LAB ENGINEERING

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Product Name :	**Product Code :**
Computerized Cascade Refrigeration Trainer	RAC0007

Description :

Computerized Cascade Refrigeration Trainer

Technical Specification :

The Cascade Refrigeration systems with two-stage compression are used for the generation of particularly low temperatures.
At very low temperatures large pressure differences are required between the evaporator and condenser.
In a compressor the volumetric efficiency drops significantly at high-pressure ratios.
Therefore, two compressors are connected in series, with each compressor only having a relatively low-pressure ratio.
This makes a more favorable dimensioning of the low-pressure stage compressor possible.
Due to the large specific volume it requires a larger capacity at lower drive power.
All relevant measured values are recorded by sensors and displayed.
In addition, intercooling between the low-pressure compressor (LP) and the high-pressure compressor (HP) reduces the outlet temperature of the HP compressor to harmless values and improves the efficiency of the compression.
The simultaneous transmission of the measurements to the software enables analysis and the representation of the process in the log p-h diagram in real time.
Additionally, two flow meters indicate the total volumetric flow rate and the volumetric flow rate in the intercooling.
FEATURES:
Design and function of a refrigeration system with two-stage compression and injection intercooling
Effect of the inlet temperature at the HP compressor on the efficiency of the compression
Effect of the additional refrigerant intercooling

Distribution of the compressor pressure ratios
Represent and understand the refrigeration cycle process in the log p-h diagram
With intercooling
Without intercooling
SPECIFICATION:
Low-pressure compressor (LP) :
Displaced volume: 25,93cm3
Power consumption: 550W
Refrigeration capacity: 1744W at -10/32°C
High pressure compressor (HP) :
Displaced volume: 8,86cm3
Power consumption: approx. 275W
Refrigeration capacity: 583W at -10/32°C
Refrigerant :
Filling volume: 1,29kg
CO2-equivalent: 1,8t
Measuring ranges :
Flow rate: 2…29L/h, 4…40L/h
Pressure: 1x -1…15bar, 2x -1…24bar
Temperature: 8x -75…125°C
Power :
0…562W (heater)
0…750W (LP compressor)
0…2250W (HP compressor)
Required for operation :
230V, 50Hz, 1 phase
230V, 60Hz, 1 phase