



DES 3500 / 5000 / 8000 / 11000 / 14000 / 16000 / 18000 / 21000

Kitchen Ventilation Unit



Installation & Operation Manual



EN

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INTRODUCTION

Installation&Operation Manual has been prepared and given to customer as a guide for easy installation&operation units manufactured by ENEKO A.Ş. The manual contains description of the unit, components and basic informations and recommendations for proper and fail free operation. Please read the instructions and warnings given in this manual before starting installation, operation and maintenance works and keep this manual near the unit, within easy reach of service personnel.



Any damage, failure or hazard occurred because of use except this purpose is beyond the responsibility of manufacturer.



For technical service and questions, please contact with following information.



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WARNINGS & SAFETY INFORMATION



- ◆ This unit has to be used under proper conditions according to its technical specification and design purpose. (Otherwise responsibility belongs to practitioner)
- ◆ Unauthorized personnel must not interfere in unit and/or must not use unoriginal spare parts. (Otherwise responsibility of failure that may occur belongs to practitioner)
- ◆ Do not install this product in a refrigerated warehouse, heated swimming pool or other location where temperature and humidity are significantly different. (Failure to heed this warning may result in electrical shock or malfunctioning.)
- ◆ Unit should not be subjected to excessive vibration and shock while transporting.
- ◆ If the unit is damaged due to any transporting etc. reasons, it should not be mounted.
- ◆ There should be avoided to put any material on to the unit that may cause any damage.
- ◆ Do not install this product in a location where acid, alkali or organic solvent vapors, paints or other toxic gases, gases containing corrosive components or high concentrations of oily smoke are present (Failure to heed this warning may result not only in malfunctioning but also fire, power leakage and electrical shock.)
- ◆ Do not use this product outside the range of its rated voltage and control capacity.



- ◆ If outdoor air is too cold and can cause condensation, pre-heater should be used to prevent.
- ◆ Select an adequately sturdy position for installing the product and install it properly and securely. (The unit can cause injuries in case of fall.)
- ◆ The surface of the unit must be able to carry the weight of the unit.
- ◆ Use electric cables specified in the manual to connect the room control board and check the connection strength (Otherwise fire may occur).
- ◆ Where ducts pass through the building and in the area which is connection with building construction, pay attention that ducts never touch any metal parts and any electrical contact.
- ◆ The outside ducts must be tilted at a gradient (1/30 or more) downwards toward the outdoor area from the main unit, and properly insulated.
- ◆ Gloves should be worn while installation. (Failure to heed this warning may result in injury.)
- ◆ A dedicated circuit breaker must be installed at the origin of mains power supply. This circuit breaker must be provided with a means for locking (lock and key).
- ◆ The body of the unit, the control room panels and cables must be at least 3 meters away from high electro-magnetic field forming equipment or cables.



- ◆ This product must not be disassembled under any circumstances. Only authorized repair technicians are qualified to conduct disassembly and repairs. (Failure to heed this warning may result in fire, electrical shock or injury.)



- ◆ Connect the product properly to the ground. (Malfunctioning or power leaks can cause electrical shock.)
- ◆ Electrical connection should be made by authorized and trained technical personnel.
- ◆ Water connections should be done before the electrical connection is made. Before starting electrical connection, be sure water connection is made tightly.
- ◆ Electrical wiring connections must be made according to the specified electrical wiring diagram.
- ◆ There should not be any changes to the electrical connections that is made at the factory.
- ◆ Cables used in network connection must conform to specified standards and earth connection must be made.
- ◆ A circuit breaker should be placed between the network and unit. The circuit breaker should be selected according to the total power and current value specified on the label.
- ◆ Overcurrent fuse is recommended for the unit.



The installations which is not available for installation and operation manual is out of guarantee.

CHECK LIST

In the event of unit failure and pre-commissioning checks to be made are determined as follows; after checking this information, please contact our company in case failure continues.

Controls

√

Make sure that the unit receives power and electrical grounding is made!

Make sure that the electricity cables are drawn from in the correct cross section!
Please check whether there is heating on cables or not.

Please check whether the cables in unit control panel are shielded (shielded magnetic field) or not; make sure shielding is grounded. If not, please change them!

Make sure that fresh air and exhaust air filters are clean and they do not block the flow of air!

Make sure there is the connection of drainage on the unit, check any possible clogging in drainage line and clean if necessary!

Please check whether the diameter of the air duct connection of the unit and the diameter of the spigot are the same. If the duct connection is smaller, change it with the correct one.

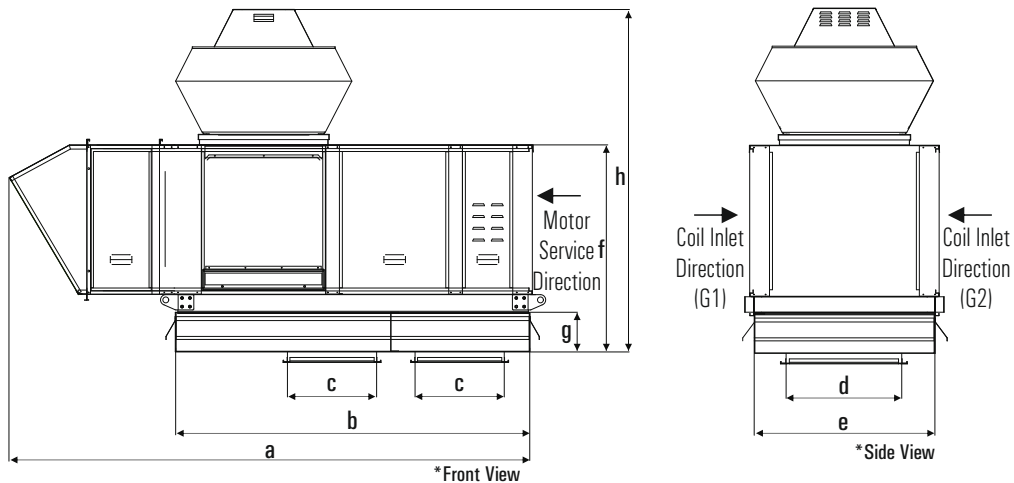
Make sure the electrical connections of the unit are made as suggested on the unit and in this guide, check if there is incorrect connection.

Make sure during the installation of the unit there is enough space for the service and if there is not enough space, re-install again.

In extremely cold climate applications, frost may occur on the exchanger, apply electric heater in fresh air intake section of the unit to get the temperature to -5 °C and above.

After installing the unit, make sure that it does not create an abnormal sound or vibration, if there is, make sure that rubber pads are used.

UNIT DIMENSIONS



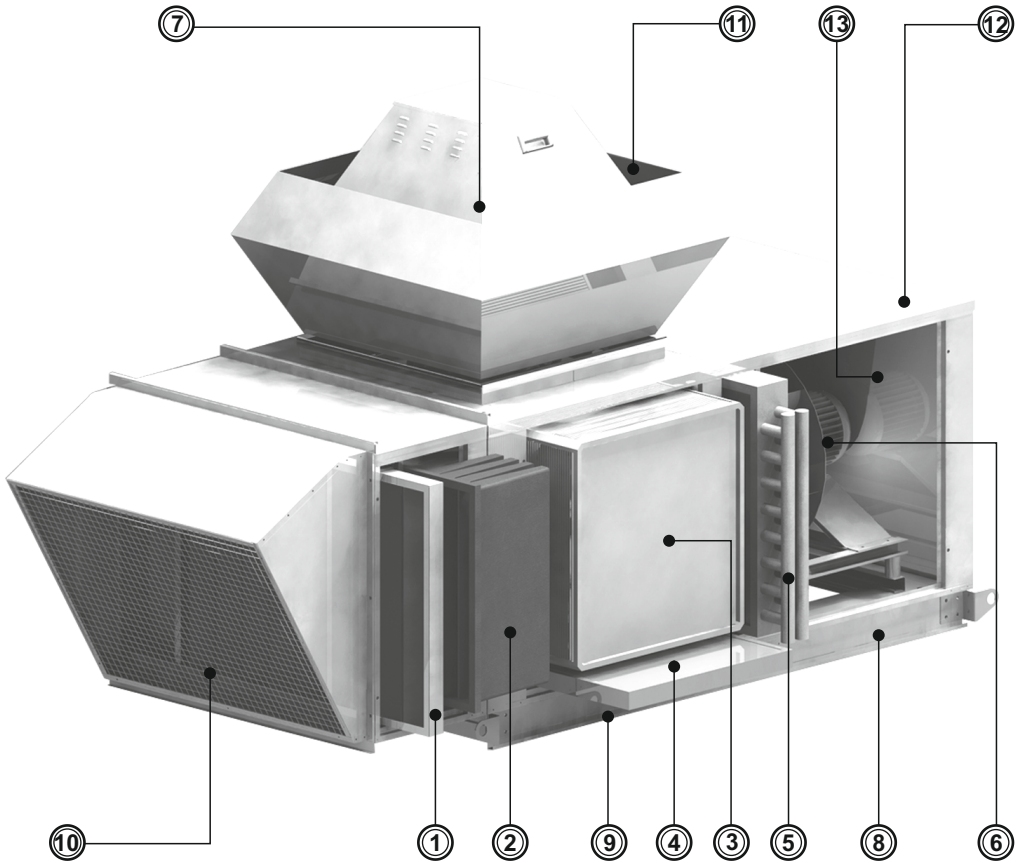
	a	b	cx	d	e	f	g	h	x	y
DES 3500	2632	1790	450	450	910	1050	200	1750	900	1000
DES 5000	2955	2010	700	400	1300	1275	200	2100	900	1000
DES 8000	3165	2220	500	1000	1900	1275	200	2210	1100	1000
DES 11000	3165	2220	500	1000	1900	1275	200	2210	1100	1000
DES 14000	3165	2220	500	1000	1900	1275	200	2210	1100	1000
DES 16000	3350	2310	500	1300	2100	1470	200	2380	1600	1000
DES 18000	3350	2310	500	1300	2100	1470	200	2380	1600	1000
DES 21000	3350	2310	500	1600	2375	1470	200	2380	1900	1000

x: Minimum service space for both side of the unit.

y: Minimum service space for back of the unit.

* All measurement values are mm.

	Coil Inlet Direction
DES 3500	G1 Air Flow Direction Right
DES 5000	G1 Air Flow Direction Right
DES 8000	G2 Air Flow Direction Left
DES 11000	G2 Air Flow Direction Left
DES 14000	G2 Air Flow Direction Left
DES 16000	G1 Air Flow Direction Right
DES 18000	G1 Air Flow Direction Right
DES 21000	G2 Air Flow Direction Left





Unit Components Descriptions

- | | |
|---------------------------------|----------------------|
| ① Pre-filter (G Class Filter) | ⑧ Roof Curb |
| ② Final-filter (F Class Filter) | ⑨ Drain Pan |
| ③ Heat Recovery Exchanger | ⑩ Supply Air Louver |
| ④ Grease Filter | ⑪ Exhaust Air Outlet |
| ⑤ Heating Coils | ⑫ Unit Cover Plate |
| ⑥ Supply Air Fan | ⑬ Control Panel |
| ⑦ Exhaust Air Fan | |



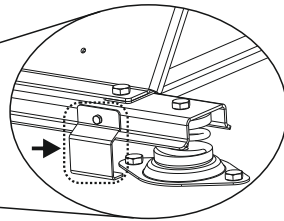
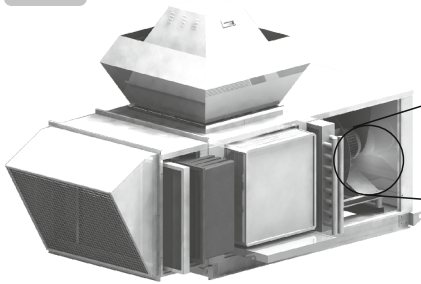
Lifting Considerations


- Do not lift the unit when it is windy and while a personnel is working under the unit.
- Use lifting chain as shown below. Lifting chains must be capable of supporting the entire weight of the device.
- Lifting chains may not be the same length. Set lifting chains to balance the device.
- If possible, create a parallel loop straps to the air flow direction.
- For your safety, when unit is lifted up, you may use appropriate equipment method such as belts, straps.
- Determine center of gravity of unit and test it by lifting up about 500 mm. If lifting point is not appropriate, re-determine it to prevent falls.
- Not lifting the unit properly may cause serious injury even death.

 Failure to follow the instructions above may cause damage of equipment, serious injury, or even death.
 Subassemblies and parts of unit are equipped as shipped from the factory.



Fan Fixing

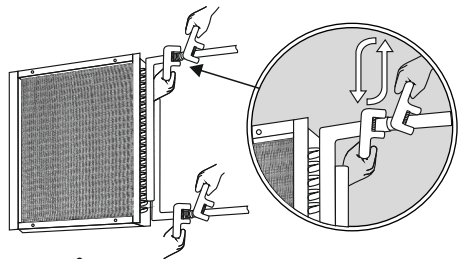


 Fan fixing parts should be removed before the duct and electrical installation applications.



Coils Connection

- Use a double wrench while attaching piping to DX / Heating / Cooling coils to prevent damage.
- The pipes of DX / Heater / Cooling coils must be supported separately and insulated thermally.
- Coils, filters and drop eliminators are demounted carefully while connecting piping to DX / Heating / Cooling coils.

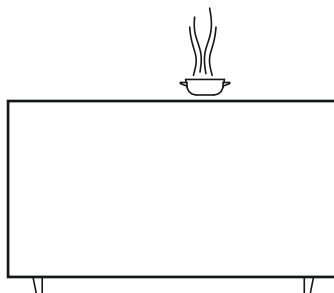
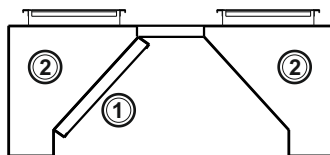
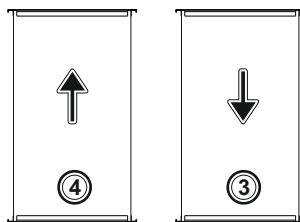
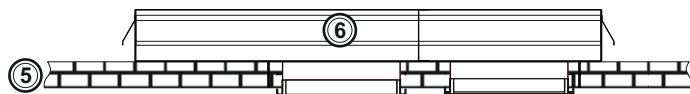
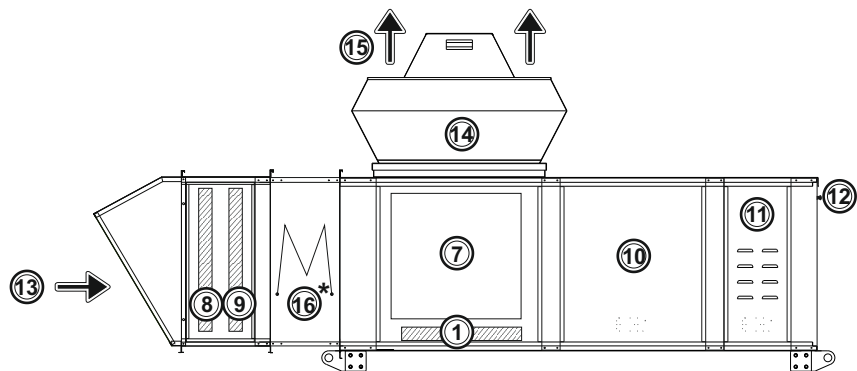


 Use counter-holding for the connection!



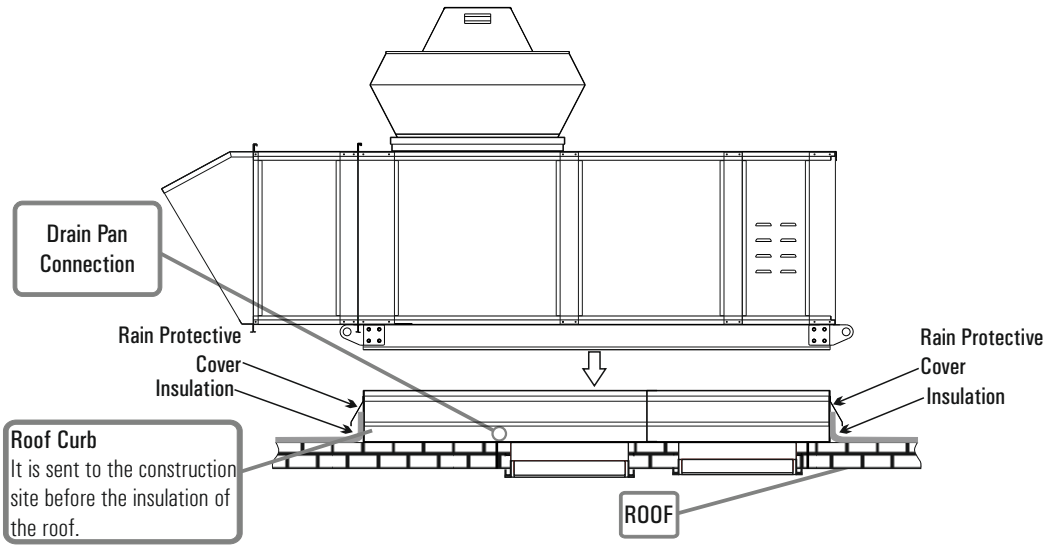
Drain Connection

- If there is more than one drain pan, mount siphon to each individual section.
- Using only one siphon for all drainage connected to common line may cause overflow in the condensation pan.
- Avoid applications prevent the flow of water in the drain line.
- Drain line should never be on higher level than the condensate pan.

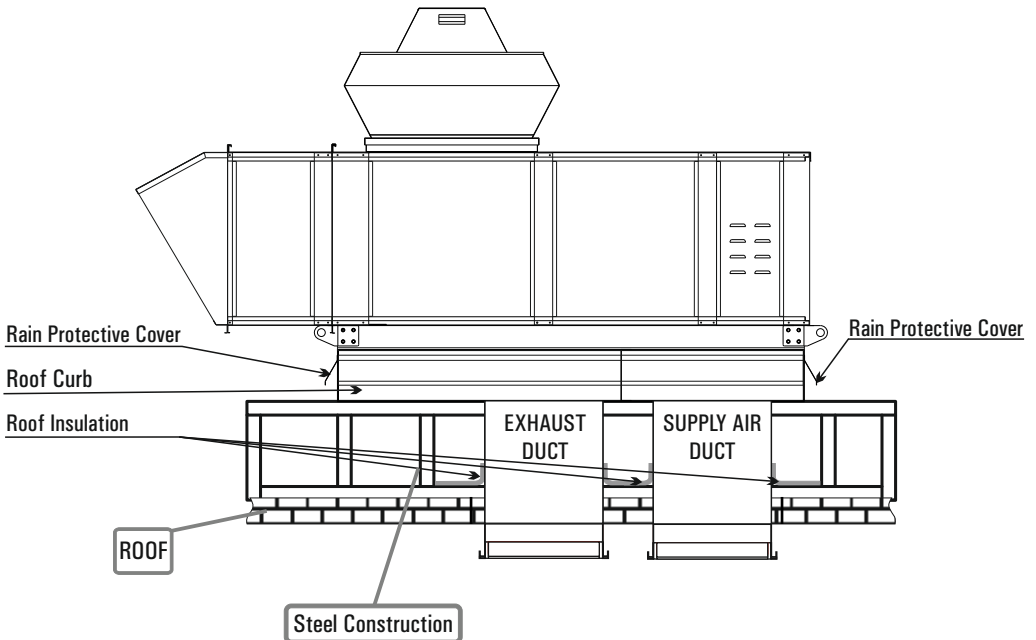


- ① Grease Filter
- ② Double Skin
- ③ Supply Air Duct
- ④ Return Air Duct
- ⑤ Roof
- ⑥ Roof Curb
- ⑦ Heat Recovery Exchanger
- ⑧ Pre-filter (G Class Filter)
- ⑨ Final-filter (F Class Filter)
- ⑩ Supply Air Fan Section
- ⑪ Electrical and Control Equipment
- ⑫ Emergency Stop Button
- ⑬ Supply Air
- ⑭ Exhaust Fan Section
- ⑮ Exhaust Fan
- * ⑯ Electric Heater (Optional)

In case of connection to the steel curb directly on the roof

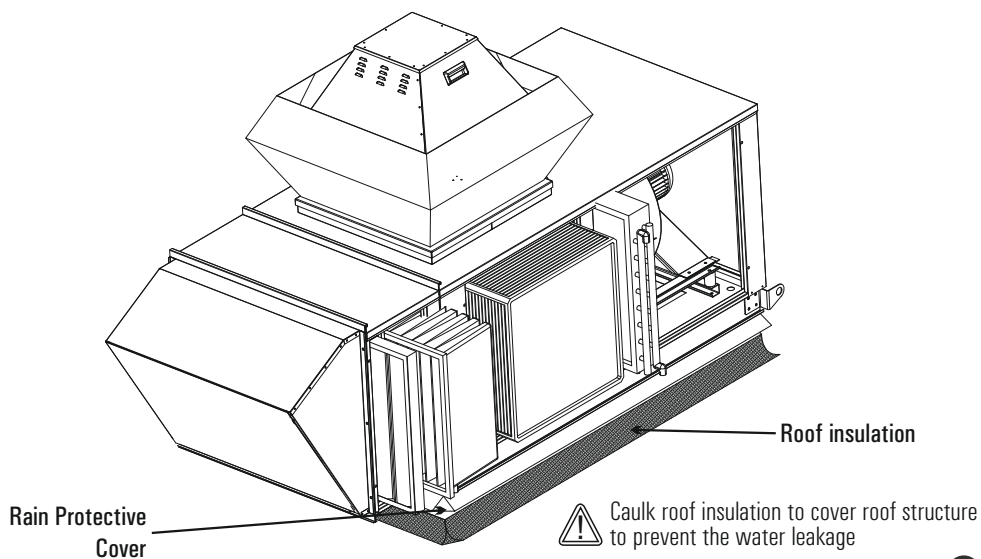
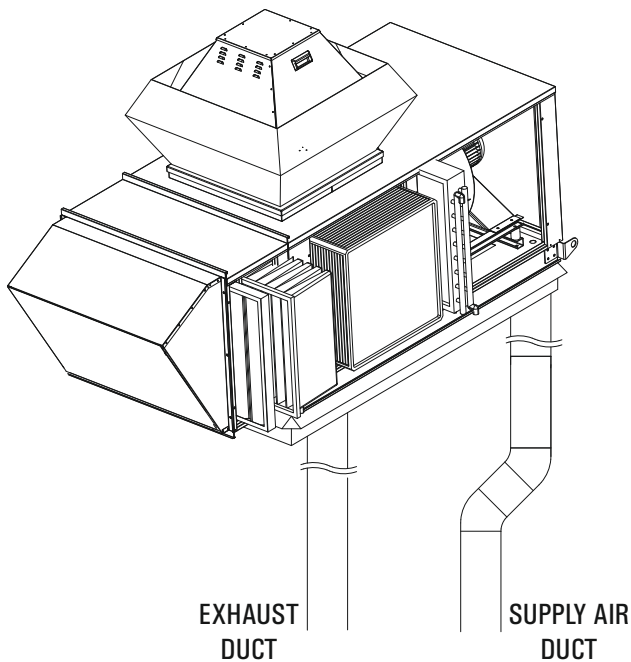


In case of connection to the steel curb over the steel construction





 Steel Construction will be fixed to the roof constructions with M10 nuts.

The Details Of The Principle Duct Connection



MAINTENANCE

 **TURN OFF** all the power switches before the maintenance is performed.
Do not operate the system without the air filter to protect the components of the unit against being clogged.

 Please, read the instructions carefully on this manual before operating the system.

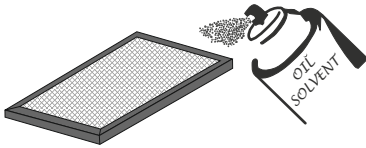
Filter

To clean up G class filters according to EN 779;

- Turn off the unit.
- Remove dirty filters.
- Use a vacuum cleaner to clean the G3-G4 class filters. Use warm water to clean the G2 class filter. Leave to dry after cleaning the G2 class filter.
- Place the filters in the filter slots.
- Close the service cover and be sure it is closed tightly.

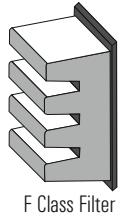
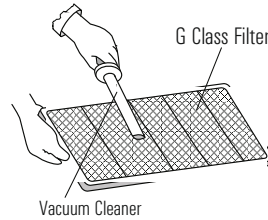
To clean up grease filters

- Turn off the unit.
- Remove dirty filters.
- Clean with oil solvent every fifteen days. Then clean with the hot water. Leave to dry after cleaning the grease filter.
- Close the service cover and be sure it is closed tightly.



To clean up F class filters according to EN 779;

- Turn off the unit.
- Remove dirty filters.
- Place new bag filters in the filter slots.
- Close the service cover and be sure it is closed tightly.

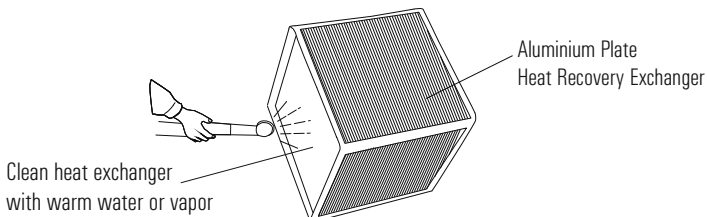


 Place the F class filters in vertical position.

Heat Exchanger

For units with aluminum plate heat exchanger;

- Turn off the unit.
- Remove aluminum plate heat exchanger from the unit.
- Clean heat exchanger with warm water or vapor. If necessary, use warm water with natural detergent or soap powder to remove dirt.
- After cleaning, leave the heat exchanger to dry before placing them back in the unit.
- Be sure the screws of service cover are tightened securely and heat exchanger cannot fall out of its slots.



Maintenance Period

Every year;

- Paint the exterior surface of casing to prevent corrosion on metal surfaces of the unit.
- Clean fan propeller and fan shaft of the fan.
- If the unit has drain pan, check and clean the drain pan.
- If the unit has damper, check the connection of damper, set screw and rigging.
- Check all electrical connections and isolation.
- Check if there is any damaged cable connections.
- Check if there is any damaged on all gaskets around door and buffer. Check the situation of all isolation materials.
- Check all connections to prevent fracture and leakage, and if there is any repair it.

Every 3-6 months;

- Clean or change clogged or dirty filters. If the pressure drop of a bag filter is higher than 300 Pa, change the bag filter.
- Check all electrical connections.
- Check the accumulated dirt on coils.



Clean up the heat exchanger every two years.


System Connection

- 1- Cut the gaskets in cable connection hole from the center.
- 2- Pass the on/off switch cables through the cable connection hole.
- 3- Connect the main power cable and ground wires to the terminals in the junction box.
- 4- Use cable tie to hold the cables tightly.
- 5- After making cable connections, insulate the cable connection hole against entering water and impurity.


 You must be sure that the unit is grounded in accordance with local regulations.

Considerations During Electricity Network Connection

- 1- Electrical connection must be done by an authorized personnel.
- 2- Drain pipe connection should be done before making the electrical connection and please start electrical installation after being sure that insulation is ensured.
- 3- All kinds of safety measures should be taken by the technician during installation.
- 4- Electrical wiring must be done according to the specified electrical diagram. Any electrical connection which is made by the factory should not be changed.
- 5- Cables to be used during network connection must conform to the specified standards and should be connected to a grounded power supply.
- 6- A circuit breaker should be placed between the unit and network. Circuit breaker must be selected according to the total power and current value specified on + the nameplate.
- 7- Over current protection is recommended for the units.




 If there are two switch box on the unit, you need to make cabling for each switch box separately.

Automation Cable Color Standard

NO	ELECTRICAL PROPERTIES	FUNCTION
1	R ~	GRAY CABLE
2	S ~	BROWN CABLE
3	T ~	BLACK CABLE
4	NEUTRAL	BLUE CABLE
5		YELLOW / GREEN CABLE
6	CONTROL SIGNAL 1	BLACK CABLE (230 VAC)
7	CONTROL SIGNAL 2	RED CABLE (24 VAC)
8	24 VAC	RED CABLE
9	24 VAC GO	WHITE CABLE
10	24 VDC +	RED / WHITE CABLE
11	24 VDC -	BLUE / WHITE CABLE
12	4-20 mA / 0-10 V	YELLOW CABLE
13	NTC 10k / Pt1000...	ORANGE CABLE
14	NC / NO DRY CONTACT	GREEN CABLE

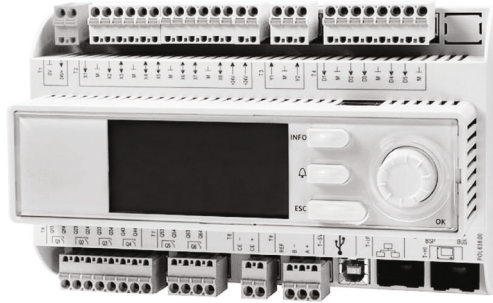
Control Panels

Using on the units control panel types and descriptions are indicated below. The control panels are used optional on the units.

Panel Type	Panel Descriptions
 <p data-bbox="260 608 463 639">Type-1 (Internal Display)</p>	<ul style="list-style-type: none"> - Internal display on the PLC - IP 20 protection class (EN 60529) - There is no need for any external communication display due to the provided internal display on the PLC.
 <p data-bbox="260 841 463 873">Type-2 (External Display)</p>	<p>Hand Panel 1: Wall-mounted type, IP 65 protection class for only front side of panel, Max. 50 m communication ability</p> <p>Hand Panel 2: Magnet type, IP 65 protection class for whole panel, Max. 50 m communication ability</p>
 <p data-bbox="260 1066 463 1098">Type-3 (External Display)</p>	<ul style="list-style-type: none"> - Magnet type, - IP 31 protection class, - Max. 700 m communication ability

Control Panel - Keypad Explanations

■ Type-1 Control Panel (Internal Display)



Type-1 (Internal Display) Control Panel

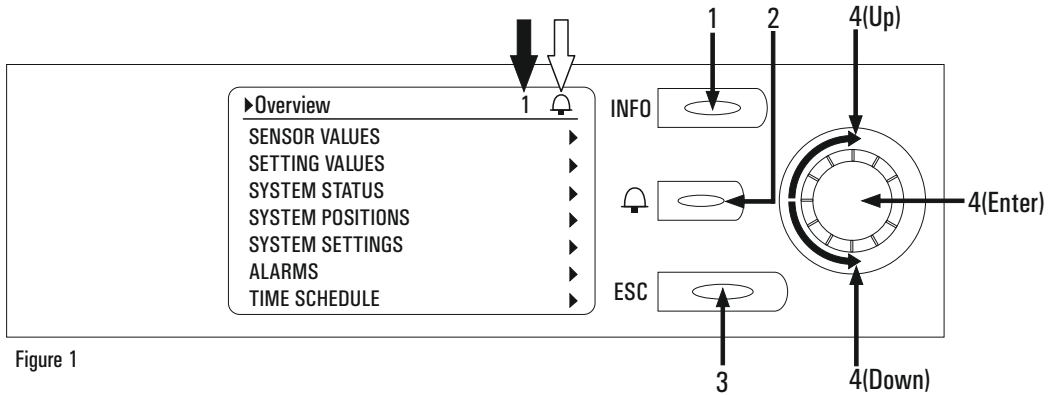




Figure 1

- 1. Info:** It allows you to enter the account menu. When the user password is entered as "1000", the system is entered with the user account. After login, the service page will be active on the bottom line in the main menu. The user can access the service menu from this page.
- 2. Alarm** : This is the alarm key that displays you malfunctions in the system.
- 3. ESC:** This is the exit key that allows you return to the previous menu.
- 4. Up/Down:** It is used to turning between the lines and change set values.
- 5. Enter:** It's the confirmation key. It allows the changes to be saved.



"1" Indicates the number of rows on the page where the selected row is located.

 This symbol indicates malfunctions in the system. If there is a fault in the system, the bell starts to swing. If there is no fault, it doesn't swing.

Control Panel - Keypad Explanations

▪ Type-2 Control Panel (External Display)



Type-2 (External Display) Control Panel

▪ Control Panel Dimensions

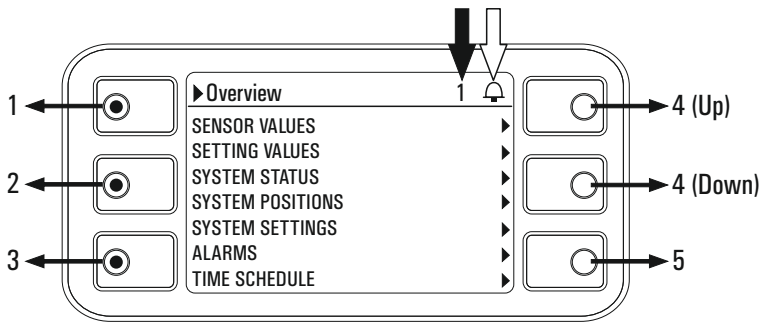
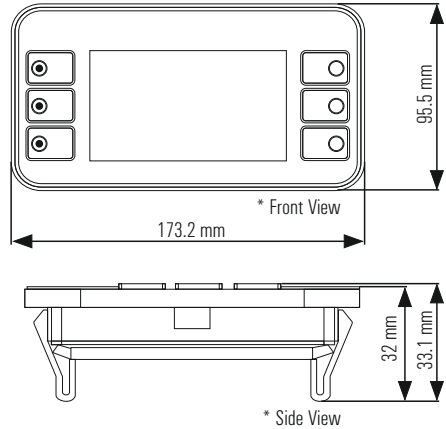


Figure 2

1. **Info:** It allows you to enter the account menu. When the user password is entered as "1000", the system is entered with the user account. After login, the service page will be active on the bottom line in the main menu. The user can access the service menu from this page.
2. **Alarm** : This is the alarm key that displays you malfunctions in the system.
3. **ESC:** This is the exit key that allows you to return to the previous menu.
4. **Up/Down:** It is used to turning between the lines and change set values.
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"1" Indicates the number of rows on the page where the selected row is located.

This symbol indicates malfunctions in the system. If there is a fault in the system, the bell starts to swing. If there is no fault, it doesn't swing.

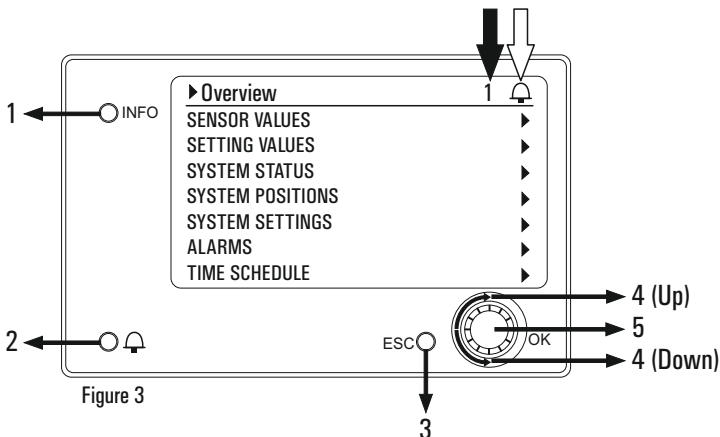
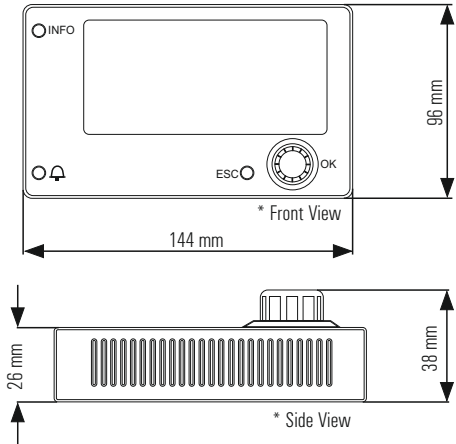
Control Panel - Keypad Explanations

▪ Type-3 Control Panel (External Display)



Type-3 (External Display) Control Panel

▪ Control Panel Dimensions



- 1. Info:** It allows you to enter the account menu. When the user password is entered as "1000", the system is entered with the user account. After login, the service page will be active on the bottom line in the main menu. The user can access the service menu from this page.
- 2. Alarm** : This is the alarm key that displays you malfunctions in the system.
- 3. ESC:** This is the exit key that allows you return to the previous menu.
- 4. Up/Down:** It is used to turning between the lines and change set values.
- 5. Enter:** It's the confirmation key. It allows the changes to be saved.



"1" Indicates the number of rows on the page where the selected row is located.

This symbol indicates malfunctions in the system. If there is a fault in the system, the bell starts to swing. If there is no fault, it doesn't swing.

Control Panel Displays and Descriptions

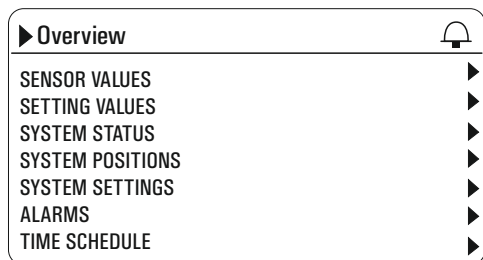


Figure 1

Set and tracking values are divided into pages for easy access. As shown in Figure 1, when the "Enter" key is pressed on the line indicated by the "►" mark, it goes to the related page.

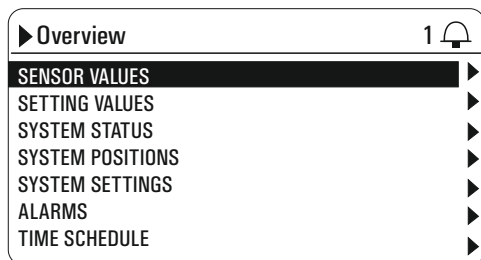


Figure 2

If the background of the line is black as shown in Figure 2, it means that the line is selected. With the "Up/Down" functions, you can switch between the lines. If the entire line is black, then that line has a changeable value. The value is selected with the "Enter" function, and the value is changed with the "Up/Down" keys.

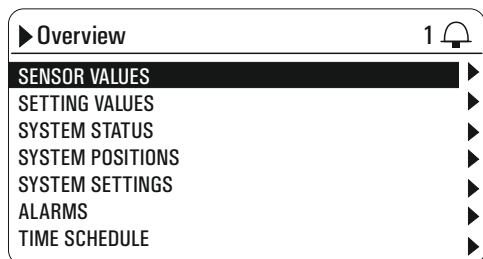


Figure 3

When the "Enter" key is pressed on the 'SENSOR VALUES' line as shown in Figure 3, it goes to the page that the set values (see Figure 4) are specified.

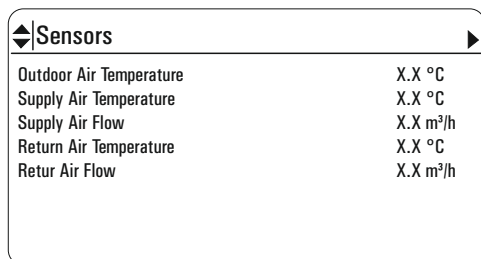


Figure 4

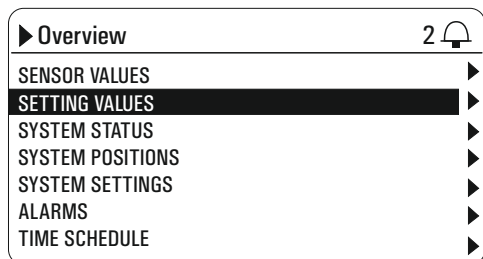


Figure 5

When the "Enter" key is pressed on the "SETTING VALUES" line as shown in the Figure 5, it goes to the page that the temperature, supply or return air flow settings etc. of the unit. (see Figure 6).

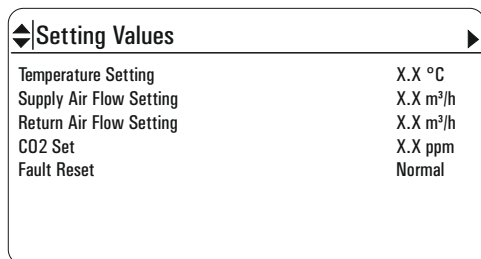


Figure 6

Control Panel Displays and Descriptions

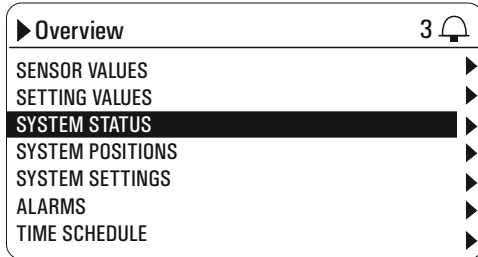


Figure 7

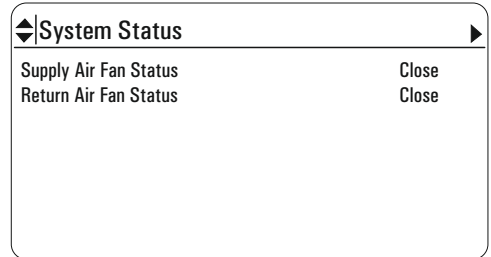


Figure 8

When the "Enter" key is pressed on the "SYSTEM STATUS" line as shown in the Figure 7, it goes to the page that the opened or closed status etc. of the unit can be monitored. (see Figure 8).

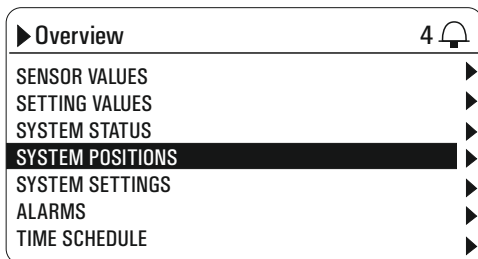


Figure 9

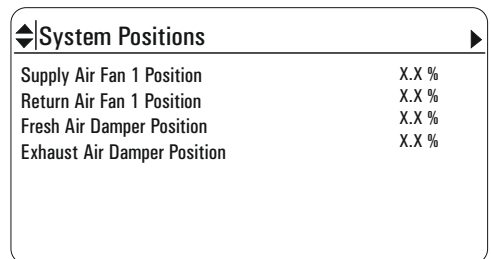


Figure 10

When the "Enter" key is pressed on the "SYSTEM POSITION" line as shown in the Figure 9, it goes to the page that the speeds and positions of the unit can be monitored. (see Figure 10).

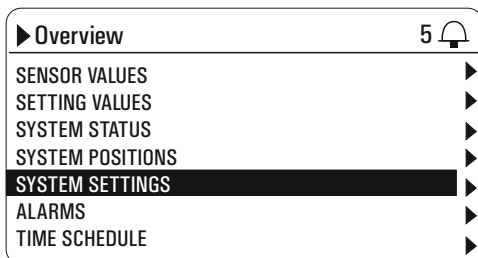


Figure 11

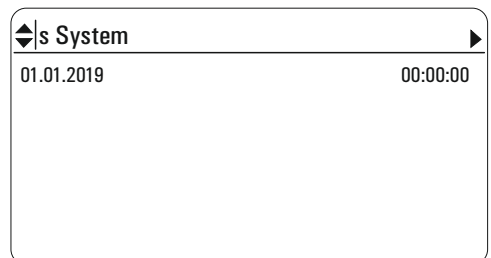


Figure 12

When the "Enter" key is pressed on the "SYSTEM SETTINGS" line as shown in the Figure 11, it goes to the page that date and time settings of the unit can be adjusted. (see Figure 12). For each variable (day / month / year), adjustment can be made using the "Enter" and "Up / Down" direction keys. After each set change, the next key is automatically selected when the "Enter" key is pressed. (see Figure 13 and Figure 14)

Control Panel Displays and Descriptions

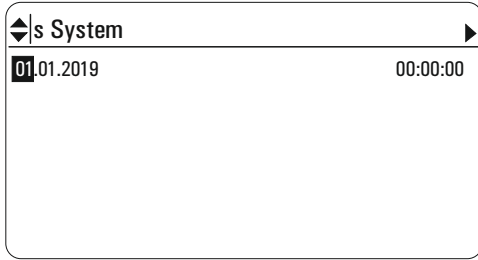


Figure 13

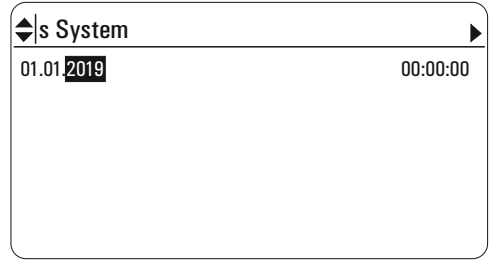


Figure 14



If the system's date and time keeps up to date, time program runs right and failure dates can be monitored.

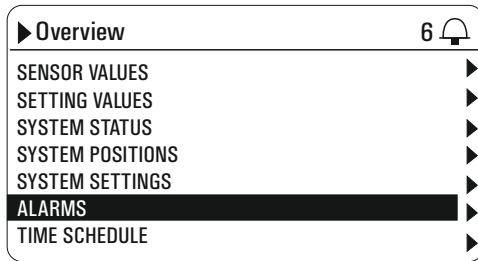


Figure 15

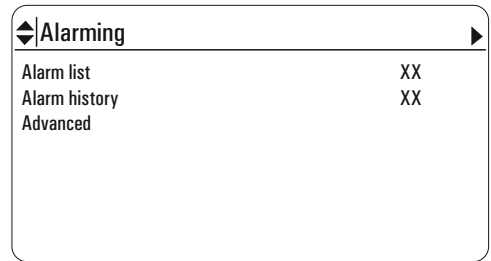


Figure 16

When the "Enter" key is pressed on the "ALARMS" line as shown in the Figure 15, it goes to the page that alarm list, alarm history etc. informations can be monitored. (see Figure 16).

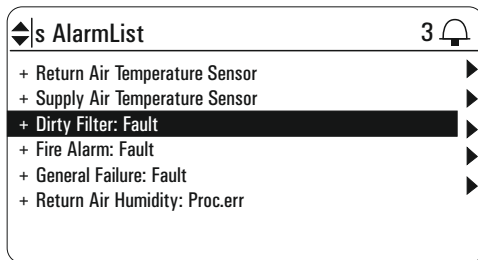


Figure 17

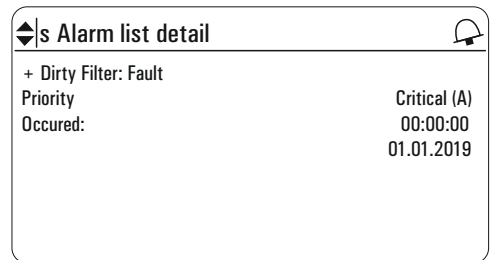


Figure 18

For example, when the "Enter" key is pressed on the "Dirty Filter: Fault" as shown in the Figure 17, it appears alarm details as shown in the Figure 18. If the unit's time and date is adjusted on the "SYSTEM SETTINGS" menu, you can see the time of occurrence of the alarm correctly on the screen.

Control Panel Displays and Descriptions

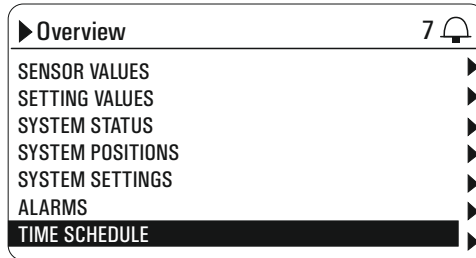


Figure 19

When the “Enter” key is pressed on the “TIME SCHEDULE” line as shown in the Figure 19, it goes to the page that can be adjusted weekly time schedule. (see Figure 20).



You must be logged in to the system with the user account from the password menu for time settings.

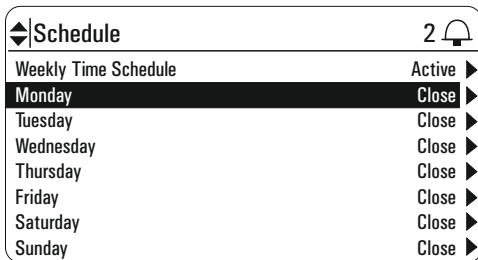


Figure 20

The start time and end time can be adjusted during the day by pressing the “Enter” key onto the days in the “Weekly Time Schedule” page as shown in Figure 20.



Figure 21

As shown in Figure 21, the time schedule starting time must be adjusted “Time 1”. System date and time which can be set at the settings page reads “Value 1” as system command after starting time passes “Time 1”. Likewise, system date and time which can be set at the settings page reads “Value 2” as system command after closing time passes “Time 2”. The system run command must be selected for “Value 1”. For example, “Open”, “Heating” or “Cooling” etc. After reading the value in “Value 1” the system runs until the closing time according to the command entered. The system shutdown command “Value 2” must be kept “Off” position to shut down the system.





Warranty Certificate

- * If the unit is used according to the instructions given in user manual and interfered in only authorized technical service that we authorize about any maintenance and repair reasons, all spare parts will be under warranty for 2 years against material, labor and production faults except motor components.
- * Identifying of parts replaced and determining troubleshooting technical procedure applied, will belong to our company.
- * After ex-works of goods, all faults during loading, unloading and shipment will be out of guarantee. If a falsify has been made on documents or any falsify and changing have been made on serial number, goods will be out of guarantee.

Terms of Guarantee

1. Guarantee period is 2 years as from the time of delivery.
2. All spare parts except motor components are under warranty.
3. If the goods break down during guarantee period, the time spent for maintenance will be added to guarantee period. Maintenance period is 30 days at most. 30 days begin with the notice to a service station. If there is no service station, 30 days begin with the notice to the seller, dealer, agency, agent, importer or manufacturer of the goods.
4. If production fault occurs during guarantee period; the cost of new spare part and labor will not be claimed from the customer.
5. If a fault occurs because of not using or assembling according to the instructions given in user manual, goods will be out of guarantee.

UNIT TYPE

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