

SCIENCE AND INDUSTRY TEC 3000 ELECTRONIC CONTROLLER

The TEC 3000 is the latest in electronic control equipment for the MVE Chart range of freezers and includes 17 audible and visual alarms. This ensures that all of the key controlling factors within the freezer are comprehensively monitored to ensure sample integrity at all times.

In the event that a condition triggers any of the (user configurable) alarms this will be displayed on the LCD screen accompanied with an audible warning. As an additional feature the TEC 3000 can be connected to host sites BMS system, therefore enabling peace of mind for out of hours monitoring.

Key features of the controller include:-

- Alarms – 17 Audible and visual alarms.
- Password Protection – 4 Configurable security levels.
- Data Storage – Storage of the last 30,000 events.
- Nitrogen Level measurement – Ultra reliable, increased accuracy (over traditional methodology) via differential pressure technology.
- Unique additional features – Compatibility with all BMS systems, configurable user display and multi-option filling configurations.
- Temperature sensors – 2 x platinum RTD sensors.
- Timed filling – from every day to every 28 days the controller can be set to fill at the same time in a user defined period. Beneficial to those who want the freezers filled before the lab is used in the morning or to ensure that the freezers are always filled during working hours.

Alarms

A brief description of the alarms are:

High Temp A, High Temp B, Low Temp A, Low Temp B, High Level, Low Level, Usage Warning, Usage Alarm, Fill Time, Bypass time, Temp A Calibration, Temp B Calibration, Bypass Calibration, Low Battery, Power Failure, Lid Open, Communication Loss.

Note: For external monitoring there are four alarm contacts which can be configured to either Normally Open (NO) or Normally Closed (NC).

One of the alarms is a Global Indicator switching when any alarm condition exists, the other monitored points are: High Temp A, Low Level, High Level and Low Battery.

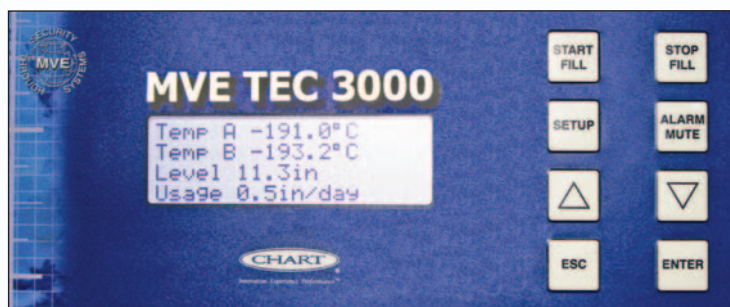


Chart Connect 3000

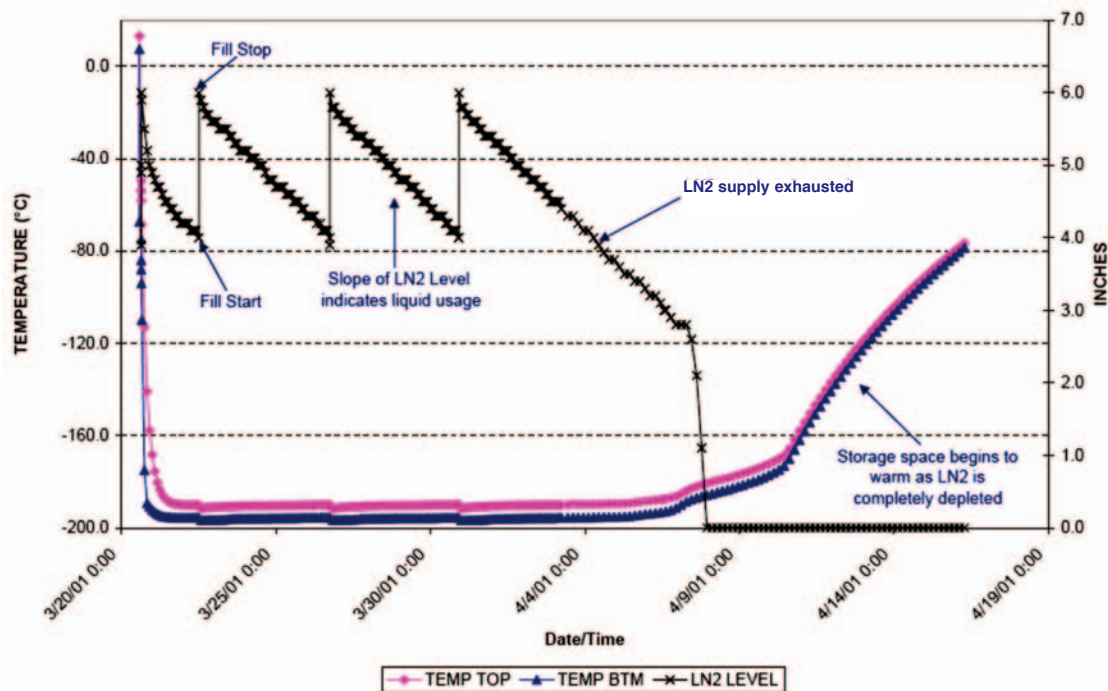
Main menu of Cryo Connect allows the filling to be started or stopped remotely / alarms to be muted and to change the alarm parameters for temperature and level.

Data is downloaded to excel spreadsheet where graphs and pivot tables can be produced to analyse the data or events.

Four different levels of security may be assigned up to 10 passwords. This allows for complete control as to who has the capability to alter the functions and settings of the controller, and to what extent an individual can alter those settings.

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Sample Event Log Plot

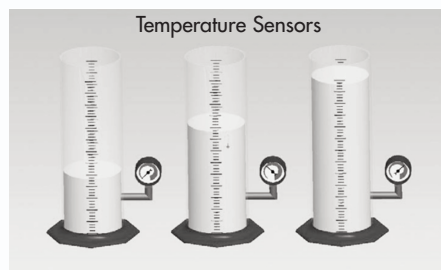


An example of data being shown in graphical format clearly showing filling events and any effects on temperature v level.

Data Storage

The TEC 3000 automatically stores time and date stamped information for the last 30,000 events, which would include all alarm triggers (see Alarms), therefore enabling a full audit trail of sample integrity.

With the PC connected to the users network it is possible to access current data from the freezers remotely using the Chart Connect program.



Nitrogen Level Measurement

By utilising a differential pressure sensor system to determine the amount of liquid within the freezer this ensures greater accuracy above other methods currently employed.

This is achieved as the sensor operates on the physical principal of imposed head pressure, which states that the pressure generated by a column of fluid (or freezer in this case) increases directly in proportion to the depth of fluid.

Additional Features

- Hot Gas Bypass – The TEC 3000 has the capability to vent warm nitrogen gas before starting a fill cycle.
- RS485/ASCII/MODBUS – Serial communication allows for all data stored within the unit to be downloaded for analysis or as a record log.
- All units can be set for timed filling (from 1-28 days), One Fill All Fill(OFAF) either Simultaneous or Sequential filling (Up to 100 units).
- Configurable user display – Level can be set to Inches, mm or % of tank, Temperature °C, °F or K.

Note: Upgrade kits available from TEC 2000 to TEC 3000 to enable users to benefit from the features and benefits of the latest technology without having to replace their freezer.