

[illegible]

		Позиция	Наименование и техническая характеристика	Тип, марка, обозначение документа, опросного листа	Код оборудования, изделия, материала	Завод-изготовитель	Единица измерения	Количество	Масса единицы	Примечание											
Взаим. инв. №			в комплекте с ответными фланцами, прокладками, крепежом																		
		8	Компенсатор антивибрационный фланцевый Ру1.0, Ду125	FC10 PN10 DN125		Фирма АДЛ	шт.	4		311, 312											
			в комплекте с ответными фланцами, прокладками, крепежом																		
		9	Компенсатор антивибрационный фланцевый Ру1.0, Ду65	FC10 PN10 DN65		Фирма АДЛ	шт.	8		342, 343											
			в комплекте с ответными фланцами, прокладками, крепежом																		
		10	Балансировочный клапан "Гранбаланс" КБЧ, серия 10	Гранбаланс Ду200		Фирма АДЛ	шт.	2		313											
			Ру1.6 (16), Ду200, Kvs=710	FN01A136776																	
			в комплекте с ниппелями для подключения дифф. Манометра																		
			в комплекте с ответными фланцами, прокладками, крепежом																		
		11	Балансировочный клапан "Гранбаланс" КБЧ, серия 10	Гранбаланс Ду150		Фирма АДЛ	шт.	2		344											
			Ру1.6 (16), Ду150, Kvs=390	FN01A136775																	
			в комплекте с ниппелями для подключения дифф. Манометра																		
			в комплекте с ответными фланцами, прокладками, крепежом																		
		12	Кран шаровой неполнопроходный BV16 из нержавеющей стали	BV16-04-015-63-P/P		Фирма АДЛ	шт.	24		316											
			PN63, DN15, G1/2" Вр-Вр																		
		13	Кран шаровой неполнопроходный BV16 из нержавеющей стали	BV16-04-025-63-P/P		Фирма АДЛ	шт.	28		315											
			PN63, DN25, G1" Вр-Вр																		
		14	Автоматический воздухоотводчик Flamco Flexvent, прямой	DN15		Фирма АДЛ	шт.	10		317											
			DN15, PN10, поплавковый, материал латунь, G1/2", Нр	HW02A520936																	
			Приборы КИП																		
		PI	Манометр общетехнический. Тип ТМ, серия 20	TM-520P.20(0-1,0 МПа)M20x1.5.1		РОСМА	шт.	16													
			Трехходовой кран Watts (внутренняя M20x1.5 — наружная M20x1.5)	RM15- M20x1.5		РОСМА	шт.	16													
		Подп. и дата			Отвод-охладитель M20x1.5 наружная / M20x1.5 внутренняя	OC100-OX28, M20x1.5		РОСМА	шт.	16											
					Бобышка из углеродистой стали под манометр ТМ, приварная	БП-ТМ-30- M20x1.5		РОСМА	шт.	16											
					Отвод стальной DN15, 90 градусов	ГОСТ 3262-75			шт.	4											
		Инв. № подл.																			
				TI1	Термометр биметаллический общетехнический. Тип БТ, серия 211	BT-32.211(0-60C)M20x1.5.150.2.5		РОСМА	шт.	6											
	Радиальное присоединение на трубопровод в комплекте																				
			с латунной защитной гильзой																		
			Бобышка из углеродистой стали под термометр БТ, приварная	БП-БТ-30-M20x1.5		РОСМА	шт.	6													
											06-HJT II-000-TX.9.C						Лист				
																	2				
											Изм.	Кол.уч.	Лист	№ док.	Подпись	Дата					

Позиция		Наименование и техническая характеристика	Тип, марка, обозначение документа, опросного листа	Код оборудования, изделия, материала	Завод-изготовитель	Единица измерения	Количество	Масса единицы	Примечание
		Прокладка медная для установки термометра	M20x1.5		РОСМА	шт.	6		
T12		Термометр биметаллический общетехнический. Тип БТ, серия 211	БТ-32.211(0-60C)M20x1.5.100.2.5		РОСМА	шт.	4		
		Радиальное присоединение на трубопровод в комплекте с латунной защитной гильзой							
		Бобышка из углеродистой стали под термометр БТ, приварная	БП-БТ-30-M20x1.5		РОСМА	шт.	4		
		Прокладка медная для установки термометра	M20x1.5		РОСМА	шт.	4		
T13		Термометр биметаллический общетехнический. Тип БТ, серия 211	БТ-31.211(0-60C)M20x1.5.100.2.5		РОСМА	шт.	2		
		Осевое присоединение на трубопровод в комплекте с латунной защитной гильзой							
		Бобышка из углеродистой стали под термометр БТ, приварная	БП-БТ-30-M20x1.5		РОСМА	шт.	2		
		Прокладка медная для установки термометра	M20x1.5		РОСМА	шт.	2		
		Трубы, отводы, переходы							
		Трубы по стальные прямошовные, Ст20	ГОСТ 10704-91, Ст20						
		Tr273x7				м.п.	115		
		Tr219x6				м.п.	229		
		Tr159x4.5				м.п.	20		
		Tr133x4				м.п.	10		
		Tr89x4				м.п.	5		
		Tr76x3.5				м.п.	6		
		Tr32x3				м.п.	4		
		Тройники стальные, Ст20	ГОСТ 17376-2001						
		Тройник редукционный 273x7-273x7-219x6, Ст20				шт.	4		
		Тройник редукционный 219x6-219x6-159x4.5, Ст20				шт.	4		
		Тройник равнопроходный 219x6, Ст20				шт.	4		
		Тройник равнопроходный 159x4.5, Ст20				шт.	4		
		Отводы крутоизогнутые, Ст20	ГОСТ 17375-2001						

Взаим. инв. №

Подл. и дата

Инв. № подл.

Изм.

Кол.уч.

Лист

№ док.

Подпись

Дата

06-HJT II-000-TX.9.C

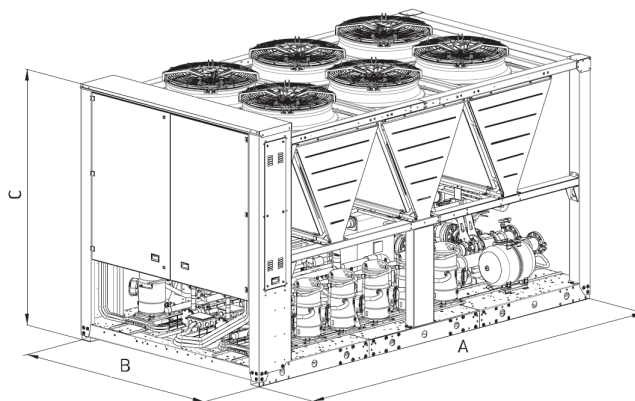
Лист
3

		Позиция	Наименование и техническая характеристика	Тип, марка, обозначение документа, опросного листа	Код оборудования, изделия, материала	Завод-изготовитель	Единица измерения	Количество	Масса единицы	Примечание																																	
			Отвод 90гр, 273х7, Ст20				шт.	10																																			
			Отвод 90гр, 219х6, Ст20				шт.	40																																			
			Отвод 90гр, 159х4.5, Ст20				шт.	10																																			
			Отвод 90гр, 133х4, Ст20				шт.	7																																			
			Переходы стальные Ст20	ГОСТ 17378-2001																																							
			Переход Э 219х6-133х4, Ст20				шт.	4																																			
			Переход Э 273х7-219х6, Ст20				шт.	2																																			
			Заглушка эллиптическая, Ст20	ГОСТ 17379-2001																																							
			Заглушка 273х7, Ст20				шт.	2																																			
			Заглушка 219х6, Ст20				шт.	2																																			
			Заглушка 159х4.5, Ст20				шт.	4																																			
			Резьбы стальные																																								
			Ниппель приварной G1/2"	ГОСТ 3262-75			шт.	24																																			
			Ниппель приварной G1"	ГОСТ 3262-75			шт.	28																																			
			Тепловая изоляция																																								
			Изоляция рулонная, шириной 1м, толщина 32 мм	тип ST		K-Flex	м2	47																																			
			Изоляция рулонная, шириной 1м, толщина 19 мм	тип ST		K-Flex	м2	319																																			
			Самоклеящаяся лента Н-50				п.м.	50																																			
			Сталь тонколистовая оцинкованная, S=0.8мм	ГОСТ 19904-74			м2	47																																			
Взаим. инв. №																																											
			Опоры трубопроводов																																								
Подп. и дата			Хомут МР-MXI 267/274 M16	372240		HILTI	шт.	29																																			
			Хомут МР-MXI 219 M16	372243		HILTI	шт.	57																																			
			Хомут МР-PI 149-161 M8/M10	2073479		HILTI	шт.	5																																			
			Хомут МР-PI 129-134 M8/M10	2073477		HILTI	шт.	3																																			
Инв. № подл.			Материалы																																								
<table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="4">06-HJT II-000-TX.9.C</td><td>Лист</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="4"></td><td>4</td></tr><tr><td>Изм.</td><td>Кол.уч.</td><td>Лист</td><td>№ док.</td><td>Подпись</td><td>Дата</td><td colspan="4"></td><td></td></tr></table>																	06-HJT II-000-TX.9.C				Лист											4	Изм.	Кол.уч.	Лист	№ док.	Подпись	Дата					
						06-HJT II-000-TX.9.C				Лист																																	
										4																																	
Изм.	Кол.уч.	Лист	№ док.	Подпись	Дата																																						

[illegible]



Проект: LBA 740

LBA 740-SC-RA

Модель	LBA 740-SC-RA
Охлаждение	
Холодопроизводительность	702 кВт
Температура окружающего воздуха	32 C
Хладагент	R410A
Масса хладагента	78 кг
Коэффициент энергоэффективности EER	3.3
Сезонный коэффициент энергоэффективности SEER	4.31
Коэффициент $\eta_{s.c}$	167.26
Компрессоры	
Общее количество	12 шт.
Количество холодильных контуров	2 шт.
Ступени производительности	0-17-25-33-42-50-58-67-75-83-90-100 %
Водяной контур	
Гликоль	Этиленгликоль
Содержание гликоля в растворе	45 %
Температура воды (раствора) на входе	13 C
Температура воды (раствора) на выходе	7 C
Общий расход воды (раствора)	33 л/с
Сопротивление испарителя	118 кПа
Тип насоса	Без насоса
Номинальная мощность насоса	- кВт
Полный напор насоса	- кПа
Располагаемый напор чиллера со встроенным насосом	- кПа
Объем расширительного бака при наличии встроенных насосов	50 л
Минимальный объем системы для работы без аккумулирующего бака	0.69 м3

Вентиляторы конденсатора

Количество вентиляторов	8 шт
Расход воздуха	45.78 м3/с

Электрические характеристики

Электропитание	400 / 50 / 3+РЕ В/Гц/фаз
Общая потребляемая мощность	214 кВт
Потребляемый ток chillera	385.99 А
Максимальный пусковой ток	680 А
Максимальный рабочий ток агрегата	503 А
Максимальный рабочий ток агрегата со встроенным насосом	- А

Акустические характеристики

Уровень звукового давления на расстоянии 1м от агрегата	86 дБ(А)
---	----------

Габаритные размеры

Длина (А)	5350 мм
Ширина (В)	2255 мм
Высота (С)	2450 мм

Патрубки гидравлического контура

Диаметр	125 ДУ
Соединение фланцевое	5" дюйм

Масса

Транспортировочная масса	4490 кг
--------------------------	---------

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

TECHNICAL DATA

DRY COOLER (5) JGH1590.C1/04 Q3EA(EC)S

Number of circuits **60**

PERFORMANCE (SINGLE UNIT)

Real Capacity **350,00 kW**

TUBE SIDE

Fluid (10) **ETHYLENE GLYCOL 45%**

Inlet Fluid Temp.	15,0 °C	Outlet Fluid Temp.	10,0 °C
Fluid flow rate	70,69 m³/h	Fluid Velocity	1,6 m/s
Massic Fluid Flow	75160 kg/h	Pressure drops	96 kPa

AIR SIDE

Inlet Air Temp [MAX]	5,0 °C	Outlet Air Temp.	11,8 °C
Inlet relative hum.	50,0 %	Outlet relative hum.	31,5 %

Altitude	0 m
ESP	0,0 Pa
Flow Direction	N/A

Air Flow	145390 m³/h	Air Velocity	2,29 m/s
----------	--------------------	--------------	-----------------

FANS TECHNICAL DATA

ERP	Yes	UL	Yes
Fan Number	5 N°	Fan Diameter	900 mm
Phases-Voltage-Frequency	3-400-50 N°/Volt/Hz	Fan type	34050H91ECB2C
Rpm [Nominal data]	1100 Rpm	Link	EC
Power x 1 [Nominal data]	3200 Watt	Current x 1 [Nominal data] (1)	5,00 A
Rpm [Working point]	1099 Rpm	Rpm rate [working point / nominal]	100 %
Power x 1 [Working point]	2435 Watt	Current x 1 [Working point] (1)	3,71 A
Total Power x n° [Working point]/ [Nominal data]	12175/16000 Watt	Total Current x n° [Working point]/ [Nominal data]	18,55/25,00 A
Efficiency Energy Class:nominal calculation Water 40-35°C/Air 25°		Efficiency Energy Class:calculation on the working point	E

FANS NOISE DATA (7)

Sound Pressure Level (4) [Working point]	62 dB(A)	Sound Power Level (4) [Working point]	95 dB(A)
At the distance of	10 m	in accordance with EN 13487/EN ISO 3744 (7)	

HEAT EXCHANGER DATA (3)

Fin Material (2)	Aluminium Turbo	Tubes Material	Copper
Fin Spacing	2 mm	Internal Volume	354,0 dm³
Fin Thickness	0,1 mm	Casing material	Galvanized steel painted
Surface	2292,0 m²	Number of passes	4
Inlet Connection	2x3"		
Outlet Connection	2x3"	Connections	Same side
Max Pressure Design	10 bar	Fluid Category	Group 2

DIMENSIONS AND WEIGHT (3)

Length	7475 mm	Weight (3)	1917 kg
Width	1170 mm	Number of fixing point	12
Height	1804 mm	LDM (Approximate data)	3,644 m

SOUND POWER LEVEL

	Tot.	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Δ [dB(A)]	82	54	66	76	76	79	75	73	63

Data refers to one fan. IMPORTANT: the tolerance in any single octave band is +/-5dB. The tolerance in the overall dB(A) level is +/- 2dB.

In case of AC fans working point is defined by fan supplier in nominal curve (delta or star). In case of EC fans is simulated on working point of unit.

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

DRY COOLER JGH1590.C1/04 Q3EA(EC)S

ACCESSORIES

CODE	DESCRIPTION	S/NS	PRICE € (EUR)	NET € (EUR)
PAT	Aluminium turbo finned pack			
PAS	Special fin spacing			
VENT_EC_S2	Fan EC 02			
CBLO3E	Wiring with electrical panel + ECM 'Q3E'			
AMM_JUMB	Shock ansorbers Jumbo 'A'			

WARNING

W002: Non-standard fin spacing. Please ask Thermokey for delivery time

An inverter different from the one proposed by Thermokey must have omni polar sinusoidal filters, between phase and phase and phase and ground.

(*) Attention: Please check with Thermokey the conformity of minimal operating temperature of the selected equipment (fans, cables, ...)

For any support please contact our Sales Department

Gross Unit Price	€ (EUR)
Accessories Price	€ (EUR)
Total Gross Price	€ (EUR)
Discount	%
Net price of the unit	€ (EUR)
Net price of the accessories	€ (EUR)
Total Net Price	€ (EUR)
Number of units	
Total Net Price	€ (EUR)

Offer validity **60 Days**
Lead time (9) **to be defined**

Thermokey sales conditions are available on the website
www.thermokey.com

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

DRY COOLER JGH1590.C1/04 Q3EA(EC)S

- (1) The voltage is referred to the supplier's nominal data: fans consumption may vary with the air temperature and voltage system.
- (2) The unit may not be suitable for very corrosive atmosphere. For special applications contact Thermokey. If a special fin material is selected(copper,coating),all the other materials of the unit remain standard(for detailed information please check the Technical description of the unit).
- (3) Dimensions and weight are not valid for all possible options! The overall dimensions on the data sheet relate to the units without controls /electrical panels (For more detailed information please refer to the Electrical Box Manual). In the case of horizontal air flow units the standard position of the connections is on the left looking at the finned pack.
- (4) Any noise caused by control systems, adiabatic system and so on, is not considered in the fan noise declaration. Actual values can also be subject to changes depending on the conditions of the installation.
- (5) The manual consists of 4 parts; IG = General instructions for safe use, IM = Instructions for handling and unpacking, TC = Instructions and technical specifications , IS = Specific use and maintenance instructions. If not expressly requested at the pre-Purchase Order stage, the TC and IS instructions must be downloaded by the user from www.thermokey.com as they will not be provided in paper format.
The installer is required to follow the instructions of the above manuals and of all the main electrical components' manuals (e.g. fans, pumps, regulators).
- (6) The unit is equipped with fans that follow the efficiency requirements of ERP directive 2009/125/EC
- (7) In accordance with EN 13487 the declared sound pressure level for this unit has been calculated in free-field conditions over a reflecting plane with a parallelepiped surface. With reference to ISO 3744, when the difference of measurement of the unit in on and off stage is ≤ 6 dB (A) , the the sound measurement does not reach the accuracy as required by the Directive. Background noise values lower than 30dB (A) are typical of indoor and silent environments. The declaration of the sound pressure of the unit, stated on the Thermokey data sheets, considers the background noise negligible.
- (8) S x x x x : id serial number of the combination of the standand options available on Archimede (listed and described in the ACCESSORIES section) and special on request. The code appears on the order confirmation (as a part of the model code description) and on the data plate of the unit . Note : For each range the available options are listed in the catalogue on the Table Options and Accessories . The register of combinations of options associated with the code S x x x x is available on request .
- (9) Delivery time for standard unit is considered ex works. For any special terms and conditions (ex. Large quantities,special items..) please contact Sales dept.
- (10) The standard unit is not self-draining: the choice of fluid (water / glycol) is closely related to the freezing point of the same and to the actual operating period of the unit. For a self-draining construction, please contact Thermokey for a special offer.
- (11) The air throw declared in the data sheets is the distance from the fan when the air speed corresponds to 0.25m/s.The air throw ir referred only to the default air flow of the fan : for cubic , light cubic and commercial models with delta or single-phase operation, for dual flow models with connection defined by the series
- (14) For fan units with microchannel cores, it is mandatory to respect the procedures available on ThermoKey website (Indications for the use of Tk micro cores)

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

(15) Fluid Group related to Directive 2014/68 / CE.

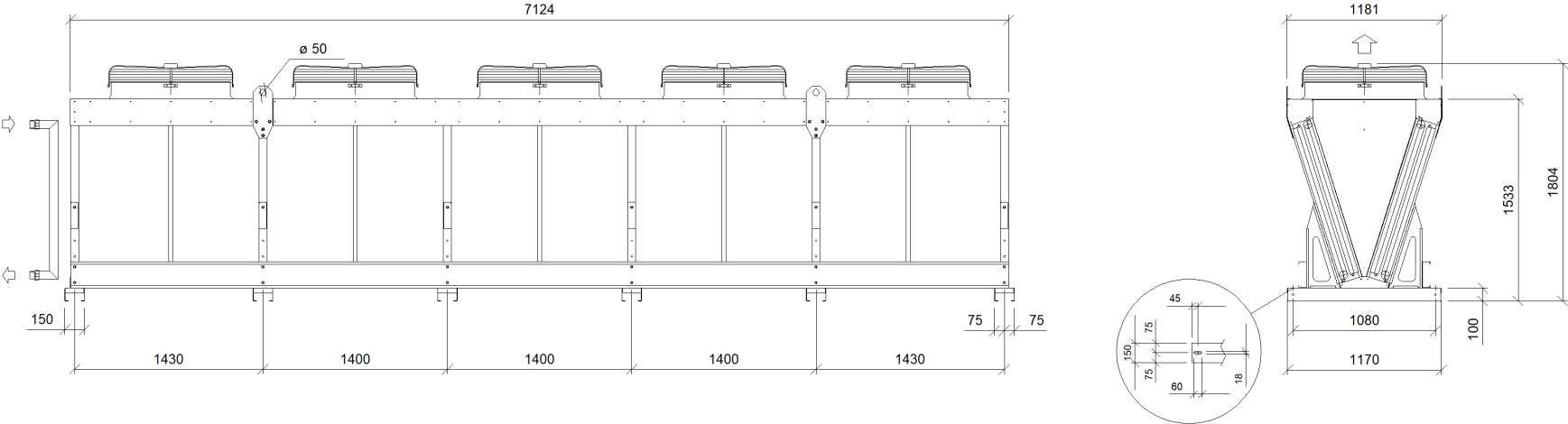
(16) The data on the fan label do not represent the worst absorption conditions.

(17) The declared performances are suitable for HVAC applications. For other critical applications (e.g. industrial, power) please contact Thermokey.

(18) Thermokey reserves the right to change the technical data, drawings and prices of the Archimede software at any time and without prior notice. Please refer to the software release and EULA of the software in Section "?".

(19) The Archimede software is based on Refprop's latest libraries of oils, refrigerants and blends. Data updates may result in different performances of the units than those of previous releases of Archimede.

Model: JGH1590.C1/04 Q3EA(EC)S



Attention: Drawing and dimensions not valid for all accessory options!

The overall dimensions on the datasheet refer only to the unit without regulation(For more detailed information refer to Electrical box Manual). In the units with horizontal air flow the standard position of the connections is left looking at the finned pack (right looking at the fans).

CONNECTIONS			Company	Korf-Megaprestige	Date	24/10/2018
Inlet Connections	2x3"		Attention of	Боцман Анастасия	Sw Version	180801
Outlet Connections	2x3"		City		Offer	18002512-SQ - Rev. 00
			Telephone		Reference	350kW
			Fax		Position	002

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

DRY COOLER JGH1590.C1/04 Q3EA(EC)S

LIQUID COOLERS:

Quality standard ISO 9001

Applied Directives:

2014/68/EU Pressure Equipment Directive (PED)

2014/35/EU Low Voltage Directive (LVD)

2014/30/EU Electromagnetic Compatibility Directive (EMC)

2006/42/EC Machinery Directive (MD)

2011/65/UE Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipments (RoHS)

FINNED PACK HEAT EXCHANGER

Optimised geometries for use with mixtures of water or water-glycol and pure, made with tube and fin materials designed to achieve the best performances. The coil is tested at a pressure of 17 bar. For test purposes all circuits are supplied with vent valves and drain valves. Coverplates and side plates made with customised material and painting depending on heat exchanger application. Fin spacing from 1.8 to 4 mm based on materials/applications (2.1 mm by default). Upon request, the whole finned pack can undergo different types of treatments/coatings depending on the application.

Triangular geometry (42 x 36.4 mm) with backflow air-refrigerant circuits in order to optimise the thermodynamic capacity. Heat exchange tubes in smooth copper (Ø 16 mm - 5/8").

Aluminium louvered fins

CASING

The casing is made of hot-dip galvanised steel elements painted with a RAL 7035 powder coating to ensure excellent resistance to corrosion in the main applications. The units have been designed to be highly modular. The internal construction allows great air distribution using any type of controller thanks to inner partition walls which make each single fan air flow independent. The bends are protected by suitable panels. Components painting is done after any production operation so that protection against corrosion is guaranteed on all parts. All unpainted exposed components are made with materials having a level of resistance to corrosion either equal or superior to that of the painted casing. The casing is in compliance with corrosivity category C4-L (pursuant to standard UNI EN ISO 12944). Upon request, the casing can be manufactured following special painting, RAL and stainless steel specifications depending on the required application.

PACKAGING

Protective film packaging. Upon request, the units can be provided with dedicated packaging for special shipments (e.g. container with dedicated slides, barrier bags, etc.).

FANS

All fan units manufactured by Thermokey are fit with axial type fans featuring a motor with an external rotor directly built-in the axial propeller to create a compact, maintenance-free fan. Optimised efficiency and minimised noise level thanks to the fan blades aerodynamic design. Protective grids in compliance with EN 294. All the fans have to meet the requirements of balance quality grade Q 6.3 as prescribed in DIN ISO 1940. Motor protection class IP54. Windings in thermodynamic capacity class F, pursuant to DIN EN 60 034-1. The noise levels in use are those declared by the fan manufacturer according to DIN 24166, precision grade 3, measured according to DIN 45635. The sound pressure level declared for this unit has been calculated in free field conditions on a parallelepiped reflecting reference surface in compliance with standard EN 13487. Upon request, fans with special features can be supplied (voltage, frequency, corrosion category, etc.).

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

High efficiency and long durability EC fans (brushless) supplied with integrated control electronics: ideal for ongoing control of the rotation speed with a 0 to 10V signal or, alternatively, MODBUS RS485. They are the ideal design solution for high aerodynamic efficiencies, the modulation of the number of speeds, self electric protection, monitoring/modification of the operating parameters of each individual fan. Three-phase motor(s) 380-480V-3ph+PE-50/60 Hz. Temperature range between -35.0 °C and 60.0 °C (average value depending on type of fan and fan power supply). Alarms are available in the terminal board to warn about motor faults.

HYDRAULIC CONNECTIONS

Copper headers. Male GAS type threaded bevel connections

ACCESSORIES

A – SHOCK ABSORBERS

Shock absorbing elastic bases for industrial machineries having a galvanised steel body and NBR elastomer element.

Q3E - THREE-PHASE ELECTRICAL PANEL FOR 400V-3-50HZ EC FANS

Company	Korf-Megaprestige	Date	24/10/2018
Attention of	Боцман Анастасия	Sw Version	180801
City		Offer	18002512-SQ - Rev. 00
Telephone		Reference	350kW
Fax		Position	002

Short description: electrical panel for EC fans with paint coated metal casing, controller mounted inside the box, protected by automatic switches (circuit breakers) connected to groups of fans, fan regulation control MODBUS RS485, internal anti condensate heating element. Description: metal box painted with RAL7035, 120 micron thick, suitable for outdoors installation. Protection class IP65. Electrical cables suitable for outdoors installation (connection of power and signals). Working temperatures: -40°C/40°C. Power supply: 3~ 400V / 50Hz +PE. Main switch. Protected by automatic switches (circuit breakers) connected to groups of fans. Controller mounted inside the box. Fan speed regulation controlled by MODBUS. Free contact for unit powered indicator. Free general fan alarm contact. Warning light to signal system is powered. General alarm warning light. Quick power connectors for fans directly on panel (4-pole connectors made of plastic, protection class IP68, temperature -50°C/+110°C). Quick signal connector for fans directly on panel (6-pole connector made of plastic, protection class IP68, temperature -50°C/+110°C). Execution in compliance with CE regulations.. Panel mounted and wired. Internal heating element suitably sized for ambient temperatures up to -40°C.

CONTROLLER: Em - EC-MANAGER: controller Em is a multifunction and multiple-input unit for the regulation of speed of three-phase electronically commutated motors installed on axial fans, which is designed to regulate different EC motors, in a simultaneous and coordinated way, using programmable input signals. Power supply: 20-24VDC/AC $\pm 10\%$ -230-460Vac $\pm 20\%$ - 50 / 60Hz. Working temperatures: -40°C÷50°C Input from external signal or transducer: 0-20mA, 4-20mA, 0-5V, 0-10V. 2 MODBUS RS485 connections (COM 0 on PC side & COM 1 on fan side). Possibility to connect temperature probes (default) or pressure probes. Min. and Max. fan speed setting. Auxiliary contacts - available contacts: S1 - direct mode (by default with NO contact) - reverse (with NC contact); SP - selection of setpoints 1 or 2 (SP1 by default with NO contact; SP2 with NC contact); S5 - night speed limitation (by default OFF with NO contact; ON with NC contact); S2 - controller ON-OFF (by default ON with NO contact; OFF with NC contact); S6: max. spray speed enable; TK - contact for connection of the thermal motor protection (by default FANS ON with NC contact; FANS OFF with NO contact). 3 programmable relays: RL1 - general controller alarm; RL2 - fan alarm; RL3 - relay for heat exchanger cleaning start. 2 programmable analog outputs (for fan regulation or spray activation). Display showing the main parameters. LED indicator of controller status. Auxiliary power supply outputs: 5.0 Volt (Vrr) stable; 10.0 Volt (Vrr) stable; 20 Volt $\pm 10\%$. Controller mounted, wired and programmed according to the calculation board of the fan unit. NTC temperature probe(s) (10kOhm) fitted with silicone cable and stainless steel terminal. Storage temperature -20 °C ÷ 70 °C. Pressure transducer(s) 4-20mA fitted with silicone cable (2 wires), 7/16" 20UNF (8-28V) -25 °C ÷ 80° C (0-30bar (0-50bar upon request)). Advanced functions: Emergency fan speed - fan rotation speed in the case of a control system fault; Overspeed - possibility to increase the speed setpoint above the max. fan speed value (by-pass MAX RPM limit); Speed-off - possibility to reduce the speed setpoint below the min. fan speed value (by-pass MIN RPM limit); Low capacity - is used to switch off groups of fans in the case of low temperatures, high temperature variations between day and night; Anti-lock - is used to start the fans if they are supposed not to operate for a long time; Washing - is used to program a washing cycle of the heat exchanger (start, frequency, duration), including reverse fan rotation and activation of the RL3 relay for washing system start-up; Cleaning - is used to program a washing cycle of the heat exchanger (start, frequency, duration, rotation speed), including reverse fan rotation; Separate regulation of 2 fan groups - possibility to manage two different rows of fans having different setup/regulation parameters; reverse fan rotation - possibility to operate the fans in reverse rotation (manually enabled on the display).