

COMPACT AIR HANDLING UNIT SERIES R

TWO VARIANTS, ONE SOLUTION.



Refrigerant: R454B
Control: On/Off



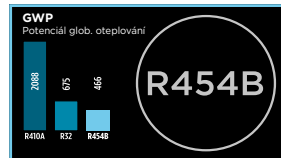
Refrigerant: R454C
Control: Stepless inverter

MANDIK

Main characteristics

- › “Rooftop” product
- › Air throughputs from 4,000 to 30,000 m³/h
- › Design from 14 typical rated outputs from 20 to 150 kW
- › Integrated heat pump with the possibility of heating/cooling
- › For refrigerant R454C, the unit allows for stepless capacity control. For refrigerant R454B, the unit offers only staged heat pump power control.
- › Eco-friendly and safe refrigerant R454C or R454B in safety class A2L
- › Possible to install a bivalent electric heater
- › Possible to install a fluid heater/cooler
- › Possible to install exhaust fans and a rotary heat recovery exchanger
- › T2/TB3 class thermal insulated casing in the standard version
- › Possible version for industrial and coastal environments with medium salinity, class C4 according to EN ISO 12944-2 (at additional cost)
- › Design that meets the EKODESIGN requirement according to Commission Regulation (EU) 2016/2281
- › The product complies with the requirements of Machinery Directive 2006/42/EC
- › The option to choose any RAL colour
- › High level of variability of the I&C system design – different types of controllers, remote controls, and other peripheral devices according to the customer’s requirements
- › Possible remote unit management using the CLIMAN cloud service
- › Emphasis on easy access for service and maintenance
- › Own service centre – possible to order commissioning service, warranty/post-warranty service
- › Possible warranty-period extension to up to 60 months

Compact air handling unit series R (product type: “ROOFTOP”) is designed for the decentralised ventilation, heating, and cooling of commercial and industrial buildings. It allows for easy installation on the roof of a building, or next to it. The integrated reversible heat pump provides comfortable heating and cooling and, thanks to inverter control, offers smooth and efficient power control.



CERTIFICATION:

Low Voltage Directive
(2014/35/EU) - LVD

Electromagnetic Compatibility
(2014/30/EU) - EMC

Pressure Equipment Directive
(2014/68/EU) - PED

RoHS Directive
(2011/65/EU) - RoHS

Machinery Directive
(2006/42/EC) - MD

Ecodesign
(2009/125/ES)



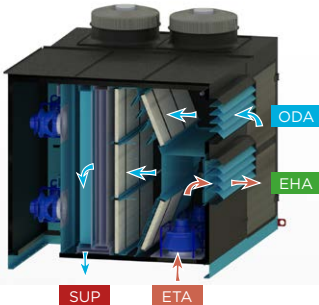
Energy efficiency

The unit combines EC fans, a compressor with an inverter drive, and a mixing damper, which makes it possible to use both quantitative and qualitative controls for the quality of the internal environment and combination with free cooling. This ensures optimal comfort, eliminates temperature fluctuations, and significantly reduces energy consumption compared to traditional on/off systems. The unit is reversible, working in both cooling and heating modes. Thanks to smart supply temperature control, it provides a quality indoor environment at low operating costs. This unit achieves outstanding seasonal performance of SCOP 3.98 and SEER 4.83 - benchmarks that translate into real operating savings and a small environmental footprint.

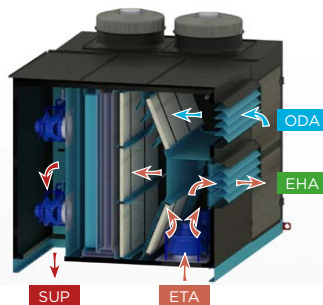


VARIANT USES

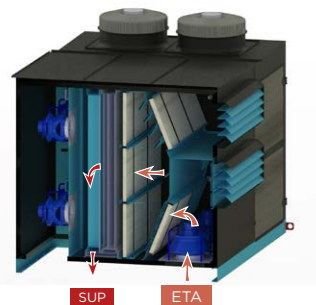
Free cooling



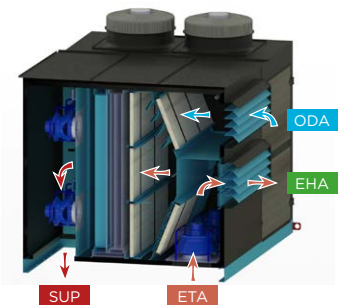
Mix of fresh and exhaust air



100% circulation



100% fresh air



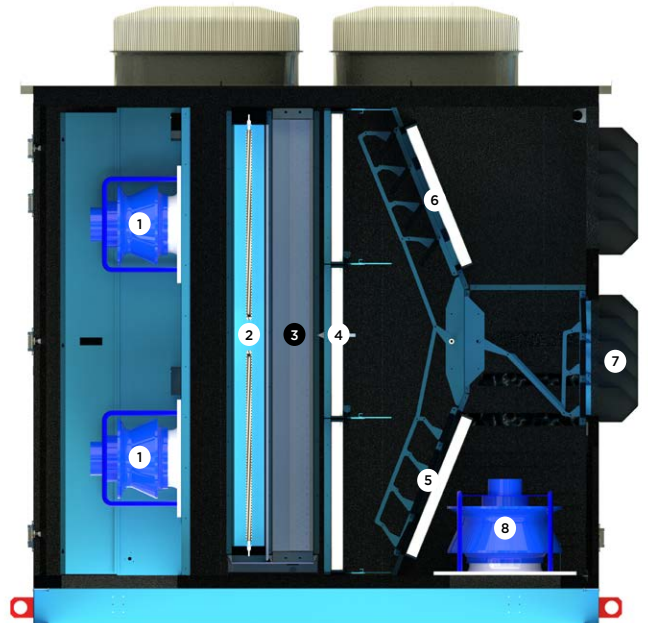


Smart controls

The product is designed for the smart era – it supports cloud connection, which facilitates remote monitoring, control, and diagnostics from anywhere. Building managers have access to real-time data and can respond immediately to alerts, significantly reducing downtime and service costs. The system can also be paired with an optional room controller for local temperature and fan speed adjustment, and it can also be controlled from a mobile phone. For full integration into the building, the unit supports BMS protocols, such as Modbus or BACnet, and communicates seamlessly with central control systems. It's not just a machine – it's a smart machine.



- ❶ Air supply fan
- ❷ Electric/water heater
- ❸ Heat pump evaporator
- ❹ Filters
- ❺ Mixing damper
- ❻ Fresh air damper
- ❼ Exhaust air damper
- ❽ Exhaust air fan



Climan control

We turned 20 years of experience in the management of HVAC systems into state-of-the-art Climan control. We developed entirely new control software, which, in combination with our own hardware modules, offers an outstanding price/performance ratio.



Maximum flexibility and efficiency

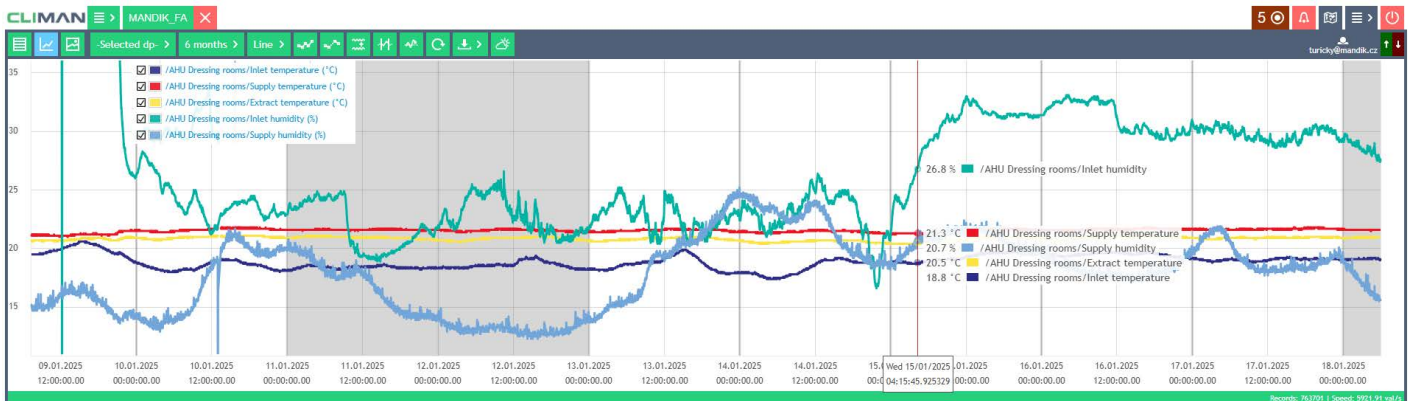
- › Fully modular software enabling the control of both compact units and any configuration of Mandik assemblies.
- › Modbus RTU for intelligent control of fans and circuits allows for full control and diagnostics of unit components, leading to higher energy efficiency and reliability.
- › Possible simultaneous control according to temperature, humidity, CO₂.
- › Communication options: Analog, ModBus, BACnet.

Modern technology for remote management and visualization

- › Integrated web server written in the most popular JavaScript framework, inspired by Google Material Design.
- › Fully-responsive visualization – control from PCs, tablets, mobile phones, and industrial displays.
- › Remote Proxy connection to PLC – the possibility of remote management, software updates, and rapid response to customer requests.

Full cloud management

- › New Cloud Climan (<https://climan.online>) with mobile application.
- › Complete data history, remote control of the unit from anywhere.



TECHNICAL PARAMETERS

Unit	[-]	A			B				C							
Nominal air flow	[m³/h]	4000	6000	8000	10000	12000	14000	16000	18000	20000	22000	24000	26000	28000	30000	
Rated power in heating mode	[kW]	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Rated power in cooling mode	[kW]	20	30	35	50	55	60	65	90	95	100	110	130	135	140	
Electric heating	[kW]	up to 18			up to 30				up to 60							
Water heater (80/60 °C)	[kW]	up to 60			up to 100				up to 160							
Number of compressors (type)	[pcs]	1			2				3			4				
Number of integrated cooling circuits	[pcs]	1			2											
Refrigerant	[-]	R454C (GWP 148 - A2L) / R454B (GWP 466)														
Refrigerant amount / per circuit	[kg]	15.2 / 15.2			19.6 / 9.8				29.4 / 19.6				39.2 / 19.6			
COP	[-]	3.49	3.40	3.02	3.39	3.24	3.08	2.97	3.44	3.29	3.10	3.09	3.23	3.25	3.07	
EER	[-]	4.01	3.59	3.08	3.73	3.50	3.29	3.05	3.32	3.20	3.08	2.97	3.04	2.99	2.97	
SCOP	[-]	3.87	3.96	4.04	3.96	3.92	3.94	3.99	3.91	3.92	3.93	3.62	3.98	4.19	4.11	
SEER	[-]	5.12	5.16	4.98	5.38	5.19	5.06	4.81	4.92	4.72	4.59	3.51	4.56	4.48	4.38	
Seasonal efficiency in heating mode η_{sh}	[%]	152	155	159	155	154	155	156	154	154	154	142	156	165	161	
Seasonal efficiency in cooling mode η_{sc}	[%]	205	206	199	215	208	202	193	197	189	184	140	183	179	175	
Dimensions (breadth × length × height)	[mm]	2200 × 2648 × 2427			2200 × 3240 × 2427				2200 × 5180 × 2427							
Weight	[kg]	1248			1680		1698		2602			2672		2712		
Acoustic power into surrounding environment, cooling in operation LwA	[dBA]	92			95				96				96			
Acoustic power into pipes LwA	[dBA]	92	95		97		98		102			104				
Acoustic power into pipes, without cooling (only fans) LwA	[dBA]	94			97				102							
Supply fan - EC (radial, free wheel)	[pcs]	1	2		3		4		3			4				
Exhaust fan - EC (radial, free wheel)	[pcs]	1			2											
Axial fan for condenser cooling	[pcs]	1			2				3			4				
Filtration class	[-]	G3/G4/M5/F7/F9														
Number of filters 1 st stage	[-]	2+2 pcs (592 × 592 × 48)			3+3 pcs (592 × 592 × 48)				4+4 pcs (592 × 592 × 48), 4+4 pcs (300 × 592 × 48)							
Number of filters 2 nd stage	[-]	6 pcs (592 × 592 × 48)			9 pcs (592 × 592 × 48)				12 pcs (592 × 592 × 48), 4 pcs (300 × 592 × 48)							
Sensors	[-]	temperature/humidity/CO ₂ /smoke														
Communication standards	[-]	ModBus/Analog/(BACnet)														
Control	[-]	MaR/Cloud/Room Unit/ModBus														
Power supply	[-]	400 V / 3-phase / 50 Hz														
Recommended protection	[A]	63			100				250							

i The highlighted columns are available both in a version with an inverter compressor using R454C refrigerant and with an ON/OFF compressor using R454B refrigerant. Others are Inverter - R454C only.

MANDÍK

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