



## Installation Instructions

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### EZ-Solution Interconnect Box

#### **Read This Book**

This book has important information for safe installation and operation of this equipment. Read and understand this book before applying power. Keep this book and tell all service personnel to read this book. **If you do not follow the instructions, you can cause damage to the equipment, injury, or death.**

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## Table of Contents

I.	Dangers, Warnings and Precautions.....	3
II.	Introduction .....	4
III.	EZ-Solution System Components.....	5
IV.	System Setup .....	7
V.	EZ-Solution Interconnect Box .....	8
VI.	EZ-Solution Interconnect Box Settings .....	9
	A. Switch #12, Settings.....	9
	1. Dispensers without Credit Card Modules.....	9
	2. Dispensers with Credit Card Modules.....	9
	3. Hybrid Systems.....	10
	4. Mechanical Pumps with an M2E Upgrade	
	B. Switch #13, Settings.....	11
	C. Switch #1, #2 and #3, Settings.....	12
	D. Dispenser Communication Connections .....	13
VII.	Loop Card Settings.....	14
	A. Switch #1, Settings.....	14
	1. Tokheim Dispensers .....	15
	2. Bennett Dispensers with 485 Comm.....	15
	1. Bennett Dispensers with Current Loop .....	15

# **I. Dangers, Warnings and Precautions**

FOR THE SAFE INSTALLATION, MAINTENANCE, AND OPERATION OF THE EZ-SOLUTION SYSTEM AND RELATED EQUIPMENT, READ AND UNDERSTAND ALL WARNINGS AND CAUTIONS.

**"DANGER": means: If you do not follow the instructions, severe injury or death will occur.**

**"WARNING": means: If you do not follow the instructions, severe injury or death can occur.**

**"CAUTION": means: If you do not follow the instructions, damage can occur to the equipment.**

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**"DANGER": Disconnect all power to this equipment and associated dispensers equipment during installation, service or any maintenance. Failure to do so can cause injury or damage equipment.**

**"WARNING": Maintenance and repairs must be done by QUALIFIED/TRAINED personnel.**

**"WARNING": To prevent electric shock, keep the electrical parts of the console dry.**

**"WARNING": You must have training in the installation and service of fuel dispensing equipment before working on this system.**

**"WARNING": Make sure this equipment is correctly grounded. Failure to do so can cause injury or damage equipment.**

**"CAUTION": Electronic components are static sensitive. Use proper static precautions (static straps) before working on the equipment.**

**"WARNING": Failure to properly ground all equipment can cause injury or damage equipment.**

**"WARNING": Installation must comply with National Code (NFPA #70), Automotive and Marine Service Code (NFPA #30A), Federal, State and local codes.**

**"CAUTION": Each dispenser must have a 12 gauge or larger green stranded ground wire connected from the grounding lug of the junction box to the main electrical service panel ground. (National Electrical Code, Article 514-7). It is unacceptable to rely on the conduit for this grounding requirement.**

## **II. Introduction**

**The new EZ-Solution console system from TMS is an improved dispenser control system which is very flexible and will readily adapt to most control applications. The pump card and IC board switches are programmed at the factory or at the site for whatever pump/dispenser configuration is desired.**

**The EZ-Solution system can operate the following with the same IC box and console.**

**MECHANICAL PUMPS (with the M2E or standard TMS-23 relay boards)**

**ELECTRONIC DISPENSERS (Gilbarco, Wayne, Tokheim, Bennett)**

**ELECTRONIC DISPENSERS with PAY-AT-THE-PUMP MODULES (Gilbarco, Wayne)**

**MECHANICAL AND ELECTRONIC DISPENSERS (Hybrid applications) COMING SOON**

**For retrofit installations the EZ-Solutions IC box will work with traditional MPC and EZ consoles.**



Fig. 1 – EZ Solution System

### **III. EZ-Solution System Components**

#### **A. EZ-Solution System Components**

- **Console ( 8 or 16 Fueling Positions)**
- **IC Box (with up to 8 pump cards handling 2 hoses per card. If pay-at-the pump card readers are employed, an additional IC box *may be needed*. Call TMS to confirm).**
- **Pump Cards (Each IC box comes with two pump cards additional cards may be necessary)**
- **Cable (Specify 25ft., 50ft., 75 ft., 100 ft., or 150 ft., Specials upon request)**

***NOTE: Optional Epson thermal printer is available for the EZ-Solution system.***

#### **B. System Specifications**

##### **SYSTEM POWER REQUIREMENTS:**

EZ-SOLUTIONS console power Input, dedicated 115VAC, .5 Amp Max. 50/60 Hz.  
AC Emergency OFF Contact, 115 VAC 1 AMP Max., 120 Watt Max.

**ENVIRONMENTAL REQUIREMENTS:**

32 F to 104 F (0 C to 40 C), Non-condensing humidity.  
Avoid exposure to direct sunlight or heat. Locate the console in an area that allows an unobstructed view of all fueling positions.

**CONSOLE TO INTERCONNECT BOX CONNECTION:**

**Electronic Dispensers** - Connection between the EZ-SOLUTIONS console and the EZ-SOLUTIONS interconnect box is made through a 25 foot round cable having 15 conductors and 2 "DB-9" type connectors. Longer optional cables are available through your dealer. The maximum recommended distance between the EZ-SOLUTIONS console and the EZ-SOLUTIONS interconnect box is 150 feet.

**Electronic Dispensers with M2E Converter Boards** - Connection between the EZ-SOLUTIONS Console and the OPTIONAL MECHANICAL 800F interconnect box with M2E converter boards is made through a 25 foot round cable having 15 conductors and 2 "DB-9" type connectors. Longer optional cables are available through your dealer. The maximum recommended distance between the EZ-SOLUTIONS console and the EZ-SOLUTIONS interconnect box is 500 feet.

**DIMENSIONS:**

EZ-SOLUTIONS Console 8" W x 4-1/2" H x 9-3/4" D  
EZ-Solutions IC Box 13-3/4" W x 15" H x 4" D

**WEIGHTS:**

EZ-SOLUTIONS Console	6 lbs.
EZ-SOLUTIONS IC Box	10 lbs.
EZ-SOLUTIONS Cable (25 ft.)	2 lbs.

**NOTE:** The above weights do not include shipping cartons or packing materials.

**C. PERIPHERAL INTERFACE INSTALLATION:**

In compliance with the UL regulations and standards that apply to the Petroleum Industry, the following information establishes installation parameters for the use of peripheral equipment with the TMS EZ-SOLUTIONS Control Console.

1. Any peripheral equipment must be UL listed.
2. Any peripheral equipment must have an Electronics Industry Association (EIA) Standard RS-232C or RS-422A communications interface (whichever is appropriate for the application).
3. Any peripheral equipment must not be installed in or above a hazardous location.
4. The peripheral interconnection cable must be either UL Style 1061 or 2462 suitable for interconnection of electronic equipment.

## IV. System Setup

Each EZ-Solution system console can be preprogrammed at the factory for either Gilbarco, Wayne, Bennett or Tokheim communication protocols. Please note that the EZ-Solution console pump configuration, i.e., fuel pricing, grade assignments, hose assignments, etc. are programmed during the site installation process using the EZ-CONFIG program. This program can be accessed through the TMS website and downloaded into the installer's computer. The TMS website is: [www.trianglemicrosystems.net](http://www.trianglemicrosystems.net).

### EZ-Solution Console Connections

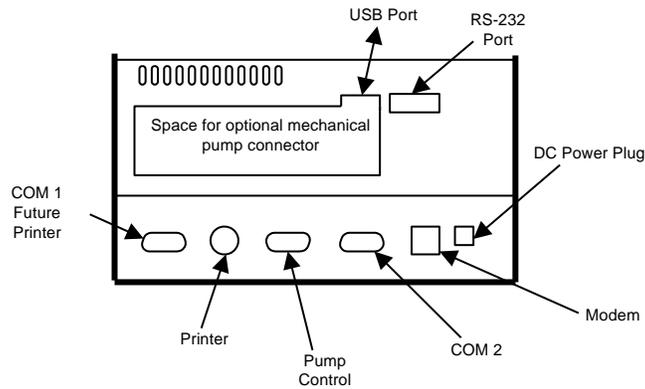


Fig. 2 – EZ Solution Console

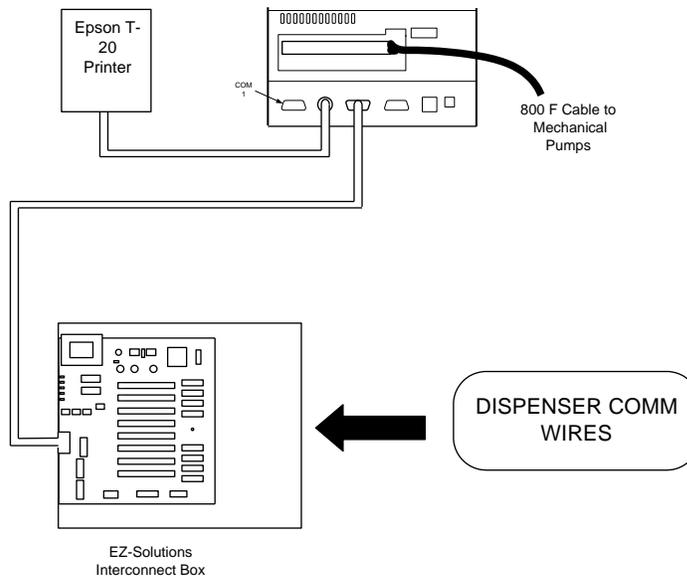


Fig. 3 – EZ Solution System Setup

# V. EZ-Solution Interconnect Box

The EZ-Solution IC box can be set up for Gilbarco, Wayne, Bennett and Tokheim Dispensers. For pay-at-the-pump applications only Gilbarco and Wayne can be configured at this time (5/21/2012). In addition the IC box can be setup for mechanical pumps with M2E converter boards.

The EZ-Solution IC box has five (5) programmable switches SW12, SW13, SW1, SW2 and SW3, shown below. In addition up to eight (8) loop cards can be inserted, which are programmed separately. An additional switch SW1 is located on each loop card.

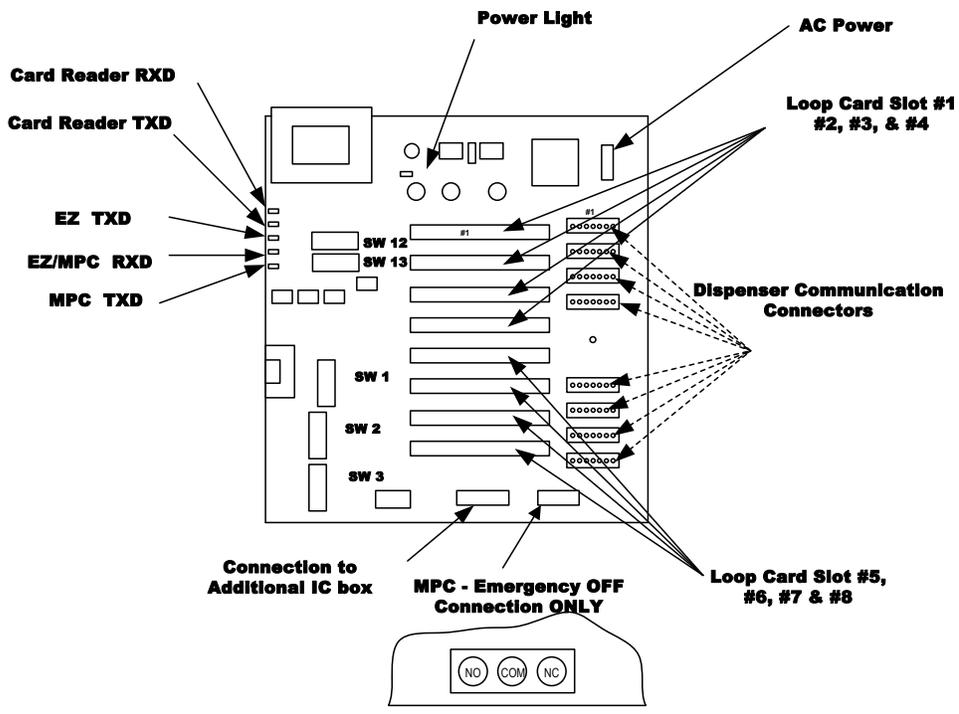
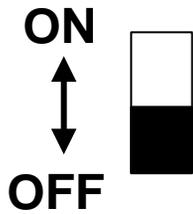


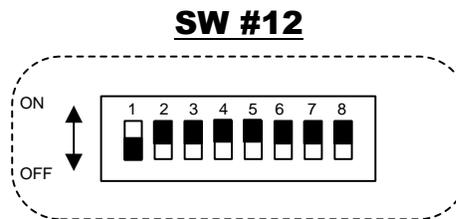
Fig. 5 – EZ Solution IC Box

## VI. EZ-Solution Interconnect Box Settings



*Note: The switch position#1, shown is in the ON position.*

### A. Switch #12, Settings



On switch #12 the numbers 1, 2, 3, 4, 5, 6, 7, 8 refer to the loop card positions.

The number one position (#1) on SW#12 refers to the first loop card (which is shown in the ON position), #2 to the second loop card, etc.

#### 1. Connecting to Electronic Dispensers without Credit Card Modules

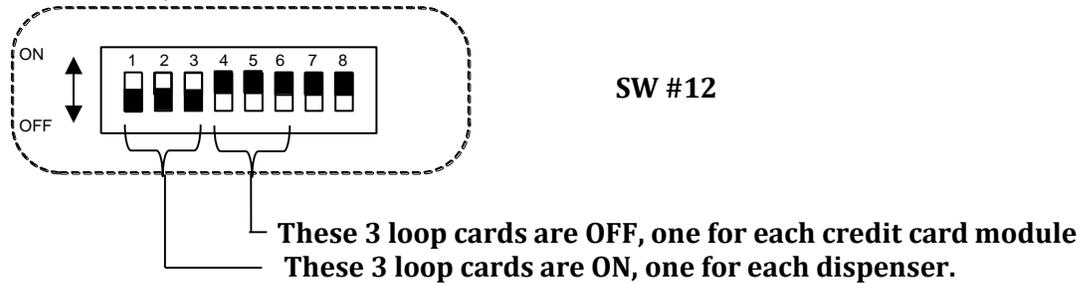
Each of the loop card positions will handle one dispenser with two fuel positions. If there are eight (8) loop cards in the EZ-Solutions IC box then the maximum number of dispensers is eight (8) with 16 fueling positions. Turn ON each loop card position for each dispenser.

#### 2. Connecting to Electronic Dispensers with Credit Card Modules

All dispensers and credit card modules operate on different communication loops and the EZ-Solutions IC box operates the same way. For each dispenser assign one loop card and for each credit card modules a separate loop card must be assigned.

**EXAMPLE:**

A customer has 3 dispensers with 3 credit card modules and switch #12 should be set up as follows;



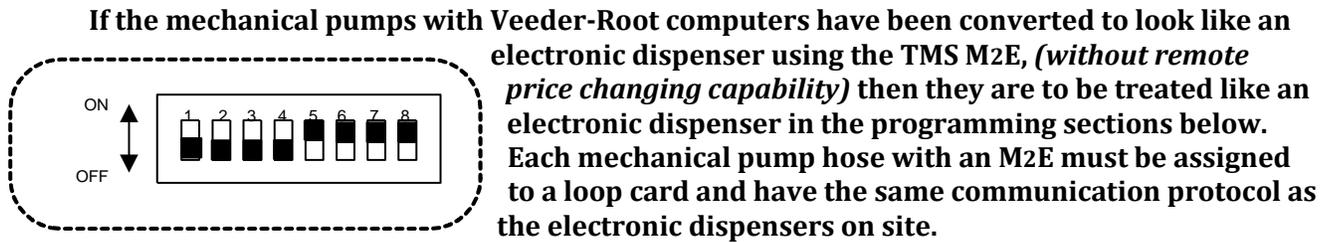
In this example the position of loop card #7 and #8 does not matter as there are no other dispensers to be connected to the IC box.

**3. Hybrid Connection (COMING SOON)**

The EZ Solution system can operate electronic dispensers with/without credit card modules and mechanical pumps with existing TMS 800F cables and TMS23 relay boards.

Each electronic dispenser is assigned to a loop card and each credit card module is assigned to a different loop card and each mechanical pump is connected directly to the EZ-Solutions console with an 800F cable. If the mechanical pump is directly connected to the EZ-Solutions console (shown in Fig.3, page 8) with an 800F cable then NO LOOP CARD for that position is required.

**4. Connecting to Mechanical Pumps with an M2E Mechanical Upgrade**

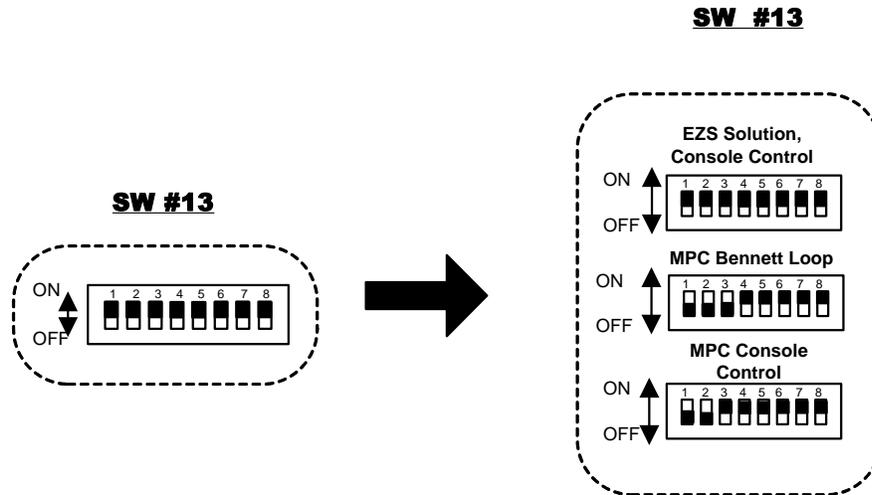


**EXAMPLE: The mechanical pumps are connected to a TMS 800 F interconnect box with M2E converter boards**

The positions #1, #2, #3, and #4 are turned ON for each mechanical dispenser hose. Positions #5, #6, #7 and #8 are turned OFF.

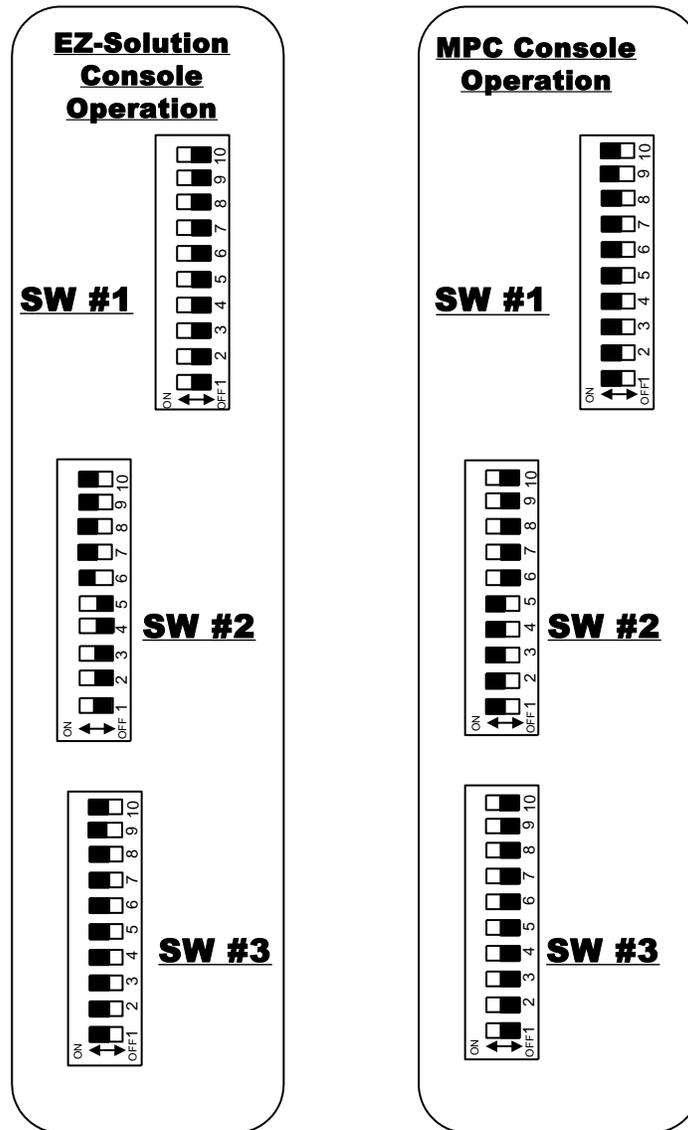
## B. Switch #13, Settings

Switch #13, determines the type of TMS console that interfaces with the EZ-Solutions interface box.

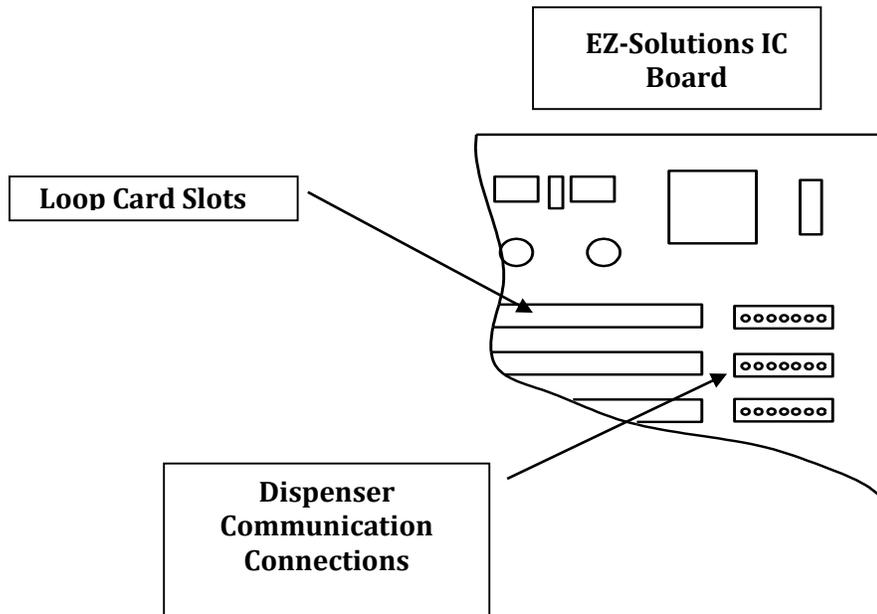


## C. Switch #1, #2 and #3, Settings

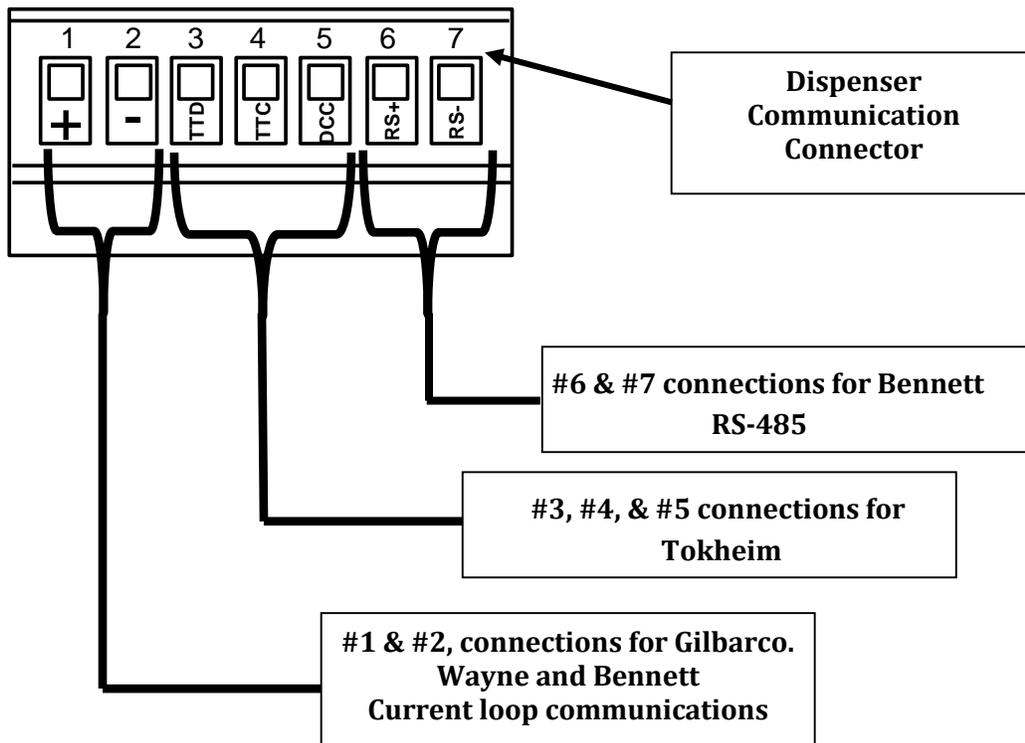
Switches #1, #2, and #3 must be set as shown below depending on what type of console is controlling the EZ-Solutions IC box (either an EZ-SOLUTIONS, EZ or EZ-Solutions console). Both the EZ and EZ-Solutions consoles are to be treated the same. Settings shown on following page.



# Dispenser Communication Connections



The dispenser communication connectors are located next to each loop card slot as noted above. Each communication connector controls the loop card that is immediately next to it. Only one type of electronic dispenser communications can be connected.



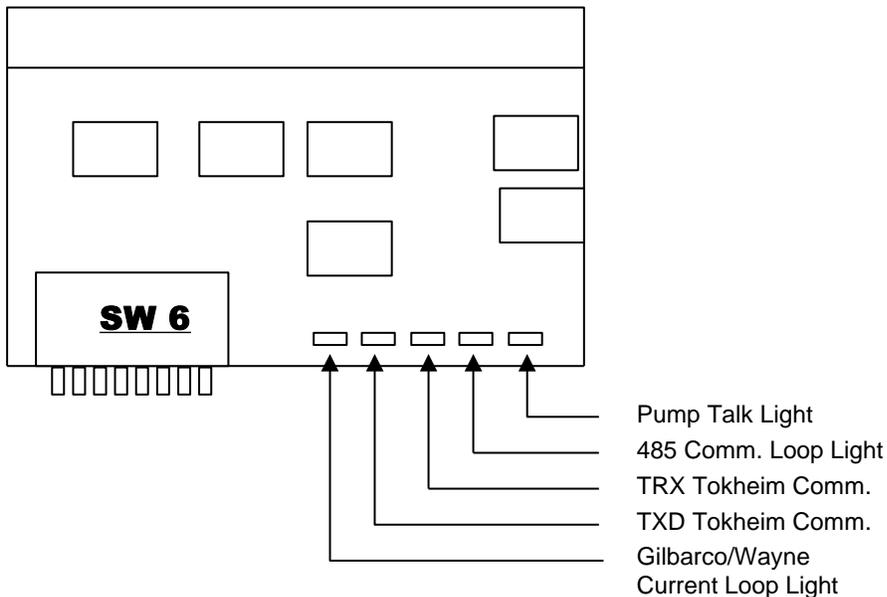
## VII. EZ-Solution LOOP CARD

### A. Switch #1, Settings

**NOTE: Switch #1 on the LOOP card is different from the SW#1 switch on the EZS interconnect board**

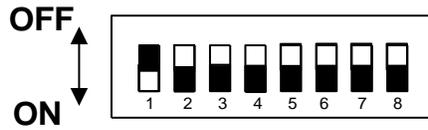
The loop card determines the type of communication protocol required for the dispensers that are to be controlled. Once the switches are set on the loop card place the card in a slot on the EZ-Solutions IC board. Start from the #1 slot position and go down from there. Remember that the dispenser cards do not have to follow any particular slot order. The latter also applies to any credit card modules that might be employed as all the modules and dispensers are addressed differently.

***NOTE: If any upgraded mechanical pumps with M2E boards or VRR conversion heads are used treat them as a standard electronic dispenser with one hose with each mechanical hose requiring a separate loop card.***



Each pump card will handle one electronic dispenser with two fueling positions or one credit card module. Depending on the dispenser protocols set the loop card switches as follows:

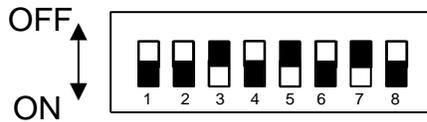
**Gilbarco, Wayne, Protocols**



**Tokheim Protocol**



**Bennett Dispensers with 485 Comm. and Tokheim/Wayne Card Readers**



**Bennett Dispensers with Current Loop**

