

### DANE TECHNICZNE

CHŁODNICA CIECZY (5) WH1390.BT5/02 V W3EEpAF(EC)

Number of circuits **54**

#### PERFORMANCE (SINGLE UNIT)

Rzeczywista wydajn. **200,01 kW**

#### TUBE SIDE

Czynnik (10) **ETHYLENE GLYCOL 35%**

Temp. wej. czynnika	<b>15,0 °C</b>	Temp. wyj. czynnika	<b>10,0 °C</b>
Przepływ czynnika	<b>38,16 m³/h</b>	Fluid Velocity	<b>1,7 m/s</b>
Massic Fluid Flow	<b>40021 kg/h</b>	Opory	<b>56 kPa</b>

#### AIR SIDE

Inlet Air Temp [MAX]	<b>2,0 °C</b>	Temp. wyj. powietrza	<b>8,7 °C</b>
Wilg. wzgl. na wlocie	<b>50,0 %</b>	Wilg. wzgl. na wylocie	<b>31,3 %</b>
		Wysokość n.p.m.	<b>0 m</b>
		ESP	<b>0,0 Pa</b>
		Flow Direction	<b>Vertical</b>
Przepl. pow.	<b>83542 m³/h</b>	Air Velocity	<b>2,92 m/s</b>

#### DANE TECHNICZNE WENTYLATORÓW

ERP	<b>Yes</b>	UL	<b>Yes</b>
Ilość went.	<b>3 N°</b>	Fan Diameter	<b>900 mm</b>
Phases-Voltage-Frequency	<b>3-400-50 N°/Volt/Hz</b>	Fan type	<b>34050H91ECB2C</b>
obr./min. [Nominal data]	<b>1100 Rpm</b>	Połączenie	<b>EC</b>
Moc x1 [Nominal data]	<b>3200 Watt</b>	Prąd x1 [Nominal data] (1)	<b>5,00 A</b>
obr./min. [Working point]	<b>1045 Rpm</b>	Rpm rate [working point / nominal]	<b>95 %</b>
Moc x1 [Working point]	<b>2088 Watt</b>	Prąd x1 [Working point] (1)	<b>3,20 A</b>
Total Power x n° [Working point]/ [Nominal data]	<b>6264/9600 Watt</b>	Total Current x n° [Working point]/ [Nominal data]	<b>9,60/15,00 A</b>
Klasa wydajności: podana dla parametrów SC2 Woda 40-35 °C/oto		Klasa wydajności: podana dla punktu pracy	

#### POZIOM GŁOŚNOŚCI URZĄDZENIA (7)

Poziom ciśn. akust. (4) [Working point]	<b>58 dB(A)</b>	Poziom mocy akust. (4) [Working point]	<b>90 dB(A)</b>
W odległości	<b>10 m</b>	zgodnie z EN 13487/EN ISO 3744 (7)	

#### HEAT EXCHANGER DATA (3)

Materiał lamel (2)	<b>Aluminium Turbo</b>	Tubes Material	<b>Copper</b>
Podziałka lamel	<b>2,1 mm</b>	Pojemność wewn.	<b>83,0 dm³</b>
Grubość lamel	<b>0,1 mm</b>	Casing material	<b>Galvanized steel painted</b>
Powierzchnia	<b>780,0 m²</b>	Liczba sekcji	<b>2</b>
Wejście	<b>3"</b>		
Wyjście	<b>3"</b>	Przyłącza	<b>Same side</b>
Max Pressure Design	<b>10 bar</b>	Fluid Category	<b>Group 2</b>

#### WYMIARY AND WEIGHT (3)

Długość	<b>5780 mm</b>	Waga (3)	<b>730 kg</b>
Szerokość	<b>1632 mm</b>	Number of fixing point	<b>8</b>
Wysokość	<b>1565 mm</b>	LDM (Approximate data)	<b>1,927 m</b>

#### POZIOM MOCY AKUST.

	Tot.	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Δ [dB(A)]	<b>80</b>	<b>60</b>	<b>69</b>	<b>73</b>	<b>74</b>	<b>76</b>	<b>73</b>	<b>71</b>	<b>62</b>

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.

**CHŁODNICA CIECZY WH1390.BT5/02 V W3EEpAF(EC)****AKCESORIA**

CODE	DESCRIPTION	S/NS
IMB	Opakowanie	
VENT_EC_S2	Wentylator EC 02	
FSON	Przył. kołnierzowe regulowane 'F'	
AMM_TAV	Shock absorbers Table 'A'	
CBLW3E	Okablowanie 'W3E'	
RGEP	Regulator Ec Plus 'Ep'	

**OSTRZEŻENIE**

W przypadku stosowania regulatora innego niż oferowany przez Thermokey, musi on być wyposażony w filtr sinusoidalny (omnipolarny) faza-faza / faza/ziemia. Zastosowanie nieodpowiedniego regulatora grozi uszkodzeniem wentylatorów i utratą gwarancji

For any support please contact our sales department

Offer validity

**60 Days**

Dostawa (9)

**to be defined**

Thermokey sales conditions are available on the website  
[www.thermokey.com](http://www.thermokey.com)

**CHŁODNICA CIECZY WH1390.BT5/02 V W3EEpAF(EC)**

(1) Pobór prądu podany w odniesieniu do danych nominalnych otrzymanych od dostawcy: rzeczywisty pobór prądu wentylatorów może się różnić w miarę zmian temperatury otoczenia oraz wahań napięcia zasilającego.

(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](http://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) Urządzenie jest dostarczane z wentylatorami spełniającymi wymagania dyrektywy ERP 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  $\leq 6$  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 standard 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 is 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)

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

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

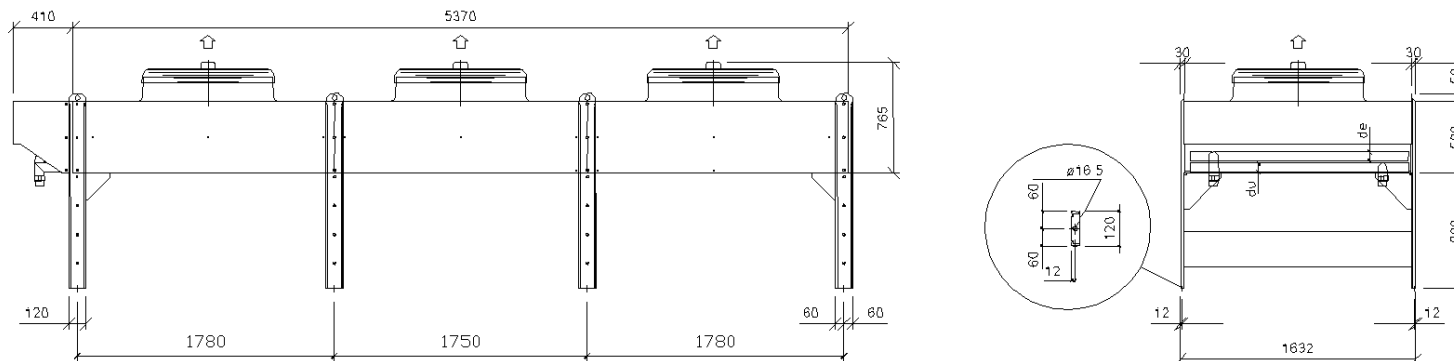
(17) The declared performances are suitable for HVAC applications with air flow in a free field on both coil and fan sides (e.g. avoid recirculation or any element that reduces airflow) and with uniform inlet temperatures to the coil (e.g. avoid conditions on which adjacent elements cause temperature variations at the unit inlet). 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

WH1390.BT5/02 V W3EEpAF(EC)



Uwaga: Rysunek i wymiary nie uwzględniają wszystkich akcesoriów!

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).

PRZYŁĄCZA	
Przyłącza wej.	3"
Przyłącza wyj.	3"

**ThermoKey**  
Heat Exchange Solutions

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Firma ---  
Do  
Miasto  
Telefon  
Faks

Date 26/3/2019  
Wersja opr. 181116  
Offer @ - Rev. 00  
Reference @  
Position 003

**CHŁODNICA CIECZY WH1390.BT5/02 V W3EEpAF(EC)****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 12 mm).

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**

Wooden crate packaging with protective film for transportation. The unit is delivered in vertical position (horizontal air flow) supplied with feet. Upon request, the units can be supplied with dedicated packaging for special shipments (e.g. container, 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.).

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 -20.0 °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. Flanged connections with aluminium slip-on flange PN10 UNI6089 and copper flare fitting. All dry coolers with flanged connections are supplied with a pre-assembled pressure gauge to check the heat exchanger pre-charge pressure (pre-charged with nitrogen to a pressure of 3 bar).

## ACCESSORIES

### A – SHOCK ABSORBERS

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

### Ep - CONTROLLER FOR "EC-PLUS Ep" EC FANS

Controller Ep 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: 2ph+PE 400Vac ±20% (other voltages upon request). Working temperatures: -20°C ÷ 50°C. Plastic UV-resistant junction box with protection class IP55. Input from external signal or transducer: 0- 20mA, 4-20 mA, 0-5V, 0-10V. Optional RS485 interface for MODBUS networking. Possibility to connect temperature probes (default) or pressure probes. Auxiliary contacts - contacts available: S1 - direct mode (by default with NO contact); - reverse (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); TK - contact for connection of the thermal motor protection (by default FANS ON with NC contact; FANS OFF with NO contact). 1 programmable relay; analog output 0-10V (for fan speed regulation). PID regulation principle. Optional proportional mode. Min. and Max. fan speed setting. Display showing the main operating parameters. LED indicator of controller status. Outputs for external signals: 5.0 Volt (Vrr) stable; 10.0 Volt (Vrr) stable; 0 Volt ±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)).

### W3E - THREE-PHASE ELECTRICAL PANEL FOR 400V-3-50HZ EC FANS

Short description: electrical panel for EC fans with plastic casing, fuse protection for groups of fans and external control 0-10V. Description: plastic UV-resistant box, protection class IP55. Electrical cables suitable for outdoor installation (connection of power and signals). Working temperatures: -20°C/40°C. Power supply: 3~ 400V / 50Hz +PE. Main switch. Fuse protection for groups of fans. Suitable to connect J + EN + EB + EP + EM controllers (to be mounted outside this panel). Fan speed regulation control with 0-10V signal. Free contact on main switch for ON/OFF indicator. Free fan alarm contact. MODBUS communication (fans-side). 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.