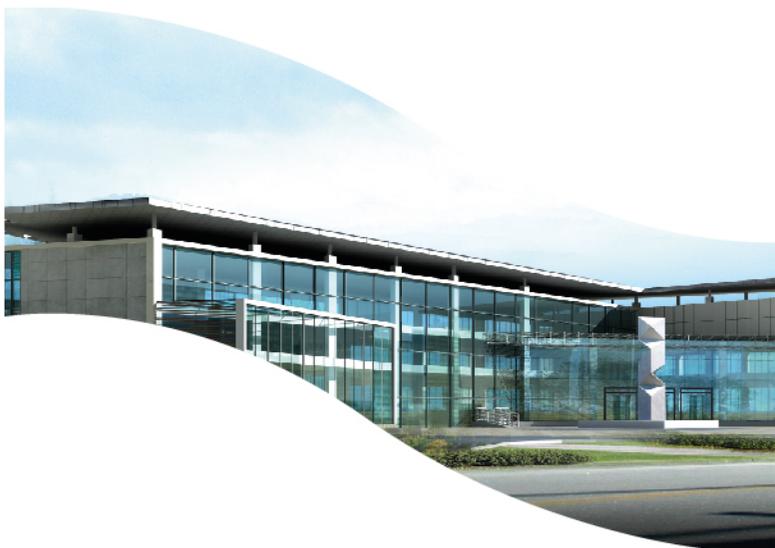


ÜNTES®
Building Trust since 1968

THERMOFRESH Units

UTFS series
Technichal
Catalogue



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01 INTRODUCTION

1.1 THERMOFRESH Series

- Uniform Airflow Enabling Low Sound Level and Low Energy Consumption Thanks to Aerodynamic Casing Design.
- 9 Different Sizes up to 5500 m³/h Airflow Rate
- Highly Efficient Aluminium Plate Cross-Flow Heat Recovery System
- 6 Staged Airflow Rate Control Powered by Highly Efficient Coupled AC Plug Fans or AC Centrifugal Fans with Low Sound Level
- Minimum Thermal Leak Achieved by 10 mm Elastomeric Rubber Foam Insulation with Low Thermal Conductivity and High Water Vapor Diffusion Resistance
- High Indoor Air Quality Resulted by Filtration Classes from ISO Coarse ≥ %40 (G2) up to ISO ePM10 ≥ %50 (M5)
- Minimum Energy Consumption Thanks to Advanced Automation Control System
- Remote Access to Unit with Wi-Fi Technology and Unit Control by Mobile Application
- Flexible 7-Day Weekly Program
- User Friendly Room Control Unit



THERMOFRESHUnit
UTFS Series

www.entes.com

02 PRODUCT KEY

UTFS	040	BRCA
PRODUCT KEY	MODEL	OPTIONS
		<p>LPRH: Low Capacity Electrical Pre-Heater HPRH: High Capacity Electrical Pre-Heater LPOH: Low Capacity Electrical Post-Heater MPOH: High Capacity Electrical Post-Heater CW3R: Chilled Water Coil 3-ROW CW4R: Chilled Water Coil 4-ROW CW5R: Chilled Water Coil 5-ROW CW6R: Chilled Water Coil 6-ROW DX3R: Direct Expansion Coil 3-ROW DX4R: Direct Expansion Coil 4-ROW DX5R: Direct Expansion Coil 5-ROW DX6R: Direct Expansion Coil 6-ROW HW1R: Hot Water Coil 1-ROW HW2R: Hot Water Coil 2-ROW C3H1: Cold and Hot Water Coil 3-Rows Cooling,1 Row Heating C4H1: Cold and Hot Water Coil 4-Rows Cooling, 1 Row Heating C5H1: Cold and Hot Water Coil 5-Rows Cooling, 1 Row Heating MSFS: ISO ePM10 50%(M5) First Stage Supply Filter G2FS: ISO Coarse 40% (G2) First Stage Supply Metal Filter G2FR: ISO Coarse 40% (G2) First Stage Exhaust Metal Filter MAXC: Maxi Controller Electrical Panel SDFA: Smoke Detector/Fire Alarm Digital Input FADI: Fire Alarm Digital Input FAFD: Fresh Air ON/OFF Damper EAFD: Exhaust Air ON/OFF Damper BPFD: By-Pass ON/OFF Damper SATC: Supply Air Temperature Control RATC: Return Air Temperature Control FCAL: Filter Clogging Alarm IAQC: Indoor Air Quality Control RODI: Remote ON/OFF Digital Input P2VH: Proportional Heating Control With 2-Way Valve Set P3VH: Proportional Heating Control With 3-Way Valve Set P2VC: Proportional Cooling Control With 2-Way Valve Set P3VC: Proportional Cooling Control With 3-Way Valve Set O2VH: On/Off Heating Control with 2-Way Valve Set O3VH: On/Off Heating Control with 3-Way Valve Set O2VC: On/Off Cooling Control with 2-Way Valve Set O3VC: On/Off Cooling Control with 3-Way Valve Set IP67: IP67 Electrical Panel WIFI: Wireless (Wi-Fi) Control CDCA: Circular Duct Connection Adaptor LPHB: Low Capacity Electrical Pre-Heater+By-Pass ON/OFF Damper HPHB: High Capacity Electrical Pre-Heater+By-Pass On/OFF Damper TRAF: 24 VAC Transformer RAHS: Return Air Humidity Sensor RLYC: Relay Card</p>
	050	
	075	
	105	
	160	
	200	
	250	
	320	
	410	
	500	
UTFS		

03 GENERAL FEATURES

3.0 Heat recovery units are used to increase the indoor air quality and save energy being lost in the process of ventilation. The units are ideal for ventilating small offices, houses and similar premises. In a house, the air from the toilet and kitchen is directed outward. The unit pulls in the fresh air with the help of ducts and collates it with the exhaust air inside a heat exchanger that can reach efficiencies of 60%. The exhaust air that has transferred its energy is given to the outside and fresh air is given to the living room.

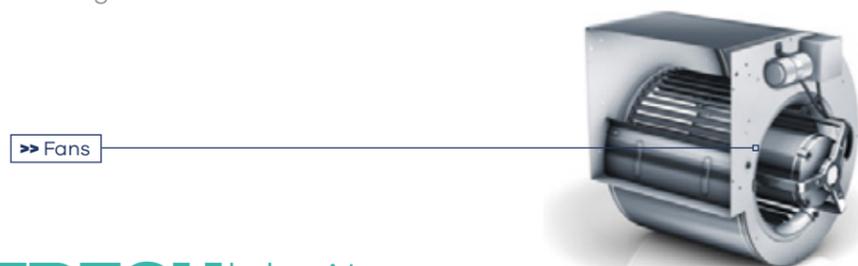
04 COMPONENT FEATURES

4.1. STRUCTURE UTFS units outer skin is manufactured from corrosion resistant pre-painted galvanized sheet. Drainage pan is made of galvanized steel and is painted with electrostatic powder paint. EPDM leak proof gaskets are used to provide full air tightness at the panels. Tested and approved Class B fire-rated 10 mm thickness elastomeric rubber foam insulation with low thermal conductivity and high water vapor diffusion resistance is used to reduce the thermal leaks.

4.2. PLATE HEAT EXCHANGER With the help of low pitched aluminum plated heat exchangers, the warm air leaving room transfers its energy to the cold air entering the room and as a result energy loss will be prevented. In cases where heat transfer is not required, the fresh air goes through the bypass damper omitting the heat exchanger and entering the room directly.



4.3. FANS The fans are located inside the unit and are used to lead the fresh air into the room and transfer the exhaust air from the room to the outside. It is designed to create variable pressure and airflow levels and can control its fan revolution according to the system needs. Thermofresh units use 2 AC Centrifugal Fans.



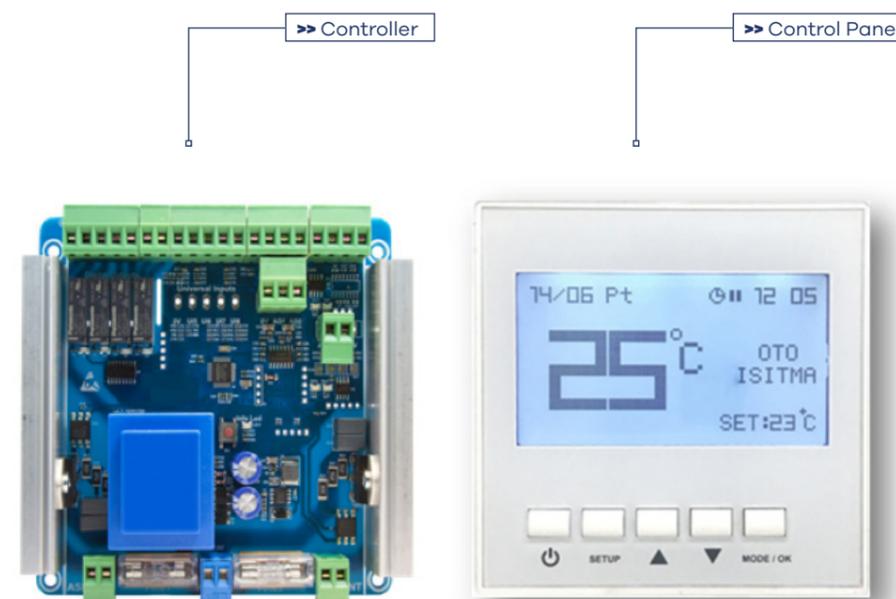
4.4. FILTERS UTFS units use ISO Coarse 60%(G4) filter as a standard equipment. The filters are placed at the entry of the internal unit to improve the air quality and keep the equipment safe. It is important to do regular control and cleaning to keep the system functional. Optionally ISO ePM10 50%(M5) is used as first stage filters or ISO Coarse 40%(G2) metal filters.



4.5. CONTROL PANEL UTFS units have just one electrical panel. The electrical pane has a built-in power supply and accommodates the microprocessor that ensures the control of the components. UTFS units do not require any extra power or any additional electrical panels.

The safety equipment of the system in the panel mainly include automatic and glass fuses, motor protection switches and phase protection relay.

The electrical panel contains a microprocessor that processes the signal received from pressure, temperature and humidity sensors. This microprocessor is capable of performing the cooling and fan control operations of the unit. The microprocessor changes depending on the number of options.



4.6. COIL AND REFRIGERANT (R410A)

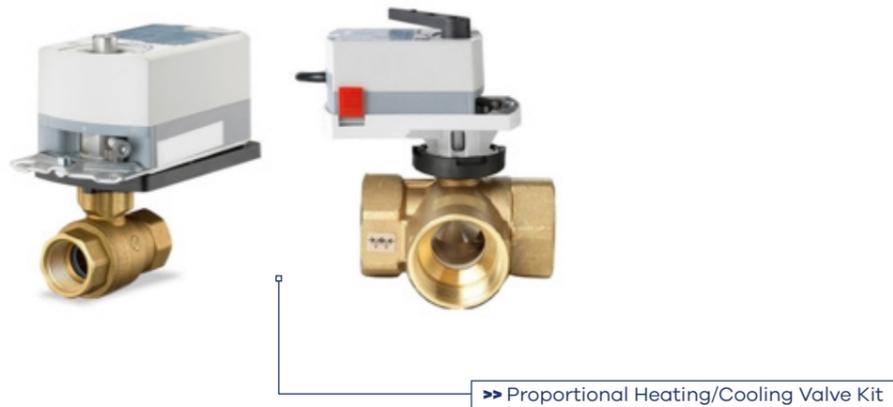
UTFS units have water and direct expansion coil as an option. Cold water coils are offered as 3/4/5/6 rows, direct expansion coils as 3/4/5/6/ rows and hot water coils as 1/2 rows.

The refrigerant used in UTFS units is R-410A. This unit is designed to work with this particular gas and should not be used with other refrigerants.



4.7. PROPORTIONAL HEATING/COOLING VALVE KIT

Valve kits with actuators are used to operate the system more effectively and are given as an option when coils are selected. The cooling and heating processes are proportionally controlled with the help of actuators.



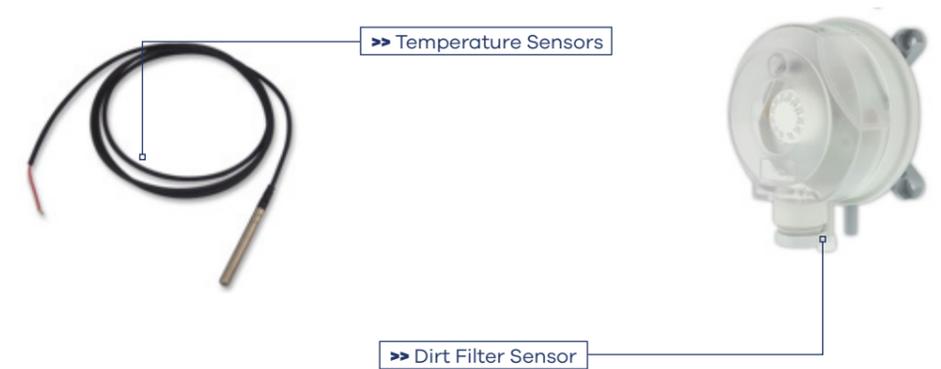
4.8. SENSORS

There are various sensors depending on the options and accessories in the system. They provide the necessary operational information for the processor by converting the data they acquire and sending them to the microprocessor.

Fresh air temperature sensor plays a vital role in determining the optimal operating conditions of the heat recovery system by measuring the temperature of air coming into the room. The sensor is placed at the damper openings before the heat recovery unit entry.

Dirt filter sensors determine the decrease in filter set pressure values by measuring filter inlet and outlet pressure. It also provides the user with information about the change/cleaning requirements of the filters.

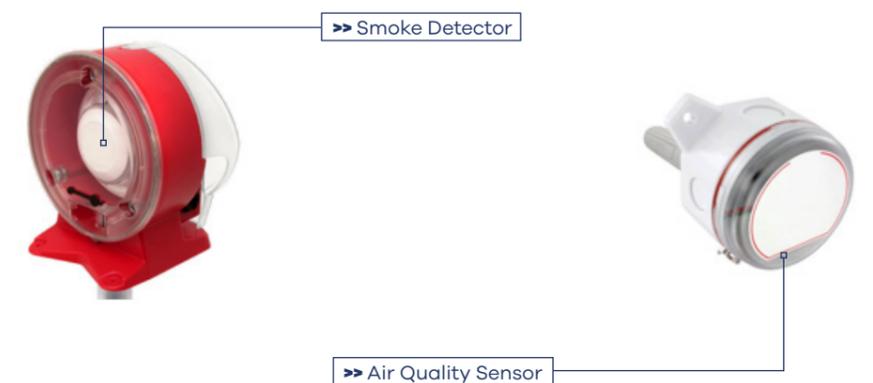
The supply temperature sensor given with the heating/cooling options provides information to the microprocessor by measuring the temperature that enters the room. The sensor helps the system keep the heating/cooling balance.



The optional air quality sensor (CO₂ sensors) provides the information to the control unit that regulates the fan stages by measuring the amount of carbon dioxide in the room.

The optional return air temperature sensor measures the temperature of air leaving the room and provides the information to the microprocessor that uses the data to operate the heat recovery unit more efficiently.

By sensing the changing air values at or before the fire, the optional smoke detector allows the system to stop the fans. If there is a damper in the unit, the damper is closed automatically by the system.



05 OPERATING LIMITS

Unit operating limits are given below. Operating within the limits is vital for the efficient operation of the device.

Cooling	External Air Temperature	
	DB [°C]	WB [°C]
Minimum	-20	-
Maximum	42	-

06 OPTIONS AND FEATURES

LPRH	LOW CAPACITY ELECTRICAL PRE-HEATER	MIDC	MIDI CONTROLLER ELECTRICAL PANEL
HPRH	HIGH CAPACITY ELECTRICAL PRE-HEATER	MAXC	MAXI CONTROLLER ELECTRICAL PANEL
LPOH	LOW CAPACITY ELECTRICAL POST-HEATER	SDFA	SMOKE DETECTOR/FIRE ALARM DIGITAL INPUT
MPOH	MEDIUM CAPACITY ELECTRICAL POST-HEATER	FADI	FIRE ALARM DIGITAL INPUT
HPOH	HIGH CAPACITY ELECTRICAL POST-HEATER	FAFD	FRESH AIR ON/OFF FLAP DAMPER
CW3R	CHILLED WATER COIL 3-ROW	EAFD	EXHAUST AIR ON/OFF FLAP DAMPER
CW4R	CHILLED WATER COIL 4-ROW	BPFD	BY-PASS ON/OFF FLAP DAMPER
CW5R	CHILLED WATER COIL 5-ROW	SATC	SUPPLY AIR TEMPERATURE CONTROL
CW6R	CHILLED WATER COIL 6-ROW	RATC	RETURN AIR TEMPERATURE CONTROL
DX3R	DIRECT EXPANSION COIL 3-ROW	FCAL	FILTER CLOGGING ALARM
DX4R	DIRECT EXPANSION COIL 4-ROW	IAQC	INDOOR AIR QUALITY CONTROL
DX5R	DIRECT EXPANSION COIL 5-ROW	RODI	REMOTE ON/OFF DIGITAL INPUT
DX6R	DIRECT EXPANSION COIL 6-ROW	P2VH	PROPORTIONAL HEATING CONTROL WITH 2-WAY VALVE SET
HW1R	HOT WATER COIL 1-ROW	P3VH	PROPORTIONAL HEATING CONTROL WITH 3-WAY VALVE SET
HW2R	HOT WATER COIL 2-ROW	P2VC	PROPORTIONAL COOLING CONTROL WITH 2-WAY VALVE SET
C3H1	COLD/HOT WATER COIL 3-ROW/1-ROW	P3VC	PROPORTIONAL COOLING CONTROL WITH 3-WAY VALVE SET
C4H1	COLD/HOT WATER COIL 4-ROW/1-ROW	IP67	IP67 ELECTRICAL PANEL
C5H1	COLD/HOT WATER COIL 5-ROW/1-ROW	WIFI	WIRELESS (Wi-Fi) CONTROL
M5FS	ISO ePM10 50% (M5) FIRST STAGE SUPPLY FILTER	CDCA	CIRCULAR DUCT CONNECTION ADAPTOR
G2FS	ISO Coarse 40% (G2) FIRST STAGE SUPPLY METAL FILTER	LPHB	LOW CAPACITY ELECTRICAL PRE-HEATER + BY-PASS ON/OFF FLAP DAMPER
G2FR	ISO Coarse 40% (G2) FIRST STAGE EXHAUST METAL FILTER	HPHB	HIGH CAPACITY ELECTRICAL PRE-HEATER + BY-PASS ON/OFF FLAP DAMPER
TRAF	24 VAC TRANSFORMATOR	RAHS	RETURN AIR HUMIDITY SENSOR
RLYC	RELAY CARD	O2VH	ON/OFF HEATING CONTROL WITH 2-WAY VALVE SET
O3VH	ON/OFF HEATING CONTROL WITH 3-WAY VALVE SET	O2VC	ON/OFF COOLING CONTROL WITH 2-WAY VALVE SET
O3VC	ON/OFF COOLING CONTROL WITH 3-WAY VALVE SET		

6.1. ELECTRICAL PRE HEATER LOW/HIGH CAPACITY – LPRH/HPRH — Heats the fresh air before entering the heat recovery unit to increase the efficiency of the overall heat recovery system. It has the capability of heating the cold outdoor air and regulating the humidity of air entering the heat recovery system.

6.2. ELECTRICAL POST HEATER LOW/MEDIUM/HIGH CAPACITY– LPOH/MPOH/HPOH — Provides heating to the air entering the room if the temperature needs to be raised further, mostly used when the room is partially or fully conditioned by the outer units. High capacity post-heater option has 3 stages.

6.3. CHILLED WATER COIL 3/4/5/6 ROW – CW3R/CW4R/CW5R/CW6R — The chilled water coils which installed on the supply air side are designed for conditioning the fresh air and suitable for regional cooling as well.

6.4. DIRECT EXPANSION COIL 3/4/5/6 ROW – DX3R/DX4R/DX5R/DX6R — Sectional cooling compatible direct expansion coils, that are installed at the supply of the unit are used to condition the air entering the room.

6.5. HOT WATER COIL 1/2 ROW – HW1R/HW2R — Sectional cooling compatible hot water coils, that are installed at the supply of the unit are used to condition the air entering the room.

6.6. COLD AND HOT WATER COIL 3/4/5-1 ROW – C3H1/C4H1/C5H1 — Sectional cooling compatible hot and cold water coils, that are installed at the supply of the unit are used to condition the air entering the room. The option should be selected when heating or cooling is required on the same unit.

6.7. FIRST/SECOND STAGE FINE SUPPLY FILTER – F7FS/F7SS/F9SS — Optional filters are placed at the supply and exhaust side to increase the quality of indoor air. Filters used in the first stage are ISO ePM10 ≥ %50(M5) in the case of fine filter and ISO Coarse ≥ %40(G2) in the case of metal 1. stage filter.

6.8. MAXI CONTROLLER ELECTRICAL PANEL - MAXC — A controller that offers advanced automation possibilities for complex applications. Maxi controller needs to be installed when selecting the following options: Smoke detector/Fire Alarm Digital Input, Return Air Temperature Control and Remote On/Off.

**6.9. SMOKE DETECTOR/
FIRE ALARM
DIGITAL INPUT –
SDFA** — In the case of fire, the detector informs the controller of the incident and consequently the controller shuts the unit down while giving alarm information to the input. Likewise, the detector provides the controller with the information from the fire alarm system on site and consequently the controller shuts the unit down.

**6.10. FIRE ALARM
DIGITAL INPUT –
FADI** — In case of fire, with the help of alarm information received from the fire alarm system in the field, the controller stops the unit and gives the alarm information.

**6.11. FRESH AIR AND
EXHAUST AIR ON/
OFF DAMPER –
FAFD/EAFD** — Regulates the amount of fresh air entering the room and the amount of exhaust air leaving the room to increase the overall efficiency of the unit. The airflow rate is regulated with the servomotor controlled dampers.

**6.12. BY-PASS ON/OFF
DAMPER – BPDF** — Optionally, the fresh air omits the heat exchangers and is given directly to the room in the case where heat transfer is not necessary with the help of a by-pass damper.

**6.13. SUPPLY AND
RETURN AIR
TEMPERATURE
CONTROL – SATC/
RATC** — Measures the fresh air temperature entering the room and exhaust air leaving the room. The information obtained is provided to the necessary control components, which operates the unit more efficiently.

**6.14. FILTER CLOGGING
ALARM – FCAL** — The filter clogging sensor monitors the pressure at the inlet and outlet of filters, determines that the filter values are below the set limit and informs the user that the filters require cleaning/replacement.

**6.15. INDOOR AIR
QUALITY CONTROL
– IAQC** — Regulates indoor air quality by controlling the fresh air entering the room with the help of a CO₂ sensor situated at the exhaust fan suction duct. The controller provides the necessary fresh air by using the data taken off the sensors and regulates fan stages with this information.

**6.16. Remote ON/OFF
Digital Input - RODI** — Offers digital input for remote control possibilities on site.

**6.17. PROPORTIONAL
OR ON/OFF
HEATING/COOLING
CONTROL WITH
2/3-WAY VALVE
SET – P2VH/P3VH/
P2VC/P3VC/O2VH/
O3VH/O2VC/O3VC** — Valve kits are used in cycles with hot and cold water coils to make the system more efficient.

**6.18. IP67 ELECTRICAL
PANEL – IP67** — Harsh outer environment resistant IP67 class panel.

**6.19. WIRELESS (WI-FI)
CONTROL – WIFI** — Remote access to the unit thanks to Wi-Fi technology and unit control with mobile application.

**6.20. CIRCULAR DUCT
CONNECTION
ADAPTOR – CDCA** — The adaptor is used to connect the inlet and outlet connection to circular ducts.

**6.21. LOW/HIGH
CAPACITY
ELECTRICAL PRE-
HEATER + BY-PASS
ON/OFF DAMPER –
LPHB/HPHB** — Heats the fresh air before entering the heat recovery unit to increase the efficiency of the overall heat recovery system. It has the capability of heating the cold outdoor air and regulating the humidity of air entering the heat recovery system. Optionally, the fresh air omits the heat exchangers and is given directly to the room in the case where heat transfer is not necessary with the help of a by-pass damper.

**6.22. VAC
TRANSFORMER –
TRAF** — When indoor air quality, proportional controlled valves and return air humidity sensor are selected, the transformer needs to be installed as well.

**6.23. RETURN AIR
HUMIDITY SENSOR
– RAHS** — Should be selected when the indoor humidity value needs to be read.

6.24. RELAY CARD – RLYC — When Pre-Heaters and On/Off dampers are selected, the relay card needs to be installed as well.

07

CAPACITY TABLES

UTFS Series		050	075	105	160	200
Technical Specifications						
Nominal Airflow Rate	m³/h	500	750	1050	1600	2000
Maximum External Static Pressure	Pa	220	210	235	317	204
Power Supply	V/Ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Exhaust Fan Nominal Motor Power	W	58	91	145	310	310
Supply Fan Nominal Motor Power	W	58	91	145	310	310
Fan Model		Backward Curved Direct Coupled AC Plug Fan				
Fresh Air Filter Class	%	ISO Coarse≥60% (G4)				
Exhaust Air Filter Class	%	ISO Coarse≥60% (G4)				
Cross-Flow Heat Recovery						
Winter Efficiency ¹	%	58	57,8	59	56,5	57,6
Summer Efficiency ²	%	53,1	52	54,2	51,9	52,9
Sound						
Sound Pressure Level ³	dB(A)	40	50	53	53	59
Dimensions						
Height	mm	423	429	477	531	531
Width	mm	781	891	1005	1181	1382
Lenght	mm	1017	1103,5	1243,5	1466,5	1498,5
Weight ⁴	kg	57	65	83	112	130

- 1) Winter conditions: Outdoor air temperature -5°C, 80% RH and indoor air temperature 22°C, 50% RH.
- 2) Summer conditions: Outdoor air temperature 35°C, 40% RH and indoor air temperature 24°C, 50% RH.
- 3) Sound pressure level at 1 m distance in free field.
- 4) Weight of the unit without accessories.

UTFS Series		250	320	410	500
Technical Specifications					
Nominal Airflow Rate	m³/h	2500	3200	4100	5000
Maximum External Static Pressure	Pa	180	232	234	150
Power Supply	V/Ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Exhaust Fan Nominal Motor Power	W	373	550	750	1100
Supply Fan Nominal Motor Power	W	373	550	750	1100
Fan Model		Forward Curved Direct Coupled AC Centrifugal Fan			
Fresh Air Filter Class	%	ISO Coarse≥60% (G4)			
Exhaust Air Filter Class	%	ISO Coarse≥60% (G4)			
Cross-Flow Heat Recovery					
Winter Efficiency ¹	%	57,6	57,5	57,4	57,3
Summer Efficiency ²	%	52,7	52,5	52,5	52,4
Sound					
Sound Pressure Level ³	dB(A)	54	54	58	56
Dimensions					
Height	mm	611	711	711	811
Width	mm	1478	1578	1749	1800
Lenght	mm	1900	2000	2200	2250
Weight ⁴	kg	175	202	251	299

- 1) Winter conditions: Outdoor air temperature -5°C, 80% RH and indoor air temperature 22°C, 50% RH.
- 2) Summer conditions: Outdoor air temperature 35°C, 40% RH and indoor air temperature 24°C, 50% RH.
- 3) Sound pressure level at 1 m distance in free field.
- 4) Weight of the unit without accessories.

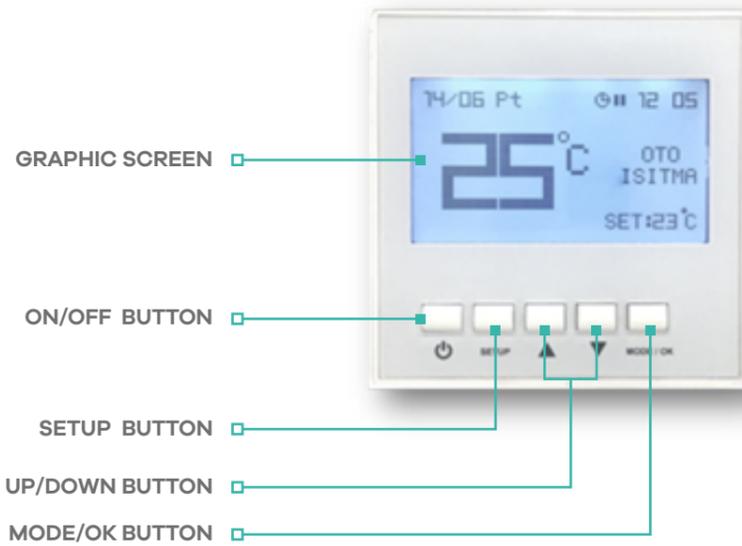
Electric Heater and Coil Capacities	Inlet Air Conditions (°C)						
			UTFS 050	UTFS 075	UTFS 105	UTFS 160	UTFS 200
Fresh Air Unit - Pre-Heater - Low Capacity							
Heating Capacity		kW	1,02	1,54	2,16	3,27	4,11
Fresh Air Unit - Pre-Heater - High Capacity							
Heating Capacity		kW	2,04	3,08	4,32	6,54	8,22
Fresh Air Unit - Post-Heater - Low Capacity							
Heating Capacity		kW	1,02	1,54	2,16	3,27	4,11
Fresh Air Unit - Post-Heater - Medium Capacity							
Heating Capacity		kW	2,04	3,08	4,32	6,54	8,22
Fresh Air Unit - Post-Heater - High Capacity							
Heating Capacity		kW	3,06	4,62	6,48	9,81	12,33
Fresh Air Unit - 3 Row Chilled Water Coil							
Cooling Capacity	27 DB/50 % RH	kW	2,42	3,60	5,13	7,90	9,66
Fresh Air Unit - 4 Row Chilled Water Coil							
Cooling Capacity	27 DB/50 % RH	kW	2,75	4,63	6,22	9,99	11,87
Fresh Air Unit - 5 Row Chilled Water Coil							
Cooling Capacity	27 DB/50 % RH	kW	3,30	5,07	6,99	10,94	13,58
Fresh Air Unit - 6 Row Chilled Water Coil							
Cooling Capacity	27 DB/50 % RH	kW	3,72	5,69	7,87	11,93	14,90
Fresh Air Unit - 3 Row Direct Expansion Coil							
Cooling Capacity	27 DB/50 % RH	kW	2,68	3,98	5,64	8,28	10,36
Heating Capacity	5 DB/80 % RH	kW	3,16	4,93	6,90	10,30	12,88
Fresh Air Unit - 4 Row Direct Expansion Coil							
Cooling Capacity	27 DB/50 % RH	kW	3,20	4,83	6,78	9,95	12,40
Heating Capacity	5 DB/80 % RH	kW	3,80	5,70	8,04	12,10	15,16
Fresh Air Unit - 5 Row Direct Expansion Coil							
Cooling Capacity	27 DB/50 % RH	kW	3,57	5,38	7,55	11,26	13,99
Heating Capacity	5 DB/80 % RH	kW	4,21	6,32	8,89	13,30	16,68
Fresh Air Unit - 6 Row Direct Expansion Coil							
Cooling Capacity	27 DB/50 % RH	kW	3,80	5,91	8,25	12,09	15,25
Heating Capacity	5 DB/80 % RH	kW	4,49	6,66	9,40	14,23	17,75
Fresh Air Unit - 1 Row Hot Water Coil							
Heating Capacity	5 DB/80 % RH	kW	4,42	6,40	8,91	13,25	16,10
Fresh Air Unit - 2 Row Hot Water Coil							
Heating Capacity	5 DB/80 % RH	kW	7,28	11,05	15,38	23,36	28,71

Electric Heater and Coil Capacities	Inlet Air Conditions (°C)					
			UTFS 250	UTFS 320	UTFS 410	UTFS 500
Fresh Air Unit - Pre-Heater - Low Capacity						
Heating Capacity		kW	5,10	6,54	8,40	10,14
Fresh Air Unit - Pre-Heater - High Capacity						
Heating Capacity		kW	10,20	13,08	16,80	20,28
Fresh Air Unit - Post-Heater - Low Capacity						
Heating Capacity		kW	5,10	6,54	8,40	10,14
Fresh Air Unit - Post-Heater - Medium Capacity						
Heating Capacity		kW	10,20	13,08	16,80	20,28
Fresh Air Unit - Post-Heater - High Capacity						
Heating Capacity		kW	15,30	19,62	25,20	30,42
Fresh Air Unit - 3 Row Chilled Water Coil						
Cooling Capacity	27 DB/50 % RH	kW	12,77	15,74	20,48	25,18
Fresh Air Unit - 4 Row Chilled Water Coil						
Cooling Capacity	27 DB/50 % RH	kW	15,32	19,27	24,78	30,25
Fresh Air Unit - 5 Row Chilled Water Coil						
Cooling Capacity	27 DB/50 % RH	kW	17,15	21,82	27,90	33,92
Fresh Air Unit - 6 Row Chilled Water Coil						
Cooling Capacity	27 DB/50 % RH	kW	18,86	23,81	30,60	37,35
Fresh Air Unit - 3 Row Direct Expansion Coil						
Cooling Capacity	27 DB/50 % RH	kW	12,98	16,61	21,39	25,88
Heating Capacity	5 DB/80 % RH	kW	16,23	20,61	26,27	32,24
Fresh Air Unit - 4 Row Direct Expansion Coil						
Cooling Capacity	27 DB/50 % RH	kW	15,67	19,95	25,45	31,25
Heating Capacity	5 DB/80 % RH	kW	18,97	24,21	31,11	37,72
Fresh Air Unit - 5 Row Direct Expansion Coil						
Cooling Capacity	27 DB/50 % RH	kW	17,61	22,57	28,71	35,18
Heating Capacity	5 DB/80 % RH	kW	20,90	26,61	34,22	41,61
Fresh Air Unit - 6 Row Direct Expansion Coil						
Cooling Capacity	27 DB/50 % RH	kW	19,13	24,63	31,28	38,40
Heating Capacity	5 DB/80 % RH	kW	22,25	28,31	36,42	44,27
Fresh Air Unit - 1 Row Hot Water Coil						
Heating Capacity	5 DB/80 % RH	kW	20,05	25,54	33,95	40,46
Fresh Air Unit - 2 Row Hot Water Coil						
Heating Capacity	5 DB/80 % RH	kW	37,06	45,89	59,68	73,38

08 CONTROL UNIT

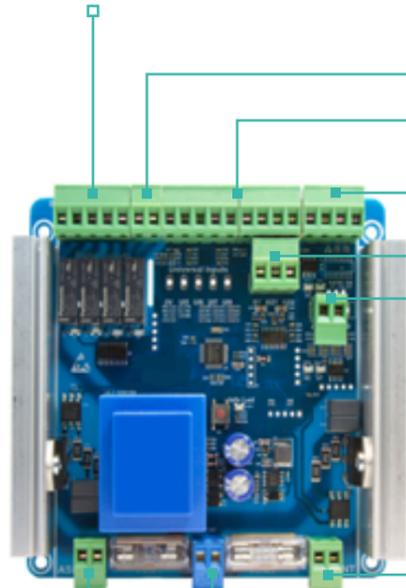
8.1. CONTROL PANEL

- 3'1" Graphic Screen
- Aspirator, Ventilator 6 Step Speed Control
- Automatic/Manual Operation
- Heating/Cooling/Fan Modes
- Language Options Selection(Turkish/English)
- Internal Room Temperature Sensor
- User Friendly Design
- Minimum and Maximum Set Temperature Limit
- Weekly Program(Each day Separately)



8.2. POWER CONTROL UNIT

ELECTRIC HEATER INPUT



- DAMPER OUTPUT
- ANALOG DIGITAL INPUTS
- ROOM PANEL CONTROLLER CONNECTION
- ANALOG OUTPUTS
- BMS CONNECTION
 - Time Based Filter Dirt Control (Adjustable Service Duration)
 - Ready Application Selection on the Screen
 - Adjustable Mode Selection (Auto Heating, Auto Cooling, Man Heating, Man Cooling, Fan Mode)
 - Resumable After Power Outage
 - Connection to Building Management System(Modbus-RTU)
 - Weekly Program(Each day separately)
- TRIAC VENT OUTPUT
- 230 VAC FEED
- TRIAC ASP OUTPUT

09 ELECTRICAL CONNECTION

9.1. ELECTRICAL CONNECTION

Electrical connection operations on the electric panel should be conducted by following the procedures below. These rules are not suggestions and should be followed to ensure the safety of user;

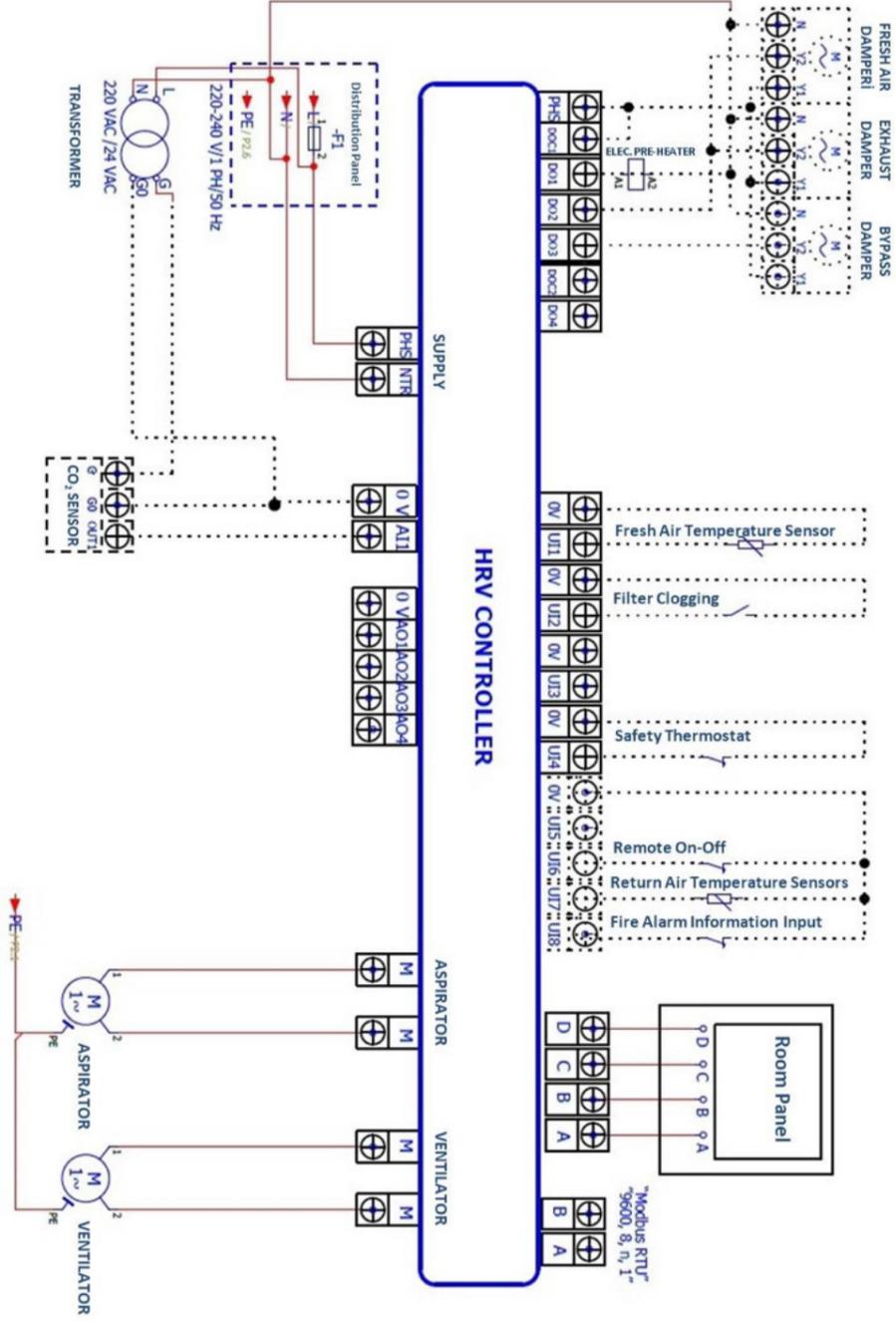
- Equipment and cables to be used in electricity connection should be chosen according to the maximum current values given in the tables and figures. Figures can also be found on the electrical panel door.
- Connections, over current protections and magnetic switches must comply with CEI EN 60204 European norms. If a stray current relay will be used in addition to the magnetic protection, this relay must have 30–300 mA block. This will also protect the operator against the isolator defects.
- Grounding cable sections should not be under the values given in the diagrams.
- The route of the electrical supply cables must not obstruct the service covers of the unit.

10 POWER INFORMATION

UTFS Model	Fan Motor Absorbed Current (A)	Electrical Pre Heater Absorbed Current (A)		Electrical Post Heater Absorbed Current (A)		
		Low Capacity	High Capacity	Low Capacity	Medium Capacity	High Capacity
050	0,45	4,43	8,87	4,43	8,87	13,3
075	0,68	6,70	13,39	2,22	4,44	6,65
105	1,1	3,11	6,22	3,11	6,22	9,33
160	2,25	4,71	9,42	4,71	9,42	14,13
200	2,25	5,92	11,84	5,92	11,84	17,76
250	5,1	7,34	14,69	7,34	14,69	22,03
320	6,8	9,42	18,84	9,42	18,84	28,25
410	7,77	12,10	24,19	12,1	24,19	36,29
500	10	14,60	29,20	14,6	29,2	43,8

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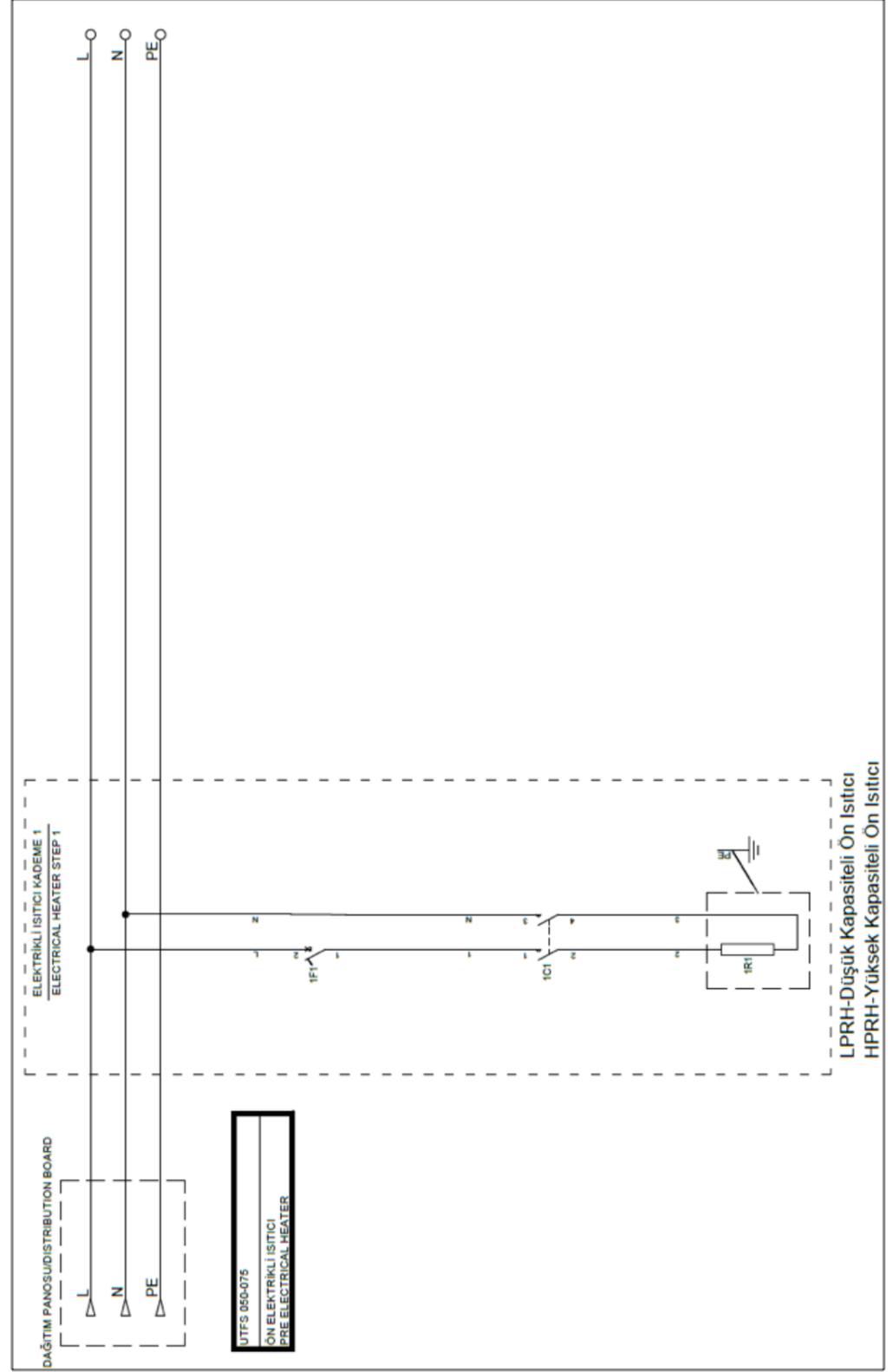
11 ELECTRICAL WIRING SCHEMATIC

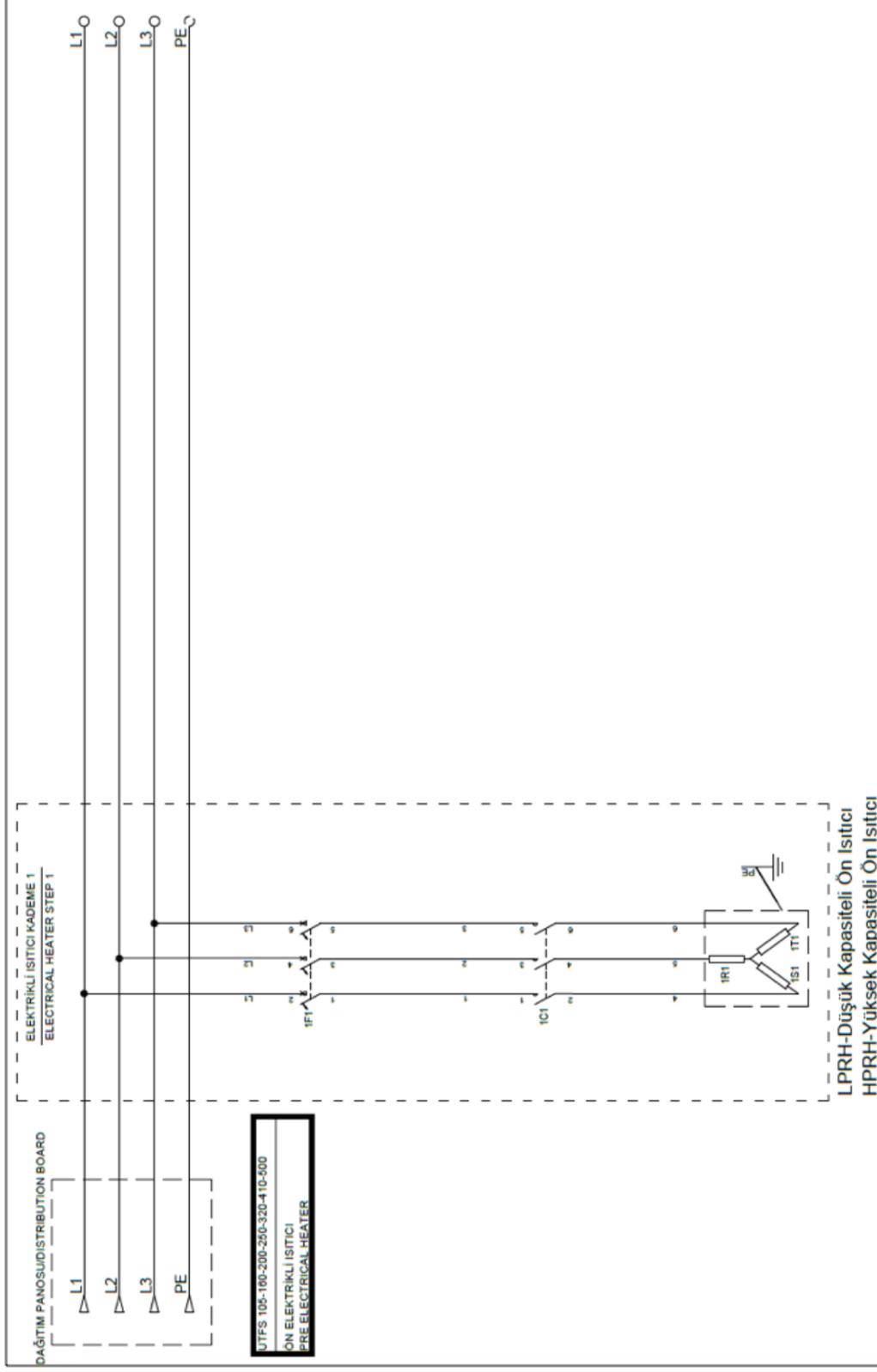


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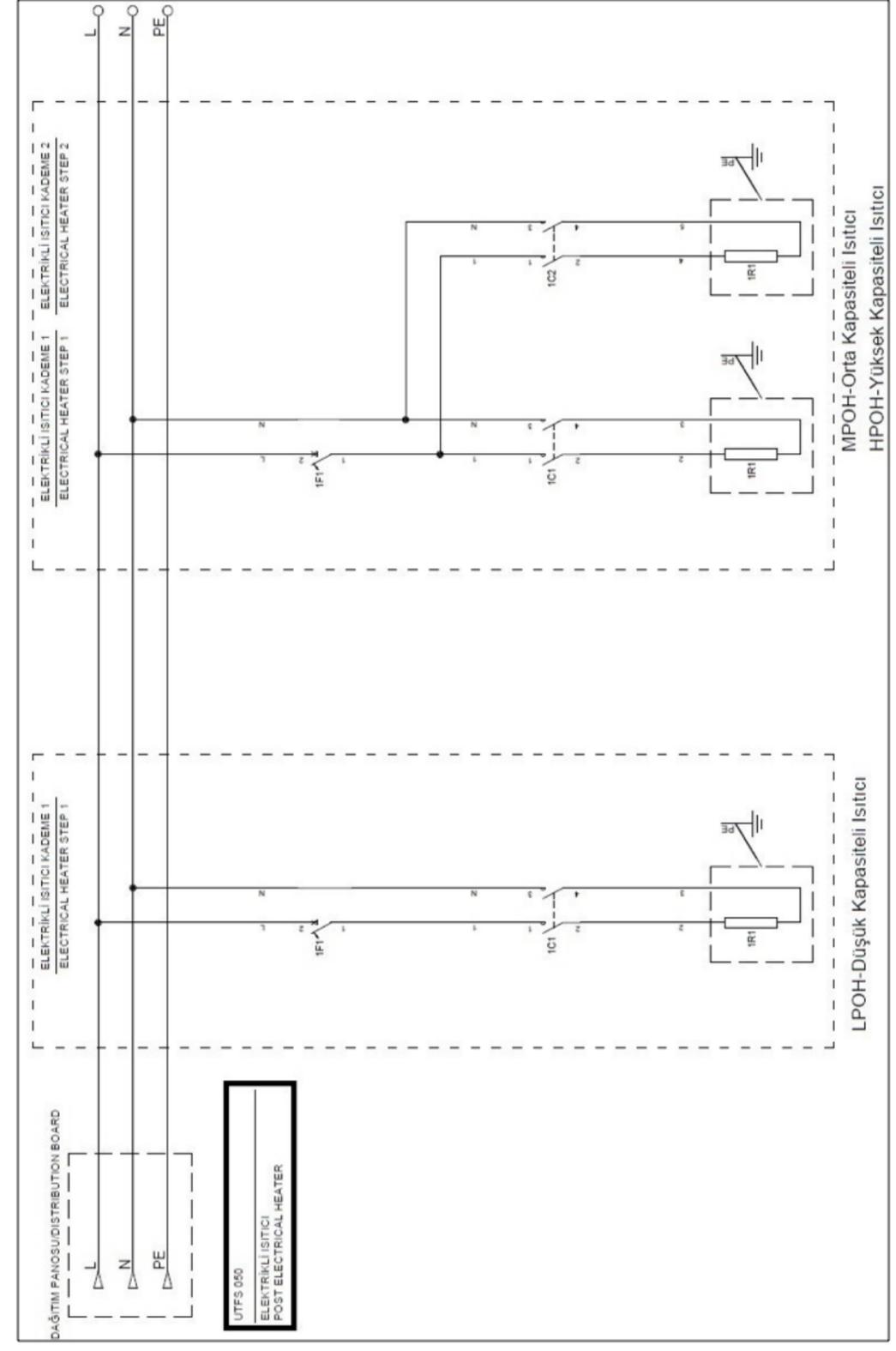


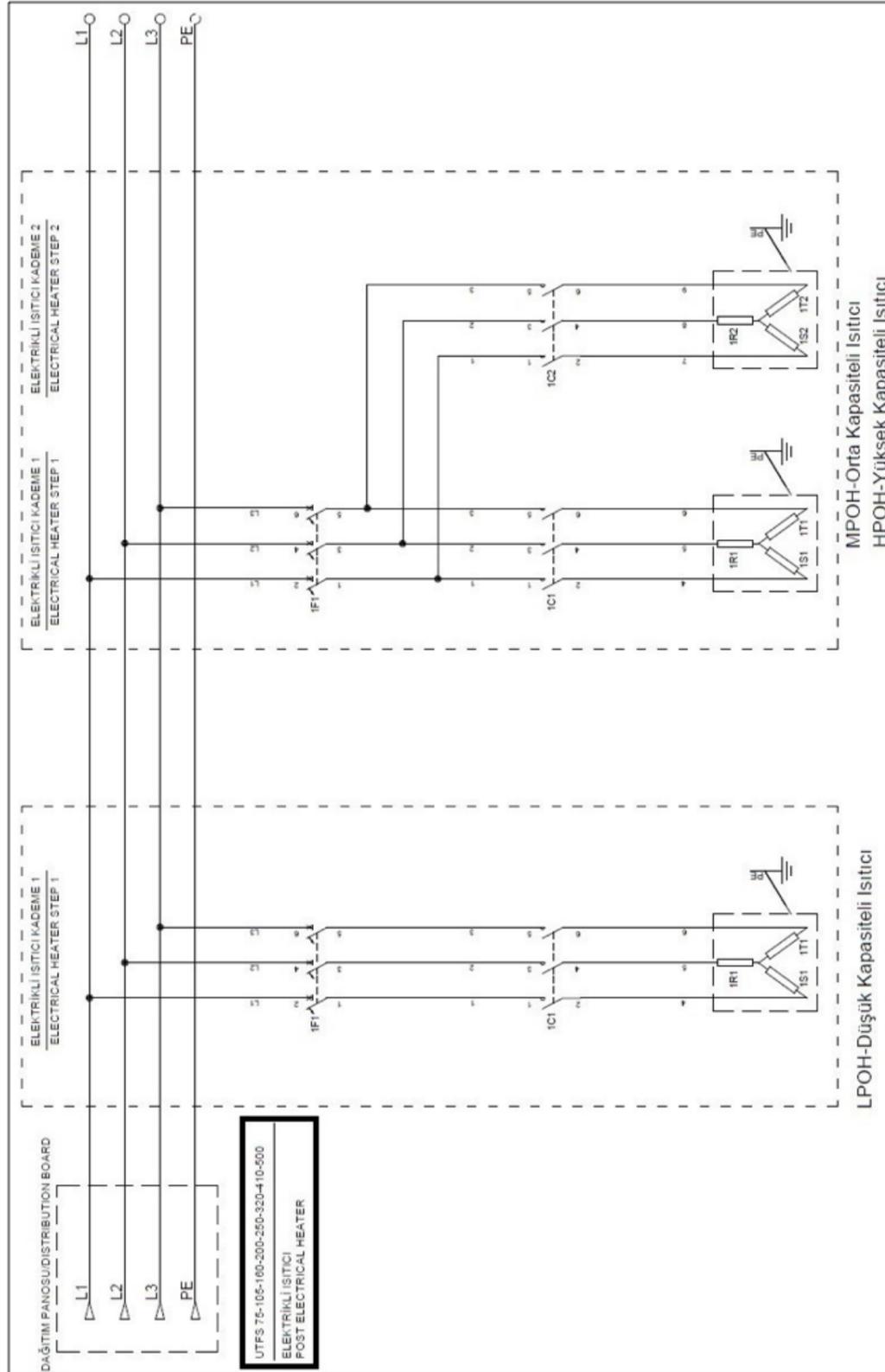
Electric Pre-Heater Schematic / 050-075





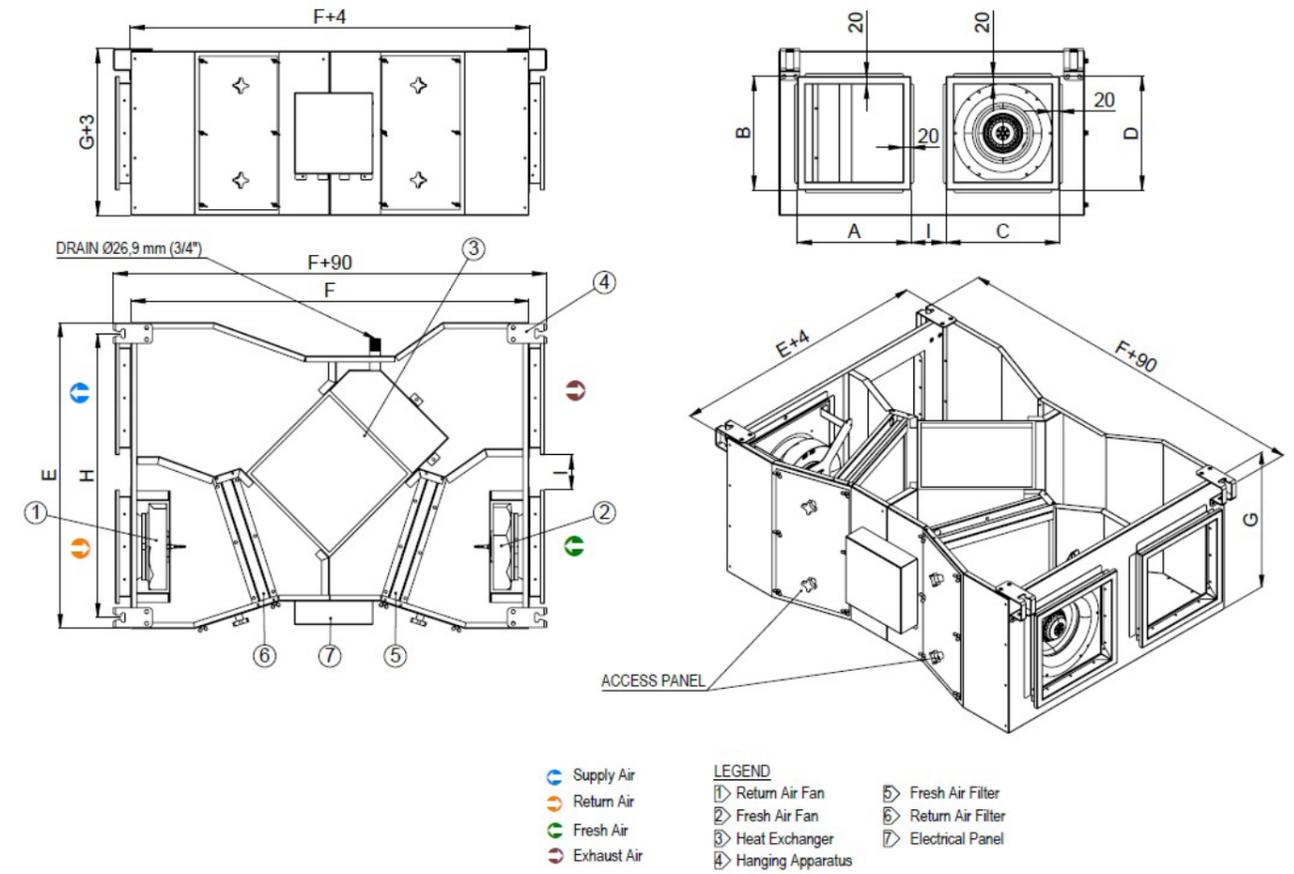
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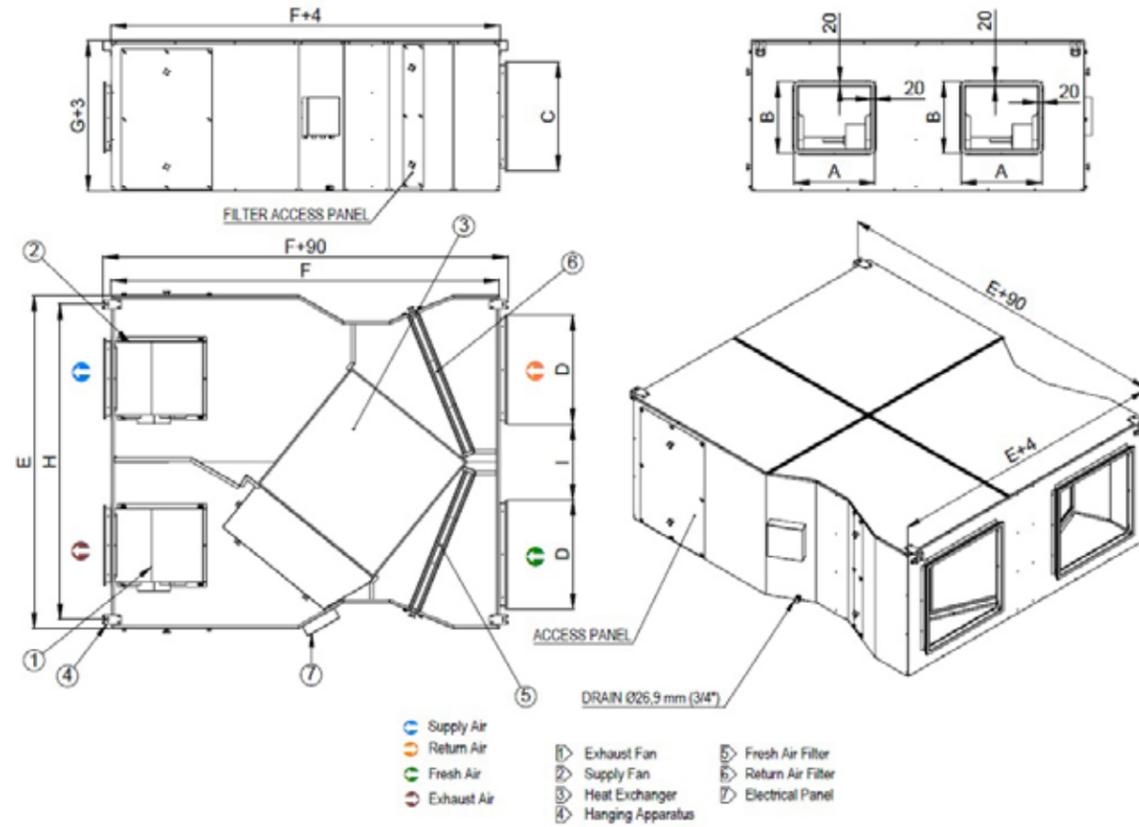
12 DIMENSIONS

12.1 UTFS 050-075-105-160-200 Dimensions



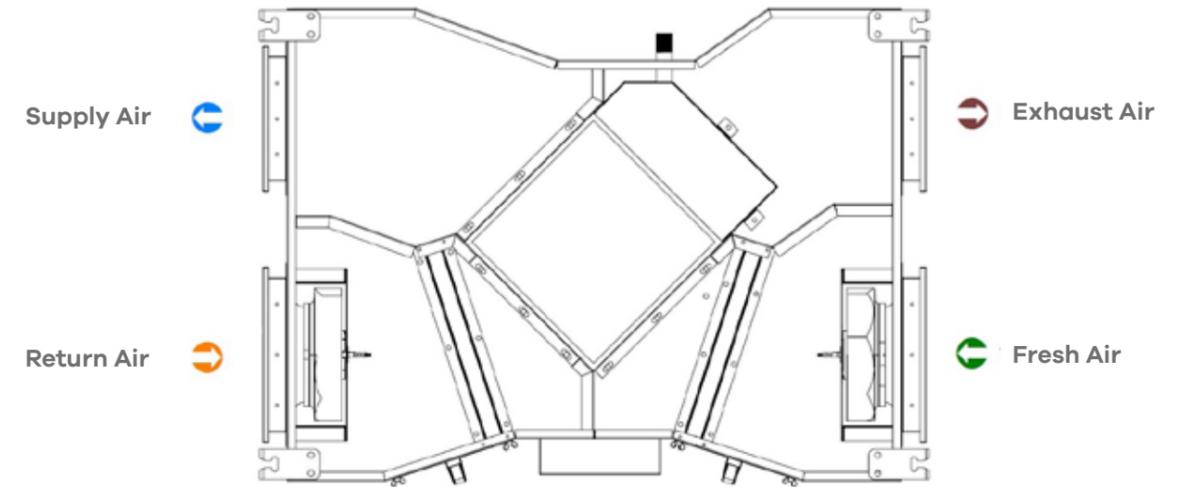
DIMENSION (mm)	MODELS				
	UTFS 050	UTFS 075	UTFS 105	UTFS 160	UTFS 200
A	290	295	315	360	360
B	290	295	315	360	360
C	290	295	315	360	360
D	290	295	315	360	360
E	781,5	891	1005	1177	1257
F	1017	1103,5	1243,5	1366,5	1398,5
G	423	429	477	531	576
W	725,5	835	949	1121	1201
H	90	169,5	204	284	304

12.2 UTFS 250-320-410-500 Airflow Directions

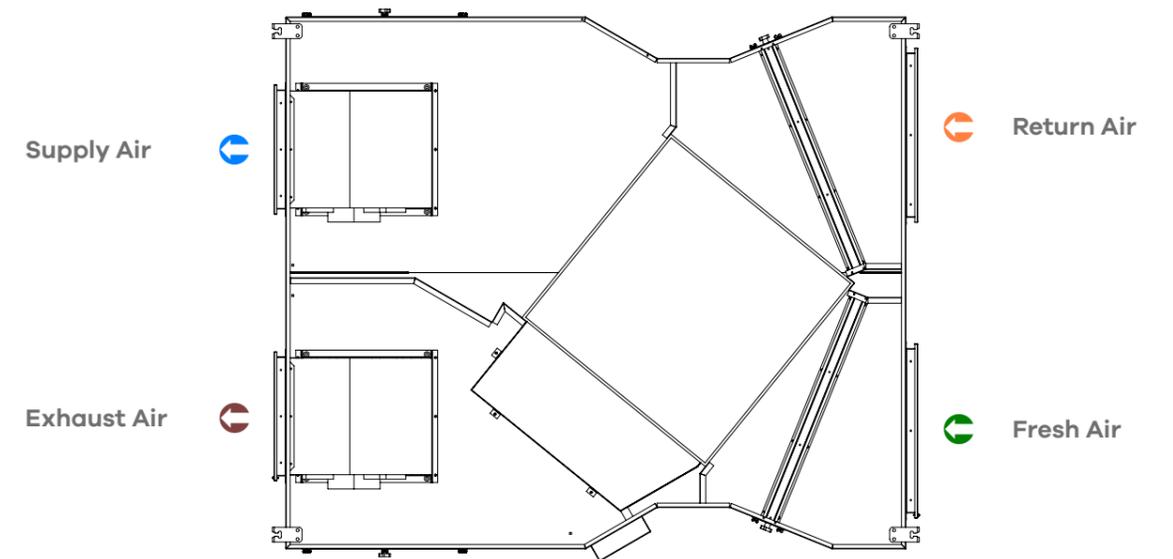


13 AIRFLOW DIRECTIONS

13.1 UTFS 050-075-105-160-200 Airflow Directions



13.2 UTFS 250-320-410-500 Airflow Directions



DIMENSION (mm)	MODELS			
	UTFS 250	UTFS 320	UTFS 410	UTFS 500
A	344	373	373	437
B	308	336	336	384
C	460	490	540	590
D	460	490	540	590
E	1353	1428	1600	1800
F	1600	1700	1900	2100
G	681	711	761	811
W	1257	1332	1504	1704
H	193,5	238,5	260,5	410,5

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DEVICE OPERATING SCENARIOS

Scenario 1 (Only Ventilation)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the outer temperature falls below the limit, then the pre-heater is activated via Relay 1(Optional). The damper motors are activated via Relay 2 when the device is started(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional).

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 2 (Ventilation + 2 Step Electric Heating)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the set temperature is higher than the room temperature in heating, then the electric heater will activate via Relay 1, Relay 2 and in 3.step via Relay 1+Relay 2. In proportional heating(Optional), no relay is used as outlet. The Bypass damper motor is activated via Relay 4 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). If the outdoor air temperature falls below the limit, then the electric heater(Optional) will activate via Relay 5.

In the instructions;

HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 3 (Ventilation + Water Heating)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the outer temperature falls below the limit, then the pre-heater is activated via Relay 1(Optional). The damper motors are activated via Relay 2 when the device is started(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating. Heating valve motor is controlled via AO3 proportional heating outlet(Optional).

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 4 (Ventilation + Water Cooling)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the outer temperature falls below the limit, then the pre-heater is activated via Relay 1(Optional). The damper motors are activated via Relay 2 when the device is started(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional).

Cooling valve motor is controlled via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 5 (Ventilation + Water Heating + Water Cooling)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the outer temperature falls below the limit, then the pre-heater is activated via Relay 1(Optional). The damper motors are activated via Relay 2 when the device is started(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional).

Heating valve motor is controlled via AO3 proportional heating outlet and cooling valve motor via AO4 proportional cooling outlet
In the instructions;

HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 6 (Ventilation + Water Cooling + Electric Heating)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the set temperature is higher than the room temperature in heating, then the electric heater will activate via Relay 1, Relay 2 and in 3.step via Relay 1+Relay 2. In proportional heating(Optional), no relay is used as outlet. The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). The damper motors are activated via Relay 4 when the device is started(Optional). Heaters are controlled via AO3 proportional heating outlet(Optional) and cooling valve motor via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 8 (Ventilation + Dx Cooling)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the outer temperature falls below the limit, then the pre-heater is activated via Relay 1(Optional). The damper motors are activated via Relay 2 when the device is started(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). Compressor opening and closing contactors are activated via Relay 4. Dx systems are controlled via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 9 (Ventilation + Dx Heatpump)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

In cooling mode, the compressor opening-closing contactors are activated via Relay 1 and in heating mode via Relay 2. The Bypass damper motor is activated via Relay 4 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). The damper motors are activated via Relay 5 when the device is started(Optional). If the outer temperature falls below the limit, then the pre-heater is activated via Relay 6(Optional). Heating system is controlled via AO3 proportional heating outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 10 (Ventilation + Dx Cooling + Electric Heating)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the set temperature is higher than the room temperature in heating, then the electric heater will activate via Relay 1, Relay 2 and in 3.step via Relay 1+Relay 2. In proportional heating(Optional), no relay is used as outlet. The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). In cooling mode, the compressor opening-closing contactors are activated via Relay 4. The damper motors are activated via Relay 5 when the device is started(Optional). If the outer temperature falls below the limit, then the pre-heater is activated via Relay 6(Optional). Heating system is controlled via AO3 proportional heating outlet and Dx system via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 11 (Ventilation + Dx Cooling)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

The damper motors are activated via Relay 1 when the device is started(Optional). If the outer temperature falls below the limit, then the pre-heater is activated via Relay 2(Optional). The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). In cooling mode, the compressor opening-closing contactors are activated via Relay 4. VRF system is controlled via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 12 (Ventilation + Dx Heatpump)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

In heating mode, the opening-closing contactors are activated via Relay 1 and Relay 2. In cooling mode, the compressor opening-closing contactors are activated via Relay 1. Bypass damper motor is activated via Relay 4 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). The damper motors are activated via Relay 5 when the device is started(Optional). If the outer temperature falls below the limit, then the pre-heater is activated via Relay 6(Optional). VRF heating and cooling system is controlled via AO3 proportional heating-cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

Scenario 13 (Ventilation + Dx Cooling + Electric Heating)

In this scenario, 2 AC fan motors connected to triac outlets operate at different speed steps according to the required load determined by the thermostat input temperature or the information obtained by the CO₂ sensors(Optional).

If the set temperature is higher than the room temperature in heating, then the electric heater will activate via Relay 1, Relay 2 and in 3.step via Relay 1+Relay 2. The Bypass damper motor is activated via Relay 3 in the case heat exchanger frost protection, temperature difference of $\pm 1K$ between indoor and outdoor environment and freecooling/freeheating(Optional). In cooling mode, the compressor opening-closing contactors are activated via Relay 4. The damper motors are activated via Relay 5 when the device is started(Optional). If the outer temperature falls below the limit, then the pre-heater is activated via Relay 6(Optional). Heaters are controlled via AO3 proportional heating outlet(Optional) and VRF system via AO4 proportional cooling outlet.

In the instructions;
HCP6 Digital Room Control Panel will be called as thermostat and M1002-X card as device.

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