

O P E R A T I O N M A N U A L

SPLIT DUCT AIR CONDITIONER

MODELS:

(R410A)

KSTU440HFAN1/KSUR440HFAN3

KSTU560HFAN1/KSUR560HFAN3



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1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed are divided into two categories. In either case, important safety information is listed which must be read.



WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.



CAUTION

Failure to observe a caution may result in injury or damage to the equipment.



WARNING

Ask your dealer for installation of the air conditioner.

Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.

Ask your dealer for improvement, repair, and maintenance.

Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.

In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.

Never let the indoor unit or the remote controller get wet.

It may cause an electric shock or a fire.

Never press the button of the remote controller with a hard, pointed object.

The remote controller may be damaged.

Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.

Use of wire or copper wire may cause the unit to break down or cause a fire.

It is not good for your health to expose your body to the air flow for a long time.

Do not insert fingers, rods or other objects into the air inlet or outlet.

When the fan is rotating at high speed, it will cause injury.

Never use a flammable spray such as hair spray, lacquer or paint near the unit.

It may cause a fire.

Never touch the air outlet or the horizontal blades while the swing flap is in operation.

Fingers may become caught or the unit may break down.

Never put any objects into the air inlet or outlet.

Objects touching the fan at high speed can be dangerous.

Never inspect or service the unit by yourself.

Ask a qualified service person to perform this work.

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact you local government for information regarding the connection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

To prevent refrigerant leak, contact your dealer.

When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.

The refrigerant in the air conditioner is safe and normally does not leak.

If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.

Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.

Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.



CAUTION

Do not use the air conditioner for other purposes.

In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.

Otherwise, an electric shock and injury may result.

In order to avoid electric shock or fire, make sure that an earth leak detector is installed.

Be sure the air conditioner is grounded.

In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.

In order to avoid injury, do not remove the fan guard of the outdoor unit.

Do not operate the air conditioner with a wet hand.
An electric shock may happen.

Do not touch the heat exchanger fins.
These fins are sharp and could result in cutting injuries.

Do not place items which might be damaged by moisture under the indoor unit.
Condensation may form if the humidity is above 80%, the drain outlet is blocked or the filter is polluted.

After a long use, check the unit stand and fitting for damage.
If damaged, the unit may fall and result in injury.

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.

Arrange the drain hose to ensure smooth drainage.
Incomplete drainage may cause wetting of the building, furniture etc.

Never touch the internal parts of the controller.
Do not remove the front panel. Some parts inside are dangerous to touch, and a machine trouble may happen.

Never expose little children, plants or animals directly to the air flow.
Adverse influence to little children, animals and plants may result.

Do not allow a child to mount on the outdoor unit or avoid placing any object on it.
Falling or tumbling may result in injury.

Do not operate the air conditioner when using a room fumigation - type insecticide.
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.
It may cause incomplete combustion or deformation of the unit due to the heat.

Do not install the air conditioner at any place where flammable gas may leak out.
If the gas leaks out and stays around the air conditioner, a fire may break out.

The appliance is not intended for use by young children or infirm persons without supervision.



DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

2. ELECTRIC SAFETY REQUIREMENT

- Wire distribution must be performed by duly qualified electricians.
- All wire distribution must comply with electric safety specifications.
- Ensure that the air conditioner is grounded properly. Namely, the main switch of the air conditioner must have reliable ground wires.
- Provide the air conditioner with a separate power supply compliant with the nominal parameter values.
- Electric performance requirements:

Table.2-1

	Type	Power supply	The main switch specification	Fuse specification
Outdoor unit	—	380-415V 3N~ 50Hz	70A	50A
Indoor unit	Mid. static pressure	220-240V~ 50Hz	20A	12A



NOTE

- Do not cut off the ground wire of the main power switch in any circumstance.
- Do not use damaged power wires. Change the damaged power wires once they are detected.
- Connect the power supply of the air conditioner for preheating it for at least 12 hours before using the air conditioner. Besides that, please be keep in mind that do not cut off the power supply immediately, for the unit completely shut down needs to spend a day-night.(In order to prevent the compressor drive-up by forced, then heating the crankcase.)
- Do not block the air inlet and outlet, if that so the performance would reduce and the unit couldn't be start for which protect device is on service.

3. FUNCTIONS & FEATURES

- Nested in the ceiling, space-saving and noble.
- High capacity of cooling/heating, efficient, and energy-saving.
- Innovative air supply, which provides homogeneous conditioning of the room temperature.
- Remote control or wire control function.
- Low noise design.
- The air outlet is laid out in the way you desire.
- Use refrigerant to transmit cool/heat directly, which provides a high transmitting efficiency.
- It is suitable be used for office, hospital, commercial place and home, the air conditioner will create the comfortable and elegance environment for you.

4. MODEL, SPECIFICATION & PARAMETERS

In case any parameters in the following table are changed, no other notice will be given. The parameters specified on the nameplate shall prevail.

Table 4-1

Model		MOV-150HN1-R MHA-150HWN1	MOV-192HN1-R MHA-192HWN1
Type		Cooling&heating	Cooling&heating
Standard cooling capacity (Btu/h)		150100	192000
Standard heating capacity (Btu/h)		160300	200000
Standard power (kW)	Cooling	17.6	22
	Heating	15.7	19.3
Standard current (A)	Cooling	29.7	36.3
	Heating	26.4	31.9
Rated input power (kW)	Indoor unit	2.73	4.69
	Outdoor unit	26.9	32.2
Rated input current (A)	Indoor unit	12.1	20.9
	Outdoor unit	47.9	53.8
Power supply	Indoor unit	220-240V~ 50Hz	
	Outdoor unit	380-415V 3N~ 50Hz	
Circulating air volume(m ³ /h) (Indoor)		8500	10800
Static pressure (Pa)		196	196
Noise value dB(A)	Indoor unit	63	65
	Outdoor unit	70	73
Outline dimensions (mm)	Indoor unit	1828×668×858	
	Outdoor unit	1250×1615×765	1390×1615×765
Weight (kg)	Indoor unit	188	235
	Outdoor unit	288	320
Applicable area (m ²)		190-240	240-300
Control mode		Remote control or wire control (option)	



NOTE

- The cooling capacity of the air conditioner is measured in a standard environment where the indoor dry/wet bulb temperature is 27°C/19°C and the outdoor dry/wet bulb temperature is 35°C/24°C; the heating capacity is measured in a standard environment where the indoor dry/wet bulb temperature is 20°C/15°C and the outdoor dry/wet bulb temperature is 7°C/6°C; and the actual cooling/heating capacity changes with the rise/fall of the indoor/outdoor environment temperature and relative humidity.
- The noise of the unit is measured in the semi noise suppression lab according to the national standards, and the accuracy extent is ±3dB(A).
- During the actual service, the noise will be changed according by ducts, and the practical noise value is about 45dB(A) or lower.(after be installed the mute device.)
- External static pressure range of the air conditioner under experiment is 0 Pa.

5. NAMES AND FUNCTIONS OF AIR CONDITIONER COMPONENTS

MHA1-150H(C)R
MHA1-192H(C)R
MHA-192HWN1

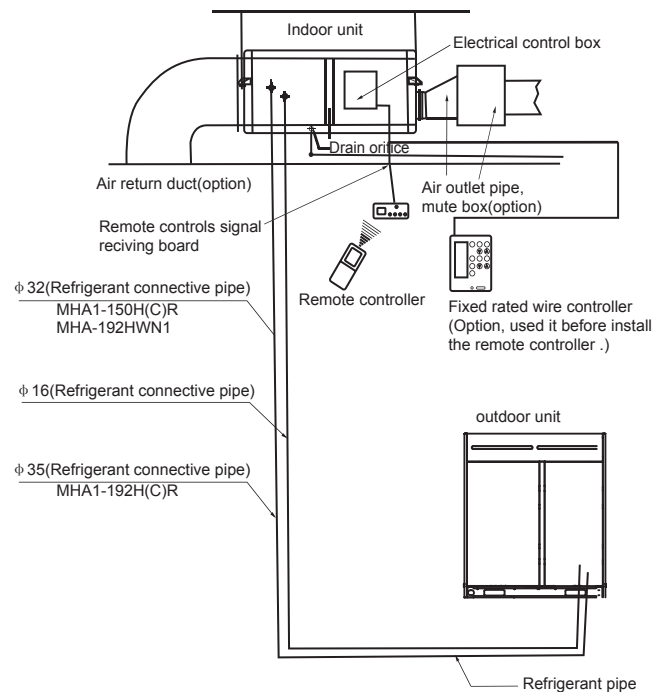


Fig.5-1

6. OPERATION PRECAUTIONS

Read this operation manual carefully before operating the unit. Grasp the key points in the manual, and seek help from the con distributor for any question.

This air conditioner is designed to provide a comfortable room environment, and is applicable to the purposes described in the manual only.

■ Inspection before operation

- Check whether the ground wire is broken or disconnected.
- Check whether the air filter is installed properly.
- If the air conditioner has been out of service for a long period, be sure to clean the filter before resuming the service of the air conditioner. Cleanse it biweekly during continuous service of the air conditioner. For details, see the chapter headed "Maintenance and Upkeep".
- Check that the air inlet and outlet of the indoor/outdoor unit are not blocked.

■ Safety precautions

- Do not let the indoor unit or remote controller moistened. Otherwise, electric short-circuit or fire may occur.
- Do not use or store flammable gases or liquids near the air conditioner, e.g., hair styling jelly, paint and gasoline. Otherwise, fire may occur.

- Do not touch the deflector plate while the air deflector works. Otherwise, the fingers may be clipped or the driving parts of the indoor unit deflector may be damaged.
- When the fuse blows out, do not substitute any fuse of an improper nominal current value or other wires. Substituting conductor or copper wire for fuse may cause damage to the air conditioner or cause fire.
- Do not insert any objects like sticks into the air inlet or outlet. It is very dangerous when the blade touches any foreign objects during high-speed running of the fan.
- Do not remove the fan cover of the outdoor unit. The fan without any external cover is very dangerous during high-speed running.
- Do not use the main power switch to start up or shut down the air conditioner, but use the ON/OFF button on the remote controller.
- Do not let children toy with the air conditioner.
- Do not repair the air conditioner by yourself. Delegate professional maintainers to do the repair.
- Cut off the main power switch before cleansing the filter and the unit body. This unit is grounded and provides dual protection against accidental electric shock. No electric shock will occur when you normally replace or cleanse the filter or use a dry cloth to clean the unit body. However, to be on the safe side, cut off the power supply before performing maintenance or up-keep work.
- The electric circuit must be installed RCCB and manual switch

Table.6-1

Cooling operation	Outdoor temperature:17~46°C
	Indoor temperature:≥17°C
Heating operation	Outdoor temperature:-7~24°C
	Indoor temperature:≤30°C
Dewetting operation	Outdoor temperature:17~46°C
	Indoor temperature:17~32°C



NOTE

- The indoor relative humidity should be lower than 80%. If the air conditioner works in an environment with a relative humidity higher than mentioned above, the surface of the air conditioner may condensate. In this case, it is recommended to set the air speed of the indoor unit to high.
- If the air conditioner works in other than the above circumstances, functions may fail.

7. BEAT OPERATION

- Pay attention to the following issues to ensure that the system is in normal operation. For detailed operation procedure, see the corresponding instructions.
- Adjust the air flow direction properly, and do not aim the air flow at the persons in the room directly.
- Adjust the room temperature properly to get a comfortable environment. Avoid being too hot or too cold.
- In the cooling operation, use curtains or window shades to prevent direct sunlight.
- Close all windows and doors. If the doors and windows are open, the air in the room will flow out and the effect of cooling/heating will be compromised.
- Set the predetermined operation time through the remote controller.
- Do not put any objects near the air inlet or outlet which obstruct air flow. Otherwise, it will reduce efficiency of the air conditioner or even lead to system interruption.



NOTE

- Before leaving the unit idle for a long period, cut off the main power switch, and remove the batteries in the remote controller. When the main power switch is turned on, a certain extent of electric power is consumed even if the air conditioner does not run. Turning off the main power switch can save energy. Before restart the unit, please connect the power supply advance 12 hours before restart the unit, for ensure the power the unit could proform in normally.
- Cleanse the air filter every another two weeks. The effect of cooling or heating will be compromised if the air filter is blocked.
- Please consign professional personnel to check, clean and maintain the duct, drain system regularly.

8. MAINTENANCE & UPKEEP

8.1 Importants

- Only the professionals can perform repair.
- Before performing operation for the electric connectors or cleansing the filter, turn off the main power switch.
- Do not use water or air with a temperature higher than 50°C to cleanse the filter or panel.

- Check and maintain the ventilating slot once every half years, wash and maintain with corresponding disinfection shall process once
- every two years are recommended. The filter can expel dust and other particles in the air. If it is blocked, the effect of the air conditioner will be degraded. Therefore, clean it every another two weeks if you use the air conditioner for a long period.
- If the indoor unit is installed in a place with heavy dust, clean the filter more often.
- If the stain is heavy and difficult to clean, replace the filter (the substitute filter is an optional assembly in the sale).
- Do not replace the power cable without permission. If the power cable is damaged, specialized power cable must be used as substitute. No not repair the air conditioner without permission. The foregoing operations must be performed by the local distributor or aftersales service office of manufacturer.

8.2 Maintenance & Upkeep Of Outdoor Unit

- The edge of some sheet metal assemblies and the fin of the condenser are very sharp. Incorrect operation may cause harm. Be cautious when cleaning them up.
- Check the air inlet and outlet of the outdoor unit periodically to see whether they are blocked by stain or lampblack.
- Contact the distributor or the aftersales service center of manufacturer.

8.3 Operation Required Before Leaving The Air Conditioner Idle For A Long Period:

- Let the air conditioner run in the air supply mode for about half a day, and let its interior be fully dry.
- Switch off the power by the button in remote controller, and then cut off the power supply.
- When the main power switch is turned on, a certain extent of electric power is consumed even if the air conditioner does not run. Turning off the main power switch can save energy.
- Remove the batteries out of the remote controller.
- After the air conditioner has been in service for several seasons, foreign substance accumulates inside the unit to an extent dependent on the working conditions. Therefore, shut down the air conditioner through the ON/OFF button of the remote controller, and then cut off the power supply.

8.4 Startup After A Long Period Out Of Service

- Check the following issues:
 - Check whether the air inlet or outlet of the indoor unit and outdoor unit is blocked. Remove foreign substance if any.
 - Check whether the ground wire is connected properly.
 - Check whether the condensate water is discharged normally. (Cooling operation season)
 - Check whether the insulation work of refrigerant circuit and ventilating duct is on sound status.
 - Check whether the installing seat is corroded or rusted.

- Startup
 - Connect the indoor unit 12 hours after connect the outdoor unit to power supply.
 - Switch on the power control of remote controller or wire controller, and than startup the air conditioning.

9. PHENOMENA NOT ATTRIBUTABLE TO FAULTS OF AIR CONDITIONER

The following phenomena do not indicate exception of air conditioner

- The system does not run.
 - After pressing the ON/OFF button, the system does not run immediately.
 - If the RUN indicator is on, it indicates the air conditioner runs in the normal status.
 - It does not run immediately because the safety device in the system is active to prevent overload.
 - Three minutes later, the air conditioner compressor will run automatically.
 - If the RUN indicator and the Defrost/Preheat indicator are on, it indicates you have selected the heating mode. At the beginning after startup, since the compressor does not run, the temperature of the indoor unit is too low. See the chapter headed "Cooling/Heating/Supply Air Operation Procedure".
- The indoor unit gives out white aerosol
 - This phenomenon may occur when the indoor relative humidity is too high and the unit runs in the cooling mode (in a place where there is much oil mist or dust).
 - If the internal stain of the indoor unit is heavy, the temperature in the room will be distributed unevenly. In this case, the interior of the indoor unit must be cleaned.
 - Contact the local distributor or the aftersales service center of manufacturer to inquire about the methods of cleaning the indoor unit. This job must be performed by professional maintainers.
 - This phenomenon may also occur when the air conditioner shifts from defrosting operation to heating operation.
 - That is because the moist generated by defrosting is expelled as steam.
- Noise of air conditioner
 - When the air conditioner runs in the cooling, dewetting or heating mode automatically, grave continuous sizzles may occur.
 - That is the sound of flow of refrigerant between the indoor unit and the outdoor unit.
 - The sizzles may be heard shortly after the unit stops running or when the unit runs in the defrost mode. That is the sound raised because the refrigerant stops flowing or changes the volume of flow.
 - Squeak may occur when the air conditioner starts or stops running. That is the sound raised because the plastic assemblies inflate or deflate when the temperature changes.

- Dust is blown out of the indoor unit.
When the air conditioner resumes service after a long period out of service, the dust in the indoor unit will be blown out.
- The indoor gives out smell
The indoor unit absorbs the smell of the room, furniture or smoking, and gives it out when running.
- Shift from cooling mode to air supply mode.
- In order to prevent frosting of the indoor heat exchanger, the air conditioner shifts to the air supply mode automatically, and resumes to cooling mode in a short time.
- When the room temperature decreases to the set temperature, the air conditioner will shut down the compressor automatically, and shifts to the air supply status. After the room temperature rises, the compressor will restart. The action of the compressor in the heating mode is the contrary.

10. FAULTS OF AIR CONDITIONER AND CAUSE

- If any of the following exceptions occurs, stop operation of the air conditioner immediately. Turn off the power switch, and contact the local aftersales service center of manufacturer:
 - The RUN indicator blinks quickly (2 blinks per second).
 - After turning off the power switch and then turning it on again, that indicator still blinks quickly.
 - The receiving function of the remote controller fails, or the start/shutdown operation is abnormal.
 - The fuse blows out frequently, or the circuit breaker protection occurs frequently.
 - Foreign substance or moist enters the air conditioner.
 - The indoor unit leaks water.
 - Other exceptions occur.
- If the air conditioner fails but does not meet the foregoing phenomena obviously, check the system in the following procedure:

Table.10-1

Symptom	Possible causes	Way of handling
The system does not run	<ul style="list-style-type: none"> • Power supply fails • The power switch is not connected • The fuse blows out or the circuit breaker snaps of • The remote controller or the wire controller fails 	<p>Operate it after power supply resumes Connect the power supply properly.</p> <p>Replace the fuse or check whether electric leakage occurs. Check the remote controller or wire controller.</p>
The air conditioner sends air out but cannot provide cool air at all	<ul style="list-style-type: none"> • The set temperature is improper • 3-minute protection of the compressor 	The set temperature is lower than the room temperature during the cooling. Or the set temperature is higher than the room temperature during the heating.

The unit keep starting up and shutting down frequently	<ul style="list-style-type: none"> • The refrigerant is excessive or deficient. • Air or noncondensable gas exists in the refrigerant loop. • The compressor fails. • The voltage is too high or too low. • The refrigerant loop is obstructed 	<p>Detect leak, and fill the refrigerant of a correct quantity</p> <p>Make a vacuum again and fill the refrigerant.</p> <p>Repair or replace the compressor. Install a voltage regulator.</p> <p>Locate the causes and replace thepart.</p>
The cooling effect is poor	<ul style="list-style-type: none"> • The condenser of the outdoor unit or indoor unit is too dirty • The filter is blocked • The intake orifice or exhaust orifice of the outdoor/indoor unit is blocked • The door or window is open • Directly exposed to sunlight • Too many heat sources • Too high outdoor environment temperature • The refrigerant is leaked or the replenishment is deficient 	<p>Cleanse the condenser</p> <p>Cleanse the filter</p> <p>Remove foreign matters to keep well ventilated.</p> <p>Close all windows and doors.</p> <p>Use curtains or jalousie to obstructsunlight.</p> <p>Reduce heat sources</p> <p>The cooling effect of the air conditioner is deteriorated (but normal)</p> <p>Detect leak, and fill the refrigerant of a correct quantity</p>
The heating effect is poor	<ul style="list-style-type: none"> • The outdoor environment temperature is lower than -7°C • The door or window is not closed tightly • The refrigerant is leaked or the replenishment is deficient 	<p>Use a heating device.</p> <p>Close doors and windows properly</p> <p>Detect leak, and fill the refrigerantof a correct quantity.</p>

11. FAULTS OF REMOTE CONTROLLER AND CAUSE

Table.11-5

Before requesting for maintenance or repair, inspect the following:

Table.11-1

The shift function cannot be set		
Symptom	Check item	cause
The wind speed cannot be shifted	Check whether the mode marked on the screen is AUTO	When you select the AUTO mode, the indoor unit will select "AUTO" for the air speed automatically
	Check whether the mode marked on the screen is DEWET	When you select the DEWET mode, the indoor unit will select "AUTO" for the air speed automatically. The air speed is selectable only in the "cooling", "heating" and "supply air" mode

Table.11-2

The transmitting symbol"▲" does not blink		
Symptom	Check item	cause
When you press ON/OFF button, the remote controller signal cannot be transmitted	Check whether the batteries of remote controller are low	When the batteries are exhausted, the signals cannot be transmitted

Table.11-3

The temperature indicator dose not light up		
Symptom	Check item	cause
The temperature indicator does not light up	Check whether the mode marked on the screen is Supply Air	In the Supply Air mode, the temperature cannot be set

Table.11-4

The display disappears		
Symptom	Check item	cause
After a while, the ON/OFF display disappears	Check whether the time set on the timer has expired	The air conditioner stops running because the set time has expired
After a while, the TIMING ON display disappears	Check whether the time set on the timer has expired	When it comes to the set time of starting operation of the air conditioner, the air conditioner will start running automatically, and the corresponding display will disappear.

No sound of receiving signal		
Symptom	Check item	cause
When pressing the ON/OFF button, the air conditioner does not raise the receiving tone	When the ON/OFF button is pressed, check whether the signal transmitting part of the remote controller is aligned with the receiving part of the indoor unit. Check whether the power switch of the air conditioner is connected properly	Align the signal transmitting part of the remote controller with the receiving part of the indoor unit. Then press the ON/OFF button repeatedly. The air conditioner cannot receive the signals of the remote controller because it is shut down.
The buttons of the remote controller do	Check the screen of the remote controller	Lock buttons

12. REPAIR

In case your air conditioner fails to operate normally, shut down the unit and cut off the power supply promptly. Then contact the manufacturer distributor. Report the model, operation environment and fault information of the air conditioner in detail, request for sending technicians to repair, but do not fix it by yourself at your discretion.

13. TROUBLE SHOOTING

No.	Display	Problem
1	All lamps flashing at 5Hz	The PRO terminal on PCB of indoor unit without connected to Null line, or optical coupler on PCB malfunction
2	Timer lamp flashing at 5Hz	Room temperature sensor malfunction
3	Operation lamp flashing at 5Hz	Evaporator temperature sensor malfunction
4	Defrosting lamp flashing at 5Hz	Condensator temperature sensor malfunction
5	Alarm lamp flashing at 5Hz	Water-level check malfunction
6	Operation lamp & Timer lamp flashing at 5Hz	Eeprom malfunction

