



## User Guide Installation & Maintenance Manual



### 3 1/8" Motorized Coax Transfer Switch Model 301-180-X and X01-180-X Coax Switch Controller

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# 1.0 General

## 1.1 Introduction:

Myat has developed the 3 1/8" coax switch to provide a means of switching RF energy between four line sections. The switch consists of two major components. The coaxial RF switch and the motorized actuator, which drives the switch. (See Figure 1)

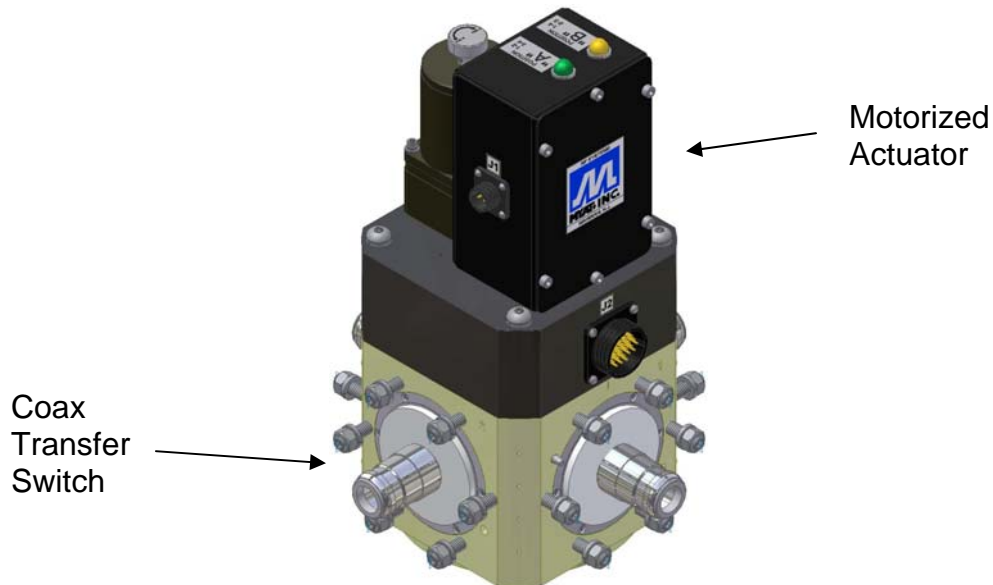


Figure 1

The coax transfer switch has been developed in a radial four (4) port configuration. Each port is a 3 1/8", 50 OHM, E.I.A male only interface configuration with bullet connector. The outer housing of the switch is aluminum, protected by an application of Chem-Film coating. The inner conductor pathway is silver plated brass and copper to minimize electrical losses. The switch is approved for indoor applications only, and is not designed to be pressurized.

The motorized actuator utilizes a high quality, reversible, motor and engineered Geneva drive mechanism to insure accurate 90° rotation of the switch. The switch locks in place at the end of each movement and will remain in position until it receives a signal to "switch", at which time it will unlock and rotate to the alternate position. The switch has two window ports located in the base, (either A or B), which use a mechanical flag to indicate the switch position. Position indicator LED's are also provided on top of the switch control box. It also has interlocking limit switches which trip as soon as a switch command is given, shutting down the transmitter before the RF switch begins to rotate. See figure 2 for switch port arrangement.

**WARNING:** Operating the transfer switch while RF power is applied will cause catastrophic failure.

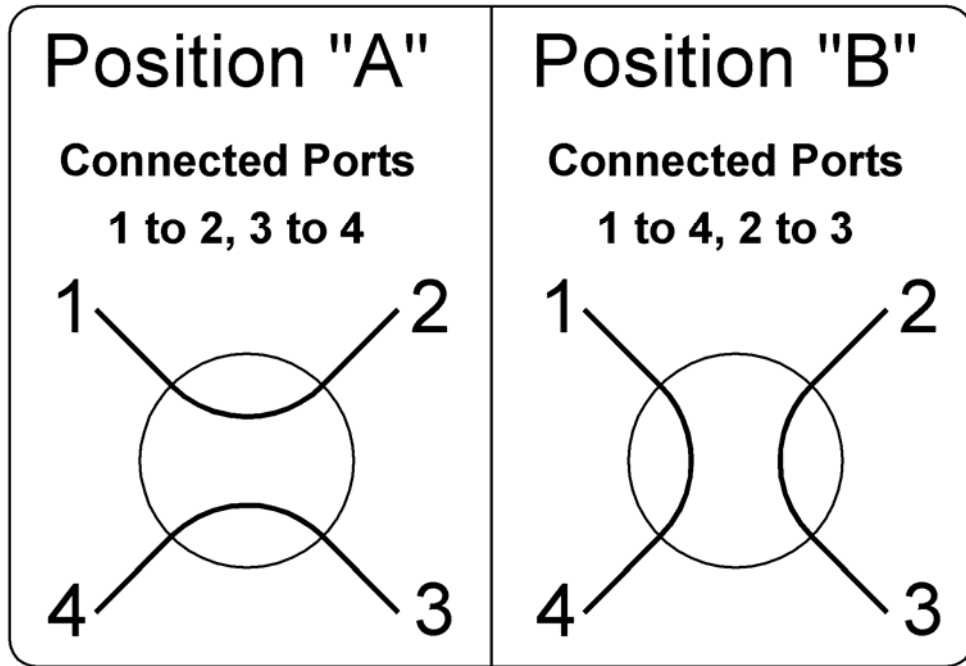


Figure 2 Switch Port Arrangements

A manual override is provided so that the switch may be operated in the event of an AC drive power failure. A knurled knob is provided at the rear of the motor housing, which is direct coupled to the armature of the motor. Before manually operating the switch you must first verify that all RF power has been removed. Then disconnect the AC drive power cord at the switch. Then rotate the knob manually to end of travel. This will drive the switch to change position. **Caution:** Remove RF power before AC power is reapplied, the switch will return to the last automated command position dependant on position of latching relay.

**1.2 Specifications:**

The coax transfer switch is available for drive voltages of 115 VAC or 230 VAC. Control voltages of 12 VDC and 24 VDC can be specified. The following table shows available switch catalog numbers.

Catalog #	Drive Power	Control Voltage
301-180-1	115VAC 50/60Hz	12VDC
301-180-2	115VAC 50/60Hz	24VDC
301-180-3	230VAC 50/60Hz	12VDC
301-180-4	230VAC 50/60Hz	24VDC

**Note:** These voltages must be specified at time of purchase and are not field changeable.

The following table lists the performance specifications of the switch.

<b>Isolation &lt;-60dB, Peak Power 310kW, Automatic Switching Time &lt; 2S</b>				
Channel	Frequency MHz	VSWR	Peak Power, KW	Average Power, KW
2	54	<1.02:1	310	60.5
300	107.9	<1.02:1	310	42.8
13	210	<1.02:1	310	30.6
14	470	<1.03:1	310	20.4
52	698	<1.05:1	310	16.8
E69	862	<1.06:1	310	15.3

**1.3 Model X01-180 Transfer Switch Controllers:**

Myat has developed the X01-180 series Transfer Switch Controller to provide an engineered solution for remote control switch operation. It is strongly recommended that only genuine Myat Switch Controllers be used to operate Myat Transfer Switches. The transfer switch controller operates on 115 VAC power. It provides a control signal to the switch of either 12 or 24 VDC, depending on which controller is ordered. As standard features the controller has an “Enable Key Switch” which will allow for local or remote operation. It also has position indicator LED’s on the face panel to show switch position remotely. The Transfer Switch Controller, Model X01-180-1 is shown in Figure 3. There are eight models of this controller, which are shown in the table below. Basically there are controllers for operating one, two, three, or four remote coax switches. Each is available with 12 or 24 VDC control voltage. The cover plate arrangement shown in Figure 3 is “Typical” of all covers. As the number of coax transfer switches increases so will the number of position selector switches and the number of position indicators.

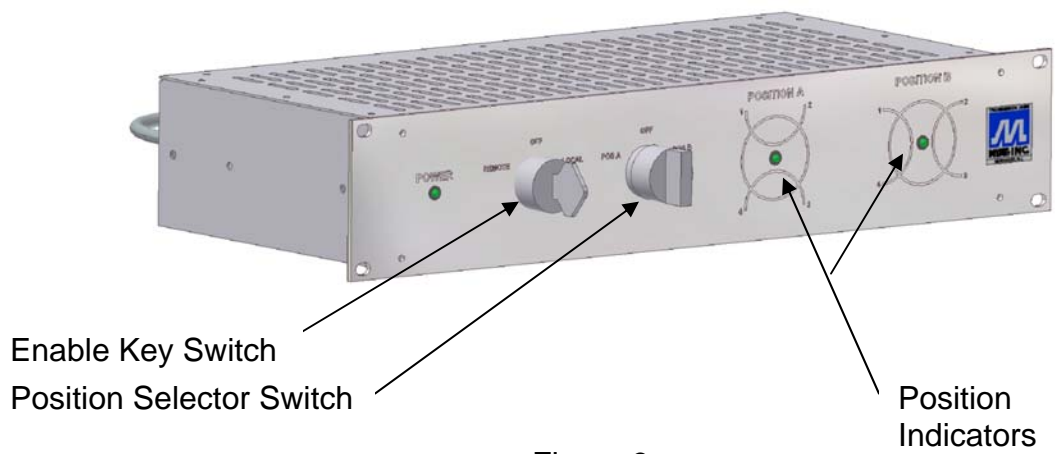


Figure 3

Catalog Number	Number of Switches	Control Voltage
X01-180-1	1	12 VDC
X01-180-2	2	12 VDC
X01-180-3	3	12 VDC
X01-180-4	4	12 VDC
X01-180-5	1	24 VDC
X01-180-6	2	24 VDC
X01-180-7	3	24 VDC
X01-180-8	4	24 VDC

## **2.0 Installation**

### **2.1 Preparation**

Upon receipt of the switch, inspect all packaging for damage. Open the packages and inspect the switch for any obvious transit damage. If any damage is noted contact the carrier to file a damage report and notify Myat so that arrangements can be made for repair or replacement.

### **2.2 Mechanical Installation**

The coaxial transfer switch is designed to operate correctly when mounted in any position. The switch should be mounted using the four (4) threaded mounting holes provided on the base. Each hole is threaded 3/8-16 to a depth of 1/2 inch. Do not rely on the coax connected to the switch, to carry the weight of the switch.

The switch must always be mounted to a support structure of sufficient strength to carry its weight.

While the switch can be mounted in any position, care must be taken that there is sufficient clearance above the actuator to operate the manual override and see the position indicator LED's. Visual access must be provided to the bottom of the switch so that the position indicator flag can be seen. See figure 4 for dimensions of the switch and actuator.

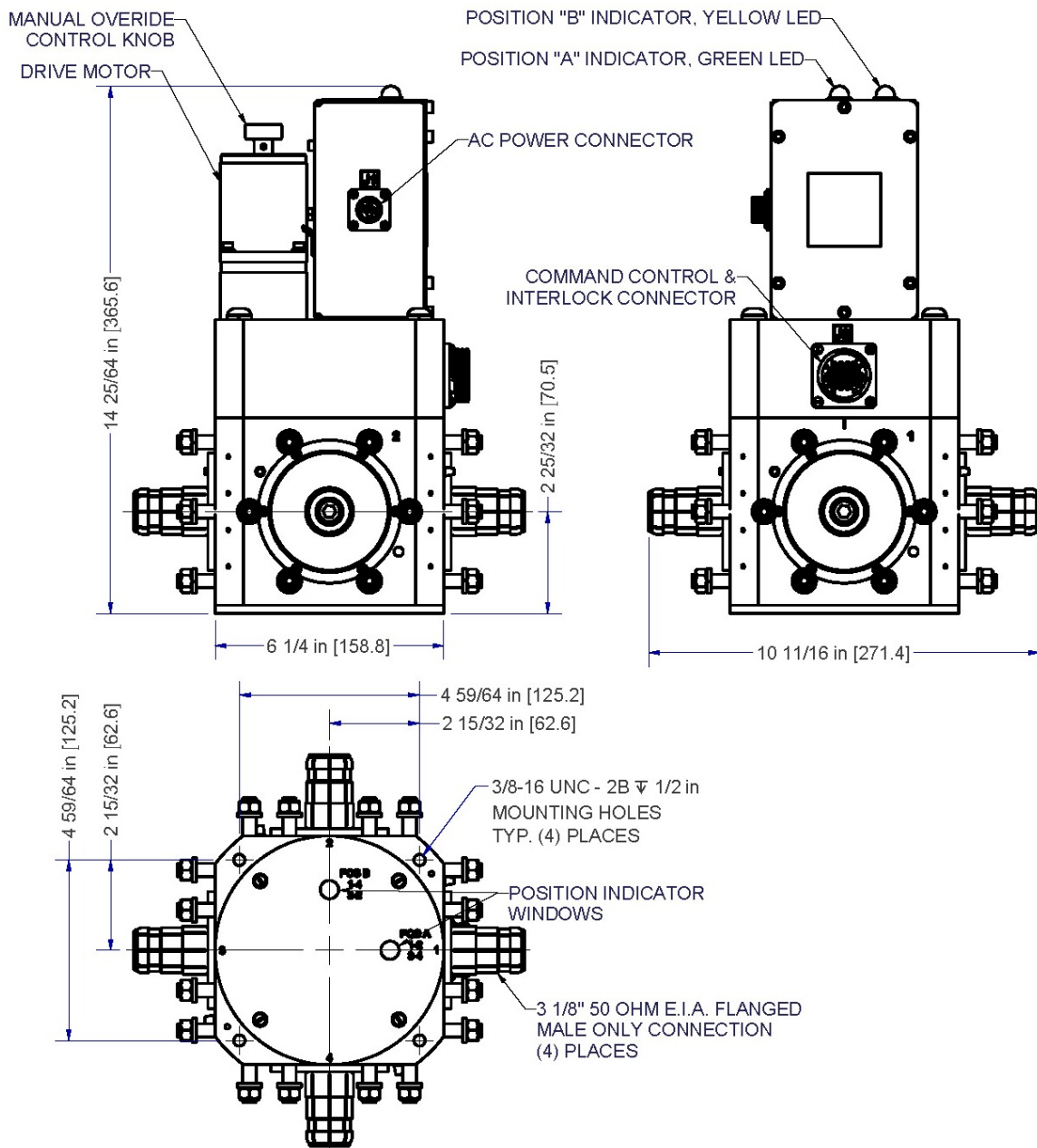


Figure 4

After the switch and actuator have been properly installed the coax transmission lines must be connected. All switch ports are male, 3 1/8" E.I.A. standard. Threaded studs with stainless steel lock washers and nuts are provided to secure mating flanges. This bolting arrangement was selected to compensate for flange thickness variation. Verify that interconnecting coax conforms to E.I.A. cutback dimensions. Care must be taken when aligning the coax to the switch port. Make sure that the inner conductor is properly aligned to the bullet connector on the switch so that the bullet is not split and damaged. Once the inner conductor is aligned, the flange can be bolted up using the hardware kit supplied with the switch.



**Caution:** Do not use standard 3 1/8" hardware kits to connect these flanges, as the bolts are too long and will damage the switch.

Once the coax lines have been connected to all ports, manually operate the switch. Check for smooth movement of the actuator, with no binding. Manually verify that the smoothness of the actuator and the force needed to operate it are roughly equal in both directions.

The X01-180-x series Transfer Switch Controller is designed to be installed in a standard 19 inch mounting rack. Dimensions of the unit are shown in figure 5 shown below. Mounting hardware for the rack installation is to be provided by the installer. The unit should be installed to provide free access to the rear terminal blocks. This is needed to connect the wiring to the coax switch. In addition, a standard 120VAC outlet will be needed within six feet of the controller to provide power.

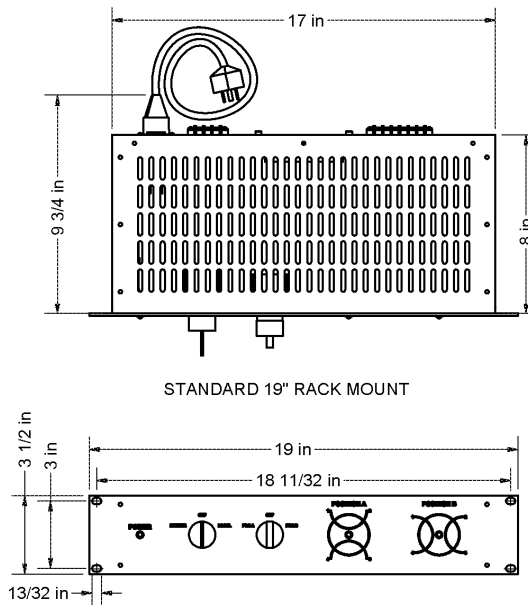


Figure 5

### 2.3 Electrical Installation

Electrical Installation of the coax transfer switch is covered in four phases. These are installation of the A.C. Drive Wiring, installation of the D.C. Command Control wiring, installation of DC power wiring for LED Position Indicators and installation of the RF Interlock Device. All four phases will reference the unit schematic shown in figure 6A thru 6D.

**AC Motor Wiring** -The first step of the electrical installation will be to connect the AC, 50-60Hz power to the switch. The switch was specified either 115VAC or 230 VAC at the time the order was placed. Check the nameplate on the motor to verify that the correct voltage is being applied. The connection

to the switch will be at the AC Power connector J1. Myat furnishes the mating solder type connector. The installer will be responsible for making up the connecting wire to run back to the power source. See figure 7 to identify the AC power connector and the Command, Control and Interlock Connector. Figure 8 shows an exploded view of a typical harness connector. Use the schematic shown in figures 6A – 6D as a guide to wiring the AC power. Figure 9 on page 13 indicates the 4 pole circular connector terminal numbering.

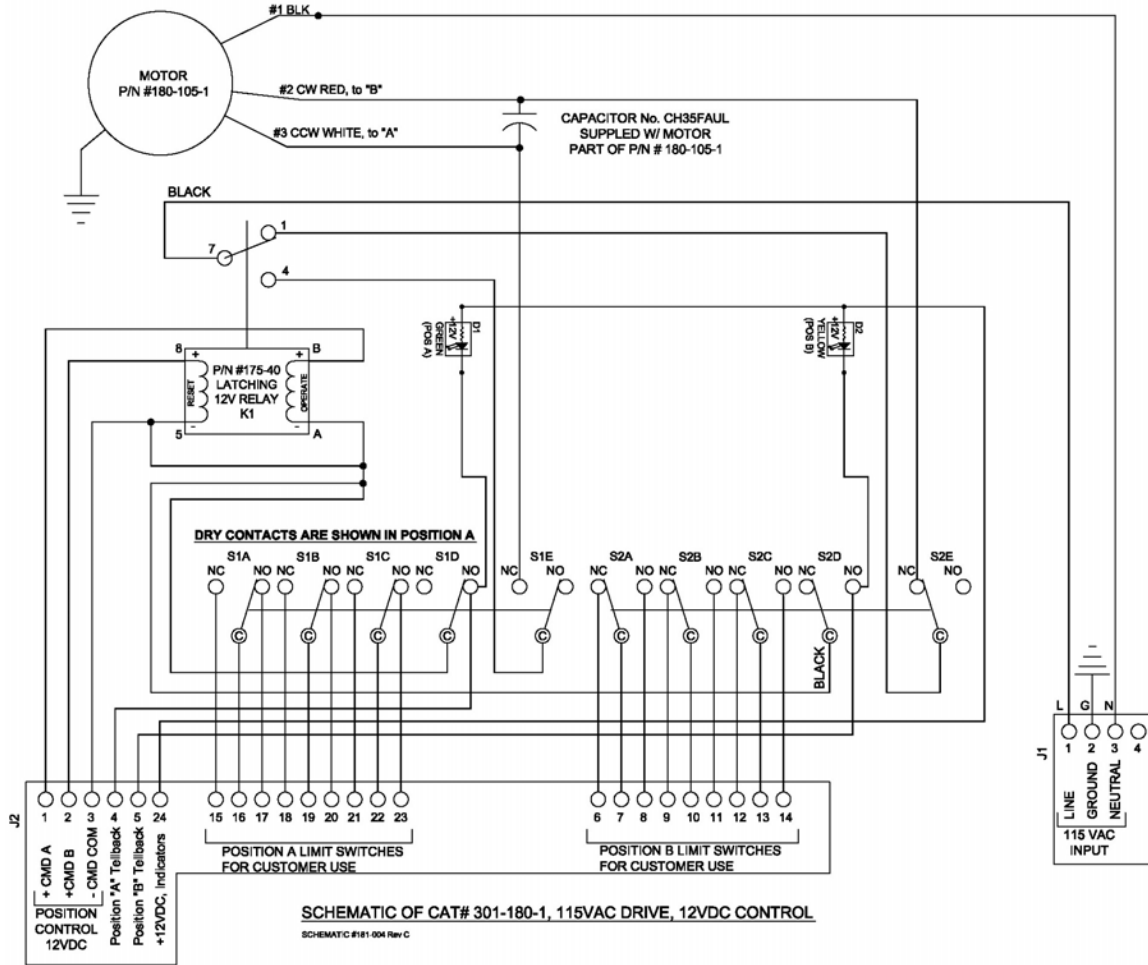


Figure 6A

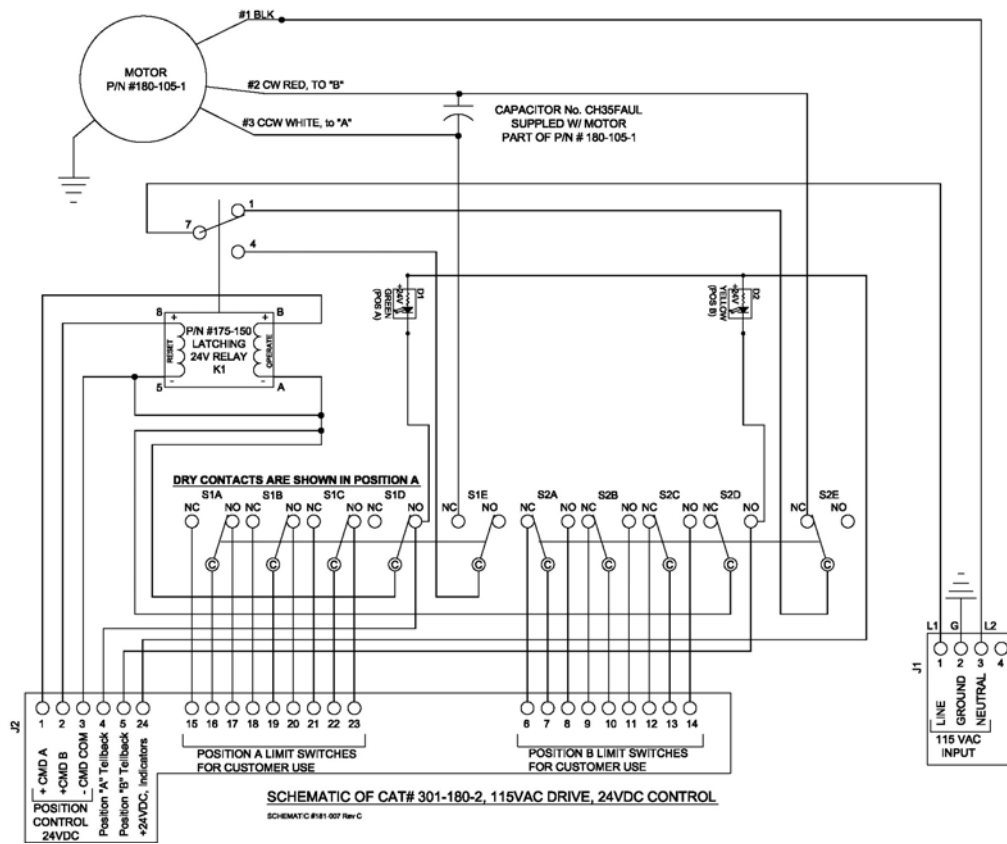


Figure 6B

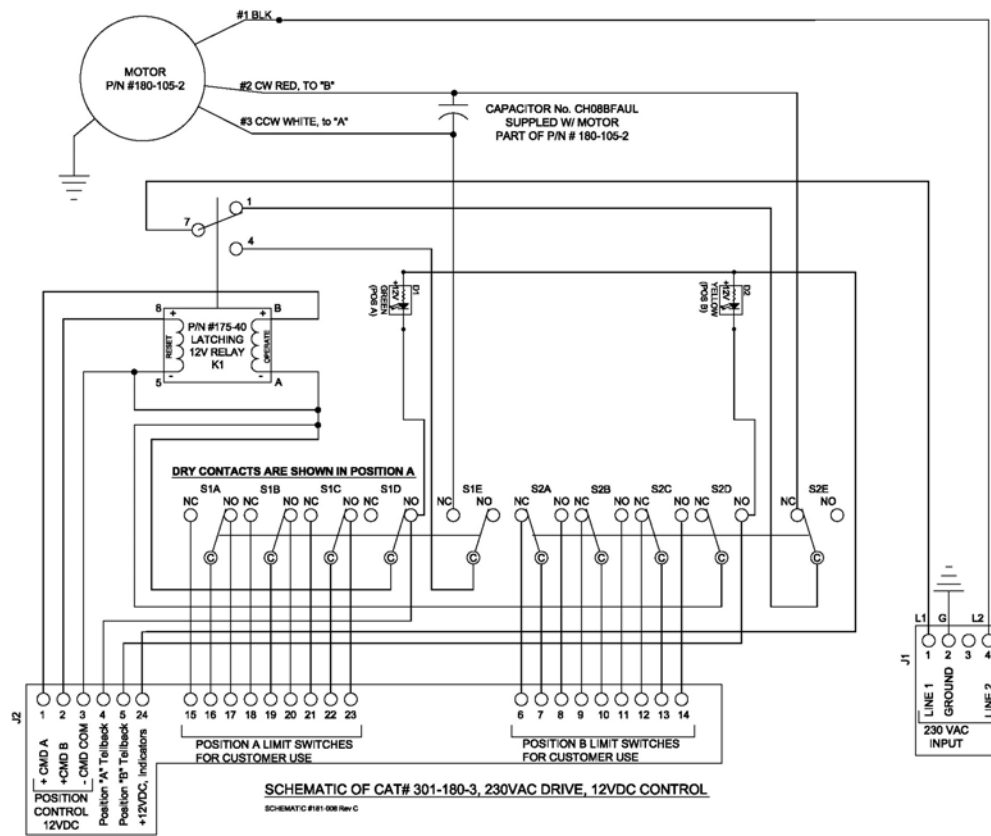


Figure 6C



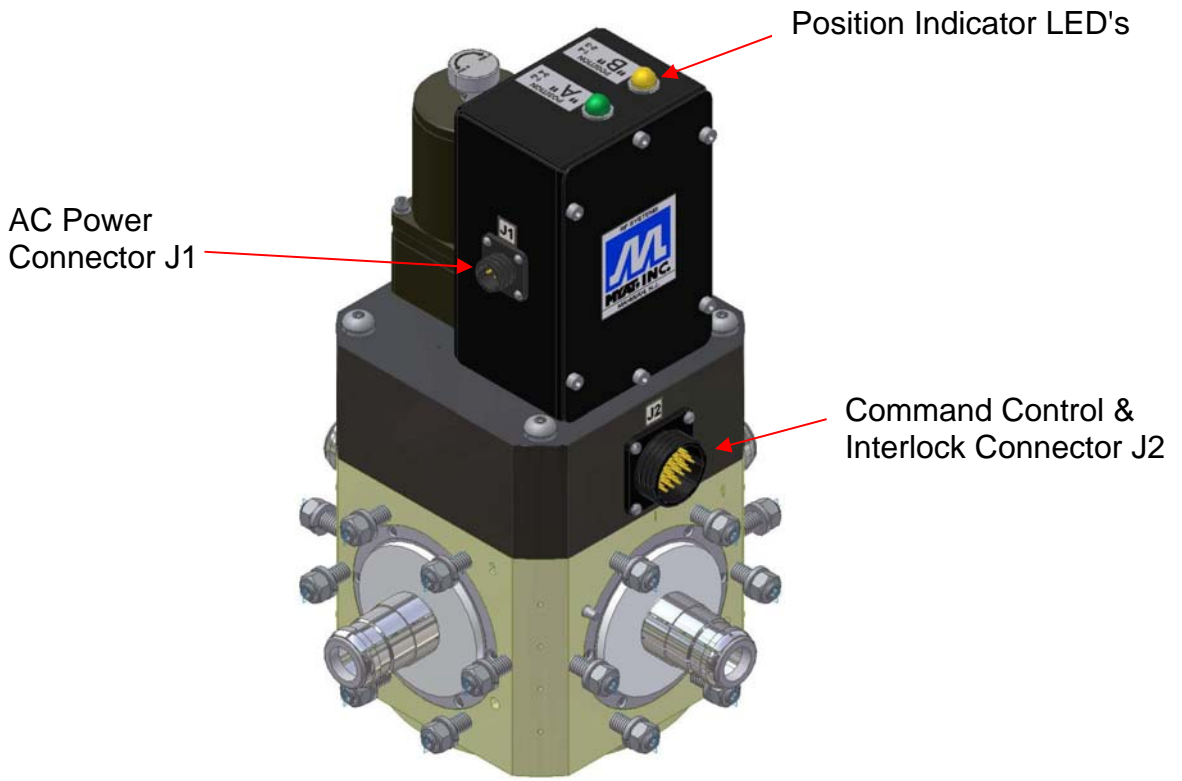


Figure 7

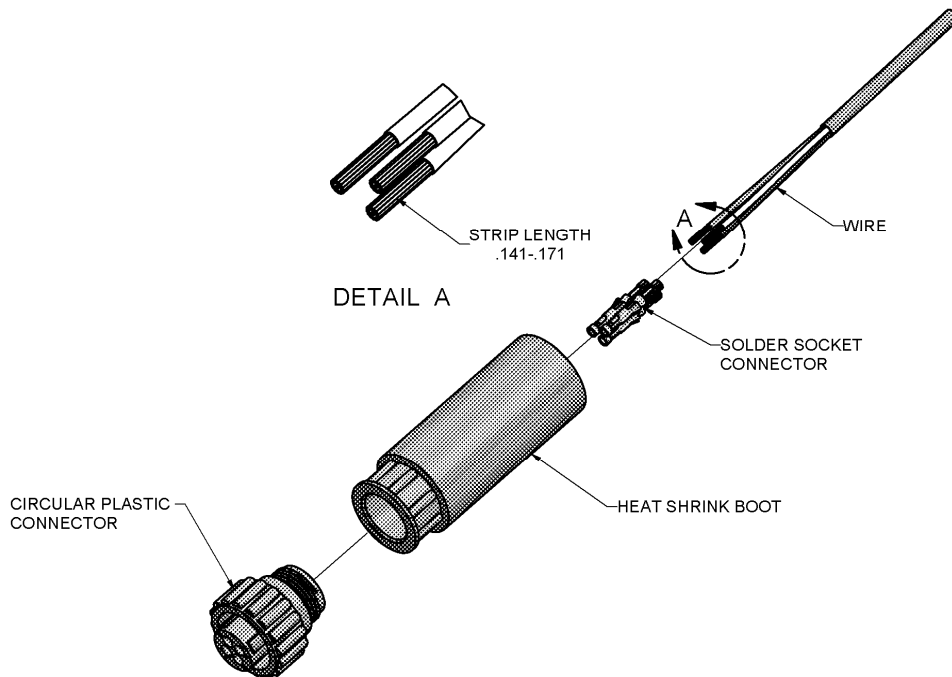


Figure 8

**Transmitter Interlock Wiring** - Prior to operating the switch and changing position, all RF energy passing through the switch must be turned off. Normally, the transmitter power is turned off prior to issuing an automated switch command control or prior to performing a manual switch. The transmitter interlock wiring must be utilized to shut down or mute the transmitter in the event that the transfer switch is mistakenly operated while RF power is applied.

**Caution:** *Operating the switch manually or automatically while under RF power will cause catastrophic failure and voids any warranty.*

The actuator on the coaxial transfer switch has three form C contacts for customer use that are mechanically operated when the switch is in position "A", labeled as "POSITION A LIMIT SWITCHES FOR CUSTOMER USE" and another set of three form C contacts which is operated in position "B" labeled as "POSITION B LIMIT SWITCHES FOR CUSTOMER USE". They are wired to the "J2" 24 pin connector per schematics Figures 6A through 6D. The location of the J2 connector can be seen in figures 4 and 7. When the switch is not locked in either position "A" or "B", all contacts will be in the normally closed position. The transmitter interlock must be wired through one contact in each of the two switching positions. This will prevent RF power from being applied to the switch when it is not locked in either position "A" or position "B". Any remaining contact sets can be used as needed for other signaling or interlock functions. Figure 10 on page 13 indicates the 24 pole circular connector terminal numbering.

**Note: These contacts are rated for 3 AMPS @ 125/250 VAC.**

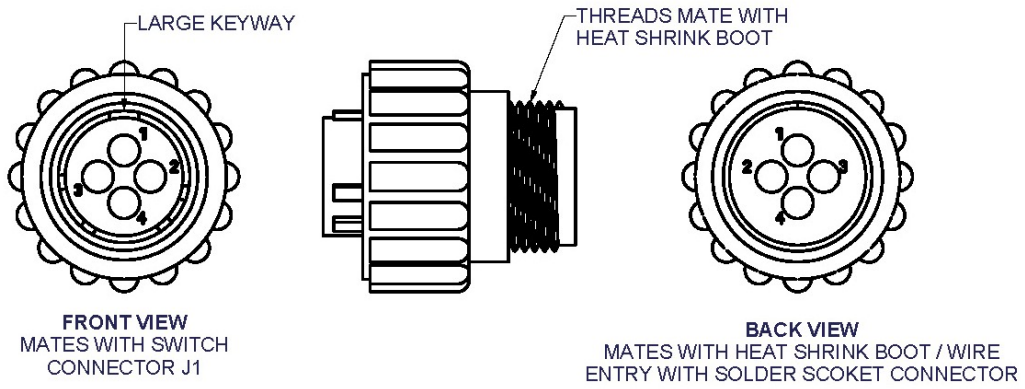


Figure 9

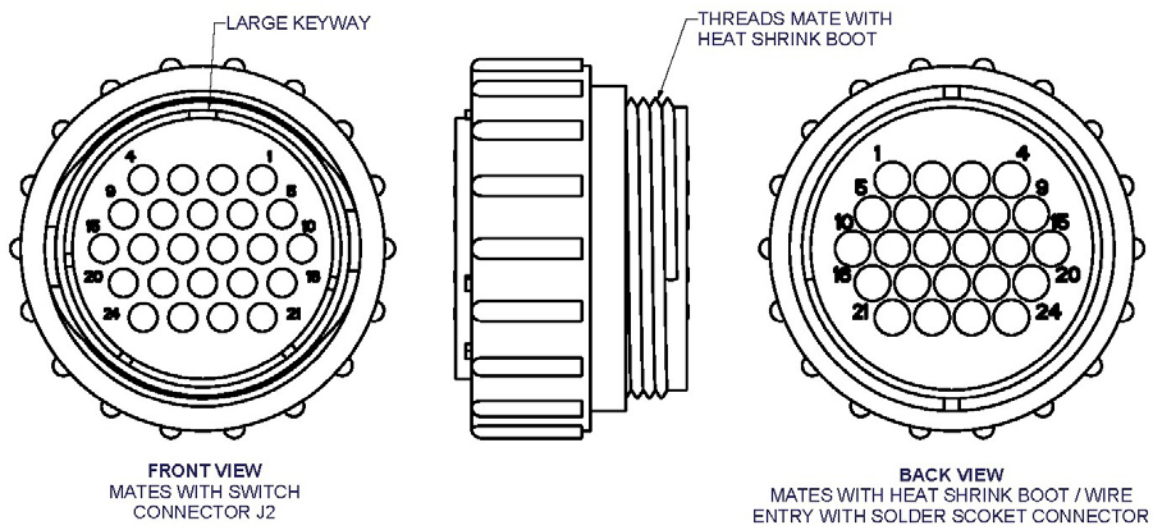


Figure 10

## 3.0 Final Inspection and Test

**Caution:** *No RF Power is to be applied to the switch until this checkout is complete.*

Turn on the AC power. Turn on the switch controller to provide DC power to the indicator LED's and enable command control.

**Caution:** *This may cause the switch to operate if it is in a different position than it was last electrically left at. This is normal due to the latching relay remaining in the latched position and the use of the manual operator during installation.*

Activate the switch by applying the specified control voltage to the control terminals 24 pin circular connector J2. Observe the operation of the switch. Verify completeness of rotation and locking in position. The switch utilizes a Geneva drive for rotation and locking in position. The input wheel of the drive can rotate either clockwise or counterclockwise, depending on whether the switch is moving to position A or B. Verify interlock closure with an electrical multi-meter when in the locked position. Check that the lamps on the switch controller, used to indicate position, are operating correctly. They must indicate the same position as the mechanical indicator shown in figures 11A and 11B in addition to the position indicator LED's on top of switch shown in figure 11C.

The switch is ready to use.

**Bottom of Switch**

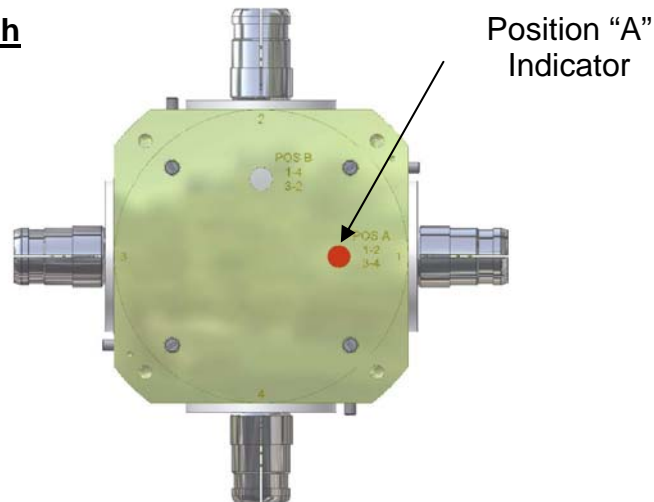


Figure 11A



**Bottom of Switch**

Position "B"  
Indicator

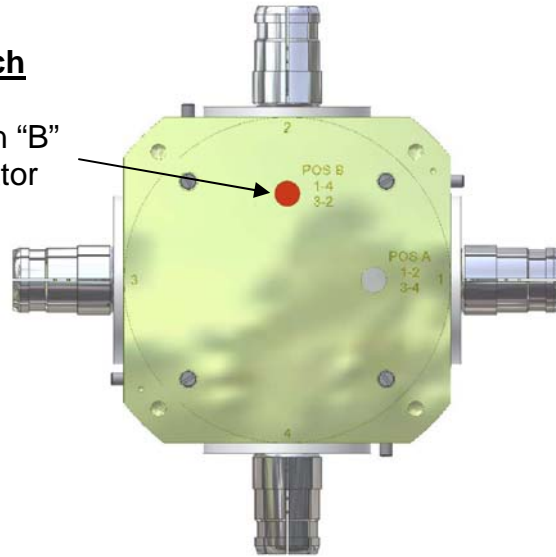
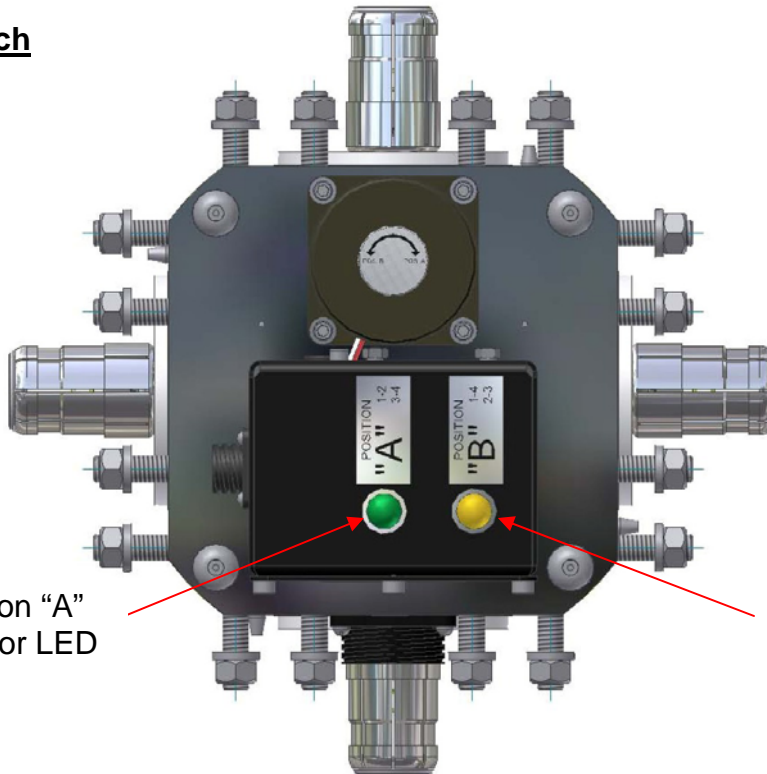


Figure 11B

**Top of Switch**

Position "A"  
Indicator LED



Position "B"  
Indicator LED

Figure 11C

## 4.0 Maintenance

There is only a limited amount of maintenance which can be performed on the coax transfer switch. Monthly it is recommended that the switch be operated both manually and electrically. During this operation all lights and signaling devices should be checked. In the event of a failure the following table provides a list of spare parts which are available from Myat for repair of the switch actuator. There are no user serviceable parts in the RF switch itself. Contact Myat at the location shown on the cover of this manual for additional information.

MYAT PART NUMBER	DESCRIPTION
CH35FAUL	CAPACITOR FOR 115VAC MOTOR
CH08BFAUL	CAPACITOR FOR 230VAC MOTOR
175-40	CONTROL RELAY, 12VDC
175-150	CONTROL RELAY, 24VDC
175-264	Indicator Lamp LED Green 12VDC
175-265	Indicator Lamp LED Yellow 12VDC
175-266	Indicator Lamp LED Green 24VDC
175-267	Indicator Lamp LED Yellow 24VDC

For Factory Service and Spare Parts Contact:

Myat, Inc.

Sales Department

360 Franklin Turnpike

Mahwah, NJ, 07430

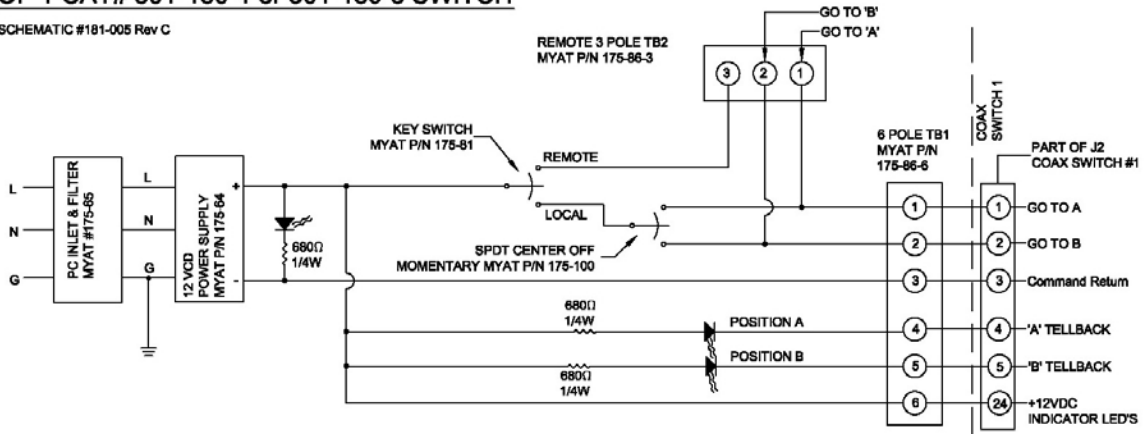
Telephone....201-684-0100

Fax.....201-684-0104



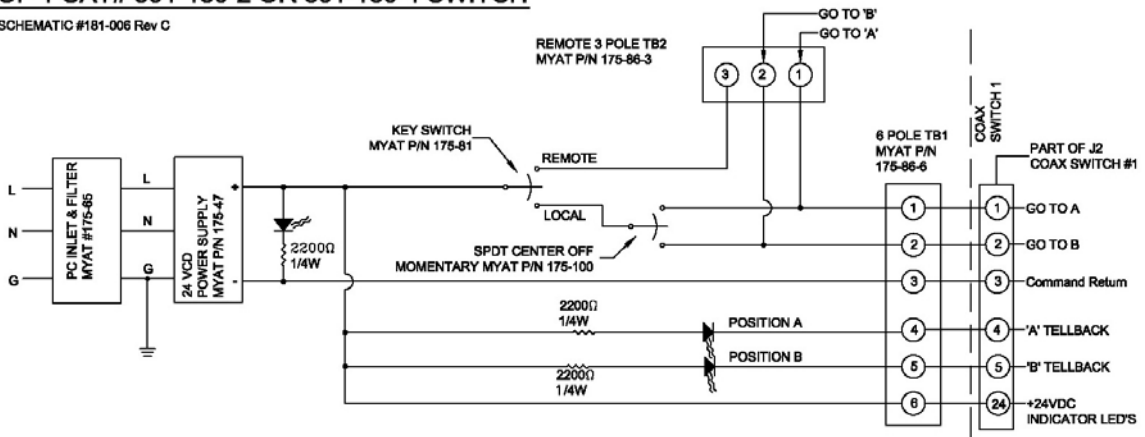
**SCHEMATIC OF CAT# X01-180-1 FOR 12VDC CONTROL  
OF 1 CAT# 301-180-1 or 301-180-3 SWITCH**

SCHEMATIC #181-005 Rev C



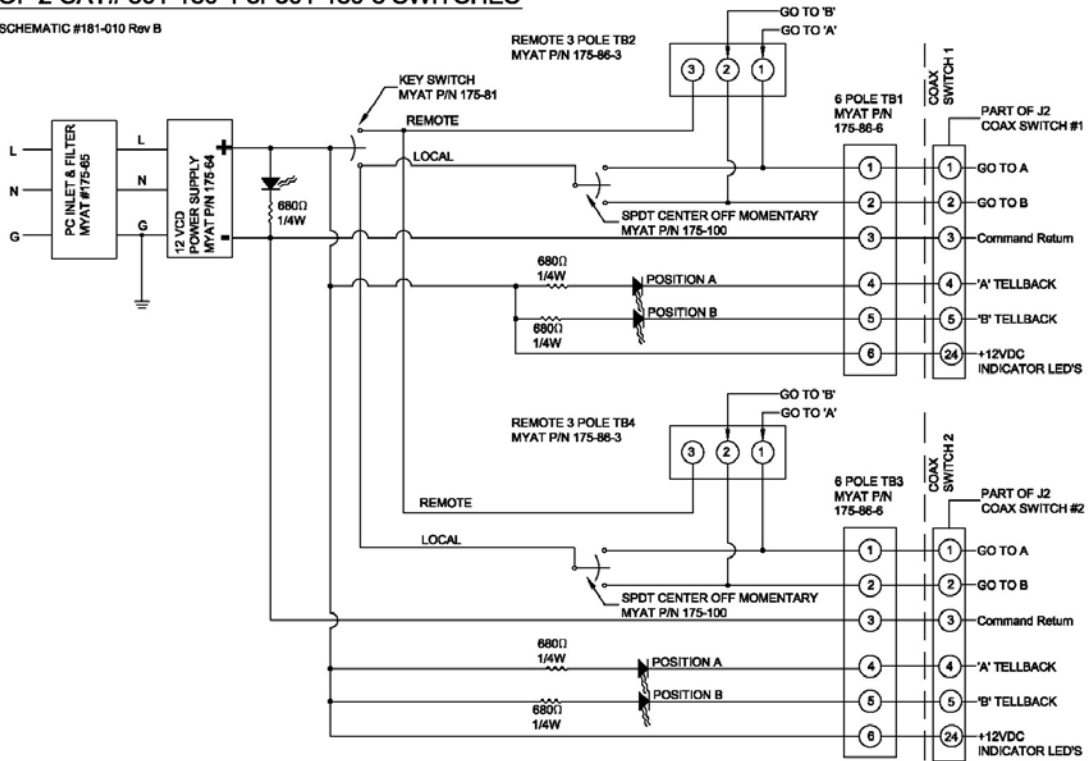
**SCHEMATIC OF CAT# X01-180-5 FOR 24VDC CONTROL  
OF 1 CAT# 301-180-2 OR 301-180-4 SWITCH**

SCHEMATIC #181-006 Rev C



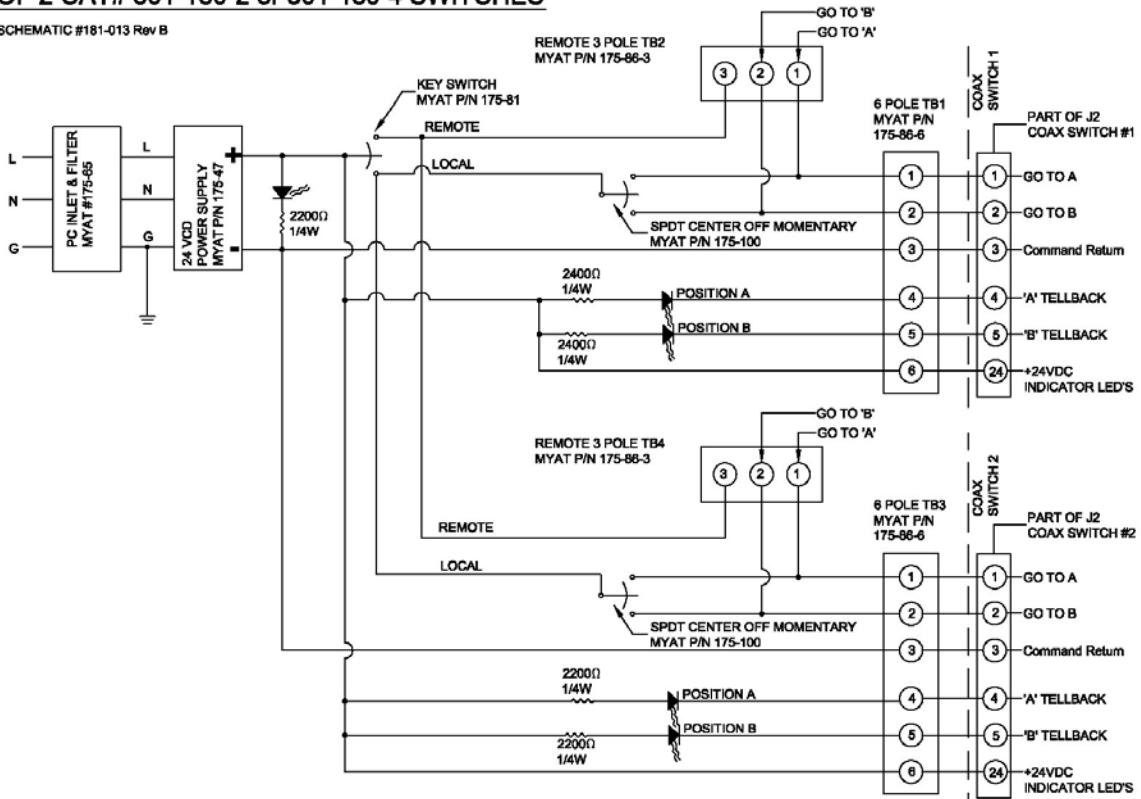
**SCHEMATIC OF CAT# X01-180-2 FOR 12VDC CONTROL OF 2 CAT# 301-180-1 or 301-180-3 SWITCHES**

SCHEMATIC #181-010 Rev B



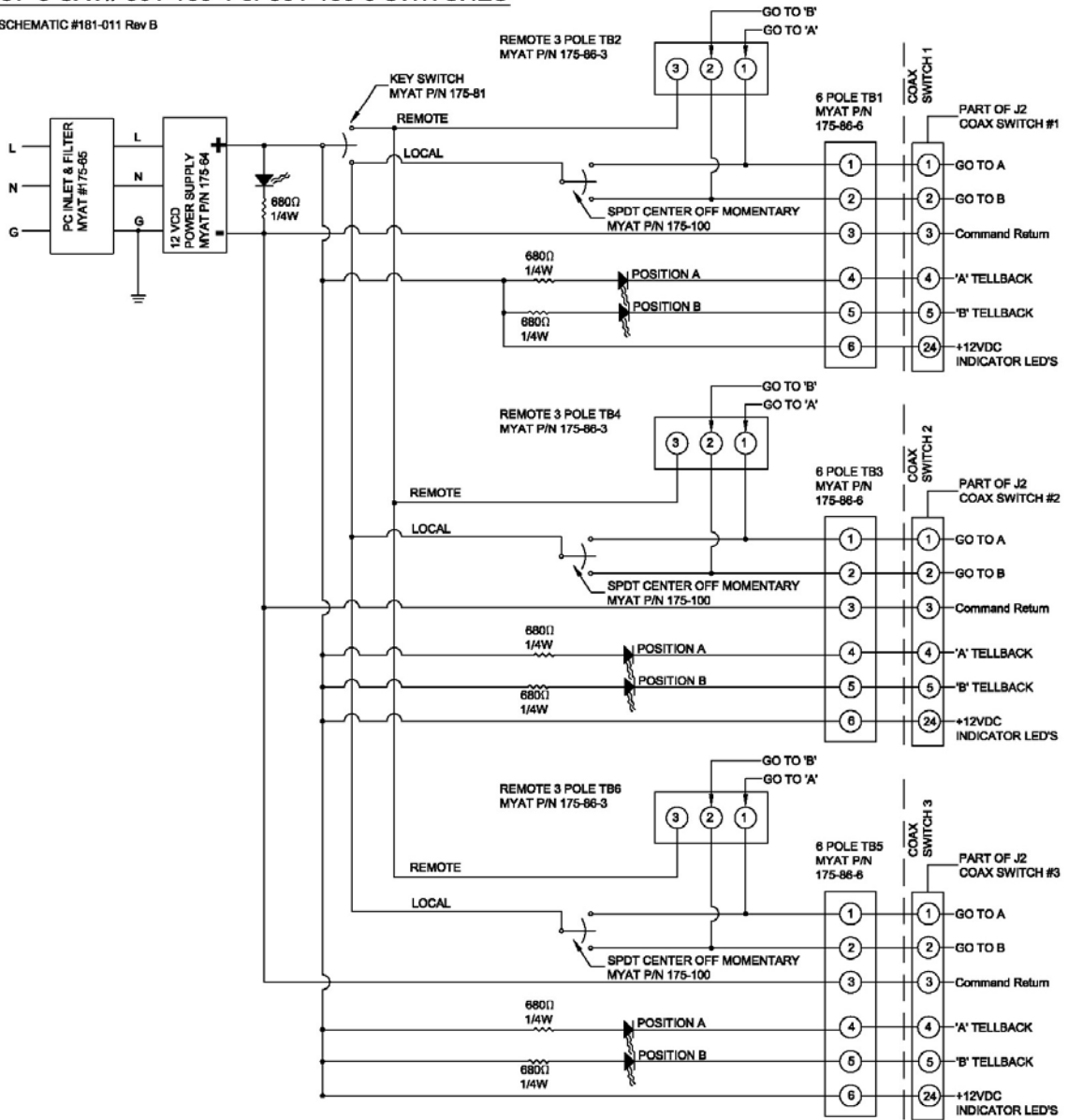
**SCHEMATIC OF CAT# X01-180-6 FOR 24VDC CONTROL OF 2 CAT# 301-180-2 or 301-180-4 SWITCHES**

SCHEMATIC #181-013 Rev B



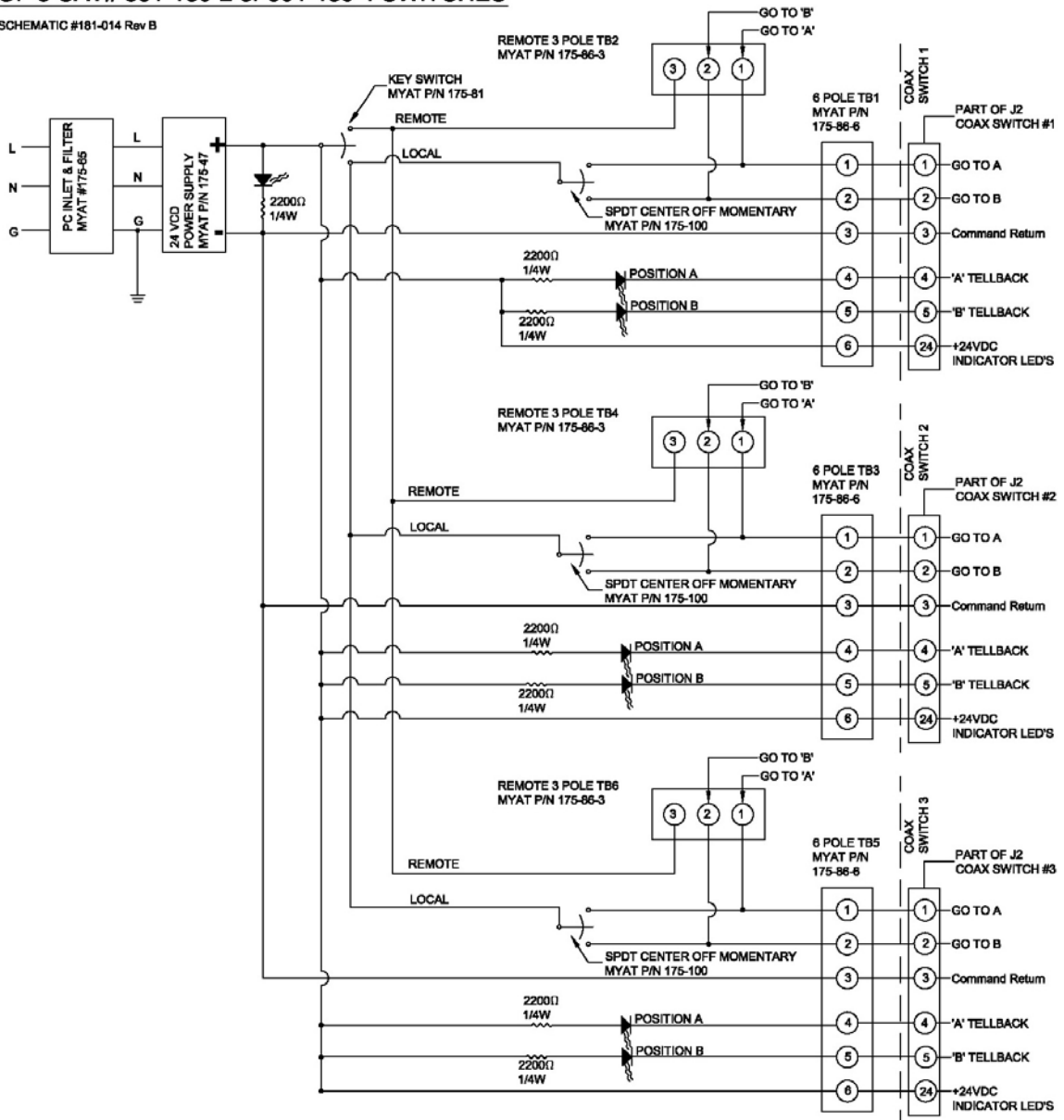
**SCHEMATIC OF CAT# X01-180-3 FOR 12VDC CONTROL  
OF 3 CAT# 301-180-1 or 301-180-3 SWITCHES**

SCHEMATIC #181-011 Rev B



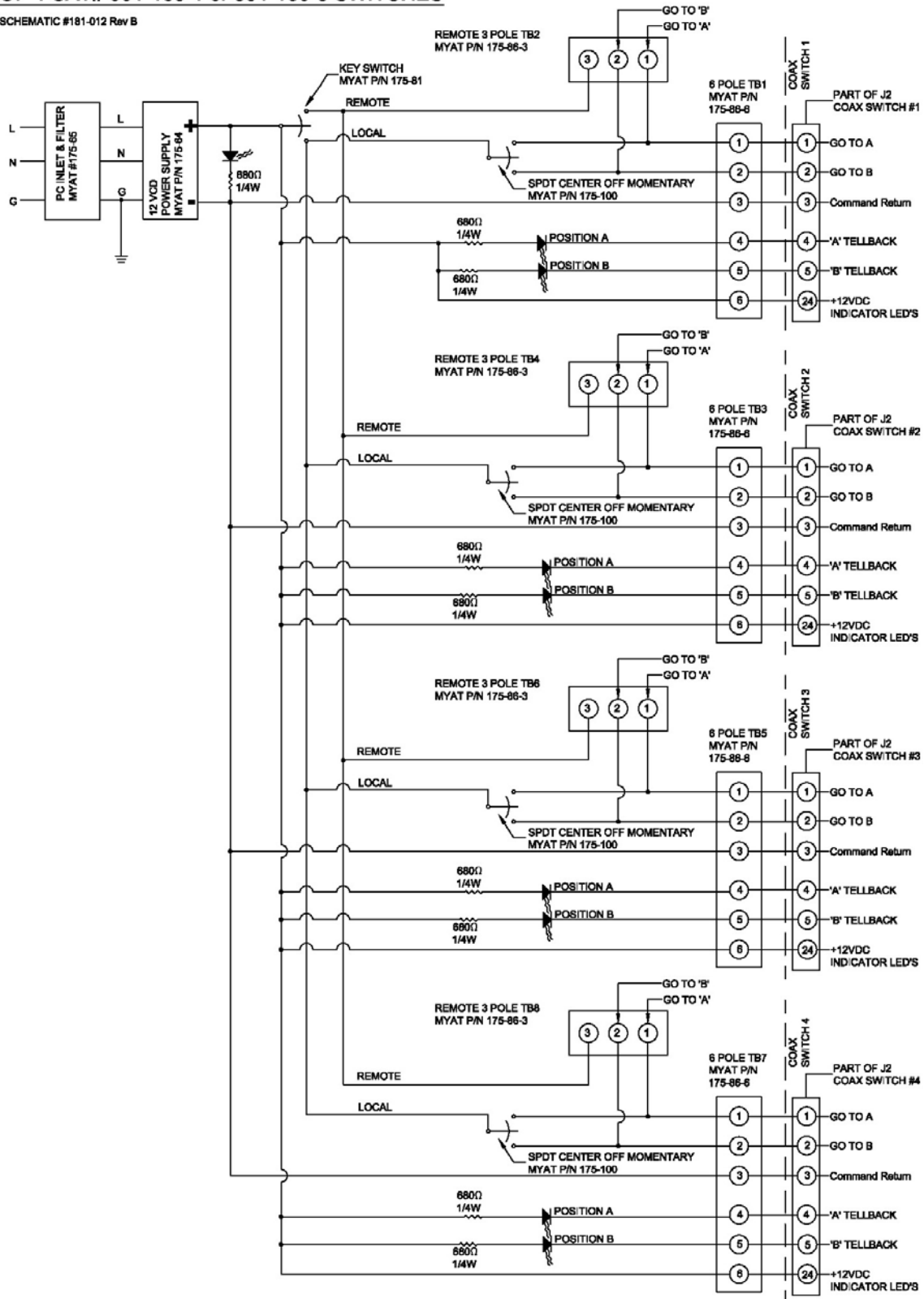
**SCHEMATIC OF CAT# X01-180-7 FOR 24VDC CONTROL OF 3 CAT# 301-180-2 or 301-180-4 SWITCHES**

SCHEMATIC #181-014 Rev B



**SCHEMATIC OF CAT# X01-180-4 FOR 12VDC CONTROL  
OF 4 CAT# 301-180-1 or 301-180-3 SWITCHES**

SCHEMATIC #181-012 Rev B





**SCHEMATIC OF CAT# X01-180-8 FOR 24VDC CONTROL  
OF 4 CAT# 301-180-2 or 301-180-4 SWITCHES**

SCHEMATIC #181-015 Rev B

