

**DAIKIN**

**R410A**

# TECHNICAL MANUAL

## Packaged Air Conditioner Rooftop

**UATYQ-MCY1**

**— Heatpump [50Hz] —**



UATYQ250/350/450/550/600/700MCY1



With Economizer (Optional)

TM-5RT-B-ST-A1



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# Nomenclature

**UAT Y Q 250 M C Y1**

**Product Type**

UAT: Rooftop

**Model**

Y: Heatpump  
“ ”: Cooling Only

**Refrigerant**

Q: R410A

**Size**

250: 25 kW  
\* It might differ with the actual rated capacity.  
Always refer to Engineering & Physical Data  
or Performance Table

**Power Supply Symbol**

Y1: 3 Phase 50 Hz 380-415V

**Generation/Series**

C: C series

**Product Origin**

M: OYLM

## Product Line Up

### UATYQ-C Series

Model		Classification												
		Rooftop Panel	PCB	EXV	Hydrophilic Gold Fin	Scroll Compressor	Saranet Air Filter	Horizontal Flow	Convertible	Filter Drier	High Pressure Switch	Low Pressure Switch	Economizer Kit *	Variable Pitch Pulley
HEATPUMP	UATYQ250MCY19	X	X	X	X	X	X	X	X	X	X	X	X	X
	UATYQ350MCY1	X	X	X	X	X	X	X	X	X	X	X	X	X
	UATYQ450MCY1	X	X	X	X	X	X	X	X	X	X	X	X	X
	UATYQ550MCY1	X	X	X	X	X	X	X	X	X	X	X	X	X
	UATYQ600MCY1	X	X	X	X	X	X	X	X	X	X	X	X	X
	UATYQ700MCY1	X	X	X	X	X	X	X	X	X	X	X	X	X

\* Optional accessories (field install)

# Features

## General Specification

### Package Unit

Daikin's new range of rooftop packaged units has been developed specifically to suit commercial applications and are designed to be easy to install, requiring only ducting (and associated fittings), power/control wiring and drain piping. Along with the ivory white colour, the flat top and compact design gives an aesthetic and neat appearance when installed in line of sight. The unit cabinet is made of powder coated sheet metal especially suitable for outdoor use. All parts of the structure are fastened with corrosion resistant screws and bolts.

### Base Beam

The base beams are fixed and provide a rigid foundation for the entire unit. The beam has the rigging holes for better handling purpose. It is also designed to allow mounting on a roof curb, the dimension of the roof curb should be followed strictly in accordance with the installation manual.

### Flexible Air Supply (Variable Pitch Pulley)

Since all the units utilize a belt/pulley driven supply air fan, the units are able to meet a wide range of supply air volumes and external static pressures. Furthermore, the supply air fan motors, pulleys and belts (field supplied) can be easily changed on site to meet exact air flow and ESP requirement if required.

### Convertible Return and Supply Air

Unit can be easily converted from horizontal to vertical (downward) supply and return air duct configuration by relocating the panels and supply air fan mounting.

### Scroll Compressor

Units are equipped with high efficiency and reliable scroll compressors. Each compressor is mounted on rubber vibration isolators in order to reduce the noise level and vibration transmissions.

### Powder Coated Condensate Drain Pan

The sheet metal condensate drain pan is powder coated to resist corrosion.

### Slots for 2 inches Return Air Filters

A 2 inches rail is provided as standard in instances where a field supplied filter casement need to be installed.

### Higher Energy Efficiency Rating

The UATYQ-C series is designed in line with market requirement for better energy saving.

## Technical Specification

### Compressor

Compressor used in UATYQ-MCY1 Packaged Units are hermetically sealed scroll type. All the compressors are provided with an internal overload protection.

### Condenser

Condenser coils are manufactured from seamless inner grooved copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All coils are tested against by Nitrogen holding at 609psig and highly precise Helium leak test at 235psig.

ALL standard coils are up to 3 rows / 14-16 FPI, 3/8" (9.52mm) O.D. tubes.

Hydrophilic Gold Fin coating (NA549) is offered as standard, which has longer life span under corrosive environment.

### Evaporator

Evaporator coils are manufactured from seamless inner grooved copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All coils are tested against by Nitrogen holding at 609psig and highly precise Helium leak test at 235psig.

ALL standard coils are 3-4 rows / 14-16 FPI, 3/8" (9.52mm) O.D. tubes.

Hydrophilic Gold Fin coating (NA549) is offered as standard, which has longer life span under corrosive environment.

**Condenser Fan and Motor**

Fans are of propeller type, direct driven by weather-proof electrical induction motors. Condenser fan motor has class F insulation and splash-proof enclosure, IP44.

**Evaporator Fan and Drive**

Blower is DWDI centrifugal, forward curved type. It is mechanically and dynamically balanced and being mounted on a rigid shaft in a self aligned bearing block. The motor is fitted with an adjustable variable pitch pulley (VPP) drive as standard. It has class B insulation and dripping water proof, IP55.

**Refrigerant Circuit**

Each refrigerant circuit shall have independent electronic expansion devices, HP/LP switch and refrigerant line service pressure ports as standard factory installed.

**Expansion Device**

Electronic Expansion Valve is being used to ensure accurate control of refrigerant flow.

**Casing/Structure**

The unit casing used in UATYQ-C series is made of zinc coated galvanized steel sheets. It is further coated with an electrostatic powder coat and then oven-baked for a tough and lasting weather resistant finish. Zinc plated screws are used throughout to further reduce possibility of unit rusting.

**Insulation**

ALL possible areas of condensation to happen are insulated by PE, Polyethelene. Panel insulation is 10mm thickness while drain pan insulation is 5mm thickness.

**Control**

Units shall be completely factory supplied with an integrated Control Module, with built in resident control algorithms for heating, cooling, or ventilating operations in response to electronic signals from indoor & outdoor temperature sensors.

**Rooftop Panel - handset**

Rooftop Panel comprises all starting, operating and safety controls setting. It is connected to the IC module PCB and supplied as standard. Standard wire length is 15 meters and it can be extended up to 100 meters.

**Optional Features****3rd Party Thermostat**

For application that requires uniform thermostat outlook with other electrical appliances. 3rd Party thermostat can be connected to the factory supplied module via the contact point available on PCB board.

**Basic BMS Connection**

Unit's standard PCB board provides dry contact for basic BMS connection. Input signal will go to dry contact ON/OFF, COOL/HEAT, and 4 to 20 mA temperature adjuster while output signal will come from ON/OFF, COOL/HEAT, ALARM and DEFROST dry contact.

**Economizer**

The economizer kit allows outside air to be mixed with return air for 'free' cooling if the outdoor air temperature is suitable. Economizer cooling can be used alone or in conjunction with mechanical cooling. Beside that, the economizer kit can be used as well to provide ventilation air thus can improve indoor air quality. Please refer to the economizer kit features for more details.

**CO2 Sensor**

Field specified CO2 sensor can be easily plug on the control board's dry contact, which is available on the economizer extension board.

**Auxiliary Heater**

Auxiliary heater connection point is available on the standard PCB for field supplied heater connection.

## Economizer Kit Features

### Introduction

Economizer kit is an accessory provided by the factory, but requires field installation. It is also designed to cater for horizontal or vertical downthrow air discharge orientation. Economizer kit is compatible for R410A rooftop models. If you are unsure whether this kit can be used with your particular unit, please contact authorized service division. It is vital to do a correct selection on economizer kit, refer the table below for kit selection guideline:

No.	Rooftop Unit	Economizer kit which is compatible with rooftop unit
1	UATYQ250	ECONO250
2	UATYQ350	ECONO350
3	UATYQ450	ECONO450
4	UATYQ550	ECONO550
5	UATYQ600	ECONO600
6	UATYQ700	ECONO700

#### Note:

The economizer kit may not be assembled with rooftop unit if wrongly selected.

### 1. Easy installation

- The economizer kit can be installed on all new UATYQ-C Rooftop series.
- No additional wiring is needed as the unit comes from factory is ready for this.
- No additional cost for standard unit, when the users do not require economizer features since the kit is fielded installed.

### 2. Control

- Economizer is controlled by differential temperature.
- By using certain temperature inputs, the economizer will be activated once a certain set point is achieved.

### 3. Free Cooling

- Economizer kit is able to provide 'free cooling'.
- Depending on outdoor air conditions, the opening of the damper will be changed.
- The better the outdoor air conditions, the higher efficiency of the unit due to lesser mechanical cooling.

### 4. Indoor Air Quality

- Economizer kit is able to provide fresh air; it helps to maintain indoor air quality.
- The build-in controller is ready to be used with field installed CO2 sensor.
- Thus, it further improves the indoor air quality.

### 5. Damper

- Dampers modulation are controlled by reliable spring-return motor.
- Designed with extruded aluminium blades and frame, it is always light and it has low air leakage.

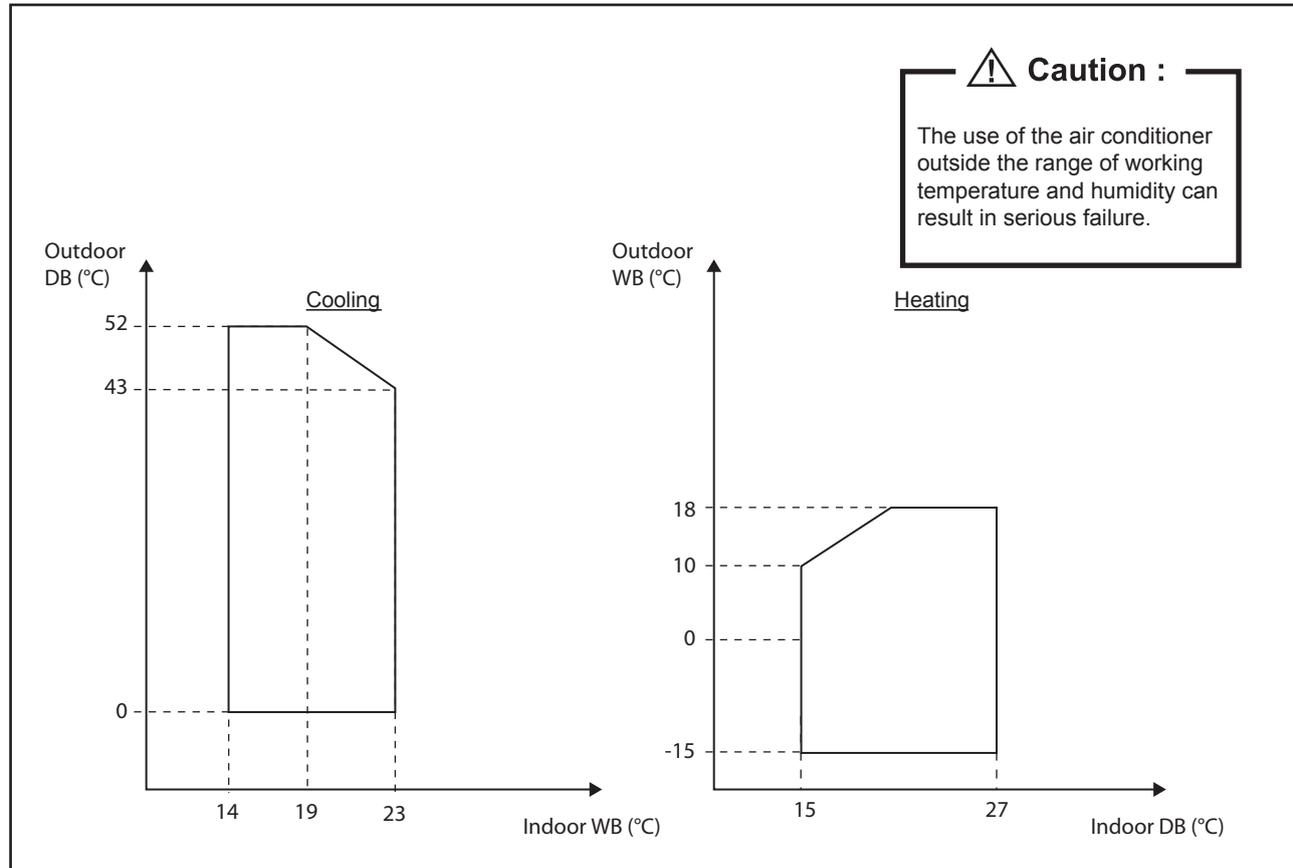
### 6. Filter

- Pre-filtration is used to prevent foreign objects, such as birds, stones, leaves from going into the unit.

# Application Information

## Operating Range

Ensure the operating temperature is within the allowable range, as stated in diagram below:



The applicable operating range for unit with economizer feature is the same as normal unit. However, the restriction of fresh air opening will occur in high ambient or low ambient in order to ensure the reliability of the unit.

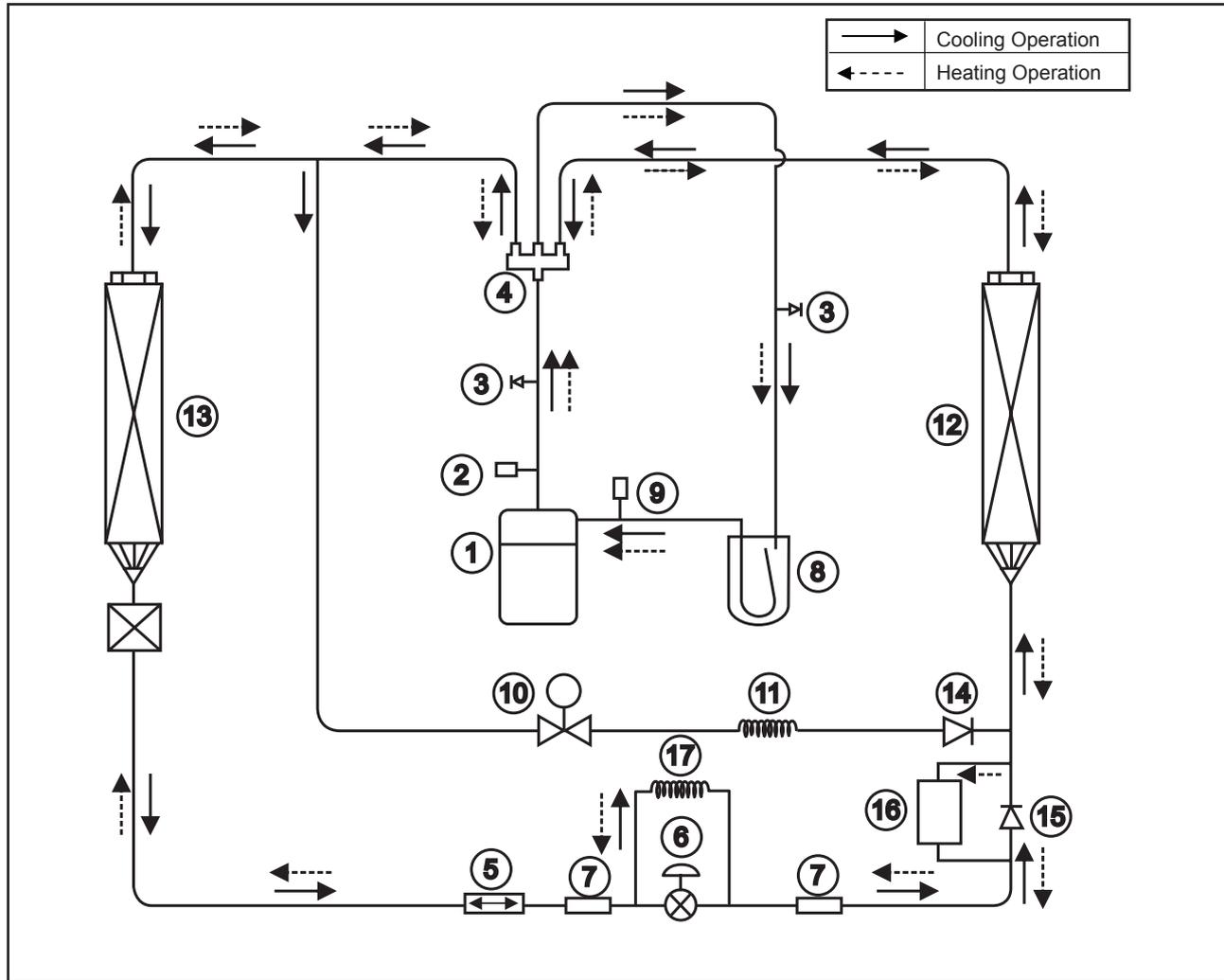
For high ambient in cooling operation, fresh air opening will be restricted at not more than 15%. When the outdoor DB temperature is more than 50°C, the fresh air opening will be closed to 0%.

For low ambient in heating operation, fresh air opening will be restricted at not more than 10% to avoid cold draft issue.

It is recommended to select an appropriate fresh air opening by considering the whole operating range of the air-conditioner unit in both cooling and heating operation.

## Refrigerant Circuit Diagrams

Model : UATYQ250/350/450/550/600/700



Item	Part's Model/Part No/Size
1	Compressor
2	High Pressure Switch
3	Access Valve
4	4 - Ways Valve
5	Filter Drier
6	Electronic Expansion Valve
7	Strainer
8	Accumulator
9	Low Pressure Switch
10	Solenoid Valve
11	Bypass Capillary Tube
12	Indoor Heat Exchanger
13	Outdoor Heat Exchanger
14	Check Valve 1
15	Check Valve 2
16	Compensator
17	Capillary Tube

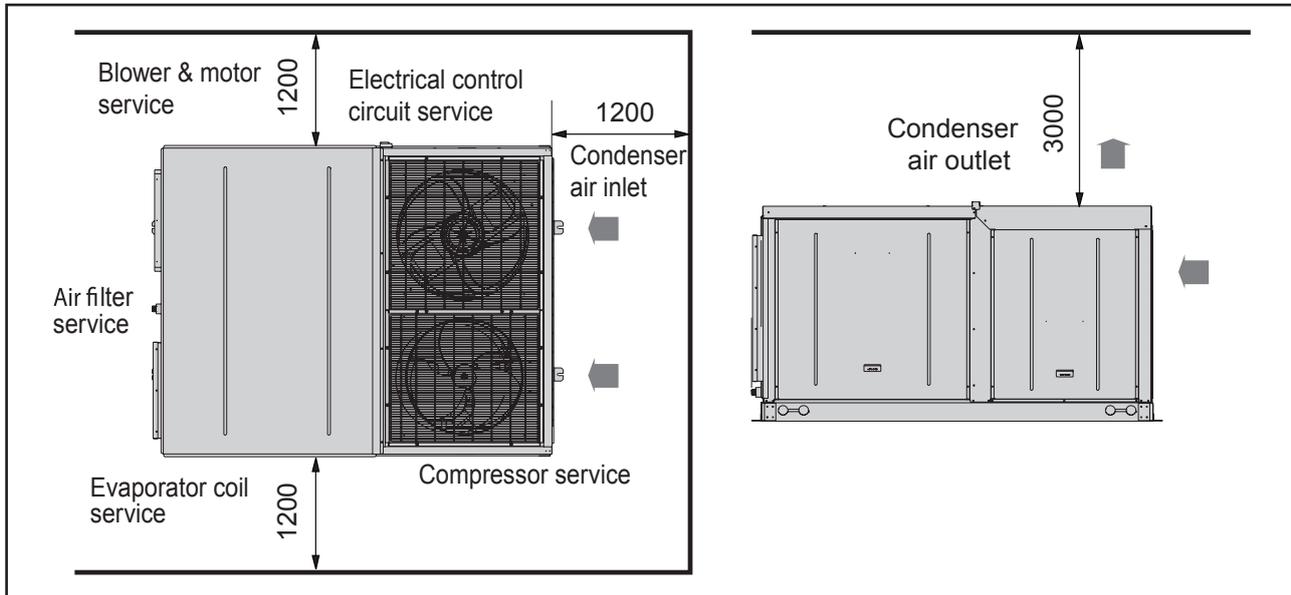
Note : (a) UATYQ350/450/550/600/700 consists of 2 circuits in the system.  
 (b) Item no. 15 & 16 are applicable for UATYQ350 only.  
 (c) Item no. 17 are applicable for UATYQ700 only.

## Installation

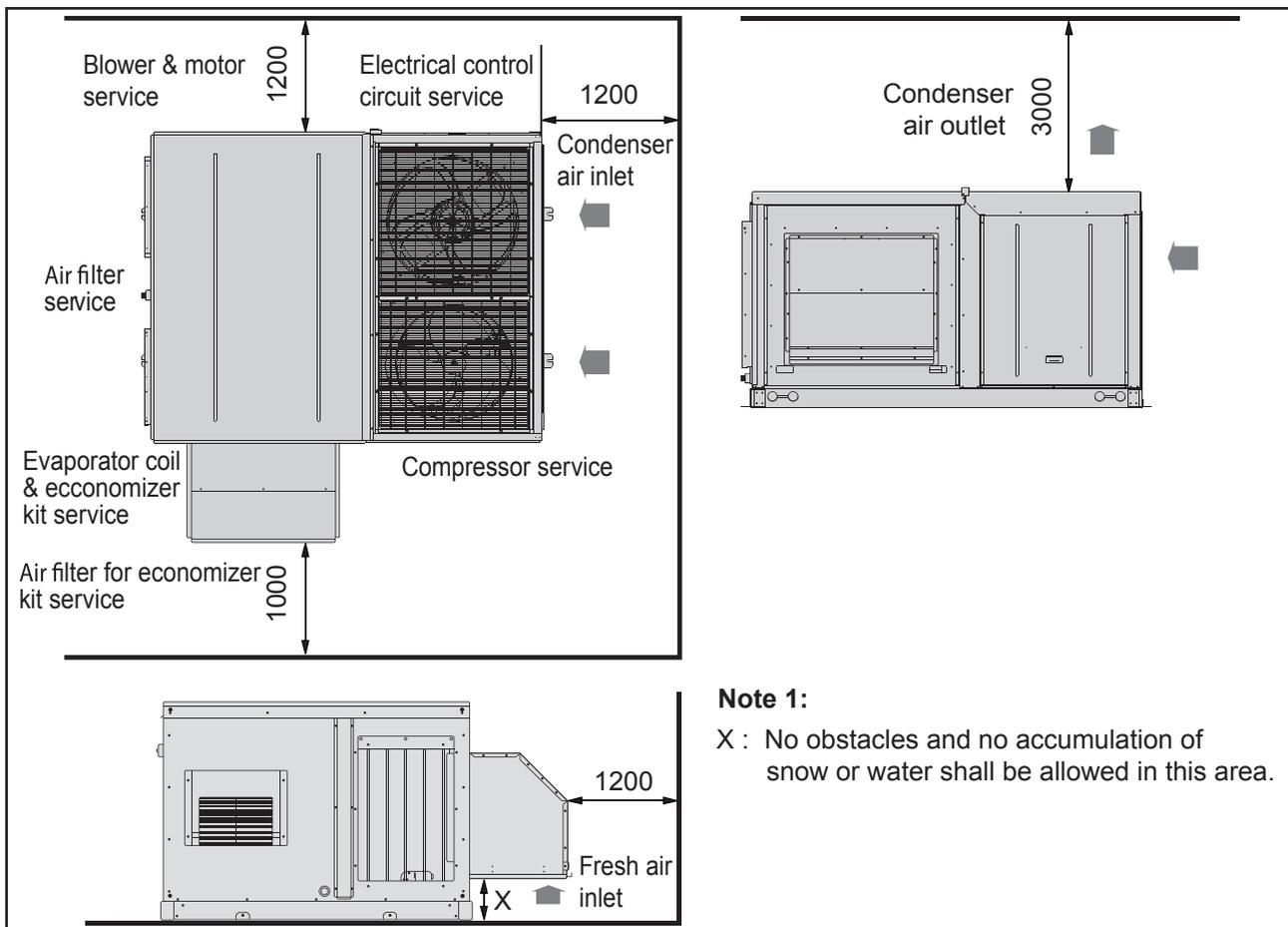
### Installation clearance

Refer diagram below for the space required around the unit. Note that:

- All dimensions shown are in mm.
- All space value shown are minimum clearance required for the unit.
- Unit shown in the diagram is UATYQ250. Other models shall follow the same clearance.



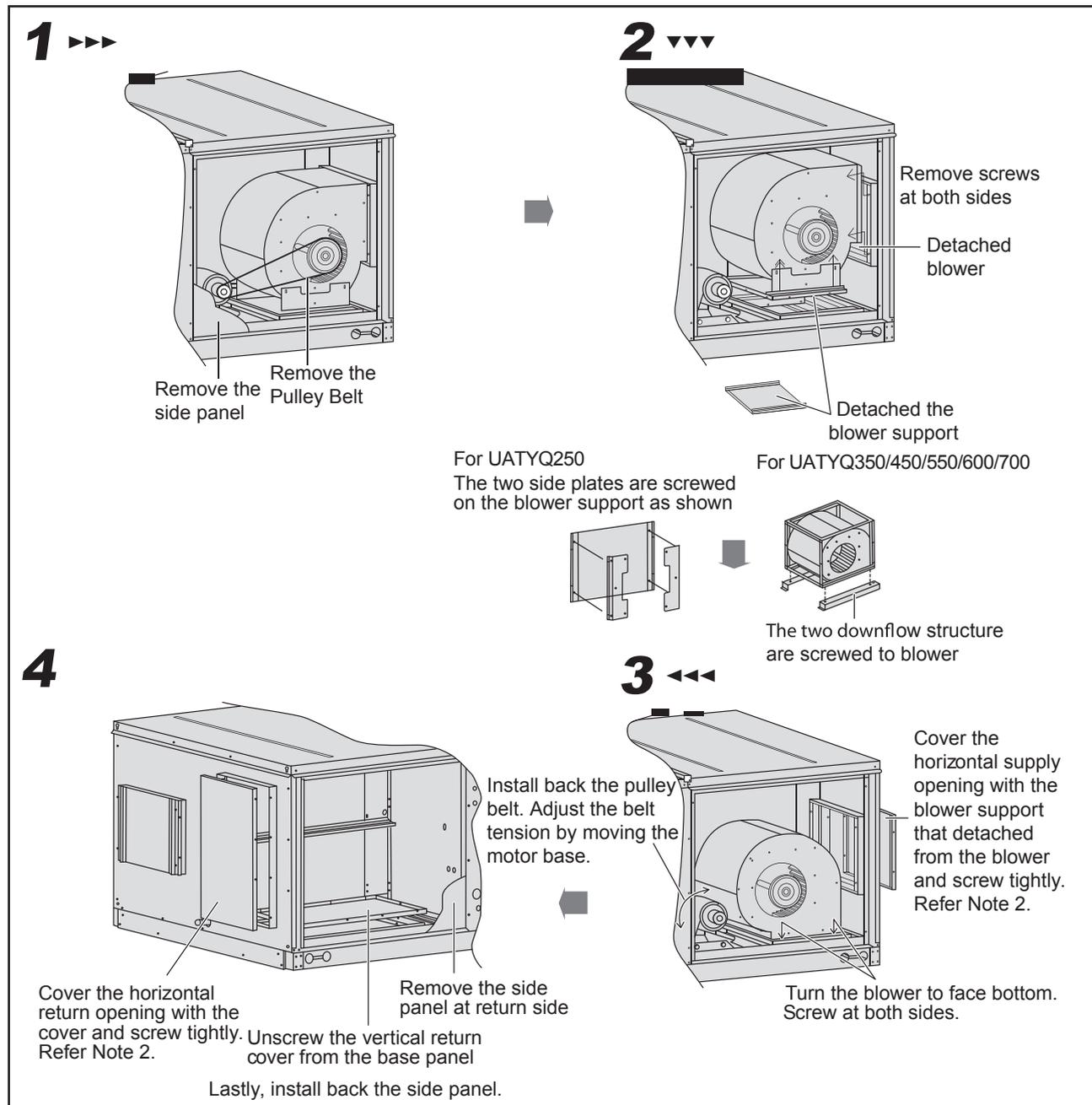
Additional space or clearance is required when economizer kit is installed. Whenever the unit is equipped with economizer kit, the space required around the unit with economizer kit shall follow the diagram below:-



### Unit Conversion

In the case of converting standard unit to downthrow unit, follow the steps as stated below:

#### UATYQ250/350/450/550/600/700



Install back the pulley belt. Adjust the belt tension. Lastly, install back the side panel. Refer Note 1.

**Note 1**

For downthrow conversion, belt length need to be changed.

For unit with standard pulley, belt length = a mm

Shaft to shaft distance for downthrow, C-C = b mm

	UATYQ250	UATYQ350	UATYQ450	UATYQ550	UATYQ600	UATYQ700
a	1382	1357	1250	1382	1382	1382
b	375	388	375	445	445	435

**Note 2**

Sealant such like gasket (field supply) shall be placed in between the metal cover and flange. Besides that, weather-proof silicone shall be applied on all the joints, screw holes and gaps to ensure water-tight condition.

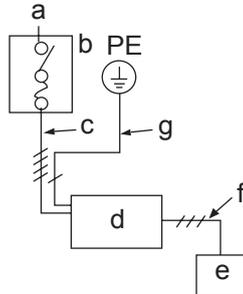
**Wire Connection**

- All electrical work must be carried out by qualified electrician and in accordance with local power supply requirement and associate regulation.

**Method for connecting electric wire**

Before connecting the wire, consult the electric power company of jurisdiction.

(1) The entire wiring diagram of unit



a	Power supply	d	Unit
b	Main switch/fuse (field supply)	e	Remote control
c	Power supply wiring for unit	f	Connection wiring for unit & remote controller
		g	Earth

(2) Wiring connection to unit

Route the power supply wires and control wire through the knockout holes in the unit.

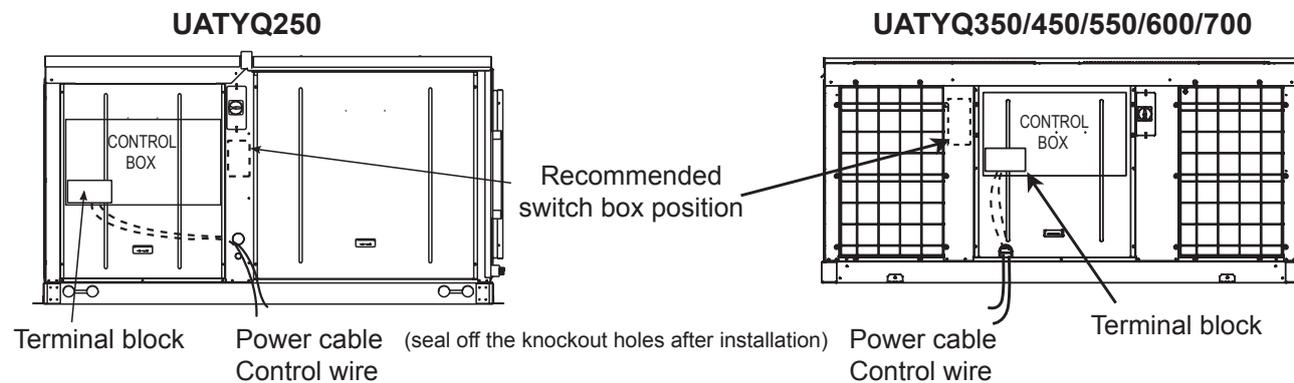
Remove the service panels and connect the units power supply wires to terminal block inside the control box, as shown.

**Note:**

While installing the circuit breaker onto the unit, make sure that the screws do not damage the components (e.g. coil) inside the unit.

The switch box also can be installed without attaching to the unit.

The knockout holes are only in UATYQ250; UATYQ350; UATYQ450; UATYQ550; UATYQ600; UATYQ700 comes with a power cable hole.



**Wiring Example And Selection Of Circuit Breaker**

Model	Power cable (mm <sup>2</sup> )	Breaker capacity (A)	Over current protection switch (A)	Earth cable (mm <sup>2</sup> )
UATYQ250	4	32	32	4
UATYQ350	6	40	40	6
UATYQ450	10	40	40	10
UATYQ550	10	50	50	10
UATYQ600	16	63	63	16
UATYQ700	25	80	80	25

## Application Information

### Note:

A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in fixed wiring in accordance with local and national legislation.

- The unit is to be wired directly from an electrical distribution board either by a circuit breaker (preferred) or HRC fuse.
- Fix the power supply wiring to terminal block. Connect control wiring to control terminal block through the control box's hole.
- Earth wiring must be connected.
- The power supply cord must be equivalent to H05VV-F (60227 IEC 52 or 60227 IEC 53) which is the minimum requirement, and to be used in protective tube.

### Warning

- Before working in this unit, isolate it from the power supply.
- Electrical wiring to this unit and the remote controller shall be installed in accordance with the appropriate requirement of the local wiring code.

Observe the notes mentioned below when wiring to the terminal block. Precautions to be taken for power supply wiring. (Use a round crimp-style terminal for connection to the terminal block. In case it cannot be used due to unavoidable reasons, be sure to observe the following instruction.)

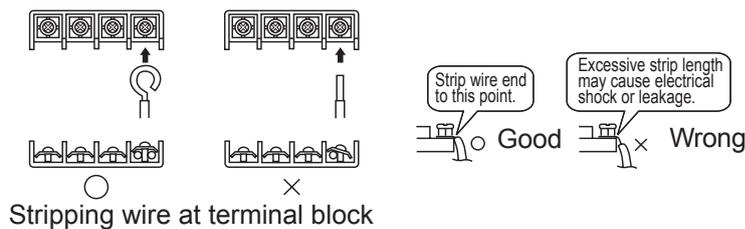
Round crimp-style terminal



Stranded wire

### Caution

When connecting the connection wires to the terminal block using a single core wire, be sure to perform curling. Problems with the work may cause heat and fires.



- Pull the wire and make sure that it does not disconnect. Then fix the wire in place with a wire stop.

### Control Operation Guide

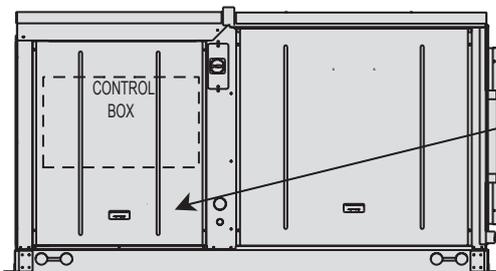
The unit is equipped with a controller main board, and a wired remote controller is connected to the controller main board.

All the setting in the unit is preset by the manufacturer. It is not recommended to change the setting unless necessary or mentioned below.

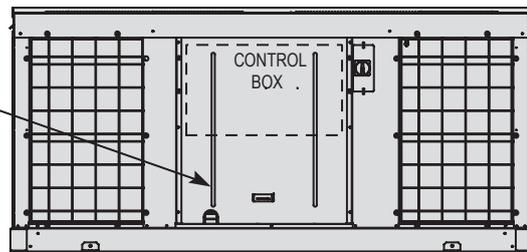
#### a) Remote Controller Location

The remote controller is located on a metal bracket behind the service panel. It is packed together with installation manual.

UATYQ250



UATYQ350/450/550/600/700



Remove panel

b) LED Display (Controller Main Board)

The LED will blink when power up the unit.

c) LCD Display (Remote Controller)

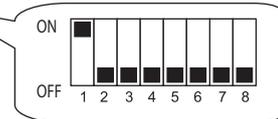
During normal operations, the LCD displays compressor on/off status, mode, set temperature and so on. Refer to Operating Manual for the details of operation guide. The LCD will display the main screen upon power-up. When malfunctioning occur, a pop-up message will appear on the LCD with backlight blinking and 'beep' sound.

d) Optional Configurations

The controller main board can be used as the interface for thermostat control and BMS system.

(i) Thermostat control (TB\_THM-I)

- To use this control, set Dip Switch Setting: SW1-ON (default is OFF).
- Follow the method below for thermostat control inputs:



G	Y1	Y2	W1	W2	Mode	Operation
0	0	0	0	0	-	Unit off
1	0	0	0	0	Cool	Indoor fan on
X	1	0	X	X	Cool	1 stage compressor
X	1	1	X	X	Cool	2 stage compressor
X	0	X	1	0	Heatpump/Heater	1 stage compressor
X	0	X	1	1	Heatpump/Heater	2 stage compressor

Remark: X = Don't care.

- Refer table below for installation recommendations:

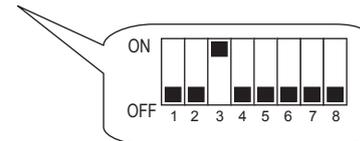
Input	Rated voltage	Rated current	Wire size
G	24V AC	5mA	AWG18~22
Y1			
Y2			
W1			
W2			

Note:

- When the controller main board is configured as thermostat control, the remote controller is used for monitoring purpose only.
- Unit needs to be restarted (power off and on) whenever dip switch setting is changed.

(ii) BMS control (TB\_BMS-I)

- To use this control, set Dip Switch Setting: SW3-ON (default is OFF) and panel parameter G8 to '1' (default is '0').



Note:

- G8 = Control Type  
0 = Panel  
1 = BMS
- For TB\_BMS-I, there are 3 control inputs:  
unit on/off; operating mode (cool-0/heat-1); and set point (4~20mA).
- Refer table below for installation recommendations:

Input TB_BMS-I	Rated voltage	Rated current	Wire size
On/Off	24V AC	5mA	AWG18~22
Operating mode	24V AC	5mA	
Cool/Heat set point	-	4~20mA	

Note:

- When the controller main board is configured as BMS control, the remote controller is used for monitoring purpose only.
- Unit needs to be restarted (power off and on) whenever dip switch setting is changed.

(iii) Dry contact output (TB\_BMS-O)

- For TB\_BMS-O, there are 4 monitoring outputs: error alarm; output1; output2; and defrost signal.
- Refer table below for installation recommendations:

Input TB_BMS-O	Rated voltage	Rated current (A)	Wire size
Alarm output (AL)	230V AC/125V AC/30V DC	1/3/3	AWG18~22
Output1 (O1)	230V AC/125V AC/30V DC	2/3/3	
Output2 (O2)	230V AC/125V AC/30V DC	3/3/3	
Defrost signal (DFRT)	230V AC/125V AC/30V DC	4/3/3	

- The output signals will vary depending on the configuration of controller main board, whether it is thermostat control or BMS control.

(1) For thermostat control, the outputs are summarized as below:

	Output 1*	Output 2*	Description of operation
<b>Output Status</b>	OFF	OFF	OFF mode
	OFF	ON	FAN mode
	ON	OFF	COOL mode
	ON	ON	HEAT mode

Output	Output status	Description of operation
Defrost	ON	System defrosting
	OFF	Normal
Alarm	ON	Alarm occurred
	OFF	No alarm occurred

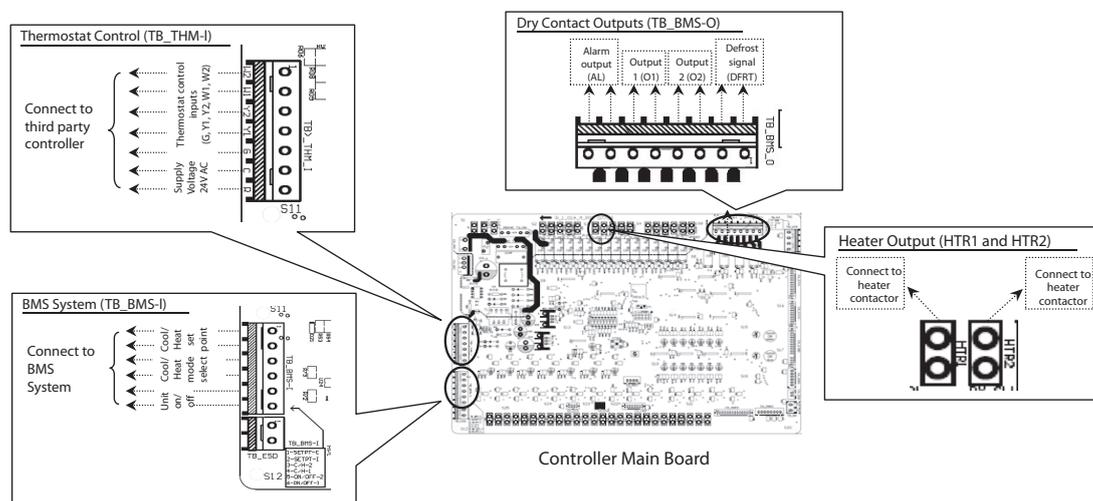
\* Output 1 = ON/OFF

\* Output 2 = COOL/HEAT

(2) For BMS control, the outputs are summarized as below:

Output	Output status	Description of operation
Output 1	ON	ON mode
	OFF	OFF mode
Output 2	ON	HEAT mode
	OFF	COOL mode
Defrost	ON	System defrosting
	OFF	Normal
Alarm	ON	Alarm occurred
	OFF	No alarm occurred

The diagram below shows the position for terminal blocks in the controller main board which are used for thermostat control and BMS system. Beside that, the output pins for auxilliary electrical heater are shown as well.



## (iv) Auxilliary Electrical Heater Output (HTR1 and HTR2)

- There are two output pins (HTR1 and HTR2) on controller main board, which are used to energize the heater contactor. The contactor must be selected accordingly to avoid any safety issue(s).
- The heater shall be installed in accordance with local and national legislation. It must comply with EN60335-2-40.
- Thermal fuse(s) shall be installed on the heater to eliminate any danger or damage on the heater/unit. This is especially critical when there is any malfunction happen to controller main board or blower.
- The heater shall be in a safe location, whereby no risk of damage could be happen on the unit.
- Use non-flammable duct for the unit that is installed with heater.
- Use different power supply for electrical heater and install a circuit breaker for each of the heater.
- Maximum temperature in the unit must not exceed 60°C. Temperature measurement shall be taken during the installation or commisioning in order to ensure the temperature does not exceed this value.
- Select the proper safety device or thermal protector accordingly.
- The heater shall never be installed inside the unit. The recommended location for the heater is inside the supply duct, whereby the distance of the heater is sufficient to ensure the temperature inside the unit does not exceed 60°C.

## (v) Economizer Control

- Ensure the economizer kit has been incorporated with rooftop unit before activate the economizer function in the controller main board. Else, error will occur.
- To activate economizer function, set Dip Switch Setting: SW4-ON (default is OFF) in the controller main board and panel parameter G6 to '1' (default is '0').

**Note:**

- G8 = Control Type
- 0 = Panel
- 1 = BMS



- In economizer controller board, there are 4 dip switches and 3 shunt jumpers which provide flexible selection based on different requirements:
  - Dip Switch 1: Minimum fresh air opening setting in heating mode, whereby the selection of different pins will give different opening setting. SW1: 5%, SW2: 10%, SW3: 15%, SW4: 20%, SW5: 25%, SW6/7/8: no function, Default: 0% (no selection, all OFF).
  - Dip Switch 2: Minimum fresh air opening setting in cooling mode, whereby the selection of different pins will give different opening setting. SW1: 0%, SW2: 5%, SW3: 15%, SW4: 20%, SW5: 25%, SW6/7/8: no function, Default: 10% (no selection, all OFF).
  - Dip Switch 3: CO2 PPM level threshold value selection, whereby the selection of different pins will give different value setting. SW1: 25%, SW2: 50%, SW3: 75%, SW4: 100%, Default: 0% (no selection, all OFF).
  - Dip Switch 4: Type of operation, which include the following selection:-
    - SW1: OFF = Differential temperature operation (default), ON = No function at this moment.
    - SW2: OFF = Economizer mode (default), ON = Fresh air mode.
    - SW3: OFF = Overcooled protection is not activated (default), ON = Overcooled protection is activated.

Shunt jumper 1, 2 and 3: Minimum fresh air opening setting in fan mode, whereby the selection of different pins will give different opening setting. Given the name of shunt jumper 1 = JP1, shunt jumper 2 = JP2 and shunt jumper 3 = JP3; refer the table below for different fresh air opening selection:-

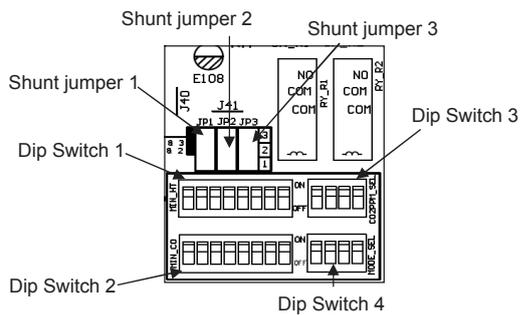
Fresh air opening (%)	JP1	JP2	JP3
0 (default)	OFF	OFF	OFF
10	OFF	OFF	ON
20	OFF	ON	OFF
30	OFF	ON	ON
40	ON	OFF	OFF
50	ON	OFF	ON
70	ON	ON	OFF
85	ON	ON	ON

Legend: OFF = Short pin 2 and pin 3  
ON = Short pin 1 and pin 2

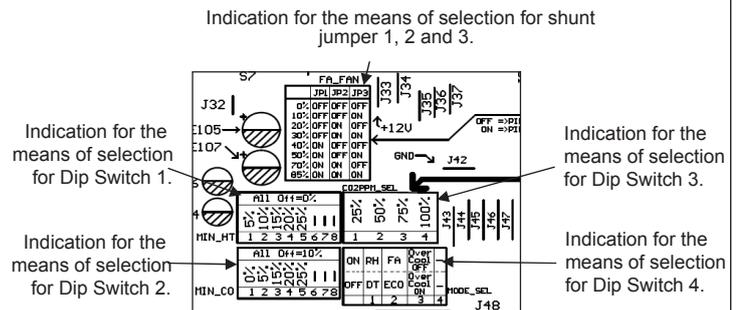
**Caution**

- Dip Switch 1, 2 and 3 allow only 1 pin selection. Multiple pins selection will cause error and the operation will go back to default setting. While Dip Switch 4 allow multiple pins selection.

Location of dip switches and shunt jumpers in the economizer controller board:



Indication on the economizer controller board:



# Sound Data

## Sound Pressure Level

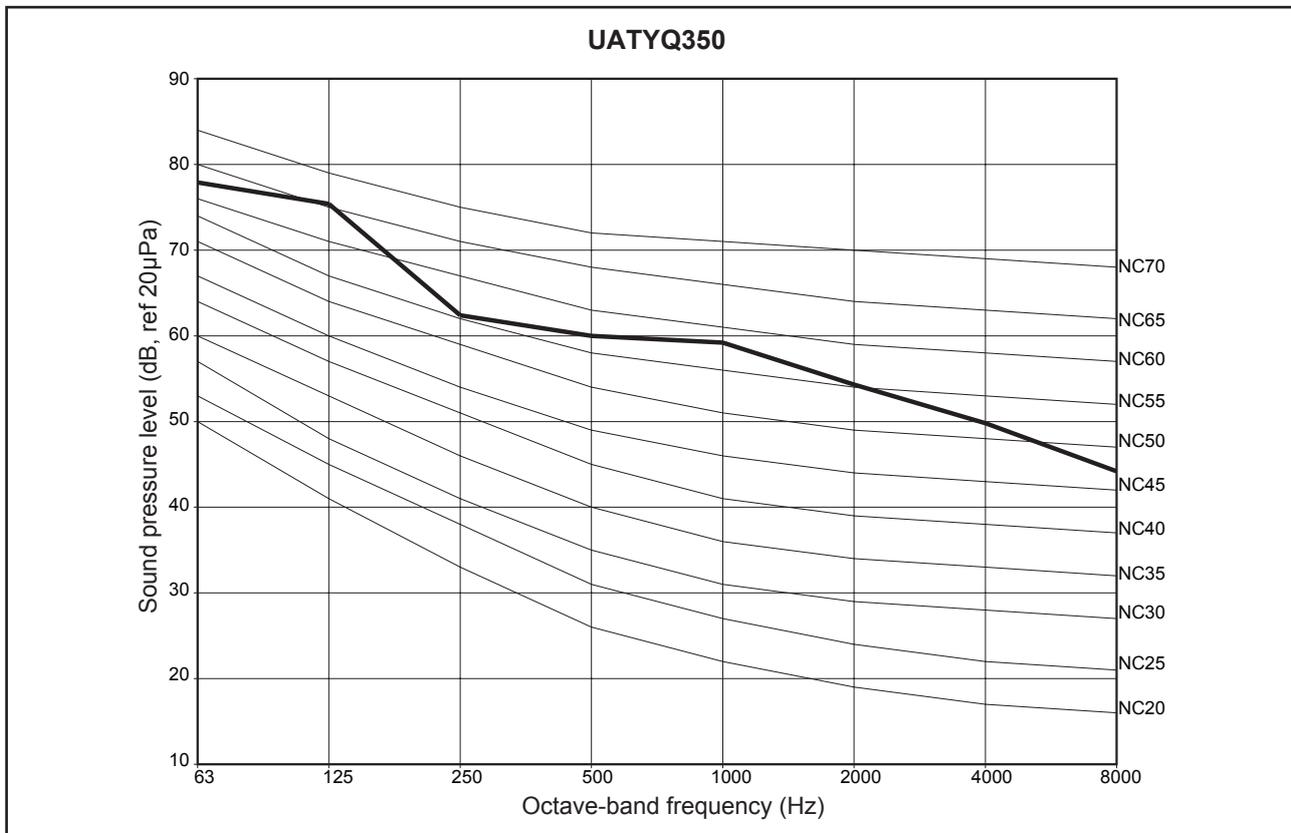
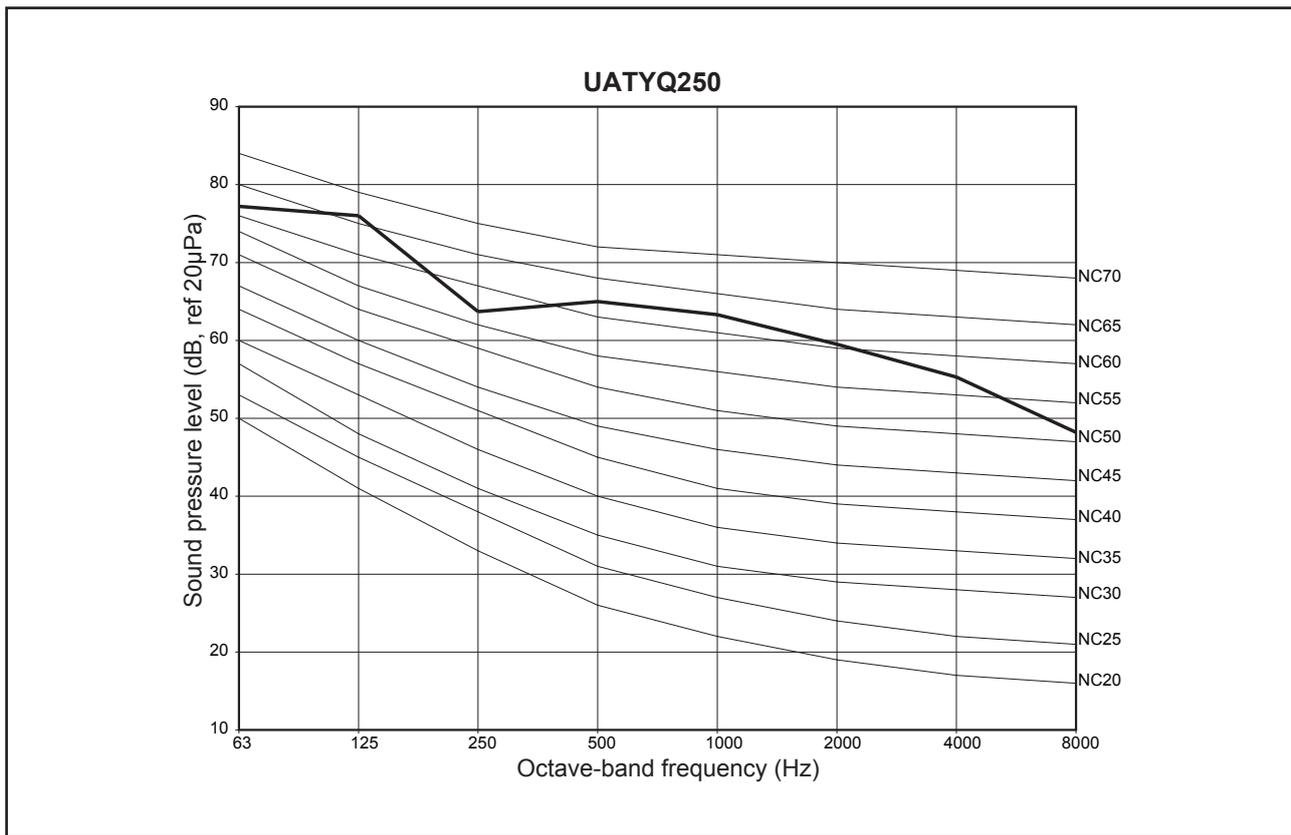
Model	1/1 Octave Sound Pressure (dB, ref 20 $\mu$ Pa)								Overall (dBA)	Noise Criteria
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz		
UATYQ250	77	76	64	65	63	60	55	48	68	66
UATYQ350	78	75	62	60	59	54	50	44	64	65
UATYQ450	77	74	61	60	61	54	52	45	65	63
UATYQ550	78	82	66	63	63	56	51	45	68	73
UATYQ600	85	76	69	66	65	61	53	46	70	66
UATYQ700	83	74	70	66	65	62	56	47	70	68

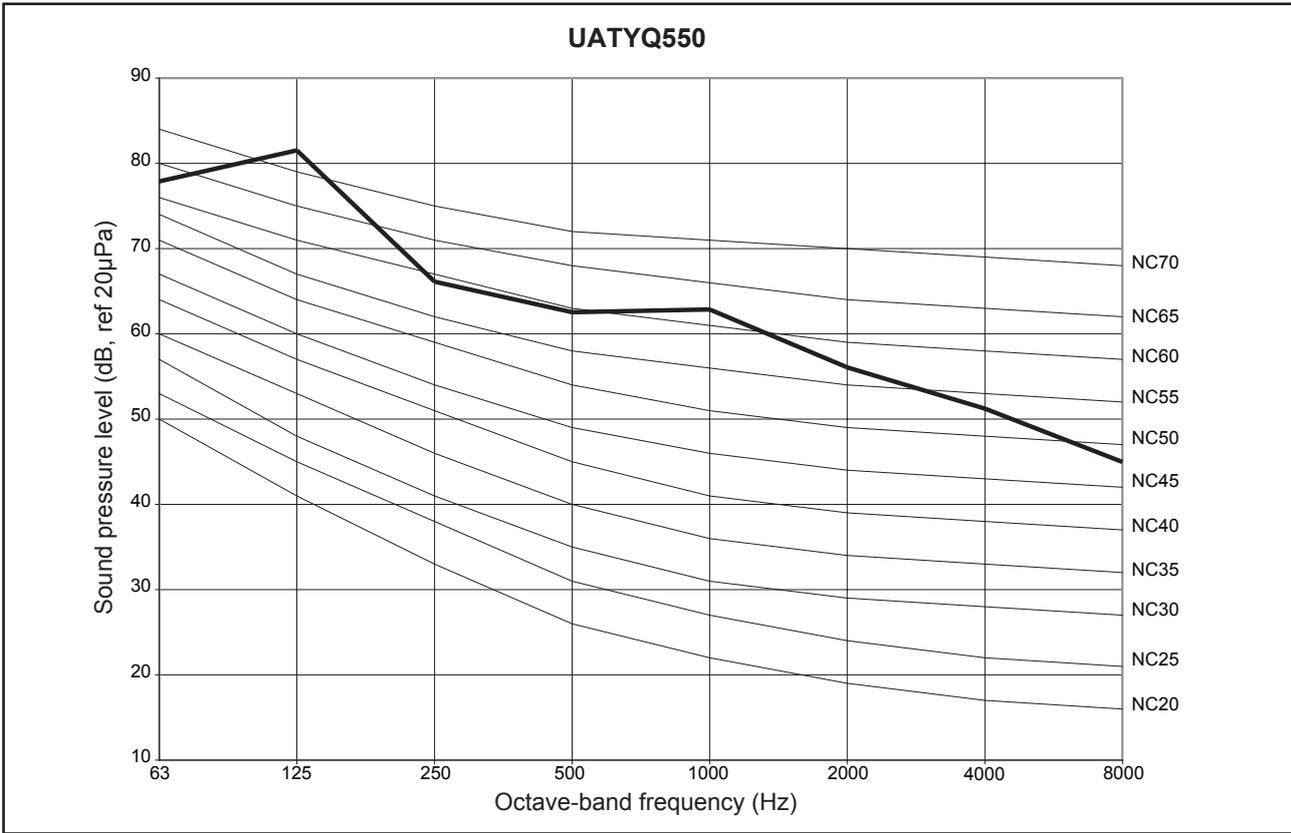
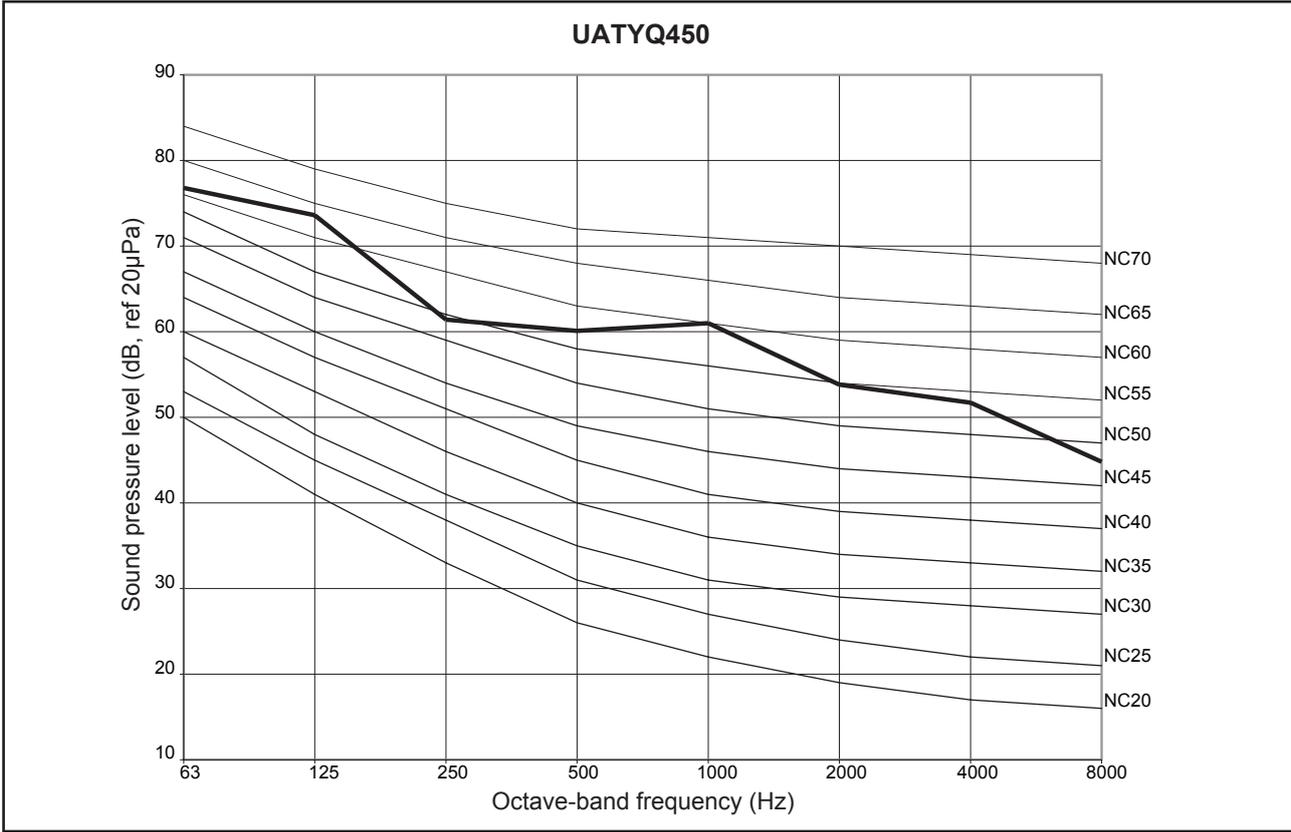
## Sound Power Level

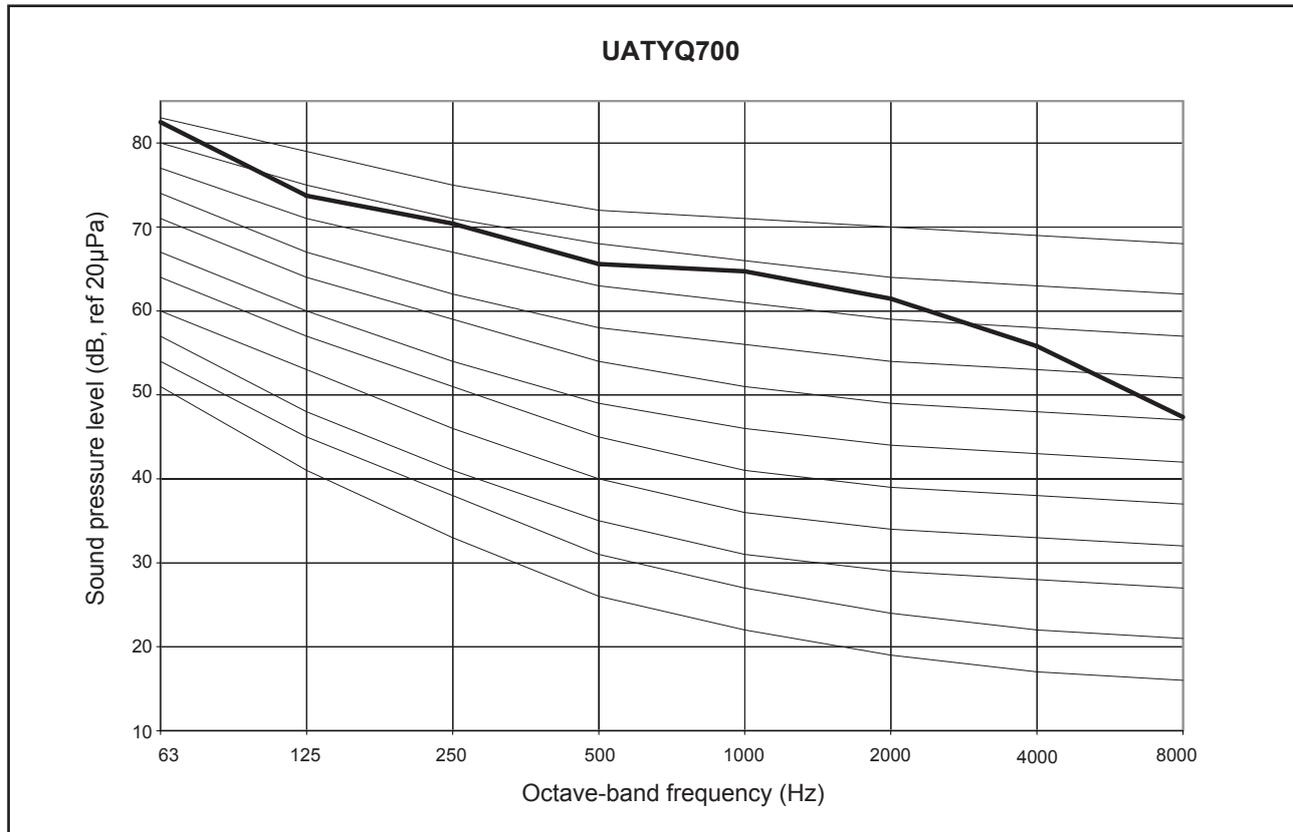
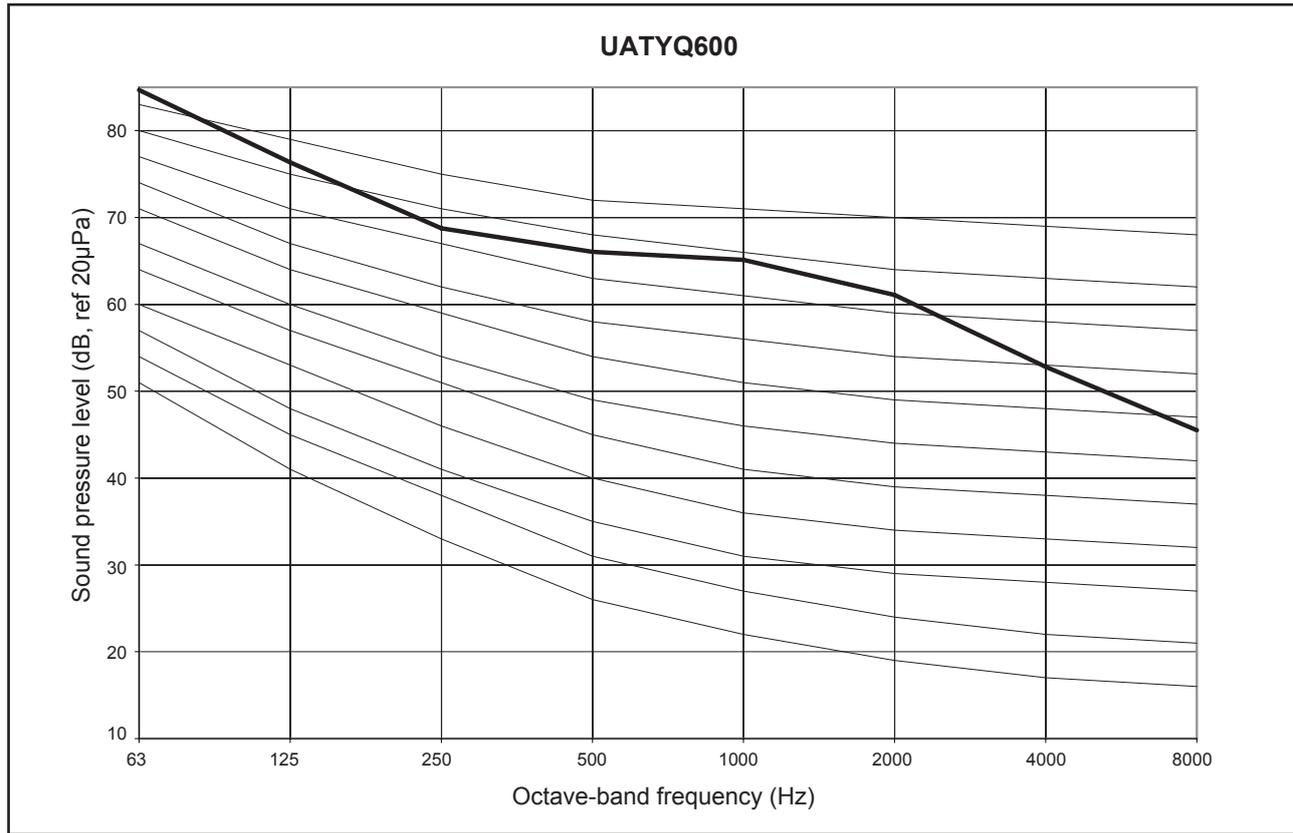
Model	1/1 Octave Sound Power Level (dB, ref 1pW)								Overall (dBA)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
UATYQ250	91	91	79	78	78	72	68	61	82
UATYQ350	96	91	79	78	80	72	70	64	83
UATYQ450	93	90	79	78	80	73	71	64	83
UATYQ550	95	96	83	82	84	78	73	66	87
UATYQ600	101	94	87	85	87	81	76	69	90
UATYQ700	99	91	88	85	86	83	77	69	90

Note:- Microphone position: 1m away from every side of the unit and 1m above floor level.

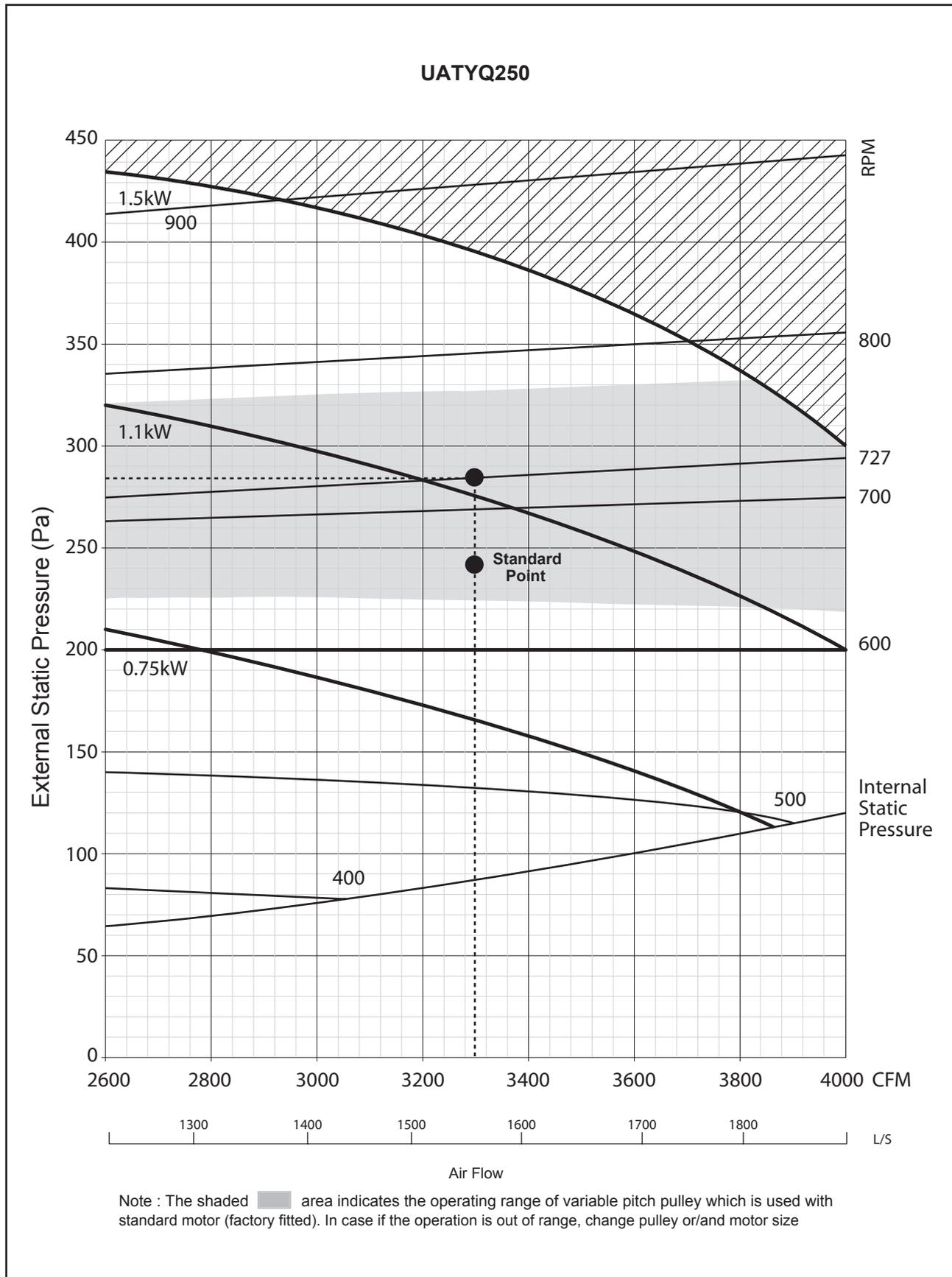
NC Curve







# Selection Process



**Example for selection process:**

The following data are the rated design points for model R410A rooftop UATYQ250:

Airflow Rate = 3300 cfm

External Static Pressure (ESP) = 150Pa

Blower RPM = 657

To increase the ESP to 200Pa, but maintain the airflow rate at 3300cfm, please follow the steps below:

**Step 1: Selection of new desired point.**

From the blower curve, select the point that can meet both of the requirements.

(ESP = 200Pa and airflow rate = 3300cfm).

**Step 2: Read RPM value from the blower curve.**

Next, refer to the RPM value in the blower curve which is corresponding to this point.

For instance, from the blower curve on the right, RPM which is corresponding to this point = 727.

**Step 3: Read power consumption value for indoor fan motor.**

Then, use this RPM value to estimate the power consumption of indoor fan motor by referring to the table of 'Motor Variable Pitch Pulley Data'. For instance, from the table, indoor fan motor with 727RPM consumes 1000W.

**Step 4: Read number of turns for variable pitch pulley.**

Similarly, use this RPM value to read the no. of turns (N) by referring to the table of 'Motor Variable Pitch Pulley Data'. The variable pitch pulley for motor shall be adjusted to this 'N' in order to achieve the desired point

(ESP = 200Pa and airflow rate = 3300cfm). For instance, from the table, no. of turns (N) = 1.5 in order to get 727RPM. First, adjust the motor pulley to 0 turns. Then, makes 1 and half turns on the pulley. Cross check the dimension 'X', which stands for regulation space of motor pulley. In this case, X = 3.5mm.

### Motor Variable Pitch Pulley Data:

Date is provided according to factory fitted standard motor and blower. The range of airflow & ESP must be worked within blower curve boundary.

External Static Pressure (ESP)		UATYQ250/350/450/550/600/700 = 100 Pa																
Models UATYQ	N	0	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4
	X	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
250	Fan Speed (RPM)	738	733	727	722	716	711	704	698	691	683	676	670	663	656	650	643	638
	Power Input (W)	2005	1950	1890	1830	1770	1715	1660	1605	1550	1490	1420	1350	1275	1205	1130	1060	990
350	Fan Speed (RPM)	760	754	748	741	735	728	721	713	706	699	691	684	676	668	660	652	645
	Power Input (W)	2690	2590	2495	2390	2295	2190	2095	2005	1905	1815	1725	1650	1575	1515	1455	1390	1350
450	Fan Speed (RPM)	820	815	810	805	800	793	787	780	773	765	758	750	742	734	726	718	710
	Power Input (W)	3775	3660	3545	3450	3350	3250	3140	3030	2920	2810	2700	2590	2480	2370	2275	2185	2100
550	Fan Speed (RPM)	890	882	873	864	855	846	837	828	820	811	802	793	784	775	766	757	748
	Power Input (W)	5450	5300	5150	5010	4870	4720	4580	4440	4300	4160	4010	3870	3720	3570	3410	3240	3070
600	Fan Speed (RPM)	889	880	871	862	853	844	835	826	818	810	802	794	786	778	770	762	754
	Power Input (W)	5570	5460	5320	5180	5040	4900	4760	4620	4500	4380	4260	4140	4020	3900	3780	3660	3540
700	Fan Speed (RPM)	1004	994	984	974	964	954	944	933.8	924	914	904	894	884	874	864	854	844
	Power Input (W)	9430	9155	8880	8605	8330	8055	7780	7505	7230	6955	6680	6405	6130	5855	5580	5305	5030

External Static Pressure (ESP)		UATYQ250/350/450/550/600/700 = 150 Pa																
Models UATYQ	N	0	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4
	X	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
250	Fan Speed (RPM)	750	744	738	733	727	721	714	708	701	693	686	678	671	664	657	650	643
	Power Input (W)	1790	1720	1645	1580	1510	1445	1375	1325	1270	1205	1130	1045	955	870	800	755	715
350	Fan Speed (RPM)	769	762	755	748	741	734	727	720	713	706	698	690	682	673	665	657	650
	Power Input (W)	2300	2205	2105	2000	1900	1800	1700	1610	1530	1460	1380	1300	1230	1160	1110	1060	1000
450	Fan Speed (RPM)	833	827	821	814	807	801	795	788	780	771	765	759	752	745	737	727	717
	Power Input (W)	3440	3330	3220	3110	3000	2890	2780	2670	2560	2450	2340	2230	2120	2020	1910	1830	1740
550	Fan Speed (RPM)	882	875	868	861	853	846	838	830	821	812	804	796	788	779	770	761	752
	Power Input (W)	5210	5050	4890	4720	4550	4400	4260	4100	3930	3770	3620	3480	3340	3190	3030	2890	2750
600	Fan Speed (RPM)	892	883	874	865	856	847	838	829	821	813	805	797	789	781	773	765	757
	Power Input (W)	5270	5160	5020	4880	4740	4600	4460	4320	4200	4080	3960	3840	3720	3600	3480	3360	3240
700	Fan Speed (RPM)	1008	998	988	978	968	958	948	938	928	918	908	898	888	878	868	858	848
	Power Input (W)	8910	8645	8380	8115	7850	7585	7320	7055	6790	6525	6260	5995	5730	5465	5200	4935	4670

External Static Pressure (ESP)		UATYQ250/350/450 = 200 Pa, UATYQ550/600/700 = 210 Pa																
Models UATYQ	N	0	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4
	X	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
250	Fan Speed (RPM)	763	757	751	744	738	733	727	721	715	708	700	693	685	677	669	661	653
	Power Input (W)	1370	1320	1265	1195	1130	1065	1000	950	905	850	790	725	650	605	555	510	460
350	Fan Speed (RPM)	776	769	762	755	748	741	733	726	718	711	703	695	687	679	671	663	655
	Power Input (W)	1910	1830	1740	1650	1560	1470	1390	1300	1210	1140	1055	985	920	850	790	740	690
450	Fan Speed (RPM)	842	836	830	823	817	811	805	796	788	781	773	764	755	746	738	731	723
	Power Input (W)	3080	2980	2890	2780	2670	2560	2450	2340	2230	2120	2020	1910	1820	1730	1620	1520	1420
550	Fan Speed (RPM)	889	882	875	868	861	853	845	837	828	819	810	801	792	783	774	765	757
	Power Input (W)	4670	4520	4370	4210	4060	3900	3750	3600	3430	3260	3090	2920	2750	2580	2470	2330	2230
600	Fan Speed (RPM)	896	887	880	873	864	855	846	837	828	819	811	802	793	784	778	768	759
	Power Input (W)	4950	4710	4570	4430	4290	4150	4010	3870	3870	3730	3590	3450	3310	3170	3030	2890	2750
700	Fan Speed (RPM)	1010	1000	990	980	970	960	950	940	930	920	910	900	890	880	870	860	850
	Power Input (W)	8180	7925	7670	7415	7160	6905	6650	6395	6140	5885	5630	5375	5120	4865	4610	4355	4100

## Selection Process

External Static Pressure (ESP)		250 Pa																
Models UATYQ	N	0	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4
	X	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
550	Fan Speed (RPM)	894	887	880	871	866	857	850	841	832	826	817	808	798	790	778	773	761
	Power Input (W)	4310	4120	4050	3890	3630	3560	3370	3220	3020	2930	2780	2730	2570	2370	2210	2030	1960
600	Fan Speed (RPM)	898	893	886	877	868	859	850	841	832	823	814	805	796	787	778	769	761
	Power Input (W)	4690	4550	4410	4270	4130	3990	3850	3690	3530	3370	3210	3050	2890	2730	2570	2410	2250
700	Fan Speed (RPM)	1013	1003	993	983	973	963	953	943	933	923	913	903	893	883	873	863	853
	Power Input (W)	7560	7315	7070	6825	6580	6335	6090	5845	5600	5355	5110	4865	4620	4375	4130	3885	3640

Legend: X: Regulation Space of Motor Pulley (mm)

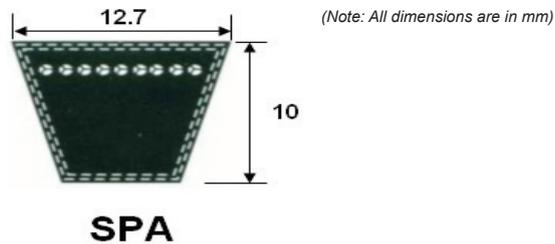
N: Number of Turns

ESP: External Static Pressure (Pa)

 : Factory Set Point

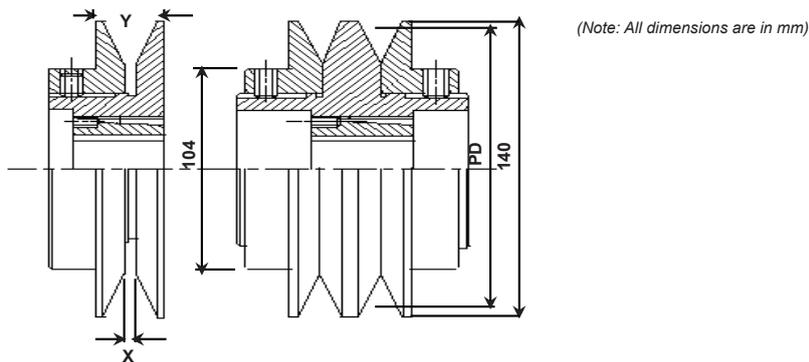
 : Data is out of blower curve (for reference only)

## V-Belt Dimensions



Models R410A Rooftop	Section	Top Width	Thickness	Angle (°)	V-belt length	Side flow	Down flow	Quantity (pcs)	
						Pulley center distance (mm)	V-belt length		Pulley center distance (mm)
						Nominal	Nominal		Nominal
UATYQ250	A	12.7	10	40	1657	510	1382	375	1
UATYQ350	A	12.7	10	40	1782	590	1357	388	1
UATYQ450	A	12.7	10	40	1657	515	1250	375	2
UATYQ550	A	12.7	10	40	1932	710	1382	445	2
UATYQ600	A	12.7	10	40	1957	710	1382	445	2
UATYQ700	A	12.7	10	40	1907	690	1382	435	2

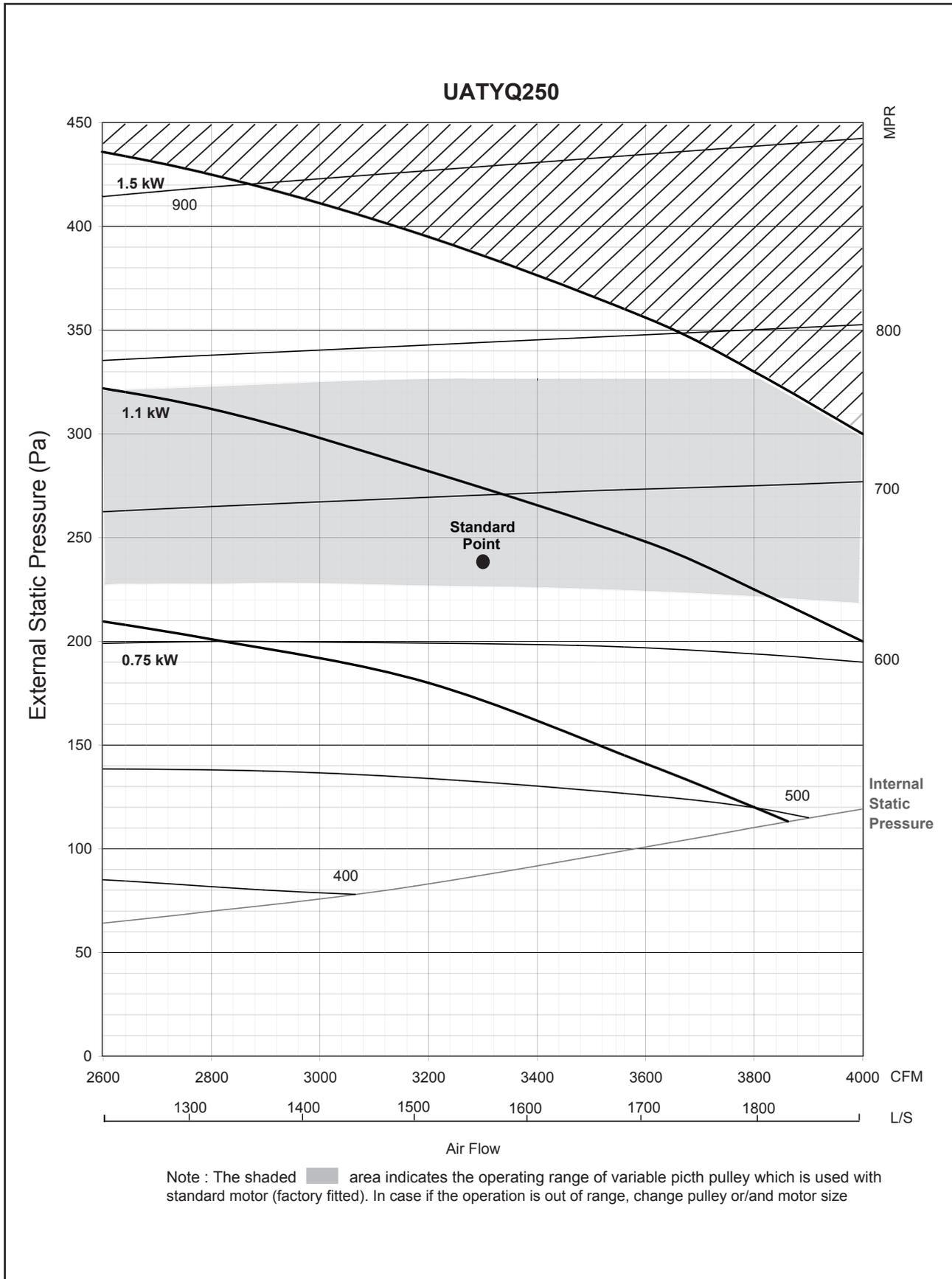
## Motor Pulley Dimensions



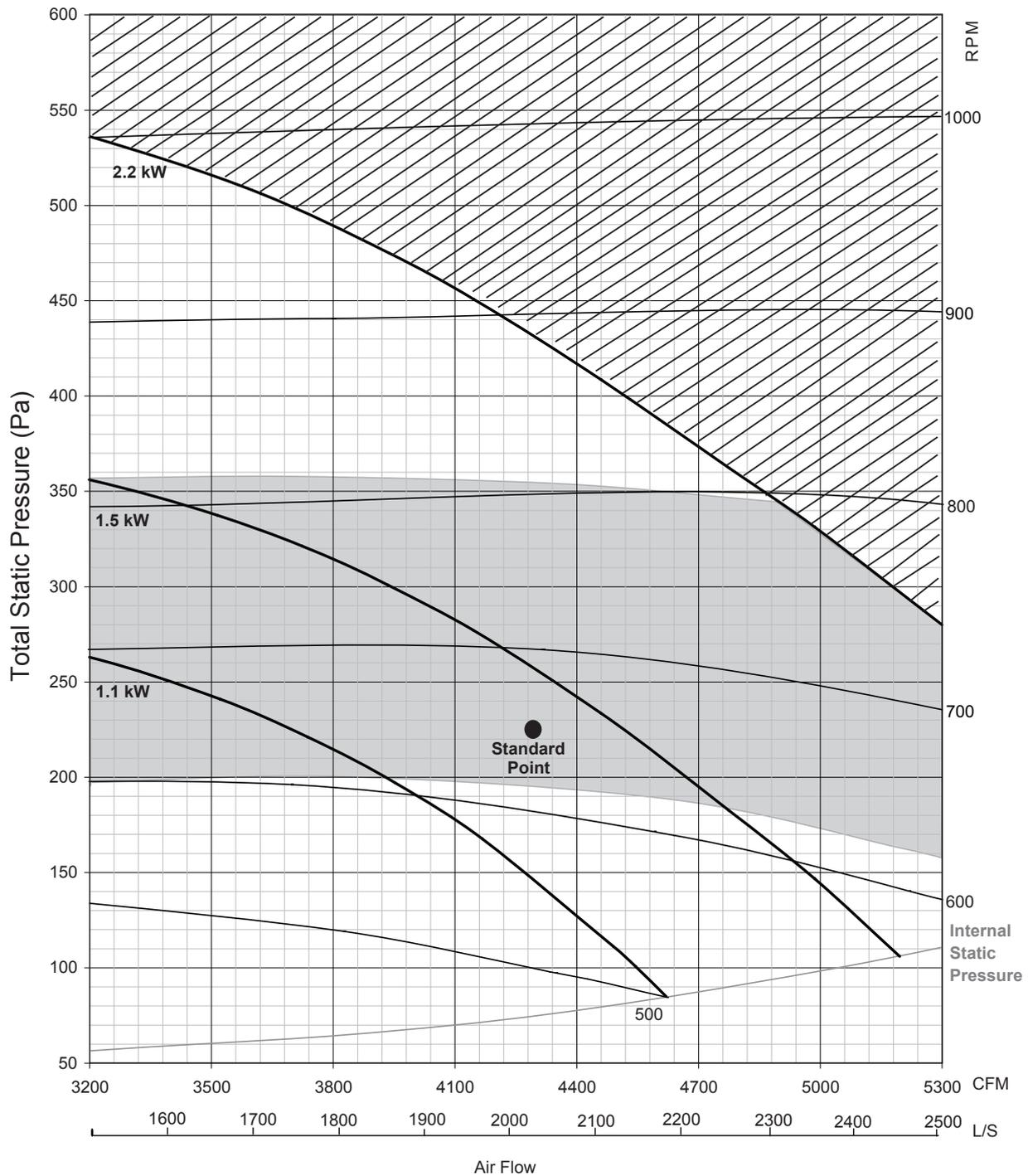
Models R410A Rooftop	Pulley Type	PD		Total Length	Quantity (pcs)
		Medium	Min - Max		
UATYQ250	VPT139A1	121	109 - 133	35	1
UATYQ350	VPT139A1	121	109 - 133	35	1
UATYQ450	VPT139A2	121	109 - 133	70	2
UATYQ550	VPT139A2	121	109 - 133	70	2
UATYQ600	VPT139A2	121	109 - 133	70	2
UATYQ700	VPT139A2	121	109 - 133	70	2

Legend: PD: Pitch Diameter of Motor Pulley (mm)

### Blower Curves

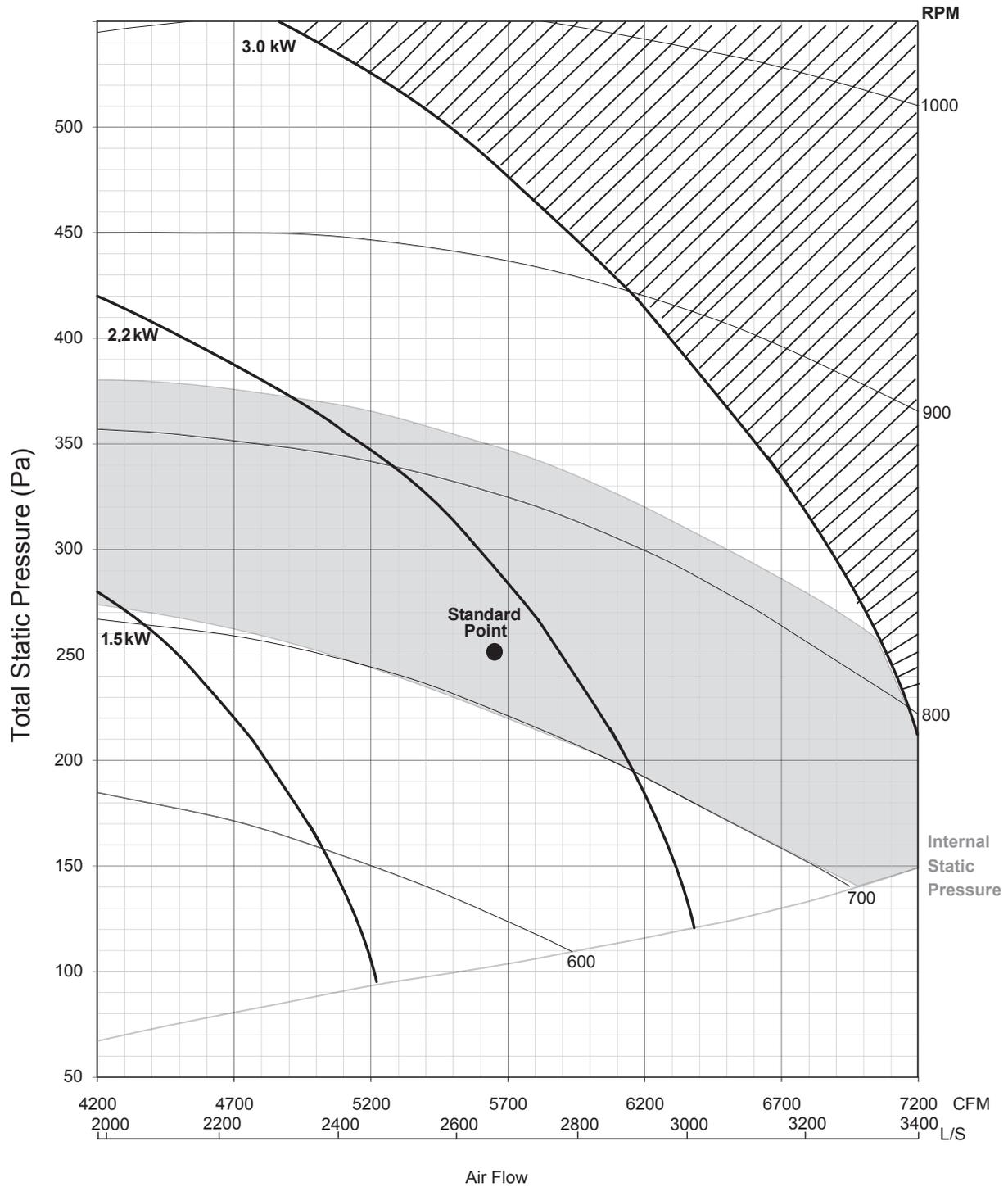


### UATYQ350

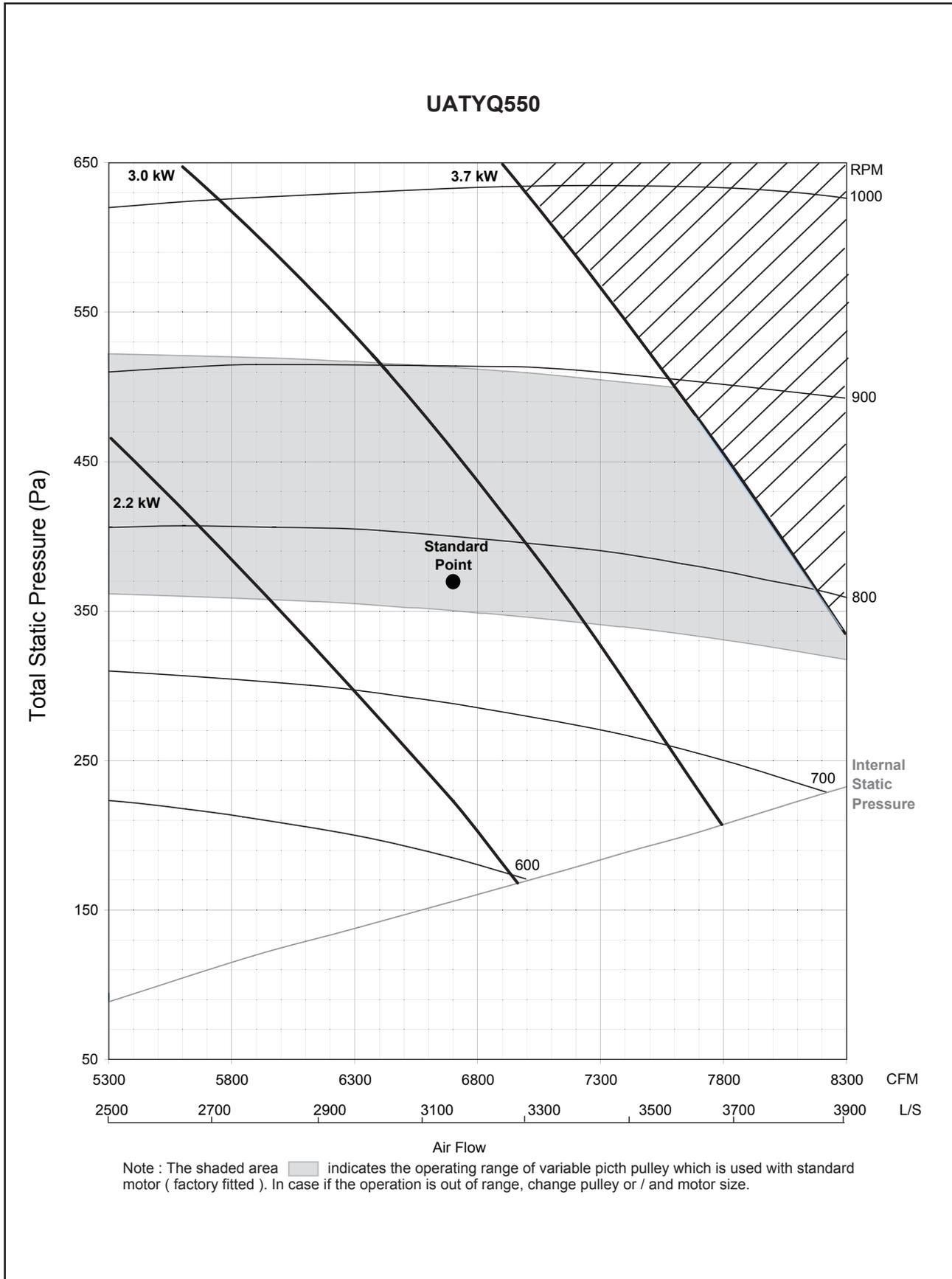


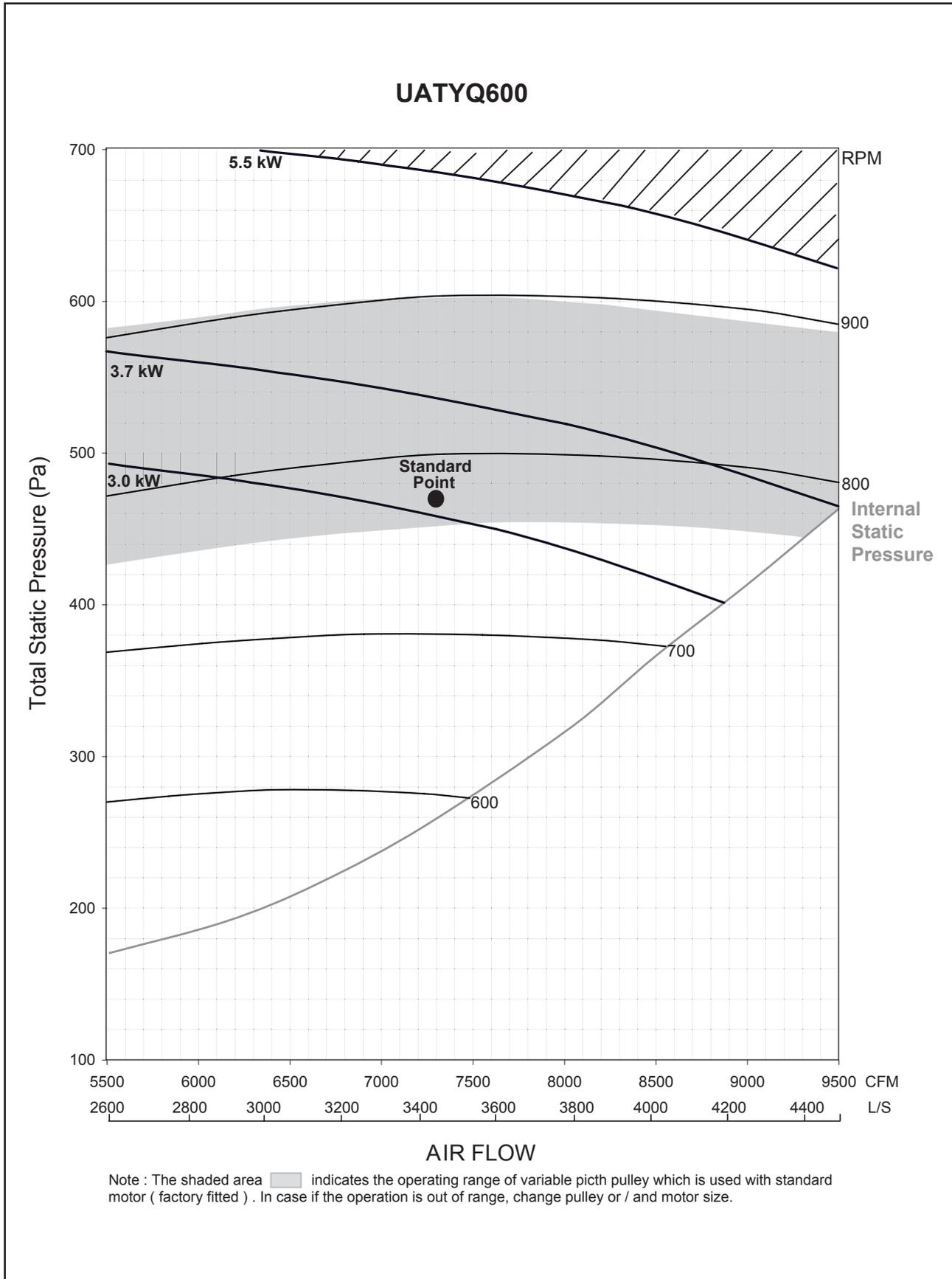
Note : The shaded area indicates the operating range of variable pitch pulley which is used with standard motor ( factory fitted ) . In case if the operation is out of range, change pulley or / and motor size.

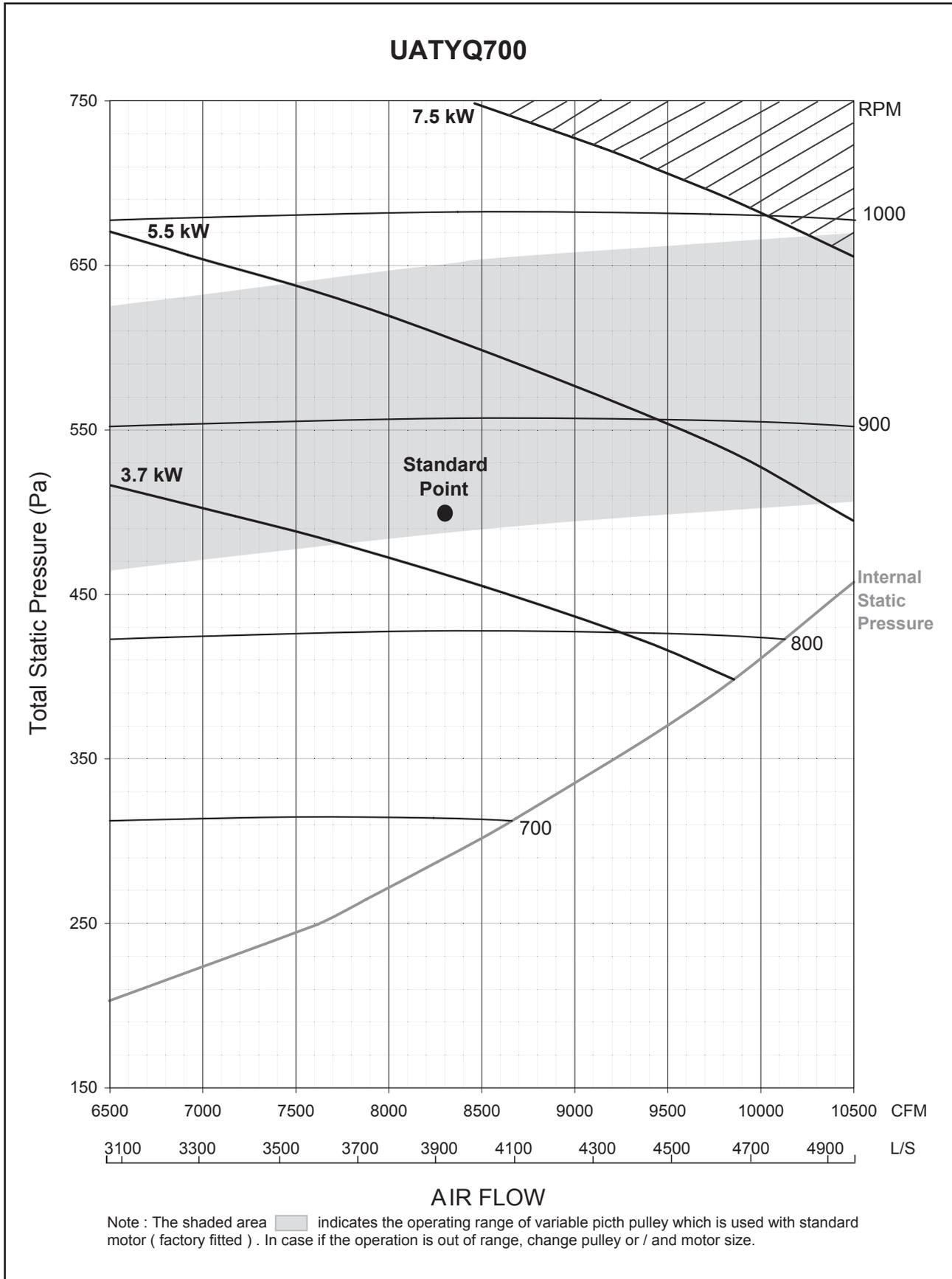
### UATYQ450



Note : The shaded area indicates the operating range of variable pitch pulley which is used with standard motor ( factory fitted ). In case if the operation is out of range, change pulley or / and motor size.







# Engineering & Physical Data

## Engineering Data - Heatpump (R410A)

MODEL		UATYQ250	UATYQ350	UATYQ450		
NOMINAL COOLING CAPACITY	Btu/h	93300	121400	152600		
	W	27340	35580	44720		
NOMINAL HEATING CAPACITY	Btu/h	85000	118700	142600		
	W	24910	34790	41790		
NOMINAL TOTAL INPUT POWER (COOLING)	W	8140	10780	13040		
NOMINAL TOTAL INPUT POWER (HEATING)	W	7330	10840	12860		
NOMINAL RUNNING CURRENT (COOLING)	A	14.70	19.50	23.80		
NOMINAL RUNNING CURRENT (HEATING)	A	14.10	19.80	24.40		
EER	W/W	3.36	3.30	3.43		
COP	W/W	3.40	3.21	3.25		
REFRIGERANT CONTROL (EXPANSION DEVICE)			EXV			
REFRIGERANT CHARGE	kg	6.1	5.8 X 2	7.2 X 2		
POWER SOURCE	V/Ph/Hz		380 ~ 415 / 3 / 50			
REFRIGERANT TYPE		R410A				
EVAPORATOR	CONTROL	AIR DISCHARGE OPERATION	DUCTED WIRED ROOFTOP PANEL			
	AIR FLOW	HIGH	l/s / CFM	1560 / 3300	2030 / 4300	2670 / 5650
	EXTERNAL STATIC PRESSURE		Pa (in.wg.)	147 / 0.6	147 / 0.6	147 / 0.6
	SOUND PRESSURE LEVEL		dBA	68	64	65
	SOUND POWER LEVEL		dBA	82	83	83
	CONDENSATE DRAIN SIZE		mm	25.4	25.4	25.4
	FAN	TYPE		CENTRIFUGAL FORWARD CURVE		
		DRIVE		BELT DRIVE		
		TYPE		INDUCTION		
		INDEX OF PROTECTION (IP)		IP 55		
		INSULATION GRADE		B		
	FAN MOTOR	RATED INPUT POWER	W	800	1,160	1,910
		RATED RUNNING CURRENT	A	1.70	3.10	3.70
		MOTOR OUTPUT	W	1,100	1,500	2,200
		POLES		4		
	COIL	TUBE	MATERIAL	S.I.G.C.		
			DIAMETER	9.53 / 3/8		
		FIN	MATERIAL	ALUMINIUM		
			FACE AREA	m <sup>2</sup>	0.80	0.46
		ROW		3	3	4
AIR QUALITY	FILTER	TYPE	WASHABLE SARANET			
		QUANTITY	2	2	2	
CASING		COLOUR	IVORY WHITE			
AIR FLOW		l/s / CFM	3884 / 8230	5664 / 12000	5710 / 12100	
UNIT DIMENSION	HEIGHT X WIDTH X DEPTH	mm	1150 x 1638 x 2063	1028 x 2209 x 2113	1130 x 2209 x 2113	
PACKING DIMENSION	HEIGHT X WIDTH X DEPTH	mm	1365 x 1730 x 2293	1197 x 2276 x 2344	1287 x 2276 x 2344	
UNIT WEIGHT		kg	445	580	610	
CONDENSER	FAN	TYPE	PROPELLER			
		DRIVE	DRIVE			
		TYPE	INDUCTION			
		INDEX OF PROTECTION (IP)	IP44			
		INSULATION GRADE	F			
	FAN MOTOR 1	RATED INPUT POWER	W	560	870	790
		RATED RUNNING CURRENT	A	2.50	3.80	3.60
		MOTOR OUTPUT	W	360	550	510
		POLES		6		
	FAN MOTOR 2	TYPE		INDUCTION		
		INDEX OF PROTECTION (IP)		IP44		
		INSULATION GRADE		F		
		RATED INPUT POWER	W	710	870	790
		RATED RUNNING CURRENT	A	3.20	3.80	3.60
		MOTOR OUTPUT	W	420	550	510
		POLES		6		
	COMPRESSOR 1	TYPE		SCROLL		
		OIL TYPE		POE		
		OIL AMOUNT	cm <sup>3</sup>	3,253	1,656	1,774
		RATED INPUT POWER (COOLING)	W	6,870	4,570	5,740
RATED INPUT POWER (HEATING)		W	6,020	4,540	5,490	
RATED RUNNING CURRENT (COOLING)		A	12.6	8.0	10.6	
RATED RUNNING CURRENT (HEATING)		A	12.1	8.0	10.4	
LOCKED ROTOR AMP.		A	111.0	74.0	101.0	
COMPRESSOR 2	TYPE		SCROLL			
	OIL TYPE		POE			
	OIL AMOUNT	cm <sup>3</sup>	N/A	1,656	1,774	
	RATED INPUT POWER (COOLING)	W	N/A	4,470	5,720	
	RATED INPUT POWER (HEATING)	W	N/A	4,390	5,190	
	RATED RUNNING CURRENT (COOLING)	A	N/A	8.0	10.7	
	RATED RUNNING CURRENT (HEATING)	A	N/A	7.9	10.3	
	LOCKED ROTOR AMP.	A	N/A	74.0	101.0	
COIL	TUBE	MATERIAL	S.I.G.C.			
		DIAMETER	9.53 / 3/8			
	FIN	MATERIAL	ALUMINIUM			
		FACE AREA	m <sup>2</sup>	1.28	1.10	1.24
	ROW		2	3	3	
CASING		COLOUR	IVORY WHITE			

ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).

COOLING	HEATING
INDOOR: 27°C DB / 19°C WB	INDOOR: 20°C DB
OUTDOOR: 35°C DB / 24°C WB	OUTDOOR: 8°C DB / 6°C WB

### Engineering Data - Heatpump (R410A)

MODEL		UATYQ550		UATYQ600		UATYQ700			
NOMINAL COOLING CAPACITY	Btu/h	190000		228000		247700			
	W	55690		66820		72600			
NOMINAL HEATING CAPACITY	Btu/h	184000		210500		237500			
	W	53930		61690		69610			
NOMINAL TOTAL INPUT POWER (COOLING)	W	16740		19650		21610			
NOMINAL TOTAL INPUT POWER (HEATING)	W	15540		18580		21420			
NOMINAL RUNNING CURRENT (COOLING)	A	30.20		33.80		39.00			
NOMINAL RUNNING CURRENT (HEATING)	A	28.80		32.30		40.20			
EER	W/W	3.33		3.40		3.36			
COP	W/W	3.47		3.32		3.25			
REFRIGERANT CONTROL (EXPANSION DEVICE)				EXV					
REFRIGERANT CHARGE	kg	8.7 x 2		10.4 x 2		11.6 x 2			
POWER SOURCE	V/Ph/Hz			380 - 415 / 3 / 50					
REFRIGERANT TYPE				R410A					
EVAPORATOR	CONTROL OPERATION				DUCTED				
	AIR DISCHARGE OPERATION				WIRED ROOFTOP PANEL				
	AIR FLOW	HIGH	l/s / CFM	3160 / 6700	3445 / 7300	3917 / 8300			
	EXTERNAL STATIC PRESSURE		Pa (in.wg.)	206 / 0.8	206 / 0.8	206 / 0.8			
	SOUND PRESSURE LEVEL		dBA	68	70	70			
	SOUND POWER LEVEL		dBA	87	90	90			
	CONDENSATE DRAIN SIZE		mm	25.4	25.4	25.4			
	FAN	TYPE DRIVE				CENTRIFUGAL FORWARD CURVE			
	FAN MOTOR	TYPE				BELT DRIVE			
		INDEX OF PROTECTION (IP)				INDUCTION			
		INSULATION GRADE				IP 55			
		RATED INPUT POWER	W	2,580	3,030	4,610			
		RATED RUNNING CURRENT	A	4.70	5.80	7.80			
		MOTOR OUTPUT	W	3,000	3,700	5,500			
	COIL	TUBE MATERIAL				S.I.G.C.			
DIAMETER		mm	9.53 / 3/8						
FIN MATERIAL				ALUMINIUM					
FACE AREA		m <sup>2</sup>	0.61	0.76	0.91				
ROW			4	4	4				
AIR QUALITY	FILTER	TYPE			WASHABLE SARANET				
QUANTITY			2	2	2				
CASING	COLOUR			IVORY WHITE					
AIR FLOW		l/s / CFM	6090 / 12900	9534 / 20200	10006 / 21200				
UNIT DIMENSION	HEIGHT X WIDTH X DEPTH	mm	1048 x 2209 x 2670	1302 x 2209 x 2670	1454 x 2209 x 2670				
PACKING DIMENSION	HEIGHT X WIDTH X DEPTH	mm	1267 x 2276 x 2901	1518 x 2276 x 2901	1672 x 2276 x 2901				
UNIT WEIGHT		kg	830	880	1020				
CONDENSER	FAN	TYPE DRIVE				PROPELLER			
	INDEX OF PROTECTION (IP)				INDUCTION				
	FAN MOTOR 1	TYPE				IP44			
		INSULATION GRADE				F			
		RATED INPUT POWER	W	780	1,700	1,690			
		RATED RUNNING CURRENT	A	3.40	2.90	3.00			
		MOTOR OUTPUT	W	590	1,200	1,200			
		POLES				6			
	FAN MOTOR 2	TYPE				INDUCTION			
		INDEX OF PROTECTION (IP)				IP44			
		INSULATION GRADE				F			
		RATED INPUT POWER	W	780	1,700	1,690			
		RATED RUNNING CURRENT	A	3.40	2.90	3.00			
		MOTOR OUTPUT	W	590	1,200	1,200			
	COMPRESSOR 1	TYPE				SCROLL			
		OIL TYPE				POE			
		OIL AMOUNT	cm <sup>3</sup>	3,253	3,253	3,253			
		RATED INPUT POWER (COOLING)	W	7,390	8,180	8,920			
		RATED INPUT POWER (HEATING)	W	6,700	7,200	8,060			
		RATED RUNNING CURRENT (COOLING)	A	13.5	15.1	15.9			
		RATED RUNNING CURRENT (HEATING)	A	12.7	14.2	15.1			
		LOCKED ROTOR AMP.	A	111.0	118.0	118.0			
	COMPRESSOR 2	TYPE				SCROLL			
		OIL TYPE				POE			
OIL AMOUNT		cm <sup>3</sup>	3,253	3,253	3,253				
RATED INPUT POWER (COOLING)		W	7,790	8,180	8,920				
RATED INPUT POWER (HEATING)		W	6,870	7,200	8,060				
RATED RUNNING CURRENT (COOLING)		A	13.9	15.1	15.9				
RATED RUNNING CURRENT (HEATING)		A	12.9	14.2	15.1				
LOCKED ROTOR AMP.		A	111.0	118.0	118.0				
COIL	TUBE MATERIAL				S.I.G.C.				
	DIAMETER		mm	9.53 / 3/8					
	FIN MATERIAL				ALUMINIUM				
	FACE AREA		m <sup>2</sup>	1.33	1.75	2.00			
	ROW			3	3	3			
CASING	COLOUR			IVORY WHITE					

ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).

COOLING	HEATING
INDOOR: 27°C DB / 19°C WB	INDOOR: 20°C DB
OUTDOOR: 35°C DB / 24°C WB	OUTDOOR: 8°C DB / 6°C WB

### Safety Devices- Heatpump (R410a)

MODEL			UATYQ250	UATYQ350
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	4137 / 600
		CLOSE	kPa/psi	3309 / 480
	LOW PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	124 / 18
		CLOSE	kPa/psi	193 / 28
	PHASE SEQUENCER			YES
DISCHARGE THERMOSTAT SETTING			°C / °F	
			120 / 248	

MODEL			UATYQ450	UATYQ550
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	4137 / 600
		CLOSE	kPa/psi	3309 / 480
	LOW PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	124 / 18
		CLOSE	kPa/psi	193 / 28
	PHASE SEQUENCER			YES
DISCHARGE THERMOSTAT SETTING			°C / °F	
			120 / 248	

MODEL			UATYQ600	UATYQ700
SAFETY DEVICE	HIGH PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	4137 / 600
		CLOSE	kPa/psi	3309 / 480
	LOW PRESSURE SWITCH	TYPE	NC, Auto Reset	
		OPEN	kPa/psi	124 / 18
		CLOSE	kPa/psi	193 / 28
	PHASE SEQUENCER			YES
DISCHARGE THERMOSTAT SETTING			°C / °F	
			120 / 248	

## ENGINEERING DATA - ECONOMIZER

MODEL			ECONO250	ECONO350	ECONO450	ECONO550
CORRESPONDING ROOFTOP UNIT			UATYQ250	UATYQ350	UATYQ450	UATYQ550
POWER SOURCE		VDC	24	24	24	24
NOMINAL AIR FLOW		L/S / CFM	1560   3300	2030   4300	2670   5650	3160   6700
PACKAGING DIMENSION	HEIGHT	MM	534	534	534	534
	WIDTH	MM	1440	1430	1430	1458
	DEPTH	MM	1144	1124	1124	1564
NET MASS		KG	51	42	43	53
GROSS MASS		KG	152	140	141	165
ACTUATOR RA	BRAND		BELIMO	BELIMO	BELIMO	BELIMO
	MODEL		LF24-SR	LF24-SR	LF24-SR	LF24-SR
	POWER SOURCE	V/PH/HZ				
		VDC	24	24	24	24
	CONTROL SIGNAL INPUT	VDC	2 -10	2 -10	2 -10	2 -10
INDEX OF PROTECTION (IP)			54	54	54	54
ACTUATOR OA	BRAND		BELIMO	BELIMO	BELIMO	BELIMO
	MODEL		LF24-SR	LF24-SR	LF24-SR	LF24-SR
	POWER SOURCE	V/PH/HZ				
		VDC	24	24	24	24
	CONTROL SIGNAL INPUT	VDC	2 -10	2 -10	2 -10	2 -10
INDEX OF PROTECTION (IP)			54	54	54	54
DAMPER RA	SHAPE		RECTANGULAR	RECTANGULAR	RECTANGULAR	RECTANGULAR
	MATERIAL		ALUMINIUM	ALUMINIUM	ALUMINIUM	ALUMINIUM
	NO. OF BLADES		5	6	6	6
	BLADE ARRANGEMENT		OPPOSED	OPPOSED	OPPOSED	OPPOSED
	CONTINUOUS OPERATING TEMPERATURE	C	60	60	60	60
	OPENING DIMENSION ( H X W )	MM	712.2 X 510.0	562.2 X 610.0	562.2 X 610.0	706.2 X 610.0
DAMPER OA	SHAPE		RECTANGULAR	RECTANGULAR	RECTANGULAR	RECTANGULAR
	MATERIAL		ALUMINIUM	ALUMINIUM	ALUMINIUM	ALUMINIUM
	NO. OF BLADES		7	6	6	7
	BLADE ARRANGEMENT		OPPOSED	OPPOSED	OPPOSED	OPPOSED
	CONTINUOUS OPERATING TEMPERATURE	C	60	60	60	60
	OPENING DIMENSION ( H X W )	MM	511.6 X 710.0	562.2 X 610.0	562.2 X 610.0	606.8 X 710.0
FILTRATION	TYPE		SARANET	SARANET	SARANET	SARANET
	QUANTITY		1	1	1	1
	DIMENSION ( H X W )	MM	515.0 X 750.0	560.0 X 658.0	560.0 X 658.0	604.0 X 750.0
CASING COLOUR			IVORY WHITE			

ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).

COOLING	HEATING
INDOOR: 27°C DB / 19°C WB	INDOOR: 20°C DB
OUTDOOR: 35°C DB / 24°C WB	OUTDOOR: 8°C DB / 6°C WB

## ENGINEERING DATA - ECONOMIZER

MODEL		ECONO600		ECONO700		
CORRESPONDING ROOF TOP UNIT		UATYQ600		UATYQ700		
POWER SOURCE		VDC	24	24		
NOMINAL AIR FLOW		L/S / CFM	3445	7300	3917 8300	
PACKAGING DIMENSION	HEIGHT	MM	534		534	
	WIDTH	MM	1458		1458	
	DEPTH	MM	1564		1564	
NET MASS		KG	54		69	
GROSS MASS		KG	166		181	
ACTUATOR RA	BRAND		BELIMO		BELIMO	
	MODEL		LF24-SR		LF24-SR	
	POWER SOURCE		V/PH/HZ	24 / 1 / 50/60		
			VDC	24	24	
	CONTROL SIGNAL INPUT		VDC	2 -10	2 -10	
	INDEX OF PROTECTION (IP)			54	54	
ACTUATOR OA	BRAND		BELIMO		BELIMO	
	MODEL		LF24-SR		LF24-SR	
	POWER SOURCE		V/PH/HZ	24 / 1 / 50/60		
			VDC	24	24	
	CONTROL SIGNAL INPUT		VDC	2 -10	2 -10	
	INDEX OF PROTECTION (IP)			54	54	
DAMPER RA	SHAPE		RECTANGULAR	RECTANGULAR		
	MATERIAL		ALUMINIUM	ALUMINIUM		
	NO. OF BLADES		6	6		
	BLADE ARRANGEMENT		OPPOSED	OPPOSED		
	CONTINUOUS OPERATING TEMPERATURE		C	60	60	
	OPENING DIMENSION ( H X W )		MM	706.2 X 610.0	1012.4 X 610.0	
DAMPER OA	SHAPE		RECTANGULAR	RECTANGULAR		
	MATERIAL		ALUMINIUM	ALUMINIUM		
	NO. OF BLADES		7	10		
	BLADE ARRANGEMENT		OPPOSED	OPPOSED		
	CONTINUOUS OPERATING TEMPERATURE		C	60	60	
	OPENING DIMENSION ( H X W )		MM	606.8 X 710.0	683.8 X 1010.0	
FILTRATION	TYPE		SARANET	SARANET		
	QUANTITY		1	1		
	DIMENSION ( H X W )		MM	604.0 X 750.0	690.0 X 1088.0	
CASING COLOUR		IVORY WHITE				

ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).

COOLING	HEATING
INDOOR: 27°C DB / 19°C WB	INDOOR: 20°C DB
OUTDOOR: 35°C DB / 24°C WB	OUTDOOR: 8°C DB / 6°C WB

# Performance Data

## Calculation Steps

*Interpolation* method can be used to get the total cooling capacity, **TC** and sensible capacity, **SC** and power input, **PI** at those temperatures which are not stated out in the table. Extrapolation method are not allowed to be used to get the **TC**, **SC** and **PI**.

### Example:

**Model:** UATYQ450

**Indoor Condition:** 25°C DB, 17°C WB

**Outdoor Condition:** 37°C DB

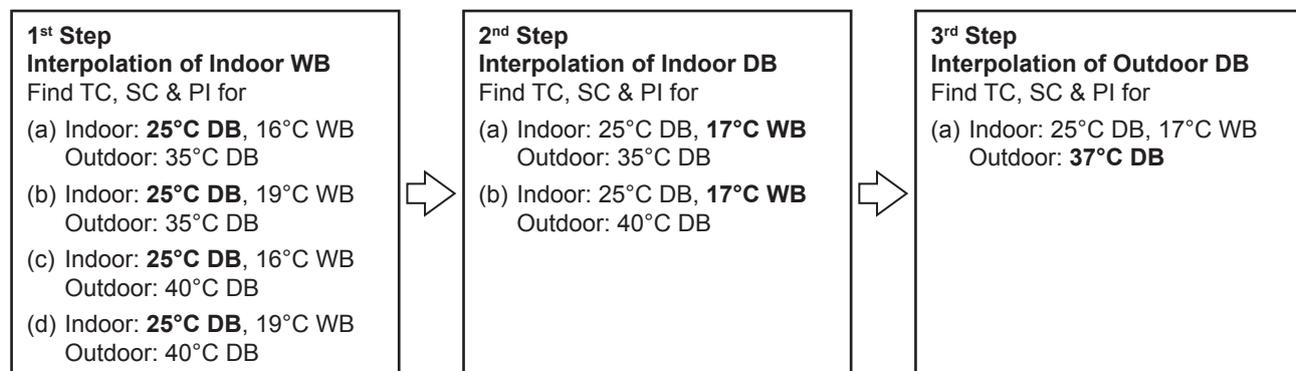
**Fan Speed:** High (5650CFM)

### Solution:

#### Overall

Based on the Performance Table,

1. Refer to the Indoor DB column,
  - **25°C** is located between 24°C & 27°C for 16°C WB.
  - **25°C** is located between 24°C & 27°C for 19°C WB.
  - Thus, Interpolation needs to be applied.
2. Refer to the Indoor WB column,
  - **17°C** is located between 16°C WB & 19°C WB for 25°C DB.
  - Thus, Interpolation needs to be applied.
3. Refer to the Outdoor DB column,
  - **37°C** is located between 35°C & 40°C.
  - Thus, Interpolation needs to be applied.



**Details of Calculation:****1<sup>st</sup> Step:**

To obtain the Total capacity and Sensible capacity and Power input for

**(a) Indoor Condition: 25°C DB, 16°C WB**

**Outdoor Condition: 35°C DB**

Indoor WB °C	Indoor DB °C	Outdoor DB, °C			
		35°C			
		TC (kW)	SHC (kW)	PI (kW)	
16			∴	∴	∴
	24		41.41	35.59	12.81
	25	-----	$x_1$	$y_1$	$z_1$
	27		43.48	41.63	12.94

**Total capacity, TC**

Interpolation Method:

$$\Rightarrow \frac{25^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{43.48\text{kW} - 41.41\text{kW}}{43.48\text{kW} - x_1\text{kW}}$$

$$\Rightarrow x_1 = 42.10\text{kW}$$

**Sensible capacity, SHC**

Interpolation Method:

$$\Rightarrow \frac{27^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{41.63\text{kW} - 35.59\text{kW}}{41.63\text{kW} - y_1\text{kW}}$$

$$\Rightarrow y_1 = 37.60\text{kW}$$

**Power Input, PI**

Interpolation Method:

$$\Rightarrow \frac{27^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{12.94\text{kW} - 12.81\text{kW}}{12.94\text{kW} - z_1\text{kW}}$$

$$\Rightarrow z_1 = 12.85\text{kW}$$

**(b) Indoor Condition: 25°C DB, 16°C WB**  
**Outdoor Condition: 40°C DB**

Indoor WB °C	Indoor DB °C	Outdoor DB, °C			
		40°C			
			TC (kW)	SHC (kW)	PI (kW)
16			∴	∴	∴
	24		38.59	33.52	13.91
	25	-----	x <sub>2</sub>	y <sub>2</sub>	z <sub>2</sub>
	27		40.74	39.20	14.06

**Total capacity, TC**

Interpolation Method:

$$\Rightarrow \frac{27^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{40.74\text{kW} - 38.59\text{kW}}{40.74\text{kW} - x_2\text{kW}}$$

$$\Rightarrow x_2 = 39.31\text{kW}$$

**Sensible capacity, SHC**

Interpolation Method:

$$\Rightarrow \frac{27^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{39.20\text{kW} - 33.52\text{kW}}{39.20\text{kW} - y_2\text{kW}}$$

$$\Rightarrow y_2 = 35.41\text{kW}$$

**Power Input, PI**

Interpolation Method:

$$\Rightarrow \frac{27^\circ\text{C} - 24^\circ\text{C}}{27^\circ\text{C} - 25^\circ\text{C}} = \frac{14.06\text{kW} - 13.91\text{kW}}{14.06\text{kW} - z_2\text{kW}}$$

$$\Rightarrow z_2 = 13.96\text{kW}$$

**Repeat process (a) and (b) in 1<sup>st</sup> step for the condition below:**

**(c) Indoor Condition: 25°C DB, 19°C WB**  
**Outdoor Condition: 35°C DB**

(c) x<sub>3</sub> = 44.55 kW;  
 y<sub>3</sub> = 31.63 kW;  
 z<sub>3</sub> = 13.03 kW

**(d) Indoor Condition: 25°C DB, 19°C WB**  
**Outdoor Condition: 40°C DB**

(d) x<sub>4</sub> = 41.46 kW;  
 y<sub>4</sub> = 29.99 kW;  
 z<sub>4</sub> = 14.13 kW

**2<sup>nd</sup> Step:**

To obtain the TC, SC & PI for

**(a) Indoor Condition: 25°C DB, 17°C WB**

**Outdoor Condition: 35°C DB**

Indoor WB °C	Indoor DB °C	Outdoor DB, °C			
		35°C			
			TC (kW)	SHC (kW)	PI (kW)
			↓	↓	↓
16	25		42.10	37.60	12.85
17		-----	$x_5$	$y_5$	$z_5$
19			44.55	31.63	13.03

**Total capacity, TC**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{44.55\text{kW} - 42.10\text{kW}}{44.55\text{kW} - x_5\text{kW}}$$

$$\Rightarrow x_5 = 42.92\text{kW}$$

**Sensible capacity, SHC**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{31.63\text{kW} - 37.60\text{kW}}{31.63\text{kW} - y_5\text{kW}}$$

$$\Rightarrow y_5 = 35.61\text{kW}$$

**Power Input, PI**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{13.03\text{kW} - 12.85\text{kW}}{13.03\text{kW} - z_5\text{kW}}$$

$$\Rightarrow z_5 = 12.91\text{kW}$$

**(b) Indoor Condition: 25°C DB, 17°C WB**  
**Outdoor Condition: 40°C DB**

Indoor WB °C	Indoor DB °C	Outdoor DB, °C			
		40°C			
		TC (kW)	SHC (kW)	PI (kW)	
		⋮	⋮	⋮	
16	25	39.31	35.41	13.96	
17		-----	$x_6$	$y_6$	$z_6$
19		41.46	29.99	14.13	

**Total capacity, TC**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{41.46\text{kW} - 39.31\text{kW}}{41.46\text{kW} - x_6\text{kW}}$$

$$\Rightarrow x_6 = 40.03\text{kW}$$

**Sensible capacity, SHC**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{29.99\text{kW} - 35.41\text{kW}}{29.99\text{kW} - y_6\text{kW}}$$

$$\Rightarrow y_6 = 33.60\text{kW}$$

**Power Input, PI**

Interpolation Method:

$$\Rightarrow \frac{19^\circ\text{C} - 16^\circ\text{C}}{19^\circ\text{C} - 17^\circ\text{C}} = \frac{14.13\text{kW} - 13.96\text{kW}}{14.13\text{kW} - z_6\text{kW}}$$

$$\Rightarrow z_6 = 14.02\text{kW}$$

**3<sup>rd</sup> Step:**

To obtain the Total capacity and Sensible capacity for

**(a) Indoor Condition: 25°C DB, 17°C WB**

**Outdoor Condition: 37°C DB**

Indoor WB °C	Indoor DB °C	Outdoor DB, °C									
		35°C			37°C			40°C			
		TC (kW)	SHC (kW)	PI (kW)	TC (kW)	SHC (kW)	PI (kW)	TC (kW)	SHC (kW)	PI (kW)	
		-----									
25	17		42.92	35.61	12.91	x	y	z	40.03	33.60	14.02

**Total capacity, TC**

Interpolation Method:

$$\Rightarrow \frac{40^{\circ}\text{C} - 35^{\circ}\text{C}}{40^{\circ}\text{C} - 37^{\circ}\text{C}} = \frac{40.03\text{kW} - 42.92\text{kW}}{40.03\text{kW} - x\text{kW}}$$

$$\Rightarrow x = 41.76\text{kW}$$

**Sensible capacity, SHC**

Interpolation Method:

$$\Rightarrow \frac{40^{\circ}\text{C} - 35^{\circ}\text{C}}{40^{\circ}\text{C} - 37^{\circ}\text{C}} = \frac{33.60\text{kW} - 35.61\text{kW}}{33.60\text{kW} - y\text{kW}}$$

$$\Rightarrow y = 34.81\text{kW}$$

**Power Input, PI**

Interpolation Method:

$$\Rightarrow \frac{40^{\circ}\text{C} - 35^{\circ}\text{C}}{40^{\circ}\text{C} - 37^{\circ}\text{C}} = \frac{14.02\text{kW} - 12.91\text{kW}}{14.02\text{kW} - z\text{kW}}$$

$$\Rightarrow z = 13.35\text{kW}$$

## Performance Adjustment

Performance of the unit will derate when it operates with fresh air mode and this condition depends on user's selection.

Before installation, it is recommended to check the correction factor table (table 1) below in order to do a correct design selection.

Noted that it has different factor used for different selection of fresh air opening, in both cool mode and heat mode.

Performance of the unit will derate when it operates with fresh air mode and this condition depends on user's selection.

**Table 1: Correction factor for unit's performance.**

Rooftop Model	Economizer Kit Model	Operation Mode	Fresh Air Opening (%)					
			0	5	10	15	20	25
UATYQ Series	ECONO	Cooling	1.00	0.97	0.93	0.90	0.86	0.80
		Heating	1.00	0.97	0.93	0.90	0.87	0.83

For example:

Indoor Condition: 27°C DB 19°C WB

Outdoor Ambient: 35°C DB

Model: UATYQ250

Airflow: 3300 CFM

Total Cooling Capacity: 27.34 kW

Sensible Cooling Capacity: 21.87 kW

For fresh air opening of 25%, the correction factor is 0.80.

Thus, the adjusted capacity will be:

Total Cooling Capacity = 0.80 X 27.34 = 21.87 kW

Sensible Cooling Capacity = 0.8 X 21.87 = 17.50 kW

## Pressure Drop Table

Airflow resistance refers to pressure drop caused by the economizer kit. Before installation, it is recommended to check the pressure drop in table 2 below in order to do a correct design selection.

**Table 2: Pressure drop in economizer kit.**

Rooftop Model	Economizer Kit Model	Maximum Pressure Drop in Economizer Kit										
		Standard Airflow Rate		Side Return (Horizontal) Application								Down Return (Vertical) Application
				Fresh Air Mode						Economizer Mode	Fresh Air Mode or Economizer Mode	
		cfm	m <sup>3</sup> /s	0% Outdoor Air Damper Opening (Pa)	5% Outdoor Air Damper Opening (Pa)	10% Outdoor Air Damper Opening (Pa)	15% Outdoor Air Damper Opening (Pa)	20% Outdoor Air Damper Opening (Pa)	25% Outdoor Air Damper Opening (Pa)	Maximum Pressure Drop (Pa)	Pressure Drop (Pa)	
UATYQ250	ECONO250	3300	1.56	0	3	5	10	13	15	20	0	
UATYQ350	ECONO350	4300	2.03	0	5	10	13	20	30	40	0	
UATYQ450	ECONO450	5650	2.67	0	7	21	38	53	58	68	0	
UATYQ550	ECONO550	6700	3.16	0	15	30	50	60	65	70	0	
UATYQ600	ECONO600	7300	3.45	0	20	37	52	58	61	65	0	
UATYQ700	ECONO700	8300	3.92	0	5	10	13	20	32	42	15	

For example:

Model: UATYQ250 (Horizontal Throw)

Economizer kit operating mode: fresh air mode at 25%, the corresponding pressure drop is 15 Pa.

Rooftop Model	Economizer Kit Model	Standard Airflow Rate		Maximum Pressure Drop in Economizer Kit								Down Return (Vertical) Application
				Side Return (Horizontal) Application						Economizer Mode	Fresh Air Mode or Economizer Mode	
				Fresh Air Mode								
cfm	m <sup>3</sup> /s	0% Outdoor Air Damper Opening (Pa)	5% Outdoor Air Damper Opening (Pa)	10% Outdoor Air Damper Opening (Pa)	15% Outdoor Air Damper Opening (Pa)	20% Outdoor Air Damper Opening (Pa)	25% Outdoor Air Damper Opening (Pa)	Maximum Pressure Drop (Pa)	Pressure Drop (Pa)			
UATYQ250	ECONO250	3300	1.56	0	3	5	10	13	15	20	0	
UATYQ350	ECONO350	4300	2.03	0	5	10	13	20	30	40	0	
UATYQ450	ECONO450	5650	2.67	0	7	21	38	53	58	68	0	
UATYQ550	ECONO550	6700	3.16	0	15	30	50	60	65	70	0	
UATYQ600	ECONO600	7300	3.45	0	20	37	52	58	61	65	0	
UATYQ700	ECONO700	8300	3.92	0	5	10	13	20	32	42	15	

As a result, the External Static Pressure (ESP) will be reduced by 15 Pa.

Pressure drop in economizer kit from table 2 refers to initial resistance. An air filter that is installed in the rain hood of economizer will expose to outdoor environment and easily becomes dirty. Regular service is required for this filter (recommended at least once every two weeks). The final resistance shall not exceed the recommended value in table 3 below.

**Table 3: Technical specifications for air filter in economizer rain hood.**

Economizer Kit Model	Recommended Type	Quantity	Dimension (L x W x t)	* Initial Resistance (Pa)	Recommended Final Resistance
ECONO250	Washable Saranet Filter	1	750 x 515 x 4	15	80
ECONO350	Washable Saranet Filter	1	658 x 560 x 4	13	70
ECONO450	Washable Saranet Filter	1	658 x 560 x 4	27	70
ECONO550	Washable Saranet Filter	1	750 x 604 x 4	34	110
ECONO600	Washable Saranet Filter	1	750 x 604 x 4	30	105
ECONO700	Washable Saranet Filter	1	1088 x 690 x 4	16	110

Note: \* Initial resistance is rated based on 85% of outdoor air opening.

The resistance values mentioned in table 3 have been incorporated into pressure drop values in table 2. Table 3 provides guidelines only on the service of filter. Thus, system sizing does not require to include these values into consideration.

## Performance Table

### Cooling Mode

Model: UATYQ250

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
2640	16°C	21°C	26.92	17.79	6.55	25.90	17.33	6.93	25.31	17.19	7.46	24.12	16.64	7.91	22.42	15.75	8.60	20.86	15.04	9.52
		24°C	27.02	20.73	6.56	26.00	20.27	6.94	25.41	20.17	7.47	24.23	19.64	7.92	22.60	18.55	8.61	21.16	17.59	9.54
		27°C	27.60	25.41	6.58	26.65	24.72	6.97	26.15	24.48	7.51	25.07	23.64	7.97	23.52	22.40	8.67	22.18	21.23	9.62
	19°C	30°C	28.31	28.31	6.65	27.43	27.43	7.05	26.49	26.49	7.60	25.49	25.49	8.08	23.92	23.92	8.78	22.61	22.61	9.72
		24°C	29.44	16.79	6.69	28.30	16.35	7.08	27.67	16.22	7.61	26.39	15.74	8.07	24.56	14.94	8.76	22.90	14.29	9.68
		27°C	29.52	20.66	6.70	28.39	20.20	7.09	27.75	20.12	7.62	26.48	19.60	8.08	24.65	18.68	8.76	23.00	18.02	9.69
		30°C	29.67	24.23	6.71	28.66	23.57	7.10	28.13	23.34	7.64	26.94	22.58	8.11	25.20	21.36	8.80	23.69	20.39	9.74
		33°C	30.23	30.23	6.75	28.93	28.93	7.15	29.12	29.12	7.71	28.05	28.05	8.18	25.58	25.58	8.89	24.48	24.48	9.84
		22°C	27°C	31.94	16.47	6.85	30.87	16.13	7.25	30.19	16.01	7.79	28.81	15.54	8.25	26.84	14.76	8.93	25.10	14.19
	30°C		32.17	20.48	6.86	30.94	20.03	7.25	30.25	19.95	7.79	28.89	19.46	8.25	26.91	18.57	8.94	25.16	17.95	9.86
	33°C		32.25	24.19	6.86	31.02	23.73	7.26	30.32	23.72	7.80	28.97	23.22	8.26	27.10	21.99	8.96	25.53	21.02	9.89
	36°C		32.40	26.87	6.89	31.28	26.17	7.29	30.91	26.12	7.84	29.66	25.35	8.31	27.94	24.19	9.02	26.43	23.19	9.96
3300	16°C	21°C	27.89	18.62	6.60	26.78	18.12	6.98	26.14	17.97	7.51	24.90	17.42	7.97	23.11	16.51	8.65	21.47	15.80	9.57
		24°C	28.06	22.96	6.62	27.05	22.29	7.00	26.49	22.00	7.54	25.32	21.22	7.99	23.59	19.99	8.68	22.07	18.98	9.61
		27°C	29.12	26.80	6.67	28.17	26.05	7.07	27.69	25.74	7.61	26.58	24.83	8.08	24.90	23.38	8.78	23.45	22.13	9.72
		30°C	30.19	30.19	6.77	29.19	29.19	7.17	28.15	28.15	7.72	27.06	27.06	8.20	25.10	25.10	8.90	23.69	23.69	9.84
	19°C	24°C	30.42	18.53	6.75	29.22	18.04	7.14	28.53	17.90	7.67	27.19	17.36	8.13	25.27	16.47	8.81	23.53	15.79	9.73
		27°C	30.57	22.98	6.76	29.37	22.49	7.15	28.69	22.42	7.68	27.34	21.87	8.14	25.50	20.72	8.83	23.88	19.68	9.76
		30°C	31.20	26.32	6.79	30.07	25.60	7.19	29.48	25.35	7.74	28.23	24.56	8.20	26.44	23.20	8.90	24.97	22.02	9.84
		33°C	31.86	31.86	6.87	30.85	30.85	7.28	29.77	29.77	7.84	28.63	28.63	8.32	26.87	26.87	9.03	25.43	25.43	9.97
	22°C	27°C	33.11	18.28	6.91	31.80	17.84	7.31	31.07	17.74	7.85	29.63	17.22	8.31	27.56	16.35	9.00	25.73	15.70	9.91
		30°C	33.22	22.84	6.92	31.92	22.36	7.32	31.19	22.30	7.86	29.75	21.77	8.32	27.69	20.80	9.01	25.88	20.15	9.92
		33°C	33.46	27.07	6.94	32.26	26.33	7.34	31.64	26.07	7.89	30.30	25.24	8.36	28.32	23.90	9.06	26.66	22.87	9.99
		36°C	34.08	29.22	6.99	32.88	28.63	7.39	32.05	28.12	7.96	30.87	27.22	8.44	28.71	25.44	9.16	26.93	23.98	10.11
3960	16°C	21°C	28.55	20.03	6.64	27.41	19.53	7.02	26.74	19.37	7.55	25.45	18.80	8.01	23.61	17.83	8.69	21.92	17.08	9.60
		24°C	29.05	24.35	6.67	27.95	23.62	7.06	27.35	23.32	7.59	26.12	22.50	8.05	24.34	21.22	8.74	22.83	20.03	9.67
		27°C	30.46	28.03	6.75	29.39	27.18	7.14	28.90	26.86	7.69	27.71	25.88	8.16	25.94	24.35	8.86	24.39	23.02	9.80
		30°C	31.28	31.28	6.85	30.22	30.22	7.26	29.11	29.11	7.82	27.95	27.95	8.29	26.31	26.31	8.99	24.55	24.55	9.93
	19°C	24°C	31.12	19.98	6.79	29.87	19.47	7.18	29.13	19.32	7.72	27.73	18.76	8.17	25.77	17.83	8.85	24.00	17.13	9.77
		27°C	31.33	25.03	6.81	30.11	24.43	7.20	29.49	24.14	7.74	28.17	23.28	8.20	26.26	21.96	8.89	24.60	20.89	9.81
		30°C	32.28	27.64	6.86	31.18	26.95	7.26	30.65	26.63	7.82	29.43	25.69	8.29	27.58	24.20	8.99	26.01	22.94	9.93
		33°C	33.03	33.03	6.97	31.95	31.95	7.38	31.12	31.12	7.94	29.92	29.92	8.42	28.06	28.06	9.13	26.23	26.23	10.07
	22°C	27°C	33.81	19.81	6.96	32.47	19.31	7.35	31.68	19.18	7.90	30.17	18.63	8.35	28.08	17.73	9.04	26.22	17.07	9.95
		30°C	34.00	24.92	6.97	32.65	24.41	7.37	31.86	24.37	7.91	30.36	23.82	8.37	28.30	22.72	9.05	26.55	21.64	9.98
		33°C	34.64	28.87	7.01	33.36	28.08	7.41	32.68	27.82	7.96	31.30	26.96	8.43	29.24	25.53	9.13	27.65	24.26	10.07
		36°C	35.21	30.28	7.08	33.71	29.13	7.50	33.22	28.86	8.08	31.96	27.90	8.56	29.70	26.06	9.27	28.12	24.80	10.22

**Remark:**

AFR: Air flow rate (CFM)  
 EWB: Entering Wet Bulb Temp. (°C)  
 EDB: Entering Dry Bulb Temp. (°C)  
 TC: Total Cooling Capacity (kW)  
 SHC: Sensible Heat Capacity (kW)  
 PI: Power Input (kW)

**Notes:**

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

Model: UATYQ350

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SC	PI	TC	SC	PI	TC	SC	PI	TC	SC	PI	TC	SC	PI	TC	SC	PI
3440	16°C	21°C	35.03	23.44	8.67	33.71	22.84	9.18	32.94	22.65	9.88	31.40	21.92	10.48	29.18	20.75	11.39	27.15	19.82	12.61
		24°C	35.17	27.32	8.68	33.84	26.70	9.19	33.07	26.58	9.89	31.54	25.88	10.49	29.41	24.44	11.40	27.53	23.17	12.63
		27°C	35.91	33.48	8.72	34.68	32.58	9.23	34.04	32.25	9.94	32.62	31.14	10.56	30.61	29.52	11.48	28.86	27.97	12.73
		30°C	36.85	36.85	8.81	35.70	35.70	9.34	34.47	34.47	10.07	33.17	33.17	10.70	31.13	31.13	11.63	29.42	29.42	12.88
	19°C	24°C	38.31	22.12	8.86	36.83	21.54	9.38	36.02	21.38	10.08	34.34	20.74	10.69	31.97	19.68	11.60	29.80	18.83	12.82
		27°C	38.41	27.23	8.87	36.95	26.62	9.38	36.12	26.51	10.09	34.46	25.83	10.70	32.08	24.62	11.60	29.93	23.75	12.83
		30°C	38.61	31.92	8.88	37.30	31.06	9.40	36.60	30.75	10.12	35.06	29.75	10.74	32.80	28.14	11.66	30.84	26.87	12.89
		33°C	39.34	39.34	8.94	37.65	37.65	9.47	37.89	37.89	10.21	36.50	36.50	10.84	33.28	33.28	11.78	31.86	31.86	13.03
	22°C	27°C	41.56	21.70	9.07	40.17	21.25	9.60	39.29	21.10	10.31	37.49	20.48	10.92	34.93	19.45	11.83	32.66	18.70	13.05
		30°C	41.87	26.99	9.08	40.27	26.39	9.60	39.36	26.29	10.32	37.59	25.64	10.93	35.02	24.47	11.84	32.75	23.65	13.06
		33°C	41.97	31.88	9.08	40.37	31.27	9.61	39.46	31.25	10.33	37.71	30.59	10.94	35.27	28.97	11.86	33.22	27.70	13.10
		36°C	42.16	35.40	9.12	40.71	34.49	9.65	40.22	34.41	10.39	38.60	33.40	11.01	36.36	31.87	11.94	34.39	30.55	13.19
4300	16°C	21°C	36.29	24.53	8.75	34.85	23.88	9.25	34.02	23.68	9.95	32.40	22.96	10.55	30.07	21.76	11.45	27.95	20.82	12.67
		24°C	36.52	30.25	8.76	35.20	29.37	9.27	34.48	28.99	9.98	32.95	27.97	10.59	30.70	26.34	11.50	28.72	25.01	12.73
		27°C	37.90	35.31	8.83	36.66	34.33	9.36	36.04	33.91	10.08	34.59	32.72	10.70	32.41	30.81	11.62	30.52	29.16	12.87
		30°C	39.29	39.29	8.96	37.99	37.99	9.49	36.64	36.64	10.23	35.22	35.22	10.85	32.66	32.66	11.78	30.84	30.84	13.03
	19°C	24°C	39.59	24.42	8.94	38.02	23.77	9.45	37.13	23.58	10.16	35.38	22.87	10.77	32.88	21.70	11.67	30.63	20.80	12.89
		27°C	39.78	30.28	8.95	38.22	29.63	9.47	37.33	29.54	10.18	35.58	28.82	10.78	33.19	27.31	11.69	31.08	25.94	12.92
		30°C	40.60	34.68	9.00	39.13	33.73	9.52	38.36	33.40	10.24	36.74	32.36	10.86	34.41	30.57	11.79	32.50	29.01	13.03
		33°C	41.47	41.47	9.10	40.14	40.14	9.64	38.74	38.74	10.38	37.25	37.25	11.01	34.97	34.97	11.95	33.09	33.09	13.21
	22°C	27°C	43.08	24.09	9.16	41.39	23.51	9.68	40.44	23.37	10.40	38.56	22.69	11.00	35.87	21.54	11.91	33.48	20.68	13.13
		30°C	43.24	30.09	9.17	41.54	29.46	9.69	40.59	29.39	10.41	38.72	28.69	11.02	36.04	27.41	11.93	33.68	26.54	13.14
		33°C	43.54	35.67	9.18	41.98	34.70	9.72	41.17	34.36	10.45	39.43	33.26	11.07	36.85	31.49	11.99	34.69	30.14	13.23
		36°C	44.35	38.50	9.25	42.79	37.73	9.79	41.71	37.05	10.54	40.17	35.87	11.18	37.36	33.52	12.13	35.05	31.60	13.39
5160	16°C	21°C	37.15	26.40	8.80	35.67	25.73	9.30	34.80	25.53	10.00	33.12	24.77	10.60	30.72	23.49	11.50	28.53	22.51	12.72
		24°C	37.81	32.08	8.83	36.37	31.12	9.35	35.60	30.73	10.05	33.99	29.65	10.66	31.67	27.96	11.57	29.72	26.40	12.81
		27°C	39.64	36.93	8.94	38.25	35.82	9.46	37.61	35.39	10.19	36.06	34.11	10.81	33.75	32.08	11.73	31.75	30.33	12.98
		30°C	40.70	40.70	9.08	39.33	39.33	9.61	37.89	37.89	10.35	36.38	36.38	10.98	34.24	34.24	11.91	31.95	31.95	13.15
	19°C	24°C	40.50	26.32	9.00	38.87	25.65	9.51	37.91	25.46	10.22	36.08	24.72	10.82	33.54	23.49	11.72	31.23	22.57	12.94
		27°C	40.77	32.98	9.01	39.19	32.20	9.53	38.38	31.80	10.25	36.66	30.68	10.86	34.18	28.93	11.77	32.02	27.53	13.00
		30°C	42.01	36.43	9.08	40.57	35.51	9.61	39.89	35.08	10.35	38.30	33.85	10.98	35.89	31.89	11.91	33.85	30.22	13.15
		33°C	42.99	42.99	9.23	41.59	41.59	9.77	40.50	40.50	10.52	38.94	38.94	11.15	36.52	36.52	12.09	34.14	34.14	13.34
	22°C	27°C	44.00	26.10	9.22	42.25	25.45	9.74	41.23	25.28	10.46	39.27	24.55	11.06	36.55	23.36	11.97	34.12	22.49	13.18
		30°C	44.25	32.84	9.23	42.49	32.17	9.76	41.47	32.11	10.48	39.52	31.38	11.08	36.83	29.94	11.99	34.56	28.51	13.22
		33°C	45.08	38.04	9.28	43.41	37.00	9.81	42.53	36.65	10.55	40.73	35.53	11.16	38.05	33.64	12.09	35.98	31.96	13.34
		36°C	45.82	39.90	9.38	43.87	38.39	9.94	43.23	38.03	10.69	41.59	36.77	11.33	38.65	34.34	12.28	36.60	32.68	13.54

Remark:

- AFR: Air flow rate (CFM)
- EWB: Entering Wet Bulb Temp. (°C)
- EDB: Entering Dry Bulb Temp. (°C)
- TC: Total Cooling Capacity (kW)
- SHC: Sensible Heat Capacity (kW)
- PI: Power Input (kW)

Notes:

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

Performance Data

Model: UATYQ450

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
4520	16°C	21°C	44.03	29.82	10.49	42.37	29.06	11.10	41.41	28.82	11.95	39.46	27.89	12.68	36.67	26.40	13.77	34.12	25.22	15.25
		24°C	44.20	34.76	10.50	42.53	33.98	11.11	41.57	33.82	11.96	39.64	32.93	12.69	36.97	31.10	13.79	34.60	29.48	15.28
		27°C	45.14	42.60	10.55	43.59	41.45	11.17	42.78	41.04	12.03	41.00	39.63	12.77	38.48	37.56	13.89	36.28	35.59	15.40
		30°C	46.31	46.31	10.66	44.87	44.87	11.30	43.33	43.33	12.18	41.69	41.69	12.94	39.13	39.13	14.06	36.98	36.98	15.58
	19°C	24°C	48.15	28.14	10.72	46.29	27.41	11.34	45.27	27.20	12.20	43.16	26.39	12.93	40.18	25.04	14.03	37.46	23.96	15.50
		27°C	48.28	34.64	10.73	46.44	33.87	11.35	45.40	33.74	12.21	43.31	32.87	12.94	40.32	31.33	14.04	37.62	30.22	15.52
		30°C	48.53	40.62	10.74	46.88	39.53	11.37	46.01	39.13	12.24	44.06	37.85	12.99	41.23	35.81	14.10	38.76	34.19	15.60
		33°C	49.45	49.45	10.81	47.32	47.32	11.45	47.63	47.63	12.35	45.88	45.88	13.11	41.83	41.83	14.24	40.04	40.04	15.76
	22°C	27°C	52.24	27.61	10.98	50.49	27.04	11.61	49.38	26.84	12.48	47.12	26.05	13.21	43.90	24.75	14.31	41.05	23.79	15.79
		30°C	52.63	34.34	10.98	50.61	33.58	11.61	49.48	33.46	12.49	47.25	32.63	13.22	44.01	31.13	14.32	41.16	30.10	15.80
		33°C	52.76	40.56	10.99	50.74	39.79	11.62	49.60	39.76	12.49	47.39	38.93	13.23	44.33	36.87	14.35	41.76	35.24	15.84
		36°C	52.99	45.05	11.03	51.17	43.88	11.68	50.55	43.79	12.57	48.52	42.50	13.32	45.70	40.55	14.44	43.22	38.87	15.96
5650	16°C	21°C	45.61	31.21	10.58	43.80	30.39	11.19	42.77	30.13	12.04	40.72	29.21	12.76	37.80	27.69	13.86	35.12	26.50	15.33
		24°C	45.90	38.49	10.60	44.24	37.37	11.21	43.33	36.89	12.07	41.41	35.59	12.81	38.59	33.52	13.91	36.09	31.82	15.39
		27°C	47.64	44.93	10.68	46.08	43.68	11.32	45.29	43.15	12.19	43.48	41.63	12.94	40.74	39.20	14.06	38.36	37.10	15.57
		30°C	49.38	49.38	10.84	47.75	47.75	11.48	46.05	46.05	12.37	44.27	44.27	13.13	41.05	41.05	14.26	38.76	38.76	15.76
	19°C	24°C	49.76	31.07	10.82	47.79	30.25	11.44	46.67	30.00	12.29	44.47	29.11	13.02	41.33	27.61	14.12	38.49	26.47	15.59
		27°C	50.00	38.53	10.83	48.04	37.70	11.45	46.92	37.59	12.31	44.72	36.67	13.04	41.71	34.75	14.14	39.07	33.00	15.63
		30°C	51.03	44.13	10.88	49.19	42.92	11.52	48.22	42.50	12.39	46.18	41.17	13.13	43.26	38.90	14.26	40.85	36.92	15.76
		33°C	52.12	52.12	11.00	50.46	50.46	11.66	48.70	48.70	12.56	46.82	46.82	13.32	43.95	43.95	14.46	41.59	41.59	15.97
	22°C	27°C	54.15	30.65	11.08	52.02	29.91	11.71	50.82	29.74	12.58	48.46	28.87	13.31	45.08	27.41	14.41	42.08	26.32	15.88
		30°C	54.34	38.29	11.09	52.22	37.49	11.72	51.02	37.40	12.59	48.67	36.51	13.33	45.29	34.88	14.43	42.33	33.78	15.90
		33°C	54.72	45.39	11.11	52.77	44.15	11.75	51.75	43.71	12.64	49.56	42.32	13.39	46.32	40.07	14.51	43.60	38.35	16.00
		36°C	55.74	48.99	11.19	53.78	48.01	11.84	52.42	47.14	12.75	50.49	45.64	13.52	46.96	42.65	14.67	44.05	40.21	16.20
6780	16°C	21°C	46.70	33.59	10.64	44.83	32.74	11.25	43.73	32.48	12.10	41.63	31.51	12.82	38.61	29.89	13.91	35.86	28.64	15.39
		24°C	47.52	40.82	10.69	45.72	39.59	11.30	44.74	39.10	12.16	42.73	37.73	12.90	39.81	35.57	13.99	37.35	33.59	15.49
		27°C	49.82	46.99	10.81	48.08	45.57	11.44	47.27	45.04	12.33	45.32	43.40	13.07	42.42	40.82	14.19	39.90	38.59	15.70
		30°C	51.16	51.16	10.98	49.43	49.43	11.63	47.62	47.62	12.52	45.72	45.72	13.28	43.03	43.03	14.40	40.15	40.15	15.91
	19°C	24°C	50.91	33.49	10.88	48.86	32.64	11.50	47.65	32.40	12.36	45.35	31.45	13.09	42.15	29.89	14.18	39.25	28.72	15.65
		27°C	51.25	41.96	10.90	49.26	40.97	11.53	48.24	40.47	12.40	46.07	39.04	13.14	42.96	36.82	14.24	40.24	35.02	15.72
		30°C	52.80	46.35	10.99	51.00	45.18	11.63	50.14	44.64	12.52	48.13	43.07	13.28	45.11	40.57	14.40	42.55	38.45	15.91
		33°C	54.03	54.03	11.16	52.27	52.27	11.82	50.90	50.90	12.72	48.94	48.94	13.49	45.90	45.90	14.62	42.91	42.91	16.14
	22°C	27°C	55.30	33.21	11.15	53.11	32.38	11.78	51.83	32.16	12.65	49.35	31.24	13.38	45.93	29.72	14.48	42.88	28.61	15.95
		30°C	55.62	41.78	11.17	53.40	40.93	11.80	52.12	40.86	12.67	49.67	39.93	13.41	46.29	38.09	14.51	43.44	36.28	15.99
		33°C	56.66	48.41	11.22	54.57	47.07	11.87	53.46	46.64	12.76	51.20	45.21	13.51	47.83	42.80	14.63	45.22	40.67	16.14
		36°C	57.59	50.76	11.35	55.14	48.85	12.02	54.34	48.38	12.94	52.28	46.78	13.71	48.58	43.69	14.85	46.00	41.58	16.38

Remark:

- AFR: Air flow rate (CFM)
- EWB: Entering Wet Bulb Temp. (°C)
- EDB: Entering Dry Bulb Temp. (°C)
- TC: Total Cooling Capacity (kW)
- SHC: Sensible Heat Capacity (kW)
- PI: Power Input (kW)

Notes:

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

Model: UATYQ550

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
5360	16°C	21°C	54.83	38.04	13.47	52.77	37.07	14.25	51.56	36.77	15.34	49.14	35.58	16.28	45.67	33.68	17.68	42.49	32.17	19.58
		24°C	55.05	44.34	13.48	52.96	43.34	14.26	51.76	43.15	15.35	49.36	42.01	16.29	46.04	39.67	17.71	43.09	37.61	19.62
		27°C	56.21	54.34	13.54	54.29	52.88	14.34	53.27	52.35	15.44	51.06	50.55	16.40	47.92	47.91	17.83	45.18	45.18	19.78
		30°C	57.67	57.67	13.68	55.88	55.88	14.50	53.95	53.95	15.63	51.92	51.92	16.61	48.73	48.73	18.05	46.05	46.05	20.00
	19°C	24°C	59.96	35.90	13.76	57.64	34.96	14.56	56.37	34.70	15.66	53.75	33.66	16.60	50.04	31.95	18.01	46.65	30.56	19.90
		27°C	60.12	44.19	13.77	57.83	43.21	14.57	56.53	43.04	15.67	53.94	41.93	16.61	50.21	39.96	18.02	46.85	38.55	19.92
		30°C	60.43	51.81	13.79	58.38	50.42	14.60	57.29	49.91	15.72	54.87	48.29	16.68	51.34	45.68	18.10	48.26	43.62	20.02
		33°C	61.57	61.57	13.88	58.92	58.92	14.70	59.31	59.31	15.85	57.14	57.14	16.83	52.10	52.10	18.29	49.86	49.86	20.24
	22°C	27°C	65.06	35.23	14.09	62.88	34.50	14.90	61.49	34.24	16.02	58.67	33.24	16.96	54.67	31.57	18.37	51.12	30.35	20.27
		30°C	65.54	43.81	14.10	63.03	42.84	14.91	61.61	42.68	16.03	58.84	41.62	16.97	54.81	39.72	18.39	51.25	38.39	20.28
		33°C	65.70	51.74	14.11	63.19	50.75	14.92	61.77	50.72	16.04	59.02	49.66	16.98	55.21	47.03	18.42	52.00	44.95	20.34
		36°C	65.99	57.46	14.16	63.72	55.98	14.99	62.96	55.86	16.13	60.42	54.22	17.10	56.91	51.73	18.54	53.83	49.59	20.49
6700	16°C	21°C	56.80	39.81	13.58	54.55	38.76	14.36	53.26	38.44	15.45	50.71	37.27	16.38	47.07	35.32	17.79	43.74	33.80	19.67
		24°C	57.15	49.10	13.60	55.10	47.67	14.40	53.96	47.06	15.50	51.57	45.40	16.44	48.05	42.76	17.85	44.95	40.60	19.76
		27°C	59.32	57.31	13.71	57.38	55.72	14.53	56.40	55.05	15.65	54.14	53.11	16.62	50.73	50.01	18.05	47.78	47.33	19.98
		30°C	61.50	61.50	13.92	59.47	59.47	14.74	57.35	57.35	15.88	55.13	55.13	16.85	51.13	51.13	18.30	48.26	48.26	20.23
	19°C	24°C	61.97	39.63	13.88	59.52	38.59	14.68	58.12	38.28	15.78	55.38	37.13	16.72	51.47	35.22	18.12	47.93	33.77	20.01
		27°C	62.27	49.15	13.90	59.82	48.09	14.70	58.43	47.95	15.80	55.69	46.78	16.74	51.95	44.33	18.15	48.65	42.10	20.06
		30°C	63.54	56.30	13.97	61.25	54.75	14.78	60.05	54.22	15.91	57.51	52.52	16.86	53.87	49.63	18.30	50.87	47.10	20.24
		33°C	64.91	64.91	14.13	62.83	62.83	14.97	60.64	60.64	16.12	58.31	58.31	17.10	54.73	54.73	18.56	51.79	51.79	20.51
	22°C	27°C	67.44	39.11	14.22	64.78	38.16	15.03	63.29	37.94	16.15	60.35	36.82	17.09	56.14	34.96	18.50	52.40	33.57	20.39
		30°C	67.67	48.84	14.24	65.03	47.82	15.05	63.54	47.70	16.17	60.61	46.57	17.11	56.41	44.49	18.52	52.71	43.09	20.41
		33°C	68.15	57.90	14.26	65.71	56.32	15.09	64.44	55.77	16.23	61.72	53.99	17.19	57.68	51.11	18.63	54.30	48.92	20.54
		36°C	69.42	62.50	14.37	66.98	61.24	15.21	65.28	60.14	16.37	62.88	58.22	17.36	58.48	54.41	18.83	54.86	51.30	20.79
8040	16°C	21°C	58.15	42.85	13.66	55.83	41.76	14.45	54.46	41.43	15.53	51.84	40.20	16.46	48.09	38.13	17.86	44.66	36.54	19.75
		24°C	59.18	52.07	13.72	56.93	50.51	14.51	55.71	49.88	15.61	53.21	48.13	16.56	49.58	45.38	17.96	46.51	42.85	19.89
		27°C	62.04	59.94	13.88	59.87	58.14	14.69	58.87	57.45	15.82	56.44	55.36	16.78	52.83	52.08	18.22	49.69	49.23	20.15
		30°C	63.71	63.71	14.10	61.56	61.56	14.93	59.30	59.30	16.07	56.94	56.94	17.04	53.59	53.59	18.49	50.00	50.00	20.42
	19°C	24°C	63.40	42.73	13.97	60.84	41.64	14.77	59.34	41.33	15.87	56.48	40.13	16.80	52.49	38.13	18.20	48.88	36.63	20.09
		27°C	63.82	53.53	14.00	61.34	52.26	14.80	60.07	51.62	15.91	57.37	49.80	16.86	53.49	46.97	18.28	50.11	44.68	20.18
		30°C	65.76	59.13	14.11	63.51	57.63	14.93	62.43	56.95	16.07	59.94	54.95	17.05	56.18	51.76	18.49	52.98	49.05	20.42
		33°C	67.29	67.29	14.33	65.09	65.09	15.17	63.39	63.39	16.33	60.95	60.95	17.31	57.16	57.16	18.77	53.44	53.44	20.72
	22°C	27°C	68.87	42.37	14.31	66.13	41.31	15.13	64.54	41.03	16.24	61.46	39.85	17.18	57.20	37.92	18.59	53.40	36.50	20.47
		30°C	69.26	53.30	14.34	66.50	52.21	15.15	64.91	52.13	16.27	61.85	50.94	17.21	57.65	48.59	18.62	54.09	46.28	20.53
		33°C	70.56	61.75	14.41	67.95	60.05	15.24	66.57	59.49	16.38	63.75	57.67	17.34	59.56	54.60	18.78	56.32	51.88	20.72
		36°C	71.72	64.76	14.57	68.66	62.31	15.43	67.67	61.72	16.61	65.10	59.68	17.59	60.50	55.73	19.07	57.28	53.04	21.03

Remark:

- AFR: Air flow rate (CFM)
- EWB: Entering Wet Bulb Temp. (°C)
- EDB: Entering Dry Bulb Temp. (°C)
- TC: Total Cooling Capacity (kW)
- SHC: Sensible Heat Capacity (kW)
- PI: Power Input (kW)

Notes:

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

Performance Data

Model: UATYQ600

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
5840	16°C	21°C	65.79	42.92	15.81	63.31	41.83	16.73	61.87	41.49	18.01	58.96	40.15	19.11	54.79	38.00	20.75	50.98	36.30	22.98
		24°C	66.05	50.03	15.82	63.54	48.91	16.74	62.11	48.69	18.02	59.22	47.41	19.12	55.24	44.77	20.78	51.70	42.44	23.03
		27°C	67.45	61.32	15.89	65.13	59.67	16.83	63.92	59.08	18.13	61.26	57.04	19.25	57.49	54.07	20.93	54.21	51.23	23.21
		30°C	69.20	69.20	16.06	67.05	67.05	17.03	64.74	64.74	18.35	62.29	62.29	19.50	58.46	58.46	21.19	55.26	55.26	23.48
	19°C	24°C	71.95	40.51	16.16	69.16	39.46	17.09	67.64	39.16	18.38	64.49	37.98	19.48	60.04	36.05	21.14	55.97	34.48	23.36
		27°C	72.14	49.87	16.17	69.39	48.76	17.10	67.83	48.57	18.39	64.72	47.31	19.50	60.24	45.09	21.15	56.21	43.50	23.38
		30°C	72.51	58.47	16.19	70.04	56.90	17.14	68.74	56.32	18.45	65.84	54.49	19.57	61.60	51.55	21.25	57.91	49.22	23.50
		33°C	73.88	73.88	16.29	70.70	70.70	17.26	71.16	71.16	18.60	68.56	68.56	19.75	62.51	62.51	21.46	59.83	59.83	23.75
	22°C	27°C	78.06	39.75	16.54	75.45	38.93	17.49	73.78	38.64	18.80	70.40	37.51	19.91	65.59	35.63	21.57	61.34	34.25	23.80
		30°C	78.64	49.44	16.55	75.63	48.34	17.50	73.93	48.16	18.81	70.60	46.97	19.92	65.77	44.82	21.58	61.50	43.32	23.81
		33°C	78.83	58.39	16.56	75.82	57.27	17.51	74.12	57.24	18.83	70.81	56.04	19.94	66.24	53.07	21.62	62.40	50.73	23.88
		36°C	79.18	64.84	16.62	76.46	63.17	17.60	75.54	63.04	18.94	72.49	61.18	20.07	68.28	58.37	21.77	64.58	55.96	24.05
7300	16°C	21°C	68.15	44.93	15.94	65.45	43.74	16.86	63.90	43.37	18.14	60.85	42.05	19.23	56.48	39.86	20.88	52.48	38.14	23.09
		24°C	68.58	55.41	15.97	66.11	53.79	16.90	64.75	53.10	18.19	61.88	51.23	19.30	57.66	48.25	20.96	53.93	45.81	23.20
		27°C	71.18	64.67	16.10	68.85	62.88	17.06	67.68	62.12	18.37	64.97	59.93	19.51	60.87	56.43	21.19	57.32	53.41	23.46
		30°C	73.79	73.79	16.34	71.35	71.35	17.30	68.81	68.81	18.64	66.14	66.14	19.78	61.34	61.34	21.48	57.91	57.91	23.75
	19°C	24°C	74.36	44.73	16.30	71.41	43.55	17.23	69.74	43.19	18.52	66.45	41.90	19.62	61.76	39.75	21.27	57.52	38.11	23.49
		27°C	74.72	55.47	16.32	71.78	54.27	17.25	70.11	54.11	18.55	66.82	52.79	19.65	62.33	50.02	21.31	58.37	47.51	23.55
		30°C	76.24	63.53	16.40	73.49	61.78	17.35	72.05	61.18	18.67	69.00	59.26	19.79	64.63	56.00	21.48	61.03	53.14	23.75
		33°C	77.88	77.88	16.58	75.39	75.39	17.57	72.76	72.76	18.92	69.96	69.96	20.08	65.67	65.67	21.79	62.14	62.14	24.07
	22°C	27°C	80.91	44.13	16.69	77.73	43.06	17.64	75.94	42.81	18.96	72.41	41.55	20.06	67.36	39.45	21.71	62.88	37.88	23.93
		30°C	81.20	55.11	16.71	78.02	53.96	17.66	76.24	53.83	18.98	72.72	52.55	20.08	67.68	50.21	21.74	63.24	48.62	23.96
		33°C	81.77	65.34	16.74	78.85	63.55	17.71	77.32	62.93	19.05	74.05	60.93	20.17	69.21	57.68	21.86	65.15	55.20	24.11
		36°C	83.29	70.53	16.87	80.36	69.10	17.85	78.33	67.86	19.21	75.44	65.69	20.38	70.16	61.40	22.10	65.82	57.89	24.41
8760	16°C	21°C	69.77	48.35	16.04	66.98	47.13	16.96	65.35	46.76	18.23	62.20	45.37	19.32	57.70	43.03	20.97	53.58	41.23	23.18
		24°C	71.01	58.76	16.10	68.31	57.00	17.03	66.85	56.28	18.33	63.84	54.31	19.43	59.48	51.21	21.09	55.81	48.35	23.34
		27°C	74.44	67.64	16.29	71.84	65.61	17.25	70.63	64.83	18.58	67.72	62.47	19.70	63.39	58.77	21.39	59.62	55.55	23.65
		30°C	76.44	76.44	16.55	73.86	73.86	17.53	71.16	71.16	18.87	68.32	68.32	20.01	64.30	64.30	21.70	59.99	59.99	23.97
	19°C	24°C	76.07	48.22	16.40	73.00	46.9	17.34	71.20	46.64	18.63	67.77	45.28	19.72	62.99	43.03	21.37	58.65	41.34	23.58
		27°C	76.57	60.41	16.43	73.60	58.97	17.37	72.07	58.25	18.68	68.84	56.20	19.79	64.19	53.00	21.46	60.13	50.42	23.69
		30°C	78.90	66.72	16.56	76.20	65.04	17.53	74.91	64.26	18.87	71.92	62.01	20.01	67.41	58.40	21.70	63.57	55.36	23.97
		33°C	80.73	80.73	16.82	78.10	78.10	17.81	76.06	76.06	19.17	73.13	73.13	20.32	68.58	68.58	22.04	64.12	64.12	24.32
	22°C	27°C	82.63	47.81	16.80	79.35	46.62	17.75	77.44	46.30	19.07	73.74	44.97	20.17	68.63	42.79	21.82	64.07	41.19	24.03
		30°C	83.11	60.14	16.83	79.79	58.92	17.78	77.88	58.82	19.10	74.21	57.49	20.20	69.17	54.83	21.86	64.90	52.22	24.10
		33°C	84.67	69.68	16.91	81.53	67.76	17.89	79.87	67.13	19.23	76.50	65.07	20.35	71.47	61.61	22.04	67.57	58.55	24.32
		36°C	86.05	73.08	17.10	82.38	70.32	18.11	81.19	69.65	19.49	78.11	67.34	20.65	72.59	62.89	22.38	68.73	59.85	24.68

Remark:

- AFR: Air flow rate (CFM)
- EWB: Entering Wet Bulb Temp. (°C)
- EDB: Entering Dry Bulb Temp. (°C)
- TC: Total Cooling Capacity (kW)
- SHC: Sensible Heat Capacity (kW)
- PI: Power Input (kW)

Notes:

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

## Model: UATYQ700

AFR (CFM)	EWB	EDB	Outdoor temperature																	
			19°C			25°C			30°C			35°C			40°C			46°C		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
6640	16°C	21°C	71.48	48.41	17.39	68.79	47.18	18.40	67.22	46.80	19.80	64.06	45.28	21.01	59.53	42.86	22.82	55.39	40.94	25.27
		24°C	71.76	56.43	17.40	69.04	55.16	18.41	67.48	54.91	19.82	64.35	53.47	21.03	60.02	50.49	22.86	56.18	47.87	25.33
		27°C	73.28	69.15	17.48	70.77	67.29	18.51	69.45	66.63	19.93	66.56	64.33	21.17	62.47	60.98	23.02	58.90	57.78	25.53
		30°C	75.19	75.19	17.67	72.85	72.85	18.72	70.34	70.34	20.18	67.68	67.68	21.44	63.52	63.52	23.31	60.04	60.04	25.82
	19°C	24°C	78.17	45.69	17.77	75.14	44.50	18.80	73.49	44.16	20.22	70.07	42.84	21.43	65.23	40.66	23.25	60.81	38.89	25.69
		27°C	78.38	56.24	17.78	75.39	54.99	18.81	73.70	54.77	20.23	70.32	53.36	21.44	65.45	50.85	23.26	61.07	49.06	25.71
		30°C	78.78	65.94	17.80	76.10	64.17	18.85	74.69	63.52	20.29	71.53	61.45	21.53	66.93	58.13	23.37	62.92	55.51	25.85
		33°C	80.27	80.27	17.92	76.81	76.81	18.98	77.32	77.32	20.46	74.49	74.49	21.72	67.92	67.92	23.61	65.00	65.00	26.12
	22°C	27°C	84.81	44.83	18.19	81.97	43.90	19.24	80.16	43.58	20.68	76.49	42.30	21.89	71.27	40.18	23.72	66.65	38.63	26.17
		30°C	85.44	55.76	18.20	82.17	54.52	19.25	80.32	54.31	20.69	76.71	52.97	21.91	71.46	50.54	23.74	66.82	48.86	26.18
		33°C	85.64	65.85	18.21	82.38	64.59	19.26	80.53	64.55	20.71	76.94	63.20	21.93	71.97	59.85	23.78	67.79	57.21	26.26
		36°C	86.03	73.13	18.28	83.07	71.24	19.35	82.07	71.09	20.82	78.76	69.00	22.07	74.19	65.83	23.94	70.17	63.11	26.45
8300	16°C	21°C	74.05	50.67	17.53	71.11	49.33	18.54	69.43	48.92	19.95	66.11	47.43	21.15	61.36	44.95	22.96	57.02	43.01	25.40
		24°C	74.51	62.49	17.56	71.83	60.66	18.58	70.35	59.89	20.01	67.23	57.77	21.22	62.64	54.42	23.05	58.60	51.66	25.51
		27°C	77.33	72.94	17.70	74.81	70.91	18.76	73.53	70.06	20.21	70.59	67.59	21.45	66.13	63.64	23.30	62.28	60.23	25.80
		30°C	80.17	80.17	17.96	77.52	77.52	19.03	74.76	74.76	20.50	71.87	71.87	21.76	66.65	66.65	23.62	62.92	62.92	26.12
	19°C	24°C	80.79	50.44	17.92	77.59	49.11	18.95	75.77	48.71	20.37	72.20	47.25	21.58	67.10	44.83	23.29	62.49	42.97	25.84
		27°C	81.18	62.55	17.95	77.98	61.20	18.98	76.17	61.02	20.40	72.60	59.53	21.61	67.72	56.41	23.43	63.42	53.58	25.90
		30°C	82.84	71.64	18.03	79.85	69.68	19.08	78.28	69.00	20.54	74.97	66.84	21.77	70.22	63.15	23.63	66.31	59.93	26.12
		33°C	84.61	84.61	18.24	81.91	81.91	19.32	79.05	79.05	20.81	76.02	76.02	22.08	71.35	71.35	23.96	67.52	67.52	26.47
	22°C	27°C	87.91	49.77	18.36	84.45	48.56	19.40	82.51	48.28	20.85	78.67	46.86	22.06	73.18	44.49	23.88	68.31	42.73	26.32
		30°C	88.22	62.16	18.38	84.77	60.86	19.42	82.83	60.71	20.87	79.01	59.27	22.09	73.53	56.62	23.91	68.72	54.83	26.35
		33°C	88.84	73.68	18.41	85.67	71.67	19.48	84.01	70.97	20.95	80.45	68.71	22.19	75.20	65.04	24.05	70.78	62.26	26.51
		36°C	90.50	79.54	18.55	87.31	77.93	19.63	85.10	76.53	21.13	81.97	74.09	22.41	76.23	69.25	24.31	71.51	65.28	26.84
9960	16°C	21°C	75.81	54.53	17.64	72.78	53.15	18.65	71.00	52.73	20.05	67.58	51.16	21.25	62.69	48.53	23.06	58.21	46.50	25.50
		24°C	77.15	66.27	17.71	74.22	64.28	18.73	72.63	63.48	20.16	69.37	61.25	21.37	64.63	57.75	23.19	60.63	54.53	25.67
		27°C	80.88	76.28	17.91	78.05	73.99	18.97	76.74	73.11	20.43	73.58	70.45	21.67	68.87	66.27	23.52	64.78	62.64	26.01
		30°C	83.05	83.05	18.20	80.25	80.25	19.27	77.31	77.31	20.75	74.23	74.23	22.00	69.86	69.86	23.87	65.18	65.18	26.36
	19°C	24°C	82.65	54.38	18.04	79.31	52.99	19.07	77.36	52.60	20.49	73.63	51.06	21.69	68.43	48.53	23.50	63.73	46.62	25.93
		27°C	83.20	68.12	18.07	79.96	66.50	19.10	78.31	65.70	20.54	74.79	63.38	21.77	69.74	59.77	23.60	65.33	56.86	26.05
		30°C	85.72	75.24	18.21	82.79	73.35	19.27	81.39	72.47	20.75	78.14	69.93	22.00	73.24	65.87	23.87	69.07	62.43	26.36
		33°C	87.72	87.72	18.50	84.85	84.85	19.59	82.64	82.64	21.08	79.46	79.46	22.35	74.51	74.51	24.23	69.66	69.66	26.74
	22°C	27°C	89.78	53.91	18.48	86.22	52.57	19.53	84.13	52.21	20.97	80.12	50.72	22.18	74.57	48.25	23.99	69.62	46.45	26.43
		30°C	90.30	67.83	18.51	86.69	66.45	19.56	84.62	66.34	21.00	80.63	64.83	22.22	75.15	61.84	24.04	70.51	58.90	26.50
		33°C	91.99	78.59	18.60	88.59	76.42	19.67	86.78	75.71	21.14	83.11	73.39	22.38	77.65	69.49	24.24	73.42	66.03	26.74
		36°C	93.50	82.41	18.81	89.51	79.30	19.92	88.22	78.55	21.44	84.87	75.95	22.71	78.86	70.93	24.61	74.68	67.50	27.15

## Remark:

AFR: Air flow rate (CFM)  
EWB: Entering Wet Bulb Temp. (°C)  
EDB: Entering Dry Bulb Temp. (°C)  
TC: Total Cooling Capacity (kW)  
SHC: Sensible Heat Capacity (kW)  
PI: Power Input (kW)

## Notes:

1. Ratings shown are gross capacities which do not include a deduction for indoor fan motor heat.
2. ■ shows nominal capacities.
3. Direct interpolation is permissible. Do not extrapolate.
4. Unit is able to operate at ambient from 0°C to 52°C without pressure trip.

## Heating Mode

### Model: UATYQ250

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	17.71	5.41	24.99	6.49	28.96	7.08	30.95	7.38	32.93	7.67
17	17.23	5.64	24.96	6.77	28.12	7.39	30.04	7.70	31.96	8.01
19	16.75	5.87	24.93	7.05	27.27	7.70	29.12	8.02	30.98	8.34
21	16.27	6.09	24.31	7.33	26.42	8.00	28.21	8.34	30.00	8.68
23	15.79	6.32	23.10	7.61	25.57	8.31	27.30	8.66	29.03	9.01
25	15.31	6.55	21.89	7.89	24.73	8.62	26.39	8.98	28.05	9.35
27	14.83	6.78	20.69	8.17	23.88	8.92	25.48	9.30	27.08	9.68

### Model: UATYQ350

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	24.73	7.83	34.90	9.40	40.44	10.25	43.21	10.68	45.99	11.11
17	24.23	8.18	34.86	9.88	40.18	10.80	42.99	11.27	45.80	11.73
19	23.74	8.53	34.81	10.36	39.91	11.36	42.76	11.86	45.61	12.35
21	23.24	8.88	34.51	10.84	39.64	11.91	42.53	12.44	45.43	12.98
23	22.74	9.23	33.94	11.32	39.37	12.46	42.31	13.03	45.24	13.60
25	22.25	9.58	33.37	11.80	39.11	13.01	42.08	13.62	45.06	14.22
27	21.75	9.93	32.81	12.28	38.84	13.57	41.85	14.21	44.87	14.85

### Model: UATYQ450

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	29.71	9.55	41.92	11.46	48.58	12.50	51.92	13.02	55.25	13.54
17	29.15	9.94	41.87	11.92	48.43	13.00	51.83	13.55	55.24	14.09
19	28.58	10.34	41.82	12.39	48.28	13.51	51.75	14.07	55.23	14.63
21	28.01	10.73	41.56	12.86	48.12	14.02	51.67	14.60	55.22	15.18
23	27.45	11.13	41.08	13.33	47.97	14.53	51.59	15.13	55.21	15.73
25	26.88	11.52	40.61	13.80	47.82	15.04	51.51	15.66	55.21	16.28
27	26.32	11.92	40.13	14.26	47.67	15.54	51.43	16.18	55.20	16.82

### Model: UATYQ550

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	38.34	11.76	54.09	14.11	62.69	15.39	66.99	16.03	71.28	16.67
17	37.53	12.22	54.03	14.58	62.09	15.88	66.42	16.52	70.76	17.17
19	36.72	12.68	53.96	15.06	61.49	16.36	65.86	17.01	70.23	17.66
21	35.92	13.14	53.38	15.54	60.89	16.85	65.29	17.51	69.70	18.16
23	35.11	13.60	52.27	16.02	60.29	17.34	64.73	18.00	69.17	18.66
25	34.30	14.06	51.16	16.49	59.69	17.82	64.17	18.49	68.64	19.15
27	33.50	14.52	50.05	16.97	59.09	18.31	63.60	18.98	68.12	19.65

Remarks:

TC = Total Cooling Capacity (kW)

PI = Power Input (kW)

## Model: UATYQ600

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	43.85	14.19	61.88	17.03	71.71	18.58	76.63	19.36	81.55	20.13
17	42.61	14.83	61.81	17.91	69.37	19.58	74.10	20.42	78.82	21.26
19	41.38	15.47	61.73	18.78	67.04	20.59	71.56	21.49	76.09	22.39
21	40.14	16.10	60.05	19.65	64.70	21.59	69.03	22.55	73.36	23.52
23	38.90	16.73	56.76	20.52	62.36	22.59	66.50	23.62	70.64	24.65
25	37.67	17.37	53.47	21.39	60.02	23.59	63.96	24.69	67.91	25.79
27	36.43	18.00	50.18	22.27	57.68	24.59	61.43	25.75	65.18	26.92

## Model: UATYQ700

Indoor DB, °C	Outdoor WB, °C									
	-5		6		12		15		18	
	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)	TC (kW)	PI (kW)
15	49.48	13.42	69.82	16.11	80.91	17.57	86.46	18.30	92.00	19.03
17	48.43	14.02	69.73	16.93	80.08	18.52	85.67	19.31	91.26	20.10
19	47.38	14.63	69.65	17.76	79.26	19.46	84.88	20.32	90.51	21.17
21	46.32	15.22	68.86	18.58	78.43	20.41	84.09	21.33	89.76	22.24
23	45.27	15.82	67.37	19.40	77.60	21.36	83.31	22.33	89.01	23.31
25	44.22	16.42	65.87	20.23	76.77	22.31	82.52	23.34	88.26	24.38
27	43.17	17.02	64.38	21.05	75.95	23.25	81.73	24.35	87.52	25.45

Remarks:

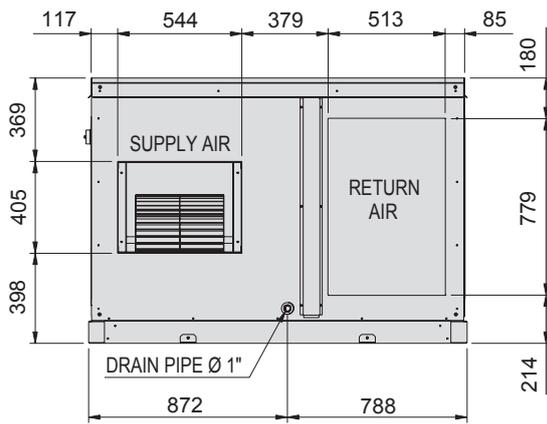
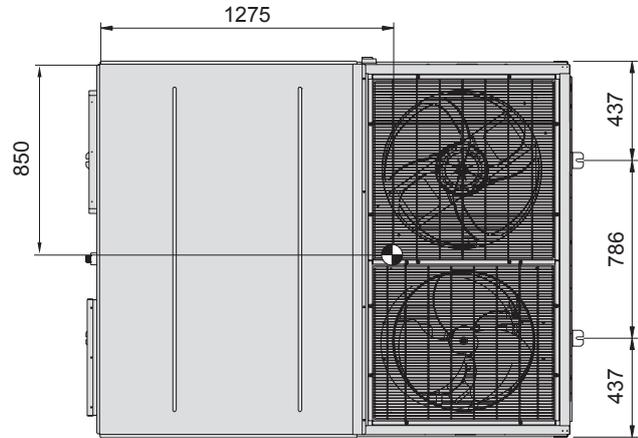
TC = Total Cooling Capacity (kW)

PI = Power Input (kW)

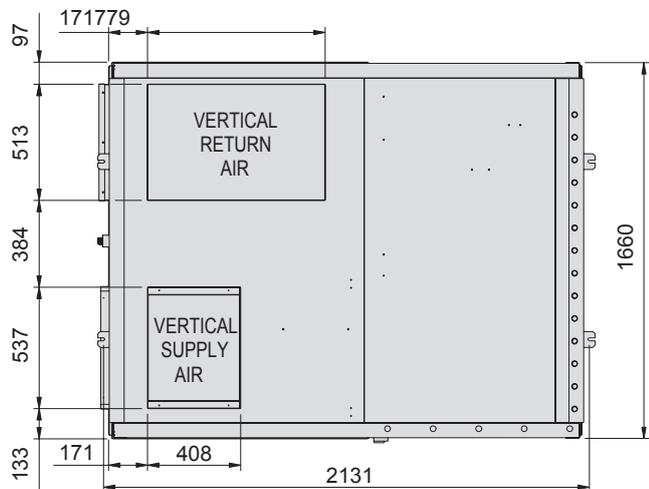
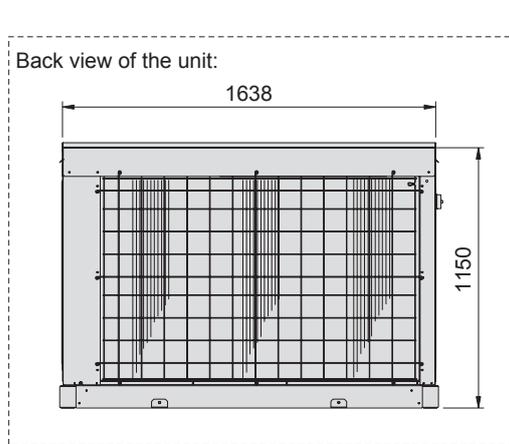
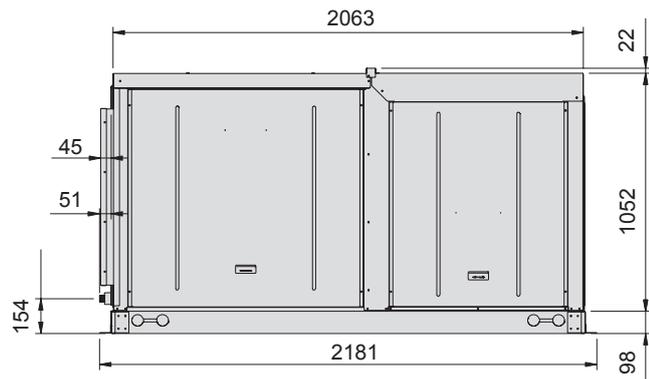
# Outlines & Dimensions

Model: UATYQ250

All dimensions are in mm



FOR HORIZONTAL DISCHARGE

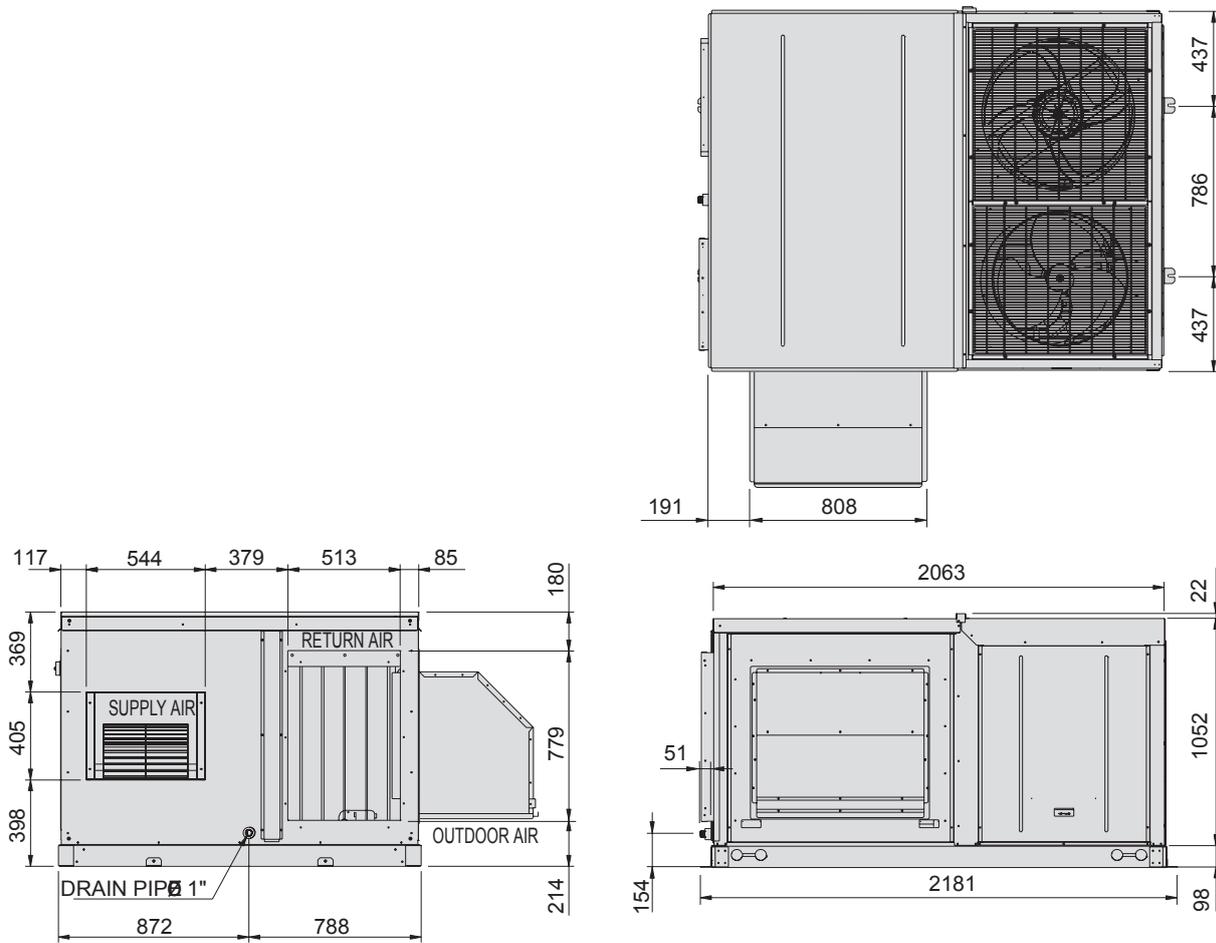


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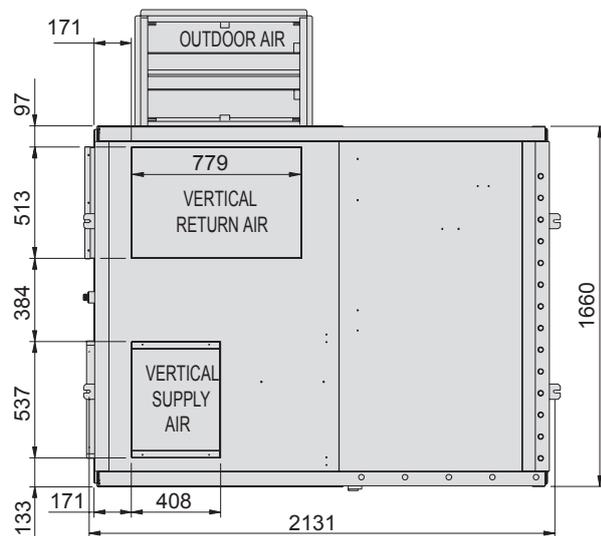
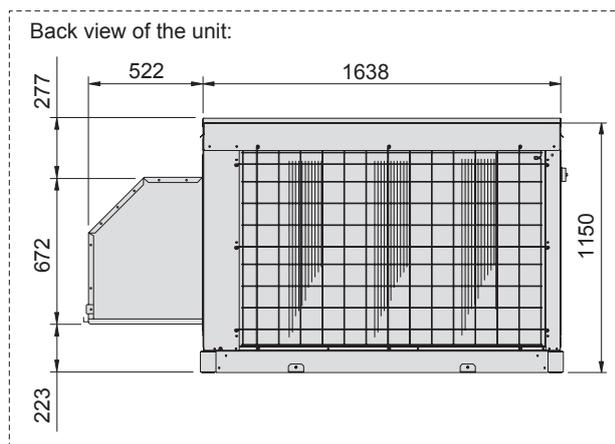
☉ CENTER OF GRAVITY

Model: UATYQ250 (With ECONO250)

All dimensions are in mm



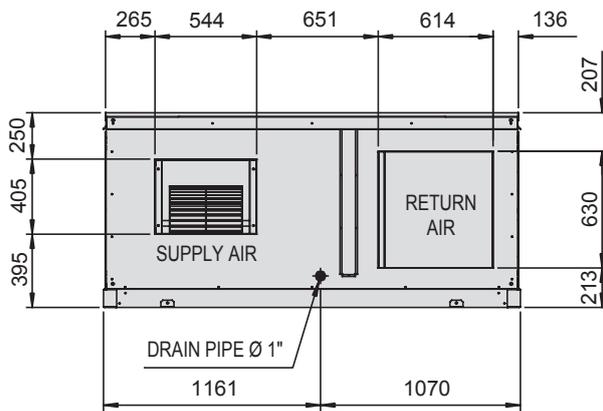
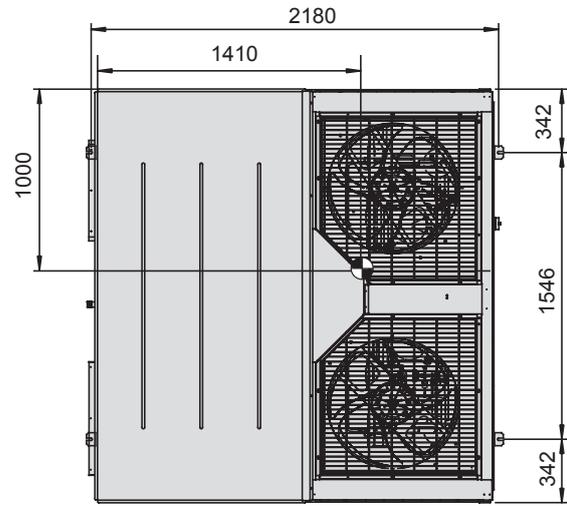
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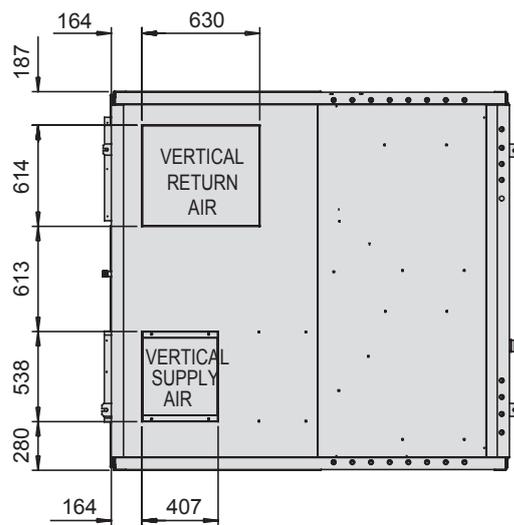
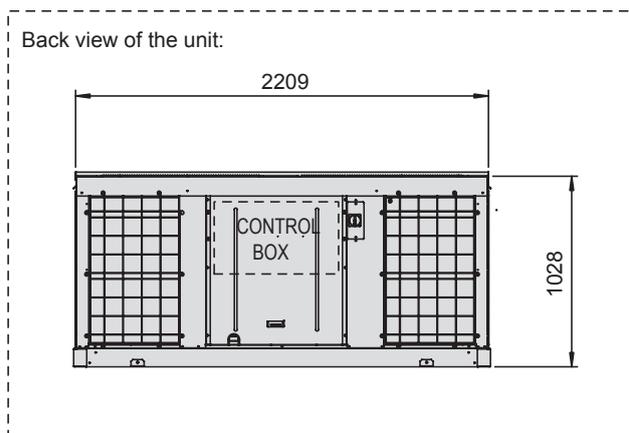
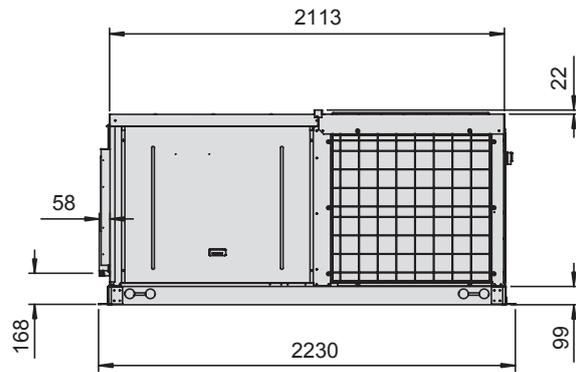
FOR VERTICAL DISCHARGE

Model: UATYQ350

All dimensions are in mm



FOR HORIZONTAL DISCHARGE

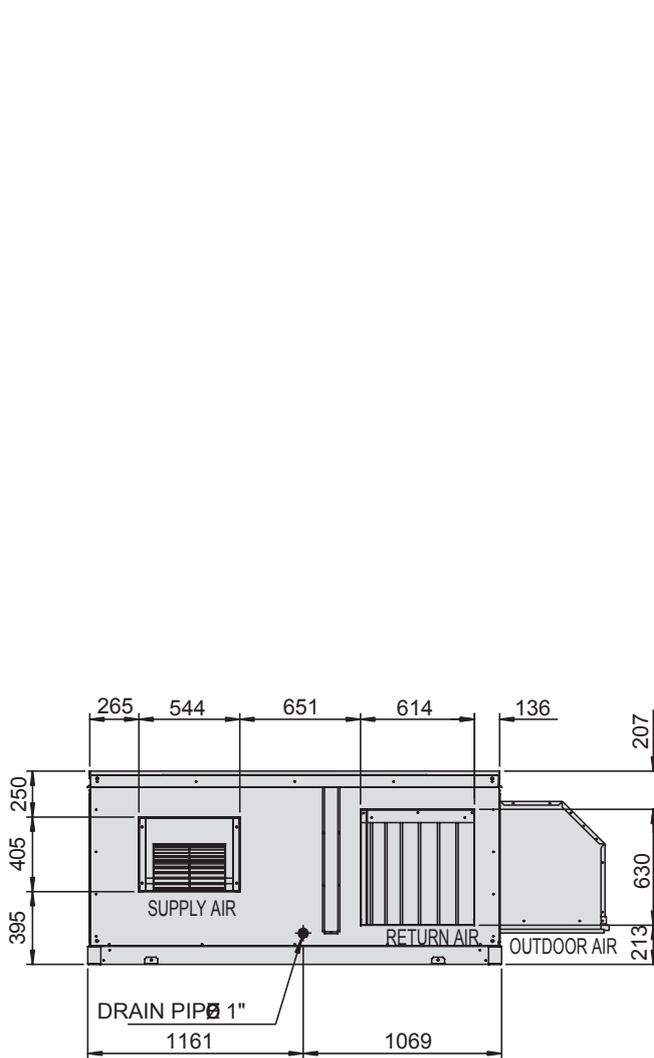


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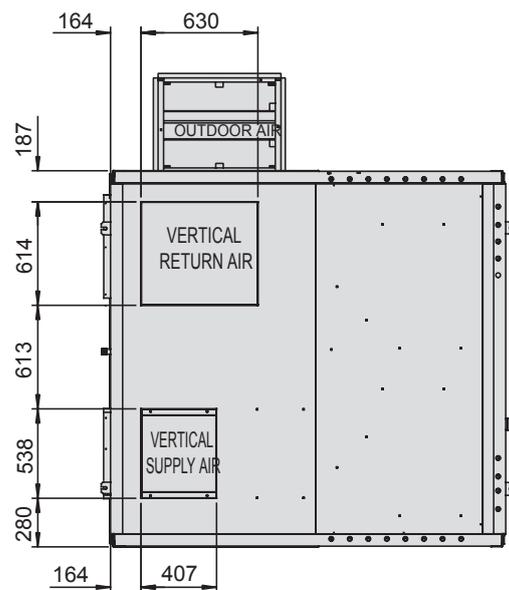
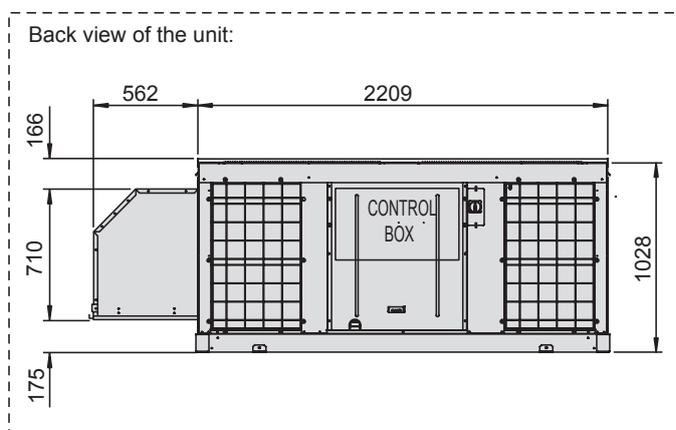
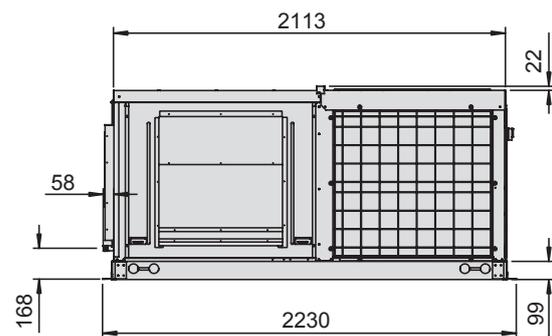
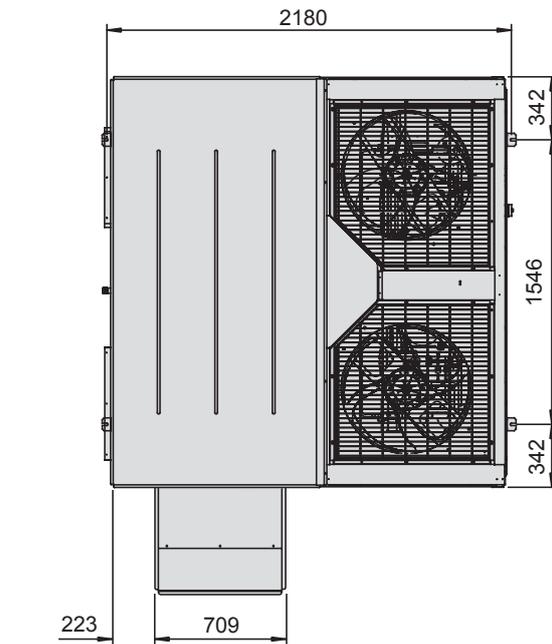
⊕ CENTER OF GRAVITY

Model: UATYQ350 (With ECONO350)

All dimensions are in mm



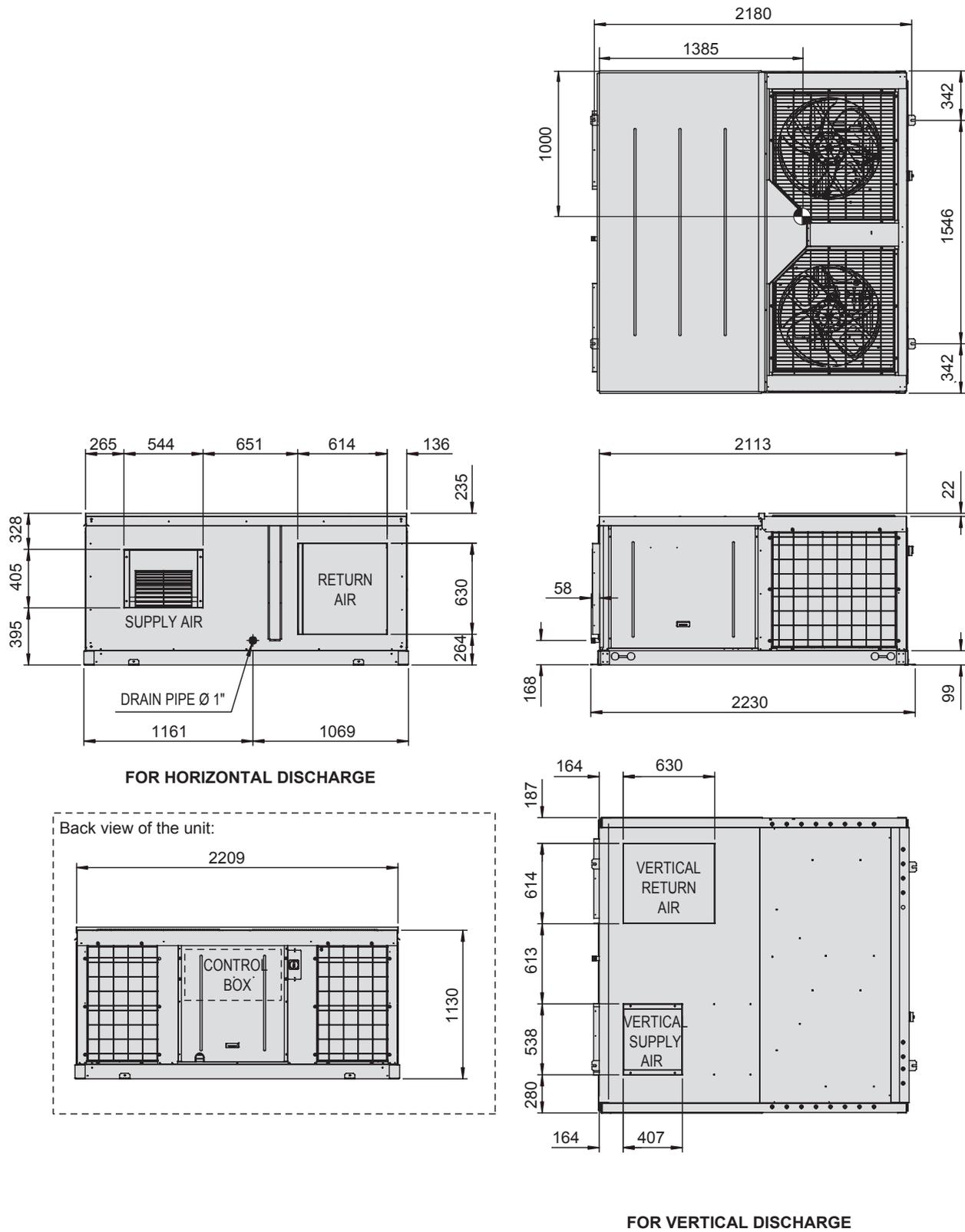
FOR HORIZONTAL DISCHARGE



FOR VERTICAL DISCHARGE

Model: UATYQ450

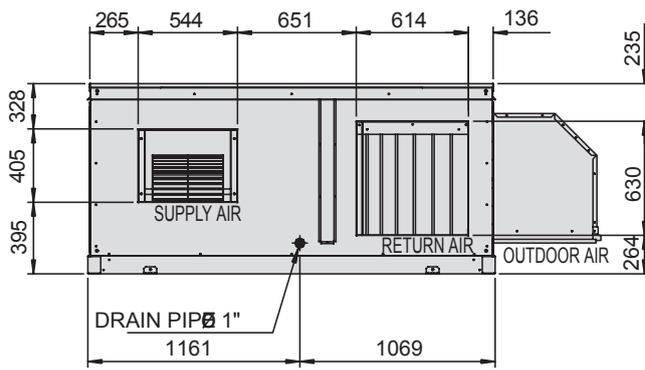
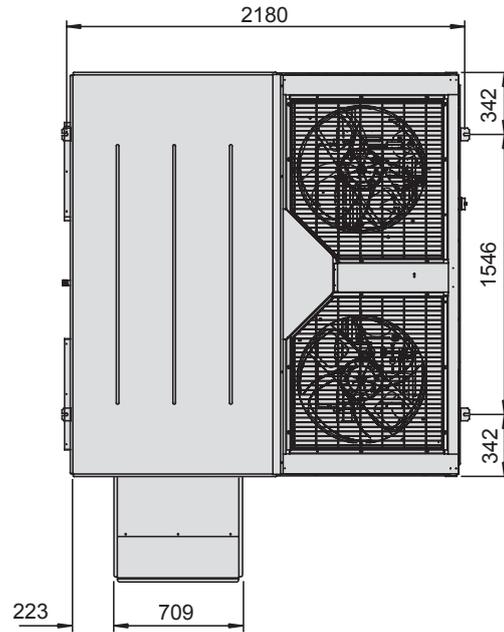
All dimensions are in mm



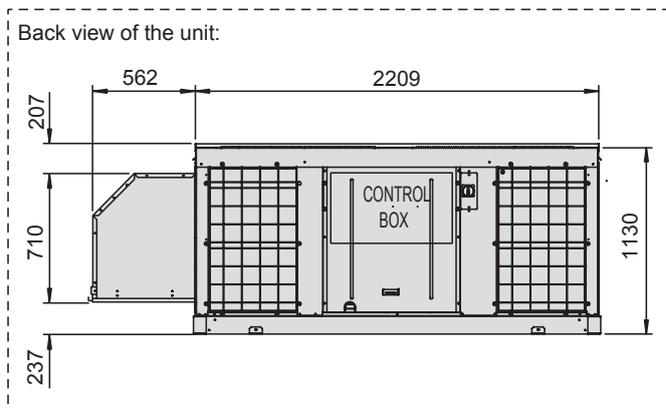
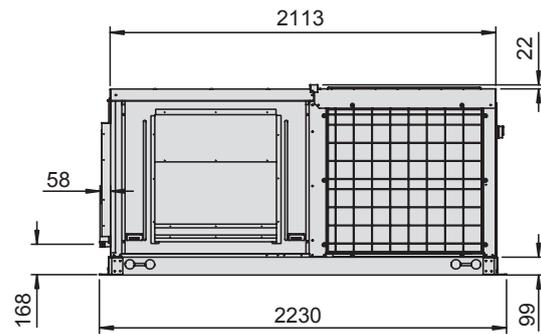
☉ CENTER OF GRAVITY

Model: UATYQ450 (With ECONO450)

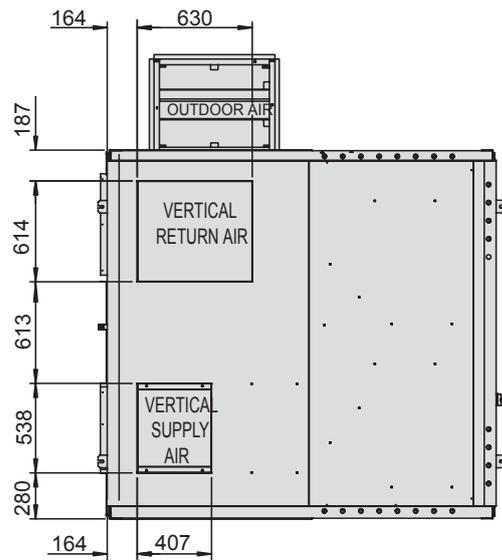
All dimensions are in mm



FOR HORIZONTAL DISCHARGE



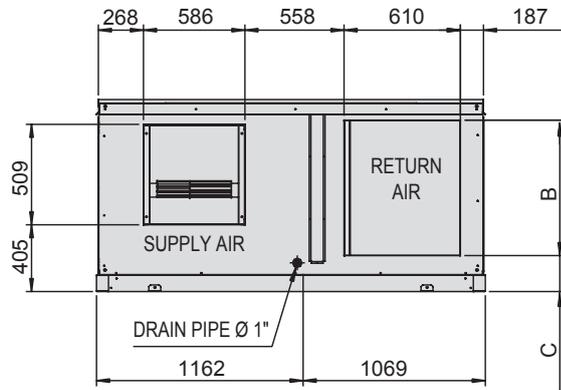
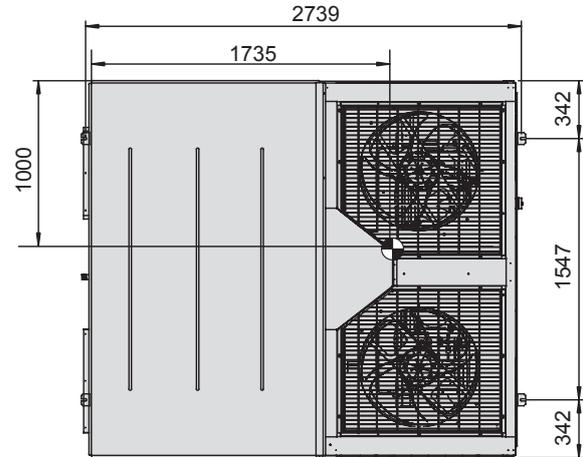
Back view of the unit:



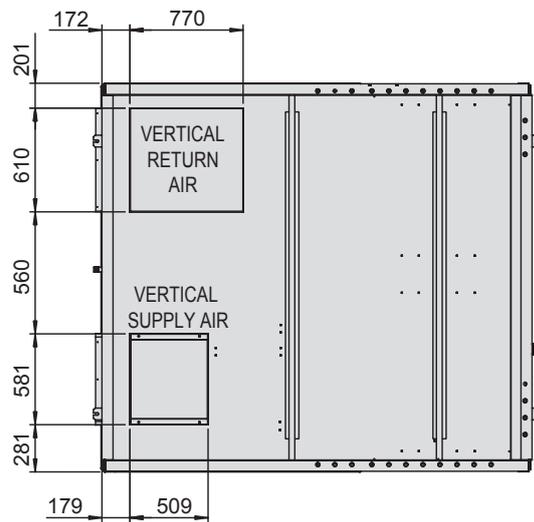
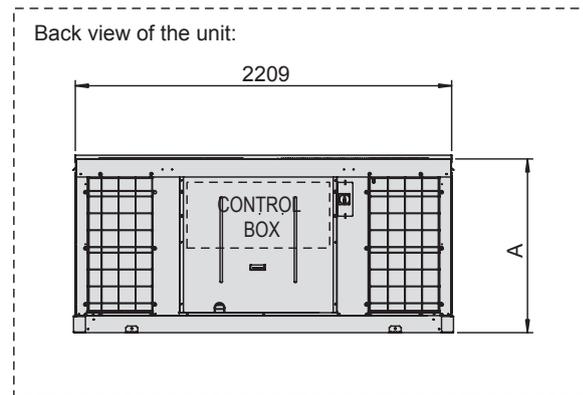
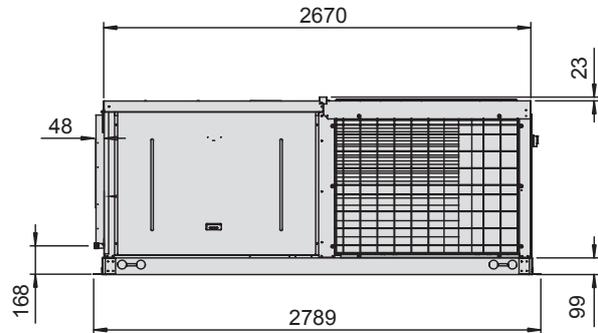
FOR VERTICAL DISCHARGE

Model: UATYQ550/600/700

All dimensions are in mm



FOR HORIZONTAL DISCHARGE



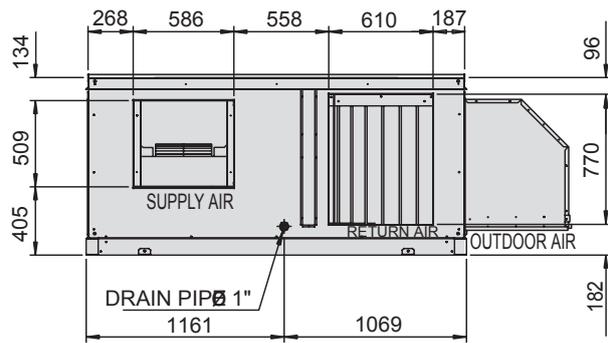
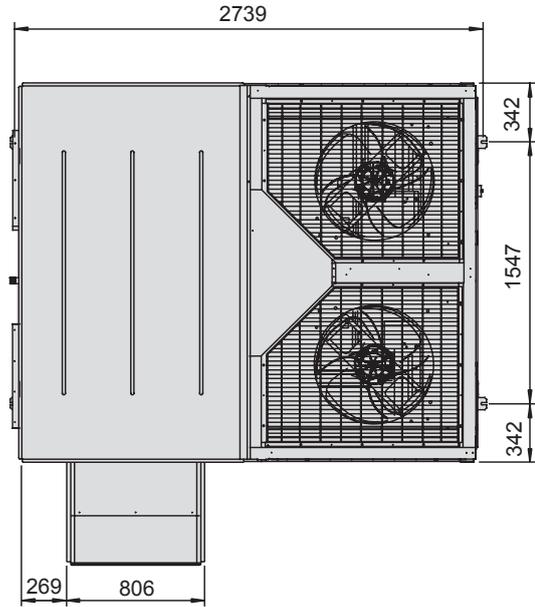
FOR VERTICAL DISCHARGE

Model (UATYQ)	550	600	700
A	1048	1302	1454
B	770	770	1176
C	182	322	182

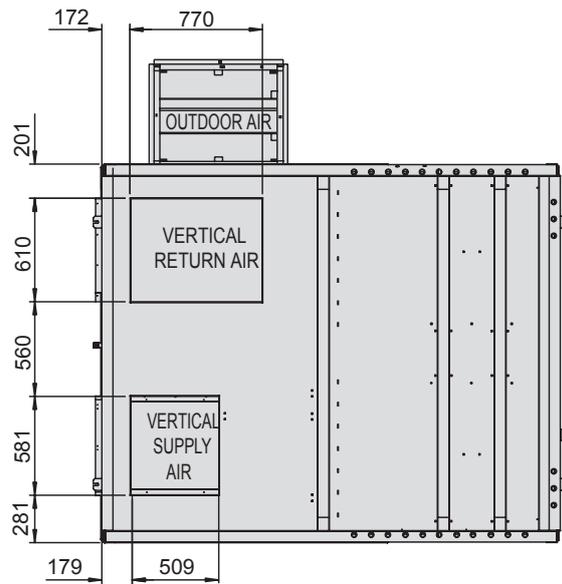
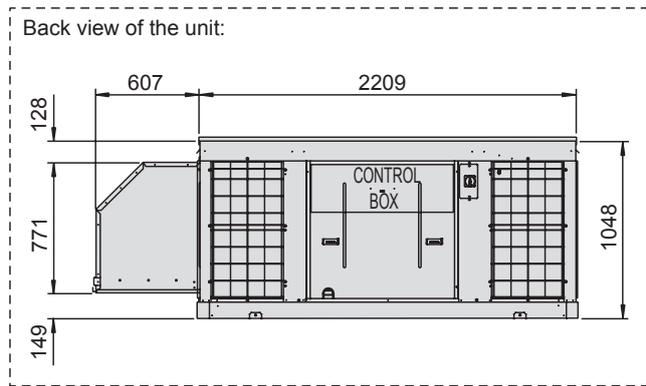
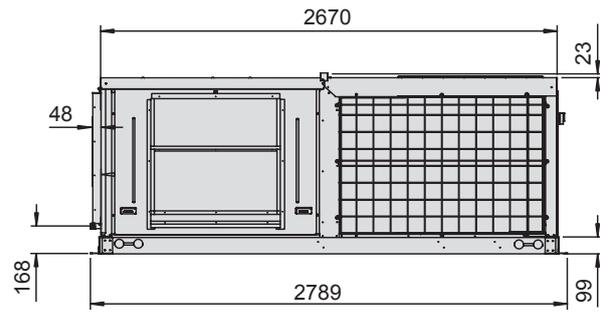
● CENTER OF GRAVITY

Model: UATYQ550 (With ECONO550)

All dimensions are in mm



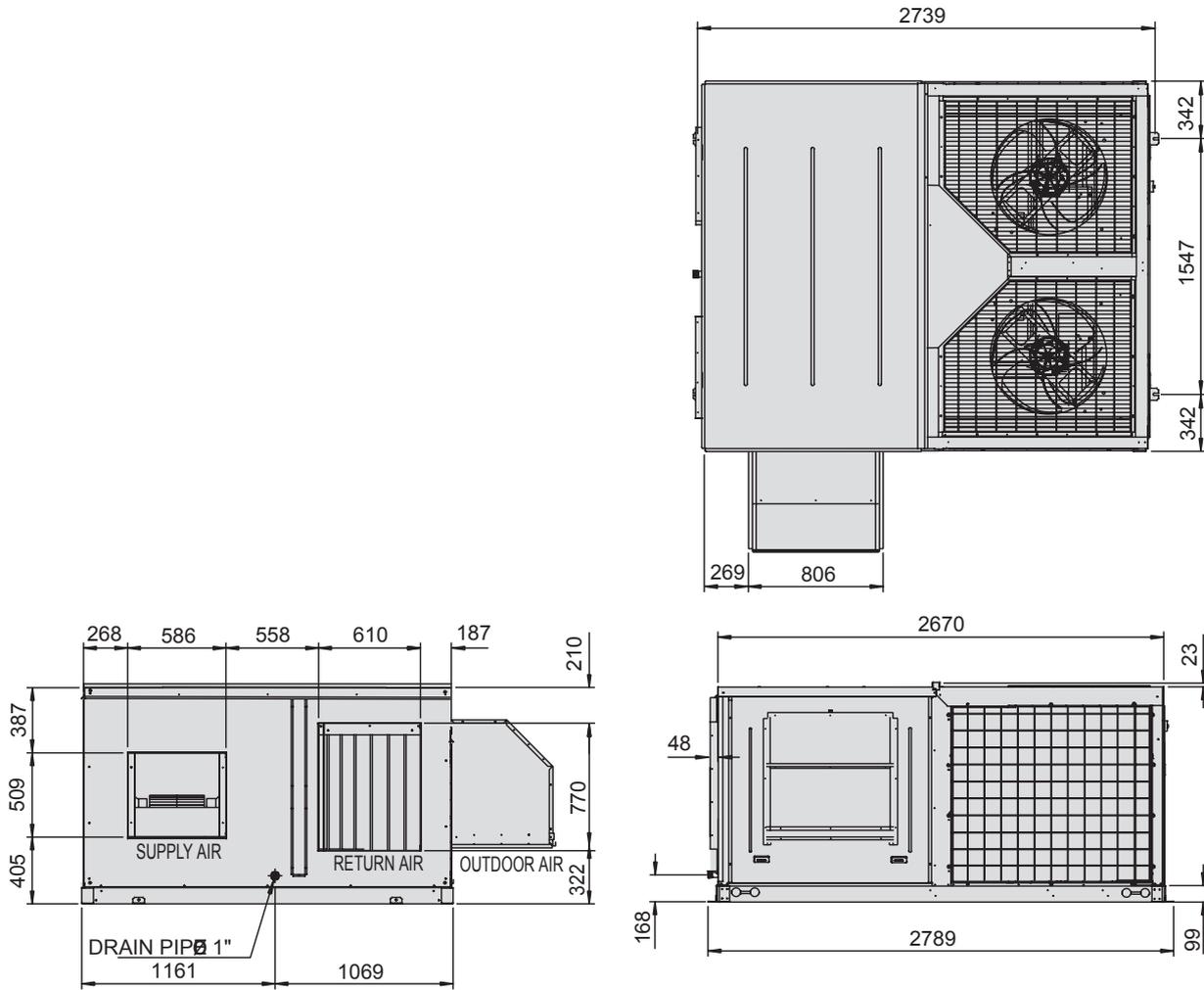
FOR HORIZONTAL DISCHARGE



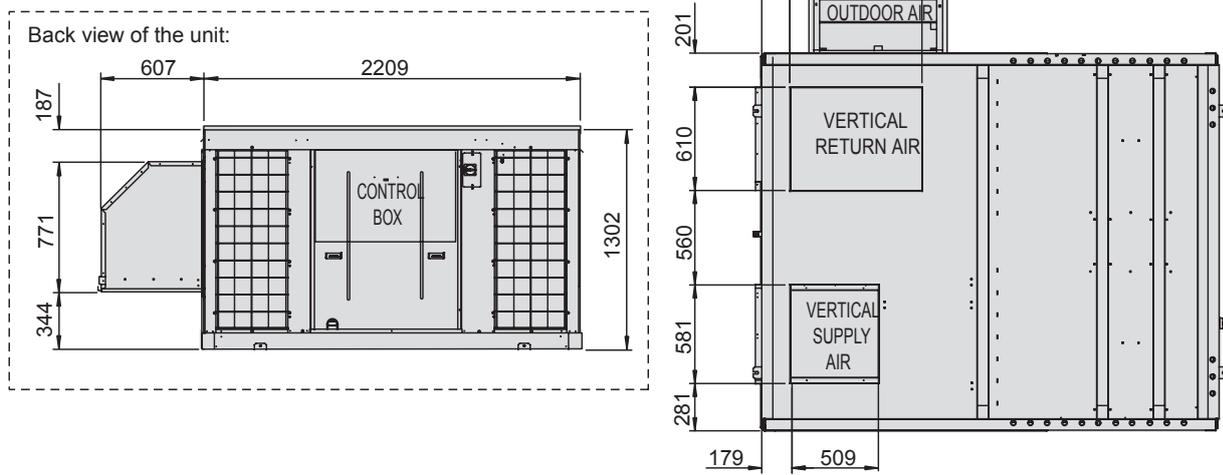
FOR VERTICAL DISCHARGE

Model: UATYQ600 (With ECONO600)

All dimensions are in mm



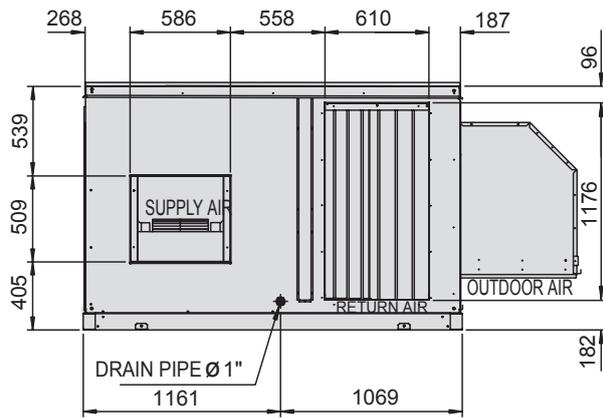
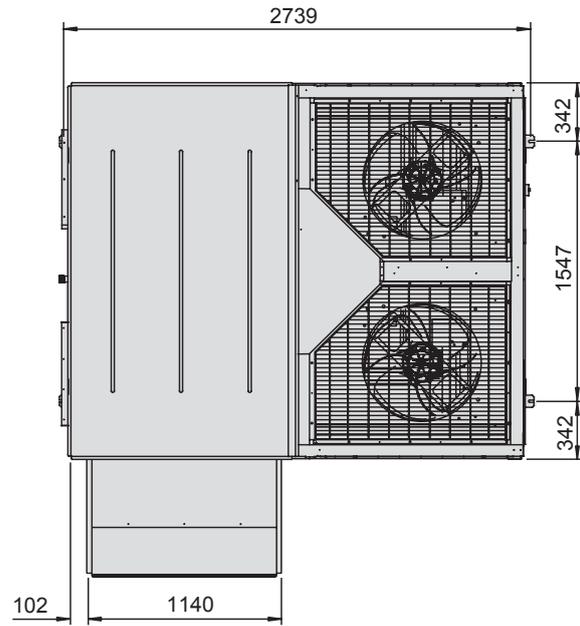
FOR HORIZONTAL DISCHARGE



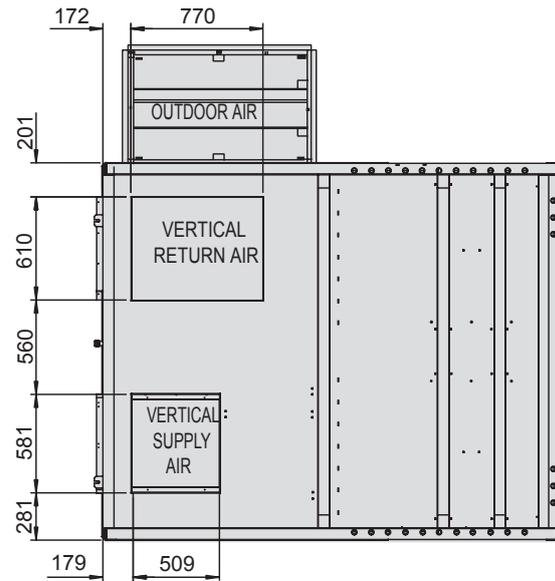
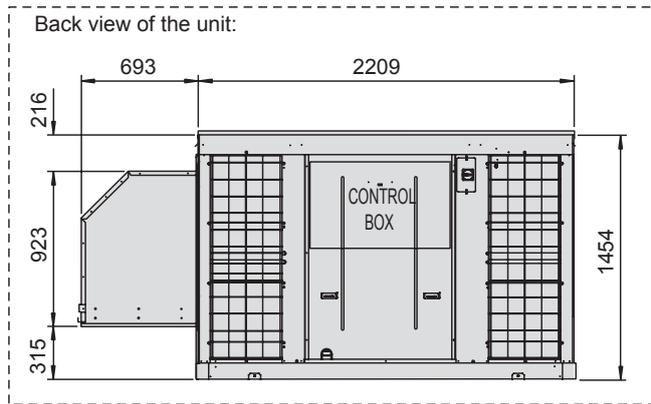
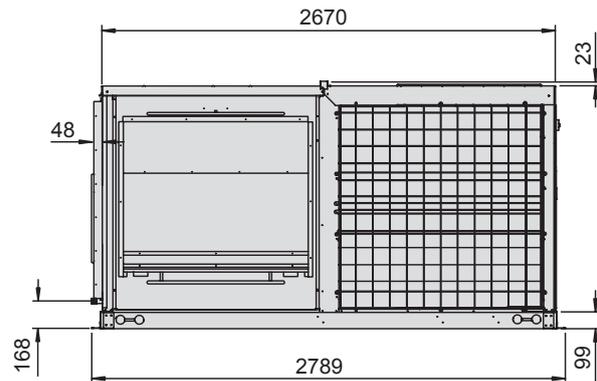
FOR VERTICAL DISCHARGE

Model: UATYQ700 (With ECONO700)

All dimensions are in mm

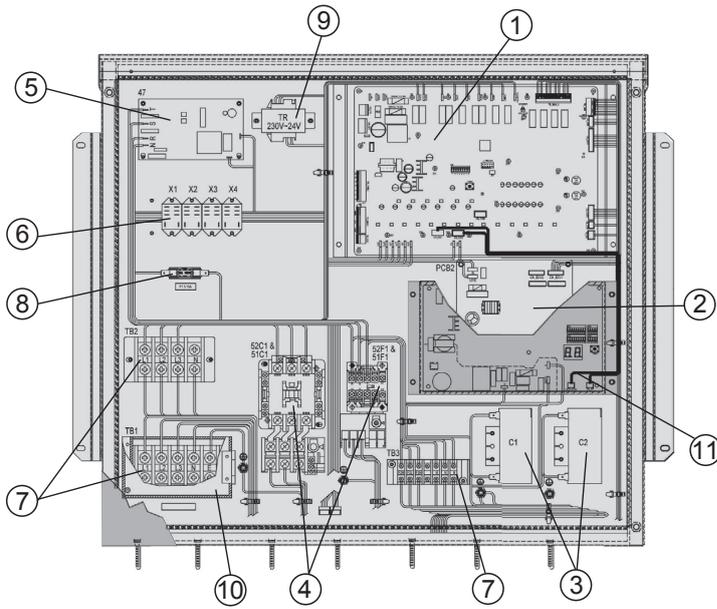


FOR HORIZONTAL DISCHARGE



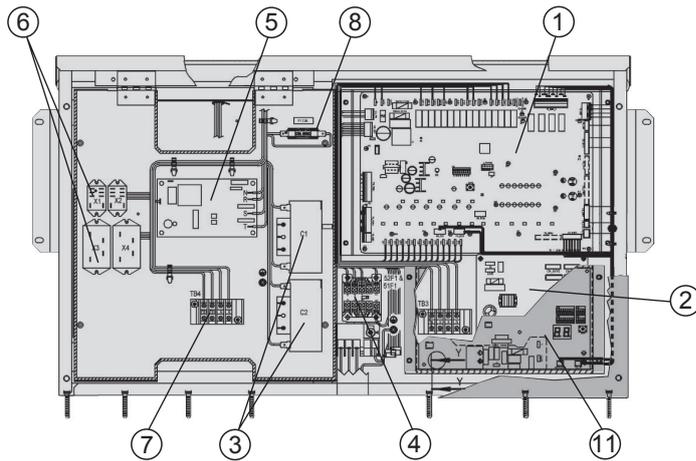
FOR VERTICAL DISCHARGE

Control Module Of Unit UATYQ250

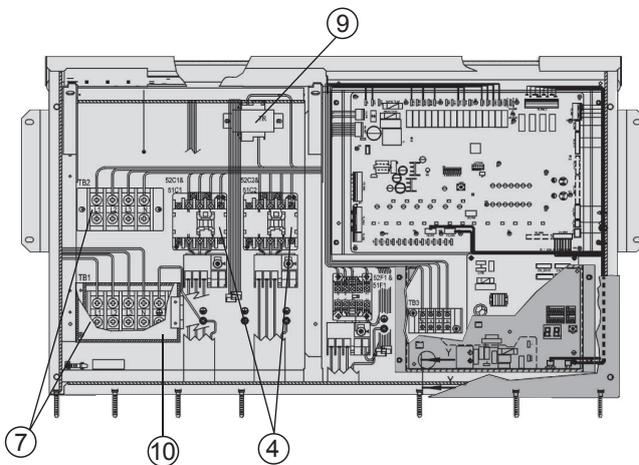


No.	Item Description
①	Controller Main Board
②	EXV Controller Board
③	Capacitor
④	Contactors
⑤	Phase Protector
⑥	Relay
⑦	Terminal Block
⑧	Fuse
⑨	Transformer
⑩	Terminal Block Cover
⑪	Economizer Controller Board

Control Module Of Unit UATYQ350/450/550



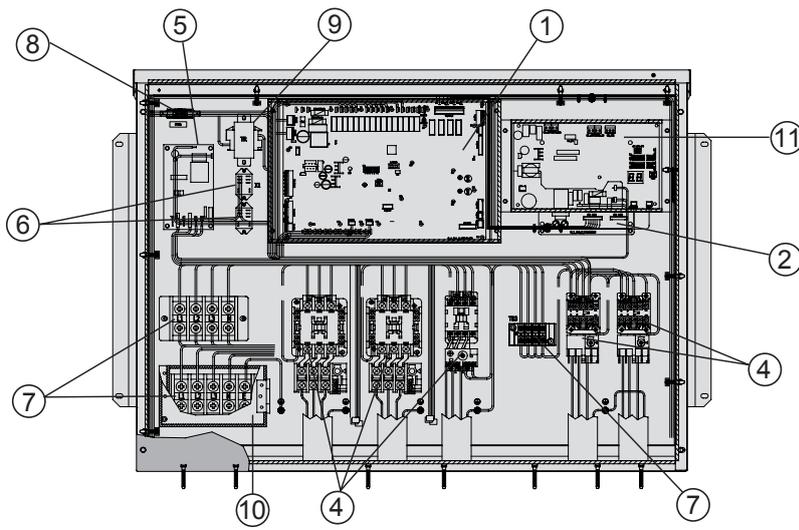
(Top Layer)



(Bottom Layer)

No.	Item Description
①	Controller Main Board
②	EXV Controller Board
③	Capacitor
④	Contactors
⑤	Phase Protector
⑥	Relay
⑦	Terminal Block
⑧	Fuse
⑨	Transformer
⑩	Terminal Block Cover
⑪	Economizer Controller Board

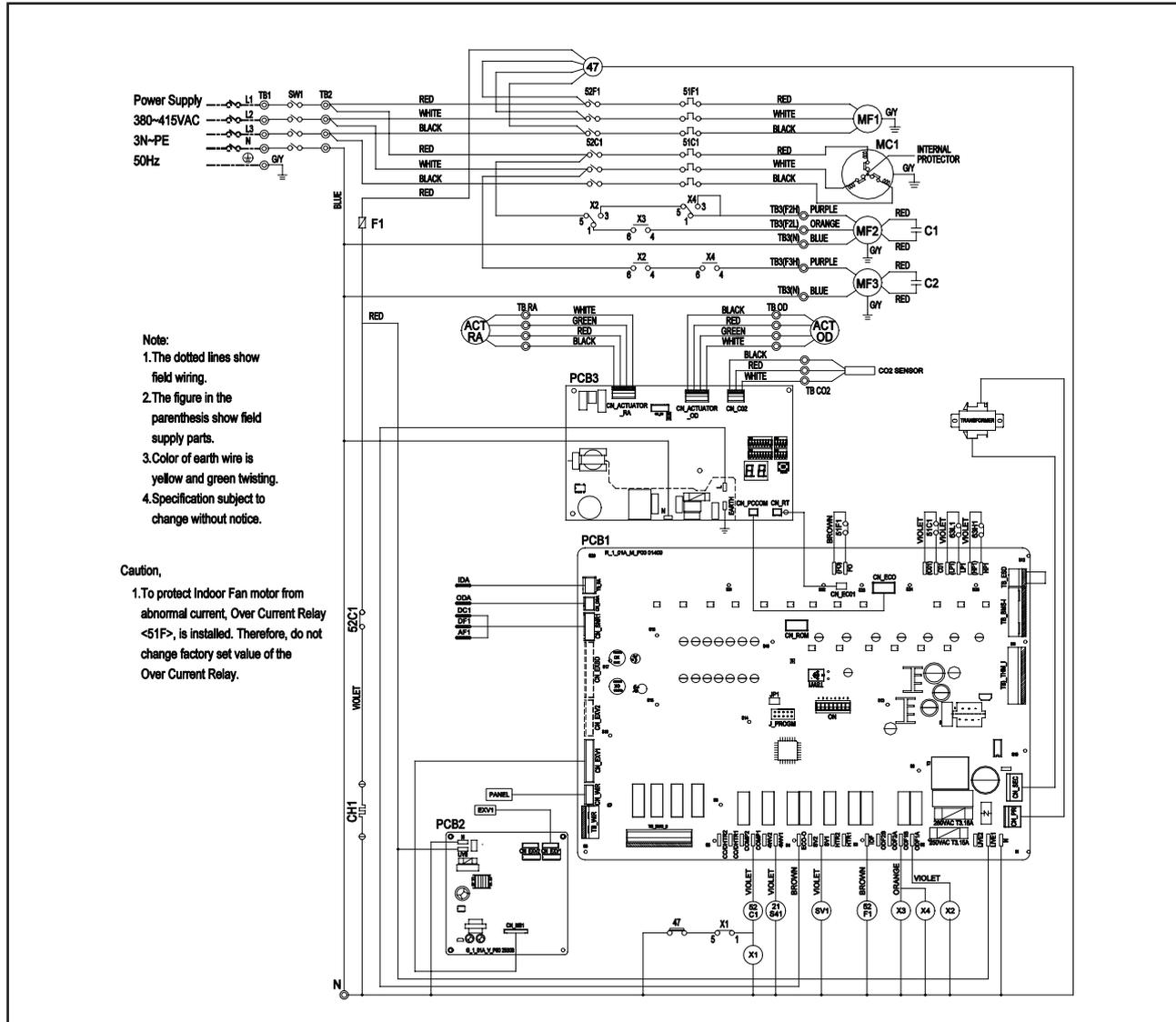
Control Module Of Unit UATYQ600/700



No.	Item Description
①	Controller Main Board
②	EXV Controller Board
③	Capacitor
④	Contactors
⑤	Phase Protector
⑥	Relay
⑦	Terminal Block
⑧	Fuse
⑨	Transformer
⑩	Terminal Block Cover
⑪	Economizer Controller Board

# Wiring Diagram

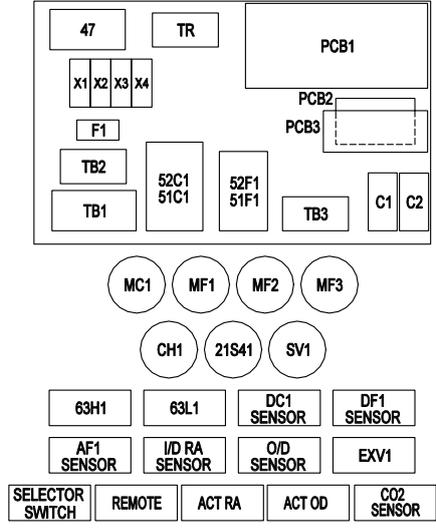
Model: UATYQ250 (With ECONO250)



- Note:
- 1.The dotted lines show field wiring.
  - 2.The figure in the parenthesis show field supply parts.
  - 3.Color of earth wire is yellow and green twisting.
  - 4.Specification subject to change without notice.

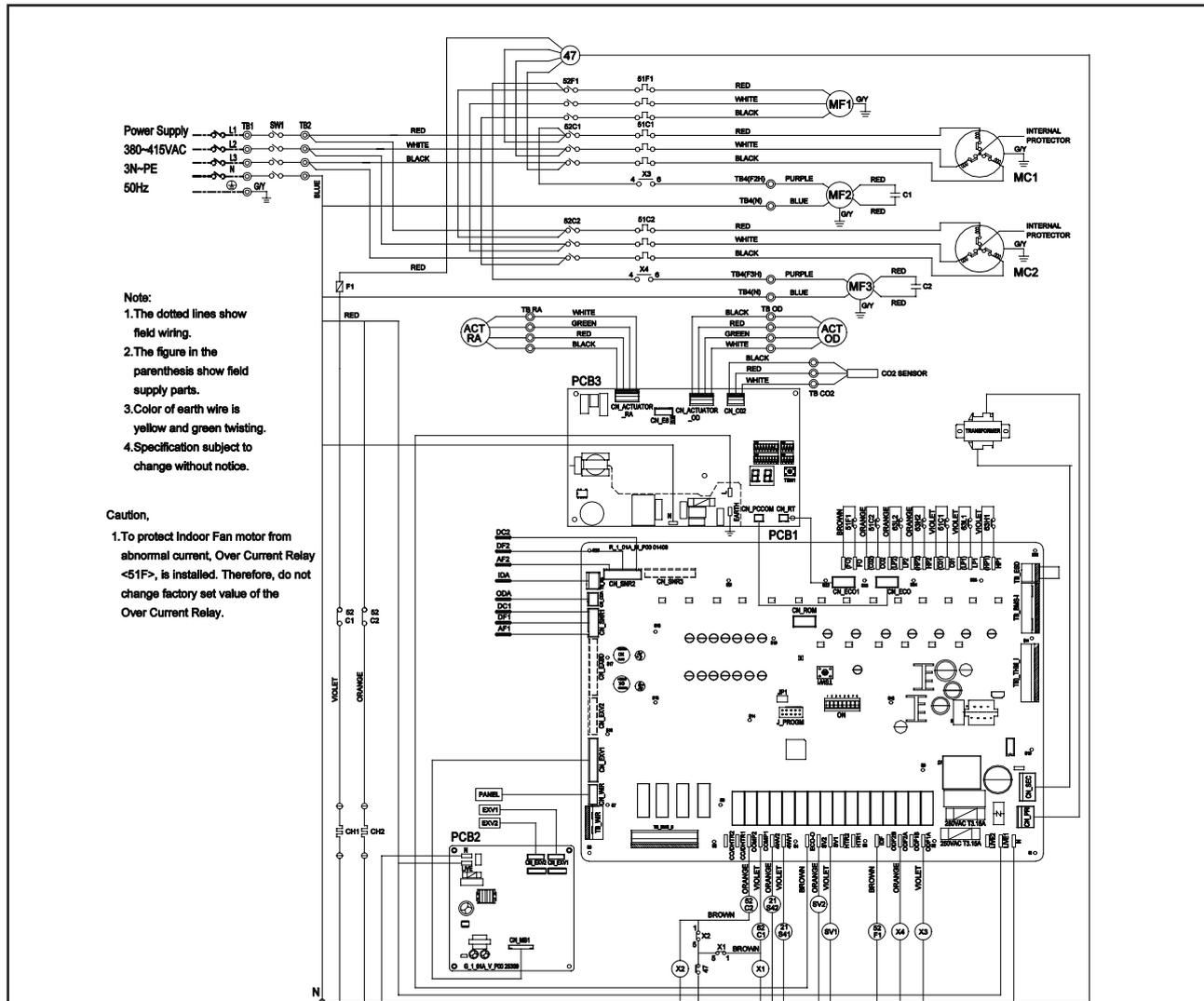
- Caution,
- 1.To protect Indoor Fan motor from abnormal current, Over Current Relay <51F>, is installed. Therefore, do not change factory set value of the Over Current Relay.

ARRANGEMENT



SYMBOL	NAME
MC1	Compressor Motor
MF1	Fan Motor (Indoor)
MF2,3	Fan Motor (Outdoor)
52C1	Contact (Compressor)
52F1	Contact (Fan I/D)
51F1	Over Current Relay (Compressor)
TB1,2,3 / TB RA,OD,CO2	Terminal Block
F1	Fuse
51F1	Over Current Relay (Fan I/D)
CH1	Crankcase Heater
47	Phase Protector
63H1	High Pressure Switch
63L1	Low Pressure Switch
C1,C2	Capacitor (O/D Fan Motor)
SV1	Solenoid Coil
21S41	4-Way Valve
X1,X2,X3,X4	Auxiliary Relays
TR	Transformer 230V/24V
TB_RA	I/D Return Air Sensor
CN_ODA	O/D Air Sensor
CN_SNR1	Sensor DC1, DF1 & AF1
CN_EXV1	Expansion Valve
CN_WIR	Panel Remote Controller
PCB 1&2	Control Module 5RT90BR
PCB 3	Control Module Economizer
CN_ACT_RA	Return Air Actuator
CN_ACT_OD	Outdoor Actuator
CN_CO2	Carbon Dioxide Sensor

Model: UATYQ350/450/550 (With ECONO350/450/550)

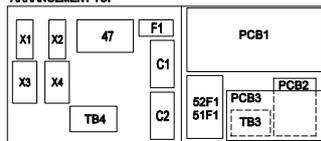


- Note:
1. The dotted lines show field wiring.
  2. The figure in the parenthesis show field supply parts.
  3. Color of earth wire is yellow and green twisting.
  4. Specification subject to change without notice.

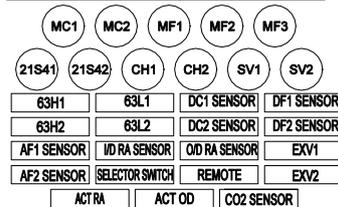
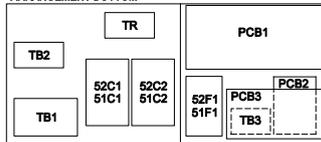
Caution,

1. To protect Indoor Fan motor from abnormal current, Over Current Relay <51F>, is installed. Therefore, do not change factory set value of the Over Current Relay.

ARRANGEMENT TOP

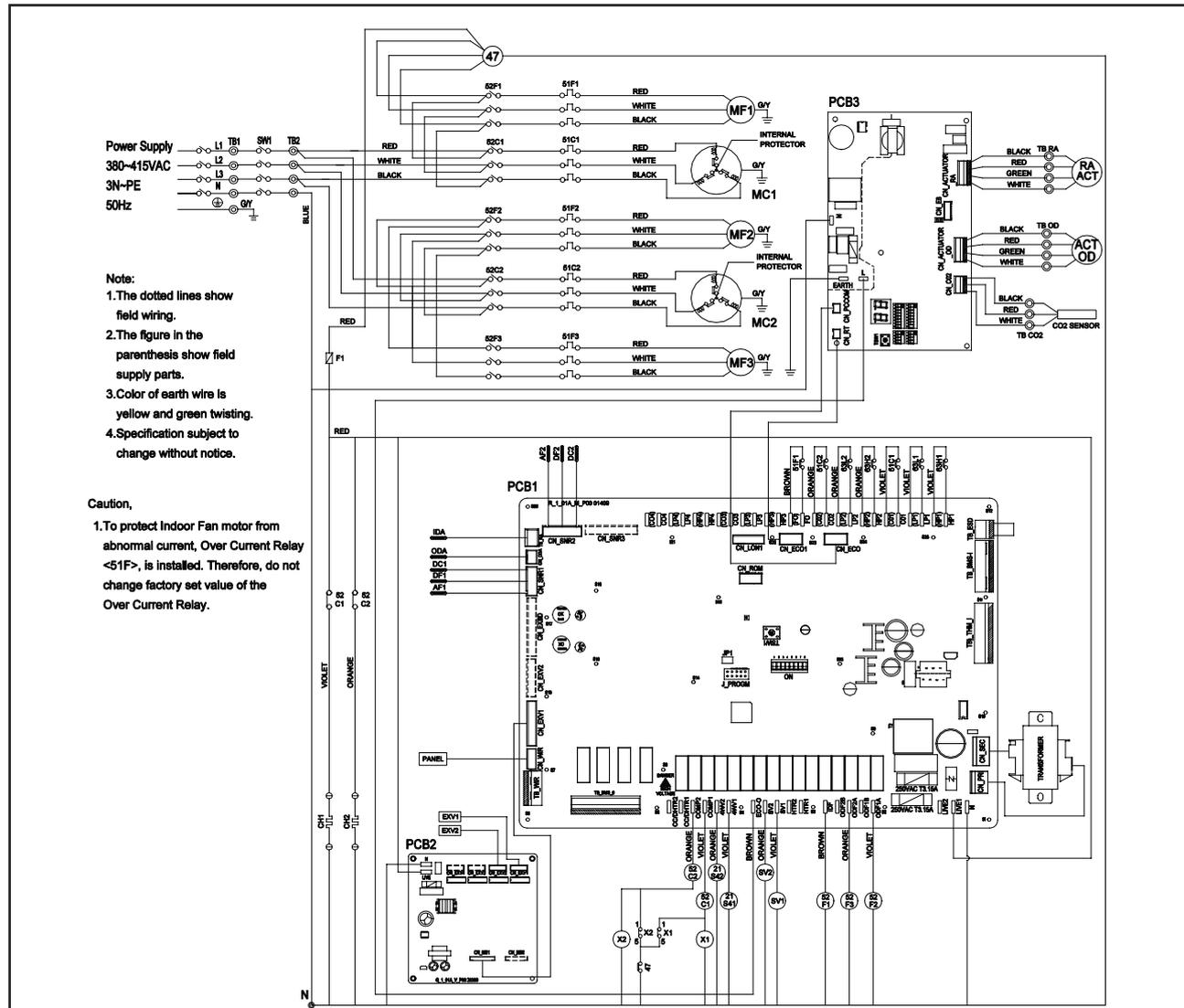


ARRANGEMENT BOTTOM



SYMBOL	NAME
MC1/MC2	Compressor Motor
MF1	Fan Motor (Indoor)
MF2,3	Fan Motor (Outdoor)
52C1/52C2	Contactora (Compressor)
52F1	Contactora (Fan I/D)
51C1/51C2	Over Current Relay (Compressor)
TB1,3,4 / TB RA, OD, CO2	Terminal Block
F1	Fuse
51F1	Over Current Relay (Fan I/D)
CH1/CH2	Crankcase Heater
47	Phase Protector
63H1/63H2	High Pressure Switch
63L1/63L2	Low Pressure Switch
C1,C2	Capacitor (O/D Fan Motor)
SV1/SV2	Solenoid Coil
21S41/21S42	4-Way Valve
X1,X2,X3,X4	Auxiliary Relays
TR	Transformer 230V / 24V
TB_RA	I/D Return Air Sensor
CN_ODA	O/D Air Sensor
CN_SNR1	Sensor DC1, DF1 & AF1
CN_SNR2	Sensor DC2, DF2 & AF2
CN_EXV1/CN_EXV2	Expansion Valve
CN_WIR	Panel Remote Controller
CN_ACT_RA	Return Air Actuator
CN_ACT_OD	Outdoor Actuator
CN_CO2	Carbon Dioxide Sensor

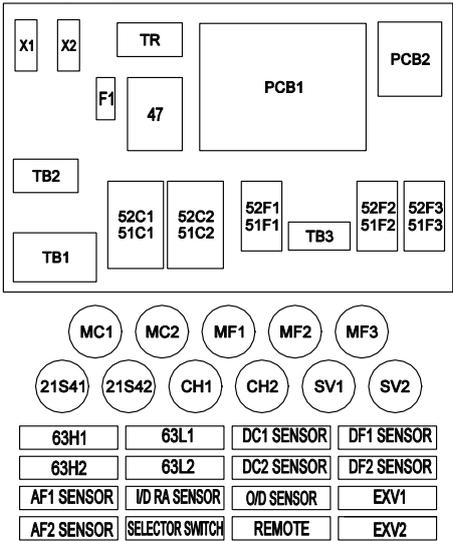
Model: UATYQ600/700 (With ECONO600/700)



**Note:**  
 1. The dotted lines show field wiring.  
 2. The figure in the parenthesis show field supply parts.  
 3. Color of earth wire is yellow and green twisting.  
 4. Specification subject to change without notice.

**Caution,**  
 1. To protect Indoor Fan motor from abnormal current, Over Current Relay <51F>, is installed. Therefore, do not change factory set value of the Over Current Relay.

ARRANGEMENT



SYMBOL	NAME
MC1/MC2	Compressor Motor
MF1	Fan Motor (Indoor)
MF2,3	Fan Motor (Outdoor)
52C1/52C2	Contact (Compressor)
52F1	Contact (Fan I/D)
52F2/52F3	Contact (Fan O/D)
51C1/51C2	Over Current Relay (Compressor)
TB1,2,3	Terminal Block
F1	Fuse
51F1	Over Current Relay (Fan O/D)
51F2/51F3	Contact (Fan O/D)
CH1/CH2	Crankcase Heater
47	Phase Protector
63H1/63H2	High Pressure Switch
63L1/63L2	Low Pressure Switch
SV1/SV2	Solenoid Coil
21S41/21S42	4-Way Valve
X1, X2	Auxiliary Relays
SW1	Selector Switch
TR	Transformer 230V / 24V
TB_RA	I/D Return Air Sensor
CN_ODA	O/D Air Sensor
CN_SNR1	Sensor DC1, DF1 & AF1
CN_SNR2	Sensor DC2, DF2 & AF2
CN_EXV1/CN_EXV2	Expansion Valve
CN_WMR	Panel Remote Controller
PCB1&2	Controller Module 5RT210BR
PCB3	Controller Module Economizer
CN_ACT_RA	Return Air Actuator
CN_ACT_OD	Outdoor Actuator
CN_CO2	Carbon Dioxide Sensor

# Service & Maintenance

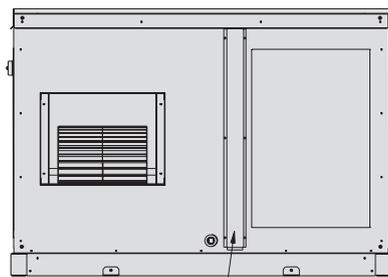
## Service Of The Filter

- Remove any dust adhering to the filter by using a vacuum cleaner or wash in lukewarm water (below 40°C) with neutral cleaning detergent.
- Rinse the filter well and dry before placing it back onto the unit.
- Do not use gasoline, volatile substances or chemicals to clean the filter.
- Clean the filter at least once every 2 weeks. Or more frequently if necessary.

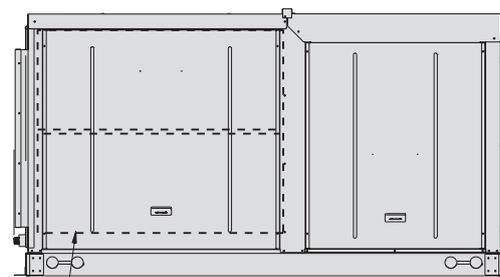
## Filter Position

The filters are mounted in front of the indoor heat exchanger.

Unit shown in the diagram is UATYQ250. Other models shall follow the same method.

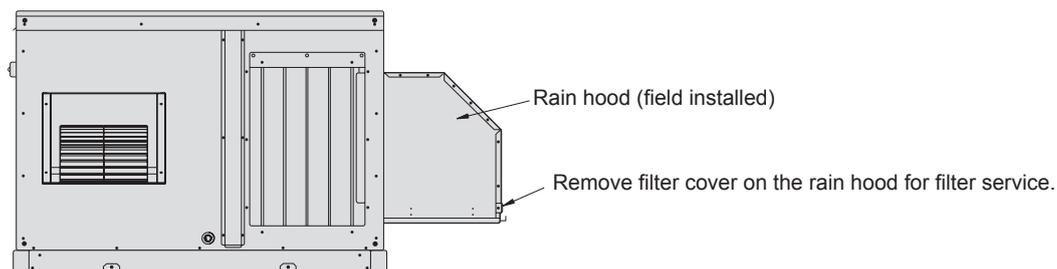


Remove filter cover for filter service.



Alternatively, remove side panel for filter service.

For unit which is installed together with economizer kit, there is one additional filter which is mounted at the bottom side of rain hood. Unit shown in the diagram is UATYQ250 + economizer kit (field installed). Other models shall follow the same method.



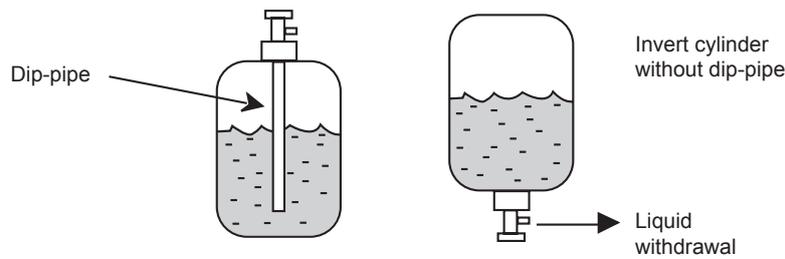
### Caution

Ensure the filter is placed properly and the filter cover is fastened with screws tightly after the service to avoid water leaking. If necessary, weather-proof sealant shall be applied in order to ensure water-proof finishing on the filter cover and rain hood.

## Vacuuming And Charging

The rooftop package units are factory pre-charged with sufficient refrigerant. However, there may be a need for charge recovery during service and maintenance works. Therefore, some precautions must be taken to ensure optimum and trouble-free system operation:

- (i) The system should be thoroughly vacuumed to ensure no incompressible gas and moisture in the system.
- (ii) Use a vacuum pump for R410A exclusively. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.
- (iii) The refrigerant should never be released directly into the environment.
- (iv) When charging R410A, ensure that only liquid is being withdrawn from the cylinder or can.



**Normally, the R410A cylinder or can is equipped with a dip-pipe for liquid withdrawal. However, if the dip-pipe is not available, invert the cylinder or can so as to withdraw liquid from the valve at the bottom.**



### Caution

- R410A must be charged as liquid. Usually R410A cylinder is equipped with a dip-pipe for liquid withdrawal. If there is no dip-pipe, the cylinder should be inverted so as to withdraw liquid R410A from the valve.
- Do not top-up when servicing leak, as this will reduce the unit performance. Vacuum the unit thoroughly and then charge the unit with fresh R410A according to the amount recommended in the specification.

# Troubleshooting

For any enquiries on spare part please contact your authorized dealer. If any malfunction of the air conditioner unit is noted, check the following fault conditions and causes for some simple troubleshooting tips.

Problem	Causes	Action
Unit does not run.	Power failure.	Press the [ON/OFF] after power restore.
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker.
	Power supply wiring phase incorrect.	Modify the wiring phase.
Compressor does not operate in 3 min after unit has started.	Protection against frequent starting.	Wait for 3 min for the compressor to start.
Air flow is low.	Filter is filled with dust and dirt.	Clean the filter.
	There are some obstacles at the air inlet or outlet of the units.	Remove obstacles.
Compressor operate continuously.	Dirty air filter.	Clean the air filter.
	Temperature setting is too low (for cooling). Temperature setting is too high (for heating).	Reset the temperature.
No cool air delivered during cooling cycle, or no hot air delivered during heating cycle.	Temperature setting is too high (for cooling). Temperature setting is too low (for heating).	Set the temperature lower. Set the temperature higher.
On heating cycle, no air delivered (UATYQ250). Or, the delivered air is not warm enough (UATYQ350).	Unit is in defrosting cycle.	Wait for a while. (It will be resumed after defrosting.)

**If the fault persists, please call your authorized local dealer/serviceman.**

## Alarm Shown On The Rooftop Panel

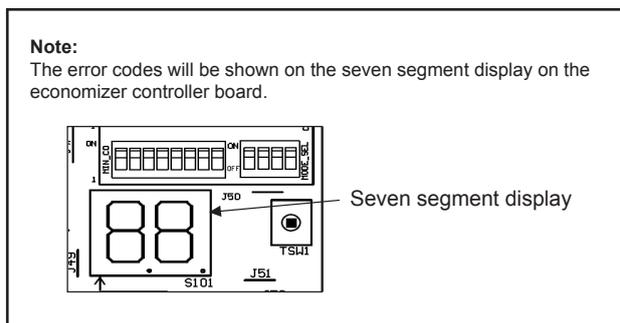
- Whenever panel received a new alarm, an alarm message will pop up on the LCD. It shows type of alarm, alarm occurred time and date. Backlight blinking (if backlight is not OFF) and alarms buzzer produces beeping sound (if it's set ON). The buzzer will beep for 10 minutes after that stop for 5 minutes (with the backlight still blinking), this process keep looping until the alarm is dissolved or a key press is detected.
- Backlight will stop blinking via key press. Press UP or DOWN key to scroll the alarms display if more than one alarms occurred. Press ESC to exit to the summary pages.
- If one of the alarms has been dissolved, pop up message will update its display (would not show the dissolved alarm anymore). If all the alarms have been dissolved, it will exit to the summary pages automatically.
- If the existing alarm has not been dissolved and another new alarm is occurred, the pop up message will update to the latest alarm.
- A sign [A] will be shown and blink in Summary Pages as long as the alarm has not been dissolved. If user needs to view current existing alarms, press "ALARM" key in the summary pages or go to ALARM MENU in MAIN MENU.
- The panel can display up to 20 new alarms at once (which are not dissolve yet).
- All the incoming new alarms record will be store in ALARM MENU – Show Alarms.
- The alarm histories are viewable ONLY when all the new alarm already dissolved.
- If the contact type alarm is set to manual reset, the alarm can only be dissolved by off and on back rooftop unit.

Error Message	Possible causes	Action
1. MB & economizer communication fail	Communication wires not connected	Connect correctly and operate again.
	External noise / interference	Avoid from noise source / add ferrite core.
	Main PCB / Economizer PCB faulty	Replace main PCB / economizer PCB.
2. Memory Error	EEPROM data corrupted	Replace main PCB and operate again.
3. Economizer Error	Refer to the economizer board error code table.	Refer to the economizer board error code table.
4. ESD contact open	Normally close ESD contact become open	ESD contact shorted with wired. If fail, replace main board and operate again.
5. Compressor 1 / 2 overload	Insufficient airflow / Air short circuit	Ensure no obstacle around the unit.
	Heat exchanger dirty	Ensure no dirt or dust on filter and coil.
	Refrigerant overcharge / undercharge	Recharging with correct amount of refrigerant.
	Condenser fan motor faulty	Replace fan motor.
	EXV or EXV PCB defective	Replace EXV or EXV PCB.
	Compressor malfunction	Replace compressor.
	Main PCB faulty	Replace main PCB.
6. Compressor 1 / 2 low pressure trip	Refrigerant undercharge	Top up with correct amount of refrigerant.
	Pressure switch faulty	Replace pressure switch.
	Main PCB faulty	Replace main PCB.
7. Compressor 1 / 2 high pressure trip	Insufficient airflow / Air short circuit	Ensure no obstacle around the unit.
	Heat exchanger dirty	Ensure no dirt or dust on filter and coil.
	Condenser fan motor faulty	Replace fan motor.
	Refrigerant overcharge	Recharging with correct amount of refrigerant.
	EXV or EXV PCB faulty	Replace EXV or EXV PCB.
	High Pressure switch faulty	Replace pressure switch.
	Main PCB faulty	Replace main PCB.
8. Compressor 1 / 2 discharge overheat	Discharge sensor malfunction	Replace new discharge sensor.
	Insufficient airflow / Air short circuit	Ensure no obstacle around the unit.
	Heat exchanger dirty	Ensure no dirt or dust on filter and coil.
	Condenser fan motor faulty	Replace new motor.
	Main PCB faulty	Replace main PCB.
9. Disconnection of discharge thermistor 1 / 2	Poor sensor connection	Connect correctly and operate again.

Error Message	Possible causes	Action
10.Heat Exchanger 1 / 2 high temperature	Discharge sensor malfunction / poor sensor connection	Connect sensor correctly / replace sensor.
	Insufficient Air Flow / Air Short Circuit	Ensure no obstacle around the unit.
	Heat Exchanger Dirty	Ensure no dirt or dust on filter and coil.
	Condenser fan motor faulty	Replace new motor.
	Compressor malfunction	Replace new compressor.
	EXV or EXV PCB faulty	Replace new EXV.
	Main PCB faulty	Replace main PCB.
11. Indoor HEX 1 / 2 abnormal temperature	Poor coil sensor connection	Connect sensor correctly / replace new sensor.
	Compressor malfunction	Replace new compressor.
	Leaking in piping joint	Fix the leak point / Change coil.
	EXV or EXV PCB faulty	Replace new EXV.
	Main PCB faulty	Replace main PCB.
12. Indoor fan overload	Motor internal over current protection faulty	Replace indoor fan motor.
	Winding resistance out of spec	
	Fan motor short body	
	Main PCB faulty	Replace main PCB
13.Return air sensor short / open	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
14.Outdoor air sensor short / open	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
15.Comp discharge sensor 1 / 2 short	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
16.Comp discharge sensor 1 / 2 open	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
17.Outdoor HEX sensor 1 / 2 short	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
18.Outdoor HEX sensor 1 / 2 open	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
19.Indoor HEX sensor 1 / 2 short	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.
20.Indoor HEX sensor 1 / 2 open	Faulty Sensor / Poor sensor connection	Connect sensor correctly / replace sensor.

There are two LEDs in economizer controller board, which are green LED and red LED. Green LED will blink when economizer controller board is powered-up. Red LED will blink when error(s) occur. Refer the table below for error codes and their meaning:-

Error Code	Fault
F0	Fresh air actuator faulty/ malfunction
F1	Return air actuator faulty/ malfunction
F2	Communication error
F3	CO2 sensor short
F4	CO2 sensor open
F5	Fresh air RH sensor short
F6	Fresh air RH sensor open
F7	Return air RH sensor short
F8	Return air RH sensor open
F9	Activation of actuator protection
FA	Multiple pins selection in Dip Switch 1, 2 or 3



**Note:**  
When error(s) occur and the faults persist, please call your authorized local dealer/serviceman for troubleshooting. However, all the errors occur in economizer controller board will not affect the normal operation of rooftop unit.

### Phase Sequencer

The unit with Scroll Compressor only can rotate in one direction. For this reason, a protective device (phase sequencer) is fitted to prevent incorrect wiring of the electrical phases. When the three phases are not connected correctly, the phase sequencer operates, and the unit will not start.

This device is located in the control box of the outdoor unit.

The following table shows the LED indicator light for phase sequencer under normal operation and fault conditions.

Description \ LED	PW (Red)	P_R (Yellow)	P_S (Yellow)	P_T (Yellow)	Actions
Normal Operation	○	●	●	●	-
Reverse Phase	◐	◐	◐	◐	Switch off the unit. Check the 3 phase wiring.
T Phase Missing	◐	●	●	◐	Switch off the unit. Check the 3 phase wiring.
S Phase Missing	◐	●	◐	●	Switch off the unit. Check the 3 phase wiring.
R Phase Missing	●	●	●	●	Switch off the unit. Check the 3 phase wiring.
S & T Phase Missing*	◐	●	◐	◐	Switch off the unit. Check the 3 phase wiring.
Overload*	◐	●	●	●	High discharge temperature. Check refrigerant system.
Sensor Missing*	◐	○	○	○	Switch off the unit. Plug in sensor.

○ ON      ● OFF      ◐ BLINK

- Note:**
- "\*" indicates additional function for PP01 phase sequencer.
  - When R phase missing, no LED or buzzer will indicate the error, but relay 71 (COMMON) and 81 (NO) will cut off.
  - The unit will check discharge sensor availability only during power up.
  - All errors can only recover through manually reset.



