



# MVE Tech Tips



*November, 2006*

## TEC3000 Edition

As you all know, Chart has recently introduced a new controller, the TEC3000 controller. Information regarding this controller has been distributed previously through several different avenues.

This special edition of Tech Tips is meant to serve as a comprehensive guide for TEC3000 information.

# TEC 3000



The TEC 3000 employs a variety of high level features that enable the controller to monitor and control the environment inside a freezer with a high level of precision.

## FEATURES/OPTIONS:

- Liquid Nitrogen Level Measurement
- Automatic Liquid Nitrogen Level Control
- Two Channel Temperature Measurement
- Multi-Function User Defined Alarms
- Battery Backup (Optional)
- Adjustable Security / Password System
- Gas Bypass (Optional)
- One Fill All Fill Capability (Sequential or Simultaneous)
- Timed Filling

## TECHNICAL SPECIFICATIONS:

- **Level Measurement**
  - Sensor Type - Dual Port Pressure Transducer Measurement  
Accuracy +/- .5 in; +/- 13 mm (typical)
  - Liquid Usage Feature
  - Two Point Calibration Feature
- **Level Control**
  - Control Type - On/Off
  - Control Output - (Fill Solenoid Valve)
  - 24VDC, 1.0 amp (max)

- **Temperature Measurement**

Two Sensors, Platinum RTD - Two wire element

- Accuracy +/-2.0°C Full Scale
- Altitude Compensation For Accuracy
- Full Range Calibration Feature
- Probe Heater For High Temp Alarm Testing

- **Front Panel Display**

- LCD Readout, 4 row x 20 character
- Level Display - Inches, mm
- Temperature Display - °C, °F, or °K

- **Standard Alarms**

- Alarm Conditions
  - Low Level Alarm
  - High Level Alarm
  - Low Temperature (Probe A & B)
  - High Temperature (Probe A & B)
  - Fill Time Alarm
  - Power Failure (remote only)
  - Lid Open Alarm
  - Usage Warning
  - Temperature Calibration Alarm (Probe A & B)
  - Usage Alarm

- **Optional Alarms**

- Bypass Sensor Failure
- Bypass Time
- Bypass Sensor Calibration
- Power Failure (audible and visual in addition to remote)
- Low Battery Voltage

- **Alarm Output**

- Both Visual and Audible Alarms
- One Global Remote Alarm Relay
- Four Discrete Remote Contacts
  - Temp A High
  - Low Level
  - High Level
  - Low Battery (Optional When Equipped With Battery Backup)

- **Controller Features**

- Communication Interface - Serial Communication  
RS485/ASCII/MODBUS
- Memory - Stores time and date stamped information on the controllers 30,000 most recent events



## MVE TEC 2000 vs. TEC 3000

	TEC 2000	TEC 3000
Alarm Outputs	No Discrete Alarm Indicators	Discrete Alarm Indicators Temp A High Low Level High Level Low Battery
Serial Communications	One RS-485 Serial Port	Two RS-485 Serial Ports
User Interface	2 x 16 LCD Display 20 Membrane Switches (Keys)	4 x 20 LCD Display 8 Membrane Switches (Keys)
Data Storage	360 Records	30,000 Records
Security	1 Password	10 Programmable Passwords 4 Possible Security Levels
Timed Filling	N/A	Programmable 1-28 Days
One Fill All Fill	Simultaneous Only	Simultaneous or Sequential
Sequential Fillings	N/A	Capable To Fill Up To 100 Units
Languages	English	English Spanish French German Italian
Bypass Sensor Calibration	No	Yes
Sensor Calibration Alarm	No	Yes Temp A Temp B Bypass Temp
Usage Warning	No	Yes, When usage doubles from one calculation to the next
Usage Alarm	No	Yes, When usage increases by 5x from one calculation to the next

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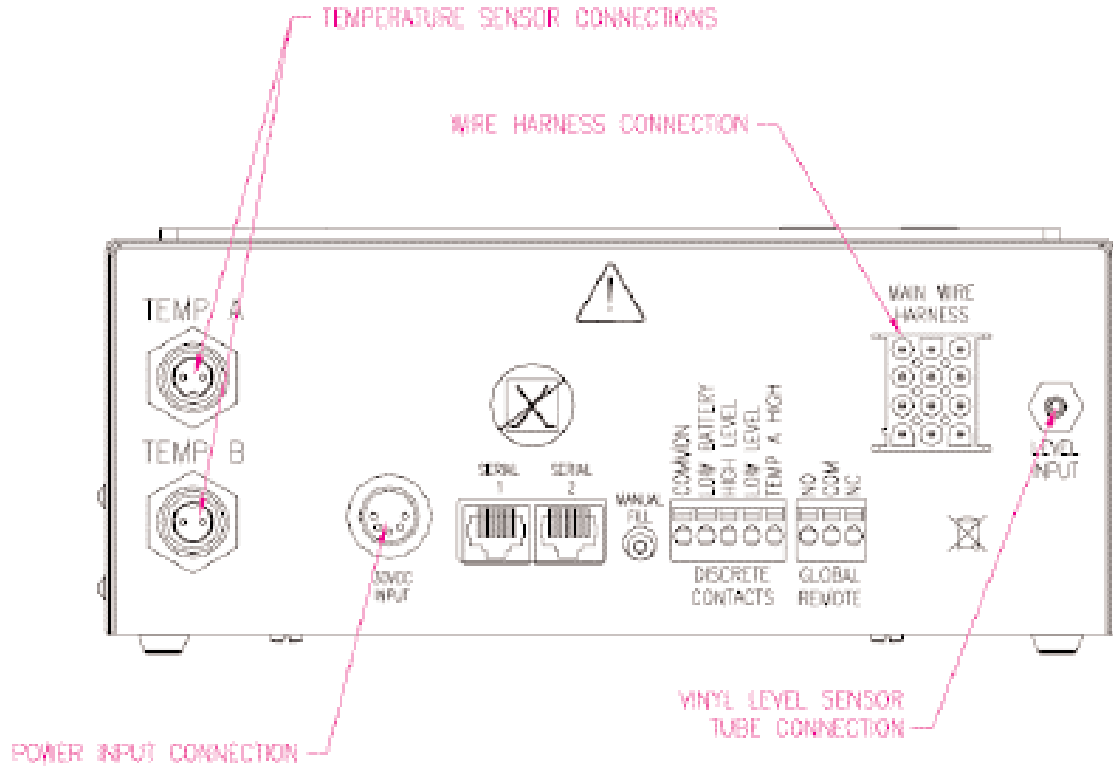
Phone: 770-425-4470 . 888-683-2796 Local Fax: 770-425-4740 . [www.chartbiomed.com](http://www.chartbiomed.com)



## TEC3000 vs. Taylor Wharton Kryos

Feature	TEC 3000	Kryos
Temperature Probes	2 standard	1 Standard (2 optional)
Type	Platinum RTD	Type T Thermocouple
Accuracy	+/- 0.1°C	+/- 2.9°C
Calibration	Single Point or Two Point	Two Point Only
Level Control	Standard	Standard
Type	Differential Pressure	Thermistor
Operating Range	2" to 48"	3" to 6"
Accuracy	+/- 0.5"	+/- 1"
Adjustability	Electronic from keypad or remote computer	Mechanical – must physically move sensors
Solenoid Valve	2	1
Alarms	Low Level High Level Low Temp High Temp LN2 Supply Lid Open Open Sensor Calibration Alarm Usage Alarm	Low Level High Level High Temp LN2 Supply Lid Open Open Sensor
Remote Contacts	High Temp A Low Level High Level Low Battery Global	Global
Communications	Standard	Standard
Type	RS485 or MODBUS	RS232
Ports	2	1
Network capable	Yes up to 100 units	No
Data Logging	Standard	Standard
Number of Events	30,000	4096
Temp A records	30,000	16,384*
Temp B records	30,000	16,384*
Alarm Records	30,000	4096
Level Records	30,000	None
Total Record Span	13+ years	7+ years

# TEC3000 Connections



# TEC3000 Communication

There is a new communication kit which was released in conjunction with the TEC3000 controller. This new communication kit is also compatible with the TEC2000. The new kit connects via your computer's USB port and does not require any external connections for power. The new communication kit is P/N 13376947 and lists at \$399. Also available is new communication software which allows the user to download data logs and adjust basic freezer settings either directly or over a freezer network. For additional information on this software, please contact Mark Baglia at [mark.baglia@chart-ind.com](mailto:mark.baglia@chart-ind.com).



## TEC3000 Service Parts/Kits

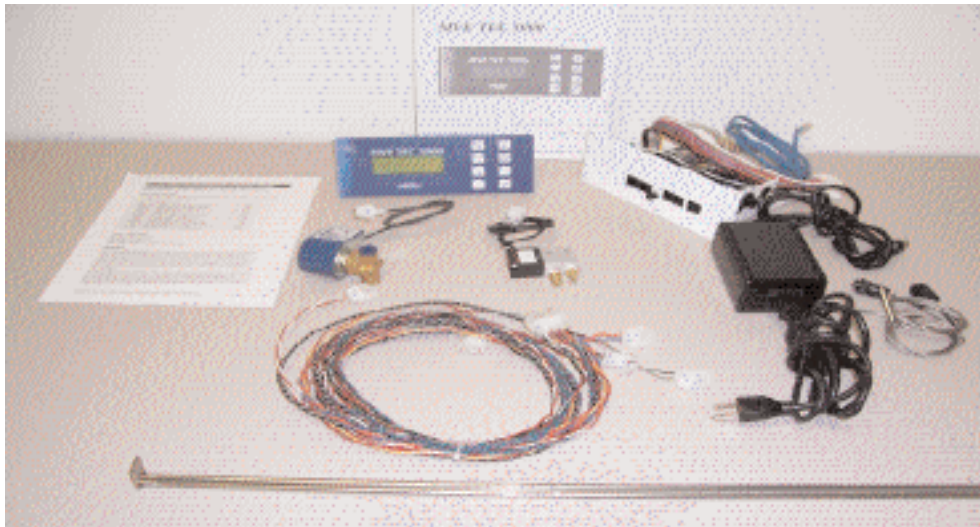
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*TEC3000 Replacement Controller (For units shipped with TEC3000s)*

TEC3000 Controller w/Text Display Panel	13319459	\$1500
TEC3000 Controller w/Symbolic Display Panel	13319467	\$1500

*TEC3000 Upgrade Kits (Lakeshore = Blue Panel, MicroDynamics = White Panel)*

Lakeshore TEC2000 to TEC3000 (Cabinet Models)	13319475	\$2700
Lakeshore TEC2000 to TEC3000 (Non-Cabinet)	13319491	\$2400
MicroDynamics TEC2000 to TEC3000 (Cabinet Models)	13319504	\$2500
MicroDynamics TEC2000 to TEC3000 (Non-Cabinet)	13319512	\$2200



P/N 13319475 Upgrade kit for Lakeshore TEC2000 Equipped Cabinet Freezers





P/N 13319491 Upgrade Kit for Lakeshore TEC2000 Equipped Non-Cabinet Freezers

P/N 13319504 – Upgrade Kit for MicroDynamics TEC2000 Equipped Cabinet Freezers



P/N 13319512 – Upgrade Kit for MicroDynamics TEC2000 Equipped Non-Cabinet Freezers

## Customer/Technical Info

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For copies of past **Tech Tips** or for more information please contact Technical Service:

**For ordering information contact:**

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