



LP4 (Local Position Controller Ver.4) Installation and Operating Manual

**Model : LP4 BOARD REV.3
(2010.06.11)
(Manual Revision 17. Mar. 2011)**



Local position controller LP4
Installation and Operating Manual

1. Checkpoints before using

- 1) Ensure the specifications (Model No. Main power, Control power, Options) of delivered actuator meet your requirements.
- 2) Ensure the application such as butterfly, ball valves and Damper etc. meet your requirement.
- 3) Ensure mounting of actuator on the application is correct and tight.
- 4) Ensure the settings of actuator such as limit switches, stopper bolts and indicator are correct.
- 5) Ensure electric wiring (Power, input/output signal) is correct.
- 6) Never do disassembly, modification
- 7) Do not perform wiring job in wet conditions
- 8) Always disconnect the power before carrying out electrical wiring.
- 9) If 3Ph Power is used, ensure wiring is correct
- 10) In case of 3-phase motor, must check rotating direction first before normal operation.
 - A. Open actuator about 50% by manual, supply power to actuator for about 5 seconds. Push CLOSE button and check whether actuator moves toward close direction or not.
 - B. If yes, it is OK.
 - C. In case of reverse direction, cut the power supply to Actuator and ensure phase wiring is correct
- 11) Generally, output signal is set by factory before delivery and no need to set. If you change CAM, reset the output signal.
- 12) Disassembly, modification without factory's consent may affect the performance of the actuator, and i-Tork does not guarantee.
- 13) Actuator's shape, wiring diagram and the contents in this manual are subject to change due to quality improvement without individual notice.

2. General description

LP4 (Local Position Controller Ver.4) is for moving Vales "OPEN" or "CLOSE" direction without extra PANEL in field. User can select Local or Remote operation via selector switch.

3. Features

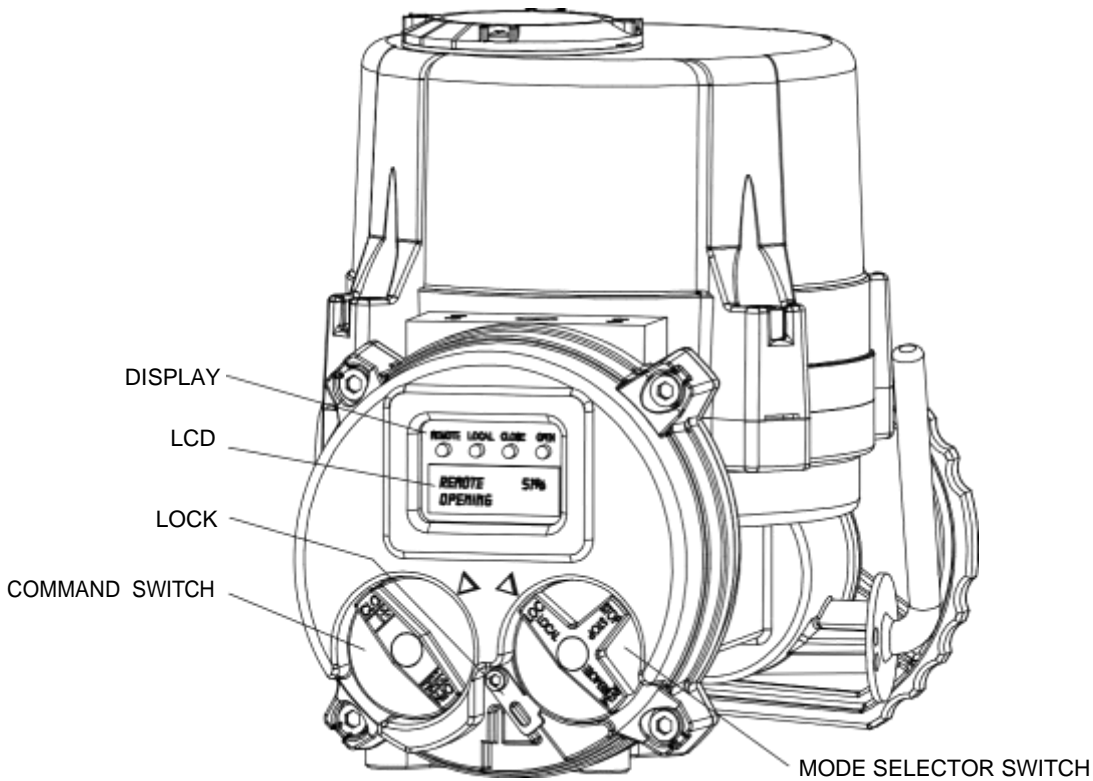
- 1) MODEL : LP4 REV.3 (2010.06.11)
- 2) POWER : 1Ph, AC85~265V, 50~60Hz, Free Voltage (AC/DC 24V is optional)
- 3) Control Port : 3 PORT (OPEN Relay, CLOSE Relay, Remote Relay)
- 4) Output Signal (Dry Contract, Option) : 3 PORT (Power Fail, Local, Remote)
- 5) Ambient Temperature : -10°C ~ +60°C (surface of LP4 board)
- 6) Ambient Humidity : 90% RH Max. (Non-Condensing)
- 7) Dielectric Strength : AC 1500V, 1 Min (Power to GND)
- 8) Insulation Resistance : more than 30MΩ / DC 500V
- 9) Vibration & Shock: X, Y, Z 10g (6g based on RMF) Frequency : 0.2 ~ 34Hz , less than 180Min)

4. General Performance

- 1) LP4 is the local control unit for JFEW / JFEX electric actuator (1Ph or 3Ph)
- 2) LP4 consists of housing (Cover with switch, body and window), 2 selector switches (LOCAL/STOP/REMOTE, OPEN/CLOSE), and 5 LEDs (POWER/REMOTE/FAULT(OVER TORQUE)/CLOSE/OPEN) to indicate the current position of actuator.
- 3) By selecting switches (LOCAL/STOP/REMOTE, OPEN/CLOSE), actuator is ready to work according to either operating command from remote via PLC, MCC controller OR operating command from local.
- 4) By selecting the local command switch, user can operate the actuator to OPEN & CLOSE.
- 5) 5 lamps will show each status according to the position of switches.

5. Construction

LP4 consists of two magnetic selector switches and display LED (or optional LCD). Selector switches are non-intrusive and magnetic sensor type which provides perfect sealing against water.



- 1) Mode Selector switches (Non-intrusive and magnetic sensor type)
 - A. Selector switch on the right side of Local control is for selecting the operation modes, and has three modes, REMOTE, STOP, LOCAL.
 - B. If mode is on REMOTE, actuator will work according to the incoming control signal (ON/OFF or 4-20mA modulating (option)) from remote.
 - C. If mode is on STOP, all command signals (Local or Remote) are ignored, and only display status is being updated.
 - D. If mode is on LOCAL, actuator works according to the signal generated by the local command of either Close or Open.
- 2) Command Switch (Non-intrusive and magnetic sensor type)

Command switch generates either open or close command.

6. Display

1) LED display

Display consists of 5 LEDs and Window, and it shows the status below.

	LED	LED's MEANING
POWER (WHITE)	OFF	POWER OFF
	ON	POWER ON
REMOTE (BLUE)	OFF	LOCAL or STOP
	ON	REMOTE MODE
FAULT (YELLOW)	OFF	READY
	ON	OVER TORQUE
FAULT(ON)+CLOSE(Flicker)		CLOSE OVER TORQUE (LOCAL ONLY)
FAULT(ON)+OPEN(Flicker)		OPEN OVER TORQUE (LOCAL ONLY)
CLOSE (GREEN)	Flicker	CLOSING (LOCAL ONLY)
	ON	FULL CLOSE
OPEN (RED)	Flicker	OPENING (LOCAL ONLY)
	ON	FULL OPEN

7. INCHING / HOLDING (ONLY LOCAL MODE/Switch On Board)

1) INCHING

- A. Open the front cover, and switch SW1-1 (OFF) on the LP4 electrical circuit board.
- B. When holding the switch in the open or close position, the actuator moves in the open or close direction, if the switch is released the actuator will stop.
- C. During opening, the OPEN (RED) LED blinks. When full open position is reached, the OPEN (RED) LED is ON.
- D. During closing, the CLOSE (GREEN) LED blinks. When full close position is reached, the CLOSE (GREEN) LED is ON.
- E. In case of FULL CLOSE (GREEN ON) or FULL OPEN (RED ON) status, if the OPEN/CLOSE switch is released, LED is OFF.

2) HOLDING (* set by factory before delivery)

- A. Open the front cover, and switch SW1-1 (ON) on the LP4 electrical circuit board.
- B. When switch is moved to the OPEN or CLOSE position once, the actuator

moves to the FULL OPEN position or FULL CLOSE position.

- C. During opening, the OPEN (RED) LED blinks. When FULL OPEN position is reached, the OPEN (RED) LED is ON.
- D. During closing, the CLOSE(GREEN) LED blinks, when FULL CLOSE position is reached, the CLOSE(GREEN) LED is ON.

8. NORMAL / REVERSE (ONLY LOCAL MOTE/Switch On Board)

- 1) NORMAL (* set by factory before delivery)
 - A. Open the front cover, and switch SW1-2 (OFF) on the LP4 electrical circuit board.
 - B. It works in the standard, CW = CLOSE / CCW = OPEN direction.
- 2) REVERSE
 - A. Open the front cover, and switch SW1-2 (ON) on the LP4 electrical circuit board.
 - B. It works in the reverse direction, CCW = CLOSE / CW = OPEN direction.
 - C. If the valve and actuator operating direction is reverse, you can simply switch over & operate without changing any electric wiring.

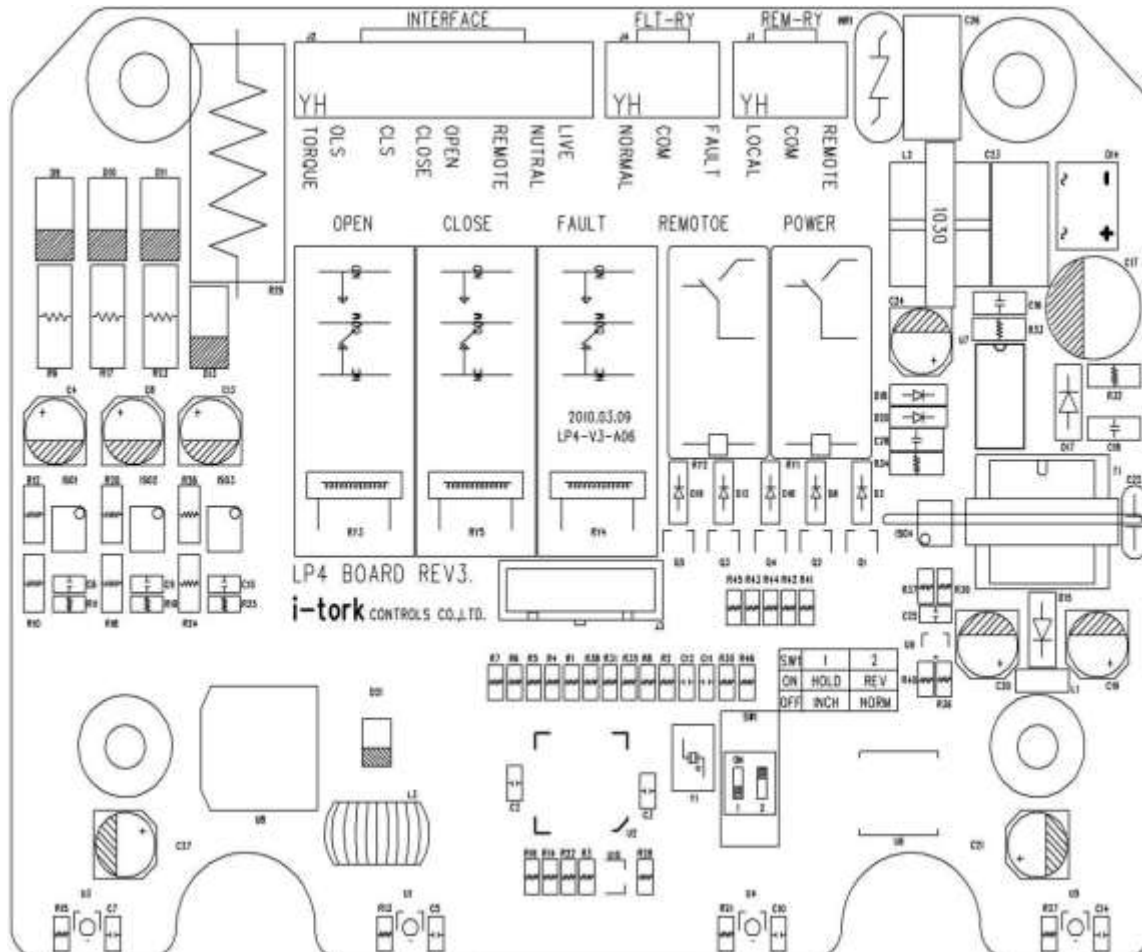
9. How to use when actuator and valve/damper are in opposite direction

(Example Wiring No. JFEW / JFEX-0160-70070-F)

- 1) When user needs to use valve CW=OPEN, CCW=CLOSE (factory standard CW=CLOSE, CCW=OPEN), follow the instruction below.
- 2) Open the front cover, and switch SW1-2 (ON) on the LP4 electrical circuit board.
- 3) Switch CLOSE & OPEN input signal line from actuator, in other words, exchange lines from actuator terminal No. 11 (BLUE) & No. 12 (RED), user will finally have No. 11 (RED, 2 wires) & No. 12 (BLUE , 2 wires).
- 4) Switch CLOSE & OPEN output signal line from terminal, in other words, exchange lines from actuator terminal No. 9 (PURPLE) & No. 10 (GREEN), user will finally have No. 9 (GREEN, 2 wires) & No. 10 (PURPLE, 2 wires).
- 5) Switch DRY CONTACT, No. 15, 16 (ACLS) & No. 17, 18 (AOLS), in other words, exchange lines from actuator terminal No. 15 & No. 17 and No. 16 & No. 18, user will finally have No. 15 (GREEN), No. 16 (BLUE), No. 17 (PURPLE), No. 18 (RED).
- 6) Reset actuator's Indicator.

- 7) According to model of actuator, the wiring diagram number would be different. Please check wiring diagram No. before rewiring.

10. PCB LAY-OUT (LP4)



11. Function of Switches and LED display

Position	LED	Status	
REMOTE	BLUE ON	Operation waiting by REMOTE signal	
STOP		ACTUATOR STOP	
LOCAL	CLOSE	GREEN FLICKER	Operating to CLOSE direction (LOCAL ONLY)
		GREEN ON	FULL CLOSE

	OPEN	RED FLICKER	Operating to OPEN direction (LOCAL ONLY)
		RED ON	FULL OPEN

12. Operating Test if actuator is 3 phases

- 1) If main power is 3 phase, check rotation directions of actuator to ensure that the main power is correct.
- 2) Do wiring job after operating actuator to 50% open position by manual hand wheel.
- 3) After Power On, turn the mode selector switch toward LOCAL position.
- 4) Turn the command selector switch to the OPEN position and check actuator moves toward open direction.
- 5) Turn the command selector switch to the CLOSE position and check actuator move towards the close direction.
- 6) If OPEN/CLOSE direction is OK, check FULL OPEN/FULL CLOSE operation.
- 7) If the operating direction is reverse, randomly select 2 wires among the 3 phase's 3 wire and switch and reconnect. And then test again. Note, to prevent electric shock, make sure main power is off first, then change wire range.
- 8) Actuator is set as CW=CLOSE, CCW=OPEN by factory before delivery.
- 9) If everything is OK, cut the power supply and put LOCAL/STOP/REMOTE switch on STOP position.