



WENZHOU RUNXIN MANUFACTURING MACHINE CO.,LTD

ADD: NO.169, RUNXIN ROAD, SHANFU TOWN, WENZHOU, ZHEJIANG, CHINA.
TEL.:0086-577-88630038, 88576512, 85956057 FAX:0086-577-88633258
E-MAIL: sales@run-xin.com http://www.run-xin.com

Rev.A. 2507



Multi-functional Flow Control Valve for Water Treatment Systems

63510 (Old Model:TM . F74A1)

63610 (Old Model:TM . F74A3)

63510B (Old Model:TM . F74B1)

63610B (Old Model:TM . F74B3)

User Manual



Please read this manual in details
before using the valve and keep it properly
in order to consult in the future.
0WRX.466.510

MODEL:F74A1-63510/F74A3-63610/F74B1-63510B/F74B3-63610B

Before the valve put into use, please fill in the below content so as to help us to refer in the future.

Softener System Configuration

Tank Size: Dia. _____ mm, Height _____ mm;

Resin Volume _____ L; Brine Tank Capacity _____ L;

Hardness of Raw Water _____ mmol/L;

Pressure of Inlet Water _____ MPa;

Control Valve Model _____ ; Number _____ ;

The Specification of Drain Line Flow Control _____ ;

Injector No. _____ .

Water Source: Ground-water Filtered Ground-water Tap Water Other _____ .

Parameter Set

| Parameter | Unit | Factory Default | Actual Value |
|--|----------------|-----------------|--------------|
| Control Mode A-01 (02, 03, 04) | / | A-01 | |
| Water Treatment Capacity(Meter Type) | m ³ | 80.0 | |
| Service Days (Time Clock Type by Days) | D. | 03 | |
| Service Hours (Time Clock Type by Hours) | H. | 20 | |
| Regeneration Time | / | 02 : 00 | |
| Backwash Time | min. | 10 | |
| Brine & Slow Rinse Time | min. | 60 | |
| Brine Refill Time | min. | 05 | |
| Fast Rinse Time | min. | 10 | |
| Maximum Interval Regeneration Days | D. | 30 | |
| Output Mode b-01(02) | / | b-01 | |

If there is no special requirement when product purchase, we choose 3# drain line flow control and 3# injector.

Catalogue

| | |
|--|----|
| Notice..... | 3 |
| 1. Product Overview..... | 4 |
| 1.1. Main Application &Applicability..... | 4 |
| 1.2. Product Characteristics..... | 4 |
| 1.3. Service Condition..... | 6 |
| 1.4. Product Structure and Technical Parameters..... | 7 |
| 1.5. Installation..... | 8 |
| 2.Basic Setting & Usage..... | 11 |
| 2.1.The Function of PC Board..... | 11 |
| 2.2.Basic Setting & Usage..... | 13 |
| 3. Applications..... | 16 |
| 3.1.Softener Flow Chart..... | 16 |
| 3.2.The Function and Connection of PC Board..... | 18 |
| A. Signal Output Connector..... | 19 |
| B. Interlock..... | 22 |
| C. Pressure Relief Output..... | 22 |
| D. Remote Handling Connector..... | 23 |
| E. Interlock System..... | 23 |
| F. Series System..... | 23 |
| 3.3.System Configuration and Flow Rate Curve..... | 24 |
| 3.4.Parameter Settlement..... | 26 |
| 3.5.Parameter Enquiry and Setting..... | 27 |
| 3.6.Trial Running..... | 31 |
| 3.7.Trouble-Shooting..... | 32 |
| 3.8. Assembly & Parts..... | 35 |
| 4. Warranty Card..... | 40 |

Notice

Notice

- To ensure normal operation of the valve, please consult with professional installation or repairing personnel before use it.
- If there are any of pipeline engineering and electric works, there must be finished by professional at the time of installation.
- Do not use the control valve with the water that is unsafe or unknown quality.
- Depending on the changing of working environment and water requirement, each parameter of softener should be adjusted accordingly.
- When the water treatment capacity is too low, please check the resin. If the reason is shortage of resin, please add; if the resin is turn to reddish brown or broken, please replace.
- Test water periodically to verify that system is performing satisfactorily.
- Sodium used in the water softening process should be considered as part your overall dietary salt intake. Contact doctor if you are on a low sodium diet.
- Ensure that there is solid salt all the time in the brine tank in the course of using, when this valve is used for softening. The brine tank should be added the crystalline coarse salt only, at least 99.5% pure, forbidding use the small salt.
- Do not put the valve near the hot resource, high humidity, corrosive, intense magnetic field or intense librations environment. And do not leave it outside.
- Forbidden to carry the injector body. Avoid using injector body as support to carry the system.
- Forbidden to use the brine tube or other connectors as support to carry the system.
- Please use this product under the water temperature between 5~45°C, water pressure 0.2~0.6 MPa. Failure to use this product under such conditions voids the warranty.
- If the water pressure exceeds 0.6 Mpa, a pressure reducing valve must be installed in front of the water inlet. While, if the water pressure under 0.2 MPa, a booster pump must be installed in front of the water inlet.
- Do not let children touch or play, because careless operation may cause the procedure changed.
- When the attached cables or transformer of this product are broken, they must be changed to the one that is from our factory.
- Advice to use M88x2 male thread distributor for top-mounted valve to make convenience for disassembly.
- At the end of the product lifetime, parts and components of the product are sorted and properly disposed in accordance with local laws and regulations.

1. Product Overview

1.1. Main Application & Applicability

Used for softening or demineralization water treatment systems.

Be suitable for residential softening system.

Ion exchange equipment

Boiler softening water system

RO pretreatment softening system, etc.

1.2. Product Characteristics

● Simple structure and reliable sealing

It adopts hermetic head faces with high degree pottery and corrosion resistance for opening and closing. It combines with Service, Backwash, Brine & Slow Rinse, Brine Refill and Fast Rinse.

● Variety of installation methods

Use side-mounted connector can change F74B from top mounted to side mounted, and screen is movable.

● No water passes the valve in regeneration in single tank type.

● Manual function

Realize regeneration immediately by pressing “” at any time.

● Long outage indicator

If outage overrides 3 days, the time of day indicator “12:12” will flash to remind people to reset new time of day. The other parameters do not need to reset. The process will continue to work after power on.

● LED dynamic screen display

The stripe on dynamic screen flash, which indicates the control valve is in service, otherwise, it is in regeneration cycle.

● Buttons lock

No operations to buttons within 1 minute, button lock indicator lights on which represents buttons are locked. Before operation, press and hold the “” and “” buttons for 5 seconds to unlock. This function can avoid incorrect operation.

● It can choose time clock type or meter type by program selection.

Can realize interchange between time clock type by day or by hour and meter type by dialing a switch on main control board. (Check figure on P18) (Attention: After dialing the switch, it needs to reconnect the power. The meter type product has one flow meter and flow meter cable, but the time clock type product doesn't have.)

● Four kinds of meter type can be selected (Suit for F74A3, F74B3)

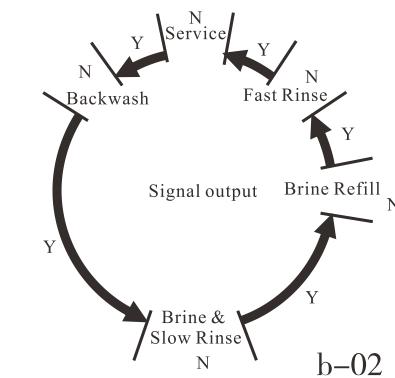
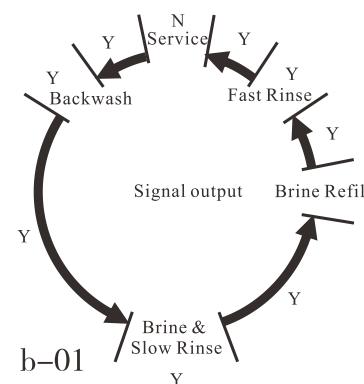
| Mode | Name | Instruction |
|------|--|--|
| A-01 | Meter delayed regeneration | Regenerate on the day although the available volume of treated water drops to zero (0). Regeneration starts at the regeneration time. |
| A-02 | Meter immediate regeneration | Regenerate immediately when the available volume of treated water drops to zero(0). |
| A-03 | Intelligent meter delayed regeneration | Meter delayed regeneration type, but by setting resin volume, feed water hardness, regeneration factor, the controller will calculate the system capacity. |
| A-04 | Intelligent meter immediate regeneration | Meter immediate regeneration type, but by setting resin volume, feed water hardness, regeneration factor, the controller will calculate the system capacity. |

● Interlock Function

It has a function of interlock to realize only one valve in regeneration but the other valves are in service while several valves parallel in system. In multi-steps treatment systems such as RO pre-treatment, when several valves are in series, there is only one valve in regeneration or washing to ensure pass water all the times while different valves in regeneration or washing. (Application refers to Figure 3-9)

● Signal output

There is a signal output connector on main control board. It is applied for controlling external wiring (Refer to Figure from Figure 3-1 to Figure 3-8). There are two kinds of output modes. b-01 Mode: Turn on when start regeneration and shut off at the end of regeneration; b-02 Mode: Signal is available only at intervals of each status. Refer to below figure:



● Remote handling connector

This connector can receive external signal, used together with PLC, and computer etc. to control the valve remotely. (Application refers to Figure3-11)

● Pressure relief connector

The valve will cut off feeding water to drain line when it switches in regeneration cycles (Same as signal output b-02). Thus in some water treatment system, e.g. Deep Well, one booster pump was installed on the inlet to increase the system water feeding pressure, this cut-off will cause pressure on inlet rising too fast to damage the valve. Pressure Relief Output can be used to avoid this problem. (Application refers to Figure3-10)

● Maximum interval regeneration days

Under the situation of service reaching the setting days and the volume not yet, it could enter into regeneration process forcibly when current time is the same as regeneration time.

● All parameters can be modified

According to the water quality and usage, the parameters in the process can be adjusted.

1.3. Service Condition

Runxin valve should be used under the below conditions:

| Items | | Requirement |
|---------------------|-------------------------|--|
| Working conditions | Water pressure | 0.2MPa ~ 0.6MPa |
| | Water temperature | 5°C ~ 45°C |
| Working environment | Environment temperature | 5°C ~ 45°C |
| | Relative humidity | ≤95% (25°C) |
| | Electrical facility | AC100 ~ 240V/50 ~ 60Hz |
| Inlet water quality | Water turbidity | < 5FTU |
| | Water hardness | First Grade Na ⁺ < 6.5mmol/L ; Second Grade Na ⁺ < 10mmol/L |
| | Free chlorine | < 0.1mg/L |
| | Iron2 ⁺ | < 0.3mg/L |
| | CODMn | < 2mg/L (O ₂) |

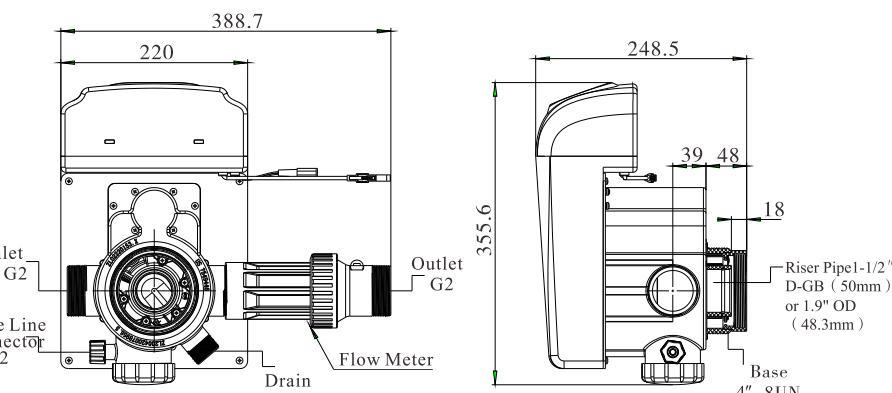
In the above table, First Grade Na⁺ represents First Grade Na⁺ Exchanger. Second Grade Na⁺ represents Second Grade Na⁺ Exchanger.

● When the water turbidity exceeds the conditions, a filter should be installed on the inlet of control valve.

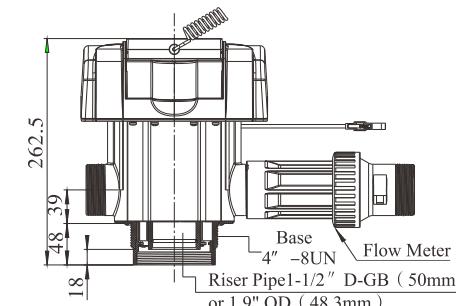
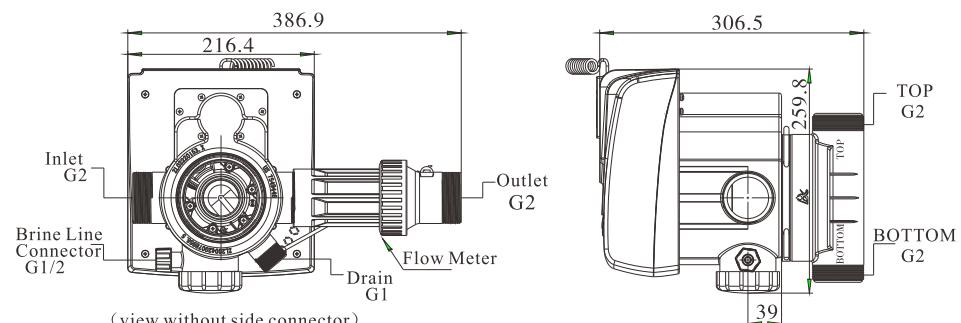
● When the water hardness exceeds the conditions, the outlet water hardness will hardly reach the requirement of boiler feed water (0.03 mmol/L) . It is suggested to adopt second grade softener.

1.4. Product dimension and parameter

A. Product dimension (The appearance is just for reference. It is subject to the real product.)



Structure Chart of F74A3 (63610)



(view without side connector)

Structure Chart of F74B3 (63610B)

B. Technical Parameters

| Model | Transformer Output | Flow Rate m ³ /h @0.3MPa | Regeneration Type | Installation Type |
|----------------|--------------------|-------------------------------------|-------------------------|-----------------------------|
| F74A1 (63510) | DC24V, 1.5A | 10 | Time clock type by days | Top-mounted |
| F74A3 (63610) | | | Meter type | |
| F74B1 (63510B) | DC24V, 1.5A | 10 | Time clock type by days | Top-mounted or side-mounted |
| F74B3 (63610B) | | | Meter type | |

1.5. Installation

A. Installation notice

Before installation, read all those instructions completely. Then obtain all materials and tools needed for installation.

The installation of product, pipes and circuits, should be accomplished by professional to ensure the product can operate normally.

Perform installation according to the relative pipeline regulations and the specification of Water Inlet, Water Outlet, Drain Outlet, Brine Line Connector.

B. Device location

①The softener should be located close to drain.

②Ensure the unit is installed in enough space for operating and maintenance.

③Brine tank need to be close to softener.

④The unit should be kept away from the heater, and not be exposed outdoor. Sunshine or rain will cause the system damage.

⑤Please avoid installing the system in one acid/alkaline, magnetic or strong vibration circumstance, because above factors will cause the system disorder.

⑥Do not install the filter or softener, drain pipeline in circumstance which temperature may drop below 5°C, or above 45°C.

⑦Install the system in the place where with the minimum loss in case of water leaking.

C. Pipeline installation (Take F74A3 as an example)

①Install control valve

a. As the Figure 1-1 shows, select the riser pipe with 50mmOD, take GB standard riser pipe as an example glue the riser pipe to the bottom strainer and put it into the mineral tank, cut off the exceeding tube out of tank top opening and round it. Plug the riser tube in case of mineral entering.

b. Fill the resin to the tank, and the height is accordance with the design code.

c. Screw top strainer connector to valve body with five pieces of screws.

- d. Insert the top strainer to the valve
- e. Insert the riser tube into control valve and screw tight control valve.

Note:

●The length of riser tube should be neither higher 2mm nor lower 5mm tank top opening height, and its top end should be rounded to avoid damage of O-ring inside the valve.

●Avoid filling floccules substance together with resin to the mineral tank.

●Avoid O-ring inside control valve falling out while rotating it on the tank.

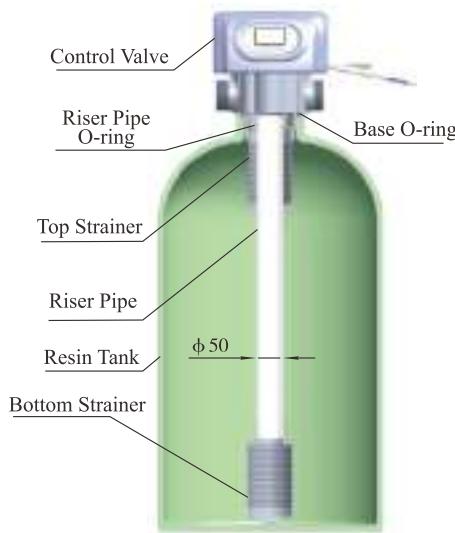


Figure 1-1

②Install flow meter

As Figure1-2 shows, put the sealing ring into nut of flow meter, screw in water outlet; insert the sensor into flow meter.

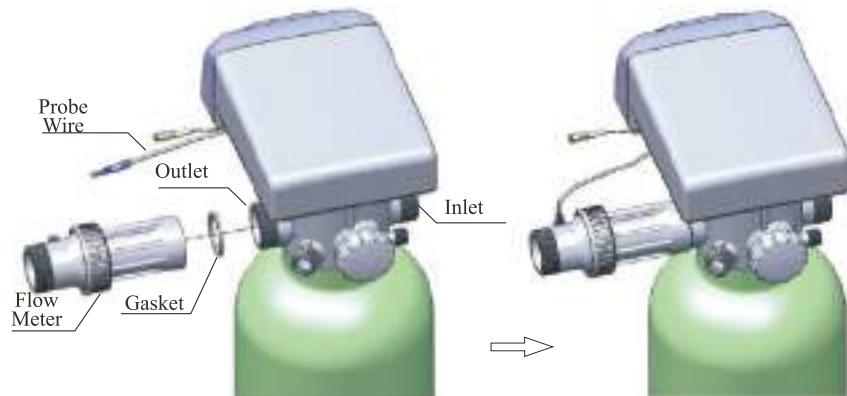


Figure1-2

③Pipeline connection

a. As Figure 1-3 shows, install a pressure gauge in water inlet.

b. Install valve A, B, C, D in inlet, outlet, inlet pipeline and outlet pipeline. Valve D is sampling valve.

c. Install a check valve on outlet pipe.

d. Inlet pipeline should be in parallel with outlet pipeline. Support inlet and outlet pipeline with fixed holder.

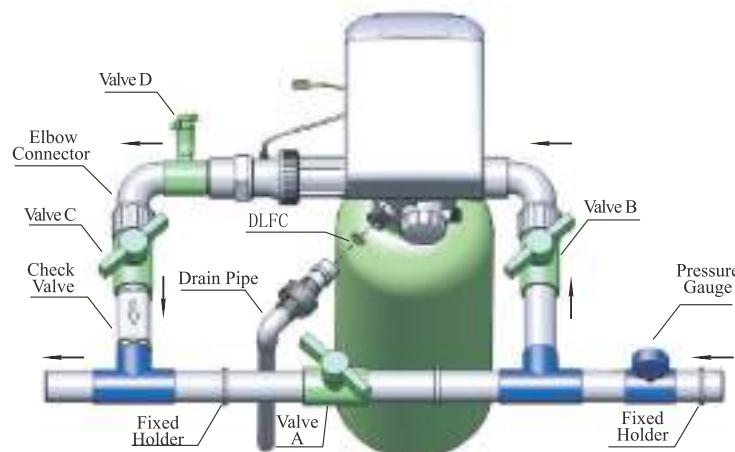


Figure 1-3

Note:

- If the water outlet or water tank is installed higher than control valve or is used in parallel interlock system with multi-outlets, a liquid level controller must be installed in brine tank or a check valve must be installed on outlet. Or else, the water in water outlet or water tank will flow backwards into brine tank when backwash.
- If making a soldered copper installation do all sweat soldering before connecting pipes to the valve. Torch heat will damage plastic parts.
- When turning threaded pipe fittings onto plastic fitting, use care not to cross thread or broken valve.
- If the valve belongs to time clock type (F74A1 or F74B1), there are no step ②.

④ Install drain pipeline

Insert drain line flow control into drain outlet and connect the drain outlet with the animated nut, as Figure 1-3 shows.

Note:

- Control valve should be higher than drain outlet, and be better not far from the drain outlet.
- Be sure not connect drain with sewer directly, and leave a certain space between them, to avoid wastewater being absorbed to the water treatment equipment, such as showed in the Figure 1-4.



Figure 1-4

⑤ Connect brine tube

- As Figure 1-5 shows, slide G1/2" brine tube hose connector over end of brine tube.
- Insert tube bushing into the end of brine tube.
- Tighten brine draw hose connector into brine line connector.
- Connect the other end of brine tube with the brine tank. (The liquid level controller and air-blocker should be installed in the brine tank.)

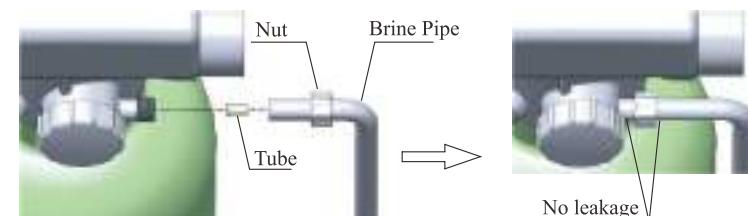
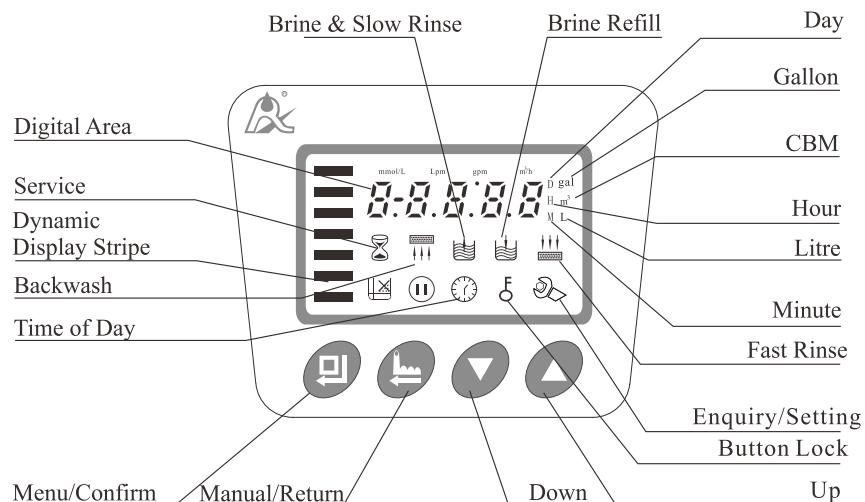


Figure 1-5

Remark: The brine tube and drain pipeline should not be bended or plugged.

2. Basic Setting & Usage

2.1 The Function of PC Board



A. Time of day indicator

● Lights on, display the time of day.

B. Button lock indicator

● Lights on, indicates the buttons are locked. At this moment, press any single button will not work (No operation in one minute, will light on and lock the buttons.)

● Solution: Press and hold both and for 5 seconds until the lights off.

C. Program mode indicator

● Lights on, enter program display mode. Press or to view all values.

● Flashes enter program set mode. Press or to adjust values.

D. Menu/Confirm button

● Press , lights on, enter program display mode and press or to view all values.

● In program display mode, press , flashes, enter program set mode, press or to adjust values.

● Press after all program are set, and then the voice “DI” means all setting are success and return program display mode.

E. Manual/Return button

● Press in any status, it can proceed to next step. (Example: if the outlet water is unqualified, press in Service status, it will start regeneration cycles instantly; Press while it is in Backwash status, it will end backwash and go to Brine & Slow Rinse at once.)

● Press in program display mode, and it will return in Service; Press in program set mode, and it will return program display mode.

● Press while adjusting the value, then it will return program display mode directly without saving value.

F. Up and Down

● In program display mode, press or to view all values.

● In program set mode, press or to adjust values.

● Press and hold both and for 5 seconds to unlock the Button Lock status.

2.2. Basic Setting & Usage

A. Parameter specification

| Function | Indi-cator | Factory Default | Parameter Set Range | Instruction |
|--------------------------|------------|------------------|-------------------------|---|
| Time of Day | | Random | 00: 00 ~ 23:59 | Set the time of day when use; “:” flashes. |
| | | | A-01 | Meter Delayed: Regenerate on the day although the available volume of treated water drops to zero (0). Regeneration starts at the regeneration time. |
| | | | A-02 | Meter Immediate: Regenerate immediately when the available volume of treated water drops to zero (0). |
| | | | A-03 | Intelligent Meter Delayed: Meter Delayed Regeneration type, but by setting Resin Volume, Feed Water Hardness, Regeneration Factor, the controller will calculate the System Capacity. |
| Control Mode | A-01 | A-01 | A-04 | Intelligent Meter Immediate: Meter Immediately Regeneration Type, but by setting Resin Volume, Feed Water Hardness, Regeneration Factor, the controller will calculate the System Capacity. |
| | | | Service Day | 1-03D. 0~99 days Only for Time Clock Type, regeneration by days |
| | | | Service Hour | 1-20H. 0~99 hours Only for Time Clock Type, regeneration by hours |
| Regeneration Time | 02:00 | 02:00 | 00: 00 ~ 23:59 | Regeneration time; “:” lights on |
| Resin Volume | 50L | 50L | 20 ~ 500L | Resin volume in resin tank (L) |
| Feed Water Hardness | Yd1.2 | 1.2 | 0.1 ~ 9.9 | Feed water hardness (mmol/L) |
| Exchange Factor | AL.65 | 0.65 | 0.30 ~ 0.99 | Relate to the raw water hardness. When hardness is higher, the factor is smaller. |
| Water Treatment Capacity | | 80m ³ | 0 ~ 999.9m ³ | Water treatment capacity in one circle (m ³) |
| Backwash Time | | 10min. | 0 ~ 99 | Backwash time (Minute) |
| Brine & Slow Rinse Time | | 60min. | 0 ~ 99 | Brine & Slow rinse time (Minute) |
| Brine Refill Time | | 5min. | 0 ~ 99 | Brine refill time (Minute) |