SAMSUNG

SAMSUNG CONTROL UNIT
installation manual

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SAMSUNG

Contents

Safety precautions

Carefully follow the precautions listed as below because they are essential to guarantee the safety of SAMSUNG product.

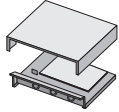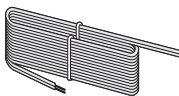**WARNING**

- Always disconnect a power supply of Air-Water Heat Pump before servicing it or accessing components inside the unit.
- Verify that installation and testing operations shall be performed by qualified personnel.
- To prevent serious damage on the system and injuries to users, precautions and other notices shall be observed.
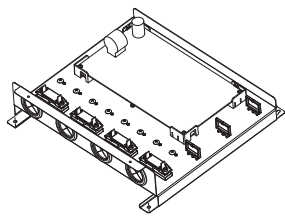
Warning

▶ Carefully read the contents of this manual before installing the control kit and store the manual in a safe place in order to be able to use it as reference after installation.

▶ For maximum safety, installers should always carefully read the following warnings.

▶ Store the manual in a safe location and remember to hand it over to the new owner if the kit is sold or transferred.

▶ The kit is compliant with the requirements of the Low Voltage Directive (72/23/EEC), the EMC Directive (89/336/EEC) and the Directive on pressurized equipment (97/23/EEC).

▶ The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and hydraulic lines. Failure to comply with these instructions or to comply with the requirements set forth in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.

▶ Do not use the units if you see some damages on the units and recognize something bad such as loud noisy, smell of burning.

▶ In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact SAMSUNG's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.

▶ Always remember to inspect the unit, electric connections, and protections regularly. These operations shall be performed by qualified personnel only.

▶ The unit contains various electric parts, which should be kept out of the reach of children.

▶ Do not attempt to repair, move, alter or reinstall the unit by unauthorized personnel, these operations may cause product damage, electric shocks and fires.

▶ Do not place containers with liquids or other objects on the unit.

▶ All the materials used for the manufacture and packaging of the air to water heat pump are recyclable.

▶ The packing materials must be disposed of in accordance with local regulations.

▶ Wear protective gloves to unpack, move, install, and service the unit to avoid your hands being injured by the edge of the parts.

▶ Do not touch the internal parts while running the units.

▶ Inspect the product shipped and check if damaged during transport. If the product has some damages,

▶ DO NOT INSTALL and immediately discuss about the damages with the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)

▶ Our units shall be installed in compliance with the spaces described in the installation manual, to ensure accessibility from both sides and allow repairs or maintenance operations to be carried out. If the units installed without complying with procedures described in manual, additional expenses can be asked because special harnesses, ladders, scaffolding or any other elevation system for repair service will NOT be considered part of the warranty and will be charged to the end customer.

▶ When service works required, make sure to disconnect the power supply at least 1 minute to prevent electric shocks.
  - Always check the voltage at the terminals of main PCB before trying to touch.

▶ Use electric wires which manual designated. Connections between wires and terminals shall be assembled without any tension. If the assembly works is not implemented well, it can lead to have product damages and fires.

▶ After wiring works, terminal block cover shall be fixed firmly. Without cover, it can cause to have product damage and fire.

Product specifications

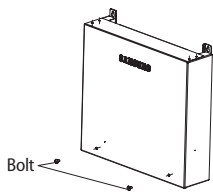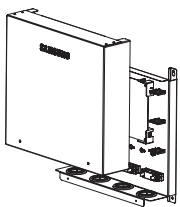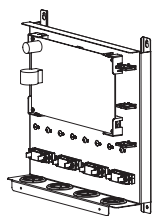| Item	Description
	MIM-E03A
	Wired remote controller
	Temperature sensor (Thermistor / 1EA)
	Remote controller cable (1EA, 4core 15m)

Main components

Model name	MIM-E03A	
Detail components	Parts	Qty.
	Main PBA	1
	Wire holder	Total 7EA (2 type)
	PCB support	4
	Grounding screw	8
	Rubber	4
	Base plate	1
	Top cover plate	1
	Case screw	2
Weight (Net)	3kg	
Packing size (W x H x D)	323 mm x 339 mm x 131 mm	

Installing the unit

Deciding on where to install the unit

▶ Install the unit in indoor and do not install it outside. The unit is designed only for indoor.

▶ Direct heat can make the kit have some failures in operation.

▶ Choose locations that are dry and sunny, but not exposed to direct sunlight or strong winds.

▶ Choose location where pipes and cables can be easily connected to the indoor unit.

▶ Avoid locations where flammable elements and explosive chemicals are stored.

▶ Choose a specific wall which can withstand the weight of unit and an outside force.

Mounting the unit

Procedure	Remark
1. Remove 2 bolts from the unit.	Bolt
2. Open the top cover and install 4 screws on the wall.	
3. Close the top cover and install 2 bolts again into the unit.	

Installing the unit

Installing the remote controller

### Connecting the wired remote controller cable to FTC

▶ Connect the wired remote controller cable to 5 and 6 on the terminal block (TB62) on the FTC controller.

📝 **NOTE**
- Wiring wire No.×size(mm2) : 2×0.3(polar)
- The 5m wire is attached as an accessory. Max. 500 m
- Wiring size must comply with the applicable local and national codes.
- Circuit rating : DC12V
  Circuit rating is NOT always against the ground.

Installing the wired remote controller

1. Select an installing position for the remote controller.

Required clearances surrounding the remote controller
Remote controller profile
30
30   30
83.5   46
120
Installation pitch
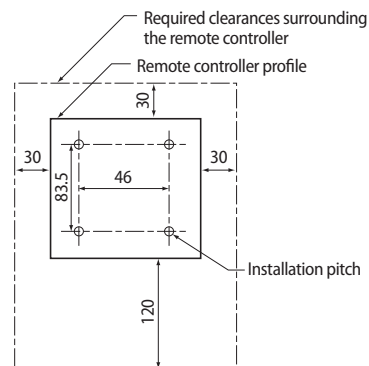
2. Procure the following parts locally :
   - 2 piece switch box
   - Thin copper conduit tube
   - Lock nuts and bushings

3. Seal the service entrance for the remote controller cable with putty to prevent possible invasion of dew drops, water, cockroaches or insects.

   [A] For installation in the switch box

   [B] For direct installation on the wall, select one of the followings:
   - Prepare a hole through the wall to pass the remote controller cable (in order to take out the remote controller cable from the back), then seal the hole with putty.
   - Take out the remote controller cable through the cut-out upper case, then seal the cut-out notch with putty.

Wall
Conduit
Lock nut
Seal with putty
Bushing
Remote controller cable
Switch box

[A]

Remote controller cable
Seal with putty
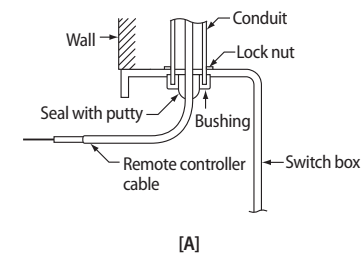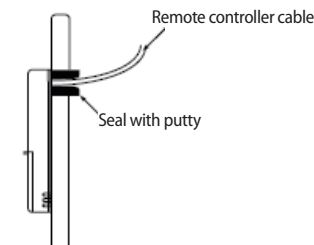
(To lead the remote controller cable from the back of the controller)

Seal with putty
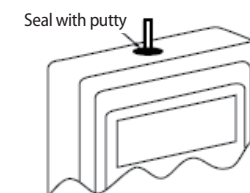
(To take out the remote controller cable through the upper portion)

Remote controller cable
Wood screw

[B]
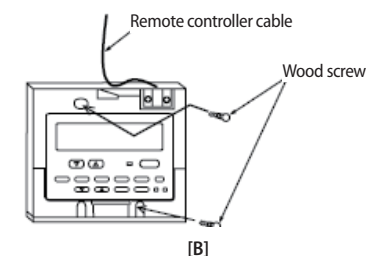
4. Connect the remote controller cable to the terminal block.

To TB62 No.5 and 6 on the FTC unit

AB   TB6

TB6 (No polarity)
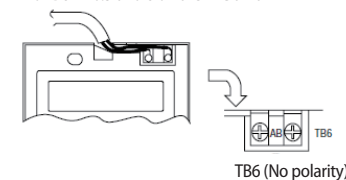
Wiring works

Overall schematics
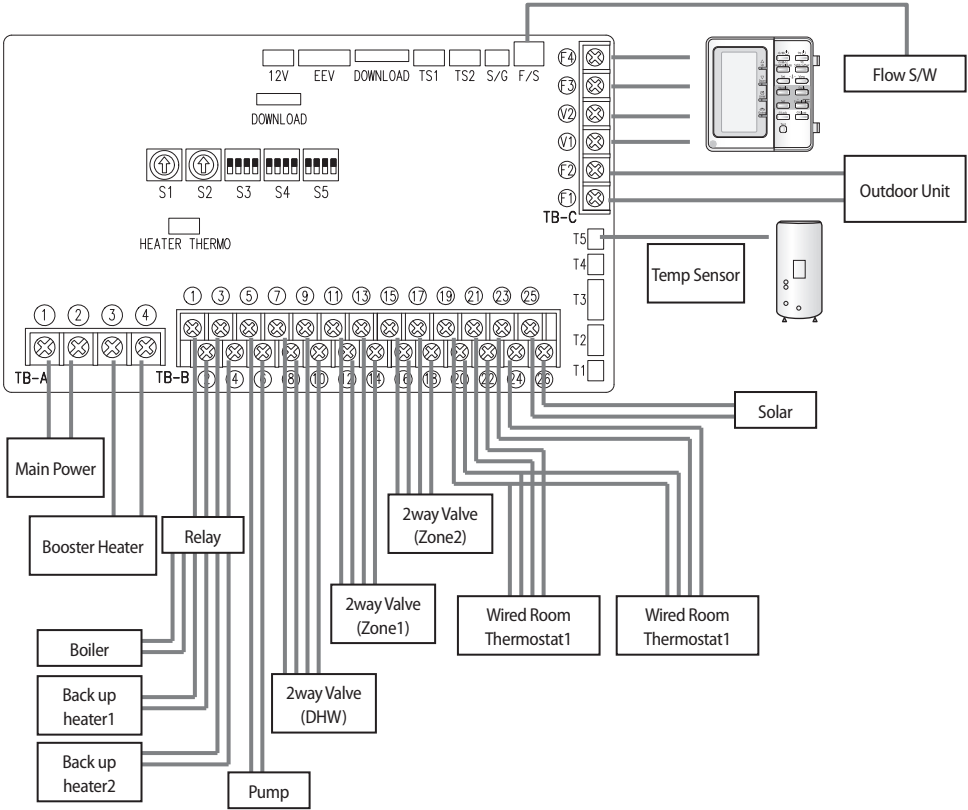
Power and communication with outdoor unit
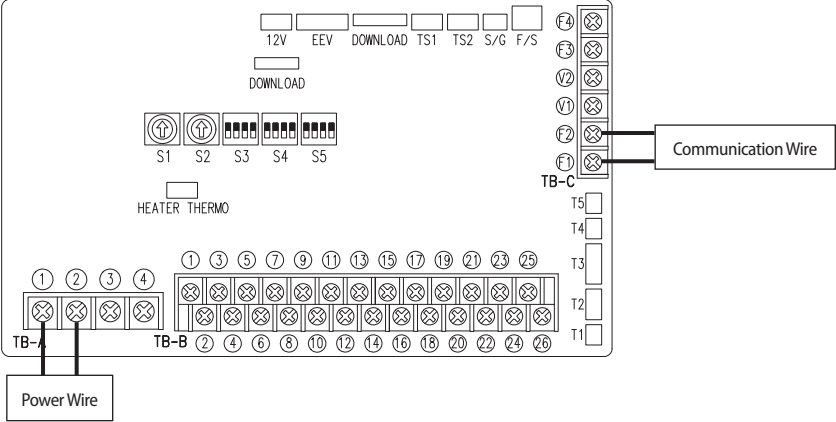
Connecting the power wire

1. Connect 'Live' and 'Neutral' power line with 'pin #1' and 'pin #2' in TB-A.
2. Connect 'Protective Earth' line with 'Earth screw' in case.

Recommended wire specification

Load	Power Supply	Power Cable	Max. Length	Type GL
		mm², wires	m	A
Do NOT use Heater (Water Pump, Valve, Wired RMC)	1Ø, 220-240V, 50Hz	1.5 / 3	L < 10m	10~
		2.5 / 3	10m < L	10~
Use Booster Heater (3kw)		4.0 / 3	L < 10m	30
		6.0 / 3	10m < L	30

Connecting the communication wire

▶ Connect 'outdoor unit's F1&F2' with 'control kit's F1&F2 in TB-C' by 2 core cable.

ENGLISH
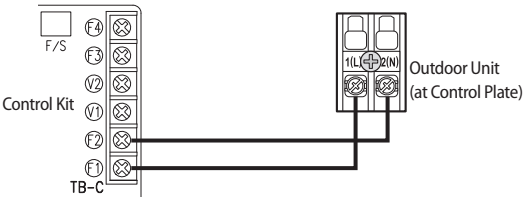
Wiring works

Communication with wired remote controller
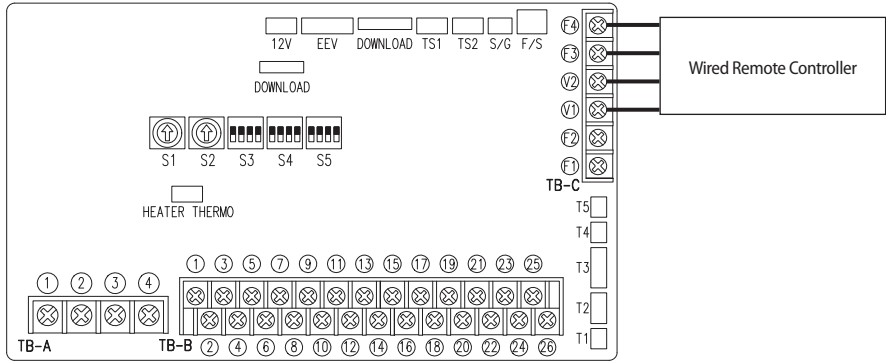
Connecting the wired remote controller

1. Connect 'V1, V2, F3, F4 of control kit' with 'V1, V2, F3, F4 of wired remote controller'.
▶ You can connect maximum 2 set of wired remote controller.
▶ In case of 2 sets for wired remote controller installation, master/slave settings shall be implemented.

Temperature sensor for hot water and water flow switch
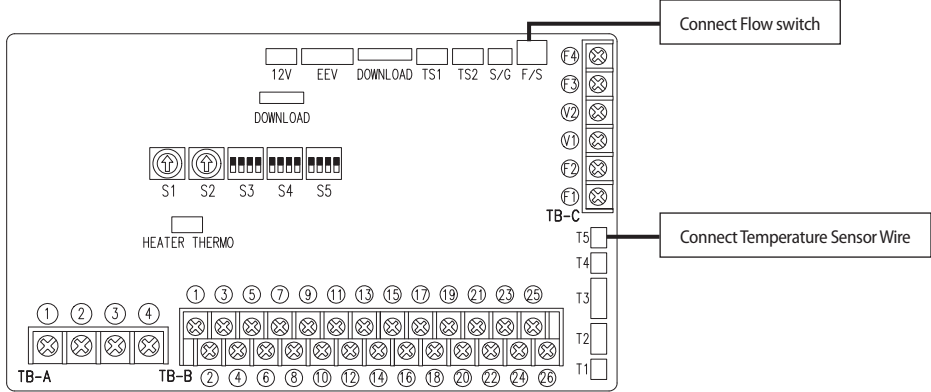
Connecting temperature sensor wire

1. Attach brass (Temperature sensor) which is attached at control kit box to the designated location for hot water or DHW tank.
2. Insert connector which is attached at control kit box at T5.

Connecting flow switch

1. Install flow switch at water pipe.
2. Connect the flow switch to 'F/S' connector.
   (If 2 pins of 'F/S connector' get short, control kit will aware water flow)

Booster heater
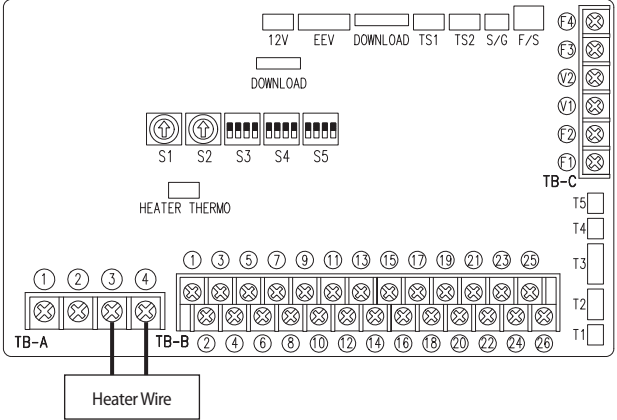
Connecting heater wire (in the case of resistor heater which is under 3kw)

1. Directly connect 'Booster heater' with 'pin #3 and pin #4' in TB-A.
▶ If you use separated 'Thermal fuse', connect 'Thermal fuse' with 'HEATER THERMO' connector.

📄 **NOTE**
- Wire spec : 4.0 mm²
- MLCC spec : 30A

Connecting heater wire (in the case of PTC Heater which is under 3kw)

1. Directly connect 'Booster heater' with 'pin #3 and pin #4' in TB-A.
▶ If you use separated 'Thermal Fuse', connect 'Thermal Fuse' with 'HEATER THERMO' connector.

📄 **NOTE**
- Wire spec : 6.0 mm²
- MLCC spec : 30A

Specification table

Part	Specification
Connection pin	#3, #4 of TB-A
Connection load	Direct connection of Heater wire
Output	AC 230V (MAX 20A)

Wiring works

Backup heater

Magnetic Contactor Wire
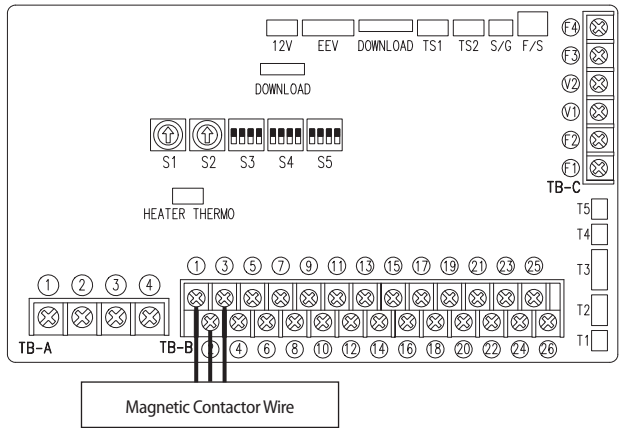
Connecting magnetic contactor for backup heater (Not Directly Connect Heater)

1. Connect 'Magnetic contactor wire' with 'pin #1, 2, 3' in TB-B.
▶ If control kit turns on the 1st step of backup heater pin#1 & pin#2 will output AC230V.
▶ If control kit turns on the 2nd step of backup heater pin#1 & pin#3 will output AC230V.

Specification table

Part	Specification
Connection pin	Step1 : #1, #2 of TB-B Step2 : #1, #3 of TB-B
Connection load	Driving for Relay or Magnetic Contactor
Output	AC 230V (MAX 0.5A)

Backup boiler
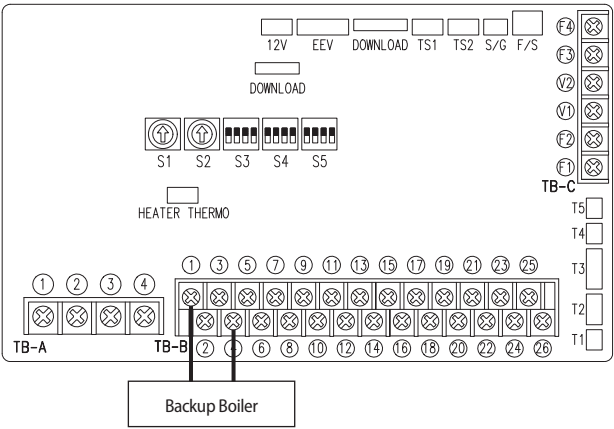
Backup Boiler

Connecting backup boiler

1. Connect 'Operation signal wire for backup boiler' with 'pin #1, 4' in TB-B.
▶ If control kit orders turning backup boiler on, pin#1 & pin#3 will output AC230V.

> **NOTE**
> **Maximum Power**
> This port can NOT supply enough power for driving backup boiler machine.
> Just use it for detecting On/Off signal.
> Maximum power is 0.5A.

Specification table

Part	Specification
Connection pin	#1, #4 of TB-B
Connection load	Signal for turning Backup Boiler on. Driving for Relay or Magnetic Contactor
Output	AC 230V (MAX 0.5A)

Wiring works

Water pump
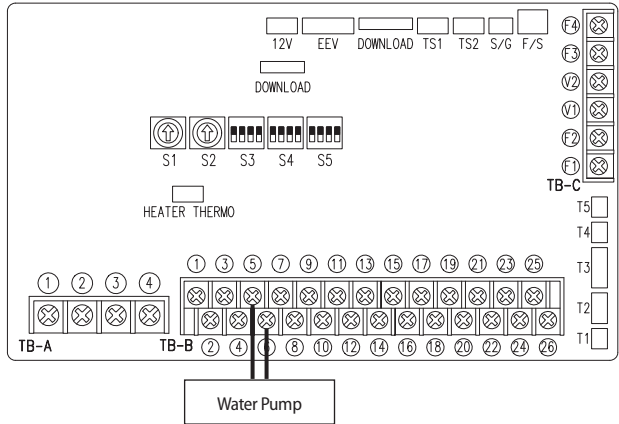
Water Pump

Connecting water pump

1. Directly connect 'water circulation pump' with 'pin #5, 6' in TB-B.
▶ If control kit orders turning water pump on, pin#5 & pin#6 will output AC230V.

> **NOTE**
>
> **Maximum Power**
> This port can supply power for small-medium sized water pump.
> Maximum power is 2A (Total power consumption must be under 2A)
> (If total power consumption is over 2A, use relay or magnetic contactor)

Specification table

Part	Specification
Connection pin	#5, #6 of TB-B
Connection load	Direct connect water pump (under 2A)
	Driving for Relay or Magnetic Contactor (over 2A)
Output	AC 230V (MAX 2A)

2way valve for hot water
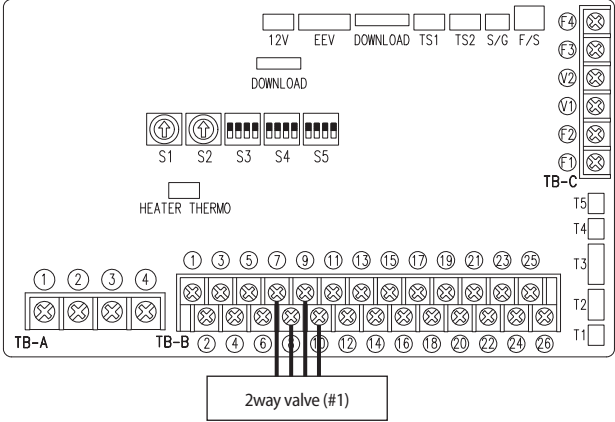
2way valve (#1)

Connecting 2way valve (for hot water)

1. Directly connect '2way valve for ZONE.1' with 'pin #7, 8, 9, 10' in TB-B.
▶ If control kit orders opening water pump on, pin#7 & pin#10 will output AC230V.

> **NOTE**
>
> **Maximum Power**
> This port can supply power for small-medium sized valve.
> Maximum power is 0.5A
> (If total power consumption is over 2A, use relay or magnetic contactor)

Specification table

Part	Specification
Connection pin	#7 : Output Power N
	#8 : Output Power L
	#9 : Output turning on Power (Normal Opened L line)
	#10 : Output turning on Power (Normal Closed L line)
Connection load	Direct connect 2way valves (under 0.5A)
Output	AC 230V (MAX 0.5A / 120W)

Wiring works

Example of valve connection

▶ 2 pole (L1, N) type
  • L1 port of Valve is connected to #10
  • N port of Valve is connected to #7
  (If L1, N ports of Valve get power, water can NOT flow to DHW tank.)
  (If L1, N ports of Valve don`t get power, water can flow to DHW tank.)

▶ 3 pole (L, L1, N) type
  • L port of Valve is connected to #8
  • L1 port of Valve is connected to #10
  • N port of Valve is connected to #7
  (If L1, N port of Valve get power, water can NOT flow to DHW tank.)
  (If L1, N ports of Valve don`t get power, water can flow to DHW tank.)

▶ 4 pole (L, L1, /L1*1), N) type
  • L port of Valve is connected to #8
  • L1 port of Valve is connected to #10
  • /L1*1) port of Valve is connected to #9
  • N port of Valve is connected to #7
  (If L1, N port of Valve get power, water can NOT flow to DHW tank.)
  (If /L1*1), N port of Valve get power, water can flow to DHW tank.)

*1) /L1 means opposite side signal of L1.

2way valve for zone 1
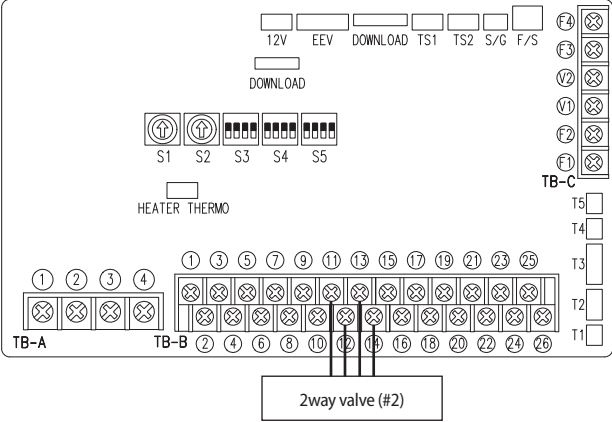
2way valve (#2)

Connecting 2way valve (for Zone1)

1. Directly connect '2way valve for ZONE.1' with 'pin #11, 12, 13, 14' in TB-B.

▶ If control kit orders opening water pump on, pin#11 & pin#13 will output AC230V.

NOTE

Maximum Power
This port can supply power for small-medium sized valve.
Maximum power is 0.5A
(If total power consumption is over 2A, use relay or magnetic contactor)

Specification table

| Part	Specification
Connection pin	#11 : Output Power N #12 : Output Power L #13 : Output turning on Power (Normal Opened L line) #14 : Output turning on Power (Normal Closed L line)
Connection load	Direct connect 2way valves (under 0.5A)
Output	AC 230V (MAX 0.5A / 120W)
Condition for operation	(NOT Define)

Wiring works

Example of valve connection

▶ 2 pole (L1, N) type
  - L1 port of Valve is connected to #13
  - N port of Valve is connected to #11
  (If L1, N ports of Valve get power, water can flow to Zone1.)
  (If L1, N ports of Valve don`t get power, water can NOT flow to Zone1.)

▶ 3 pole (L, L1, N) type
  - L port of Valve is connected to #12
  - L1 port of Valve is connected to #13
  - N port of Valve is connected to #11
  (If L1, N ports of Valve get power, water can flow to Zone1.)
  (If L1, N ports of Valve don`t get power, water can NOT flow to Zone1.)

▶ 4 pole (L, L1, /L1*1), N) type
  - L port of Valve is connected to #12
  - L1 port of Valve is connected to #13
  - /L1*1) port of Valve is connected to #14
  - N port of Valve is connected to #11
  (If L1, N port of Valve get power, water can flow to Zone1.)
  (If /L1*1), N port of Valve get power, water can NOT flow to Zone1.)

*1) /L1 means opposite side signal of L1.

2way valve for zone 2
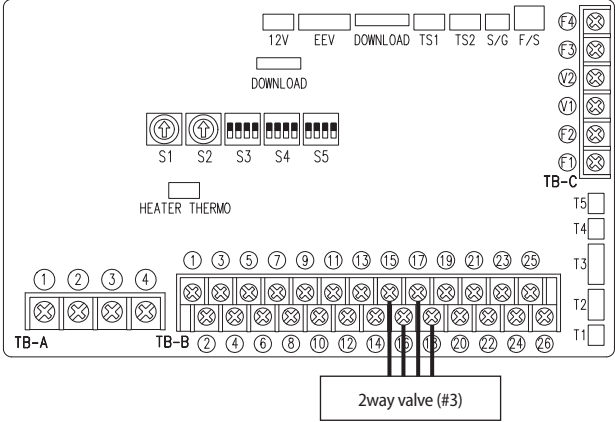
2way valve (#3)

Connecting 2way valve (for Zone2)

1. Directly connect '2way valve for ZONE.1' with 'pin #15, 16, 17, 18' in TB-B.

▶ If control kit orders opening Water Pump on, pin#15 & pin#17 will output AC230V.

> **NOTE**
>
> **Maximum Power**
> This port can supply power for small-medium sized valve.
> Maximum power is 0.5A
> (If total power consumption is over 2A, use relay or magnetic contactor)

Specification table

| Part	Specification
Connection pin	#15 : Output Power N #16 : Output Power L #17 : Output turning on Power (Normal Opened L line) #18 : Output turning on Power (Normal Closed L line)
Connection load	Direct connect 2way valves (under 0.5A)
Output	AC 230V (MAX 0.5A / 120W)
Condition for operation	(NOT Define)

Wiring works

Example of valve connection

▶ 2 pole (L1, N) type
- • L1 of Valve is connected to #17
- • N port of Valve is connected to #15
  (If L1, N ports of Valve get power, water can flow to Zone1.)
  (If L1, N ports of Valve don`t get power, water can NOT flow to Zone1.)

▶ 3 pole (L, L1, N) type
- • L port of Valve is connected to #16
- • L1 port of Valve is connected to #17
- • N port of Valve is connected to #15
  (If L1, N ports of Valve get power, water can flow to Zone1.)
  (If L1, N ports of Valve don`t get power, water can NOT flow to Zone1.)

▶ 4 pole (L, L1, /L1*1), N) type
- • L port of Valve is connected to #16
- • L1 port of Valve is connected to #17
- • /L1*1) port of Valve is connected to #18
- • N port of Valve is connected to #15
  (If L1, N port of Valve get power, water can flow to Zone1.)
  (If /L1*1), N port of Valve get power, water can NOT flow to Zone1.)

*1) /L1 means opposite side signal of L1.

Wired room thermostat
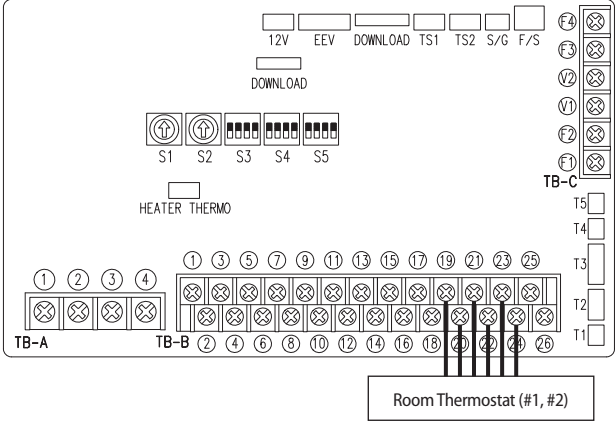
Room Thermostat (#1, #2)

Connecting wired room thermostat (On/Off Controller)

1. Connect 'Wired room thermostat' with 'pin #19, 20, 21, 22, 23, 24' in TB-B.
▶ If pin#19 & pin#21 get AC230V, control kit operation for Cooling at Zone1
▶ If pin#19 & pin#22 get AC230V, control kit operation for Heating at Zone1
▶ If pin#19 & pin#23 get AC230V, control kit operation for Cooling at Zone2
▶ If pin#19 & pin#24 get AC230V, control kit operation for Heating at Zone2

> 📄 **NOTE**
> **Maximum Consumption Power**
> Each port use under 10mA

Specification table

Part	Specification
Connection pin	#19 : Output Power N (power supplying port for Thermostat) #20 : Output Power L(power supplying port for Thermostat) #21~26 : Detecting switched L line
Connection load	Connect Room Controller
Output	AC 230V (MAX 10mA)
Condition for operation	Pin #21 detects L line, the valve for Zone1 will open & outdoor unit will operate for cooling mode. Pin #22 detects L line, the valve for Zone1 will open & outdoor unit will operate for heating mode. Pin #23 detects L line, the valve for Zone2 will open & outdoor unit will operate for cooling mode. Pin #24 detects L line, the valve for Zone2 will open & outdoor unit will operate for heating mode.

Wiring works

Solar Pump
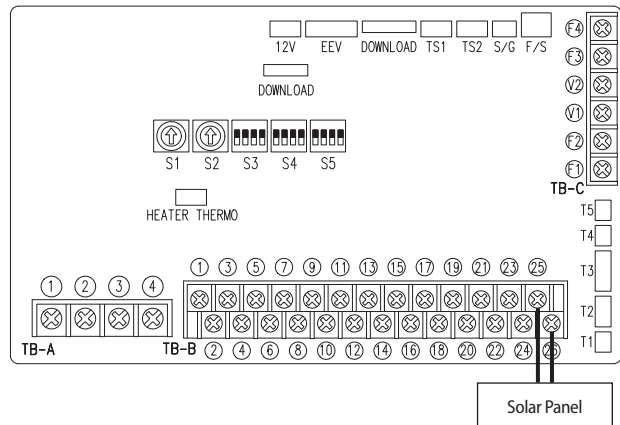
Connecting solar pump

1. Connect 'Solar pump power line' with 'pin #25, 26' in TB-B.
▶ If pin#25, 26 get AC230V, Control Kit will aware Solar Panel supply heat to DHW tank.)

> **NOTE**
> **Maximum Consumption Power**
> Each port use under 10mA

Specification table

Part	Specification
Connection pin	#25 : Output Power N #26 : Detecting Power L
Connection load	Direct connect from solar pump (AC230V)
Output	AC 230V (MAX 10mA)
Condition for operation	(NOT Define)

Setting option switches and function of keys

DIP switch setting

S/W	OFF (Default)	ON
S/W #1	Heating and cooling	Heating only
S/W #3	Target temp. : Water outlet temp.	Target temp. : Indoor temp.
S/W #3	Air sensor in remote controller	External air sensor
S/W #4	Master Remote controller	Slave Remote controller
S/W #5	Error detection when outdoor communication is broken	Error non-detection , For Commissioning / Emergency
S/W #6	Normal operation	Emergency
S/W #7	No use	No use
S/W #8	No use	No use

Setting option switches and function of keys

▌Field setting mode

Field Setting Value(FSV) Table

- Code 10✳✳ : Upper and lower temperature limits of each operation mode of wired remote controller Heating(Water Out, Room), Cooling(Water Out, Room), DHW(Tank)
- Code 20✳✳ : Water law design and external room thermostat Heating(2 WL's for floor & FCU), Cooling(2 WL's for floor & FCU), WL & Thermostat types

Field Setting Value								
Main Menu & Code	Sub Menu Function	Description	Sub Code	Default	Min	Max	Step	Unit
Remote Controller Setting Range Code 10✳✳	Water Out Temp for Cooling	Max	✳✳11	25	18	25	1	˚C
		Min	✳✳12	16	5	18	1	˚C
	Room Temp for Cooling	Max	✳✳21	30	24	30	1	˚C
		Min	✳✳22	18	18	22	1	˚C
	Water Out Temp for Heating	Max	✳✳31	55	37	55	1	˚C
		Min	✳✳32	25	15	37	1	˚C
	Room Temp for heating	Max	✳✳41	30	24	30	1	˚C
		Min	✳✳42	16	16	22	1	˚C
	DHW Tank Temp	Max	✳✳51	50	50	70	1	˚C
		Min	✳✳52	40	30	40	1	˚C
Water Law Code 20✳✳	Outdoor Temp for Water Law (Heating)	Point ①	✳✳11	-10	-20	5	1	˚C
		Point ②	✳✳12	15	10	20	1	˚C
	Water Out Temp for WL1 Heating (WL1-Floor)	Point ①	✳✳21	40	40	55	1	˚C
		Point ②	✳✳22	25	17	37	1	˚C
	Water Out Temp for WL2 Heating (WL2-Fan Coil Unit)	Point ①	✳✳31	50	40	55	1	˚C
		Point ②	✳✳32	35	17	37	1	˚C
	Heating Water Law for Auto Mode	WL Type	✳✳41	1(WL1)	1	2(WL2)	-	-
	Outdoor Temp for Water Law (Cooling)	Point ①	✳✳51	30	25	35	1	˚C
		Point ②	✳✳52	40	35	45	1	˚C
	Water Out Temp for WL1 Cooling (WL1-Floor)	Point ①	✳✳61	25	18	25	1	˚C
		Point ②	✳✳62	18	5	18	1	˚C
	Water Out Temp for WL2 Cooling (WL2-Fan Coil Unit)	Point ①	✳✳71	18	18	25	1	˚C
		Point ②	✳✳72	5	5	18	1	˚C
	Cooling Water Law for Auto Mode	WL Type	✳✳81	1(WL1)	1	2(WL2)	-	-
	External Thermostat Application	#1(Floor)	✳✳91	0(No)	0	1(Yes)	-	-
		#2(FCU)	✳✳92	0(No)	0	1(Yes)	-	-

- Code 30✳✳ : User's options for domestic hot water(DHW) tank heating
  - 3011 : Application of DHW tank in user's system
  - 302✳ : Heat pump variables for tank temp. control and combination with booster heater
  - 303✳ : Booster heater variables for combination with heat pump
  - 304✳ : Periodical disinfection heating of water tank
  - 305✳ : Off timer for power DHW mode by hot key of wired remote controller
  - 3061 : Combination of external field solar panel for with heat pump for DHW heating
  - 307✳ : Default direction of the DHW valve or Zone #1, #2 valve

Field Setting Value								
Main Menu & Code	Sub Menu Function	Description	Sub Code	Default	Min	Max	Step	Unit
DHW Code 30✳✳	Domestic Hot Water Tank	Application	✳✳11	0(No)	0	1(Yes)	-	-
	Heat Pump	Max Temp	✳✳21	50	45	55	1	˚C
		Stop	✳✳22	2	2	10	1	˚C
		Start	✳✳23	5	1	20	1	˚C
		Min Operation	✳✳24	5	0	20	1	min
		Max Operation	✳✳25	30	5	95	5	min
		Interval	✳✳26	3	0	10	0.5	hour
	Booster Heater	Application	✳✳31	1(On)	0(OFF)	1	-	-
		Delay Time	✳✳32	20	20	95	5	min
		Overshoot	✳✳33	0	0	4	1	˚C
		Compensation Temp	✳✳34	10	0	20	1	˚C
	Disinfection	Application	✳✳41	1(On)	0(OFF)	1	-	-
		Interval	✳✳42	Fri	Mon	Sun	1(All)	day
		Start Time	✳✳43	23	0	23	1	o'clock
		Target Temp	✳✳44	70	40	70	5	˚C
		Duration	✳✳45	10	5	60	5	min
	Power DHW by User Input	Timer OFF Function	✳✳51	0(Off)	0	1(On)	-	-
		Timer Duration	✳✳52	60	30	300	10	min
	Solar Panel	H/P Combination	✳✳61	0	0	1(Yes)	-	-
	3-way Valve	Default direction	✳✳71	0(Room)	0	1(Tank)	-	-
	Direction of the valves	DHW valve or 3-way valve	✳✳71	0(Tank)	0	1(Room)	-	-
		Zone #1	✳✳72	1(Room)	0	1	-	-
		Zone #2	✳✳73	1(Room)	0	1	-	-

Setting option switches and function of keys

- Code 40∗∗ : User's options for heating devices including internal backup heater and external boiler
  - 401∗ : Space/DHW heating priority and control variables
  - 402∗ : Backup/Booster heater priority and control variables
  - 403∗ : Additional backup boiler operating variables
- Code 50∗∗ : User's options for extra functions
  - 501∗ : New target temperatures of each mode by "Outgoing" hot key of remote controller
  - 5021 : Temperature difference between before & after values in "Economic" DHW mode
  - 503∗ : Time-division multi(TDM) variables for combining operation b/w A2A and A2W

Main Menu & Code	Sub Menu Function	Description	Sub Code	Default	Min	Max	Step	Unit
				Field Setting Value				
Heating Code 40∗∗	Heat Pump	Heating/DHW Priority	∗∗11	0(DHW)	0	1(Heating)	-	-
		Outdoor Temp for Priority	∗∗12	0	-15	20	1	°C
		Heating Off	∗∗13	25	14	35	1	°C
		Overshoot	∗∗14	2	1	4	1	°C
	Backup Heater	Application	∗∗21	1(On)	0(Off)	1	-	-
		BUH/BSH Priority	∗∗22	0(Both)	0	2(BSH)	1	-
		For back-up use only	∗∗23	1(On)	0(Off)	1	-	-
		Threshold Temp	∗∗24	0	-15	35	1	°C
	Backup Boiler	Application	∗∗31	0(No)	0	1(Yes)	-	-
		Boiler Priority	∗∗32	0(Off)	0	1(On)	-	-
		Threshold Temp	∗∗33	-15	-20	5	1	°C
Others Code 50∗∗	Outing	Water Out Temp for Cooling	∗∗11	25	5	25	1	°C
		Room Temp for Cooling	∗∗12	30	18	30	1	°C
		Water Out Temp for Heating	∗∗13	25	15	55	1	°C
		Room Temp for Heating	∗∗14	16	16	30	1	°C
		Auto Cooling WL1 Temp	∗∗15	25	5	25	1	°C
		Auto Cooling WL2 Temp	∗∗16	25	5	25	1	°C
		Auto Heating WL1 Temp	∗∗17	15	15	55	1	°C
		Auto Heating WL2 Temp	∗∗18	15	15	55	1	°C
		Target Tank Temp	∗∗19	30	30	70	1	°C
	DHW Saving Mode	Temp Difference	∗∗21	5	0	40	1	°C
	TDM Variable	A2A Max Operation Time	∗∗31	30	5	60	5	min
		A2W Min Operation Time	∗∗32	3	0	10	1	min
	Power Peak Control	Application	∗∗41	0(No)	0	1(Yes)	-	-
		Select forced off parts	∗∗42	1	0	3	-	-
		Using input voltage	∗∗43	1(High)	0(Low)	1	-	-

- Code 5042

[D-00]	Compressor	Back up heater	Booster heater
0 (Default)	Forced off	Forced off	Forced off
1	Forced off	Forced off	Permitted
2	Forced off	Permitted	Forced off
3	Forced off	Permitted	Permitted

Test operation

| Picture	Explanation
	1. **Commissioning mode** ▶ For active - Commissioning mode can be implemented regardless of communication error without outdoor installation. - The mode will be activated after change to DIP#5 "ON" or resetting power - Allowed by Keys input for Heating/How water over for 3sec ▶ For inactive - Cancel key input over for 3 sec. basic functions of each keys are not available for commissioning (Inactive : all heating loads is restored to default)
	2. **Installation / Checks** - Key #1 ~ #8 : Pump, Backup Heater 1st/2nd control, Booster Heater, Backup Boiler, 3-way valve(for 2-way valve, how water ↔ heating/cooling), 2-way valve #1(Thermostat #1 for Zone #1), 2-way valve #2 (Thermostat #2 for Zone #2) - Icons displayed and contact output will be provided when button input by wired remote controller (3way valve for how water (key#6) come to default condition (room direction) other keys come to default (OFF) - If the input of pump (#1) not performed than backup heater (#2, #3), "Not available" signal will be pop up. - 3way valve (key#6) will not go into "ON" simultaneously with zone control and 2 way valve for cooling. While input of "ON" for something be progressed, if another input signal be putted, "Not available" signal will be pop up. Prohibited for getting to "ON" between 2 way valves (Zone #1 = 2-1, Zone #2 = 2-2) - Each key can be allowed to change in condition of initial default (one time), if users want to do re-input in case of wrong operation, all loads contacts will be restored to default (FF) and "Not available" will be displayed over one time input. - The key of "VIEW" always be allowed for input. Every time the key be pushed, values of Water In, Water Out1 (Heat Exchanger Out), Water Out2 (Backup Heater Out), Tank, Room will be displayed in order. If no input additionally for 5 sec, it will be restored to previous condition.

Test operation

Picture	Explanation
	3. Emergency mode - Emergency mode shall be possible regardless of outdoor communication error. It is available after change DIP#5 and DIP#6 into "ON" and re-set mode. - Enable/ disable modes: allowed for heating and how water mode. Heater mode will be available after each "ON" mode and disable mode can be ended by each "OFF" input (available for Simultaneous Operation) - Depending on the condition of heater or tank un-installation using heater in emergency modes will be decided. Wired remote controller will show the sign of "Not available" according to the signal "ON" for emergency mode in un-installation of heater or tank. - It is not allowed to run heating mode for out door thermostat or indoor temperature control in terms of safety problem. Before running emergency mode, FSV#2091, 2092 shall be on "OFF". If not, "Not available" will be shown.

Before running the system

Make sure to confirm if refrigerant leakage, looseness of power cords and electric wires after completing installation of kit and heat pump systems.

Control panel
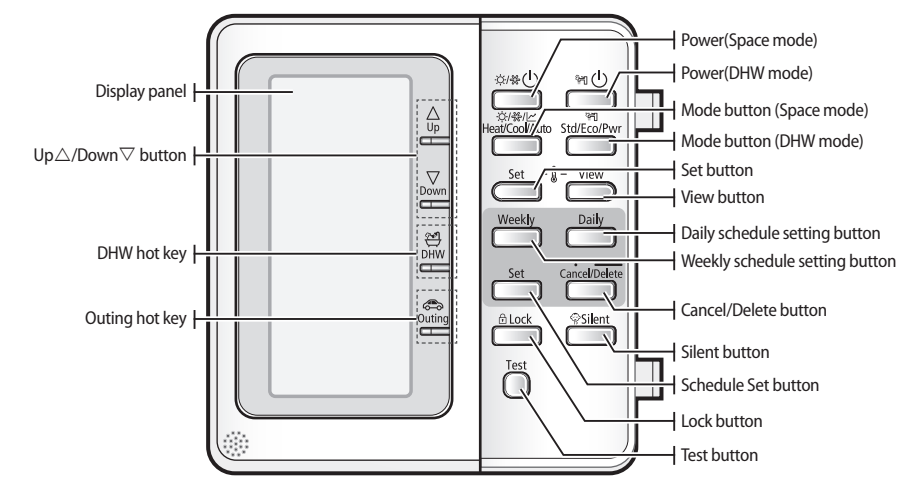
Troubleshooting

This page is showing the useful technical information for diagnosing and making error correction for various troubles which may occur in the system. Before contacting your local installers, read this page carefully and implement visual inspections of the whole system.

Possible causes	Actions
Heating or cooling performance are not good	• Check the temperature adjustment in the controller • Check if the water is filled in the system fully • Check the water flow rate
Loud noise from water pump	• Check air purge valve (Make it open and close) • Check if the water is filled in the system fully • Check if strainer is full of foreign materials
System does not work even power source does not have problem	• Check if wiring connections are installed well • Check if water flow rate is low (system will not work in condition of below 16 LPM)
Solar pump is not working	• Check TB-B and wire connections
Remote controller cannot be set	• Check if it has the mode of master or slave • If there are 2 controllers, either one shall have slave mode.

⚠ **CAUTION**
• Always make sure to turn off the system before implementing the visual checking or disassemble for detail checks.

⚠ **WARNING**
• Incorrect handling of thermostat, safety valve or other valves may lead to tank rupture. When servicing the unit follow instructions carefully:
  - Always turn off main power supply when water supply is being shut off.
  - Test the free operation of the safety valve regularly by opening the valve ensuring the water flows freely.
  - Electrical connection and all servicing of the electrical components should only be carried out by an authorized electrician.
  - Fitting and all servicing of plumbing fixtures should only be carried out by an authorized installer.
  - When replacing the thermostat, safety valve or any other valve or part supplied with this unit, use only approved parts of the same specification.

Error codes

If the unit has some problem to work properly, the LED on hydro unit will flash and some error codes will be displayed on the controller. The following table described the explanation of error codes on the LCD display.

Thermistor

▶ Check its resistance. 10kΩ@24℃ (Outdoor unit), 220kΩ@24℃ (DHW Tank, Solar)
▶ Check its location as shown at the diagram.
▶ Check its contact status with pipe.
▶ Final solution is to change parts

Display	Explanation
122	EVA inlet thermistor SHORT or OPEN
123	EVA outlet thermistor SHORT or OPEN
653	Wired remote controller thermistor SHORT or OPEN
654	FRAM Read/Write Error (Wired remote controller data error)
901	Water inlet thermistor SHORT or OPEN
902	PHE outlet thermistor SHORT or OPEN
903	Water outlet thermistor SHORT or OPEN
904	Water tank thermistor SHORT or OPEN
601	Abnormal communication between wired remote controller and hydro unit
604	Communication tracking error between wired remote controller and hydro unit
654	FRAM Read/Write error (Wired remote controller data error)
911	Flow switch 'OFF' error (Condition: Flow switch signal is off during 10 seconds when the water pump signal is ON)
912	Flow switch 'ON' error (Condition: Flow switch signal is on during 10 seconds when the water pump signal is off)