HEAT PUMPS

- air-to-water models
- ground-to-water models

CONTENTS

QUALITY LABELS

Since 2017, CTC Regulus Heat Pumps are among the first ones in the Czech Republic that are certified by **HP KEYMARK**, a voluntary and independent European certification mark.

For users, HP KEYMARK is proof that it is a high quality product that complies with applicable European standards.

WARRANTY

We offer a longer warranty for heat pumps and their compressors. Thanks to the high quality of all components and reliability of Regulus Heat Pumps, the warranty can be extended to 5 years and the warranty for compressor to 7 or 10 years.

OTHER REGULUS ADVANTAGES

- Czech company, over 30 years on the market
- remote management via the web or application
- service desk online 24/7
- nationwide network of our own service technicians
- comprehensive energy saving solutions incl. smart combinations with PV systems
- tens of thousands of installations in the Czech Republic and abroad
- really quiet heat pumps

WHY TO CONSIDER ENERGY EFFICIENT HEATING?

Energy prices have seen a relatively large increase recently. Investingin the upgrade of the heating system will bring significant savings.

WHY A HEAT PUMP?

If you choose any traditional heat source, it will always consume fuel, transforming it into heat with a certain efficiency, be it higher or lower. However, you will always pay for the complete energy consumption for your home.

If you choose a Heat Pump, it will be able to gain the majority of energy from the ambient environment (usually 2/3 of the energy supplied for a house), consuming only a smaller part of the energy (usually 1/3 of the energy supplied for a house).

With a ground source heat pump, you get even more energy for free. No matter what the energy prices will be, you'll always get most of it for free with a heat pump.

IS IT THE RIGHT TIME TO BUY A HEAT PUMP NOW?

The technical development in heat pumps has made a big progress in recent years. Heat pumps from serious European manufacturers are economic, feature a long service life and utilize smart control systems. Their price has dropped significantly due to the mass production. Moreover, you can get a state subsidy in some countries! So say goodbye to high energy bills, the right time is just now!

WHY A REGULUS HEAT PUMP?

Regulus offers excellent heat pumps of Eco series that are manufactured by CTC, a renowned Swedish company with 100 years of tradition. CTC applies the latest technologies in its development of new models. In 2020, we also included our own RTC which also allow operation in cooling mode.

Regulus is active in the heating branch since 1992, concentrating on renewable energy sources since 1999. Our team of engineers is ready to suggest you an optimum cost saving solution for your heating. It is not our goal to sell you a heat pump without any considerations, our aim is to calculate and design the best technical solution for you that will be suitable for your home and your needs and will bring you the highest savings, maintaining the heating comfort.

WHAT HEAT PUMPS AND ACCESSORIES DOES REGULUS OFFER?

Our offer consists not only of heat pumps alone but involves an entire system that enables the heat pump to be utilized optimally for space heating, cooling and DHW heating as well. Other renewable energy sources can be used together, like solar energy or biomass.

You can choose your air-source heat pump from a wide choice of performance variants and assemble an optimum heat source for your house.

Ground-coupled heat pumps can gain heat either from a deep bore or from underground loops. Each heat pump is equipped with its dedicated control electronics that controls its operation. It can communicate with an IR smart controller that can also control a whole heating system and a series of up to 10 heat pumps at the same time.

Heating control and communication with the heat pump is performed by IR external controllers. All parameters can be easily monitored and controlled via the Internet. For more, see the Controllers chapter.

A comprehensive solution is represented by RegulusHBOX indoor unit with DHW heating that contains all components of a current home boiler room. It heats DHW, contains a thermal store, an electronic controller and heating elements w. smart switching.

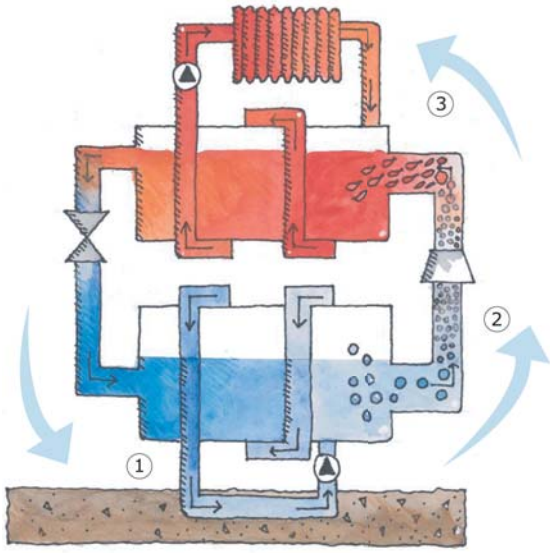
HOW IT WORKS

- Heat pump draws low-temperature energy from the ambient environment and “pumps“ it to a higher temperature
- Air or ground is usually the heat source

HOW DOES A HEAT PUMP WORK?

The working principle is the same as in a current refrigerator, freezer or A/C unit. A heat pump is based on a closed circuit filled with special coolant that evaporates under low temperature and absorbs energy. Coolant vapors are compressed in a compressor, getting heated up. Under higher temperature, the gaseous coolant gives off its heat into heating water which brings it back to liquid form, and the entire cycle repeats itself.

Like a fridge can draw heat from food as cold as -20°C, a heat pump can work and draw heat from air, water or ground even under extremely low temperatures. A COP (Coefficient of Performance) shows its efficiency, namely how many times more energy it supplies than consumes. With falling temperature of the heat source also the COP sinks.



Heat pumps use energy coming from solar radiation that remains in the air, ground and water. In an air-coupled heat pump, air passes through the heat pump, heating directly the coolant in the heat exchanger (evaporator). In a ground-coupled heat pump, biodegradable antifreeze fluid (brine) is used for heat transfer from the ground into the heat pump. This fluid circulates between the ground collector and the heat pump. When entering the heat pump, the temperature of the fluid is about 4°C. Its heat energy is transferred to the coolant circulating inside the heat pump in a closed circuit.

The heat from the ground collector causes evaporation of the coolant that has a low boiling point. Coolant vapor gets compressed by the compressor and heats up. The hot vapor then passes through a heat exchanger (condenser), condenses and gives off its heat to heating water. Then it cools down swiftly when passing through the expansion valve and the cycle repeats itself.

Air-coupled heat pumps work in the same manner, just the coolant in the evaporator is heated by passing air, not by a fluid. If you combine a heat pump with a solar thermal system, you will be using solar energy directly through solar collectors for DHW and space support heating.

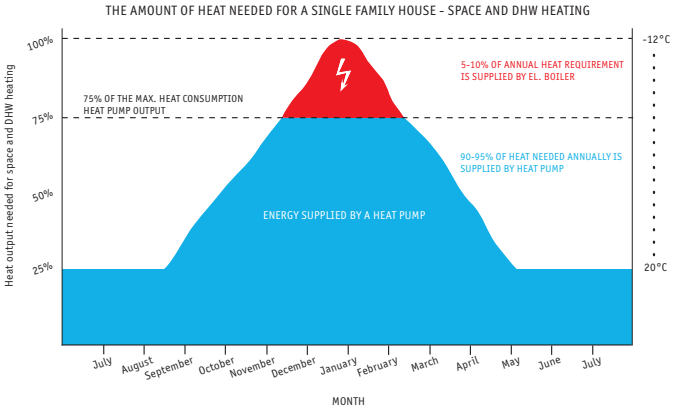
Solar collectors gain heat directly from the sun as the solar radiation heats up the fluid inside a solar collector. A solar thermal system needs almost no energy for its operation. In cool days the heat pump will utilize the solar energy indirectly. In systems with deep bores the heat from solar collectors can be stored into the bore in the summer. Then in the winter the heat pump exploits the stored heat and works with a higher COP.

In the summer, the cold from the bore can be used for direct cooling (without a heat pump), with higher cooling demands the cooling output can be increased using a heat pump.

WHAT HEAT OUTPUT IS RIGHT?

A traditional heat source (boiler) shall be sized as equivalent to the heat loss value of the house or higher. Since the investment into a more powerful heat pump is rather high, its preferred output is usually lower. In periods of extreme frost usually traditional heat sources like electricity, gas, solid fuels etc. support the heat pump in supplying the heat demanded.

Due to a sparse occurrence of very cold days the operation of a traditional source brings very little cost increase while the investment spared is high. The recommended heat pump sizing is about 75% of the building’s heat loss that will cover as much as 95% of the annual heat consumption.



SIZING

AIR-TO-WATER MODELS

ON/OFF - EcoAir 406-420:

SIZING BY:	energy needed for space and DHW heating				building heat loss *			
Heat Pump	**from**		**to**		**from**		**to**	
EcoAir 406	**-**	*kWh/year*	**16 000**	*kWh/year*	**-**	*kW*	**6**	*kW*
EcoAir 408	**11 500**	*kWh/year*	**20 000**	*kWh/year*	**5**	*kW*	**8**	*kW*
EcoAir 410	**18 000**	*kWh/year*	**31 500**	*kWh/year*	**7**	*kW*	**12**	*kW*
EcoAir 415	**25 000**	*kWh/year*	**41 500**	*kWh/year*	**10**	*kW*	**16**	*kW*
EcoAir 420	**36 500**	*kWh/year*	**51 500**	*kWh/year*	**14**	*kW*	**20**	*kW*

INVERTER - EcoAir 600M and RTC:

SIZING BY:	energy needed for space and DHW heating				building heat loss *			
Heat Pump	**from**		**to**		**from**		**to**	
EcoAir 614M	**-**	*kWh/year*	**29 000**	*kWh/year*	**-**	*kW*	**11**	*kW*
EcoAir 622M	**16 000**	*kWh/year*	**44 500**	*kWh/year*	**6**	*kW*	**17**	*kW*
RTC 6i	**-**	*kWh/year*	**13 000**	*kWh/year*	**-**	*kW*	**5**	*kW*
RTC 13e	**-**	*kWh/year*	**26 000**	*kWh/year*	**-**	*kW*	**10**	*kW*
RTC 20e	**25 000**	*kWh/year*	**47 000**	*kWh/year*	**10**	*kW*	**18**	*kW*

GROUND-TO-WATER MODELS

ON/OFF – EcoPart 406-417:

SIZING BY:	energy needed for space and DHW heating				building heat loss *			
Heat Pump	**from**		**to**		**from**		**to**	
EcoPart 406	**-**	*kWh/year*	**17 000**	*kWh/year*	**-**	*kW*	**7**	*kW*
EcoPart 408	**16 500**	*kWh/year*	**24 500**	*kWh/year*	**5**	*kW*	**10**	*kW*
EcoPart 410	**20 000**	*kWh/year*	**30 000**	*kWh/year*	**7**	*kW*	**13**	*kW*
EcoPart 412	**23 500**	*kWh/year*	**35 500**	*kWh/year*	**9**	*kW*	**15**	*kW*
EcoPart 414	**29 500**	*kWh/year*	**43 500**	*kWh/year*	**12**	*kW*	**19**	*kW*
EcoPart 417	**33 500**	*kWh/year*	**56 500**	*kWh/year*	**15**	*kW*	**22**	*kW*

INVERTER - EcoPart 612M and 616M:

SIZING BY:	energy needed for space and DHW heating				building heat loss *			
Heat Pump	**from**		**to**		**from**		**to**	
EcoPart 612M	**-**	*kWh/year*	**41 500**	*kWh/year*	**-**	*kW*	**16**	*kW*
EcoPart 616M	**10 000**	*kWh/year*	**54 000**	*kWh/year*	**4**	*kW*	**21**	*kW*

In all the cases, DHW heating for 4 persons is considered, with consumption of 40 l/person/day. The input data for heat pump sizing shall be based on a calculation. The energy consumption for space and DHW heating can be found in the respective Energy Performance Certificate, or established following EN ISO 52 016-1. The heat loss from a building is usually stated in the heating design, or it can be calculated using the EN 12 831-1 standard.
If there is another significant heat consumer in the building, heated by the heat pump (pool, ventilation...) that is not included in the above described calculations, please contact us via e-mail: ***poptavky@regulus.cz****.*

Heat pumps without a multi-energy thermal store need to be upgraded with **a master controller** and **a thermal store** (inverter models may be installed even without a thermal store if the conditions in the instruction manual are respected), and should they be also used for hot water supply, then with **a hot water storage tank** as well. A thermal store can be combined with a hot water storage tank in one combination tank - DUO, HSK models.

WHERE DOES A HEAT PUMP TAKE THE ENERGY FROM?

- In mild climate air is the most current heat source for heat pumps. Air-source heat pumps benefit from easy installation.
- In order to gain heat from the ground, either deep bores need to be drilled, or loops buried underground.
  The ground keeps a stable temperature, that's why the output is stable even under severe frost.

Air-to-water heat pumps

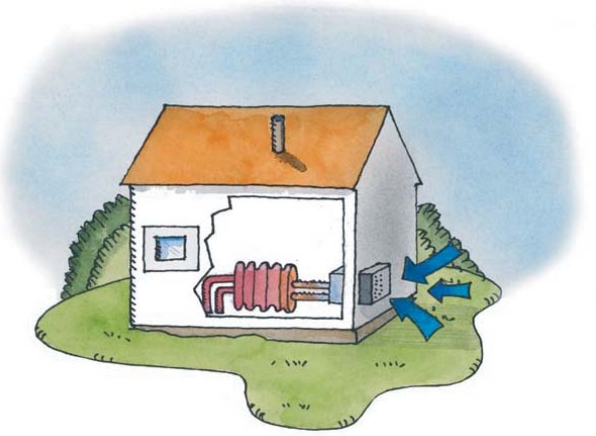
Air-to-water heat pumps draw energy from the ambient air even when the outdoor temperature drops to -22°C. The energy gained at a low temperature is then "pumped" to a higher temperature and transferred into heating water. Electric energy is consumed just to run a compressor and fan of the heat pump. This makes about one third of the energy supplied by the heat pump, the rest is drawn from the ambient air. That's why about two thirds of the energy needed for heating can be saved. Reliability and excellent parameters of CTC heat pumps are proved by many thousands annual installations in the harsh Scandinavian climate.

ADVANTAGES

+ Low purchase costs
+ Easy installation
+ No groundwork

DRAWBACKS

- Inconsiderate placement might cause noise disturbance
- Power output sinks at extremely low temperatures



Ground-to-water heat pumps with deep bore holes

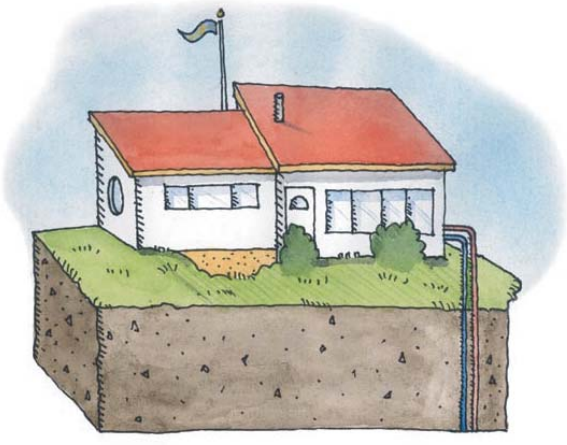
In order to gain heat from deep bores, one or more boreholes need to be drilled (70-150 m deep). Their number and depth depend on the heating output of the installed heat pump and on the building to be heated. As there is a risk of influencing groundwater, it is necessary to have a geological survey performed and obtain a permission for the boreholes. The heat pump itself is located inside the building and connects to the borehole with 2 pipes. Its connection to a thermal store and a heating system is the same as that of an air-source heat pump.

ADVANTAGES

+ Stable heat source under low outdoor temperature
+ Deep bores do not require a big lot
+ Summer cooling possible

DRAWBACKS

- Higher installation costs
- Deep bores need a permit
- Water resources shall be taken into consideration



Ground-to-water heat pumps with ground collector

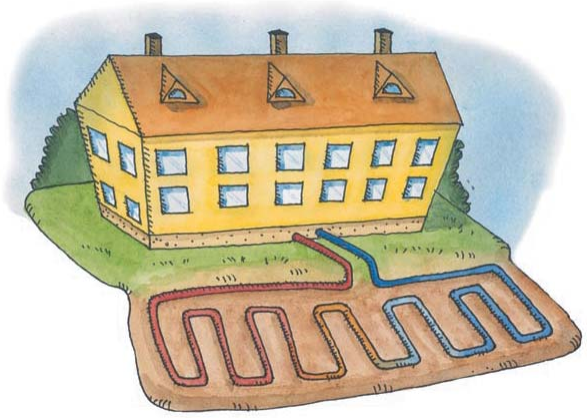
The sub-surface ground collector consists of loops of pipes buried 1.2m below the surface. The soil needs to be removed first and when the loop is laid, the soil is returned to its place. The other method is digging trenches where individual loops are laid in a similar method to burying e.g. electric cables. The heat pump itself is located inside the building and connects to the ground collector with 2 pipes. Its connection to a thermal store and a heating system is the same as that of an air-source heat pump.

ADVANTAGES

+ Lower installation costs against deep bores
+ Relatively stable heat source under low outdoor temperature
+ No special permit needed

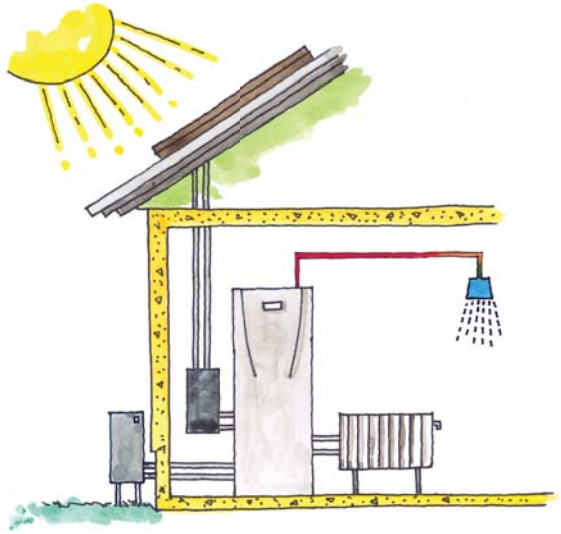
DRAWBACKS

- Large lot needed
- Groundwork on a large area



Combining solar energy with a Heat Pump

Solar energy can be utilized together with a heat pump, combining thus the most ecological energy sources. In the summertime solar energy can be used for DHW heating and in the heating season it helps in space heating. In a heat pump with a deep bore, solar energy can be stored in the bores.



AIR-TO-WATER INVERTER HEAT PUMPS

RTC 6i, 13e

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

Single-phase air-to-water heat pumps permitting reversible cooling mode.

They extract heat from the ambient air even if the temperature drops to -25° C. The maximum flow temperature is 55° C.

The advantage of inverter heat pumps is the adjustment of the power to the actual requirements of the house with regard to space heating, DHW heating or space cooling through a suitable cooling system, e.g. ceiling, wall or floor heating / cooling, or ventilation. Thus, it is possible to operate the heat pump without a thermal store, unless it is required, for example, due to insufficient heat storage for defrosting or in combination with other renewable energy sources.

Another advantage is the low starting current, so that the heat pump can be installed even in areas where there is a connection problem (more remote areas, end-points in municipalities, etc.).

The single-phase design can serve well in combination with the use of solar energy to power a heat pump. The PV panels are able to operate the heat pump efficiently in summer for DHW heating or cooling. Thanks to their single-phase design and reasonable output from approx. 2-3 kWp they can be reasonably priced.

- Cooling mode possible
- SCOP up to 4.71
- Energy Efficiency Class W. Controller A+++
- To be combined w. single-phase PV systems

TECHNICAL DATA				RTC 6i	RTC 13e
Heat output			[kW]	1-6	3-12
Seasonal coefficient of performance SCOP			[-]	4.47	4.71
Air/water temperature in °C	A7/W35 low rpm	Heat output	[kW]	1.6	5.47
		Power input	[kW]	0.5	1.10
		COP	[-]	3.2	4.97
	A2/W35 medium rpm	Heat output	[kW]	3.15	5.96
		Power input	[kW]	0.75	1.46
		COP	[-]	4.2	4.08
	A-7/W35 high rpm	Heat output	[kW]	4.03	7.64
		Power input	[kW]	1.32	2.46
		COP	[-]	3.05	3.11
Dimensions and weight		Width	[mm]	924	1160
		Height	[mm]	917	1024
		Depth	[mm]	350	503
		Weight	[kg]	76	98
Sound power level			[dB(A)]	57	52
Sound pressure level at distance of:		5 m	[dB(A)]	35	30
		10 m	[dB(A)]	29	24
Code			[-]	17735	19437

RTC heat pumps are supplied without circulation pumps. They shall be installed exclusively either with CSE IR pump stations (see page 24) or with indoor units (see pages 18-23).

AIR-TO-WATER INVERTER HEAT PUMP

RTC 20e

Three-phase inverter air-to-water heat pump permitting reversible cooling mode. It extracts heat from the ambient air even if the temperature drops to -25° C. The maximum flow temperature is 55° C.

The advantage of an inverter heat pump is the adjustment of the power to the actual requirements of the house with regard to space heating, DHW heating or space cooling through a suitable cooling system, e.g. ceiling, wall or floor heating / cooling, or ventilation.

Another advantage is the low starting current, so that the heat pump can be installed even in areas where there is a connection problem (more remote areas, end-points in municipalities, etc.).

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

- Cooling mode possible
- SCOP 4.84
- Energy efficiency class with controller A+++
- To be combined w. three-phase PV systems

TECHNICAL DATA				RTC 20e
Heat output			[kW]	9.2-18.5
Seasonal coefficient of performance SCOP			[-]	4.84
Air/water temperature in °C	A7/W35 low rpm	Heat output	[kW]	9.19
		Power input	[kW]	1.83
		COP	[-]	5.02
	A2/W35 medium rpm	Heat output	[kW]	12.09
		Power input	[kW]	2.84
		COP	[-]	4.26
	A-7/W35 high rpm	Heat output	[kW]	12.57
		Power input	[kW]	3.94
		COP	[-]	3.19
Dimensions and weight		Width	[mm]	1082
		Height	[mm]	1624
		Depth	[mm]	513
		Weight	[kg]	154
Sound power level			[dB(A)]	61
Sound pressure level at distance of:		5 m	[dB(A)]	39
		10 m	[dB(A)]	33
Code			[-]	19439

RTC 20e heat pump is supplied without circulation pumps. It shall be installed exclusively either with CSE IR pump stations (see page 24) or with RegulusBOX indoor unit (see page 18).

AIR-TO-WATER INVERTER HEAT PUMPS

EcoAir 614M, 622M

Three-phase heat pumps with a scroll compressor and speed control (inverter), offering a long service life. They work down to -22°C outdoor temperature and offer heating water temperature up to 65°C.

The advantage of an inverter heat pump is the adjustment of the power to the actual requirements of the house with regard to space and DHW heating.

These heat pumps install easily, offering a high COP and an extremely low noise level. The feature of smart defrosting keeps monitoring the condition of the heat pump and starts defrosting for the shortest necessary time only when it is really needed which contributes to high efficiency of these heat pumps.

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

- New scroll compressor with speed control and a long service life
- Smart defrost
- SCOP up to 4.93
- Energy efficiency class with controller A+++
- Suitable to be combined w. three-phase PV systems

TECHNICAL DATA				EcoAir 614M	EcoAir 622M
Heat output			[kW]	3-13	4-24
Seasonal coefficient of performance SCOP			[-]	4.9	4.93
Air/water temperature in °C	A7/W35* 20 ot./s	Heat output	[kW]	2.55	4.75
		Power input	[kW]	0.54	0.94
		COP	[-]	4.71	5.07
	A2/W35* 50 ot./s	Heat output	[kW]	5.31	8.27
		Power input	[kW]	1.31	2.19
		COP	[-]	4.05	3.78
	A-7/W35* 120 ot./s	Heat output	[kW]	8.69	13.99
		Power input	[kW]	3.94	6.03
		COP	[-]	2.21	2.32
Dimensions and weight		Width	[mm]	1245	1375
		Height	[mm]	1080	1180
		Depth	[mm]	545	645
		Weight	[kg]	174	192
Sound power level			[dB(A)]	52	55
Sound pressure level at distance of:		5 m	[dB(A)]	33	36
		10 m	[dB(A)]	27	30
Code			[-]	17156	17157

**Values measured according to EN 14511 incl. defrost cycle*

EcoAir 600M heat pumps are supplied without circulation pumps. They shall be installed exclusively either with CSE IR pump stations (see page 24) or with indoor units (see pages 18-23).

AIR-TO-WATER ON/OFF HEAT PUMPS

EcoAir 406 - 420

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

Air-to-water heat pumps draw energy from the ambient air. The energy gained under a low outdoor temperature (as low as -22°C) is then "pumped" to a higher temperature and transferred into heating water. **Its flow temperature reaches as much as +65°C.**

This line of air-coupled heat pumps has been developed using the most advanced technologies in order to reach the best parameters. They are equipped with a new, extra large air heat exchanger (evaporator) for the best utilization of air energy. In order to reach a high COP and effective operation even under very low temperatures, they are fitted with the latest compressors and an electronic expansion valve.

- SCOP up to 3.92
- Energy efficiency class with controller A++

TECHNICAL DATA				EcoAir 406	EcoAir 408	EcoAir 410	EcoAir 415	EcoAir 420
SCOP			[-]	3.85	3.92	3.92	3.76	3.71
Air/water temperature in °C	A7/W35*	Heat output	[kW]	6.22	7.83	11.45	16.19	17.52
		Power input	[kW]	1.30	1.62	2.36	3.53	4.23
		COP	[-]	4.78	4.83	4.86	4.58	4.15
	A2/W35*	Heat output	[kW]	4.69	6.02	8.80	11.42	14.55
		Power input	[kW]	1.28	1.60	2.30	3.24	4.13
		COP	[-]	3.66	3.76	3.83	3.52	3.52
	A-7/W35*	Heat output	[kW]	3.87	4.73	7.32	9.96	11.51
		Power input	[kW]	1.25	1.57	2.29	3.27	3.94
		COP	[-]	3.10	3.02	3.19	3.04	2.92
Dimensions and weight		Width	[mm]	1245	1245	1375	1375	1375
		Height	[mm]	1075	1075	1175	1175	1175
		Depth	[mm]	545	545	610	610	610
		Weight	[kg]	120	126	180	187	190
Sound power level			[dB(A)]	56	58	58	64	66
Sound pressure level at distance of:		5 m	[dB(A)]	34	36	36	44	44
		10 m	[dB(A)]	28	30	30	39	39
Code			[-]	13243	13244	12994	12995	12848

**Values measured according to EN 14511 incl. defrost cycle*

Each CTC Heat Pump is equipped with a max. current limiter for compressor startup.

EcoAir 400 heat pumps are supplied without circulation pumps. They shall be installed exclusively either with CSE IR pump stations (see page 24) or with RegulusBOX indoor unit (see page 18).

GROUND-TO-WATER ON/OFF HEAT PUMPS

EcoPart 406 - 417

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

Three-phase ground-to-water on/off heat pumps with an output range of 6, 8, 10, 12, 14 and 17 kW. Among the technical parameters, the high heating factor stands out, reaching values of up to 5.5 in low-temperature systems. Thanks to the latest technologies, especially the new electronic expansion valve, the flow temperature of the heating water is up to 65°C. Above all, this temperature guarantees maximum comfort in DHW heating.

It can work with the traditional thermal stores of the PS series and hot water storage tanks of the RBC HP series. EcoPart 406 - 410 can also work with hot water tanks of the R2DC series.

- SCOP up to 4.8
- Energy efficiency class with controller A+++
- Extremely high flow temperature of heating water
- Constant performance and SCOP even in extreme cold

TECHNICAL DATA			EcoPart 406	EcoPart 408	EcoPart 410	EcoPart 412	EcoPart 414	EcoPart 417
Seasonal coefficient of performance SCOP		[-]	4,7	4,7	4,7	4,8	4,6	4,7
Primary circuit/HP flow temp. at B0/W25	Heat output	[kW]	6,1	8,5	10,4	12,3	14,63	--
	Power input	[kW]	1,20	1,72	1,87	2,23	2,79	--
	COP	[-]	5,10	4,93	5,55	5,51	5,25	--
Primary circuit/HP flow temp. at B0/W35	Heat output	[kW]	5,9	8,2	10	11,8	14,5	16,76
	Power input	[kW]	1,29	1,79	2,17	2,57	3,19	3,71
	COP	[-]	4,57	4,58	4,60	4,60	4,54	4,52
Primary circuit/HP flow temp. at B0/W55	Heat output	[kW]	5,2	7,6	9,3	11,0	13,4	15,9
	Power input	[kW]	1,88	2,54	3,12	3,72	4,54	5,17
	COP	[-]	2,76	2,99	2,98	2,96	2,95	3,07
Dimensions and weight	Width	[mm]	600	600	600	600	600	600
	Height	[mm]	760	760	760	760	760	760
	Depth	[mm]	672	672	672	672	672	672
	Weight	[kg]	138	143	148	164	168	172
Code		[-]	12647	12648	12649	12650	12651	12652

COP given according to EN 14511 incl. power input for both the circulation pumps.

Each heat pump is fitted with a max. current limiter for compressor startup.

The heat pump comes with integrated primary circuit circulation pump (for deep bore / underground collector). EcoPart 406-412 heat pumps are supplied without circulation pumps; they shall be installed exclusively either with CSE IR pump stations (see page 24), or with RegulusBOX indoor unit (see page 18). EcoPart 414-435 heat pumps are equipped with circulation pumps already integrated inside.

GROUND-TO-WATER ON/OFF HEAT PUMPS

EcoPart 435

EcoPart 435 ground-to-water heat pump is designed for space and DHW heating in large buildings of heat loss up to 44 kW. It consists of two 17 kW heat pumps connected in parallel.

Heating control and communication with the heat pump is ensured by an external IR controller.

- SCOP 4.7
- Energy efficiency class with controller A+++

Energy efficiency class for the set with controller under average climate conditions for low temperature application

TECHNICAL DATA			EcoPart 435
SCOP		[-]	4.7
Primary circuit/ HP flow temp. at B0/W35	Heat output	[kW]	32.48
	Power input	[kW]	7.44
	COP	[-]	4.36
Primary circuit/ HP flow temp. at B0/W45	Heat output	[kW]	32.28
	Power input	[kW]	8.94
	COP	[-]	3.61
Primary circuit/ HP flow temp. at B0/W55	Heat output	[kW]	31.74
	Power input	[kW]	10.34
	COP	[-]	3.07
Dimensions and weight	Width	[mm]	596
	Height	[mm]	1760
	Depth	[mm]	680
	Weight	[kg]	359
Code		[-]	15903

COP given according to EN 14511 incl. power input for the circulation pumps.

The heat pump is fitted with a max. current limiter for compressor startup.

The heat pump comes with integrated primary circuit circulation pump (for deep bore / underground collector) and with circulation pumps already integrated inside.

GROUND-TO-WATER INVERTER HEAT PUMPS

EcoPart 612M, 616M

Three-phase ground-to-water heat pumps with a scroll compressor and speed control (inverter), offering a long service life. The advantage of an inverter heat pump is the adjustment of the power to the actual requirements of the house with regard to space and DHW heating.
These heat pumps install easily, offering a high COP and an extremely low noise level. The feature of smart defrosting keeps monitoring the condition of the heat pump and starts defrosting for the shortest necessary time only when it is really needed which contributes to a high efficiency of these heat pumps.
They can operate without a thermal store, with suitable hot water tanks. Control of the house heating and communication with the heat pump is provided by an external IR controller.

**Energy Efficiency Class for the set with controller under average climate conditions for low-temperature application*

- New SCROLL compressor with speed control and a long service life
- Smart defrost
- SCOP up to 5.4
- Energy efficiency class with controller A+++
- Suitable to be combined w. three-phase PV systems

TECHNICAL DATA			EcoPart 612M	EcoPart 616M
Output		[kW]	2.5-11.8	4-16
SCOP		[-]	5.4	5.2
Primary circuit/ HP flow temp. at B0/W35, 20 rps	**Heat output**	[kW]	2.27	4.20
	Power input	[kW]	0.33	0.9
	COP	[-]	6.94	4.66
Primary circuit/ HP flow temp. at B0/W35, 50 rps	**Heat output**	[kW]	5.91	10.52
	Power input	[kW]	1.30	2.34
	COP	[-]	4.56	4.50
Primary circuit/ HP flow temp. at B0/W35, 100 rps	**Heat output**	[kW]	12.14	15.60
	Power input	[kW]	2.42	4.19
	COP	[-]	5.01	3.72
Dimensions and weight	**Width**	[mm]	596	596
	Height	[mm]	770	770
	Depth	[mm]	673	673
	Weight	[kg]	170	172
Code		[-]	18259	18290

EcoPart 600M heat pumps are supplied incl. circulation pumps. They shall be installed exclusively either with IR controllers (see page 24), or with indoor units (see pages 18-23).

INDOOR UNIT

RegulusBOX

Wall hung indoor unit for a heat pump.

RegulusBOX CTC is designed for installation with CTC EcoAir and CTC Eco-Part heat pumps, models 406 to 414 and 612M, 616M. With inverter heat pumps, it can be connected directly to a heating system; with ON/OFF heat pumps or for multiple heating circuits, it shall be installed with a (combination) thermal store and a pump station for each circuit of the heating system.

RegulusBOX RTC is available in two variants, different for single-phase and three-phase RTC heat pumps.

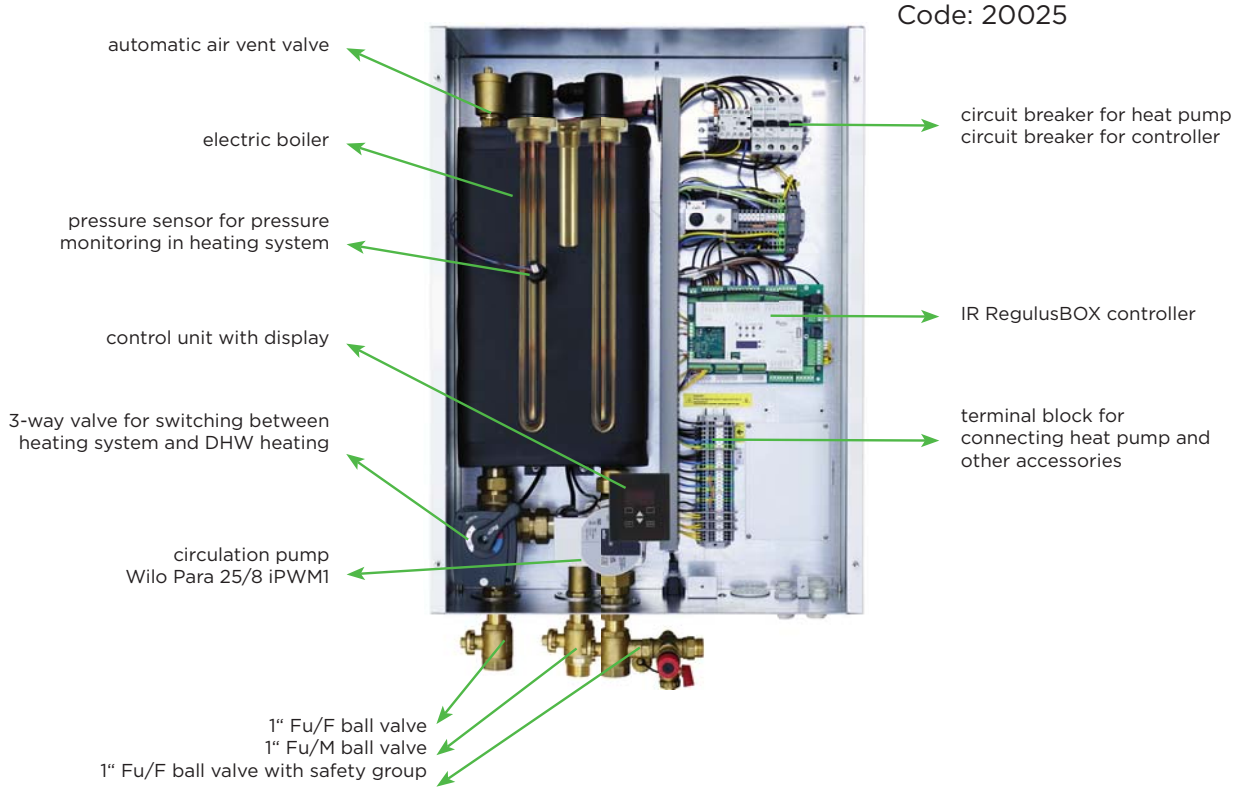
- **Intended primarily to connect inverter heat pumps directly into a heating system.**
- **Connecting a hot water tank possible, a 3-way valve inside.**
- **Involves electric boiler 2-12 kW, pressure sensor, circulation pump.**
- **A smart controller with internet connectivity and a control display that can be moved to the living area of the house where it can also act as a room temperature and humidity sensor.**
- **With RTC heat pumps it permits cooling.**

TECHNICAL DATA			RegulusBOX
Dimensions	**Width**	[mm]	560
	Height	[mm]	905
	Depth	[mm]	235
Weight		[kg]	34
Heating water volume		[l]	10
Output of electric heating elements		[kW]	12

RegulusBOX CTC 3/3
for EcoAir, EcoPart heat pumps
Code: 18928

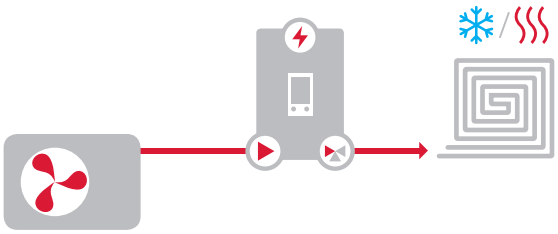
RegulusBOX RTC 3/1S
for RTC 6i, 13e heat pumps
Code: 18930

RegulusBOX RTC 3/3S
for RTC 20e heat pumps
Code: 20025

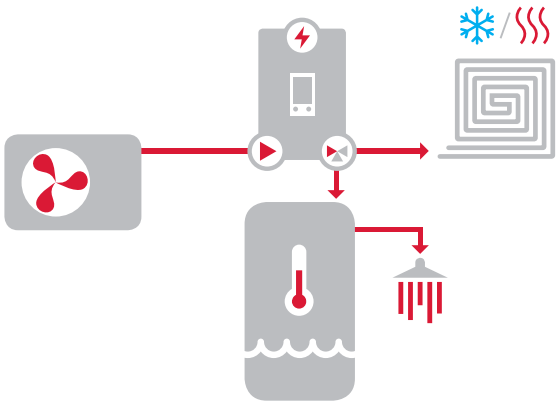


CONNECTION EXAMPLES

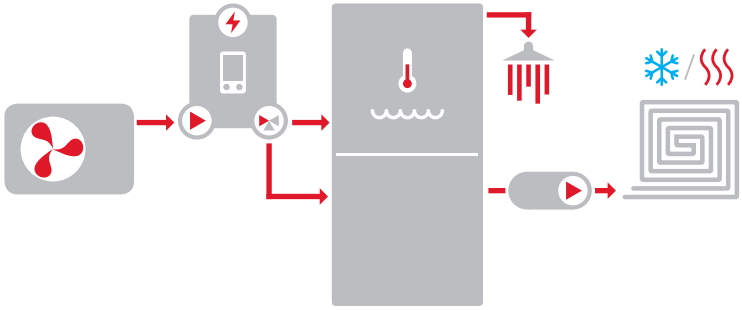
RegulusBox combined with a heat pump in heating/cooling systems.



RegulusBox combined with a heat pump and a hot water storage tank in systems for space heating/ cooling and DHW heating.



RegulusBox combined with a heat pump and a combination thermal store in systems for space heating/ cooling and DHW heating.



INDOOR UNITS WITH DHW HEATING

RegulusHBOX

Floor standing indoor unit with DHW heating. Heat pump switching between space heating and DHW heating is ensured by an integrated 3-way zone valve with actuator.

RegulusHBOX CTC is designed for installation with inverter heat pumps CTC EcoAir 614M, 622M and EcoPart 612M, 616M.

RegulusHBOX RTC is designed for installation with single-phase heat pumps RTC 6i and 3e.

RegulusHBOX 112 - intended for direct systems (one circulation pump for both heating and flow through the heat pump).

RegulusHBOX 212 - intended for split systems and systems with multiple heating circuits (connection with a thermal store).

A solar thermal system or another heat source can be connected to the unit using optional accessories.

- **Hygienic DHW heating in a stainless steel heat exchanger**
- **Electric boiler 2-12 kW, pressure sensor, circulation pump.**
- **A smart controller with internet connectivity and a control display that can be moved to the living area of the house where it can also act as a room temperature and humidity sensor.**
- **With RTC heat pumps it permits cooling.**

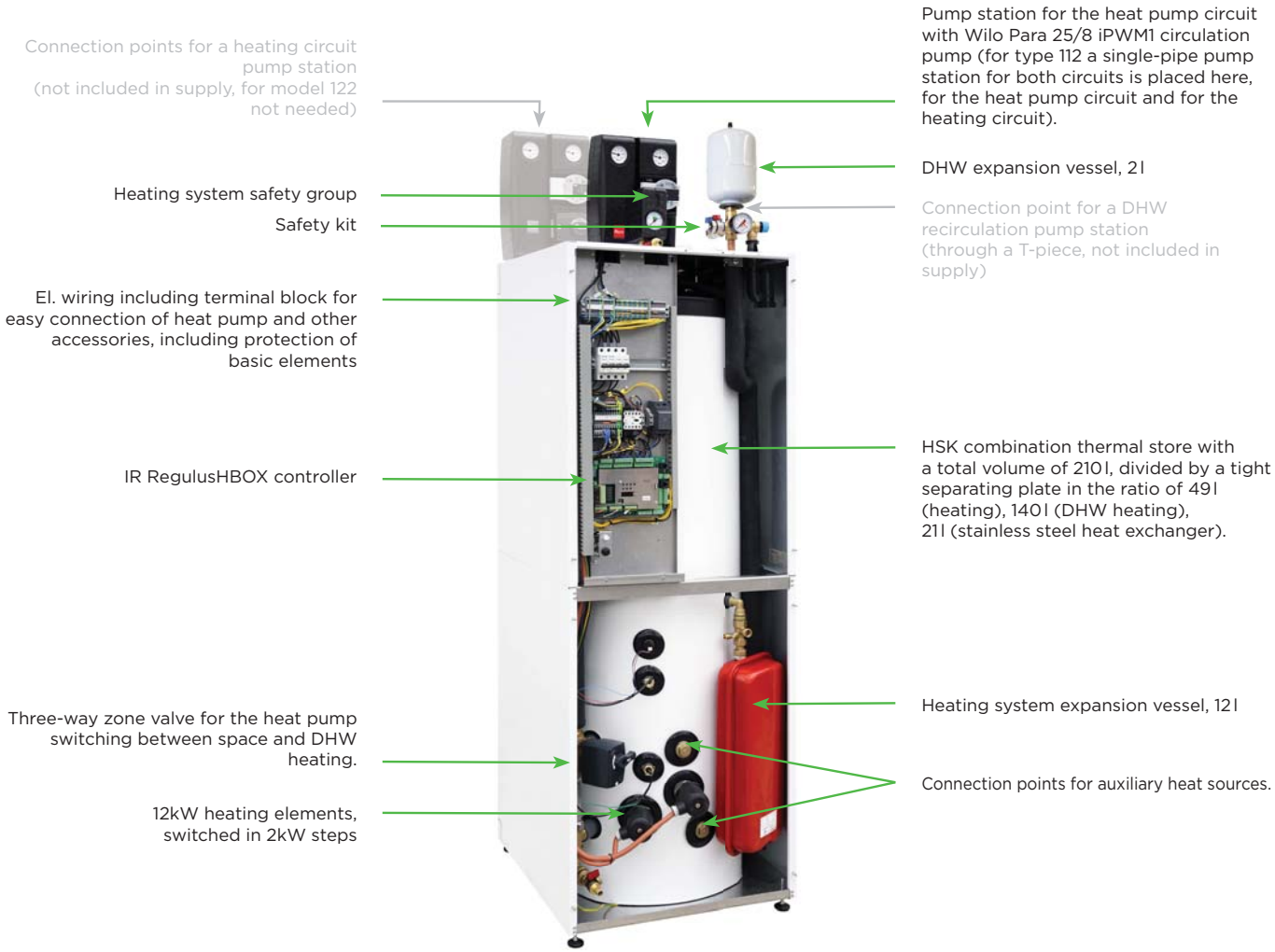
TECHNICAL DATA			RegulusHBOX
Dimensions	Width	[mm]	595
	Height	[mm]	(without safety groups/ pump stations attached)
	Depth	[mm]	650
Weight		[kg]	148
Heating water volume		[l]	49
Output of electric heating elements		[kW]	2-12

RegulusHBOX 112 CTC 3/3
for CTC inverter heat pumps
Code: 20050

RegulusHBOX 212 CTC 3/3
for CTC inverter heat pumps
Code: 20026

RegulusHBOX 112 RTC 3/1S
for RTC 6i, 13e heat pumps
Code: 20051

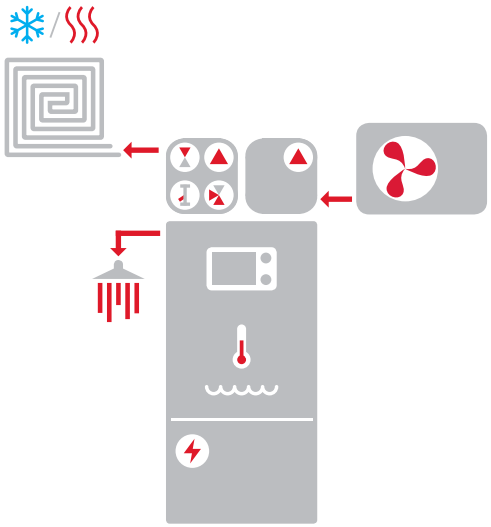
RegulusHBOX 212 RTC 3/1S
for RTC 6i, 13e heat pumps
Code: 20029



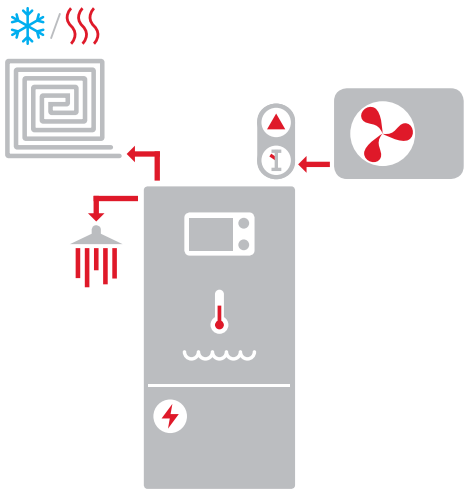
CONNECTION EXAMPLES

RegulusHBOX combined with a heat pump in heating/cooling systems and systems for DHW heating.

RegulusHBOX 212 for heating systems with one or multiple heating circuits fitted with own circulation pump(s)



RegulusHBOX 112 for heating systems with one unmixed heating circuit



INDOOR UNITS WITH DHW HEATING

RegulusHBOX K

Floor-standing indoor unit with DHW heating in a 170-l hot water tank. Heat pump switching between space heating and DHW heating is ensured by an integrated 3-way zone valve with actuator.

RegulusHBOX K CTC - designed for installation with inverter heat pumps CTC EcoAir 614M, 622M and EcoPart 612M, 616M.

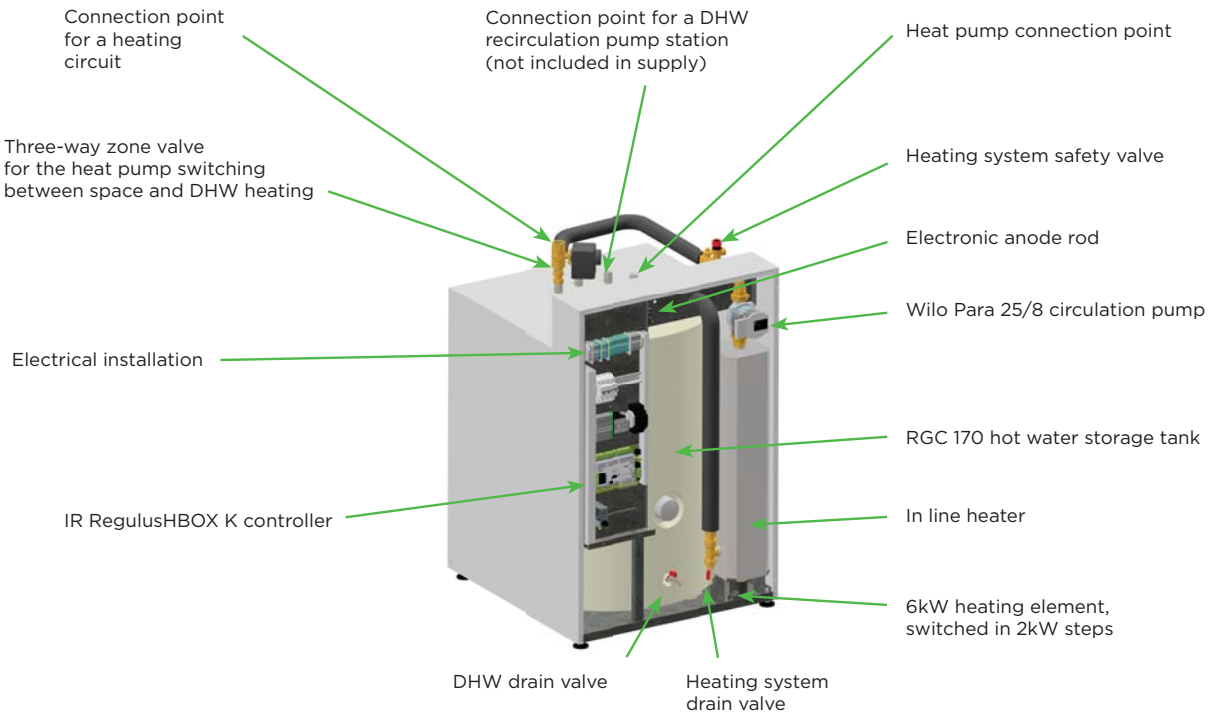
RegulusHBOX K RTC - designed for installation with single-phase heat pumps RTC 6i and 13e.

- DHW heating in an integrated hot water tank.
- Involves electric boiler 2-6 kW, circulation pump, switching zone valve.
- A smart controller with internet connectivity and a control display that can be moved to the living area of the house where it can also act as a room temperature and humidity sensor.
- With RTC heat pumps it permits cooling.

TECHNICAL DATA			RegulusHBOX K
Dimensions	Width	[mm]	750
	Height	[mm]	1150
	Depth	[mm]	825
Hot water tank volume		[l]	173
Output of electric heating elements		[kW]	2-6

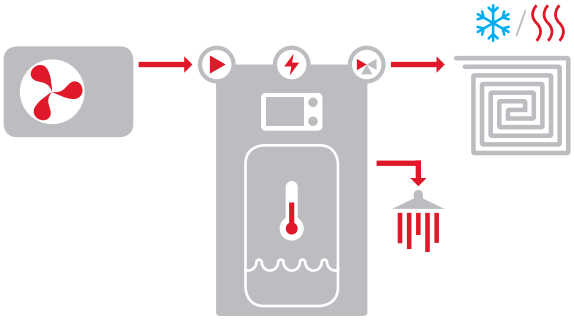
RegulusHBOX K 106 CTC 3/3
for CTC inverter heat pumps
Code: 20630

RegulusHBOX K 106 RTC 3/1S
for RTC 6i, 13e inverter heat pumps
Code: 20631



CONNECTION EXAMPLES

RegulusHBox K combined with a heat pump in systems for space heating/cooling and DHW heating.



CONTROLLERS

IR 14 Smart Controller

This smart controller is designed for efficient control of Regulus heat pumps. It can control an independent mixed heating and cooling circuit following a one's own time schedule offering 2 alternating temperature levels (set-back/comfort), DHW heating by both a heat pump and el. heating element following preset time schedules and temperatures, DHW recirculation and an auxiliary heat source. If needed, even a solar thermal or PV system can be controlled. Using **add-on modules**, the controller can be **upgraded to control heat recovery ventilation**, further up to 5 heating circuits, a fireplace or a solid fuel boiler, or even up to 3 solar appliances.

The controller enables also **control of a series** of heat pumps (a cascade). Connecting heat pumps into series will increase their total output easily. No more expensive accessories are needed, all is managed by IR controllers over a communication line, of course while maintaining all the other control functions for an entire heating system.

The Controller is available in 2 variants, either with a Czech or an English menu. It is **equipped** with an SD card for important data storage, two RJ45 Ethernet ports to connect to the Internet and for service connection, it has an integrated web server for visualization of the heating system and making adjustments. The controller can be then accessed over LAN or Internet. In smartphones **the Regulus IR Client App** can also be used.

IR 14 RTC - Code: 18239
IR 14 CTC - Code: 18514

CSE IR Set

The set consists of an IR 14 controller and a CSE TC W-PWM MFB pump station. The latter is an insulated pump station with a Wilo high-efficiency circulation pump (speed control, iPWM information on flow rate), with a ball valve with filter and magnet. The sets can be supplied also in the RZV variant with the IR controller fitted in the distribution box.

CSE IR 14 RTC - Code: 18242
CSE IR 14 CTC - Code: 18923

RC 25 Room Unit

Room unit with a temperature and humidity sensor, with a dial

Code: 18540

RS 10 Room sensor

Room temperature sensor in ABB Time design, white/white

Code: 16167

RSW 30 Temperature and Humidity Room Sensor

Wireless connection via WiFi, battery- or USB-powered

Code: 18474

Soft Starter

Soft starter for CTC EcoAir 410-420 heat pumps. It reduces the heat pump start-up current, has a self-learning algorithm responding to the conditions of the specific installation.

Code: 18401

ACCESSORIES TO AIR-TO-WATER HEAT PUMPS

Pump Station for a heat pump

A pump station for heat pumps connected in a cascade on the second position and further.

Code: 17868

Wall Support Bracket

Zinc-plated support bracket for hanging air-to-water heat pumps to the desired height above ground. Incl. silent blocks to limit vibrations.

Code: 17458, 18406

Compensator for heat pumps

The compensator is intended to increase the protection of a heat pump heat exchanger against being torn by frost. Included in supply with air-to-water inverter heat pumps.

1“Fu/M - Code: 16757
5/4“Fu/M - Code: 19754

Elbows for connecting pipes

Cu28 x 1“ M - Code: 15985
Cu28 x 5/4“ M - Code: 17091
Cu28 x Cu28 - Code: 16437

Fittings for connecting pipes

Cu28 x 1“ M - Code: 13391
Cu28 x 5/4“ M - Code: 17090
Cu28 x Cu28 - Code: 13394

Hoses for heat pumps

Braided hose 2x 1“ F
300 mm – Code: 18621
500 mm – Code: 15493
700 mm – Code: 15494
1000 mm – Code: 15495

Braided hose 2x 5/4“ F
300 mm – Code: 19752
500 mm – Code: 16896
700 mm – Code: 16897
1000 mm – Code: 16898

Braided hose 1“ F x 1“ M
300 mm – Code: 18622
500 mm – Code: 15496
700 mm – Code: 15497
1000 mm – Code: 15498

Braided hose 5/4“ F x 5/4“ M
300 mm – Code: 19753
500 mm – Code: 16899
700 mm – Code: 16900
1000 mm – Code: 16901

Heating Cable

Heating cable to prevent condensate freezing in the heat pump drain pipe. Available in two lengths - 3.5 and 5 m, non-heating end always 1 m.

3.5 m for EcoAir - Code: 16168
5 m for EcoAir - Code: 18104
2.5 m for RTC - Code: 20629
5 m for RTC - Code: 18491

In Line Heater

The in line heater is designed for continuous heating of heating water by an electric heating element. It contains a safety valve, an encased adjustable&safety thermostat with a Pt1000 sensor and wall mount brackets. An ETT-A electric heating element can be installed into the in line heater. It can be used as an auxiliary heat source for an inverter heat pump in installations without a thermal store.

for heater up to 7.5 kW output - Code: 16166
for heater up to 9 kW output - Code: 19391

ACCESSORIES TO GROUND-TO-WATER HEAT PUMPS

Filling Kit for primary circuit

Designed for easy filling and air venting the ground loop with deep bores or sub-surface ground collector. The filling kit involves a dirt strainer, 2-way shut-off ball valve, 3-way diverter ball valve and 2 filling valves to connect a filling station with a pump.

1“ M - Code: 12454
5/4“ M - Code: 12455

The 1“ M filling kit is suitable for EcoPart 406-410 heat pumps.

Antifreeze fluid for primary circuits of heat pumps

RegulusAFheat Antifreeze heat transfer fluid with anti-corrosion protection for heating and cooling circuits incl. primary circuits of ground-to-water heat pumps.

Plastic container, 5 l - Code: 19269
Plastic container, 25 l - Code: 19270
Barrel, 200 l - Code: 19271

ACCESSORIES FOR INDOOR UNITS

Blind plug and frame for using the display as a room unit

The frame is used for placing the display on a wall and the plug replaces the display in the front panel.

Code: 18248

WiFi module for IR 14, RegulusBOX, RegulusHBOX

Code: 18777

Solar Module for RegulusHBOX

This sest consists of a plate heat exchanger, pump station, air discharge device and set of pipes.

Code: 20031

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