



indoor air quality and energy saving

## TECHNICAL DATA



# HRU-ED



HEAT RECOVERY VENTILATION UNITS with INTEGRATED AIR/AIR HEAT PUMP (CLIMATIZATION)

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## HRU-ED

HRU-ED is an active recovery unit for heating, cooling and air renewal of the environments (medium efficiency).

### PERFORMANCE

HRU-ED can operate either as a passive recovery and as an active thermodynamic recovery and is particularly suitable for residential premises, commercial or collective residential buildings. The unit is supplied in plug-and-play version for a 'quick and simplified installation

### STRUCTURE

The unit is composed of a monobloc inclusive of each component for the correct operation: fans, cooling circuit, compressors and electronic expansion valve), air filtration sections and cross-flow heat exchanger (medium efficiency). The unit frame is manufactured using a profiled extruded aluminium frame and 36 mm thick sandwich panels, insulated in polyurethane foam. The panels and inner parts are manufactured in Aluzinc<sup>®</sup>, material that ensures high strength against corrosion and oxidation. The isolation of the panels is made with insulating that allow to have low noise and reduced transmittances during the operation of the unit. HRU-ED is equipped with AC fans. The heat exchanger is made of aluminum cross-flow with a medium efficiency (summer and winter operation) and the rotary or scroll compressor (high efficiency) has a thermal protector incorporated. The filter sections are: 70% ePM1 filters (formerly F7) for the supply air flow and 50% ePM10 filters (formerly M5) for the extraction air flow. The system is managed by an electronic evolved but easy to manage.

### MAIN FEATURES

**ACTIVE THERMODYNAMIC RECOVERY:** The unit allows the recovery of active energy of the exhaust air. The thermodynamic recovery allows, thanks to its refrigerant circuit, to provide energy to the environment in higher quantities than the energy subtracted from the ventilation.

**COOLING CIRCUIT:** made of copper brazed full of: high efficiency compressor, filter drier, finned coils, solenoids, valves, electronic expansion valve, liquid receiver, pressure transducers and safety devices.

**ADJUSTMENT:** electric board in the unit with microprocessor and dedicated control which allows to manage:

- the temperature of the air
- the fans
- the temperature probes inside the machine
- dirty filters with differential pressure sensors
- management of the defrosting algorithm optimized for operation at low temperatures
- 3-way valve 0-10 Volt for H<sub>2</sub>O battery management after cooling / heating

Prepared for MODBUS RTU RS 485.



Counterflow heat exchanger made of aluminum manufactured by RECUPERATOR  
RECUPERATOR participates in the Eurovent Certification Program

**N.B. - we recommend checking the intrinsic operating limits of this type of equipment on page 11. With LOW outdoor temperatures in WINTER (<0 ° C) cycle inversions occur which are used to defrost the evaporator. This causes cold air to enter (discomfort); under these conditions we suggest to provide a pre-heating resistor. With HIGH outdoor temperatures in SUMMER (> 40 ° C) the machine can block due to high pressure, especially for appliances with ON-OFF compressor (HRU-ED and HRU-EX series).**

**The inlet air temperature is a function of the external and return air temperature, refer to the data and evaluate additional systems.**

**For doubts and verification of applications, with conditions close to critical ones, contact our Technical Department.**

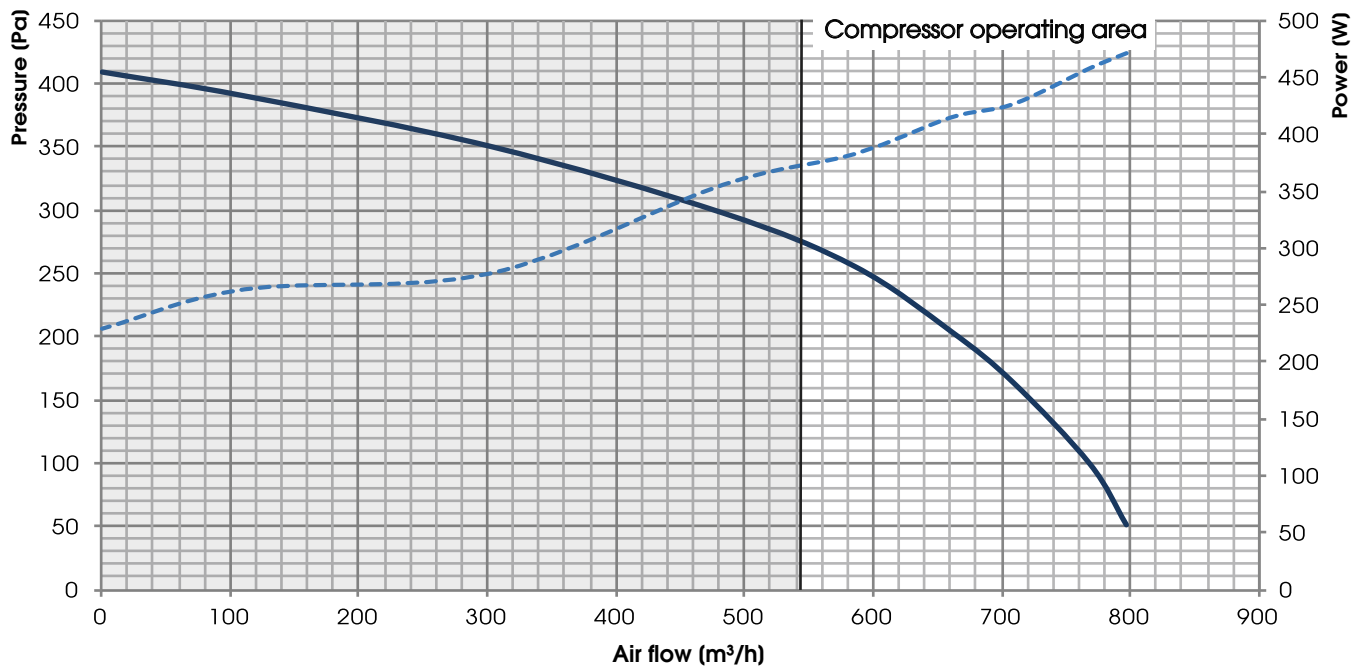


## PERFORMANCES

The unit must be ducted properly: UTEK authorizes the use only according to its performance diagram shown into this catalogue  
The declared performances are with CLEAN filters, and guaranteed ONLY with the original filters UTEK low pressure drop.

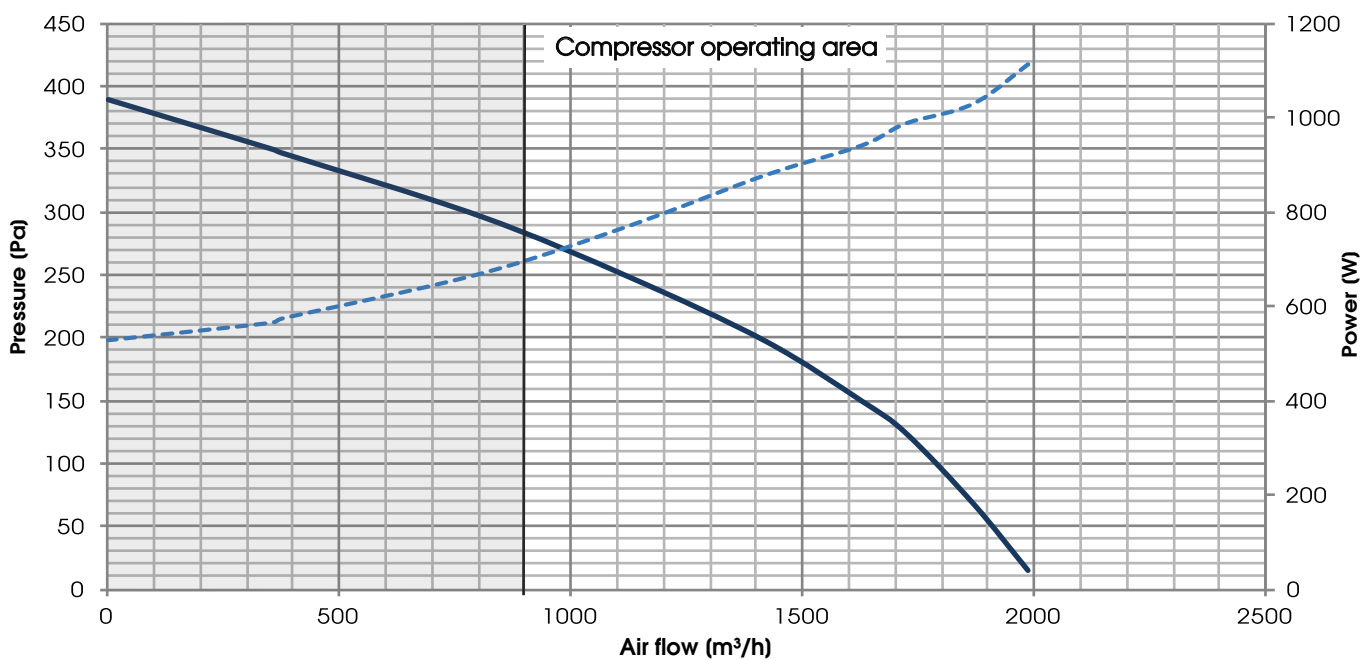
### HRU-ED 1

— Air flow — Power



### HRU-ED 2

— Air flow — Power



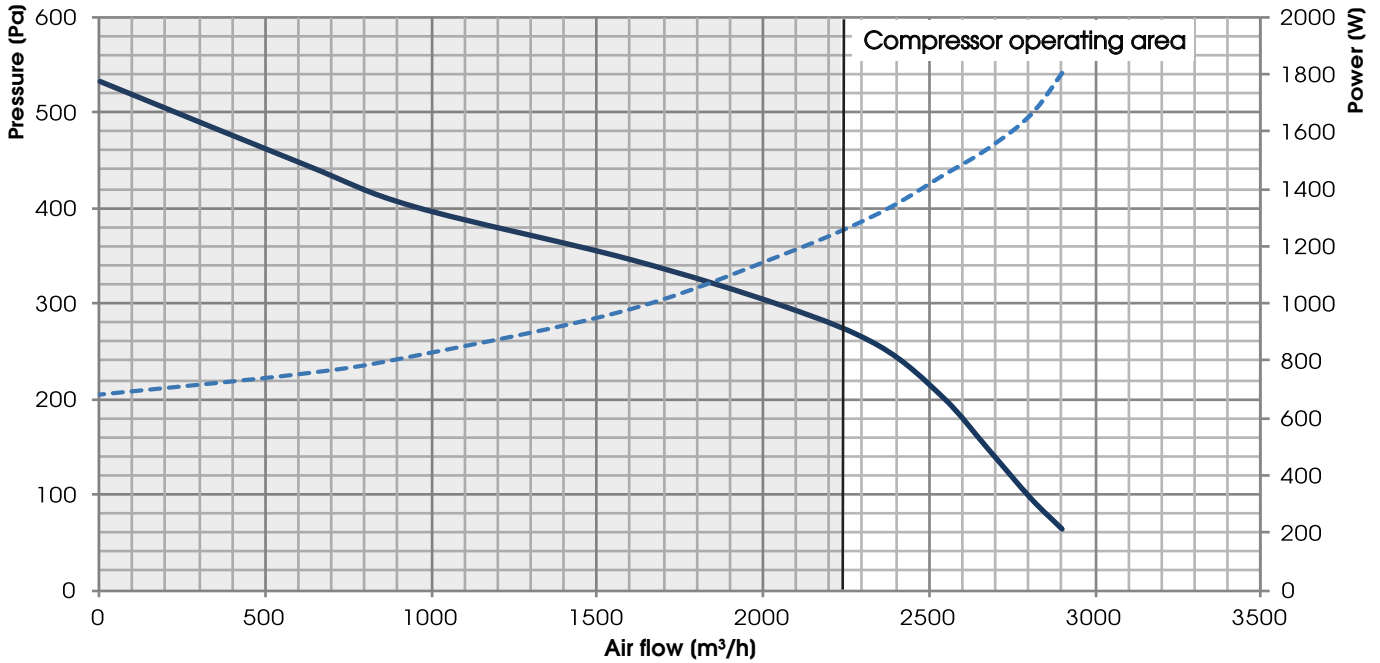


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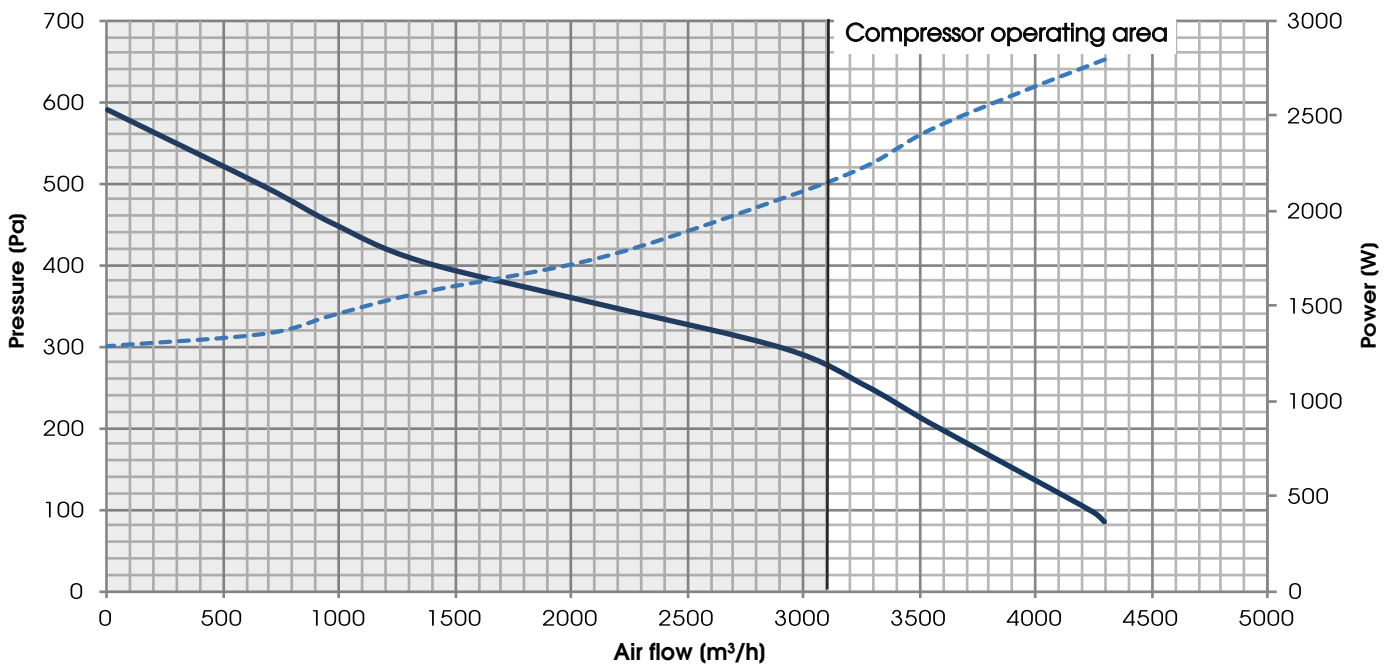
### HRU-ED 3

— Air flow — Power



### HRU-ED 4

— Air flow — Power



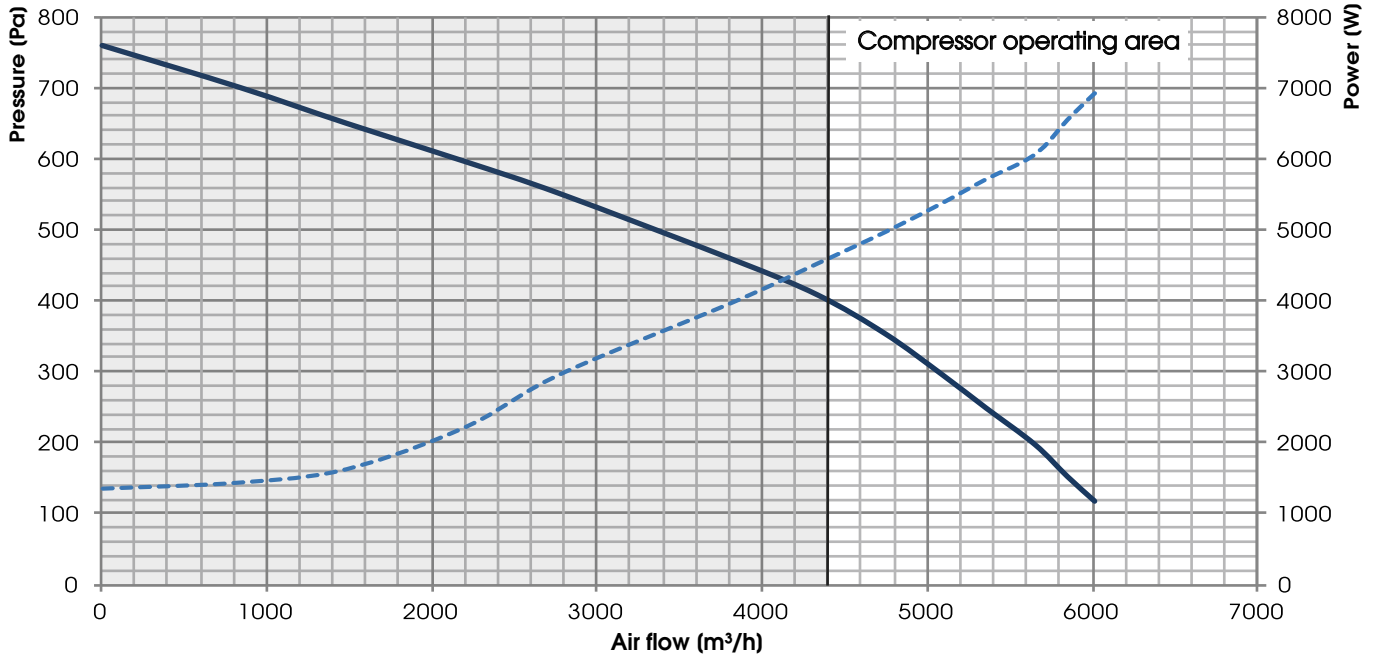


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### HRU-ED 5

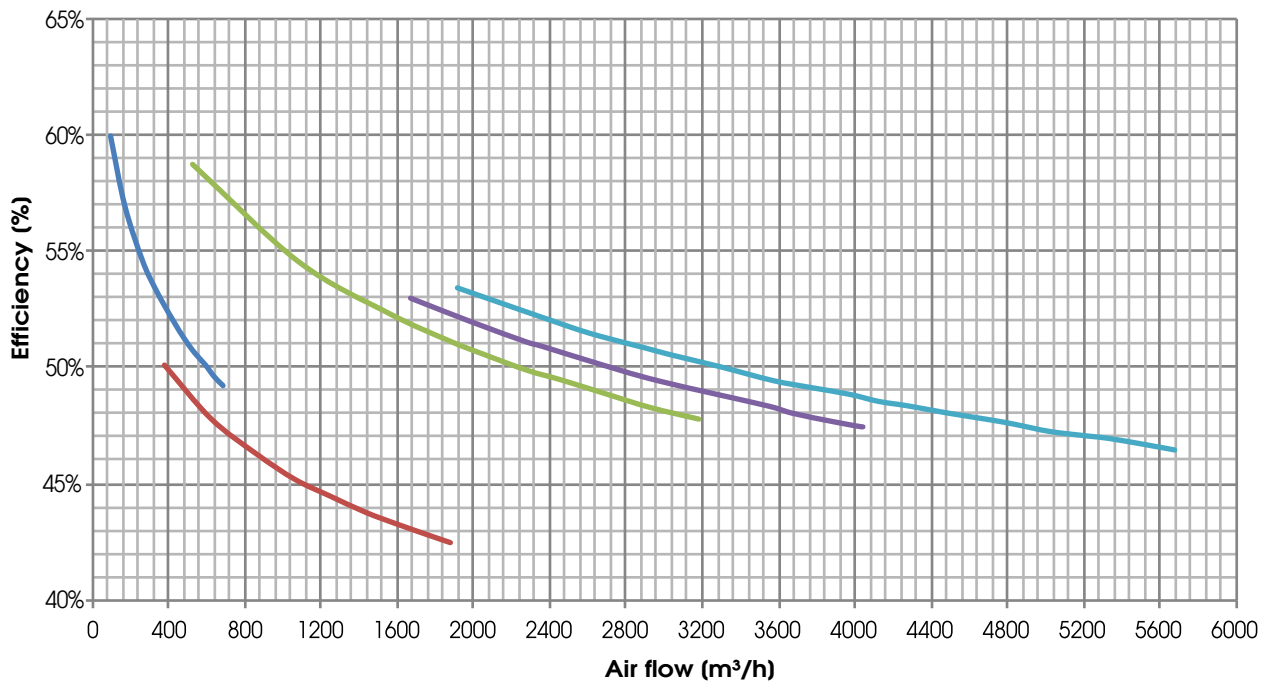
— Air flow — Power



### HEAT RECOVERY PERFORMANCE (sensible efficiency)

Values referred to the following conditions (UNI EN 13141-7): T<sub>bs</sub> external air 5°C; U.R. external 72%; T<sub>bs</sub> environment 25°C; U.R. environment 38%

— HRU-ED 1 — HRU-ED 2 — HRU-ED 3 — HRU-ED 4 — HRU-ED 5





### TECHNICAL DATA FOR WINTER OPERATION

	HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
<b>PASSIVE RECOVERY</b>					
Thermal potential (kW) (1)	2,3	4,2	11,2	15,4	22,4
<b>ACTIVE RECOVERY</b>					
Thermal capacity (kW) (1)	2,82	5,03	13	18,2	24,4
Absorbed potential (kW)	0,58	1,12	2,7	3,4	5,2
COP	4,86	4,49	4,81	5,35	4,69
<b>TOTAL RECOVERY</b>					
Global COP	8,82	8,25	8,96	9,88	9
Inlet air temperature (C°)	22,1	21,9	23,2	22,6	22,1
Potenzialità termica (kW) (1)	5,12	9,25	24,2	33,6	46,8

(1) Outdoor air -5 °/ 80% RH - Indoor air 20 °/ 50% RH - Nominal flow rate

### TECHNICAL DATA FOR SUMMER OPERATION

	HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
<b>PASSIVE RECOVERY</b>					
Cooling capacity (kW) (1)	0,4	0,76	2,08	2,85	4,22
<b>ACTIVE RECOVERY</b>					
Cooling capacity (kW) (1)	2,68	5,32	12,71	18,4	25,1
Absorbed potential (kW)	0,79	1,29	3,89	5,5	7,3
EER	3,39	4,12	3,26	3,34	3,43
<b>TOTAL RECOVERY</b>					
Global EER	8,8	4,71	3,8	3,86	4
Temperature/humidity of inlet air (C°/U%)	19,7/87,2	19,6/87,9	19,9/86	19,9/86,9	19,9/85
Cooling capacity (kW) (1)	3,08	6,08	14,79	21,25	29,32

(1) Outdoor air 30°/60% RH - Indoor air 25°/50% RH - Nominal flow rate

### GENERIC TECHNICAL DATA

	HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
Fan	Double suction centrifuges				
N° fan	2				
Nominal air flow (m³/h)	600	1500	2500	3500	5000
Useful pressure on the renewal side (Pa)	245	179	214	213	310
Useful pressure on the expulsion side (Pa)	273	196	145	199	295
Type of compressor	High efficiency rotary		High efficiency scroll		
Refrigerant gas R410A (kg)	1,75	2,70	3,20	3,70	5,30
Passive heat recovery	Cross-flow aluminum plates				
Minimum unit efficiency (%) (1)	55	50,5	53,7	52,6	51,3
Filters	ePM10 50% (ex M5)/ePM1 70% (ex F7)				
Max absorbed power fans (kW)	0,58	0,80	1,10	1,50	3,00
Max current absorbed fans (A)	2,6	5,8	9,6	19,2	13,4
Max power absorbed compressors (kW)	1,06	1,83	5,04	7,23	9,39
Max current absorbed compressors (A)	6,2	8,5	8,6	13,0	16,8
Supply voltage (V/ph/Hz)	230/1/50	230/1/50	400/3/50	400/3/50	400/3/50
Max total power absorbed (kW)	1,64	2,63	6,14	8,73	12,39
Max total current absorbed (A)	8,8	14,3	13,4	22,6	30,2
Degree of protection (IP)	20	20	20	20	20

(1) Outside air -5°/80% UR - Inside air 20°/50% UR - nominal air flow

### VALUES ACCORDING TO UNI EN 1886: 2008

MOD.	DEFORMATION CASE	LEAKAGE CASE	FILTERS CLASS	THERMAL TRASMITTANCE	THERMAL BRIDGE
HRU-ED 1	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
HRU-ED 2	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
HRU-ED 3	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
HRU-ED 4	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)
HRU-ED 5	D1 (M)	L3 (M)	F7 (M)	T4 (M)	TB3 (M)



### TEST LEAKAGE (UNI EN 13141-7)

LEAKAGE	TEST CONDITIONS	HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
OUTSIDE	Positive pressure 400 Pa	A2	A2	A2	A1	A1
OUTSIDE	Negative pressure 400 Pa	A2	A1	A2	A1	A1
INSIDE	Pressure difference 250 Pa	A2	A2	A2	A2	A2

### NOISE LEVEL

Lw Sound power level taken in accordance to UNI EN ISO 3747 - CLASS 3

			NOISE FROM THE CASE (dB)							
Compressor			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L <sub>w</sub> dB(A)
HRU-ED 1	100%	OFF	65,9	68,0	59,1	53,8	48,7	43,1	46,5	62,4
		ON	66,7	69,2	59,6	54,4	48,5	43,3	46,7	63,3
HRU-ED 2	100%	OFF	73,1	69,2	60,2	56,3	51,3	48,2	50,1	64,7
		ON	75,8	70,9	62,0	56,8	52,2	48,3	50,7	66,3
HRU-ED 3	100%	OFF	74,7	72,7	65,0	61,7	51,4	45,4	47,6	68,1
		ON	74,2	73,4	65,9	61,9	51,1	45,7	47,5	68,6
HRU-ED 4	100%	OFF	80,2	76,3	65,4	60,1	52,7	47,7	50,0	70,6
		ON	81,0	78,3	65,5	59,8	53,6	47,8	50,6	71,9
HRU-ED 5	100%	OFF	81,9	79,3	70,7	65,3	58,1	55,4	58,7	74,2
		ON	81,5	81,5	71,5	65,8	58,6	55,6	59,1	75,5

			NOISE IN THE DUCTS (dB)							
Compressor			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	L <sub>w</sub> dB(A)
HRU-ED 1	100%	OFF	63,4	66,3	65,0	65,9	61,2	60,7	67,2	71,2
		ON	64,6	67,3	65,0	64,8	62,3	60,5	67,3	71,2
HRU-ED 2	100%	OFF	69,6	74,2	68,8	70,0	64,4	63,6	66,4	74,4
		ON	72,0	75,2	70,1	70,7	65,0	64,3	66,8	75,2
HRU-ED 3	100%	OFF	71,4	74,0	74,0	71,5	64,3	65,2	68,8	76,4
		ON	71,8	74,1	73,7	71,6	64,1	65,1	68,6	76,3
HRU-ED 4	100%	OFF	83,6	83,4	76,9	74,6	68,9	68,6	72,9	80,9
		ON	83,6	83,6	76,5	75,2	69,2	69,8	73,6	81,2
HRU-ED 5	100%	OFF	79,3	80,9	80,5	78,7	74,8	73,2	77,8	84,1
		ON	80,8	82,0	80,6	78,9	75,3	73,7	78,2	84,5

### OPERATION LIMITS

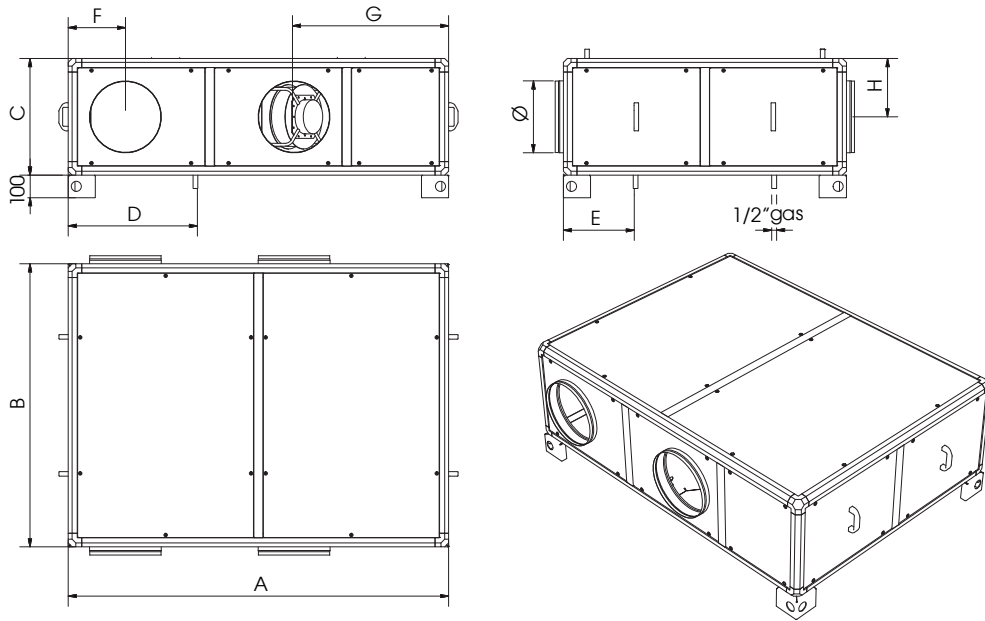
		INTERNAL AIR				
		HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
HEATING (°C)		15/25				
COOLING (°C)		18/28				
		EXTERNAL AIR				
		HRU-ED 1	HRU-ED 2	HRU-ED 3	HRU-ED 4	HRU-ED 5
HEATING (°C)		-5/20				
COOLING (°C)		15/40				

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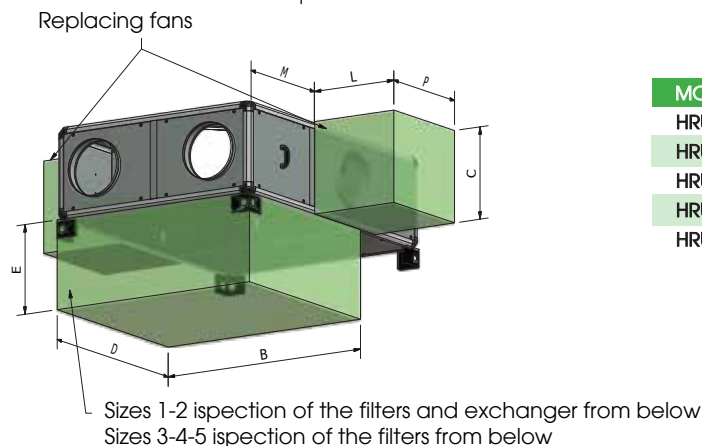
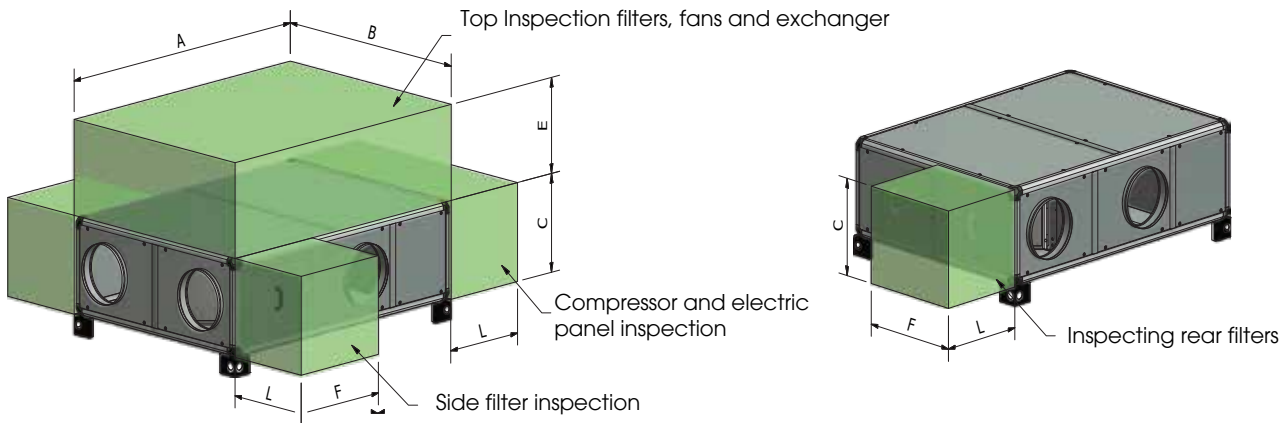
DIMENSIONS (mm) and WEIGHT (kg)



MODEL	A	B	C	Ø	D	E	F	G	H	Weight (kg)
HRU-ED 1	1400	925	415	200	495	295	245	470	208	105
HRU-ED 2	1680	1250	515	315	560	320	250	685	260	178
HRU-ED 3	1960	1430	620	355	645	390	285	615	260	262
HRU-ED 4	1960	1430	720	400	645	390	285	615	360	306
HRU-ED 5	2238	1612	922	500	722	372	335	660	461	475

INSTALLATION HRU-ED

Minimum required space for maintenance (mm)

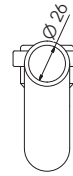
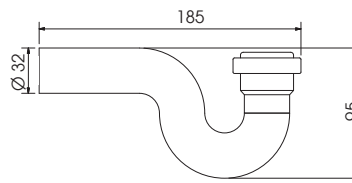


MODEL	A	B	C	D	E	F	L	M	P
HRU-ED 1	1400	925	415	1400	400	460	500	480	600
HRU-ED 2	1680	1250	515	1100	500	620	500	640	560
HRU-ED 3	1960	1430	620	530	600	530	500	1000	490
HRU-ED 4	1960	1430	720	530	700	530	500	1000	490
HRU-ED 5	2240	1610	920	625	500	620	500	1290	590





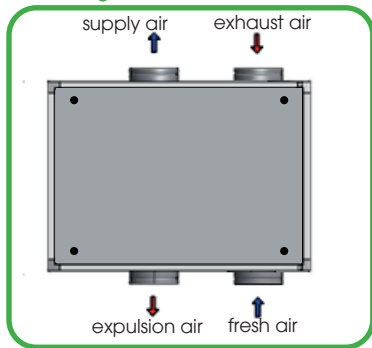
## STANDARD SIPHON (mm)



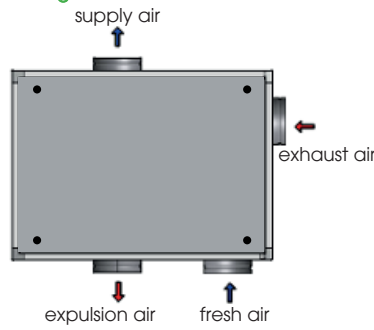
## Configurations

The configurations supplied by the factory are "1 standard" and "1 mirrored"; The other configurations can be carried out on site

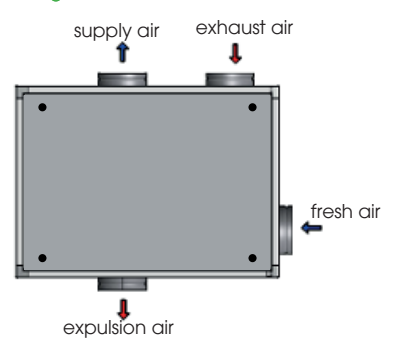
Configuration 1: Standard



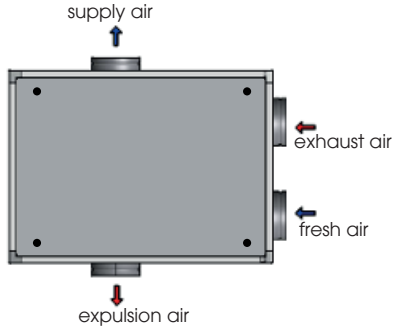
Configuration 2 Standard



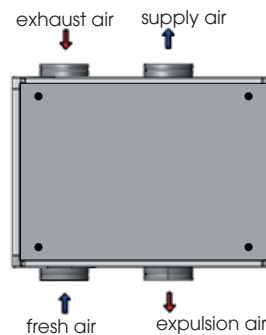
Configuration 3 Standard



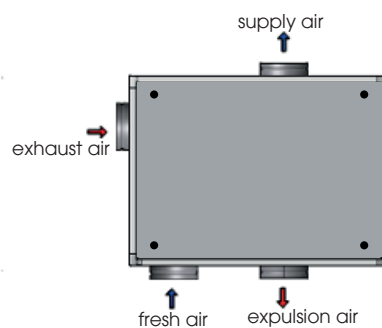
Configuration 4 Standard



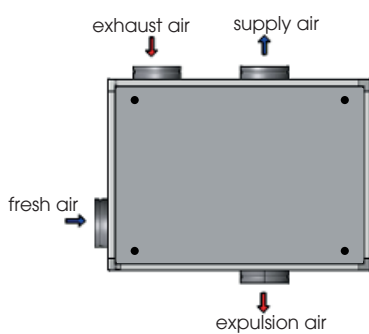
Configuration 1: Mirrored



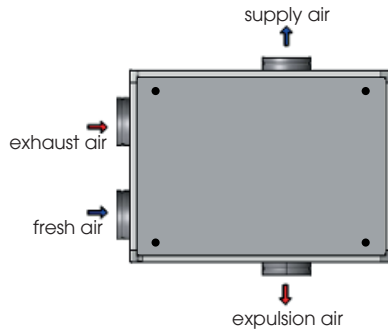
Configuration 2 Mirrored



Configuration 3 Mirrored



Configuration 4 Mirrored



The units are views from above

CLA & UTEK reserves the right to at any time the necessary changes to improve products without prior notice .

Dear Customer

Thanks for your attention to the product UTEK , designed and manufactured to ensure the real values to the User : Quality, Safety and Savings on working.



Made in Italy

**AZIENDA CON SISTEMA  
DI GESTIONE QUALITÀ  
CERTIFICATO DA DNV GL  
ISO 9001**

**AZIENDA CON  
SISTEMA DI GESTIONE  
AMBIENTALE CERTIFICATO  
DA DNV  
ISO 14001**



il Concessionario

HRU-ED\_2019\_4\_EN



HEAT RECOVERY VENTILATION UNITS with INTEGRATED  
AIR/AIR HEAT PUMP (CLIMATIZATION and DEHUMIDIFICATION)