

A photograph of a family of four (a man, a woman, and two children) standing in a grassy field. In the background is a house with a dark roof and several solar panels. The man is holding a small white model of a house with solar panels on its roof. The woman is pointing at the model. The children are looking at the model with interest. A large red diagonal shape is overlaid on the bottom left of the image.

# **TC Heat pump catalogue**



## Where to Find Us?



**HUNGARY**  
**THERMOTECNIKA-CROWN COOL KFT.**  
 H-1103 Budapest, Kőér u. 3/F (Hungary)  
 H-1475 Budapest, Pf.: 139. (Hungary)  
 Tel.: (+36) 1 260 7082, (+36) 1 260 7126  
 Fax: (+36) 1 433 3851  
 E-mail: thermotechnika@tchungary.com  
 Web: www.tchungary.com



**CROATIA**  
**CROWN COOL D.O.O.**  
 Kralja Petra Svacica 130.  
 31 300 Beli Manastir (Croatia)  
 Tel.: (+385) 31 700 611  
 E-mail: tc@tccroatia.com  
 Web: www.tccroatia.com



**CZECH REPUBLIC**  
**THERMOTECNIKA BOHEMIA S.R.O.**  
 Komenského 951  
 664 53 Újezd u Brna (Czech Republic)  
 Tel.: (+420) 544 229 478  
 E-mail: obchod@tcbohemia.com  
 Web: www.tcbohemia.com



**SLOVAKIA**  
**THERMOTECNIKA CROWN COOL S.R.O.**  
**DITL METAL S.R.O.**  
 Dvory nad Žitavou 2620  
 941 31 (Slovakia)  
 Tel.: (+421) (0) 911 277 482  
 E-mail: info@tcslovakia.com  
 Web: www.tcslovakia.com



**SERBIA**  
**THERMOTECNIKA CROWN COOL D.O.O.**  
 24000 Subotica  
 Bose Miličević 4. (Serbia)  
 Tel.: (+381) 63 1030 353  
 Tel.: (+381) 63 1030 073  
 E-mail: info@tcserbia.com  
 Web: www.tcserbia.com



**ROMANIA**  
**CROWN COOL S.R.L.**  
 530240 Miercurea-Ciuc  
 str. Toplita, nr. 155  
 Jud. Harghita (Romania)  
 Tel.: (+40) 266 317 827  
 Fax: (+40) 266 315 068  
 E-mail: office@tcromania.com  
 Web: www.tcromania.com

## About us

The company **THERMOTECNIKA BOHEMIA s.r.o.** has been operating in the Czech market as a supplier of dispense equipment since 1992. We also provide complete solutions for beer tanks, from design to installation and maintenance. Our customers can also rely on us to design and manufacture custom refrigeration and freezing chambers according to their specific needs.

In 2022, we expanded our offer to include the supply and installation of heat pumps, responding to the growing demand for energy-efficient and environmentally friendly heating solutions. Our heat pumps meet the highest standards of quality and reliability. We not only offer the sale of these heat pumps but also provide complete services, including installation and regular maintenance, carried out by our qualified technicians throughout the Czech Republic.

In June 2007, **THERMOTECNIKA BOHEMIA s.r.o.** became part of the international THERMOTECNIKA CROWN COOL group, which unites companies from the Czech Republic, Croatia, Hungary, Slovakia, Serbia, Romania, and Poland. Through this membership, we have strengthened our ability to provide high-quality products and services, drawing on the support, manufacturing, and development resources of the entire group. Together, we strive for continuous improvement and the expansion of our portfolio. For more information, visit [www.tc-eu.com](http://www.tc-eu.com).

### Service network

To ensure comprehensive services for its customers, **THERMOTECNIKA BOHEMIA s.r.o.** operates an extensive service network covering the entire Czech Republic. We have five service branches across the country, staffed by 75 qualified employees. Our fleet of 45 service vehicles enables us to provide fast and precise service, ensuring that you don't have to worry about your heat pumps or other equipment.





# About heat pumps

## Sustainable heating and cooling in the 21st century

Climate change and the depletion of resources are forcing society to reconsider traditional energy production methods and seek more sustainable alternatives. Heat pumps enable energy-efficient heating and cooling, playing an increasingly important role in a sustainable future.

## What is a heat pump?

A heat pump is a device that transfers thermal energy from a lower temperature area to a higher temperature area. Its operation is based on a principle similar to that of a refrigerator, but in reverse. While a refrigerator extracts heat from its interior and releases it into the surroundings, a heat pump extracts heat from the external environment and transfers it to the interior.



### How does a heat pump work?

- Primary side:** A heat pump extracts heat from the surrounding environment (water, air, ground).
- Secondary side:** The extracted heat is transferred to the interior environment (e.g., heating water or air inside the building).



### Main components of heat pumps

- Compressor:** It compresses the refrigerant, increasing its pressure and temperature.
- Condenser:** The gas refrigerant condenses and releases heat into the heating system.
- Evaporator:** The refrigerant evaporates and absorbs heat from the surrounding environment.
- Expansion valve:** It regulates the flow of refrigerant to the evaporator, reducing the pressure and temperature of the refrigerant.



### Best available technology: Refrigerant R290

For our heat pumps, we have chosen the best and most modern technology available on the market after extensive testing – refrigerant R290 (propane). What makes refrigerant R290 exceptional? Thanks to its very low GWP (3) and zero ODP (0), R290 is a highly eco-friendly solution. The refrigerant allows for high output temperatures of up to 75°C while operating at low pressures, thus extending the compressor's lifespan. Its excellent thermodynamic properties ensure high efficiency in heat transfer, providing maximum performance even with a smaller amount of refrigerant.



### Maximum efficiency and safety

For maximum safety, we also considered the disadvantage of the refrigerant, which is its higher flammability (class A3) compared to HFC refrigerants. During testing, we therefore installed the highest safety measures:



# About heat pumps

- ▶ All electrical components in the unit are explosion-proof certified (Ex marking), including relays and fuses with a ceramic construction.
- ▶ The system includes safety valves that release pressure if it exceeds a safe level.
- ▶ The system has a gas separator that releases gas upon detection, and check valves prevent the refrigerant from flowing backward.

## Main components of the R290 outdoor unit

### Safety valve 2.5 BAR

When the pressure exceeds 2.5 bar in the water system, it releases gas and water to reduce the pressure.

### Gas separator

Releases gas detected inside the water system.

### Refrigerant discharge pipe

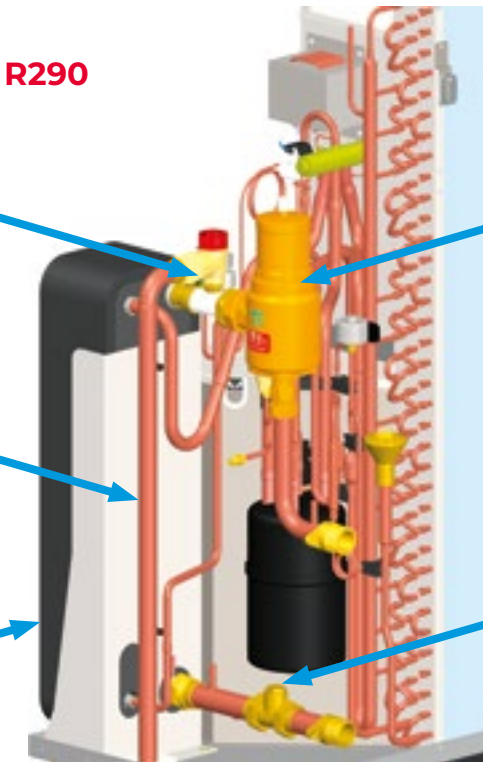
It directs the escaping refrigerant to the designated location.

### Plate heat exchanger

Specially designed exchanger for R290 gas

### Check valve

It prevents the backflow of refrigerant or water into the water system.



## Frequently asked questions or What you should know before purchasing a heat pump?



### What types of buildings are suitable for heat pumps?

Heat pumps are a versatile solution for heating and cooling of various types of buildings, whether they are residential homes, offices, or industrial properties. They are suitable for both new buildings and renovated homes, and in addition to heating, they can also provide hot water. With the option for remote control via the internet, they are ideal for home owners who appreciate convenience and flexibility. This system offers an efficient and modern way to maintain a comfortable environment in various types of properties.



### When is a heat pump most cost-effective for me?

A heat pump is most effective in homes with low heat losses, where, thanks to a properly designed heating system, it can achieve significant savings. The pump operates with a lower temperature difference (delta T) between the supply and return water, usually around 5 K, compared to gas or electric boilers that operate with a difference of up to 20 K. If the heating system is properly designed (e.g., underfloor heating or efficient radiators), the heat pump provides optimal performance and significant energy savings.

However, if these parameters are not perfectly met, the issue can be resolved with the use of a buffer tank, which hydraulically separates the primary and secondary sides of the heating system. This ensures the efficient and stable operation of the heat pump, even in less ideal conditions. Our experts will always design a customized solution to meet your requirements for cost-effectiveness and heating comfort.



# About heat pumps

## Savings in numbers



### Will I save with a heat pump even if I only use it during the heating season?

Yes, even if you use it only during the heating season, a heat pump can still bring savings. Additionally, you can use it outside the season, for example, to heat domestic hot water or a pool.



### When is a heat pump not cost-effective for me?

If your house has extremely low heat loss, for example around 3 kW, the return on investment may be lower, and a heat pump might not be economically advantageous.



### Examples of calculating the return on investment for a heat pump:

#### Example 1: Small family house

Floor area.....	100 m <sup>2</sup>
Heat loss of the house.....	5,8 kW
Original heating system.....	Electric boiler
Initial investment in a heat pump.....	161 782 Kč
Subsidy amount.....	75 000 Kč
Final price after the subsidy.....	86 782 Kč
Monthly energy savings.....	5 456 Kč
Return on investment.....	2 years

#### Example 2: Medium-sized family house

Floor area.....	150 m <sup>2</sup>
Heat loss of the house.....	9,9 kW
Original heating system.....	Gas atmospheric boiler
Initial investment in a heat pump.....	280 951 Kč
Subsidy amount.....	0 Kč (does not apply to this type of boiler)
Monthly energy savings.....	5 005 Kč
Return on investment.....	5,1 years

#### Příklad 3: Rodinný dům s fotovoltaikou

Floor area.....	120 m <sup>2</sup>
Original heating system.....	Electric boiler
Initial investment in a heat pump.....	200 000 Kč
Subsidy amount.....	90 000 Kč
Final price after the subsidy.....	110 000 Kč
Monthly energy savings (including photovoltaics) ..	6 000 Kč
Return on investment.....	1,8 years

**\*Warning:** All the listed calculations of the return on investment for heat pumps are based on current energy prices and available state subsidies as of September 30, 2024. The amount of savings and the return on investment may vary depending on future changes in energy prices, legislation, or subsidy conditions.

# About heat pumps



### Do you need an exact calculation?

Are you interested in a specific return on investment calculation for your house? Contact us, and we will gladly discuss your case and calculate the exact payback period for the heat pump tailored to your needs.



### Can I get state support for a heat pump?

The high price may discourage many people from purchasing a heat pump. Currently, you can receive support for heat pumps from the New Green Savings program, up to CZK 90,000. This savings can help cover up to 50% of the initial costs and can also be used for insulating the house.



### You are not alone in this

Most companies on the market focus only on the installation of heat pumps, but service and subsequent maintenance often fall on the customers. At TC, we offer comprehensive services – not only installation but also professional service and regular maintenance. This way, you don't have to worry about your heat pump, as we take care of everything for you.





# TC HeatPro MONO/SPLIT

## General overview

Compact and high-performance heat pumps with an indoor unit for easy installation and reliable operation. TC HeatPro heat pumps use modern technologies that compete with leading European brands, while also offering excellent availability and efficiency for a wide range of applications. Thanks to advanced control, TC HeatPro allows flexible temperature settings and maintains high efficiency even in demanding conditions with low outdoor temperatures. This system is designed to meet current requirements for energy efficiency and comfort, making it an ideal choice for both households and small commercial properties. The option to combine with a photovoltaic system or a gas boiler further increases energy savings, making TC HeatPro a versatile solution for heating and efficient operation in every season.



**The outdoor unit of the TC HeatPro heat pump** is equipped with a variety of sensors that monitor the refrigerant flow, cooling, and heating systems to ensure maximum efficiency and safety.

**The system uses a dual rotary compressor with an inverter** and a soundproof cover, allowing for very quiet operation and performance optimization. Thanks to this advanced technology, the compressor can precisely respond to the current heating and cooling needs.

**The large evaporator with wider gaps between the fins** significantly reduces the need for defrosting, contributing to overall energy savings and more efficient operation.

**The optimized fan design and the aerodynamics of the blades** ensure the lowest possible noise level during operation, contributing to the quiet and efficient functioning of the unit.

**The SWEP heat exchanger** is specially designed for use with the environmentally friendly refrigerant R290, ensuring high efficiency in heat transfer between the refrigerant and water. Thanks to its advanced design and the use of plate technology, this heat exchanger provides exceptionally high heat exchange even at low temperatures. This allows for the optimization of the overall performance of the heat pump and enhances its efficiency under various operating conditions.

**The heating cable** beneath the entire evaporator ensures that the condensate tray does not freeze, and additionally, there is 1.5 meters of heating cable leading to the drain to prevent freezing of the drainpipe. The heating cable is intelligently switched on only during the defrosting process, ensuring energy efficiency and optimal operation.

### Indoor unit:

Inside hydrobox of TC HeatPro is equipped with all the main components, which fasten the installation and make the use easier and more reliable. The key parts are:

- **Three-way valve LK Armatur EMV 110-M**, which ensures smooth switching between heating and domestic hot water (DHW) heating.
- **Electric auxiliary heater with a capacity of 6/9 kW**, which is gradually switched on demand and serves as a bivalent source.
- **Circulation pump Grundfos UPMXL 25-125 130** for heat distribution.
- **Flow meter** for accurate measurement of current performance and optimization of COP.
- **Safety group Afriso** including an automatic air vent valve and a manometer.

This system is designed with an emphasis on easy installation and maintenance. At the same time, it offers flexibility in combination with other sources, such as gas boilers or photovoltaic panels, allowing for higher energy efficiency.

# TC HeatPro MONO/SPLIT

## Main features

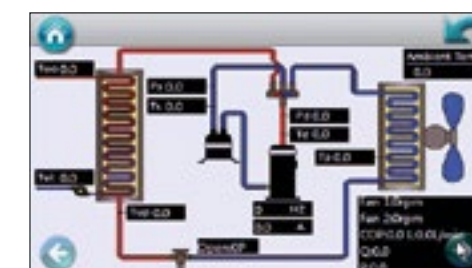
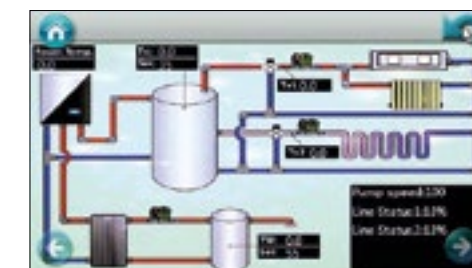
- **Display of unit status:** The ability to monitor the operational status of the unit in real time, including voltage, current, water flow, efficiency, COP, and other critical parameters.
- **Heating curve function:** Automatic water temperature adjustment based on ambient temperature for optimal comfort.
- **Room temperature control:** The ability to control not only the water temperature but also the room temperature.
- **Dual water temperature setting:** The ability to set two different heating curves for underfloor heating and radiators.
- **Room temperature compensation:** Automatic adjustment of water temperature based on the current room temperature.
- **DHW operation:** It offers enhanced logic for domestic hot water (DHW) preparation in two steps, allowing for efficient heating even under high load conditions.
- **Economic operation:** When the ambient temperature drops, the system can automatically switch to other heat sources, such as a gas boiler, to ensure more economical heating.
- **Emergency operation:** The system continues to operate even with minor faults to ensure basic comfort, while it automatically shuts down in case of critical errors. In case of a problem, the customer has access to an emergency button to activate the electric heater for water heating, which can be manually activated on the thermostat of the indoor unit.

### Remote access

Our heat pumps allow remote access for service purposes. Service technicians have the ability to view the current status of the device, including temperatures, pressures, and other key parameters.

We are able to record more than 50 parameters and store them for three years. These data can be clearly displayed in graphs, allowing for analysis of when and how a fault occurred and what changes preceded it.

Some issues can be resolved remotely by adjusting the system parameters, ensuring a quicker and more efficient repair. If a technician's physical visit is necessary, they arrive fully prepared with a detailed overview of what happened in the device and likely with a diagnosis of the cause of the problem. This saves both time and repair costs.



# Air to water heat pump TC HeatPro MONO 8 kW

Inverter-based, single-phase air to water heat pump in a monoblock design. With a nominal heating capacity of 6.9 kW (W35), high energy efficiency, quiet operation, natural refrigerant R290, and the possibility of utilizing state subsidies.



Technical specifications	Units	TC HeatPro MONO 8 kW
Power supply / refrigerant	V/Hz/Phase	220–240/50/1 – R290
Heating capacity min. / max. (A7/W30-35 according to ČSN EN 14511)	kW	4,5/9,5
C.O.P (A7/W30-35)	W/W	4,55
Heating power input min. / max. (A7/W30-35)	W	585/2 089
Cooling capacity min./max. (A35/W23-18)	kW	2,4/8,0
E.E.R (A35/W23-18)	W/W	3,8
Cooling power inputmin./max.(A35/W23-18)	W	765/2100
Fuse protection	A	16
Operating range of outdoor temperature	°C	-25~45
Max. water temperature in the system (heating / cooling)	°C	70/20
Min. water temperature in the system (heating / cooling)	°C	20/7
Noise level of indoor / outdoor unit (acoustic power)	dB (A)	33/54
Allowed water flow (min. / rated / max.)	L/S	0,21/0,29/0,35
Dimensions of indoor unit (L x W x H)	mm	553x261x650
Dimensions of outdoor unit (L x W x H)	mm	1255x392 (465)x 876
Weight of indoor unit	kg	25
Weight of outdoor unit	kg	98
Energy efficiency class	heating 35/55 °C	A+++ / A++





# Air/water heat pump TC HeatPro MONO 12 kW

An inverter, three-phase air/water heat pump in a monoblock design. With a rated heating capacity of 12.5 kW (W35), high energy efficiency, quiet operation, natural refrigerant R290, and the possibility of applying for state subsidies.



Technical specifications	Units	TC HeatPro MONO 12 kW
Power supply / refrigerant	V/Hz/Phase	380–400/50/3 – R290
Heating capacity min. / max. (A7/W30-35 according to ČSN EN 14511)	kW	8,1/16,6
C.O.P (A7/W30-35)	W/W	3,98
Heating power input min./max.(A7/W30-35)	W	1120/4170
Cooling capacity min./max. (A35/W23-18)	kW	6,9/13,2
E.E.R (A35/W23-18)	W/W	3,65
Cooling power input min./max.(A35/W23-18)	W	1540/3 650
Fuse protection	A	3x16
Operating range of outdoor temperature	°C	-25~45
Max. water temperature in the system (heating / cooling)	°C	70/20
Min. water temperature in the system (heating / cooling)	°C	20/7
Noise level (acoustic power) (outdoor unit)	dB (A)	37/56
Allowed water flow (min. / rated / max.)	L/S	0,56/0,93/1,12
Dimensions of outdoor unit (L x W x H)	mm	553x261x650
Dimensions of outdoor unit (L x W x H)	mm	1200x424 (460)x1480
Weight of indoor unit	kg	25
Weight of outdoor unit	kg	145
Energy efficiency class	heating 35/55 °C	A+++ / A++



# Air/water heat pump TC HeatPro SPLIT 9 kW

Inverter, single-phase air/water heat pump in a split design. With a rated heating capacity of 6.4 kW (W35), high energy efficiency, quiet operation, eco-friendly refrigerant R32, and the possibility of applying for state subsidies.



Technical specifications	Units	TC HeatPro SPLIT 9 kW
Power supply / refrigerant	V/Hz/Phase	220–240/50/1 – R32
Heating capacity min. / max. (A7/W30-35 according to ČSN EN 14511)	kW	4,3/9,2
C.O.P (A7/W30-35)	W/W	4,48
Heating power input min./max.(A7/W30-35)	W	885/2 055
Cooling capacity min./max. (A35/W23-18)	kW	8,48/9,5
E.E.R (A35/W23-18)	W/W	4,31
Cooling power input min./max.(A35/W23-18)	W	1860/2200
Fuse protection	A	16
Operating range of outdoor temperature	°C	-25~43
Max. water temperature in the system (heating / cooling)	°C	55/20
Min. water temperature in the system (heating / cooling)	°C	20/7
Noise level (acoustic power) (outdoor unit)	dB (A)	45/53
Allowed water flow (min. / rated / max.)	L/S	0,3/0,43/0,56
Dimensions of outdoor unit (L x W x H)	mm	600x291x751
Dimensions of outdoor unit (L x W x H)	mm	1255x392 (465)x876
Weight of indoor unit	kg	39
Weight of outdoor unit	kg	69
Energy efficiency class	heating 35/55 °C	A+++/A++





# Air/water heat pump TC HeatPro SPLIT 12 kW

Inverter, three-phase air/water heat pump in a split design. With a rated heating capacity of 11.6 kW (W35), high energy efficiency, quiet operation, eco-friendly refrigerant R32, and the possibility of applying for state subsidies.



Technical specifications	Units	TC HeatPro SPLIT 12 kW
Power supply / refrigerant	V/Hz/Phase	380–420/50/3 – R32
Heating capacity min. / max. (A7/W30-35 according to ČSN EN 14511)	kW	7,3/15,5
C.O.P (A7/W30-35)	W/W	4,6
Heating power input min./max.(A7/W30-35)	W	1600/3300
Cooling capacity min./max. (A35/W23-18)	kW	7,2/18,5
E.E.R (A35/W23-18)	W/W	3,7
Cooling power input min./max.(A35/W23-18)	W	1400/5000
Fuse protection	A	3x16
Operating range of outdoor temperature	°C	-25~43
Max. water temperature in the system (heating / cooling)	°C	55/20
Min. water temperature in the system (heating / cooling)	°C	20/7
Noise level (acoustic power) (outdoor unit)	dB (A)	40/57
Allowed water flow (min. / rated / max.)	L/S	0,5/0,72/0,93
Dimensions of outdoor unit (L x W x H)	mm	600x291x751
Dimensions of outdoor unit (L x W x H)	mm	1140x424 (460)x1480
Weight of indoor unit	kg	42
Weight of outdoor unit	kg	120
Energy efficiency class	heating 35/55 °C	A+++ / A++



# Air to water heat pump TC HeatEco

Efficient and affordable heat pumps with advanced technology for optimal performance. Our heat pumps have been carefully tested and developed to achieve optimal performance and efficiency. The units operate with a similar logic to top European brands.



- **Affordable TC product range**
- **Energy class A+++**, COP at A7/W35 up to 4.3
- **Highly efficient dual rotary DC compressor:** This compressor ensures stable and efficient operation of the heat pump with lower energy consumption, resulting in higher efficiency and reliability during operation.
- **Larger evaporator:** The pump is equipped with an evaporator that is 25% larger than standard models. This increases heat transfer and the overall efficiency of the unit.
- **Larger heat exchanger:** The product features a heat exchanger that is 25% larger, allowing for better and faster heat transfer between the refrigerant and the heating circuit.
- **Optimized refrigerant flow control algorithm:** The heat pump is equipped with advanced technology that optimizes the refrigerant flow in the system, ensuring smoother and more efficient operation.
- **„Optimized compressor operation logic“:** The intelligent compressor control system ensures that the compressor adjusts to the heating needs, reducing unnecessary wear and increasing its lifespan.

- **Optimized fan aerodynamics:** Thanks to the improved fan design, higher airflow efficiency is achieved with lower noise levels, ensuring quiet operation of the heat pump.
- **Intelligent defrosting logic:** TC HeatEco heat pumps are equipped with an intelligent defrosting system that significantly reduces the frequency of defrosting and shortens the time required for this process. In this way, the pumps provide higher performance at low outdoor temperatures and ensure continuous heating capability even under demanding conditions.
- **Condensate tray and heating cable:** For better functionality during the winter months, the pump is equipped with a condensate tray and heating cable, which helps prevent freezing and increases operational reliability.
- **SG ready and WIFI connectivity:** The device is ready for integration into smart grids (Smart Grid) and also offers the option of control via WIFI, making its management and monitoring easier.

Technical specifications	Units	TC HeatEco MONO 5 kW
Power supply / refrigerant	V/Hz/Phase	220-240/50/1 - R290
Heating capacity min. / max. (A7/W30-35 according to ČSN EN 14511)	kW	2,3~5,4
C.O.P (A7/W30-35)	W/W	5
Heating power input min./max.(A7/W30-35)	kW	0,55~1,27
Cooling capacity min./max. (A35/W23-18)	kW	1,66~2,6
E.E.R (A35/W23-18)	W/W	2,77
Cooling power input min./max.(A35/W23-18)	kW	0,66~1,13
Fuse protection	A	16
Operating range of outdoor temperature	°C	-25~43
Max. water temperature in the system (heating / cooling)	°C	75/35
Min. water temperature in the system (heating / cooling)	°C	10/5
Noise level (acoustic power) (outdoor unit)	dB (A)	56
Allowed water flow (min. / rated / max.)	L/S	0,41/0,45/0,54
Dimensions of outdoor unit (L x W x H)	mm	1104x515x660
Weight of outdoor unit	kg	84
Energy efficiency class	heating 35/55 °C	A+++ / A++

TC HeatEco MONO 7 kW	TC HeatEco MONO 9,5 kW	TC HeatEco MONO 12 kW	TC HeatEco MONO 15 kW	TC HeatEco MONO 22 kW
220-240/50/1 - R290	220-240/50/1 - R290	380-415/50/3 - R290	380-415/50/3 - R290	380-415/50/3 - R290
3,15~7,1	3,99~9,3	5,55~11,2	9,04~14,3	10,1~21,1
4,77	4,68	4,31	4,42	4,29
0,64~1,47	0,8~2,1	1,0~2,6	1,08~3,32	1,75~4,9
2,18~3,42	3,1~4,8	3,97~6,85	6,07~7,32	7,3~11,2
2,55	2,4	2,44	2,31	1,91
0,87~1,7	0,86~2,0	1,1~2,96	2,1~3,76	1,9~4,9
16	16	3x16	3x16	3x16
-25~43	-25~43	-25~43	-25~43	-25~43
75/35	75/35	75/35	75/35	75/35
10/5	10/5	10/5	10/5	10/5
56	56	56	58	58
0,41/0,45/0,54	0,41/0,45/0,54	0,5/0,57/0,69	0,64/0,71/0,85	1,13/1,25/1,51
1104x515x660	1204x515x812	1204x515x812	1204x515x962	1204x515x1362
95	99	105	123	140
A+++ / A++	A+++ / A++	A+++ / A++	A+++ / A++	A+++ / A++



