Medical Air circulated Refrigerator TC 108-2

(2 independent temperature ranges), also in accordance with DIN 13277 (formerly DIN 58345)

(Ill. similar)

External Dimension:

W = 530 mm
D = 650 mm
H = 1700 mm

Inside Dimension:
Useful space on top

W = 450 mm
D = 535 mm
H = 530 mm

Useful space at the bottom

W = 450 mm
D = 535 mm
H = 530 mm

Capacity: 280 l

Temperature range:
Top 2°C to 20°C
Bottom 2°C to 20°C
Optional: other temperature ranges

Housing (high size)
galvanized sheet steel with high quality white coating, antibacterial coated. With 4 feet, height adjustable.
Optional: Set of 4 castors
of **stainless steel** (Backplane, as well as top and bottom side of the cabinet of galvanised sheet steel)

Interior space
Inner case of galvanized sheet steel with high quality white coating, antibacterial coated. Cleaning friendly by rounded corners, slippery surface in the interior, meets highest hygiene requirements
Optional: of **stainless steel**

Insulation
high density foamed-in-place polyurethane, with a thickness of 40 mm. CFC-free

Circulation air cooling
for rapid and uniform temperature control, reducing temperature gradients to a minimum. When the door is "open" the circulating fan is switched off automatically by a micro switch in order to prevent warmer ambient air being drawn in.

Door
2 pcs. three-layer thermally insulating glass door (arranged on above the other), supplied as standard with right hand hinge, also available with left hand hinge at no extra cost. Grease resistant magnetic seal.
Optional: with **door lock (one lock for 2 doors)**
with **solid doors**

Interior fittings
4 pcs. Grating-type shelves (dim.: 400x500 mm), white coated (max. 4 shelves possible)
Interior lighting with automatic ON/OFF micro switch

Optional: Stainless Steel drawer compartments, with **2 lengthwise dividers** (max. 4 drawers possible)
with telescopic-type guides on rollers with stops, Drawer dimensions: 380x450x77 mm (WxDxH)
Usable width between the lengthwise dividers: 110 mm (lengthwise dividers easily removable)

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Control system located above the door

2 pcs. **High quality electronic temperature controller**

Actual value permanently displayed.
Set value adjustable digitally by switches.

Working range 1 from 2°C to 20°C
Working range 2 from 2°C to 20°C
(assuming the ambient temperature is approximately 4°C above the setpoint).
Temperature accuracy +/- 1,8°C after stabilisation (with 50% of loading)

Acoustic signal when the set value is undercut or exceeded
Potential-free connection socket for extern alarm indication

Optional: Temperature regulator TC 2015

Refrigerating unit
2 pcs. fully hermetically sealed, forced ventilation, fitted on vibration - absorbing mounts (ambient temperature max. 32°C), low noise (48 dBa/1m), energy saving compressor with high quality vaporisation system.
Refrigerant: R290 or equivalent.

Defrost
automatically with thermal and time limit. Condensate evaporation in heated tray. During the defrost period, the temperature inside the cabinet (only the air temperature – not the stored goods) will arise for a short time.

Electrical Data
Power supply	230 V/50 Hz (optional: 60 Hz) /single phase
Power input	2x 0,16 kW
Fuse	16 A
Power cable:	2x 1,5 m with schuko plug

Packing details (palletized)
Dimensions:	ca. 65x72x192 cm
Net weight:	155 kg
Gross weight:	175 kg
Country of Origin:	**European Union**
Customs clearance code:	8418 5090

Medical Air circulated Refrigerator — TC 108-2

(2 independent temperature ranges), also in accordance with DIN 13277 (formerly DIN 58345)

Special Equipment and Accessories:

Touchscreen temperature controller, TC 2015

Language in German / English adjustable

Working range from 2°C to 20°C
(provided that the ambient temperature is around 4°C above the set point)

Temperature accuracy +/- 1,8°C after stabilising (with 50% filling)

- **Touchscreen Display, size 12,5 cm (5")**
- **PT1000 temperature sensor for better temperature control accuracy**
- **Digital temperature setting and display with an accuracy of 0.1°C**
- **Power supply of 100-240V, 50-60Hz**
- **Password protected to prevent manipulations**
- **Data import/export via USB or Ethernet**

- **Alarm**
  - Noticeable optical alarm signalling by red / blue flashing screen
  - Audible alarm
    Mute the audible alarms, with continuous warning indication on the display and automatic return after 3 minutes when the alarm situation still exists
  - Alarm acknowledgment with password protection

  Acoustic and optical alarm indication when
  - High and low temperature (variably adjustable)
  - Door open - alarm, (adjustable)
  - Power failure
  - Temperature sensor failure
  - Defrost-time transgression (variable adjustable)
  - Optional: cooling machine monitoring with overheat protection

- **Alarm memory** (not deleted) for the last 100 alarm conditions, with the possibility of review on the display and archiving the data via USB or Ethernet. Memory can not be deleted.

- **Event memory**
  In the event log all the operations of the controller are saved, such as:
  - Doorways
  - Parameter changes
  - Cooling equipment function, etc
  - Storage for approximately 4 weeks, with the possibility of review on the display and archiving the data via USB or Ethernet.

- **Graphical display of the temperature profile in the display**
  Illustration of the actual value and if requested of the product sensor on the display and archiving via USB or Ethernet. View period freely selectable.

- **Network Connection**
  2 Ethernet ports 10/100 Mbps available. This interface can be accessed directly on the log data of the controller to import in the software.

- **NO/NC contact**
  Alarm signal time delayed (adjustable)

- **Language:** English / German, other languages on request

- **Maintenance message:** Notification that maintenance should be carried out.

- **Test facilities** for Alarm limits and battery charge status

- In the housing of the temperature regulator there are all relevant components for using the cabinet. Plug-in connectors of the electrical supply pipes enable a **service friendly exchange**.

- **Optional**
- <u>Battery Module</u>
  In case of power failure self-contained supply of the temperature controller with a powerful battery. All control functions are saved for about 72 hours.
- 4...20 mA Output
- WLAN-Module
- Interface, RS 485 (galvanically isolated)
- <u>Software</u>
  This software enables you to check at a glance several cooling units. It was designed to be user friendly and enables you to process your data in an intuitive manner.
- <u>Alarm system</u>
  - Independent product sensor for reference measurement
  - Product protection against low temperatures. By dropping below the setpoint value, the cooling machine will switched off

⚠️ **Attention:**
By using this temperature regulator, the total height of the cabinet will increase by 2000 mm

GSM Modul
Connecting to the potential-free output. In case of an alarm either a message or a call will be sent automatically. Archiving of 1000 phone numbers is possible. The GSM module is equipped with a rechargeable battery. Automatic alert via SMS when the credit has been used on the SIM card. 6 units can be connected per module. The SIM card is not included

Round Chart recorder
to record temperature, permanently installed in control panel. Comes as standard with battery back-up power supply for continuous operation (mains independent). The replaceable recording discs are suitable for 24 hours or 7-day periods. The actual temperature is plotted with a black felt tip pen on the chart. Internal temperature measurement. Measurement range: -10°C to 40°C
The unit comes with 100 round charts (day or week)

⚠️ **By choosing this recorder the freezer will have a height of: 2000 mm**

Door lock including 2 keys
Optional: electronic door lock, via temperature controller TC 2015

Mains socket / damp room design
Installed inside the cabinet, 230 V, 50 Hz
ON/OFF by switch on control panel

Cable port with cover (approx. 40 mm ⌀).
Cable port with PG-gland
 for example, to create access for operator measurement lines, etc.
Optional: with **separate sensor** kind and version as desired by the customer

Wireless data logger system
For controller-independent temperature recording

Qualifications

DQ (Design Qualification)

Definition: *Documented proof that the quality-related, GMP-related requirements has been adequately addressed in the design of equipment, including buildings, premises and auxiliary equipment*

The user-requirement profiles (specifications) are documented and confirmed by us. On request, a specification can be created by us.

IQ (Installation Qualification)

Definition: *Documented proof that critical equipment and systems have been delivered and installed in accordance with the set requirements and government regulations.*

The IQ documentation is worked out by us especially for the delivered machine and is made available to you.
The IQ documentation has to be carried out by the customer itself.

OQ (Operational Qualification)

Definition: *Documented proof that critical equipment and systems in accordance with the set requirements in the whole operating range are working as intended in accordance with predetermined limits.*

The OQ documentation is worked out by us especially for the delivered machine and is made available to you.
The OQ documentation has to be carried out by the customer itself.

CQ (Calibration Qualification) according to DIN 13277:2022-05

Definition: *Documented proof that critical measuring equipment in the intended range in accordance with predetermined tolerances operate reliably under current operating conditions*

Verifying the temperature in the unloaded cooling unit (after reaching the steady state)
1 temperature on 2 measuring levels with 4 measuring points each
(Measurement with calibrated PT 1000 sensors). Test time 4 hours, then open door for 60 seconds.
During this time, the limit values specified in DIN 13277:2022-05 must not be exceeded. Repeat the door opening after one hour.
The temperature measurements are carried out on our premises. The evaluation of the measurements, including graphical representation, is made in written form. The values must not exceed the limit values specified in DIN 13277:2022-05. **(Other measuring methods possible on request)**

PQ (Performance-Qualification) according to DIN 13277:2022-05

Definition: *Documented proof that critical equipment and systems in accordance with the set requirements in the whole workspace under current working conditions (with product) provide the requested services*

The calibration described above is carried out under real conditions on site. Optionally, the measurement can be can be carried out in a loaded or unloaded state. The measurement evaluation, including graphical representation, is made in written form. The values must not exceed the limits specified in DIN 13277:2022-05.
exceeded. **(Other measuring methods possible on request)**

tritec ®
Gesellschaft für Labortechnik
und Umweltsimulation   mbH
Hüttenstraße 9
D-30165 Hannover

Homepage	www.tritec-klima.com
E-mail	info@tritec-klima.de
Phone	++49-511/3523508
Fax	++49-511/3521715

technische Änderungen vorbehalten

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