

Supplementary Manual for F74 and F75 Series With RS-485 Port

OWRX.466.759

As Figure 1 shows, control board of F74A1(63510), F74A3(63610), F74B1(63510B), F74B3(63610B), F75A1(53510), F75A3(53610), F75B1(53510B) and F75B3 (53610B).

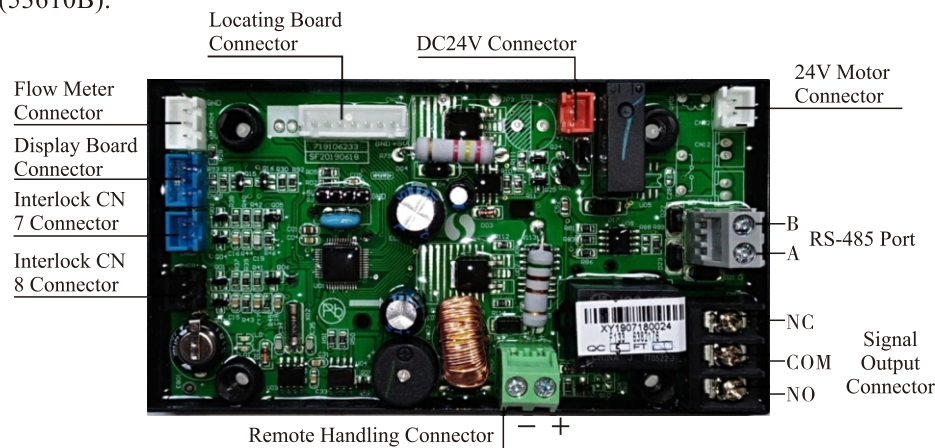


Figure 1

In program display mode, press and enter program set mode, press or to adjust the value.

Parameter setting steps (take F74A3 A-01 as example):

Items	Process steps	Symbols
Time of Day	<p>When time of day "12:12" continuously flashes, it reminds to reset. Under unlock status:</p> <ol style="list-style-type: none"> 1. Press to enter into program display mode; both and symbol light on, ":" flashes; Press , both and hour value flash, press or to adjust the hour value. 2. Press again, both and minute value flash, press or to adjust the minute value. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Control Mode	<ol style="list-style-type: none"> 1. In control mode display status, it displays A-01. Press and enter into program set mode, and 01 value flash. 2. Press or , set the value to be A-01, A-02, A-03 or A-04 control mode. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	

Regeneration Time	<ol style="list-style-type: none"> 1. In regeneration time display status, it displays "02:00". Press and enter into program set mode. and 02 flash. 2. Press or to adjust the hour value. 3. Press , and 00 flash, press or to adjust the minute value. 4. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Water Treatment Capacity	<ol style="list-style-type: none"> 1. In water treatment capacity display status, it shows and 80.00. Press and enter into program set mode. and 80 flash. 2. Press or to adjust integral number. 3. Press , press or to adjust the decimal value. 4. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Backwash Time	<ol style="list-style-type: none"> 1. In backwash time display status, it shows and 2-10. Press and enter into program set mode. and 10 flash. 2. Press or to adjust the backwash minute value. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Brine & Slow Rinse Time	<ol style="list-style-type: none"> 1. In brine & slow rinse time display status, it shows and 3-60. Press and enter into program set mode. and 60 flash. 2. Press or to adjust the brine & slow rinse time minute value. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Brine Refill Time	<ol style="list-style-type: none"> 1. In brine refill time display status, it shows and 4-05. Press and enter into program set mode. and 05 flash. 2. Press or to adjust the brine refill minute value. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	
Fast Rinse Time	<ol style="list-style-type: none"> 1. In fast rinse time display status, it shows and 5-10. Press and enter into program set mode. and 10 flash. 2. Press or to adjust the fast rinse minute value. 3. Press and hear a sound "Di", then finish adjustment, press to turn back. 	

Maximum Interval Regeneration Days	1. In maximum interval regeneration days display status, it shows H-30. Press and enter into program set mode. and 30 flash. 2. Press or to adjust the interval regeneration days. 3. Press and hear a sound "Di", then finish adjustment, press to turn back.	
Signal Output Mode	1. In signal output mode display status, it shows b-01. Press and enter into program set mode. and 01 flash. 2. Press or to adjust the signal output mode. 3. Press to finish adjustment, press to turn back.	
Valve Address	1. In valve address display status, it shows 1. Press and enter into program set mode. and 1 flash. 2. Press or to set the valve address. 3. Press to finish adjustment, press to turn back.	

1.A valve connected with PLC with RS-485 port

As Figure 2 shows, the wiring of a valve connected with PLC with RS-485 port:

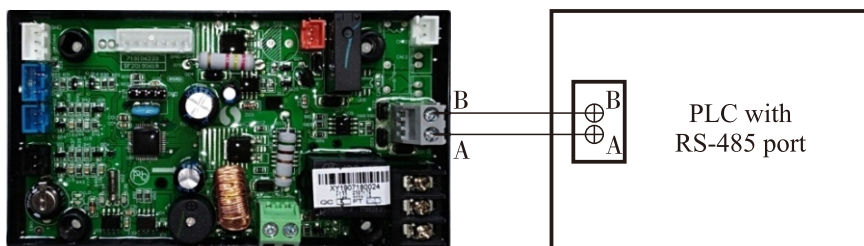


Figure 2

Instructions:

- 1) Control valve's RS-485 port A and B are respectively connected to PLC's RS-485 port A and B.
- 2) Use twisted pair wires for connection.
- 3) In case of far communication distance, a 120Ω1/4W resistor should be connected in parallel to A and B terminals of PLC and valve.
- 4) Keep away from the high voltage wire when wiring the RS-485 communication wire, and do not bundle the high voltage power wire with RS-485 communication wire together.
- 5) As control valve is matched in system, its address range is 1~247 and the default address is 1. Reading or writing data of control valve from PLC should correspond to the number of valve.

2.Several valves connected with PLC with RS-485 port

As Figure 3 shows, the wiring of a valve connected with PLC with RS-485 port:

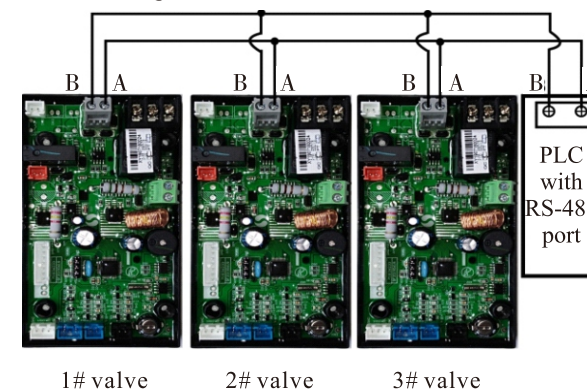


Figure 3

Instructions:

- 1) RS-485 port A and B of PLC are respectively connected to RS-485 port A and B of 1# valve. It is as the main wire. Port A and B of 2# and 3# valves are directly connected to A and B main wire in parallel.
- 2) In case of far communication distance, a 120Ω1/4W resistor should be connected in parallel to RS-485 port A and B of PLC as well as port A and B of 1# valve. There is no required to connect resistor for port A and B of 2#, 3# and other valves.
- 3) RS-485 main communication wire can be maximally connected with 32 sets of RS-485 valves or equipment. If connecting more than 32 sets, a 485 repeater should be connected to the main communication wire.
- 4) As control valve is matched in system, its address range is 1~247 and the default address is 1. Reading or writing data of control valve from PLC should correspond to the number of valve.

3.RS-485 communication

A.RS-485 communication protocol

- 1) 485 communication protocol: It adopts international MODBUS RTU.
- 2) Information transmission: Half-duplex mode, in bytes.
- 3) Transmission speed: fixed 9600bps baud rate.
- 4) Byte format: 1 start bit, 8 data bits, 1 stop bit, no parity bit. The start bit is 0 and the stop bit is 1.

B. Read control valve on site data: the read function code is 0x03

The equipment such as PLC is the master, the valve is the slave, the data of slave valve can be read from PLC.

The valve MODBUS communication address and corresponding data are defined as follows:

MODBU Address (HEX)	MODBU Address (DEC)	Instruction	Unit	Data Definition	Comment
0x2002	8194	Remaining Water	Integer m ³	0~999	Read remaining water 0~999.99m ³
0x2003	8195	Remaining Water	Decimal m ³	0~99	
0x2004	8196	Remaining Time	Day/Hour/Minute	0~99	Read remaining time Day/Hour/Minute
0x2005	8197	Fault Status	/	0x0000: Normal 0x0001: E1 0x0002: E2 0x0003: E3 0x0004: E4	Read valve status
0x2006	8198	Current Flow Rate	0.01m ³ /h	0 ~ 500	Read current flow rate
0x2009	8201	Regeneration Time	Hour	0 ~ 23	Read regeneration time; set hour value
0x200A	8202	Regeneration Time	Minute	0 ~ 59	Read regeneration time; set minute value
0x201D	8221	Current Time	Hour	0 ~ 23	Read the hour value of current time
0x201E	8222	Current Time	Minute	0 ~ 59	Read the minute value of current time
0x2007	8199	Current Status	/	0x0001: Service 0x0003: Backwash 0x0004: Brine & Slow Rinse 0x0007: Fast Rinse 0x0008: Brine Refill 0x0010: Switching	Read the current status of valve
0x200E	8206	Signal Output	/	0x0001:b-01 0x0002:b-02	Read the set signal output

C. Write Data for Valve: the function code for writing single data is 0x06, the function code for writing multiple data is 0x10.

The equipment such as PLC is the master, the valve is the slave, PLC can write the data of slave valve.

MODBU Address (HEX)	MODBU Address (DEC)	Instruction	Unit	Data Definition	Comment
0x3002	12290	Regeneration control mode	/	0x0001: A-01 0x0002: A-02 0x0003: A-03 0x0004: A-04	Set the regeneration control mode of meter type valve
0x3018	12312	Switch working position	/	0~1 One pulse	Force to regenerate

Problem: RS-485 communication doesn't work

Reasons:

A. Wrong connection of RS-485 port wires.

B. Valve address of PLC is incorrect.

Solutions:

A. Reconnect RS-485 port wires.

B. Reset the valve address of PLC as the same as that on the valve.