TCAVZ 2770÷21290 H.E.

Z-Power range

Macrosystem
764,5÷1283,4 kW

High energy efficiency packaged air cooled water chillers with axial fans.
Range with semihermetic screw compressors and R134a refrigerant gas.

R134a

CLASS A Energy Efficiency

Qualified for Energy Technology List
www.eca.gov.uk
TM
Authorised User No. 00513

HIGH ENERGY EFFICIENCY EER>3,1

CE

RHOSS CLIMA EVOLUTION

SINCERT

Rhoss takes part in the Eurovent certification programme.
Concerned products are included in the guide to Eurovent certified products, which can be consulted at www.eurovent-certification.com

EUROVENT CERTIFIED PERFORMANCE

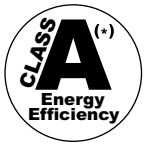
TCAVZ 2770 ÷ 21290 Z-POWER series
High energy efficiency series with R134a

A complete and flexible range

Eleven models from 765 to 1290 kW.
This allows perfect selection of the model based on the cooling capacity required in the field, with no waste.
The chillers of the Z-POWER range are also suitable for any sort of installation, thanks to their extensive operating limits.
The standard unit works normally with an outdoor air temperature from 45°C down to 5°C (down to -15°C with the FI15 accessory).
Furthermore, the unit can work up to 50°C with stepped cooling capacity.

High energy efficiency

With an eye on ever more demanding market requests in terms of energy savings, this range has been carefully designed to maximize its energy efficiency with EER values greater than 3.2 for all models.
This value refers to a chiller operating at full load in nominal conditions.
This places Z-Power series chillers in CLASS A (*)



(*) as per the proposal of energy labelling in the ambit of the European programme entitled EECCAC (Energy Efficiency and Certification of Central Air Conditioning).

ESEER and IPLV

On average, chillers perform throughout their life cycle providing lower cooling capacity than that for which they were purchased.
Average efficiency is evaluated using the indexes ESEER (European) and IPLV (American).
Z-POWER series chillers were designed to allow outstanding efficiency at partial loads and to achieve high ESEER and IPLV values, resulting in decreased energy consumption.

Optimized components R134a

The components used in the Z-POWER range were specially developed to achieve high performance and energy efficiency with R134a gas.
The new screw compressors and the dry expansion counter-flow heat exchangers dedicated to this gas are among the features of this range. The fan assembly is sized to provide excellent heat exchange with reduced noise. Also, the electronic expansion valve allows quick, precise adjustment in various load conditions.

Versions

Various versions are available to meet specific installation silence requirements.
Noise reduction in the soundproofed version, with acoustic insulation of the compressor compartment, can be further enhanced through speed reduction of the fans in the silenced version.
Proper operation and performance are ensured by the optimized design of the fan section.
In the silenced version, the electronics enable the chiller to work with outdoor air temperatures of up to 50°C with stepped cooling capacity and a raise in noise over 42°C.

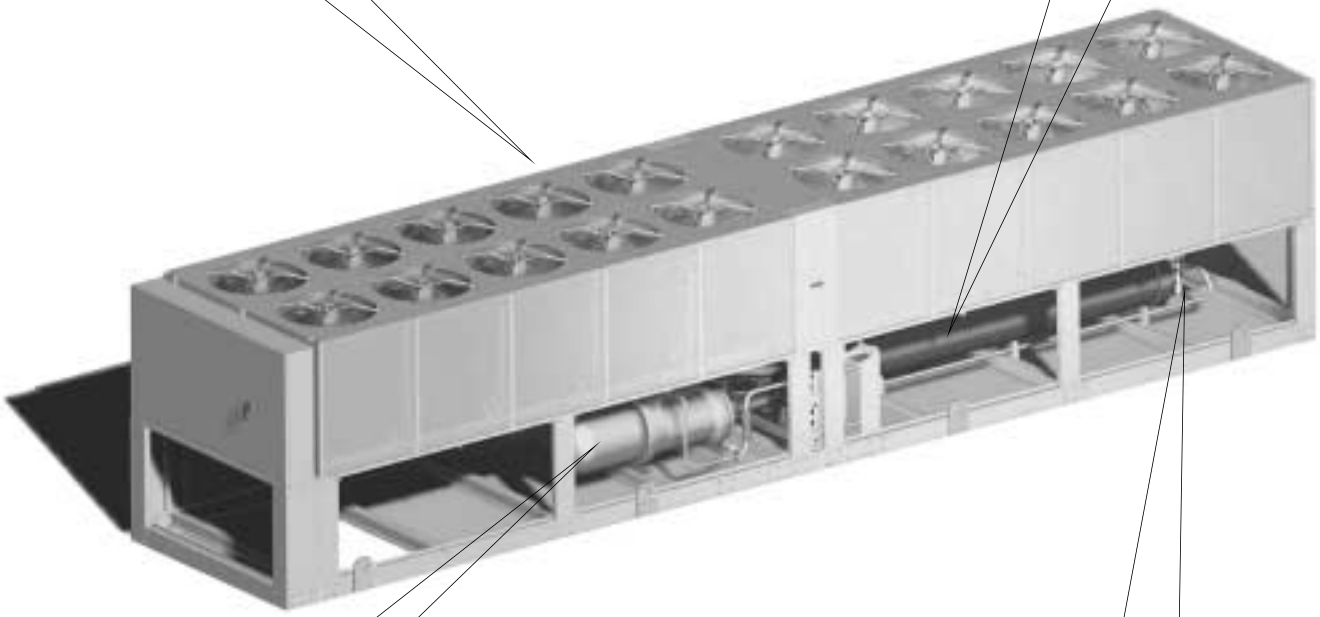
A wide range of accessories

The chillers of the Z-POWER range can be equipped not only with traditional accessories but also with total or partial recovery heat exchangers for the production of hot water at up to 60°C.
In applications with outdoor air temperatures down to -15°C, devices are available to control fan speed.
On request, the chillers can be equipped with pump assemblies with one or two pumps.

TCAVZ 2770 ÷ 21290 Z-POWER series
High energy efficiency series with R134a

Condensing section
The geometry of the condensing section and the fluid-dynamics flow generated by the fans were designed to maximize efficiency of thermal exchange and to offset load losses, while holding down the level of noise propagated to the room.
Also, the standard machine includes a stepped pressure-switch type of condensation control to allow operation with outdoor air temperatures down to +5°C.

Evaporator
Shell and tube dry expansion evaporator and perfect counter-flow thermal exchange.
The evaporator is equipped with two refrigerant circuits (one per compressor). This also improves efficiency at partial loads.



Compressor
The Z-POWER range uses semi-hermetic screw compressors specifically designed to operate with R134a gas.
Each compressor has 4 capacity control steps, for a total of 8 steps (2x4) thus providing the chiller with optimal operation even at partial loads with substantial energy savings.
An option is also available that allows modulating control of cooling capacity.

EEV:Electronic expansion valve
The chillers are standard equipped with the latest electronic expansion valve managed by microprocessor control.
Besides permitting precise control of the flow of refrigerant gas, this allows accurate operation of the cooling unit with improved response speed over traditional thermostatic expansion valves.

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Intended conditions of use

TCAVBZ units are packaged water chillers with air cooled and axial fans.
TCAVIZ - TCAVS units are packaged water chillers with air cooled and axial fans, in silenced format.
TCAVBZ, TCAVIZ and TCAVS chillers are to be used in air conditioning systems that require the use of chilled water which is not for consumption.
The unit is designed for outdoor installation.

The units conform to the following directives:
○ Machine Directive 98/37/CEE (MD);
○ Low voltage Directive 2006/95/CEE (LVD);
○ Electromagnetic compatibility Directive 89/336/CEE (EMC);
○ Pressure equipment Directive 97/23/CEE (PED).

Guide to reading the product code

SERIES coding

T	**C**	**A**	**V**	**B**	**Z**
Water chiller	Cooling only	Axial fans	Semi-hermetic screw compressors	Standard version	R134a refrigerant charge
				I Soundproofed version	
				S Silent version	

“MODEL” coding

2	**770 ÷ 1290**
No. of compressors	Approximate cooling capacity (kW)

Example: TCAVBZ 2960

○ Water chiller, cooling only, air cooled.
○ Standard version.
○ 2 no. semi-hermetic screw compressors.
○ Approximate cooling capacity 960 kW.

Main features

○ Loadbearing structure in polyester powder coated galvanized steel sheet.
○ Semi-hermetic screw compressors with high energy efficiency, specifically designed to work with R134a gas. The compressor start-up is star-triangle type with starting current limited by equalizer and load stepping, complete with integral protection and crankcase heater.
The compressors are also complete with intercept valve on the refrigerant outlet pipe.
○ Capacity control of the chiller as in the following table:

MODEL	Compressors/Steps No.	Circuits No.
2770 ÷ 21290	2 / 8	2

○ Water side shell and tube dry expansion heat exchanger with counter-flow thermal exchange. It is made of carbon steel with copper pipes, with water differential pressure switch, air bleed valve, water discharge cock and insulation of closed cell expanded polyurethane rubber with anti U.V. protection layer.
○ Victaulic type water connections to the evaporator, female threaded on the recuperator and desuperheater.
○ Air-side exchanger consisting of coil with copper tubes mechanically expanded on aluminium fins.
○ Axial electric fans, fitted with built-in protector and safety grilles. The fans are equipped with pressure-switch control to ensure operation with outdoor air temperature down to +5°C.
○ Two refrigerant circuits with mild copper tubes and steel and silver alloy welding. Each cooling circuit complete with: cartridge filter-drier, charge connections, manual reset high pressure switch, automatic reset low pressure switch, indicator of gas passage and any presence of humidity, electronic expansion valve (for hermetic closure on the liquid line with the unit stopped), valve located on liquid line, safety valves located in high pressure sections., intercept and solenoid valve on the liquid line, safety valve in the high pressure section.
○ Suction line insulation of closed cell expanded polyurethane rubber with anti U.V. protection layer.
○ Economizer to improve machine performance and ensure high energy efficiency.
○ Refrigerant high and low pressure gauge for each refrigeration circuit.
○ Refrigerant charge of eco-friendly R134a.

Electric panel

○ Electric panel complying with IEC standards, with ventilation, waterproof box complete with:
• electrical wiring configured for 400V-3ph-50Hz power supply;
• transformer for auxiliary circuit;
• auxiliary power supply 230V-1ph-50Hz;
• control power supply 24V-1ph-50Hz;
• phase monitoring to protect the compressor;
• power contactors;
• remotable controls:
- remote ON/OFF;
- compressor(s) operation indicator light and general lockout indicator light;
• main isolator switch on the power supply, complete with safety door interlock;
• fuses for each compressor and fan;
• fuses for auxiliary circuit.

○ Programmable microprocessor electronic board with user terminal fitted to the unit, remotable up to 1,000 metres.
The electronic board performs the following functions:
• regulation and management of chiller inlet/outlet water temperature set points; management of safety timer delays; of the run-hours meter for each compressor; of automatic inversion of the compressor operation sequence; of the circulation or user system pump; of the electronic antifreezing protection, of the load steps, of functions that integrate the workings of individual devices fitted to the unit;
• complete protection of the unit, possible shutdown of the machine and display of the active alarms;
• management of the electronic expansion valve (EEV) with possibility to read and display suction temperature, evaporation pressure, overheating and valve opening status.
• LCD display of programmed set points, of inlet/outlet water temperatures, of the condensing pressures, of alarms;
○ multilanguage management (Italian, English, French, German, Spanish) of display information.
○ alarm history management. The following is memorized for each alarm:
• date and time of activation;
• alarm code and description;
• the water inlet/outlet temperature values when the alarm intervened;
• condensation pressure values at the time of the alarm;
• alarm delay time from the switch-on of the connected device;
• compressor and fan status when the alarm intervened (if the FI10/FI15 accessory is present, the analogue output status is displayed).
• self-diagnosis with continuous monitoring of the machine's operational status.
○ Advanced functions:
• configured for serial connection via RS 485 port for communication with building automation, centralised systems and supervision networks;
• management of time bands and operation parameters with the possibility of daily/weekly programming;
• check up and verification of programmed maintenance status;
• computer-aided testing of the units.

Versions

○ **B** - High energy efficiency standard version (TCAVBZ).
○ **I** - High energy efficiency soundproofed version, with soundproof jackets on compressors (TCAVIZ).
○ **S** - Silent version with soundproof jackets of compressors and low fan speed (TCAVSZ).

Factory-fitted accessories

○ **IM** - Units with magnetothermic switches for protecting compressors and fans.
○ **RR** - Units with intercept valve on the compressor inlet (valve comes as standard on outlet).
○ **CCL** - Unit with linear control of compressor capacity (25-100%).
○ **RAP** - Units with prepainted aluminium/copper condensing coils.
○ **BRR** - Units with copper/copper condensing coils.
○ **RRS** - Units with tinned copper/copper condensing coils.

○ **FI10** - Proportional electronic device for the continuous adjustment of the fan rotation speed down to an outside air temperature of –10°C.
○ **FI15** - Proportional electronic device for the continuous adjustment of the fan rotation speed down to an outside air temperature of –15°C.
○ **CR** - Power factor correction capacitors ($\cos\phi > 0{,}94$).
○ **DS15** - 15% recovery with desuperheater.
○ **RC100** - 100% recovery with condensation heat recuperator. The accessory is complete with condensation control FI10 and a differential pressure switch on the recovery heat exchanger.
○ **TRD** - Thermostat with display to show the water temperature at the recuperator/ desuperheater inlet with the possibility of programming the activation set-point of a possible remote regulation device.
○ **PD** - Water differential pressure switch.
○ **RA** - Evaporator antifreezing electrical heater with switch.
○ **RDR** - Desuperheater or heat recovery trace heater, used to prevent the risk of ice forming (only with DS15 or RC100).
○ **RPE** - Lower compartment protection grilles.
○ **FTT10** - LON serial interface for connection to BMS with the LON standard FTT10 protocol.

On request, the following remote controls are available:
○ **DSP** - double set point.
○ **CS** - set point setting (4-20 mA).

Accessories supplied separately

○ **KRP** - Protection grille.
○ **KSAM** - Spring antivibration mountings.
○ **KTR** - Remote keyboard for control at a distance with the same functions as the one built into the unit.
○ **SS** - RS 485 serial interface for communication with building automation, centralised systems and supervision networks with ModBus protocol.
○ **KL** - Lifting kit for models 2960÷21290.

TCAVBZ - TCAVIZ - TCAVS 2770 ÷ 21290: technical characteristics

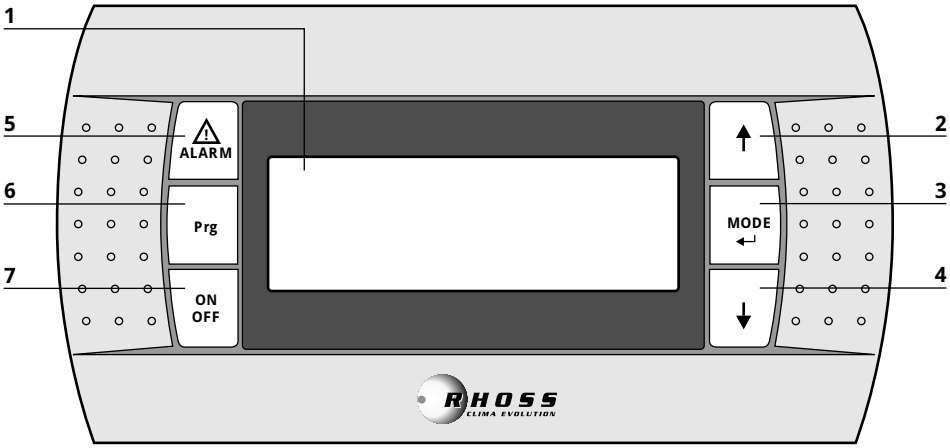
MODEL **TCAVBZ - TCAVIZ**		**2770**	**2830**	**2890**	**2960**	**21010**	**21040**	**21080**	**21130**	**21150**	**21220**	**21290**
STANDARD-SOUNDPROOFED VERSION												
Technical data												
Nominal cooling capacity (*)	kW	764,5	831,5	887,8	956,8	1009,7	1037,3	1079,9	1125,9	1152,3	1217,9	1283,4
E.E.R. (*)		3,35	3,31	3,26	3,37	3,35	3,35	3,36	3,23	3,43	3,40	3,39
E.S.E.E.R.		4,45	4,39	4,34	4,48	4,47	4,45	4,48	4,29	4,57	4,53	4,51
I.P.L.V.		4,63	4,57	4,51	4,66	4,65	4,63	4,66	4,46	4,75	4,71	4,69
Sound pressure level TCAVBZ (*) (**)	dB(A)	82	82	82	83	83	83	84	84	84	84	84
Screw compressor/steps	n.	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n.	2	2	2	2	2	2	2	2	2	2	2
Fans	n. x kW	14x2,1	14x2,1	14x2,1	16x2,1	16x2,1	18x2,1	20x2,1	20x2,1	20x2,1	20x2,1	20x2,1
Fan nominal air flow	m^3/h	315000	309400	303800	347200	347200	398600	450000	450000	434000	434000	434000
Evaporator nominal water flow (*)	m^3/h	131,2	142,7	152,3	164,2	173,2	178,0	185,3	193,2	197,7	209,0	220,2
Evaporator nominal pressure drops (*)	kPa	41	55	62	42	51	61	41	44	46	55	67
Evaporator water contents	L	436	427	427	419	410	408	398	398	398	387	376
R134a refrigerant charge	kg	See serial no. plate										
Polyester oil capacity (POE)	kg	See compressor plate										
Electrical data												
Total power consumption (*)	kW	228,0	251,0	272,0	284,0	301,0	310,0	321,0	349,0	336,2	358,0	379,0
Electrical power supply	V-ph-Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Auxiliary power supply	V-ph-Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Control power supply	V-ph-Hz	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50
Nominal current	A	386	416	441	466	498	514	527	589	568	601	633
Maximum current	A	512	544	576	619	654	677	700	700	700	750	800
Starting current	A	645	658	690	777	812	910	933	976	976	1040	1090
Dimensions												
Length	**L** mm	7680	7680	7680	8980	8980	9980	10980	10980	10980	10980	10980
Height	**H** mm	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430
Depth	**P** mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260

MODEL **TCAVSZ**		**2770**	**2830**	**2890**	**2960**	**21010**	**21040**	**21080**	**21130**	**21150**	**21220**	**21290**
SILENCED VERSION												
Technical data												
Nominal cooling capacity (*)	kW	746,0	811,2	865,5	924,0	973,5	1004,2	1051,1	1099,9	1116,2	1178,1	1240,4
E.E.R. (*)		3,24	3,17	3,09	3,16	3,13	3,16	3,22	3,08	3,21	3,14	3,08
E.S.E.E.R.		4,31	4,22	4,12	4,20	4,16	4,21	4,29	4,10	4,27	4,16	4,10
I.P.L.V.		4,48	4,39	4,28	4,37	4,33	4,37	4,47	4,26	4,44	4,33	4,26
Sound pressure level (*) (**)	dB(A)	76	76	76	77	77	77	78	78	78	78	78
Screw compressor/steps	n.	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n.	2	2	2	2	2	2	2	2	2	2	2
Fans	n. x kW	14x1,45	14x1,45	14x1,45	16x1,45	16x1,45	18x1,45	20x1,45	20x1,45	20x1,45	20x1,45	20x1,45
Fan nominal air flow	m^3/h	249200	243400	237600	260000	260000	303400	346800	346800	334000	334000	334000
Evaporator nominal water flow (*)	m^3/h	128,0	139,2	148,5	158,5	167,0	172,3	180,3	188,7	191,5	201,2	212,8
Evaporator nominal pressure drops (*)	kPa	40	53	60	39	48	58	39	42	43	52	64
Evaporator water contents	L	436	427	427	419	410	408	398	398	398	387	376
R134a refrigerant charge	kg	See serial no. plate										
Polyester oil capacity (POE)	kg	See compressor plate										
Electrical data												
Total power consumption (*)	kW	230,5	256,1	279,8	292,6	311,5	317,9	326,0	357,0	348,0	375,8	402,2
Electrical power supply	V-ph-Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Auxiliary power supply	V-ph-Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Control power supply	V-ph-Hz	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50	24/1/50
Nominal current	A	387	420	449	475	511	522	532	598	583	626	666
Maximum current	A	512	544	576	619	654	677	700	700	700	750	800
Starting current	A	631	644	676	761	796	892	913	956	956	1020	1070
Dimensions												
Length	**L** mm	7680	7680	7680	8980	8980	9980	10980	10980	10980	10980	10980
Height	**H** mm	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430
Depth	**P** mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260

(*) In the following conditions: condenser inlet air temperature 35°C; chilled water temperature 7°C; temperature differential at the evaporator 5°K; fouling factor of $0.35x10^{-4}$ m^2 K/W

(**) Sound pressure level in dB(A) refers to a measurement in open space at a distance of 1 m from the unit (average value measured on 4 sides) and with directionality factor Q=2.

Description of the keypad and display



1 = **Values and parameters DISPLAY:**
displays the numbers and the values of all the parameters (e.g. water outlet temperature, etc.), the codes of any alarms and the status of all the resources using message strings.

2/4 = **▲ (up), ▼ (down) buttons:**
used to scroll the list of parameters, the operating status and any alarms; also used to change the set point.

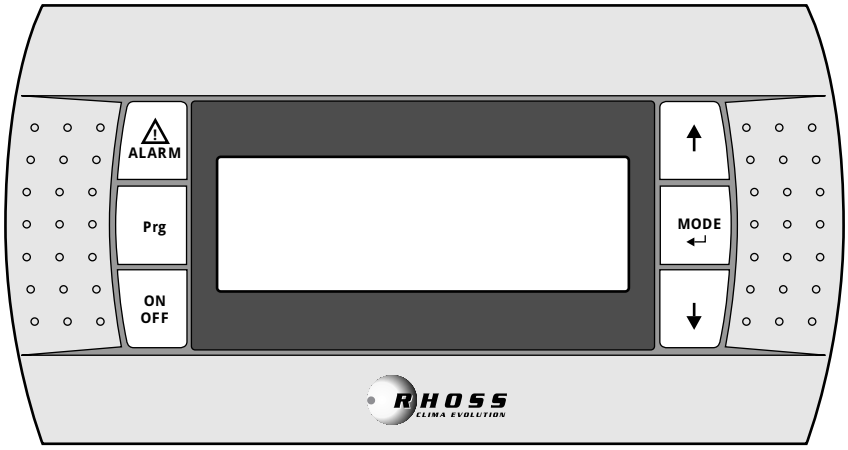
3 = **MODE - ENTER button:**
used to switch between cooling and heating operation, and to confirm the values entered.

5 = **ALARM button:**
used to display the alarm codes and reset any alarms.

6 = **PRG button:**
used to set the main operating parameters of the unit.

7 = **ON/OFF button:**
used to switch the unit on and off.

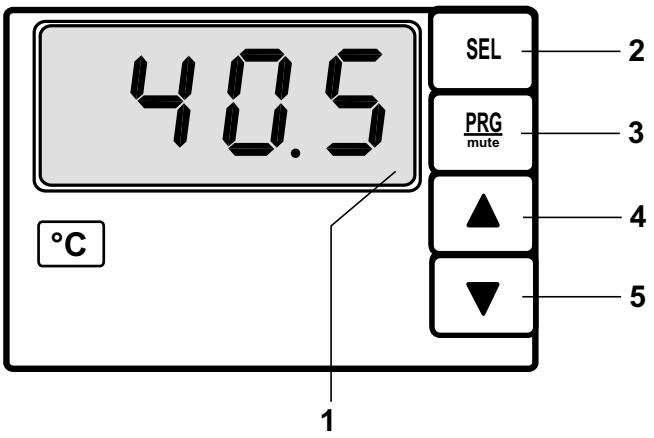
KTR - Remote keypad



Accessory - Remote keypad

The remote keypad accessory (KTR) is used to control the unit and display all the digital and analogue process variables relating to the unit from a remote position.
This accessory faithfully reproduces the functions of the keypad and the display of the microprocessor electronic controller.
This allows all the functions of the unit to be controlled directly from inside the room.

TRD - Thermostat with display



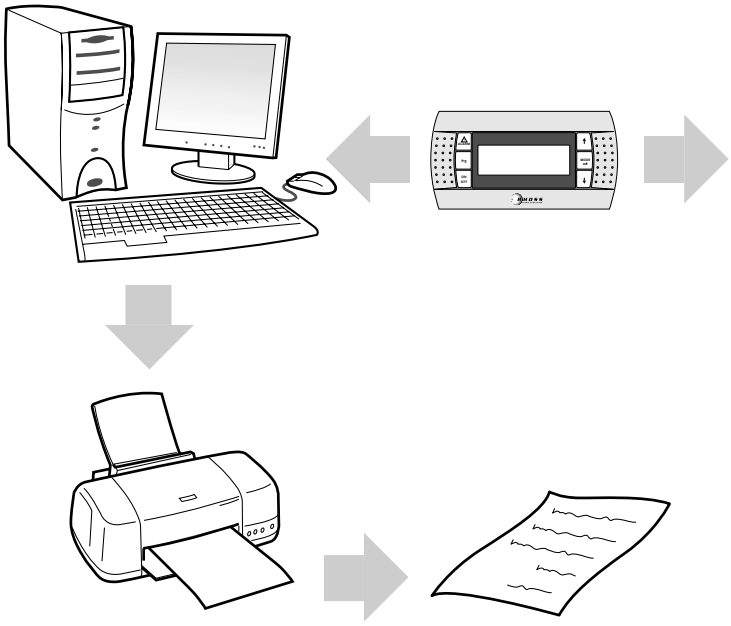
1 = **DISPLAY:**
displays the recuperator/desuperheater inlet water temperature value.

2/4/5 = **keys SEL, ▲ (up), ▼ (down):**
enable programming of the set-point and activation differential of a possible remote regulating device.

3 = **Key PRG/mute:**
allows entering the programming menu parameters.
(only for RHOSS authorised personnel).

The installation in the unit of the thermostat with display accessory (TRD) enables display of the recuperator/desuperheater inlet water temperature and programming of the activation set-point of a possible remote regulation device (e.g. ON/OFF 3-way valve), allowing a rational and efficient use of the recovered thermal energy.

SS / FTT10 serial interface



Serial communication

The electronic controller which is fitted to all the units can communicate with an external system through a serial communication line.

Supervision system

In general, a supervision system allows access to all the functions of the unit, such as:
○ setting all the values accessible from the keyboard;
○ reading all the process variables of the digital or analogue inputs and outputs;
○ reading the various alarm codes and possibly resetting them;
○ reading all the programming parameters and changing some of them.

Note:

For further information contact RHOSS sales support service.

Selecting the unit and using the performance tables

○ Tables “**A**” and “**B**” provide the cooling capacity (QF) and the power input (P), according to the water temperature at the evaporator outlet, with a constant temperature differential Δt = 5°C, and the ambient air temperature.
○ Tables “**D**” and “**E**” provide, for each model, the energy indexes, E.E.R., ESEER and IPLV, values.
○ As regards the operating limits (see page 13), the values in tables “**A**” and “**B**” can be interpolated to calculate the performance, but not extrapolated.
○ Table “**F**” shows the pressure drop curve in the evaporator.
○ Tables “**G**” and “**H**” provide, for each model, the sound pressure values in dB by octave band, the total sound power level in dB(A) and the sound pressure values in dB(A) at different distances.
○ Table “**I**” shows the correction coefficients to be applied to the nominal values if using a water glycol solution.

Table “A” - Cooling capacity TCAVBZ - TCAVIZ

MODEL	Tue (°C)	Ta (°C) 25		30		32		35		40		42	
		QF	P	QF	P	QF	P	QF	P	QF	P	QF	P
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2770	**5**	768,9	193,3	744,0	207,0	733,0	213,1	714,7	223,0	682,5	241,4	668,3	249,4
	7	822,7	197,8	796,0	211,7	784,1	218,0	**764,5**	**228,0**	731,1	246,6	717,1	254,7
	9	876,4	202,8	849,0	216,7	837,6	222,9	816,6	233,1	782,0	251,9	765,6	259,9
	11	935,3	208,0	904,5	222,1	892,3	228,4	871,2	238,6	834,0	834,0	817,8	265,5
	13	993,8	213,5	962,3	227,6	949,2	234,0	928,2	244,3	888,4	263,2	872,6	271,3
2830	**5**	837,0	212,1	809,6	227,4	796,2	234,5	777,5	245,4	742,0	266,0	726,3	274,6
	7	894,1	217,3	864,7	232,9	851,6	239,8	**831,5**	**251,0**	794,7	271,6	777,9	280,6
	9	953,9	222,9	923,8	238,5	909,7	245,5	888,1	256,8	848,5	277,6	832,0	286,6
	11	1016,4	228,7	984,1	244,6	970,7	251,6	947,5	263,0	906,5	283,8	888,7	292,9
	13	1081,6	234,9	1045,2	250,8	1032,6	257,9	1007,7	269,3	963,8	290,4	946,5	299,6
2890	**5**	893,9	229,1	863,6	246,1	851,4	253,6	829,8	265,8	791,2	288,0	775,5	297,7
	7	955,3	234,9	922,7	252,1	909,5	259,7	**887,8**	**272,0**	847,7	294,3	830,8	304,3
	9	1019,6	241,0	986,1	258,3	972,0	266,0	948,6	278,4	905,5	301,1	888,8	311,0
	11	1085,1	247,6	1050,9	265,0	1035,7	272,7	1010,6	285,2	967,6	308,0	948,0	317,9
	13	1155,3	254,4	1118,6	272,0	1102,2	279,6	1077,1	292,2	1029,2	315,3	900,2	292,0
2960	**5**	962,1	239,9	930,3	257,6	916,7	265,3	894,5	277,8	855,0	300,8	837,6	310,9
	7	1028,0	245,8	995,3	263,5	980,8	271,4	**956,8**	**284,0**	914,3	307,4	897,2	317,3
	9	1097,0	252,2	1063,5	269,8	1047,9	277,7	1022,1	290,4	978,1	314,0	958,0	324,2
	11	1169,1	258,7	1131,3	276,6	1116,4	284,5	1090,5	297,2	1043,2	320,9	1023,5	331,2
	13	1244,4	265,7	1205,9	283,5	1187,9	291,5	1162,2	304,4	1111,3	328,1	1092,1	338,4
21010	**5**	1014,8	253,7	980,0	272,6	966,5	281,0	942,7	294,3	900,0	319,0	882,6	329,8
	7	1084,1	260,0	1049,9	278,9	1033,7	287,4	**1009,7**	**301,0**	963,7	326,1	944,9	336,9
	9	1156,6	266,7	1119,8	285,8	1102,3	294,2	1076,5	307,9	1030,5	333,2	1010,2	344,2
	11	1230,5	273,7	1192,7	292,9	1175,9	301,5	1148,1	315,3	1098,7	340,8	1078,6	351,6
	13	1309,3	281,0	1268,8	300,4	1250,8	309,1	1222,9	322,9	1169,8	348,5	1146,4	359,6
21040	**5**	1039,2	261,3	1006,4	280,8	991,4	289,4	969,1	303,2	927,2	328,2	910,0	339,1
	7	1112,0	268,1	1078,3	287,5	1061,9	296,2	**1037,3**	**310,0**	993,9	335,5	975,0	346,4
	9	1187,3	275,1	1150,4	294,6	1135,2	303,3	1109,6	317,3	1063,2	342,7	1045,2	353,8
	11	1266,8	282,5	1227,8	302,0	1211,1	310,7	1184,5	324,7	1135,2	350,4	1114,0	361,6
	13	1349,0	290,3	1307,9	309,7	1291,2	318,4	1263,7	332,4	1209,8	358,3	1188,2	369,5
21080	**5**	1086,3	271,6	1050,3	291,5	1034,7	300,3	1011,4	314,1	965,9	339,7	945,3	350,7
	7	1160,3	278,0	1123,8	298,0	1106,9	306,9	**1079,9**	**321,0**	1033,0	346,8	1012,9	357,7
	9	1237,9	285,1	1198,6	304,9	1180,5	313,8	1153,7	327,9	1103,5	353,9	1082,0	365,1
	11	1316,6	292,4	1274,6	312,3	1257,6	321,1	1228,9	335,4	1177,3	361,3	1154,2	372,5
	13	1398,6	299,9	1356,3	319,7	1335,7	328,7	1307,4	342,8	1252,2	369,1	1227,5	380,4
21130	**5**	1132,8	290,0	1095,0	314,6	1077,4	325,4	1052,3	342,5	1006,9	373,4	986,4	386,7
	7	1210,3	296,8	1171,7	321,1	1152,8	331,8	**1125,9**	**349,0**	1079,2	380,3	1059,2	393,6
	9	1291,6	303,8	1250,2	328,0	1232,2	338,7	1203,3	355,9	1155,2	386,9	1133,7	400,3
	11	1378,9	310,9	1332,2	335,0	1313,0	345,7	1286,7	362,6	1232,9	393,8	1212,1	407,0
	13	1468,0	318,6	1420,5	341,9	1399,8	352,4	1369,3	369,4	1314,1	400,4	1125,3	370,9
21150	**5**	1159,1	279,6	1120,7	303,2	1104,8	313,6	1079,3	330,2	1033,3	360,6	1012,4	373,6
	7	1238,3	286,0	1199,2	309,5	1182,1	319,6	**1152,3**	**336,2**	1107,3	366,6	1086,9	379,6
	9	1323,6	292,6	1281,6	315,8	1263,3	326,1	1236,2	342,6	1185,2	373,0	1165,5	385,7
	11	1413,1	299,8	1368,0	322,4	1350,8	332,5	1319,3	348,9	1267,1	379,1	1246,1	392,2
	13	1504,3	307,3	1456,1	329,4	1437,7	339,3	1406,5	355,2	1353,1	385,3	1330,6	398,2
21220	**5**	1222,0	295,7	1180,8	321,7	1163,7	333,4	1138,5	352,4	1091,1	387,7	1070,8	403,0
	7	1305,5	301,5	1263,5	327,5	1245,1	339,2	**1217,9**	**358,0**	1169,2	393,4	1147,4	408,7
	9	1392,9	307,4	1350,2	333,3	1330,5	344,9	1301,4	364,0	1249,1	399,5	1225,7	414,9
	11	1487,1	313,7	1438,7	339,5	1420,1	350,9	1386,3	369,8	1332,8	405,3	1310,2	420,7
	13	1580,1	320,1	1531,1	345,5	1511,3	357,1	1477,9	376,0	1420,4	411,1	1396,2	426,6
21290	**5**	1289,3	310,8	1245,0	339,2	1229,0	352,3	1201,9	373,5	1153,4	413,9	1131,7	431,6
	7	1377,2	315,7	1332,1	344,4	1312,5	357,5	**1283,4**	**379,0**	1231,2	419,3	1210,2	437,0
	9	1469,4	321,0	1421,0	349,8	1402,4	362,7	1368,6	384,4	1315,2	425,1	1292,7	442,8
	11	1562,9	326,3	1513,9	355,1	1491,3	368,3	1457,9	390,0	1400,5	430,6	1376,3	448,4
	13	1663,4	331,5	1608,1	360,5	1583,9	373,9	1551,0	395,5	1489,7	436,5	1463,8	454,4

Tue = Evaporator outlet water temperature (inlet/outlet Δt = 5°C)
Ta = Outdoor air temperature (dry bulb)
QF = Cooling capacity with fouling factor of $0.35x10^{-4}$ m^2 K/W
P = Total electrical power consumption

Table “B” - Cooling capacity TCAVSZ

	Tue (°C)	Ta (°C)											
		25		**30**		**32**		**35**		**40**		**42**	
MODEL		QF	P	QF	P	QF	P	QF	P	QF	P	QF	P
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2770	**5**	753,2	193,3	727,5	208,1	715,4	214,6	697,5	225,2	665,8	244,5	651,8	252,9
	7	804,6	198,3	777,0	213,2	764,1	219,9	**746,0**	**230,5**	711,8	250,1	696,8	258,5
	9	857,1	203,5	827,5	218,7	816,3	225,4	797,0	236,2	760,2	256,0	744,0	264,6
	11	913,3	209,2	883,0	224,3	871,0	231,2	847,3	242,1	810,7	262,1	794,8	270,6
	13	972,2	215,3	939,5	230,5	925,1	237,4	902,8	248,3	863,6	268,3	760,5	252,0
2830	**5**	819,8	214,1	791,5	230,9	779,5	238,1	759,7	249,9	723,4	271,4	708,0	280,7
	7	875,8	219,8	846,8	236,6	832,4	244,1	**811,2**	**256,1**	773,5	277,9	758,3	287,2
	9	934,4	225,7	903,2	242,8	889,4	250,4	865,0	262,6	825,9	284,6	809,6	294,0
	11	995,6	232,2	962,2	249,4	947,3	257,0	924,4	269,2	880,8	291,4	768,6	269,7
	13	1059,8	239,3	1023,8	256,5	1007,9	264,2	983,2	276,2	938,2	298,6	821,8	277,0
2890	**5**	876,3	233,4	845,0	251,9	831,5	259,8	810,2	272,8	772,2	296,5	755,3	306,6
	7	935,1	239,7	902,9	258,4	888,4	266,6	**865,5**	**279,8**	824,5	303,8	807,7	313,8
	9	998,0	246,3	963,5	265,3	947,9	273,6	923,3	287,0	880,7	311,2	760,7	284,2
	11	1063,9	253,6	1026,8	272,6	1010,0	280,8	985,3	294,3	939,6	318,9	815,9	291,8
	13	1131,1	261,4	1093,0	280,5	1075,0	288,8	1048,4	302,3	893,7	291,6	871,0	299,9
2960	**5**	934,3	244,5	901,6	263,6	886,9	272,0	863,8	285,7	823,6	310,2	806,6	320,8
	7	996,8	251,0	963,2	270,3	947,4	278,9	**924,0**	**292,6**	880,9	317,6	864,0	328,1
	9	1063,6	257,7	1025,9	277,3	1010,7	286,0	985,5	299,9	940,7	325,1	922,8	335,9
	11	1133,7	265,2	1094,9	284,9	1078,6	293,6	1049,6	307,4	1003,4	332,9	873,9	307,4
	13	1205,0	273,2	1163,4	293,0	1147,7	301,5	1118,7	315,5	1069,0	341,1	932,8	315,9
21010	**5**	983,9	259,7	948,4	280,5	935,2	289,5	910,4	304,1	867,2	330,6	850,0	341,8
	7	1051,1	266,5	1014,4	287,5	997,0	296,8	**973,5**	**311,5**	928,5	338,4	908,5	349,9
	9	1121,6	274,3	1082,0	295,2	1065,0	304,6	1039,7	319,4	991,2	346,5	858,6	320,7
	11	1193,3	282,3	1152,6	303,6	1134,3	313,0	1107,0	327,7	1056,7	355,1	920,2	329,4
	13	1268,1	291,1	1226,4	312,3	1206,7	321,7	1177,4	336,8	1006,8	329,1	981,7	338,4
21040	**5**	1009,7	265,2	977,3	286,2	962,7	295,5	938,4	310,3	897,2	337,2	878,0	348,7
	7	1080,0	272,2	1044,6	293,7	1029,6	303,0	**1004,2**	**317,9**	961,4	345,0	941,5	356,7
	9	1154,6	280,4	1116,9	301,7	1101,8	310,9	1075,2	325,9	1028,2	353,2	893,2	329,0
	11	1231,7	288,7	1191,9	310,1	1175,4	319,5	1146,2	334,6	1096,0	361,8	956,9	337,8
	13	1310,0	297,6	1269,6	319,1	1249,8	328,3	1221,1	343,4	1169,4	371,0	1026,1	347,1
21080	**5**	1061,6	272,9	1024,4	294,3	1009,0	303,5	984,4	318,6	937,8	345,5	919,5	357,1
	7	1131,9	279,9	1094,1	301,5	1077,6	310,9	**1051,1**	**326,0**	1003,1	353,3	983,4	364,8
	9	1207,6	287,2	1167,1	309,0	1149,4	318,5	1118,9	333,8	1071,6	361,2	1048,4	373,0
	11	1284,5	295,4	1243,4	317,0	1224,4	326,2	1194,0	341,7	1141,1	369,3	1000,3	346,9
	13	1367,4	303,9	1320,7	325,2	1302,9	334,7	1270,3	349,9	1213,7	377,8	1070,4	356,0
21130	**5**	1109,1	293,7	1069,9	320,0	1054,5	331,6	1027,9	349,8	983,2	382,4	963,0	396,4
	7	1187,0	300,7	1145,1	327,3	1126,5	338,8	**1099,9**	**357,0**	1051,9	390,1	1032,2	404,2
	9	1266,8	308,5	1223,9	334,5	1203,9	346,0	1175,5	364,4	1126,1	397,6	942,7	360,8
	11	1350,5	316,7	1304,4	342,4	1285,4	353,8	1254,9	372,1	1201,9	405,2	1015,8	369,4
	13	1435,4	325,0	1388,7	350,6	1368,4	361,9	1338,2	380,0	1120,3	367,5	1093,1	378,0
21150	**5**	1122,6	286,1	1083,4	311,9	1068,0	323,2	1041,3	341,2	996,4	373,3	976,2	387,5
	7	1199,6	293,3	1159,4	318,8	1142,8	330,1	**1116,2**	**348,0**	1068,0	380,6	1048,2	394,6
	9	1280,1	300,6	1239,3	326,1	1219,3	337,4	1192,9	355,1	1143,3	387,7	1122,1	401,8
	11	1364,3	308,2	1320,7	333,5	1299,3	344,7	1273,3	362,4	1220,2	395,1	1197,5	409,2
	13	1455,1	316,3	1405,8	340,8	1385,4	351,9	1355,2	369,7	1300,7	402,1	1113,7	371,2
21220	**5**	1186,8	306,3	1146,4	335,0	1129,8	348,0	1103,1	368,8	1056,8	407,2	1037,0	424,0
	7	1267,9	312,7	1224,6	341,7	1206,8	354,8	**1178,1**	**375,8**	1130,5	414,1	1109,2	430,9
	9	1352,9	319,3	1306,6	348,6	1287,4	361,7	1258,9	382,5	1205,5	421,4	1185,1	438,2
	11	1441,9	326,4	1392,1	355,3	1371,6	368,4	1341,2	389,5	1286,4	428,3	1100,5	392,6
	13	1535,1	333,9	1484,5	362,4	1462,5	375,5	1427,1	396,3	1371,2	435,4	1182,1	401,6
21290	**5**	1248,6	324,8	1205,6	357,1	1187,9	371,9	1159,4	395,8	1112,1	440,2	1093,2	459,7
	7	1331,5	330,7	1285,4	363,5	1266,4	378,5	**1240,4**	**402,2**	1187,3	447,1	1167,0	466,9
	9	1420,7	336,8	1371,1	369,5	1353,2	384,6	1320,5	409,0	1265,9	453,9	1081,8	412,1
	11	1514,2	343,4	1461,0	376,3	1439,0	391,2	1406,5	415,5	1348,2	460,8	1161,2	421,2
	13	1606,1	350,1	1555,1	383,4	1531,6	398,4	1496,6	422,4	1434,1	467,9	1245,0	430,6

Tue = Evaporator outlet water temperature (inlet/outlet Δt = 5°C)
Ta = Outdoor air temperature (dry bulb)
QF = Cooling capacity with fouling factor of $0.35x10^{-4}$ m^2 K/W
P = Total electrical power consumption

Energy efficiency with partial loads - ESEER and IPLV indexes

○ The E.E.R. index represent an estimate of the energy efficiency of the cooling unit at nominal design conditions.
Actually, the operating time of a chiller at nominal conditions is generally less than the operating time in partial load conditions.
○ The indexes IPLV (Integrated Part Load Value) and ESEER (European Seasonal EER) are indexes which estimate the average seasonal energy efficiency of the chiller in four conditions of load and of outdoor air temperature. Generally, two chillers that have the same EER value may have different IPLV or ESEER values.
As a matter of fact, for an air cooled chiller unit, the average energy efficiency depends on design decisions and on the temperature of the incoming air at the condensing coil.
○ The IPLV e ESEER energy indexes, introduced respectively by the (American Refrigeration Institute - ARI standard 550/590) and by the European Community (project EECCAC - Energy Efficiency and Certification of Central Air Conditioners), have the same formulation, but they differ in outdoor air temperatures (see table "**C**") and for the energy weights which are assigned to the four load conditions considered in the calculations: 100%, 75%, 50% e 25% and for Tw produced (6,7°C IPLV / 7°C ESEER).

$$IPLV = \frac{1*EER_{100\%} + 42*EER_{75\%} + 45*EER_{50\%} + 12*EER_{25\%}}{100}$$

$$ESEER = \frac{3*EER_{100\%} + 33*EER_{75\%} + 41*EER_{50\%} + 23*EER_{25\%}}{100}$$

where $EER_{100\%}$ $EER_{75\%}$ $EER_{50\%}$ $EER_{25\%}$ represent the efficiency of the cooling unit at the four load and temperature conditions shown in table "**C**".

Table "C": load and temperature conditions

	Outdoor air temperature:	
Load	**IPLV**	**ESEER**
100%	35°C	35°C
75%	26,7°C	30°C
50%	18,3°C	25°C
25%	12,8°C	20°C

○ Tables "**D**", "**D**", show, for each model, the values of E.E.R., ESEER and IPLV.
The high energy efficiency values at partial loads were obtained thanks to the optimisation of the heat exchangers and the adoption of groups of fans managed independently based on load conditions.

Table "D": E.E.R. - ESEER - IPLV for TCAVBZ-TCAVIZ

MODEL	**E.E.R**	**ESEER**	**IPLV**
2770	3,35	4,45	4,63
2830	3,31	4,39	4,57
2890	3,26	4,34	4,51
2960	3,37	4,48	4,66
21010	3,35	4,47	4,65
21040	3,35	4,45	4,63
21080	3,36	4,48	4,66
21130	3,23	4,29	4,46
21150	3,43	4,57	4,75
21220	3,40	4,53	4,71
21290	3,39	4,51	4,69

Table "E": E.E.R. - ESEER - IPLV for TCAVSZ

MODEL	**E.E.R**	**ESEER**	**IPLV**
2770	3,24	4,31	4,48
2830	3,17	4,22	4,39
2890	3,09	4,12	4,28
2960	3,16	4,20	4,37
21010	3,13	4,16	4,33
21040	3,16	4,21	4,37
21080	3,22	4,29	4,47
21130	3,08	4,10	4,26
21150	3,21	4,27	4,44
21220	3,14	4,16	4,33
21290	3,08	4,10	4,26

Energy efficiency at partial loads

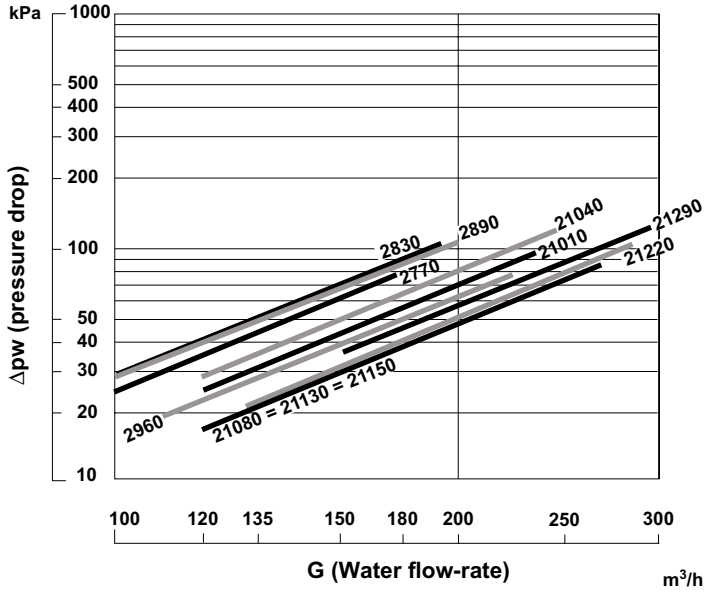
All models feature 8 cooling load steps. The table below shows, for each model, the values of the cooling capacity % and the total power input % corresponding to each load step delivered.

STEPS	**8**		**7**		**6**		**5**		**4**		**3**		**2**		**1**	
	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)	QF (*)	P (*)
MODEL	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2770÷21080	100	100	96	95	86	84	78	76	50	50	46	45	37	35	28	27
21130÷21290	100	100	95	93	85	83	78	75	50	50	45	43	36	33	28	25

QF = Cooling capacity %
P = Total power input %

(*) At the following conditions: condenser air intake temperature 35°C; chilled water temperature 7°C; temperature differential at the evaporator 5°C.

Table “F”: Evaporator pressure drop



Pressure drop calculation

○ The water flow-rate at the exchanger is calculated using the following formula:
$G = (QF \times 0{,}86) : \Delta T$
• Where:
G (m^3/h) = water flow-rate at the exchanger;
QF (kW) = refrigerating capacity;
ΔT (°C) = temperature differential;
○ The pressure drop can be taken from the graphs in “table **H**”, or alternatively calculated using the following formulae:
$\Delta pw = \Delta pw_{nom} \times (G : G_{nom})^2$
• Where:
Δpw (kPa) = pressure drop at the evaporator;
Δpw_{nom} (kPA) = nominal pressure drop at the evaporator (table of “technical specifications”);
G (m^3/h) = water flow-rate at the exchanger in question;
G_{nom} (m^3/h) = nominal water flow-rate at the evaporator (table of “technical specifications”).

Important note:

for all the units, refer to the operating limits shown on page 14 and the temperature differential (ΔT) allowed.

Table “G”: sound pressure and power TCAVBZ standard version

MODEL	Sound power levels in dB by octave band, total sound power level in dB (A) and sound pressure level in dB (A) at different distances									
	125 Hz	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**Lw**	**Lp** (1) (*)	**Lp** (10)
2770	80	76	76	79	75	73	61	99	82	67
2830	80	76	76	79	75	73	61	99	82	67
2890	80	76	76	79	75	73	61	99	82	67
2960	81	77	76	80	77	73	63	101	83	69
21010	81	77	76	80	77	73	63	101	83	69
21040	81	77	76	80	77	73	63	101	83	69
21080	82	78	77	81	78	74	66	102	84	70
21130	82	78	77	81	78	74	66	102	84	70
21150	82	78	77	81	78	74	66	102	84	70
21220	82	78	77	81	78	74	66	102	84	70
21290	82	78	77	81	78	74	66	102	84	70

Table “H”: sound pressure and power TCAVSZ silent version

MODEL	Sound power levels in dB by octave band, total sound power level in dB (A) and sound pressure level in dB (A) at different distances									
	125 Hz	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**Lw**	**Lp** (1)	**Lp** (10)
2770	65	66	71	72	69	67	54	93	76	61
2830	65	66	71	72	69	67	54	93	76	61
2890	65	66	71	72	69	67	54	93	76	61
2960	66	67	72	73	70	69	56	95	77	63
21010	66	67	72	73	70	69	56	95	77	63
21040	66	67	72	73	70	69	56	95	77	63
21080	67	68	72	74	72	69	57	96	78	64
21130	67	68	72	74	72	69	57	96	78	64
21150	67	68	72	74	72	69	57	96	78	64
21220	67	68	72	74	72	69	57	96	78	64
21290	67	68	72	74	72	69	57	96	78	64

Lp = Sound pressure level in dB(A).

Lw = Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO 3744 and Eurovent 8/1.

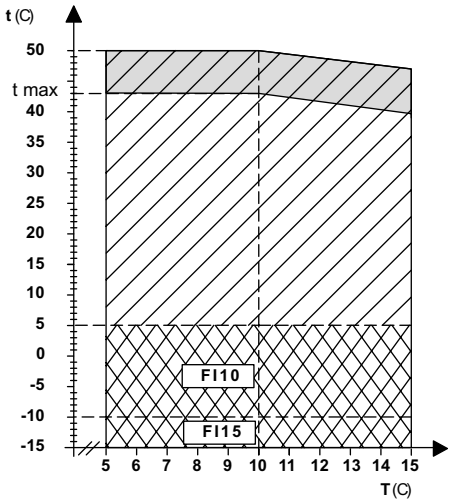
(*) For TCAVIZ (soundproofed version) take off 2 dB(A).

Important note:

○ The sound pressure level refers to measurements made in an open field at different distances from the unit (average value measured on 4 sides) with a direction factor Q = 2. The distance in metres is shown in brackets.
○ The sound pressure values cannot be extrapolated for distances less than 10m.

○ With an ambient air temperature below around 25°C, or with the FI10 / FI15 for outdoor air temperature less than 5°C, the unit in chiller mode decreases its sound level to a value lower than the nominal value indicated in the table.

Operating as a chiller



T (°C) = temperature of water produced
t (°C) = outdoor air temperature (d.b.)
○ Temperature differential at evaporator: Δt=3÷8°C. Consider the minimum and maximum water flow indicated in the table

R134a standard operation.

Operation with condensation control (FI10 - FI15).

Operation, with stepped cooling capacity. If the unit is supplied with the CCL accessory, the maximum external air temperature that can be reached is 46°C.

We can also provide units on demand to supply chilled water at less than 5°C.

Evaporator water flow

MODEL		Min.	Max.
2770	m³/h	85	175
2830	m³/h	90	190
2890	m³/h	90	200
2960	m³/h	100	220
21010	m³/h	105	230
21040	m³/h	110	240
21080	m³/h	120	245
21130	m³/h	120	260
21150	m³/h	120	265
21220	m³/h	130	285
21290	m³/h	140	295

MODEL	TCAVBZ	-
	TCAVIZ	-
	TCAVSZ	TCAVSZ
2770÷21290	t_{max} = 45°C (1) (2)	t_{max} = 42°C (1) (3)

(1) Evaporator water temperature (IN/OUT) 12/7
(2) Maximum external air temperature with unit in standard operation running on full.
(3) Maximum external air temperature with unit in silenced mode.

Use of antifreeze solutions

The use of ethylene glycol is necessary if the user wishes to avoid draining the water from the hydraulic circuit during the winter shutdown, or if the unit is required to supply chilled water at temperatures lower than 4°C. The addition of glycol changes the physical properties of the water and consequently the unit's performance.
The proper glycol percentage to be put into the system can be determined by selecting the most exacting of the operating conditions detailed below.

Anti-freeze protection during seasonal shutdown

○ Table shows the multipliers to obtain the changes in the unit's performance according to the necessary percentages of ethylene glycol.
○ The multipliers refer to the following conditions: condenser inlet air temperature 35°C; chilled water temperature 7°C; water Δt at the evaporator 5°C.
○ For different operating conditions the same multipliers can be used since the amount of change is negligible.
○ A trace electrical heater (accessory RA) reduces the freezing risk during winter shutdowns.

Table "I": TCAVBZ-TCAVIZ-TCAVSZ: 2770 ÷ 21290

Minimum ambient air temp. °C	2	0	–3	–6	–10	–15	–20
% glycol in weight	10	15	20	25	30	35	40
Freezing temperature °C	–5	–7	–10	–13	–16	–20	–25
fc G	1,025	1,039	1,054	1,072	1,093	1,116	1,140
fc Δpw	1,085	1,128	1,191	1,255	1,319	1,383	1,468
fc QF	0,975	0,967	0,963	0,956	0,948	0,944	0,937
fc P	0,993	0,991	0,990	0,988	0,986	0,983	0,981

fc G = correction factor for glycol water flow to the evaporator
fc Δpw = correction factor for pressure drops through the evaporator
fc QF = correction factor for cooling capacity
fc P = correction factor for total power consumption

TCAVBZ-TCAVIZ 2770 ÷ 21040
ACCESSORIES DS15 and RC100: performances and pressure drops

MODEL **TCAVBZ - TCAVIZ**			**2770**			**2830**	
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	959	945	927	1048	1032	1015
Recuperator nominal water flow	m³/h	166,7	164,6	164,8	182,2	179,8	180,3
Recuperator nominal pressure drops	kPa	64	62	63	58	57	57
Recuperator water contents	L	76,6	76,6	76,6	89,3	89,3	89,3
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	132	102	-	145	112	-
Recuperator nominal water flow	m³/h	11,6	9,0	-	12,8	9,8	-
Recuperator nominal pressure drops	kPa	48	31	-	57	36	-
Recuperator water contents	L	15,4	15,4	-	15,4	15,4	-

MODEL **TCAVBZ - TCAVIZ**			**2890**			**2960**	
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1125	1108	1090	1202	1184	1165
Recuperator nominal water flow	m³/h	195,6	193,0	193,7	209	206	207
Recuperator nominal pressure drops	kPa	48	47	47	50	49	50
Recuperator water contents	L	102	102	102	107,2	107,2	107,2
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	155	120	-	166	129	-
Recuperator nominal water flow	m³/h	13,7	10,5	-	14,6	11,3	-
Recuperator nominal pressure drops	kPa	64	40	-	73	46	-
Recuperator water contents	L	15,4	15,4	-	17,2	17,2	-

MODEL **TCAVBZ - TCAVIZ**			**21010**			**21040**	
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1271	1252	1234	1301	1284	1264
Recuperator nominal water flow	m³/h	221,0	218,1	219,2	226,3	223,7	224,6
Recuperator nominal pressure drops	kPa	51	49	50	53	52	52
Recuperator water contents	L	112,4	112,4	112,4	112,4	112,4	112,4
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	175	131	-	180	134	-
Recuperator nominal water flow	m³/h	15,4	11,5	-	15,9	11,7	-
Recuperator nominal pressure drops	kPa	54	32	-	57	33	-
Recuperator water contents	L	19	19	-	19	19	-

(•) Heating capacity with recuperator and desuperheater fouling factor of $0{,}35 \times 10^{-4}$ m² K/W.

(*) Conditions refer to the unit complete with condensation control (FI10) with standard setting and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(**) Conditions refer to the unit complete with condensation control (FI10) with the appropriate setting (expressly requested at the time of ordering) and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(***) Conditions refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5 K.

Operating limits:

○ **RC100:**
• temperature of hot water produced 35÷50°C with permitted water temperature differential 4÷6 K.
• the minimum permitted inlet water temperature is 30°C.
• If the unit is equipped with the accessory RC100 the FI10 accessory must be used.

○ **DS15:**
• temperature of hot water produced 45÷60°C with maximum permitted water temperature differential 10 K.
• the minimum permitted inlet water temperature is 40°C.

ATTENTION!

Units fitted with a heat recovery placed in series with the compressor must be used in compliance with current local laws.

Hot water for domestic use can be produced only with the use of an additional heat exchanger which is suited to the purpose. Refer to current laws and standards in the place of installation.

TCAVBZ-TCAVIZ 21080 ÷ 21290
ACCESSORIES DS15 and RC100: performances and pressure drops

MODEL **TCAVBZ - TCAVIZ**			**21080**			**21130**	
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1352	1333	1309	1421	1404	1387
Recuperator nominal water flow	m³/h	235,1	232,2	232,7	247,1	244,6	246,5
Recuperator nominal pressure drops	kPa	57	55	56	55	54	54
Recuperator water contents	L	112,4	112,4	112,4	121,2	121,2	121,2
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	187	142	-	197	144	-
Recuperator nominal water flow	m³/h	16,5	12,4	-	17,4	12,6	-
Recuperator nominal pressure drops	kPa	61	37	-	67	38	-
Recuperator water contents	L	19	19	-	19	19	-

MODEL **TCAVBZ - TCAVIZ**			**21150**			**21220**	
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1437	1419	1402	1518	1504	1493
Recuperator nominal water flow	m³/h	249,8	247,2	249,1	264,0	262,0	265,3
Recuperator nominal pressure drops	kPa	56	55	55	54	54	55
Recuperator water contents	L	121,2	121,2	121,2	135,1	135,1	135,1
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	199	161	-	211	165	-
Recuperator nominal water flow	m³/h	17,5	14,1	-	18,6	14,4	-
Recuperator nominal pressure drops	kPa	68	46	-	76	48	-
Recuperator water contents	L	19	19	-	20,7	20,7	-

MODEL **TCAVBZ - TCAVIZ**			**21290**	
STANDARD-SOUNDPROOFED VERSION				
Technical data				
RC100 - 100% recuperator				
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1599	1589	1583
Recuperator nominal water flow	m³/h	278,1	276,8	281,2
Recuperator nominal pressure drops	kPa	50	49	51
Recuperator water contents	L	149	149	149
DS15 - Desuperheater				
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	222	167	-
Recuperator nominal water flow	m³/h	19,6	14,6	-
Recuperator nominal pressure drops	kPa	61	37	-
Recuperator water contents	L	22,4	22,4	-

(•) Heating capacity with recuperator and desuperheater fouling factor of $0{,}35 \times 10^{-4}$ m^2 K/W.

(*) Conditions refer to the unit complete with condensation control (FI10) with standard setting and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(**) Conditions refer to the unit complete with condensation control (FI10) with the appropriate setting (expressly requested at the time of ordering) and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(***) Conditions refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5 K.

Operating limits:

○ **RC100:**
• temperature of hot water produced 35÷50°C with permitted water temperature differential 4÷6 K.
• the minimum permitted inlet water temperature is 30°C.
• If the unit is equipped with the accessory RC100 the FI10 accessory must be used.

○ **DS15:**
• temperature of hot water produced 45÷60°C with maximum permitted water temperature differential 10 K.
• the minimum permitted inlet water temperature is 40°C.

ATTENTION!

Units fitted with a heat recovery placed in series with the compressor must be used in compliance with current local laws.

Hot water for domestic use can be produced only with the use of an additional heat exchanger which is suited to the purpose. Refer to current laws and standards in the place of installation.

TCAVSZ 2770 ÷ 21040
ACCESSORIES DS15 and RC100: performances and pressure drops

MODEL **TCAVSZ**			**2770**			**2830**	
SILENCED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	959	945	927	1048	1032	1015
Recuperator nominal water flow	m³/h	166,7	164,6	164,8	182,2	179,8	180,3
Recuperator nominal pressure drops	kPa	64	62	63	58	57	57
Recuperator water contents	L	76,6	76,6	76,6	89,3	89,3	89,3
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	131	94	-	143	101	-
Recuperator nominal water flow	m³/h	11,6	8,2	-	12,6	8,8	-
Recuperator nominal pressure drops	kPa	48	26	-	56	30	-
Recuperator water contents	L	15,4	15,4	-	15,4	15,4	-

MODEL **TCAVSZ**			**2890**			**2960**	
SILENCED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1125	1108	1090	1202	1184	1165
Recuperator nominal water flow	m³/h	195,6	193,0	193,7	209	206	207
Recuperator nominal pressure drops	kPa	48	47	47	50	49	50
Recuperator water contents	L	102	102	102	107,2	107,2	107,2
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	154	108	-	163	114	-
Recuperator nominal water flow	m³/h	13,6	9,4	-	14,4	9,9	-
Recuperator nominal pressure drops	kPa	64	33	-	70	37	-
Recuperator water contents	L	15,4	15,4	-	17,2	17,2	-

MODEL **TCAVSZ**			**21010**			**21040**	
SILENCED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1271	1252	1234	1301	1284	1264
Recuperator nominal water flow	m³/h	221,0	218,1	219,2	226,3	223,7	224,6
Recuperator nominal pressure drops	kPa	51	49	50	53	52	52
Recuperator water contents	L	112,4	112,4	112,4	112,4	112,4	112,4
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	173	116	-	177	120	-
Recuperator nominal water flow	m³/h	15,3	10,2	-	15,6	10,5	-
Recuperator nominal pressure drops	kPa	53	26	-	55	27	-
Recuperator water contents	L	19	19	-	19	19	-

(•) Heating capacity with recuperator and desuperheater fouling factor of $0{,}35 \times 10^{-4}$ m^2 K/W.

(*) Conditions refer to the unit complete with condensation control (FI10) with standard setting and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(**) Conditions refer to the unit complete with condensation control (FI10) with the appropriate setting (expressly requested at the time of ordering) and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(***) Conditions refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5 K.

Operating limits:

○ **RC100:**
• temperature of hot water produced 35÷50°C with permitted water temperature differential 4÷6 K.
• the minimum permitted inlet water temperature is 30°C.
• If the unit is equipped with the accessory RC100 the FI10 accessory must be used.

○ **DS15:**
• temperature of hot water produced 45÷60°C with maximum permitted water temperature differential 10 K.
• the minimum permitted inlet water temperature is 40°C.

ATTENTION!

Units fitted with a heat recovery placed in series with the compressor must be used in compliance with current local laws.

Hot water for domestic use can be produced only with the use of an additional heat exchanger which is suited to the purpose. Refer to current laws and standards in the place of installation.

TCAVSZ 21080 ÷ 21290
ACCESSORIES DS15 and RC100: performances and pressure drops

MODEL **TCAVSZ**			**21080**			**21130**	
SILENCED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1352	1333	1309	1421	1404	1387
Recuperator nominal water flow	m³/h	235,1	232,2	232,7	247,1	244,6	246,5
Recuperator nominal pressure drops	kPa	57	55	56	55	54	54
Recuperator water contents	L	112,4	112,4	112,4	121,2	121,2	121,2
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	50/60 (*)	60/70 (*)	-
Nominal heating capacity (•)	kW	184	129	-	195	131	-
Recuperator nominal water flow	m³/h	16,2	11,3	-	17,2	11,5	-
Recuperator nominal pressure drops	kPa	59	31	-	65	32	-
Recuperator water contents	L	19	19	-	19	19	-

MODEL **TCAVSZ**			**21150**			**21220**	
SILENCED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1437	1419	1402	1518	1504	1493
Recuperator nominal water flow	m³/h	249,8	247,2	249,1	264,0	262,0	265,3
Recuperator nominal pressure drops	kPa	56	55	55	54	54	55
Recuperator water contents	L	121,2	121,2	121,2	135,1	135,1	135,1
DS15 - Desuperheater							
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	196	144	-	209	148	-
Recuperator nominal water flow	m³/h	17,3	12,6	-	18,4	12,9	-
Recuperator nominal pressure drops	kPa	66	38	-	74	40	-
Recuperator water contents	L	19	19	-	20,7	20,7	-

MODEL **TCAVSZ**			**21290**	
SILENCED VERSION				
Technical data				
RC100 - 100% recuperator				
Inlet/outlet water temperature	°C	35/40 (**)	40/45 (*)	45/50 (**)
Nominal heating capacity (•)	kW	1599	1589	1583
Recuperator nominal water flow	m³/h	278,1	276,8	281,2
Recuperator nominal pressure drops	kPa	50	49	51
Recuperator water contents	L	149	149	149
DS15 - Desuperheater				
Inlet/outlet water temperature	°C	40/50 (***)	50/60 (***)	-
Nominal heating capacity (•)	kW	221	151	-
Recuperator nominal water flow	m³/h	19,5	13,2	-
Recuperator nominal pressure drops	kPa	61	31	-
Recuperator water contents	L	22,4	22,4	-

(•) Heating capacity with recuperator and desuperheater fouling factor of $0{,}35 \times 10^{-4}$ m² K/W.

(*) Conditions refer to the unit complete with condensation control (FI10) with standard setting and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(**) Conditions refer to the unit complete with condensation control (FI10) with the appropriate setting (expressly requested at the time of ordering) and chilled water temperature 7°C, with evaporator temperature differential 5 K.

(***) Conditions refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5 K.

Operating limits:

○ **RC100:**
• temperature of hot water produced 35÷50°C with permitted water temperature differential 4÷6 K.
• the minimum permitted inlet water temperature is 30°C.
• If the unit is equipped with the accessory RC100 the FI10 accessory must be used.

○ **DS15:**
• temperature of hot water produced 45÷60°C with maximum permitted water temperature differential 10 K.
• the minimum permitted inlet water temperature is 40°C.

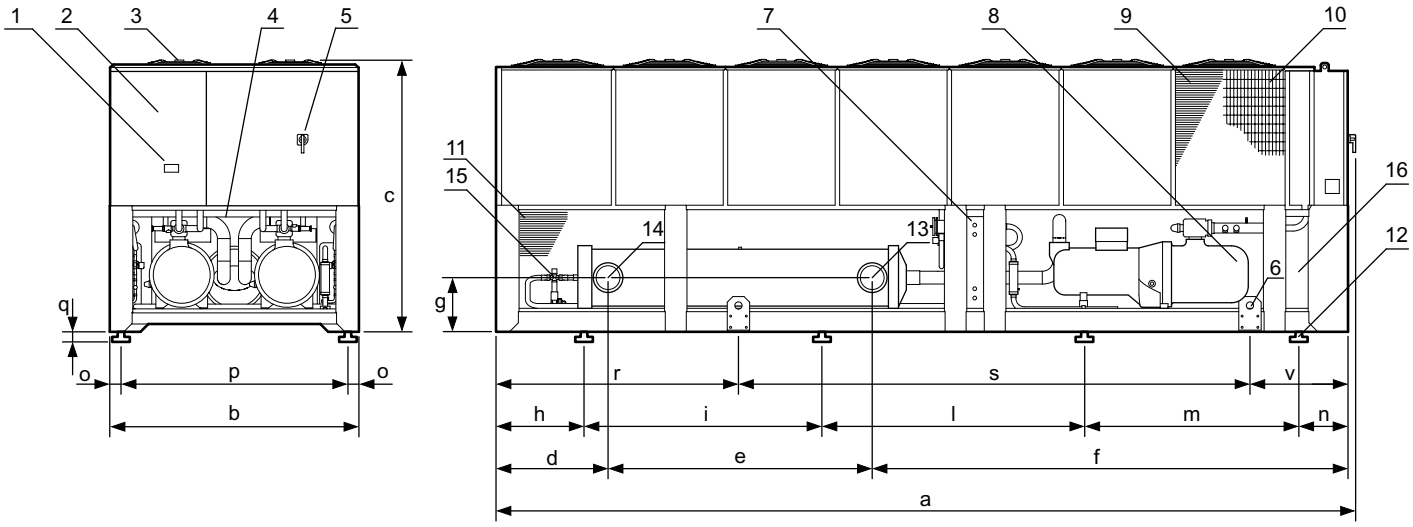
ATTENTION!

Units fitted with a heat recovery placed in series with the compressor must be used in compliance with current local laws.

Hot water for domestic use can be produced only with the use of an additional heat exchanger which is suited to the purpose. Refer to current laws and standards in the place of installation.

TCAVBZ - TCAVIZ - TCAVSZ 2770 ÷ 2890: overall dimensions and installation clearances

TCAVBZ - TCAVIZ - TCAVSZ: 2770 - 2830 - 2890



1. Electric panel
2. Electrical panel
3. Fan
4. Power input
5. Main isolator switch
6. Hoisting hook
7. Refrigerant circuit pressure gauges A/B
8. Compressor
9. Coil
10. Coil protection grille (accessory)
11. Lower compartment protection grilles (accessory)
12. Vibration damper (accessory)
13. Evaporator water inlet “Victaulic fittings”
14. Evaporator water outlet “Victaulic fittings”
15. Electronic expansion valve
16. Soundproofing TCAVIZ

MODEL		**2770**	**2830**	**2890**
Dimensions				
a	mm	7680	7680	7680
b	mm	2260	2260	2260
c	mm	2430	2430	2430
d	mm	1001	1000	1000
e	mm	2360	2360	2360
f	mm	4251	4250	4250
g	mm	484	484	484
h	mm	806	806	806
i	mm	2000	2000	2000
l	mm	2950	2950	2950
m	mm	1650	1650	1650
n	mm	206	206	206
o	mm	80	80	80
p	mm	2100	2100	2100
q (*)	mm	100	100	100
r	mm	2166	2166	2166
s	mm	4570	4570	4570
t	mm	-	-	-
u	mm	-	-	-
v	mm	876	876	876
Evaporator inlet/outlet water connections		DN 200	DN 200	DN 200

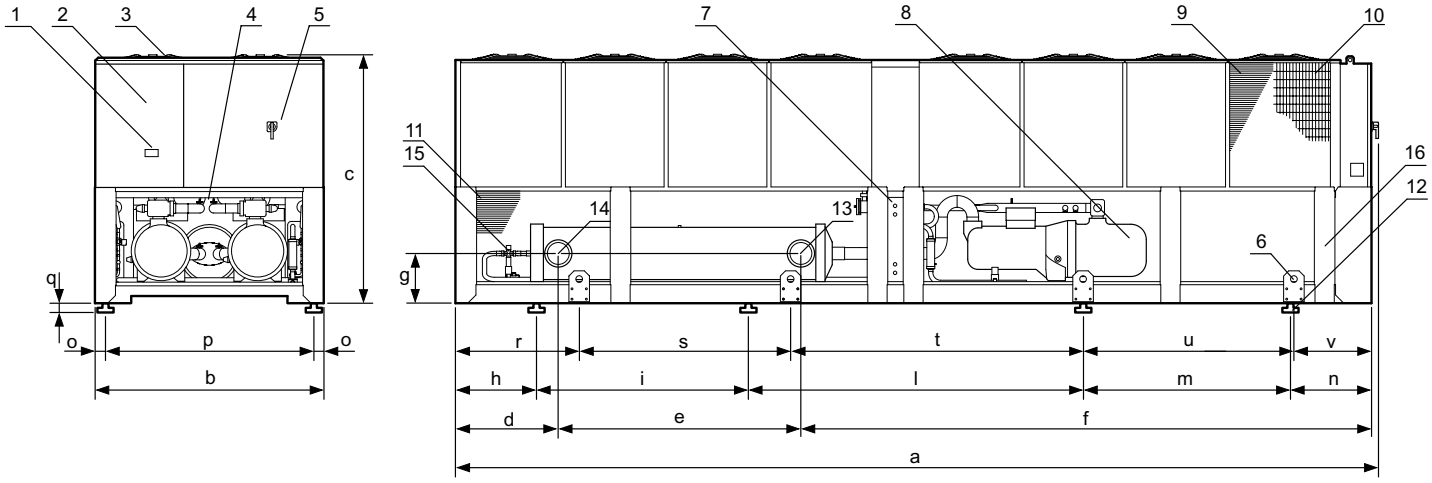
(*) The dimensions are approximate for the presence of a a leveling jack on the antivibration mounting.

ATTENTION!

The desuperheater(DS15) and heat recovery (RC100) accessories were not dimensioned because the data is subject to evaluation and modification by our technical office.
Contact our pre-sales office for any further information.

TCAVBZ - TCAVIZ - TCAVSZ 2960 / 21010: overall dimensions and installation clearances

TCAVBZ - TCAVIZ - TCAVSZ: 2960 - 21010



1. Electric panel
2. Electrical panel
3. Fan
4. Power input
5. Main isolator switch
6. Hoisting hook
7. Refrigerant circuit pressure gauges A/B
8. Compressor
9. Coil
10. Coil protection grille (accessory)
11. Lower compartment protection grilles (accessory)
12. Vibration damper (accessory)
13. Evaporator water inlet “Victaulic fittings”
14. Evaporator water outlet “Victaulic fittings”
15. Electronic expansion valve
16. Soundproofing TCAVIZ

MODEL		**2960**	**21010**
Dimensions			
a	mm	8980	8980
b	mm	2260	2260
c	mm	2430	2430
d	mm	1001	1001
e	mm	2360	2360
f	mm	5551	5551
g	mm	484	484
h	mm	806	806
i	mm	2000	2000
l	mm	3300	3300
m	mm	2000	2000
n	mm	806	806
o	mm	80	80
p	mm	2100	2100
q (*)	mm	100	100
r	mm	1204	1204
s	mm	2057	2057
t	mm	2845	2845
u	mm	2051	2051
v	mm	755	755
Evaporator inlet/outlet water connections		DN 200	DN 200

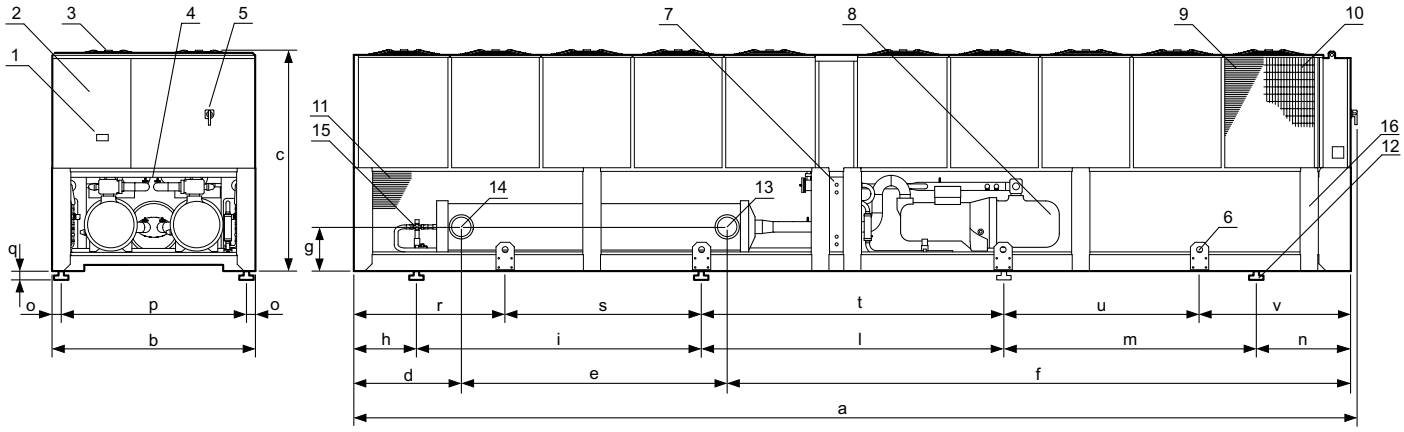
(*) The dimensions are approximate for the presence of a a leveling jack on the antivibration mounting.

ATTENTION!

The desuperheater(DS15) and heat recovery (RC100) accessories were not dimensioned because the data is subject to evaluation and modification by our technical office.
Contact our pre-sales office for any further information.

TCAVBZ - TCAVIZ - TCAVSZ 21040 ÷ 21290: overall dimensions and installation clearances

TCAVBZ - TCAVIZ - TCAVSZ: 21040 - 21080 - 21130 - 21150 - 21220 - 21290



1. Electric panel
2. Electrical panel
3. Fan
4. Power input
5. Main isolator switch
6. Hoisting hook
7. Refrigerant circuit pressure gauges A/B
8. Compressor
9. Coil
10. Coil protection grille (accessory)
11. Lower compartment protection grilles (accessory)
12. Vibration damper (accessory)
13. Evaporator water inlet “Victaulic fittings”
14. Evaporator water outlet “Victaulic fittings”
15. Electronic expansion valve
16. Soundproofing TCAVIZ

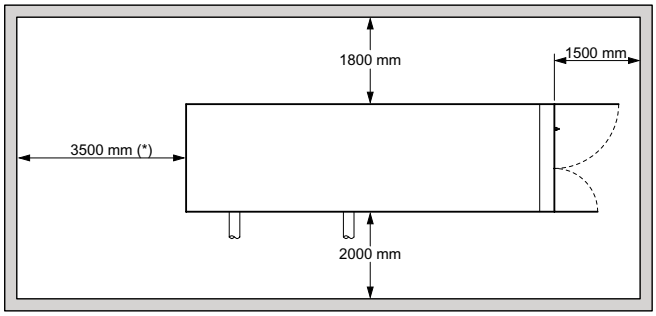
MODEL		21040	21080	21130	21150	21220	21290
Dimensions							
a	mm	9980	10980	10980	10980	10980	10980
b	mm	2260	2260	2260	2260	2260	2260
c	mm	2430	2430	2430	2430	2430	2430
d	mm	1176	1176	1176	1176	1176	1176
e	mm	2910	2910	2910	2910	2910	2910
f	mm	5826	6826	6826	6826	6826	6826
g	mm	484	484	484	484	484	484
h	mm	806	806	806	806	806	806
i	mm	3000	3000	3000	3000	3000	3000
l	mm	3300	3300	3300	3300	3300	3300
m	mm	2000	3000	3000	3000	3000	3000
n	mm	806	806	806	806	806	806
o	mm	80	80	80	80	80	80
p	mm	2100	2100	2100	2100	2100	2100
q (*)	mm	100	100	100	100	100	100
r	mm	1656	1656	1656	1656	1656	1656
s	mm	2150	2150	2150	2150	2150	2150
t	mm	3300	3300	3300	3300	3300	3300
u	mm	2051	2150	2150	2150	2150	2150
v	mm	755	1656	1656	1656	1656	1656
Evaporator inlet/outlet water connections		DN 200	DN 200	DN 200	DN 200	DN 200	DN 200

(*) The dimensions are approximate for the presence of a a leveling jack on the antivibration mounting.

ATTENTION!

The desuperheater(DS15) and heat recovery (RC100) accessories were not dimensioned because the data is subject to evaluation and modification by our technical office.
Contact our pre-sales office for any further information.

Clearances TCAVBZ-TCAVIZ-TCAVSZ: 2770 ÷ 21290



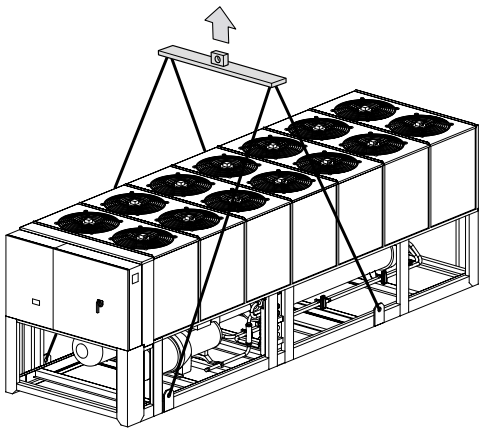
Important note:

○ The space above the unit must be free of obstacles. If the unit is completely surrounded by walls, the distances indicated are still valid, as long as at least two adjacent walls are no higher than the unit itself. The minimum space allowed in height between the top of the unit and any obstacle must not be less than 3.5m.
○ If a series of units are installed together, the minimum space between the finned coils must not be less than 2,5 m.
○ For further information contact RHOSS sales support service.
(*) Max distance in order to allow extracting the shell and tube exchanger.

Installation

○ The unit features Victaulic fittings on the air-conditioning system water inlet and outlet and on the inlets and outlets to the heat recovery/desuperheaters, as well as welded carbon steel stubs.
○ The unit should be installed observing the minimum clearances recommended in Figure 8, considering access to the hydraulic and electrical connections.
○ The unit can be fitted on antivibration mountings, supplied upon request (KSA and KSAM).
○ It is recommended to install air vent valves, on-off valves that isolate the unit from the rest of the system, and a filter. with a low pressure drop on the water inlet to the chiller or heat pump.

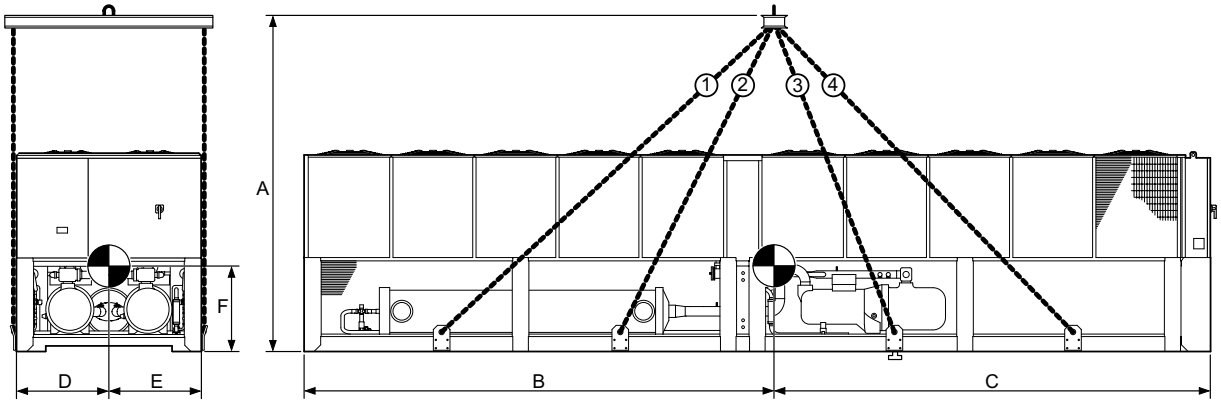
TCAVBZ-TCAVIZ-TCAVSZ: 2770 ÷ 2890



Lifting and handling

○ The unit must be handled and lifted up with care, so as to avoid damage to the external structure and to the mechanical and electrical parts on the inside.
The unit should be moved and/or lifted by the specially provided lifting-points in the base framework. For models 2960÷21290, the KL accessory can be used (lifting kit including hooks and chains as in fig. 10) or with chains of lengths as per the following table, so as to ensure stable lifting.

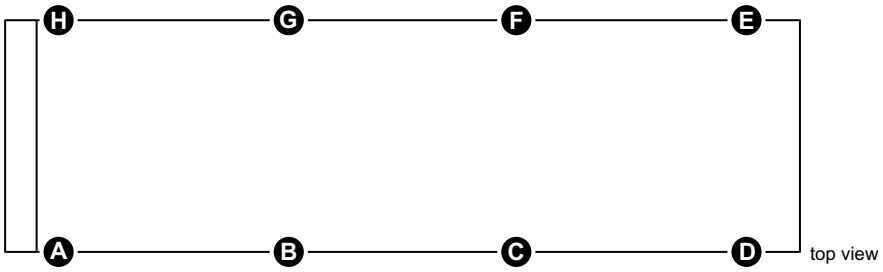
TCAVBZ-TCAVIZ-TCAVSZ: 2960 ÷ 21290



MODEL		2960	21010	21040	21080	21130	21150	21220	21290
KL - Lifting kit									
A	mm	3969	3969	3858	3801	3772	3772	3773	3774
B	mm	4696	4694	5410	5618	5675	5675	5672	5670
C	mm	4216	4218	4502	5294	5237	5237	5239	5245
D	mm	1114	1114	1114	1114	1112	1112	1113	1112
E	mm	1112	1112	1112	1112	1114	1114	1113	1114
F	mm	1078	1077	1064	1074	1024	1026	1024	1022
1	mm	5112	5112	5217	5330	5353	5353	5352	5351
2	mm	4000	4000	3962	4000	4000	4000	4000	4000
3	mm	3991	3992	4000	3864	3815	3815	3817	3819
4	mm	5091	5093	5212	5094	5033	5033	5036	5038

weight distribution between the fixing points

KSA-KSAM - Antivibration mountings
models TCAVBZ-TCAVIZ-TCAVSZ: 2770 ÷ 21290



TCAVBZ: 2770 ÷ 21290

MODEL		2770	2830	2890	2960	21010	21040	21080	21130	21150	21220	21290
Empty weight (*)	kg	5950	6360	6760	7900	7920	7990	7960	8720	9160	9200	9240
Weight (**)	kg	6387	6793	7196	8310	8330	8393	8359	9114	9553	9572	9610
Support point												
A	kg	798	851	900	1039	1041	1050	1045	1140	1194	1197	1202
B	kg	790	894	939	1087	1089	1103	1060	1182	1234	1237	1242
C	kg	800	838	890	1026	1029	1036	1040	1126	1182	1184	1189
D	kg	792	882	928	1074	1076	1089	1055	1167	1220	1225	1228
E	kg	805	817	872	1004	1007	1013	1035	1111	1167	1168	1174
F	kg	796	861	910	1052	1054	1066	1050	1153	1207	1210	1214
G	kg	808	803	859	990	993	992	1029	1097	1155	1155	1161
H	kg	798	847	898	1038	1041	1044	1045	1138	1194	1196	1200

TCAVIZ - TCAVSZ: 2770 ÷ 21290

MODEL		2770	2830	2890	2960	21010	21040	21080	21130	21150	21220	21290
Empty weight (*)	kg	6290	6700	7100	8250	8260	8340	8300	9070	9510	9560	9590
Weight (**)	kg	6727	7133	7536	8660	8670	8743	8699	9464	9903	9932	9960
Support point												
A	kg	841	894	943	1083	1083	1094	1087	1184	1238	1242	1246
B	kg	831	939	983	1133	1134	1150	1104	1227	1279	1285	1287
C	kg	843	880	932	1069	1071	1079	1082	1169	1225	1228	1232
D	kg	834	926	972	1119	1120	1134	1098	1212	1265	1271	1273
E	kg	848	858	913	1046	1048	1055	1077	1154	1210	1212	1217
F	kg	838	904	953	1096	1097	1110	1093	1197	1251	1255	1258
G	kg	851	843	900	1032	1034	1033	1071	1139	1197	1198	1203
H	kg	841	889	940	1082	1083	1088	1087	1182	1238	1241	1244

(*) The weight includes the accessories RPE and KRP.
(**) The weight and its distribution in support points includes the accessories RPE and KRP and the amount of water contained in the heat exchanger.

N.B.:

With the accessories RC100 and DS15 the weight of the unit must be added to the weight of the accessory indicated in the tables below:

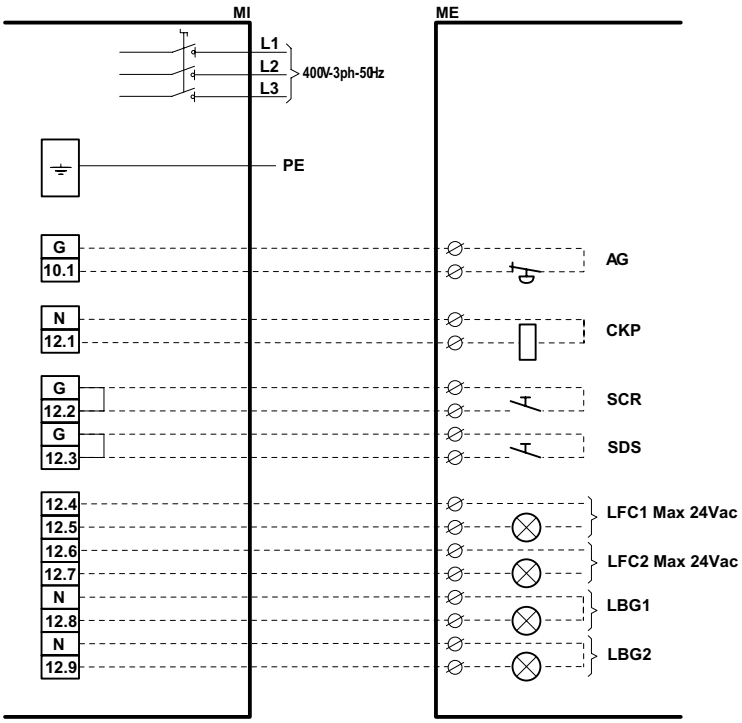
RC100 - Weights 100% recuperators

MODEL	2770	2830	2890	2960	21010	21040	21080	21130	21150	21220	21290
Weight kg	434	528	622	636	650	650	650	674	674	737	800

DS15 - Weights 15% desuperheaters

MODEL	2770	2830	2890	2960	21010	21040	21080	21130	21150	21220	21290
Weight kg	182	182	182	188	194	194	194	194	194	199	204

Models: 2770-2830-2890-2960-21010-21040-21080-21130-21150-21220-21290



Electrical connections

○ The electric panel (IP55) is accessible from the front panel of the unit.
○ The connections must be carried out in accordance with the regulations in force and the electrical wiring diagrams included with the machine.
○ Earthing of the machine is compulsory by law.
○ Always install the unit in a sheltered area, and near the machine place an automatic main switch, or fuses, of suitable capacity and breaking power.

MI = Internal terminal board
ME = External terminal board
AG = General alarm
CKP = Evaporator pump wiring harness (230 VAC voltage signal)
LBG1-2 = General lockout warning lamp - compressor 1-2 (consensus when powered 230 VAC)
LFC1-2 = Warning lamp: compressor 1-2 operating (clean contact)
L = Line
PE = Earth connection
SCR = Remote control selector (clean contact control)
SDS = Double set-point selector (clean contact control)
---- = Connection to be made by the installer

MODEL		2770	2830	2890	2960	21010	21040	21080	21130	21150	21220	21290
Electrical data												
Line section	mm²	400	400	400	400	400	400	400	400	400	500	500
PE section	mm²	240	240	240	240	240	240	240	240	240	240	240
Remote control line section	mm²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Max. absorbed currentTCAVBZ-TCAVIZ	A	512	544	576	619	654	677	700	700	700	750	800
Starting current TCAVBZ-TCAVIZ	A	645	658	690	777	812	910	933	976	976	1040	1090
Max. absorbed currentTCAVSZ	A	512	544	576	619	654	677	700	700	700	750	800
Starting current TCAVSZ	A	631	644	676	761	796	892	913	956	956	1020	1070

ATTENTION!

The above diagrams only show the connections to be made by the installer.

NOTES

NOTES

NOTES

TCAVZ 2770÷21290 H.E.

Z-Power range

RHOSS S.P.A.
Via Oltre Ferrovia, 32 - 33033 Codroipo (UD) - Italy
tel. +39 0432 911611 - fax +39 0432 911600
rhoss@rhoss.it - www.rhoss.it - www.rhoss.com

IR GROUP S.A.S.
7 rue du Pont à Lunettes - 69390 Vourles - France
tél. +33 (0)4 72318631 - fax +33 (0)4 72318632
irsaprhoss@irgroup.fr

RHOSS Deutschland GmbH
Hölzlestraße 23, D-72336 Balingen, OT Engstlatt - Germany
tel. +49 (0)7433 260270 - fax +49 (0)7433 2602720
info@rhoss.de - www.rhoss.de

RHOSS MERCOSUR
Benjamin Constant 576 - 1er Piso C.P. 1214 - Asuncion Paraguay
tel/fax +595 21 493 897 - www.rhossmercosur.com

Sedi commerciali Italia: / Italy branch offices:

Area Nord-Est: 33033 Codroipo (UD) - Via Oltre Ferrovia, 32
tel. +39 0432 911611 - fax +39 0432 911600

Area Nord-Ovest: 20041 Agrate Brianza (MI)
Centro Colleoni - Palazzo Taurus, 1
tel. +39 039 6898394 - fax +39 039 6898395

Area Centro-Sud: 00199 Roma - Viale Somalia, 148
tel. +39 06 8600699-707 - fax +39 06 8600747

Area Sud: 80143 Napoli - Via G. Porzio - Centro Direzionale - Isola G8
tel. +39 081 7879121 - fax +39 081 7879135

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