

AVTEC Control Board Manual

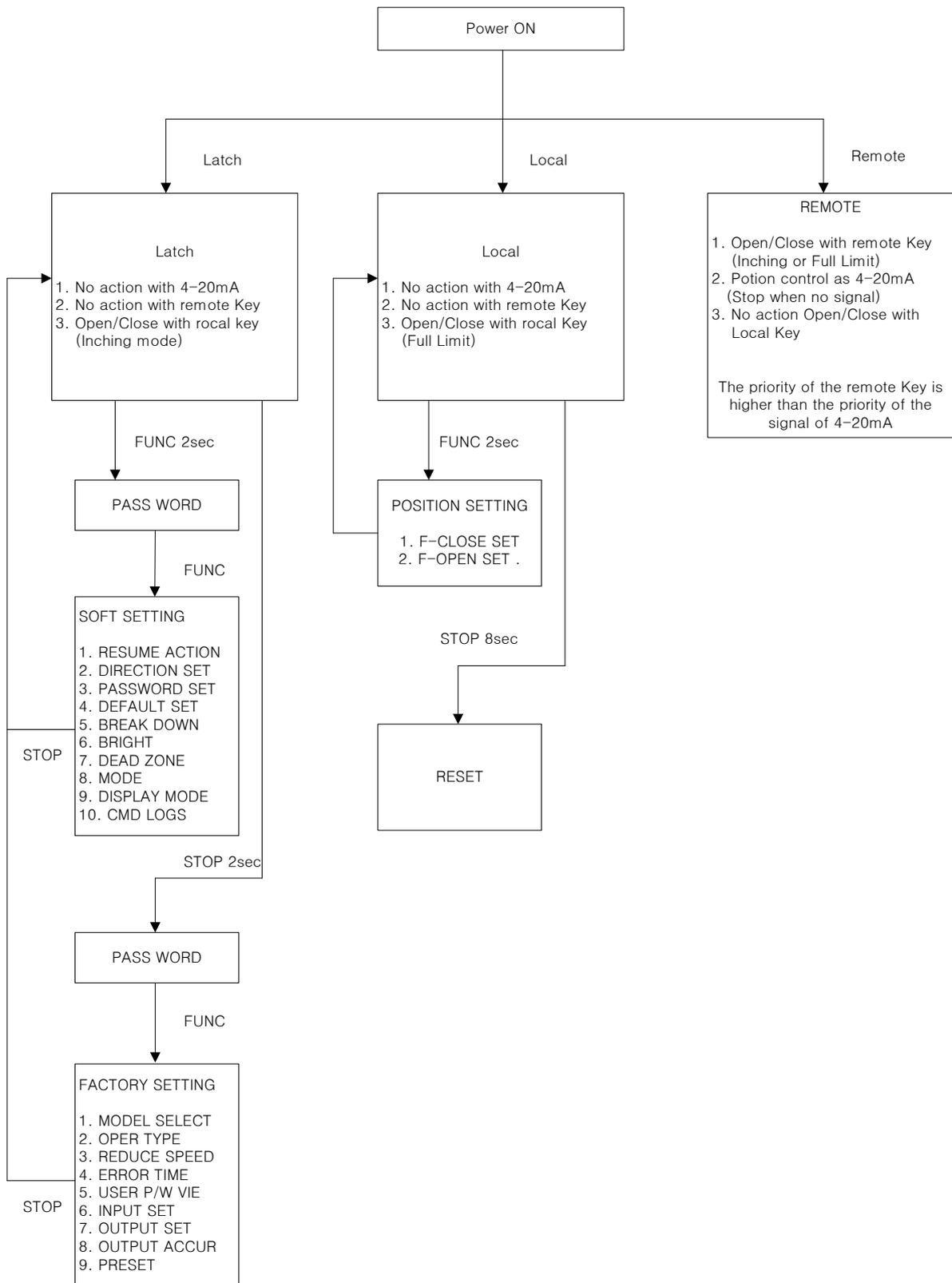
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I. The Configuration of Menu and Flow



II. The Function Summaries of Menu

| | Menu | Function |
|----------------|-----------------|--|
| Softset | 1.RESUME ACTION | First position of valve when power is ON |
| | 2.DIRECTION SET | Open / Close direction setting of valve (CW / CCW) |
| | 3.PASSWORD SET | Reset Password |
| | 4.DEFAULT SET | Set to the previously saved (PRESET) parameter |
| | 5.BREAK DOWN | Positioning of the valve when the main power is faulted and the UPS is operating |
| | 6.BRIGHT | Adjust brightness of LCD (* only works on old PCB) |
| | 7.DEAD ZONE | Decide when to open / close relay |
| | 8.MODE | Determine the operating characteristics when the valve is opened / closed from the remote |
| | 9.DISPLAY MODE | Display unit decision |
| | 10.CMD LOGS | Input history of Local Key and Remote Key |
| Factory | 1.MODEL SELECT | Model Settings |
| | 2.OPER TYPE | Set time to operate below 0% in Full Close |
| | 3.REDUCE SPEED | Valve speed setting by interval |
| | 4.ERROR TIME | Setting the operating time of the valve (when the value is out, the valve is in the fault state) |
| | 5.USER P/W VIE | User password |
| | 6.INPUT SET | 4-20mA Input calibration |
| | 7.OUTPUT SET | 4-20mA Output calibration |
| | 8.OUTPUT ACCUR | 4-20mA Output Accuracy Adjustment |
| | 9.PRESET | Save current parameters (can be loaded from Default Set) |
| Limit | F-CLOSE SET | Close Limit Position of Valve |
| | F-OPEN SET | Open Limit Position of Valve |

- ▶ All menus are moved to the ↑ or ↓ key. Press the Func key for about 2 to 5 seconds to save the entered data.
- ▶ If the valve is in the FAULT state, determine the cause and release it with the local STOP key

III. The Functions of Menu and Setting Methods

1. RESUME ACTION

[When the power is on, the position of the first valve is determined. When the power is on, the valve moves to the designated one of the following three modes and starts normal operation.]

- (1) STAY PUT : Fix it to the current position.
- (2) FULL OPEN : Fully open the valve.
- (3) FULL CLOSE : Fully close the valve.

2. DIRECTION SET

[Determine the direction of the valve]

- (1) CW : As the signal increases, the valve moves clockwise
- (2) CCW : As the signal increases, the valve moves counterclockwise

3. PASSWORD SET

- (1) Modify password to enter soft setting mode
- (2) It consists of 4 digits. After setting the number with ↑ or ↓ key, confirm with Func key. Each time a number is confirmed, it moves to the next digit.

4. DEFAULT SET

- (1) Function to call up the parameters set at the factory
- (2) After factory setting, set all parameters and use the PRESET function of FACTORY SETTING mode in save parameters

5. BREAK DOWN

- (1) It means when the main power source is FAULT and operating as UPS power source.
- (2) During Break Down, the direction of the valve can be determined in one of three modes. At this time, the valve outputs a fault signal and all functions are stopped

- 1) STAY PUT : Fix it to the current position.
- 2) FULL OPEN : Fully open the valve.

3) FULL CLOSE : Fully close the valve.

6. BRIGHT

[The function to adjust the LCD brightness. This function only works on Spherical Substrate]

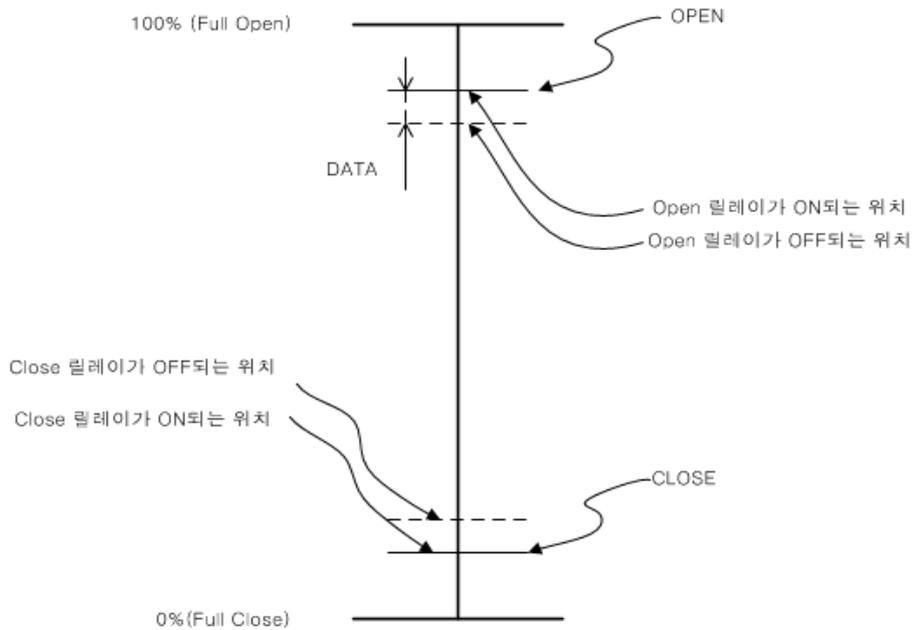
7. DEAD ZONE

[Open or Close determines the operating position and hysteresis of the relay]

(1) CLOSE : Close Location where Relay operates (%)

(2) OPEN : Open Location where Relay operates (%)

(3) DATA : Hysteresis of Relay operation (%)



8. Mode

[Defines the nature of the valve movement when the valve is operated with the remote key]

(1) INCHING : Operates only when the Open or Close key is pressed.

(2) FULL LIMIT : Once the Open or Close key is pressed, even if the key is off, continue to work until Full Open or Full Close

To stop in the middle, the Stop key must be operated

9. DISPLAY MODE

[Select to display valve position in 0.1% increments or 0.5% increments]

- (1) NORMAL : Displays the valve position in 0.1% increments
- (2) 0.5% STEP : Displays the valve position in 0.5% increments

10. CMD LOGS

[Record input information of local operation or remote operation]

※ Up to 6 final input values are saved

11. MODEL SELECT

[Selection of valve model]

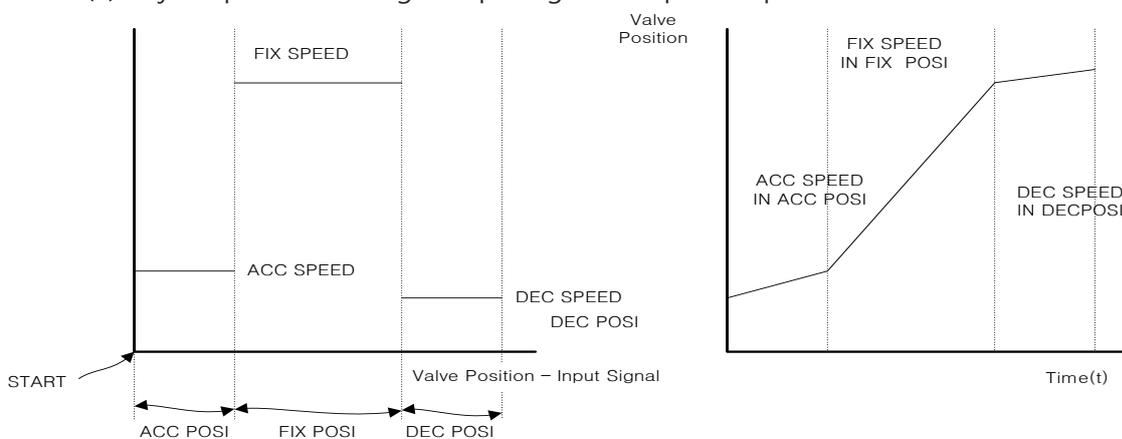
12. OPER TYPE

[When the valve is fully closed, it is decided at 0% whether to stop immediately or to operate for a specified time longer]

- (1) REGULAR POSITION : Immediately stop at 0%
- (2) DELAY t SEC : When it reaches 0%, forced to close for t seconds

13. REDUCE SPEED

(1) Adjust speed according to input signal and present position of valve.



- 1) ACC SPEED POSI : The interval (% F.S) and speed (%) at which the valve first starts moving

- 2) FIX SPEED POSI : Speed at which the valve moves (%)
 - 3) DEC SPEED POSI : The interval (% F.S) and speed (%) in which the valve decelerates and stops
- (2) The speed is entered as 0 - 100%, where 0 is the stop and 100 is the maximum speed.
- (3) The interval setting is based on the valve Full Scale (F.S) and FIX POSI is automatically determined by ACC POSI and DEC POSI.
- ※ Caution: Make sure that the sum of ACC POSI and DEC POSI does not exceed 100%.

14. ERROR TIME

[Specify the time at which the valve position can be maintained at a point where the valve does not reach the target value or is out of the target value and After the specified time, the valve goes to FAULT state and all operation stops]

- (1) T-TIME : Total allowable time (in seconds) for the valve not to reach the target value.
- (2) S-TIME : Sustainable time (in seconds) with the valve stopped at a point out of the target valve

15. USER P/W VIE

[Displays the password that can enter the Soft Setting menu]

16. INPUT SET

[Zero adjustment menu of 4-20mA input signal. 0%, 25%, 50%, 75%, 100% adjust the total 5 points]

- ▶ Note : Adjust to 100%, then press Func to save and press Func to save.

17. OUTPUT SET

[Zero adjustment menu of the signal that changes valve opening to 4-20mA. 0%, 100% adjust two points.]

18. OUTPUT ACCUR

[Adjust the precision of the 4-20mA output signal. If you set this value to 5%, if Deviation is less than 5%, it will not output valve opening but Input Signal (4-20mA) signal.]

19. PRESET

[The function to store the parameters of the currently set valve. It is called up from 'DEFAULT SET' of the soft setting.]

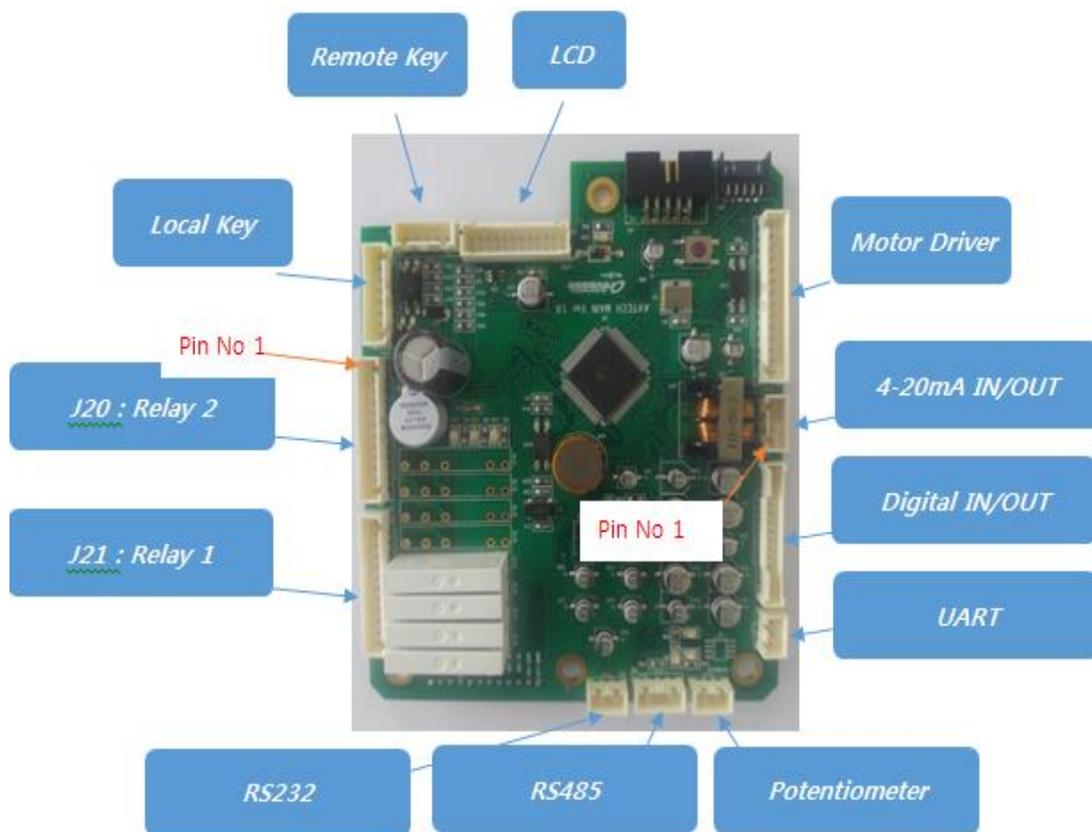
20. LIMIT SET

[In LOCAL mode, it is possible to set limit position of valve.]

- (1) F-CLOSE SET : Close Position Limit setting of valve (0.0%)
- (2) F-OPEN SET : Open Position Limit setting of valve (100.0%)

- ▶ To move all menus by ↑ or ↓ key and save the entered data, press Func key for about 2-5 seconds.
- ▶ Press the Stop Key to exit.

IV. Board Connector Functions and Names



- 1. Remote Key : Remote Key Connector
- 2. LCD : LCD Connector
- 3. Motor Driver : Motor Driver Connector
- 4. 4-20mA IN/OUT : Pin 1(OUT +), Pin 2(OUT-), Pin 3(Input +), Pin 4(Input-)
- 5. Digital IN/OUT : Digital IN/OUT Port(Not currently used)
- 6. UART : For debugging, not currently use
- 7. Potentiometer : Potentiometer Connector

- 8. RS485 : Not currently in use
- 9. RS232 : Not currently in use
- 10. Local Key : Local Key Connector
- 11. Relay1 : Table 1 Notes _ Relay 1
- 12. Relay2 : Table 2 Notes _ Relay 2

(Table 1_Relay 1)

| Pin No | Relay 1 | Function |
|--------|--------------------|---|
| 1 | Power (A) NC | Relay ON when power is on |
| 2 | Power (C) COM | |
| 3 | Power (B) NO | |
| 4 | Full Open (A) NC | ON when the valve is fully open |
| 5 | Full Open (B) COM | |
| 6 | Full Open (C) NO | |
| 7 | Full Close (A) NC | ON when the valve is fully close |
| 8 | Full Close (B) COM | |
| 9 | Full Close (C) NO | |
| 10 | Fault (A) NC | Fault signal output when time over, motor fault, LCD is not connected |
| 11 | Fault (B) COM | |
| 12 | Fault (C) NO | |

(Table 2_Relay 2)

| Pin No | Relay 2 | Function |
|--------|--------------------|--|
| 1 | Full Open (A) NC | ON when valve is fully open (for lamp) |
| 2 | Full Open (B) COM | |
| 3 | Full Open (C) NO | |
| 4 | Full Close (A) NC | ON when valve is fully closed (for lamp) |
| 5 | Full Close (B) COM | |
| 6 | Full Close (C) NO | |
| 7 | Moving (A) NC | ON when valve is open or closed |
| 8 | Moving (B) COM | |
| 9 | Moving (C) NO | |
| 10 | Remote (A) NC | In Remote mode |
| 11 | Remote (B) COM | |
| 12 | Remote (C) NO | |

V. Manual DCV (Directional Control Valve) Method of Operating

| | | |
|--|-------------------|--|
|  <p>The diagram shows a manual directional control valve handle. At the top, there is a legend with three positions: 'MANUAL OPEN' with a blue arrow pointing left, 'AUTO' with a red arrow pointing right, and 'MANUAL CLOSE' with a red arrow pointing right. Below the legend is a circular dial with a red needle pointing to the 'AUTO' position and the letters 'M & V' below it. The handle itself is a long, thin rod with a wider grip section at the top. Arrows indicate the handle's movement from the AUTO position towards the OPEN and CLOSE positions.</p> | AUTO MODE | Mode that can OPEN / CLOSE operation in REMOTE MODE |
| | MANUAL OPEN MODE | Turn the lever 45 degrees toward MANUAL OPEN (counterclockwise) and turn the handle without any direction |
| | MANUAL CLOSE MODE | Turn the lever 45 degrees toward MANUAL CLOSE (clockwise) and turn the handle without any direction |
| | CAUTION | <ol style="list-style-type: none"> 1. Be sure to reset the lever to AUTO MODE after manual operation. If it is not AUTO MODE, be sure to operate OPEN / CLOSE only. 2. One pressure is generated per 4 turns of HAND -WHEEL Please contact MAKER when pressure is not generated. 3. Do not apply excessive force when rotating lever. |

VI. ERROR CODE

| Code No | Display | Reasons | Method |
|---------|--------------|---|--|
| "1" | BREAK DOWN | When the main power is faulted and operated by USP power, the valve is moved to the preset position and all operation stops'. | Select Switch After Local Conversion Stop Button For 2seconds. |
| "2" | MOTOR FAIL | An error has occurred in the motor or motor driver. There are following causes | |
| | | Cause 1) Since the valve is mechanically fixed or the friction force is high, Overloaded Cause 2) The motor drive is not connected to the PCB Cause 3) If the motor drive is damaged Cause 4) When motor and motor drive are not connected Cause 5) If the motor is exposed to high temperature and does not function normally. Cause 6) When the motor is damaged | |
| "3" | TIME OUT S | After the valve stops moving due to mechanical If it has passed. | |
| "4" | TIME OUT T | If the target value is not reached within the specified time | |
| "5" | MEMORY FAULT | If the EE2PROM is damaged and the parameter cannot be saved. | |

