

Data sheet PolarBox



1. Identification

Designation: PolarBox (patent pending 18/231,624)

Manufacturer : MATELEX

Origin: Designed and assembled in France

CE and UL certified

2. Solution description

The main function of the **PolarBox** is to collect physical data from refrigeration systems, analyze them and display them in the form of control indicators on a remote monitoring web platform called PolarVisor.

Data processing enables users of the solution to be alerted in the event of a refrigerant leak, after a period of learning how to operate the refrigeration plant. Energy monitoring also alerts users in the event of energy drift or risk of compressor failure.

The solution is made up of several modules and sensors, with different locations and functions, the number of which varies according to the number of units to be monitored and the configuration of the installations (distance, technology, etc.). All components are



connected to an active POE switch to ensure communication and power supply with a single cable.

The installation of a column dedicated to level measurement, coupled with measurements (pressure, temperature, etc.), enables the solution to learn the normal operation of a refrigeration plant in order to determine a reference level. In the event of a leak, an alert is sent by email and made available on the PolarVisor web platform.

3. Benefits and features

- Monitoring operating data and performance indicators
- Improving plant performance
- Reduced environmental impact of refrigeration (direct and indirect greenhouse gas emissions)
- Alerts in the event of leakage (on site and by email), energy drift or risk of compressor failure
- 24/7 remote monitoring web platform
- Up to 4 control units can be monitored by one controller
- Centralized remote monitoring of a large number of refrigeration plants
- Independent, multi-operator 4G connectivity
- Advice, reminders and assistance in prioritizing interventions

4. Type of systems targeted

- Refrigeration systems with liquid receiver (HP)
- All types of tanks (vertical, horizontal, inclined horizontal)
- All refrigerants

Size, weight :

- Controller module: 17.5 * 25 * 4.5 ; 0.6kg
- GPIO module: 16*10.5*4.5 ; 0.35 kg
- Measurements module size : 19*14*4,5 ; 0,4kg
- Energy module : 9 * 10,5 * 5,5 ; 0,2kg
- Outdoor temperature module : 8,5*9*3 ; 0.1kg
- Screen: 21.5 * 15 * 2 ; 0.6kg
- Switch and power supply: 11*15*7; 1.3kg

Boitiers :

- Controller, GPIO and measurement modules: white and black ABS UL94 enclosures
- Energy module: gray ABS case
- Outdoor temperature module: white ABS case
- Switch : Aluminium Black and red

Power supply :

- Power: 120W
- Input: 240VAC and 2.6A

- Output: 48VDC and 2.5 A

Sensors :

- Measurement module :
 - HP pressure transmitter (0-30bars) in 0.5-5v
 - Pressure transmitter BP (-1-7bars) in 0.5-5v
 - DS18B20 temperature sensors
 - 4-20mA strain gauge

Energy module :

- 150A current transmitter

Accessories :

- Controller module :
 - 4G antennas: short or remote (supplied or optional)
- GPIO module :
 - 1.5mm² wire for dry contact connection
- Energy module :
 - 3G1.5 cable for voltage measurement
 - Electrical protection: differential circuit breaker
- Screen :
 - Screen fixing by magnet or screw (supplied or optional)
- Switch :
 - 3G1.5 power supply cable
 - RJ45 cat5e cables to each module (length depending on layout - partly supplied)
- Others:
 - A 2m length of Ø 1" 5/8 copper tube
 - 2 copper plugs Ø 1" 5/8
 - 1 collar Ø 1" 5/8
 - 2 x 3/8" flexible hoses (length depending on layout - 50cm minimum)
 - 2 solder fittings for hose connection
 - Various fittings for connecting hoses to the reservoir
 - 1.5mm² stainless steel cable
 - Various supplies: clamps, junction boxes, insulating tape, etc.
- Maintenance :
 - Annual calibration of measurement card and strain gauge
 - Three-yearly replacement of other sensors

- Care and cleaning: Regular dry dusting

5. Commercial specifications

- Price: on request
- Availability: first quarter 2022
- Where to buy : Mail order
- Sales area : Worldwide
- Delivery: 2 weeks maximum from order date
- Installation: Installation is carried out by the customer
- Warranty: 1 year from date of invoice

6. Technical assistance

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