

TECHNICAL DATA SELECTION

PROJECT N.: 24.013007.A

DATE: 10-05-2024

PROJECT NAME: L240510 Britovšek - inkubator



NRG\_ZU

NRG\_ZU

[#1] 10NRG0091\_ZUF10

Input data

Requested model

10NRG0091\_ZUF10

Filters		
Refrigerant		R410A
Power Supply		50Hz-400V
Cooling		
User Air Temperature	°C	21
User Relative humidity	%	50.0
Source Water Temperature In	°C	10
Source Water Temperature Out	°C	20
Source Glycol	%	0.0
Frequency Percentage	%	100.0
Altitude Inputs		
Altitude above sea level	m	0.0
User Fan Inputs		
User AESP	Pa	300
Additional Internal Coil - Cooling		
Enable		Disabled
Select Operating Mode		Disabled
InternalCoilWaterTemperatureIn	°C	45.0
InternalCoilWaterTemperatureOut	°C	40.0
InternalCoilWaterGlycolPercentage	%	0.0

## TECHNICAL DATA SELECTION

SW: #

DB: #

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## Output data

Requested model

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## Cooling

Data Inputs	USR A 21°C 50.0% SRC W 10°C 20°C 0.0%	
Cooling capacity	kW	9.4
Sensible cooling capacity	kW	8.3
Net Sensible cooling capacity	kW	7.7
SHR		0.88
Cp absorbed power	kW	1.8
Cp absorbed current	A	2.9
Fans absorbed power	kW	0.6
Fans absorbed current	A	1.0
Total power input	kW	2.4
Total Absorbed Current	A	3.9
EER	W/W	5.14
Nominal air flow	m <sup>3</sup> /h	2150
Water Flow PHE	l/h	961
Water pressure drop PHE	kPa	1
Leaving air temperature	°C	10.3
Air speed through coil	m/s	2.21
Number of Fans		1
Fans Type	plug EC series	
Type of fan motor	Brushless with integrated electronic	
Fan's balancing characteristics	<= Q 6,3 according ISO 1940-1	
Type of motor protection	IP 54 according EN 60529	
Fan speed control	Stepless by means of mP keyboard	

## Common Data

Available Pressure head	Pa	300
Max available AESP	Pa	399
Lp @ Nominal rpm ; dist.= 2 m Q=2	dB(A)	62
Type of compressor	BLDC-Twin Rotary	
N° of cp/ circuits		1/1
Oil charge	dm <sup>3</sup>	0.4
Electrical heating capacity	kW	1.5
Max Humidifier capacity	kg/h	3.00
Humidifier absorbed power	kW	2.2
Evaporators Number		1
Evaporator front area	m <sup>2</sup>	0.3
Rows		4
Fins	Aluminium + Hydrophilic coating	

Type of water connections		GAS
Size of water connections		3/4"
Condenser		AISI 304 BPHE
Refrigerant		R410A
Lenght	mm	600
Depth	mm	600
Height	mm	1875
Weight	kg	172
Power Supply		400 / 3+N / 50

**Note**

The declared performances are the result of thermodynamic simulations and therefore affected by tolerances.  
Please consider electrical drawing to design external electrical protection for the specific unit

**Version**

Software version	CCACTLC 0.0.16
Database version	20240226-0

**Remarks:**

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**TENDER SPECIFICATIONS**

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**NRG\_ZU****[#1] 10NRG0091\_ZUF10 3E505Q0L900G A0CD000H0L0N0QRS00001209****DESCRIPTION OF THE UNIT**

The NRG units are designed to be installed in technological environments and in applications with a high thermal load, such as server rooms or laboratories where high modulation of the refrigerating capacity is required in order to maintain solid control over air temperature and humidity. These units reflect the state of the art in terms of technology and design. The range covers a refrigerating capacity range from 9 to 90 kW and is available in different refrigeration versions.

The "Z" and "W" versions are the condensed water versions, the former with groundwater condensation, the latter with Dry-Cooler or tower water condensation.

The unit is available with upward (upflow version), downward (downflow version) or displacement (displacement version) air delivery.

**OPERATING LIMITS**

Ambient air temperature: + 18°C; +32°C (R.H. ≤ 65%)

Condenser water temperature: +25°C; +43°C

Operation with lower water temperatures is possible with:

- pressure switch valve with water flow modulation (optional)
- refrigerant side flooding kit (optional).

**REGULATIONS**

The unit complies with the following harmonised standards:

- 2014/68/EU (PED - Pressure Equipment Directive);
- EN 378-2:2017 (Refrigeration systems and heat pumps - Environmental safety requirements - Part 2: Design, Construction, Testing, Marking and Documentation);
- 2006/42/EC (Machinery Directive);

- 2014/30/EU (Electromagnetic Compatibility);
- 2014/35/EU (LVD) (Low Voltage Directive);
- EN 13136:2014 (Refrigerating Systems and Heat Pumps - Pressure Relief Devices and Their Associated Piping - Methods for Calculation);
- EN 60204:2016 (Safety of machinery - Electrical equipment of machines).

## MAIN COMPONENTS

### STRUCTURE

The NRG units feature a supporting frame and all the components (sheets, panels, pipes, coils) are produced in-house. The plates are galvanised and the external panels have an epoxy-polyester powder coating finish in RAL 7016 colour. Access to the main components is provided from the front of the unit. However, it is also possible to have side access to suit different requirements. The compressor compartment is segregated from the airflow (except for the displacement version). Thanks to an accurate design it is possible to remove the upper part of the compartment and obtain full accessibility to the refrigeration components. The fixing systems are made of non-oxidisable or non-corrosive materials. The condensate drain pan is made of stainless steel to ensure long-lasting operation without damage. All panels are thermally insulated with class 1 polyurethane foam according to UL 94 standards: this material, thanks to its closed cells structure, ensures high performance in terms of sound absorption. Sandwich panels are available as an option: in this case, layers of mineral fibre are sandwiched between the panel and a second metal sheet.

### REFRIGERATING CIRCUIT

The refrigeration circuit is entirely assembled in the company, using only primary brand components. The units are present in the single and dual circuit versions and are loaded with R410A refrigerant.

The main components of the refrigerating circuit are the following:

- Activated alumina and molecular sieve filter.
- Flow and humidity indicator
- Electronically controlled electric expansion valve.
- Liquid receiver according to the PED Pressure Equipment Directive.
- High pressure switches suitable for manual resetting.
- Low pressure switches suitable for automatic resetting.
- Safety valve.

### COMPRESSORS

On the NRG units Scroll compressors are installed, optimised to work with R410A and in special constructions for applications with BLDC inverter motor.

### ELECTRONICALLY CONTROLLED ELECTRIC EXPANSION VALVE

Electronically controlled electric expansion valve including software designed and optimised to track the behaviour of the refrigerant load in all conditions of use (included in the standard equipment).

### EC ELECTRONIC CONTROL FANS

The fans used in the NRG models are the radial plug type, statically and dynamically balanced with resulting reduction of noise and transmitted vibrations. The fans are of the EC electronic switching type with brushless motors: this allows energy absorption to be reduced, especially at partial loads, and the rated air flow to be maintained regardless of external conditions. The air section is equipped with an air flow switch to detect any fan faults.

### FINNED PACK HEAT EXCHANGER

Finned pack coils with 25 x 22 mm geometry characterised by fins with hydrophilic treatment for improved wettability during the dehumidification process. The corrugated fins increase the heat exchange coefficient on the air side, improving the SHR value.

### FILTERING SECTION

The filters are located in the upper part (downflow version) or frontally to the coil (upflow version) and are made of synthetic material with metal framework. The standard filtration efficiency is G3 according to the CEN EN 779 standard. The filters can be replaced by opening the doors. As an option it is possible to install a same-sized F5 filter,

without any change in ventilation. If a higher degree of filtration is required, up to F9, an external plenum must be installed. In this case a G3 filter will be part of the option as a pre-filter. In the upflow units the plenum is located on the outlet side.

**Selected options:**

- Standard/Custom Standard
- Power supply 400V / 3Ph + N / 50Hz
- Control HiPro XL + remote display PGD 1 as a kit
- Refrigerant R410A + Electronic Expansion Valve
- Refrigerant circuit options No refrigerant circuit options
- Dehumid. + Steam Humid. Control (mandatory double floor or base module)
- Modulating hot gas coil - PRECISE (only reheating) + Electric heaters modulating
- No supervision
- Filtration Filter G4 + Glogged filter sensor
- Condensing control - Flooding valve
- Packaging Fumigated pallet with top cardboard
- No remote condenser
- Colour Anthracite grey RAL7016
- Fresh air kit
- Sandwich panels
- Flooding detector and probe (compact)
- Additional Humidity and temperature sensor (shipped loose)
- Top flange connection
- High temperature condensate pump (shipped loosed, mandatory double floor or base module for installation)
- Alarm option
- Compressor jacket
- Automatic airflow control
- Emergency quick restart after black out (available with dual power supply)
- Rear air intake for upflow unit, front panels closed
- On-Off contact for external pump

DIMENSIONAL DRAWING

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Rif: [#1]

