

# I-75 Interface

## Installation, Operation and Maintenance Instructions

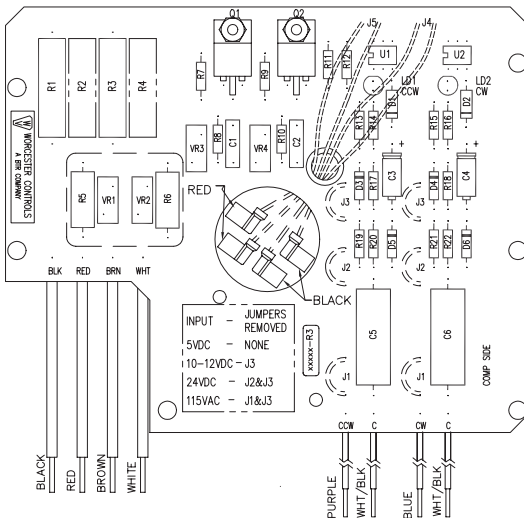
### 1. Description

The I-75 Interface is designed to be used and mounted in the Series 75 Actuator as one of many standard options. Function of the I-75 Interface is to allow the Series 75 Actuator to be powered by a 120 or 240 VAC power supply, operated directly by any programmable controller, microprocessor, and/or computer regardless of the output rating of these devices. Depending on the control input to be used, there are several options of the I-75 Interface:

These options are identified by the nameplate on the circuit board.

- 5V for 5 VDC input
- XV for 12 VDC input
- XX for 24 VDC input
- 15 for 120 VAC input

Figure 1



I-75 CIRCUIT BOARD

**NOTES:**  
 J4 & J5 WITH BLACK & RED WIRES ARE ON 240 VAC BOARD ONLY.  
 R2 & R4 USED ONLY ON BOARDS FOR 25 & 30 SIZE ACTUATORS.

### 2. Installation of I-75 Interface Board into Series 75 Electric Actuator

#### 2.1 Check Kit for Parts:

##### Common Parts for Sizes 10-30 Actuators

Qty.	Name
1	Circuit Board Subassembly
1	Insulating Board
5-6	Washers (Nylon)
5-6	Grommets (Rubber)
5-6	Mounting Screws
5	Cable Ties
1	Wiring Label
1	Closed-End Splice
1	Wire - White

##### Additional Parts for Sizes 10-23 Actuators

Qty.	Name
1	Bracket - Right
1	Bracket - Left
2	Spacer (Bracket)
2	Mounting Screw (Spacer/Bracket)

##### Additional Parts for 240 VAC Option

Qty.	Name
2	Limit Switch
1	Lead Assembly - Gray
1	Lead Assembly - Blue

##### Additional Parts for Sizes 25, 30 Actuators

Qty.	Name
1	Mounting Bracket
2	Mounting Screw (Bracket)

*Tools needed for assembly:  
 1/4" Nut Driver, 1/8" Screwdriver and Needle Nose Pliers.*

**2.2 Assembly Procedure**

**2.2.1 For 10-23 Size Electric Actuators (See Figure 2):**

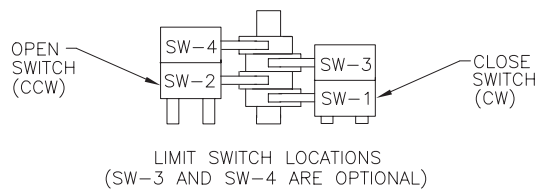
- A.** Pre-tap circuit board bracket holes with the self-tapping screws. Mount these brackets to the actuator motors or spacers as provided. The longer bracket is mounted to the right side of the actuator when facing the terminal strip. Use the motor mounting screws.
- B.** Remove and replace motor screws carefully to avoid stripping the threads of these self-tapping screws.
- C.** Once these motor screws and brackets are firmly secured, firmly tap the motor stator to ensure realignment of the top motor bearing.
- D.** Loosen all terminal strip screws to connect the circuit board wiring to the actuator terminal strip. See Section 3 for proper wiring of circuit board to the actuator terminal strip. Wire routing is important. Ensure that wiring is not pinched and is not near cams or mechanical brake (if used).
- E.** Assemble circuit board into actuator. Slide rubber grommets onto insulating board. Put nylon washers under heads of self-tapping screws.

- F.** Put circuit board onto brackets. Fasten board to brackets loosely using mounting screws. Use a nylon washer and a rubber grommet under the self-tapping screw mounted on the right side of board when facing terminal strip.
- G.** Snug down the circuit board and firmly secure mounting screws.

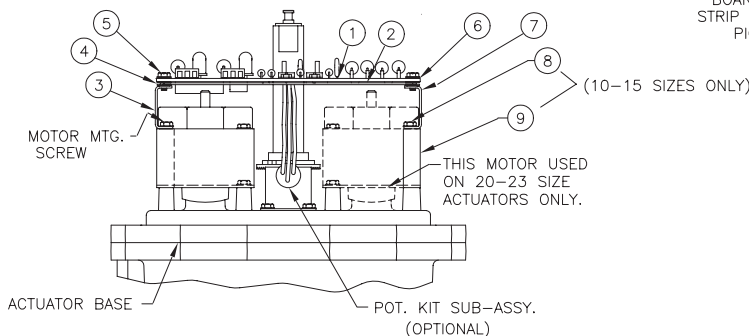
**2.2.2 For 25 and 30 Size Electric Actuators (See Figure 2):**

- A.** Assemble circuit board to bracket as shown.
- B.** Place four of the rubber grommets onto the insulating board. Put nylon washers on the screws and place screws through the circuit board and insulation board. Start screws into the bracket.
- C.** Where no insulation board is used, place a rubber grommet between the board and the bracket. Firmly tighten all screws.
- D.** Use two screws to fasten circuit board bracket to the motor mounting plate. Component side of the board is facing out.

**Figure 2**

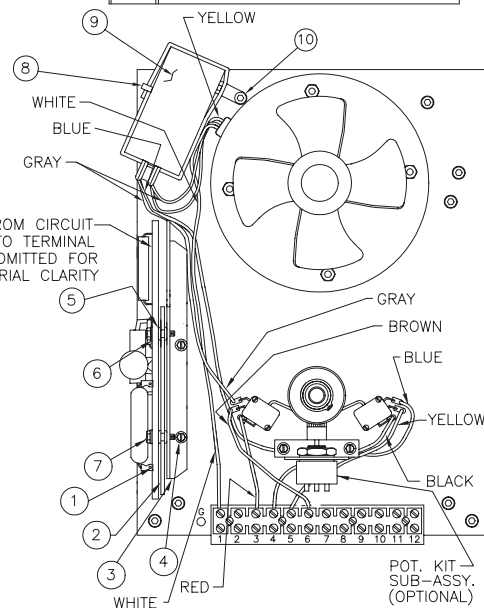


10-23 SIZE 75 ACTUATORS			
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	CIRCUIT BOARD SUB-ASSY.	6	WASHER-NYLON
2	INSULATING BOARD	7	BRACKET-LEFT (SHORT)
3	BRACKET-RIGHT (LONG)	8	MTG. SCREWS (BRACKET)
4	GROMMET-RUBBER	9	SPACER (BRACKET)
5	MTG. SCREWS (CIR. BOARD)		



10-23 SIZE 75 ACTUATORS

25-30 SIZE 75 ACTUATORS			
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	CIRCUIT BOARD SUB-ASSY.	6	WASHER-NYLON
2	INSULATING BOARD	7	MTG. SCREW (CIR. BOARD)
3	CIRCUIT BOARD BRACKET	8	CAP. TIE (See Note at Item 10)
4	MTG. SCREW (BRACKET)	9	CAPACITOR (Round or Rectangular)
5	GROMMET-RUBBER	10	CAPACITOR BKT. & SCREW (NOTE: NOT Used for Round Type Capacitor with Threaded Lug)



25-30 SIZE 75 ACTUATORS  
120 VAC BOARD SHOWN

### 3. Wiring

#### 3.1 External Power - 120/240 VAC Option (Figures 3 and 4):

**NOTE:** All wiring to terminal strip should be inserted only to mid-point of terminal strip.

AC power connections are made to terminals 1 and 2 of the terminal strip. The AC neutral, or common, wire should be connected to terminal 1 and the AC "HOT" wire to terminal 2. Grounding wire should be connected to green colored grounding screw (if present) on actuator base or to any base plate mounting screw in the actuator. Signal and power wiring for an actuator may be run for short distances in the same conduit.

See table below for minimum fuse rating when overcurrent protection is used in motor power circuit.

#### Minimum Fuse Rating for Overcurrent Protection

Actuator Size	Voltage	Fuse Rating
10-23	120 VAC	5 A
25/30	120 VAC	10 A
10-23	240 VAC	3 A
25/30	240 VAC	5 A

**NOTE:** The table shows the minimum rating to prevent inrush current from blowing the fuse.

#### 3.2 External Input Signal Connections - 120/240 VAC Option (Figures 3 and 4):

There are two isolated inputs, one for counterclockwise (CCW); the other for clockwise (CW) directions. CCW input positive (more positive) or hot (in case of AC) is connected to terminal 10, CW input positive (more positive) or hot (in case of AC) is connected to terminal 12. Other input wires, negative (less positive) or common (in case of AC) for CCW and CW directions are connected to terminals 9 and 11 respectively. For complete wiring diagram see Figures 3 or 4 below, or wiring label which is to be attached to inside of actuator cover.

#### 3.3 Internal Wiring - Common to 120/240 VAC Options (Figures 3 and 4):

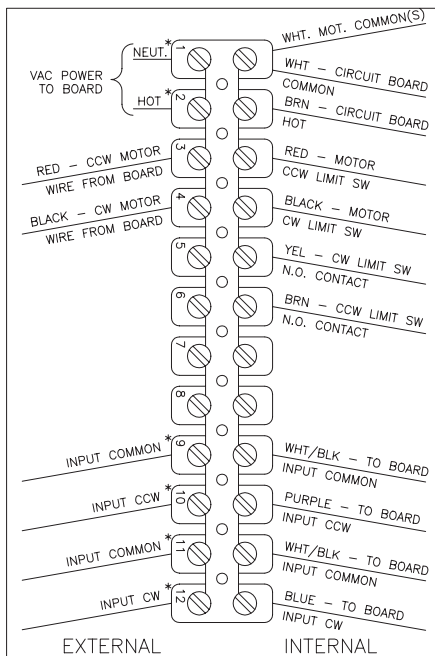
**NOTE:** When there are multiple wires going to terminal 1, use the short white wire included in kit. Connect it to terminal 1 and then splice it to the other white wires (common) using the closed-end splice.

From the circuit board connect white wire to the back of terminal 1, brown wire to the back of terminal 2, red wire to the front of terminal 3, and black wire to the front of terminal 4. Connect white/black (input common) wires of CCW and CW to back of terminals 9 and 11 respectively.

#### 3.3.1 PC Board - 120 VAC (Figure 3):

Connect purple wire of CCW input to back of terminal 10, and blue wire of CW input to back of terminal 12.

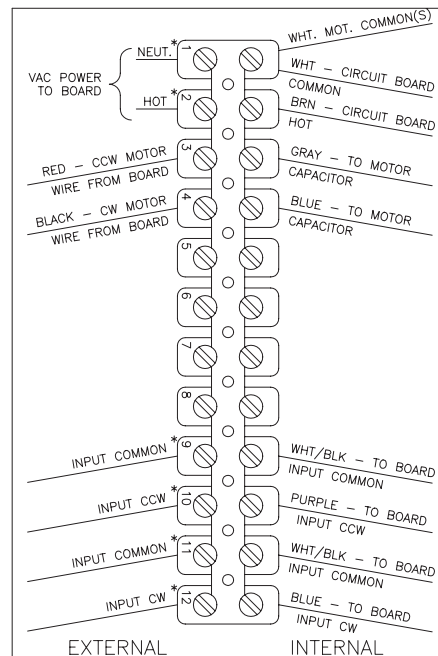
Figure 3



\*TERMINALS 1 & 2 (POWER) AND 9 THRU 12 (SIGNAL) ON EXTERNAL SIDE ARE FOR USER'S FIELD CONNECTIONS

WIRING OF I-75 120 VAC INTERFACE

Figure 4



\*TERMINALS 1 & 2 (POWER) AND 9 THRU 12 (SIGNAL) ON EXTERNAL SIDE ARE FOR USER'S FIELD CONNECTIONS

WIRING OF I-75 240 VAC INTERFACE

CAUTION: SEE TABLE IN PARAGRAPH 3.1 FOR MINIMUM OVERCURRENT PROTECTION RATINGS WHEN USED IN MOTOR POWER CIRCUIT.

### 3.3.2 PC Board - 240 VAC (Figure 4):

For I-75, 240 VAC option only, the limit switches (SW-1, SW-2) are used to interrupt CW, CCW input signals, therefore the wiring will be different.

Connect purple wire of CCW input to back of terminal 10, and blue wire of CW input to back of terminal 12.

If the installed switches SW-1, SW-2 are wired per standard wiring, remove the brown, red, yellow, and black wires from the limit switches and the internal side of terminal strip. Remove the original #18 gauge gray and blue wires from capacitor to switches (make a note of which wire is on which capacitor terminal) and discard. Replace with new #18 gauge gray and blue wires from Interface Kit and connect the gray wire to the capacitor and to terminal 3 and the longer blue wire to the capacitor and to terminal 4.

The two black wires (#20 gauge) from the Interface board connect to the common and normally closed contacts of switch no. 1 (lower right-hand switch), and the two red wires (#20 gauge) from the Interface board connect to the common and normally closed contacts of switch no. 2 (lower left-hand switch). Route the wires so they will not interfere with switch, or feedback pot operation, if used.

Securely tighten terminal screws. Keep wiring away from all rotating parts and secure with cable ties.

### 3.4 Wiring Different Options:

If Series 75 actuator is equipped with I-75 Interface and additional option has to be added, wire the additional option per instructions included in the option kit. If there are no available locations on terminal strip for wiring option, relocate wires accordingly and always mark the change on wiring diagram inside the cover. If the terminal strip is full, the connections have to be hard-wired using splices.

## 4. Indication and Repair

(Use Figure 1 for component location.)

LED Indicators - Light emitting diodes marked LD1, LD2 are in input circuits and indicate what particular input is on. Right LED, LD2, indicates that CW, close, signal is on. Left LED, LD1, indicates that CCW, open, signal is on.

If a malfunction occurs, look for the following:

If particular input is energized and corresponding LED light is not on, check for component damage or other continuity disruption in corresponding CCW and/or CW input circuit. If everything appears to be OK, replace matching opto-coupler U2 or U1.

Input circuit is OK. LED is lighted and actuator is not running. If components and continuity in corresponding power circuit are alright, then failed component is triac Q2 or Q1 depending which way the actuator doesn't run, CCW or CW.

If the actuator doesn't run in either direction, it is likely that the actuator is defective. To check this, remove the red and black leads from terminals 3 and 4 of the actuator (coming from Interface board) and the AC line connections from terminals 1 and 2. Tape these leads. Using a test cable, apply power to actuator terminals 1 and 3. The 120 VAC actuator only (see note below) should rotate CCW until stopped by the CCW limit switch. Then apply power to terminals 1 and 4 to check CW 120 VAC actuator and the CW limit switch. If the actuator does not operate, check 120 VAC associated wiring, terminal strip, the limit switches, motor and capacitor. Check switch continuity. Check for an open motor winding, and check for a shorted capacitor. If the problem in the actuator still cannot be determined, return the unit for service. If the actuator functions properly, the problem is in the interface board.

**NOTE:** The limit switches for the 240 VAC I-75 actuator do not control the motor circuit, they control input circuit only. When applying power to terminals 1 & 3, and 1 & 4 to check CCW, CW rotations, do this momentarily so that you do not override 0-90° quadrant.

Request RMA (Return Material Authorization) number from the factory, replace defective board, and return it to the factory with proper description of problem and application.

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