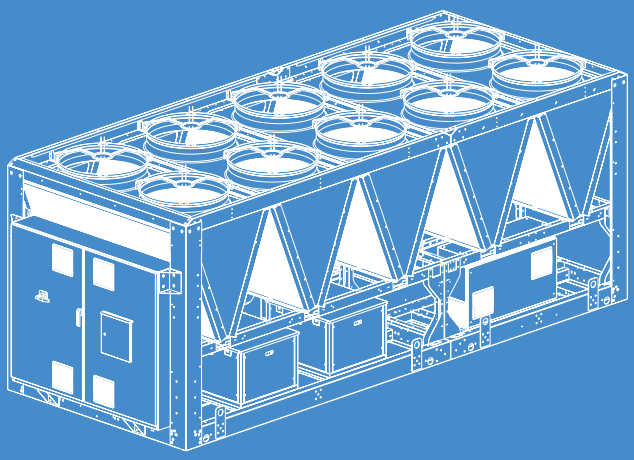
KELVIN
Air Conditioning System
2016

Qualified for **Energy Technology List**
www.eca.gov.uk
TM

bsi. ISO 9001 Quality Management | ISO 14001 Environmental Management

KELVIN Clim A280

Cooling Capacity: 280 ~ 1500 kW



A CLASS | INVERTER | OIL FREE | R134a | A C | FLOODED | MICRO CHANNEL | EU

Air cooled liquid chillers with oil-free centrifugal compressors with magnetic levitation bearings, flooded evaporator, AC axial fans with optimized diffusor and Microchannel condensing coils

KELVIN AIR CONDITIONING

KELVIN Clim A280

KELVIN CLIM A280 : Air cooled liquid chillers in "A" class energy efficiency for outdoor installation, equipped with oil-free centrifugal compressors with magnetic levitation bearings, flooded evaporator and microchannel condensing coils.
Cooling Capacity: 280 ~ 1500 kW

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

KELVIN AIR CONDITIONING

A CLASS · INVERTER · OIL FREE · R134a · A C · FLOODED · MICRO CHANNEL · EU

MAIN FEATURES

- Air cooled liquid chiller in A class energy efficiency.
- 17 models, 2 versions available for a wide selection opportunity.
- Average step of 70kW.
- EER up to 3,48.
- ESEER up to 5,88.
- Oil-free centrifugal compressors with magnetic levitation bearings driven by built-in inverter.
- R134a Refrigerant charge.
- Single refrigerant circuit.
- AC Axial fans.
- Flooded evaporator.
- Microchannel condensing coils in aluminium.
- Electronic expansion valve.
- Single air circuit.
- Modular construction.
- Suitable for outdoor installation.

MAIN BENEFITS

- Up to four centrifugal compressors with magnetic levitation bearings on the refrigerant circuit for an high efficiency.
- No need of power factor correction.
- Minimum starting current (LRA).
- Low refrigerant charge.
- Very high EER and ESEER. A Class energy efficiency.
- Quiet operation.
- Availability of double refrigerant circuit version.
- Availability of kit for further reduction of the noise.
- Availability of EC fans for a higher efficiency.
- Availability of pumping groups.
- Microprocessor control system with 7" touch screen display.
- Extremely easily of maintenance.
- Complete set of components dedicated to the safety of the unity.
- Eurovent Certification.(pending)

MAGNETIC LEVITATION CENTRIFUGAL COMPRESSOR

The KELVIN Clim A280 liquid chillers are equipped with two-stage centrifugal compressor with variable speed, which is able to follow punctually plant demands, obtaining values of energy efficiency ratio (EER) growing in a narrowing of the cooling load. The compressors are equipped with magnetic levitation oil-free bearings which compared to traditional ball bearings, completely eliminate all the maintenance procedures of lubrication.

A CLASS ENERGY EFFICIENCY

The best and most accurate components applied to the chillers.

WORKING LIMITS IN COOLING MODE

Chilled water outlet temperature: 4~15°C
Ambient temperature: -15~45°C

MAIN COMPONENTS

FRAMEWORK
- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Colour: RAL 9002.

COMPRESSORS
- Twin-turbine centrifugal compressor, oil-free type, optimized for R134a refrigerant.

The term "oil-free" refers to the total absence of lubricating oil within the compressor.
- Magnetic levitation bearings.
- Manometric compression ratio: 1.5 ~ 5.0.
- Stepless capacity control trough integrated inverter.
- High efficiency permanent-magnet synchronous motor with integrated Soft- Start system (starting current limited to 5A).
- Power factor motor cos φ > 0.9 for a large part of the operating range.
- Motor and electronic power section cooling by liquid refrigerant injection into the integrated cooling circuit.
- Electric motor thermal protection via internal winding temperature sensors.
- Electronic integrated control for operation and alarms status.
- Sensor on refrigerant discharge for temperature monitoring.
- Inner sensors for electronic components and inverter temperature control.
- Security system to protect the crankshaft and magnetic bearings in the event of failure of power supply.
- Installation with walls sound attenuators.
- Degree of protection: IP54.
- Electric resistance of the suction pipe, together with activated antifreeze evaporator, to prevent the migration of refrigerant inside the compressor.

EVAPORATOR
- Flooded shell and tube evaporator, optimized for R134a refrigerant.
- Version two passes, characterized by low pressure losses on the water side.
- Water tubes with a helical rifled internal surface.
- Integrated liquid drop separator.
- Shell, header, tube sheets made of carbon steel, tubes in Cu.
- Anticondensate insulation made of polyurethane.
- Large liquid level indicator.
- Temperature sensors on water inlet and outlet.
- Water flow switch for water flow control on water outlet towards the plant, not installed but supplied in kit.
- Large liquid level indicator.
- Antifreeze heater.
- Hydraulic connections with grooved end supplied as standard with flexible joint and adapter pipe to be welded.

CONDENSING COIL
- Microchannel condensing coil in aluminium, perfectly suitable for the civil and industrial applications cooling, while the protection function of the oxide layer allows an optimum resistance to corrosion also in case of aggressive ambient conditions.
- Extremely light construction. The coil weight is only 50% compared to traditional copper pipes and aluminium fins of the same capacity.
- Low air side pressure drop and consequentially drastic reduction of the fans motors electric energy consumption.
- High heat exchange efficiency.
- Reduced internal volume capable of reducing the total refrigerant charge. At the same performances conditions, the micro-channels condensers require up-to less than 75% refrigerant when compared to the traditional heat exchangers.
- Single air circuit.
- Frame in painted galvanized steel.

FANS SECTION
- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- External rotor AC type electric motor with stepless variable speed for condensing pressure control.
- IP54 enclosure class.

REFRIGERANT CIRCUIT

Components for each refrigerant circuit:
- Capacitive level sensor connected to the driver of the expansion valve.
- Electronic expansion valve that allows high performance and system efficiency and for the refrigerant level control in the evaporator.
- By-pass valve for start-up.
- Non return valve on by-pass line for compressor start.
- Economizer for model 280 T1E, 560 T2E, 810 T2E, 1070 T4E, 1120 T4E, 1200 T3E, 1500 T4E. The system includes:
  - Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel.
  - Anticondensate insulation made of polyurethane.
  - Intermediate electronic expansion valve.
- Sight glass.
- Filter dryer on liquid line.
- Service valve on liquid line.
- Service valve on gas suction and discharge.
- Non return valve on gas discharge.
- Safety valve on low pressure side.
- Safety valve on high pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Plastic capillary hoses for pressure sensors connection and cooling line of the compressor
- R134a refrigerant charge.

ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for outdoor installation, complete with:
- Main switch with door lock safety.
- Fuses for each compressor.
- Magnetothermic switches for fans or water pumps (if scheduled).
- Contactors for each load.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply 400/3/50.

CONTROL SYSTEM
- Microprocessor system with "Touch Screen" graphic display for control and monitor of operating and alarms status. The system includes:
  - Voltage free contact for remote general alarm,
  - Voltage free contact for external alarm. The inlet is associable with refrigerant gas leak detector (optional accessory),
  - Main components hour-meter,
  - Recording of the last 24 occurred alarms,
  - Non-volatile "Flash" memory for data storage,
  - Menu with protection password.

OPTIONAL ACCESSORIES

KELVIN Clim A280 SIZE	280 T1E VT3	340 T1 VT3	410 T2 VT4	490 T2 VT4	560 T2E VT5	680 T2 VT6	810 T2E VT7	740 T3 VT6	820 T3 VT7	900 T3 VT8	1200 T3E VT10
739 - Pumping group (1 pump)	-	-	●	●	●	●	-	●	-	-	-
769 - Pumping group (1+1stby)	-	-	●	●	●	●	-	●	-	-	-
740 - Pumping group (2 pumps)	-	-	-	-	-	-	●	-	●	●	●
770 - Pumping group (1+2stby)	-	-	-	-	-	-	●	-	●	●	●
756 - Pumping group LN (1 pump)	-	-	●	●	●	●	●	●	●	●	-
771 - Pumping group LN (1+1stby)	-	-	●	●	●	●	●	●	●	●	-
757 - Pumping group LN (2 pumps)	-	-	-	-	-	-	-	-	-	-	●
772 - Pumping group LN (1+2stby)	-	-	-	-	-	-	-	-	-	-	●
150 - LNO kit (noise reduction)	●	●	●	●	●	●	●	●	●	●	●
Active filters for containment of the harmonic distortion	●	●	●	●	●	●	●	●	●	●	●
172 - Rubber support (kit)	●	●	●	●	●	●	●	●	●	●	●
Condenser partialization system	●	●	●	●	●	●	●	●	●	●	●
79 - Electrical panel heating system	●	●	●	●	●	●	●	●	●	●	●
179 - Double refrigerant circuit	-	-	●	●	●	●	●	-	-	-	-
101 - EC fan	●	●	●	●	●	●	●	●	●	●	●
350 -Kit TK PRO corrosion resistant painting treatment	●	●	●	●	●	●	●	●	●	●	●
1003 - Analogic flowmeter	●	●	●	●	●	●	●	●	●	●	●
1005 - Power supply analyzer	●	●	●	●	●	●	●	●	●	●	●
1009 - Multimeter kit	●	●	●	●	●	●	●	●	●	●	●
Refrigerant gas leak detector	●	●	●	●	●	●	●	●	●	●	●
943 - Data Logger	●	●	●	●	●	●	●	●	●	●	●
923 - KELVIN -Com MBUS/JBUS Serial board	●	●	●	●	●	●	●	●	●	●	●
926 - LON Serial board	●	●	●	●	●	●	●	●	●	●	●
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	●	●	●	●	●	●	●	●	●	●	●
932 - BACnet MS/TP Serial board	●	●	●	●	●	●	●	●	●	●	●
942 - Serial card for GSM Modem	●	●	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●	●
KELVIN CLOUD PLATFORM	●	●	●	●	●	●	●	●	●	●	●

KELVIN Clim A280 SIZE	980 T4 VT8	1070 T4E VT9	1120 T4E VT10	1360 T4 VT11	1380 T4 VT12	1500 T4E VT12
739 - Pumping group (1 pump)	-	-	-	-	-	-
769 - Pumping group (1+1stby)	-	-	-	-	-	-
740 - Pumping group (2 pumps)	●	●	●	●	●	●
770 - Pumping group (1+2stby)	●	●	●	●	●	●
756 - Pumping group LN (1 pump)	●	●	-	-	-	-
771 - Pumping group LN (1+1stby)	●	●	-	-	-	-
757 - Pumping group LN (2 pumps)	-	-	●	●	●	●
772 - Pumping group LN (1+2stby)	-	-	●	●	●	●
150 - LNO kit (noise reduction)	●	●	●	●	●	●
Active filters for containment of the harmonic distortion	●	●	●	●	●	●
172 - Rubber support (kit)	●	●	●	●	●	●
Condenser partialization system	●	●	●	●	●	●
79 - Electrical panel heating system	●	●	●	●	●	●
179 - Double refrigerant circuit	●	-	●	-	●	●
101 - EC fan	●	●	●	●	●	●
350 -Kit TK PRO corrosion resistant painting treatment	●	●	●	●	●	●
1003 - Analogic flowmeter	●	●	●	●	●	●
1005 - Power supply analyzer	●	●	●	●	●	●
1009 - Multimeter kit	●	●	●	●	●	●
Refrigerant gas leak detector	●	●	●	●	●	●
943 - Data Logger	●	●	●	●	●	●
923 - KELVIN-Com MBUS/JBUS Serial board	●	●	●	●	●	●
926 - LON Serial board	●	●	●	●	●	●
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	●	●	●	●	●	●
932 - BACnet MS/TP Serial board	●	●	●	●	●	●
942 - Serial card for GSM Modem	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●
KELVIN CLOUD PLATFORM	●	●	●	●	●	●

● available accessory; - not available accessory

TECHNICAL DATA KELVIN Clim A280

	KELVIN Clim A280		280 T1E	340 T1	410 T2	490 T2	560 T2E	680 T2	810 T2E	740 T3
	SIZE		VT3	VT3	VT4	VT4	VT5	VT6	VT7	VT6
STANDARD	**Cooling capacity (1)**	**kW**	**280**	**340**	**410**	**490**	**560**	**680**	**810**	**740**
	Unit power input	kW	81,2	99,7	121,3	152,2	171,3	204,2	252,3	212,6
	Evaporator water flow rate	m³/h	48,2	58,5	70,5	84,3	96,3	117,0	139,0	127,0
	Evaporator pressure drop	kPa	25	24	34	25	31	22	31	25
	Compressors		centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal
	Quantity	n.	1	1	2	2	2	2	2	3
	Cooling capacity control	%	55...100%	60...100%	37...100%	33...100%	28...100%	30...100%	26...100%	25...100%
	Axial fans	n.	6	6	8	8	10	12	14	12
	Total air flow	m³/h	145500	145500	194000	194000	242500	291000	339500	291000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	143	129	135	157	164	229	237	229
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	50/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/400
	Max unit operating current (FLA)	A	166,3	245,1	316,3	316,3	324,5	490,1	498,3	474,4
	Unit starting current (LRA)	A	28,4	28,4	41,2	41,2	49,0	56,8	64,6	61,8
	EER (1)	kW/kW	3,45	3,41	3,38	3,22	3,27	3,33	3,21	3,48
	ESEER		4,95	5,38	5,10	5,32	5,39	5,29	5,51	5,88
	Sound power level [Lw] (2)	dB(A)	93,3	93,4	94,8	94,8	95,6	96,4	97,0	96,5
	Average sound pressure level [LPm] (3)	dB(A)	73,8	73,9	74,8	74,8	75,1	75,4	75,6	75,5
	Net weight	kg	2559	2626	3378	3658	4203	5056	5614	5241
	Hydraulic connections									
	Evaporator IN/OUT - OD (4)	Ø mm	114,3	114,3	168,3	168,3	168,3	168,3	168,3	168,3
OPT	Pumping group									
	2 poles motor - Power input	kW	–	5,5	5,5	5,5	11,0	11,0	11,0	–
	4 poles motor - Power input	kW	–	5,5	5,5	5,5	5,5	11,0	11,0	–
LNO KIT %100	**Cooling capacity (1)**	**kW**	**280**	**340**	**410**	**490**	**560**	**680**	**810**	**740**
	Unit power input	kW	81,2	99,7	121,3	152,2	171,3	204,2	252,3	212,6
	Total air flow	m³/h	145500	145500	194000	194000	242500	291000	339500	291000
	EER (1)	kW/kW	3,45	3,41	3,38	3,22	3,27	3,33	3,21	3,48
	Sound power level [Lw] (2)	dB(A)	92,2	92,3	93,7	93,7	94,5	95,3	95,9	95,4
	Average sound pressure level [LPm] (3)	dB(A)	72,7	72,8	73,7	73,7	74,0	74,3	74,5	74,4
LNO KIT %85	**Cooling capacity (1)**	**kW**	**268**	**324**	**380**	**465**	**532**	**650**	**765**	**740**
	Unit power input	kW	74,0	90,3	118,4	139,6	156,0	186,8	228,4	204,4
	Total air flow	m³/h	123675	123675	164900	164900	206125	247350	288575	247350
	EER (1)	kW/kW	3,62	3,59	3,21	3,33	3,41	3,48	3,35	3,62
	Sound power level [Lw] (2)	dB(A)	91,1	91,2	92,6	92,6	93,4	94,2	94,8	94,3
	Average sound pressure level [LPm] (3)	dB(A)	71,6	71,7	72,6	72,6	72,9	73,2	73,4	73,3
LNO KIT %70	**Cooling capacity (1)**	**kW**	**253**	**300**	**368**	**432**	**495**	**600**	**708**	**690**
	Unit power input	kW	66,6	80,9	110,5	125,2	140,2	166,2	203,4	184,5
	Total air flow	m³/h	101850	101850	135800	135800	169750	203700	237650	203700
	EER (1)	kW/kW	3,80	3,71	3,33	3,45	3,53	3,61	3,48	3,74
	Sound power level [Lw] (2)	dB(A)	89,4	89,5	90,9	90,9	91,7	92,5	93,1	92,6
	Average sound pressure level [LPm] (3)	dB(A)	69,9	70,0	70,9	70,9	71,2	71,5	71,7	71,6

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 $m^2°K/kW$.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [LPm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end, supplied as standard with flexible joint and adapter pipe.

TECHNICAL DATA KELVIN Clim A280

	KELVIN Clim A280 SIZE		820 T3 VT7	900 T3 VT8	1200 T3E VT10	980 T4 VT8	1070 T4E VT9	1120 T4E VT10	1360 T4 VT11	1380 T4 VT12	1500 T4E VT12
STANDARD	**Cooling capacity (1)**	**kW**	**820**	**900**	**1200**	**980**	**1070**	**1120**	**1360**	**1380**	**1500**
	Unit power input	kW	250,8	262,4	376,2	305,3	329,2	341,5	415,9	408,3	461,5
	Evaporator water flow rate	m³/h	141,0	155,0	206,0	169,0	184,0	193,0	234,0	237,0	258,0
	Evaporator pressure drop	kPa	32	37	38	26	31	34	37	38	44
	Compressors		centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal
	Quantity	n.	3	3	3	4	4	4	4	4	4
	Cooling capacity control	%	23...100%	22...100%	18...100%	16...100%	15...100%	14...100%	15...100%	15...100%	14...100%
	Axial fans	n.	14	16	20	16	18	20	22	24	24
	Total air flow	m³/h	339500	388000	485000	388000	436500	485000	533500	582000	582000
	Air circuits	n.	1	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	237	365	415	402	408	426	436	442	441
	Gas circuits	n.	1	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	50/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/400
	Max unit operating current (FLA)	A	482,6	727,0	743,4	632,5	640,7	648,9	972,1	980,3	980,3
	Unit starting current (LRA)	A	69,6	77,4	93,0	82,4	90,2	98,0	105,8	113,6	113,6
	EER (1)	kW/kW	3,27	3,43	3,19	3,21	3,25	3,28	3,27	3,38	3,25
	ESEER		5,17	5,62	5,65	5,41	5,32	5,39	5,29	5,56	5,58
	Sound power level [Lw] (2)	dB(A)	97,1	97,8	98,6	97,8	98,2	98,6	99,1	99,5	99,5
	Average sound pressure level [LPm] (3)	dB(A)	75,7	76,1	76,2	76,1	76,1	76,2	76,4	76,5	76,5
	Net weight	kg	5743	6772	8021	7065	7652	8154	8925	9427	9537
	Hydraulic connections										
	Evaporator IN/OUT - OD (4)	Ø mm	168,3	168,3	219,1	219,1	219,1	219,1	219,1	219,1	219,1
OPT	Pumping group										
	2 poles motor - Power input	kW	11,0	11,0	22,0	11,0	22,0	22,0	22,0	22,0	22,0
	4 poles motor - Power input	kW	11,0	11,0	15,0	11,0	11,0	15,0	15,0	15,0	15,0
LNO KIT %100	**Cooling capacity (1)**	**kW**	**820**	**900**	**1200**	**980**	**1070**	**1120**	**1360**	**1380**	**1500**
	Unit power input	kW	250,8	262,4	376,2	305,3	329,2	341,5	415,9	408,3	461,5
	Total air flow	m³/h	339500	388000	485000	388000	436500	485000	533500	582000	582000
	EER (1)	kW/kW	3,27	3,43	3,19	3,21	3,25	3,28	3,27	3,38	3,25
	Sound power level [Lw] (2)	dB(A)	96,0	96,7	97,5	96,7	97,1	97,5	98,0	98,4	98,4
	Average sound pressure level [LPm] (3)	dB(A)	74,6	75,0	75,1	75,0	75,0	75,1	75,3	75,4	75,4
LNO KIT %85	**Cooling capacity (1)**	**kW**	**780**	**848**	**1133**	**929**	**1010**	**1062**	**1295**	**1311**	**1404**
	Unit power input	kW	229,4	238,9	340,2	279,8	299,7	311,4	377,6	370,3	419,1
	Total air flow	m³/h	288575	329800	412250	329800	371025	412250	453475	494700	494700
	EER (1)	kW/kW	3,40	3,55	3,33	3,32	3,37	3,41	3,43	3,54	3,35
	Sound power level [Lw] (2)	dB(A)	94,9	95,6	96,4	95,6	96,0	96,4	96,9	97,3	97,3
	Average sound pressure level [LPm] (3)	dB(A)	73,5	73,9	74,0	73,9	73,9	74,0	74,2	74,3	74,3
LNO KIT %70	**Cooling capacity (1)**	**kW**	**727**	**766**	**1041**	**863**	**932**	**987**	**1196**	**1214**	**1279**
	Unit power input	kW	206,5	213,4	301,7	250,9	267,0	278,8	335,0	329,9	370,7
	Total air flow	m³/h	237650	271600	339500	271600	305550	339500	373450	407400	407400
	EER (1)	kW/kW	3,52	3,59	3,45	3,44	3,49	3,54	3,57	3,68	3,45
	Sound power level [Lw] (2)	dB(A)	93,2	93,9	94,7	93,9	94,3	94,7	95,2	95,6	95,6
	Average sound pressure level [LPm] (3)	dB(A)	71,8	72,2	72,3	72,2	72,2	72,3	72,5	72,6	72,6

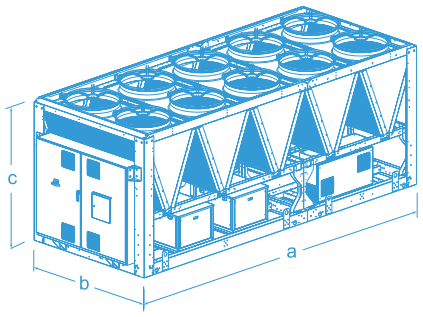
1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²°K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [LPm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end, supplied as standard with flexible joint and adapter pipe.

DIMENSIONS (mm)

KELVIN Clim A280

SIZE VT

	a	b	c
VT3	3530	2260	2304
VT4	4650	2260	2304
VT5	5770	2260	2304
VT6	6890	2260	2304
VT7	8010	2260	2304
VT8	9130	2260	2304
VT9	10250	2260	2304
VT10	11370	2260	2304
VT11	12490	2260	2304
VT12	13610	2260	2304




KELVIN
Air Conditioning System