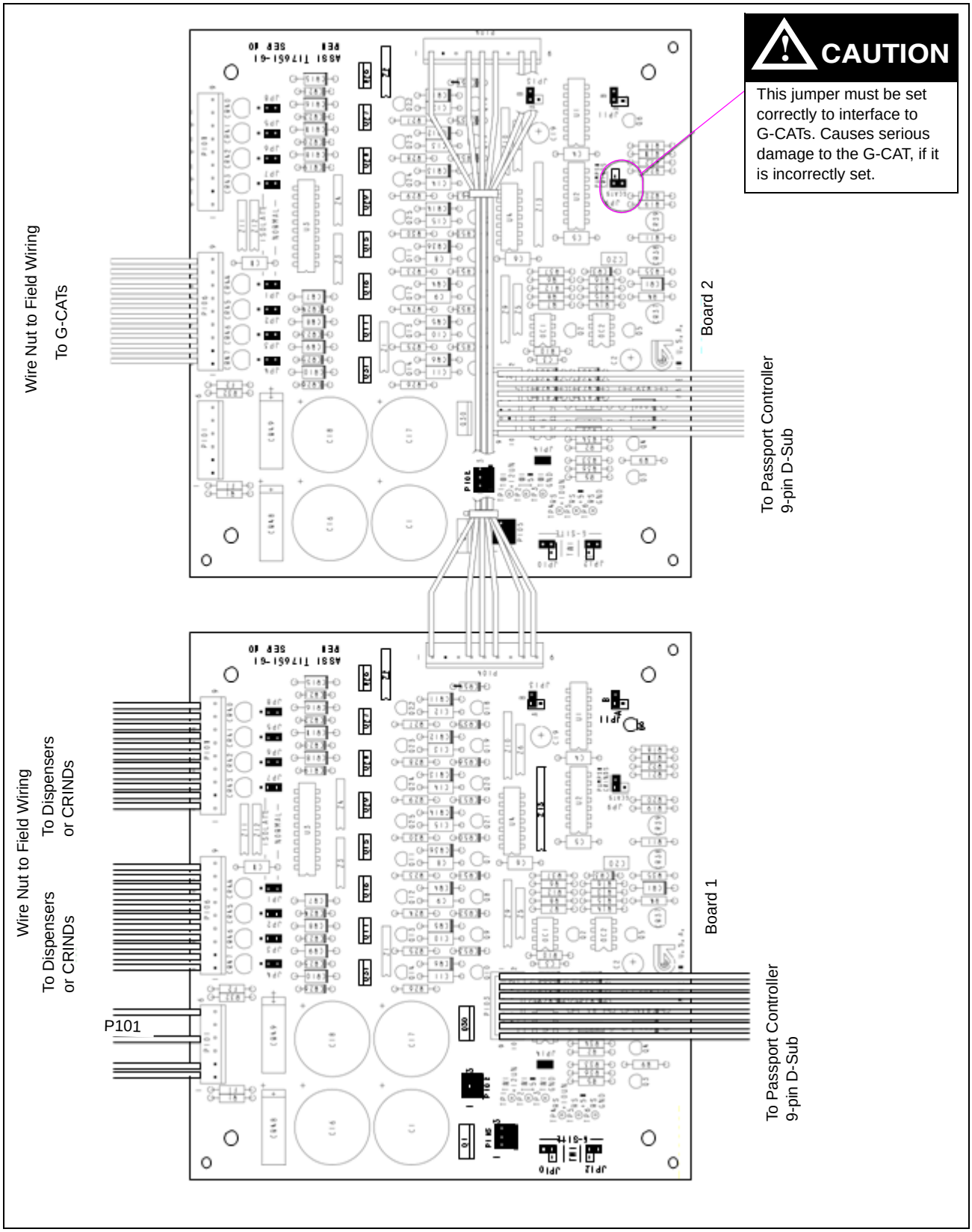


Figure 22: Jumper Settings - RS-422 Interface, M14301 Board, One Input Dispenser or CRINDs (8 Loops) and One Input G-CAT (4 Loops)

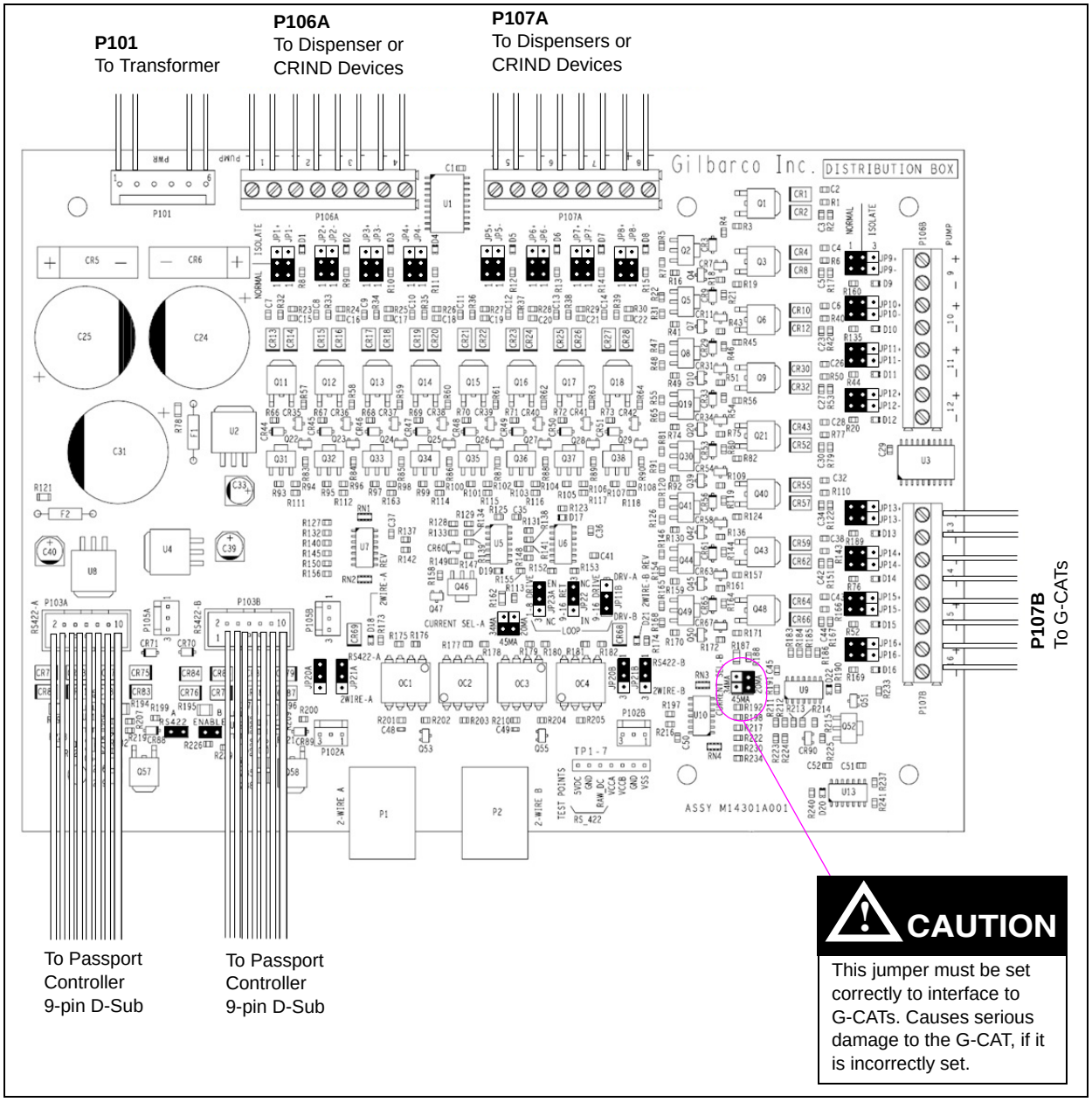


Figure 23: Jumper Settings - RS-422 Interface, Single T17651 Board, Single Input, G-CAT to Passport System

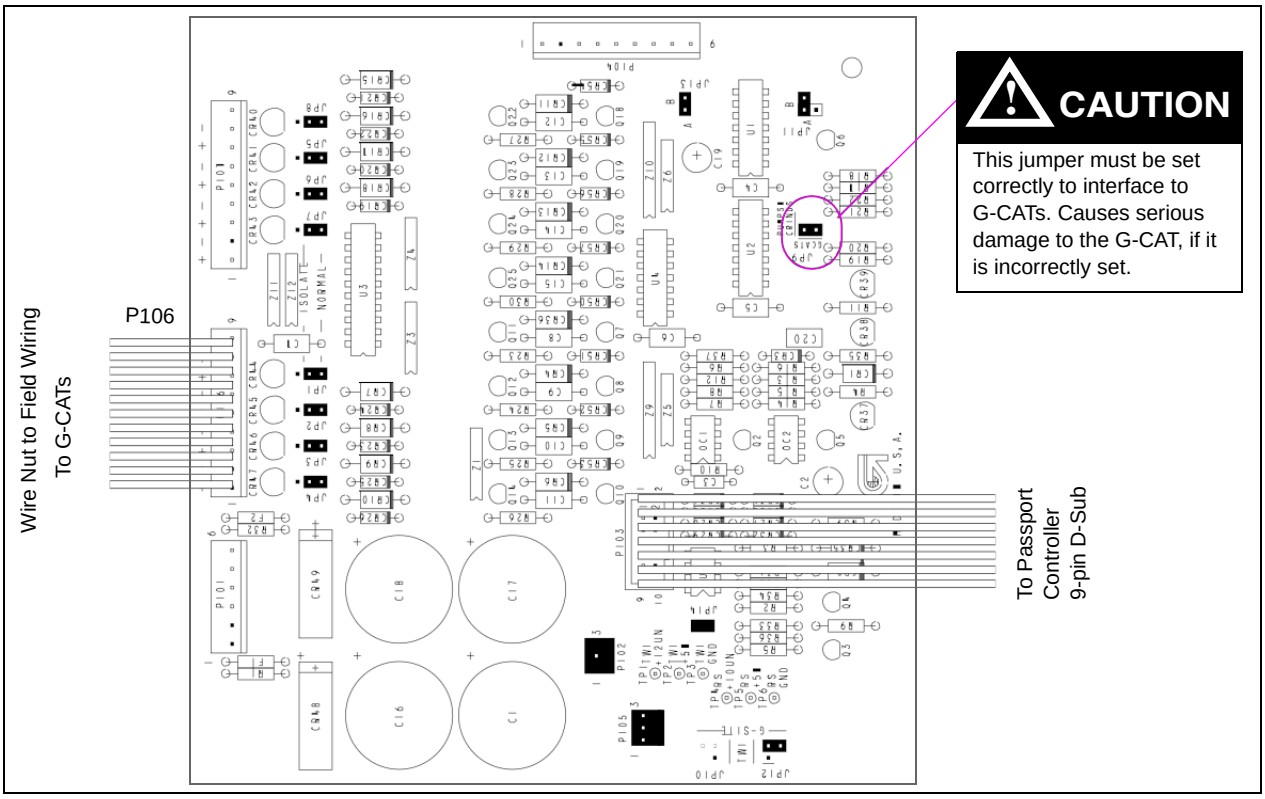
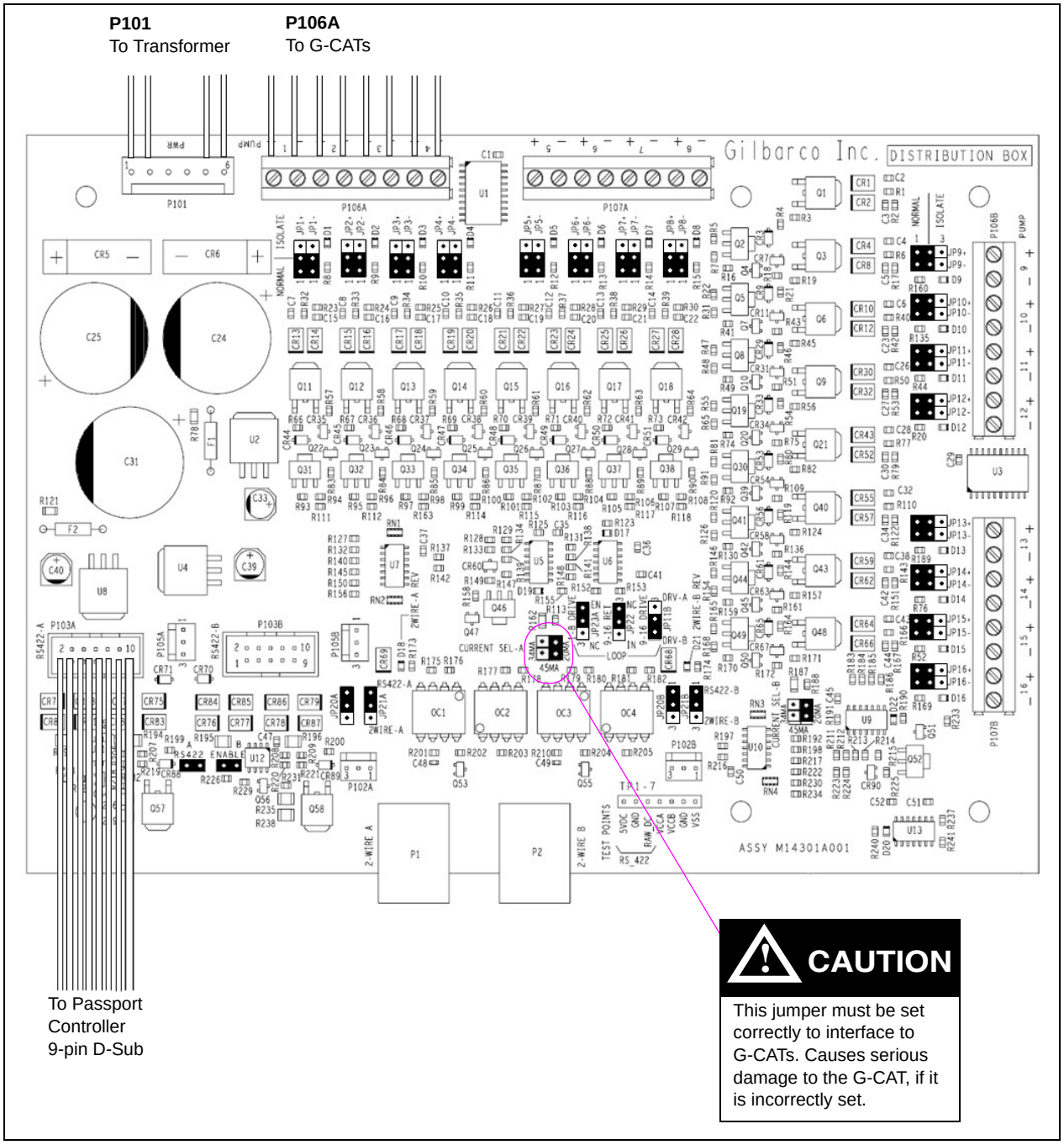


Figure 24: Jumper Settings - RS-422 Interface, M14301 Board, Single Input, G-CAT to Passport System



Installing Expansion Kit K93717 (for D-Box with T17651 Board)

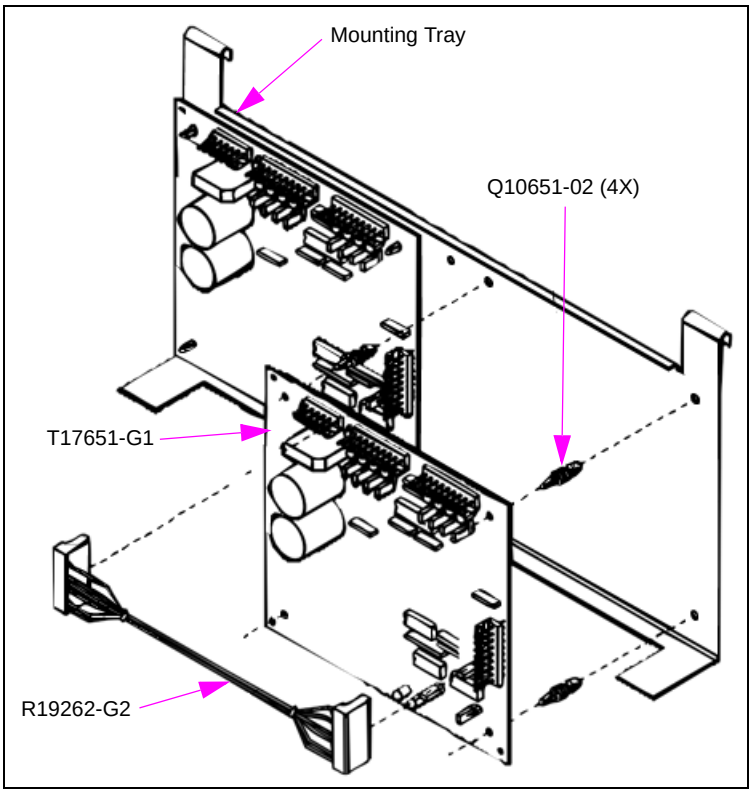
This kit provides the necessary parts to convert a Single-board D-Box (PA0261) to a dual-board, single or dual input unit.

To install the Expansion Kit, proceed as follows:

1. Remove AC input power to D-Box.
2. Loosen the two screws on the top cover. Slide top cover up to remove it from the bottom housing.
3. Remove P101, P102 or P103, P106, and P107 from the existing distribution board.
4. Slide mounting tray (with circuit board) up and out of the D-Box.
5. Install the four stand-offs supplied from kit into the holes provided on the mounting tray as shown in Figure 11 on page 22.
6. Install the new distribution board on the stand-offs. Ensure that the new distribution board is oriented in the same manner as the original distribution board (see Figure 11 on page 22).
7. Install the expansion cable between the two boards.
8. Set jump jacks for your configuration, refer to "Jump Jack Configuration" on page 19.
9. Remove knockout in the bottom housing to allow access to the modular jack connector on the new board. Install the D-Sub input cable (use R19249-G1 for Passport or R18810-G1 for all other controllers).
10. Connect the field wiring to the prewired MTA connector as shown in Figure 9 on page 20.
11. Reinstall the mounting tray into the guide in the bottom housing. Ensure that the two input cables are above the tray.
12. Reinstall the connectors removed in step 3. Install new field wiring connectors P106 and P107 on newly installed distribution board.
13. Connect new external cable to console or controller if installation is required.
14. Set the NORMAL/ISOLATE jump jack to NORMAL for channels being used.
15. Reapply power and check system for proper operation.

16 Replace top cover and tighten screws.

Figure 25: PCB Mounting to Sheet Metal Plate



Installing the Expansion Kit is now complete.

GILBARCO VEEDER-ROOT

© 2016 Gilbarco Inc.
7300 West Friendly Avenue · Post Office Box 22087
Greensboro, North Carolina 27420
Phone (336) 547-5000 · http://www.gilbarco.com · Printed in Mexico
MDE-2713C Universal Distribution Box (D-Box) Installation Manual · August 2016