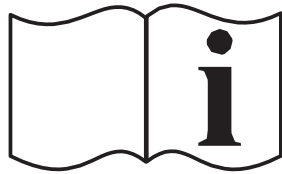
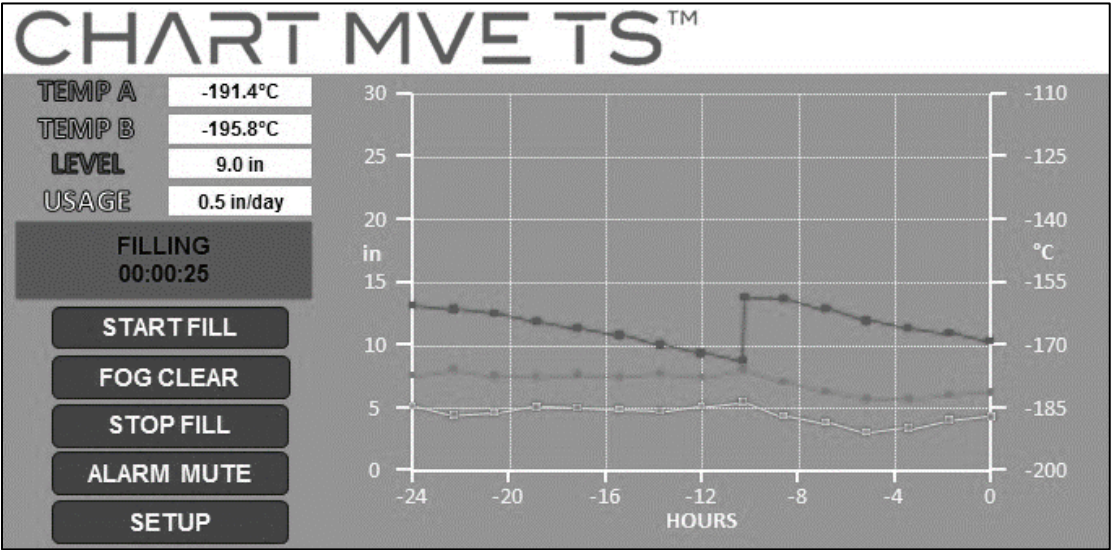




MVE TS Controller (Touch Screen)



Quick Reference Guide

MVE TS Quick Reference Guide

Table of Contents

Product Identification	
Display / Control Panel	2
Bottom Panel / Electrical / Physical Connections	3
Dewar Plumbing Connections	4
Adjusting Temperature Alarm Settings	5
Adjusting Inlet Temperature Settings	8
Adjusting Liquid Level & Liquid Level Alarm Settings	12
High Level Alarm Setting	
High Level Setting	
Low Level Setting	
Low Level Alarm Setting	
Adjusting Display and Output Settings	15
Password and Security Setup	18
Alarms and Definitions	21
Contact Information	21

MVE TS Quick Reference Guide

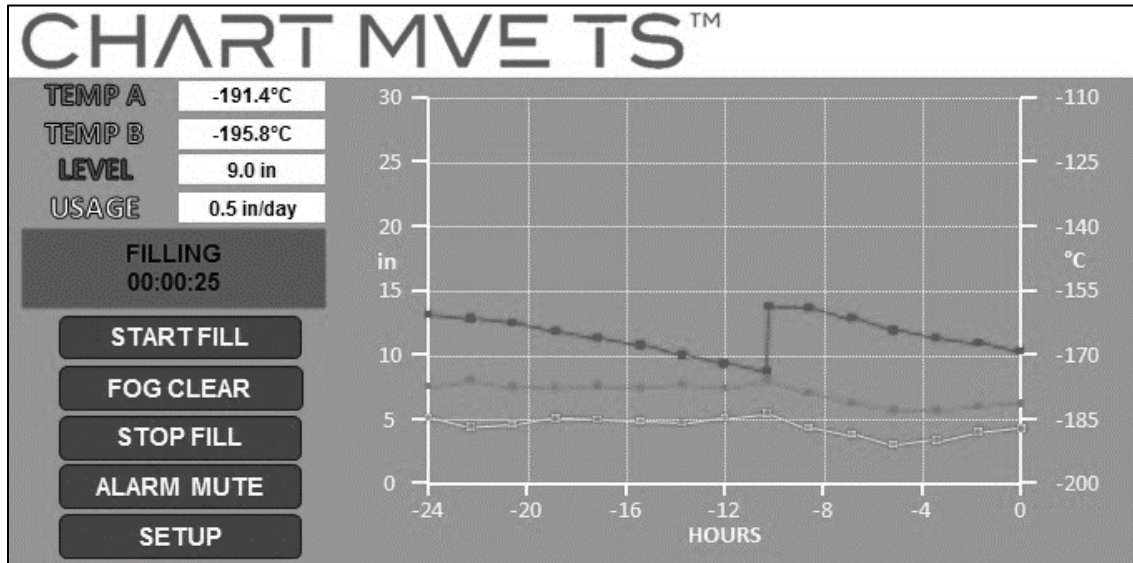
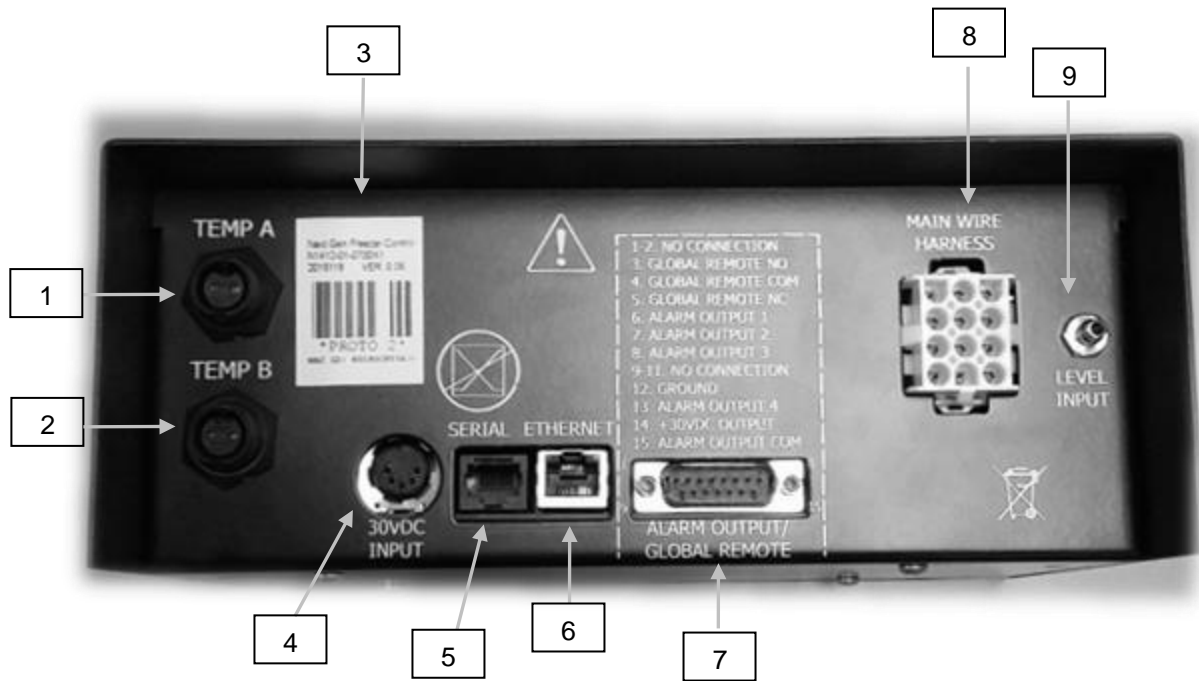


Table 1: Front Panel Identification

Display	6" touchscreen, backlight
Freezer Status	Displays "IDLE", "BYPASSING", or "FILLING" based on the current freezer status
START FILL Key	Used to manually initiate a fill
FOG CLEAR	To clear fog when opening the lid or to perform a manual fill. Momentary circuit
STOP FILL Key	Used to manually terminate a fill – Disables Auto Fill for 30 minutes
ALARM MUTE Key	Used to silence the audible alarm. Will reset the latching alarm once it has been corrected
SETUP Key	Used to access Setup Menus and parameters
Trend Graph	Adjustable graph of historical level and temperature data. Visual X,Y Graph parameters adjustable in days, temperature, and level ranges.

MVE TS Quick Reference Guide



1	Temp A Port	Connection for Temp A probe
2	Temp B Port	Connection for Temp B probe
3	Serial Number Barcode	Chart TS serial number written below barcode
4	30 VDC Power Input	Main power supply connection
5	Serial Port	RJ-45 connection for Serial/COM
6	Ethernet Port	Ethernet connection for networking
7	Global/Discrete Alarm Contacts	15 pin alarm output. Output connection for the remote monitoring of alarm conditions.
8	Wire Harness Connection	12-pin wire harness connection to plumbing assembly, lid switch, and battery backup
9	Level Connection	Level signal input. Clear, vinyl tube connects to hose barb

MVE TS Quick Reference Guide

Dewar Plumbing Connections

Connect a transfer line (included with freezer) from an LN2 supply tank to the fill connection at the rear of the freezer. Optimum supply tank pressure is 22 to 35 psi (1.5 to 2.4 bar). Although the plumbing assembly has a 50 psi (3.45 bar) pressure relief device, it is recommended that the supply tank be pressurized below 35 psi (2.4 bar) to reduce the LN2 “flash-off” rate during filling and to maximize the cryogenic valve life. The supply line can be insulated to minimize LN2 transfer losses. After the transfer hose is securely coupled to the freezer and supply tank, ensure all connections are leak free by opening the valve of the LN2 supply tank and apply a soap and water solution to each field joint. You should not see bubbles forming at any joint. Wipe away excess soap and water when finished. Before removing the transfer hose, ensure the LN2 supply tank valve is closed. Slowly and carefully loosen the transfer hose connection to vent any remaining pressure in the line before disconnecting the hose.



MVE TS Quick Reference Guide

A & B and Inlet (Hot Gas Bypass)

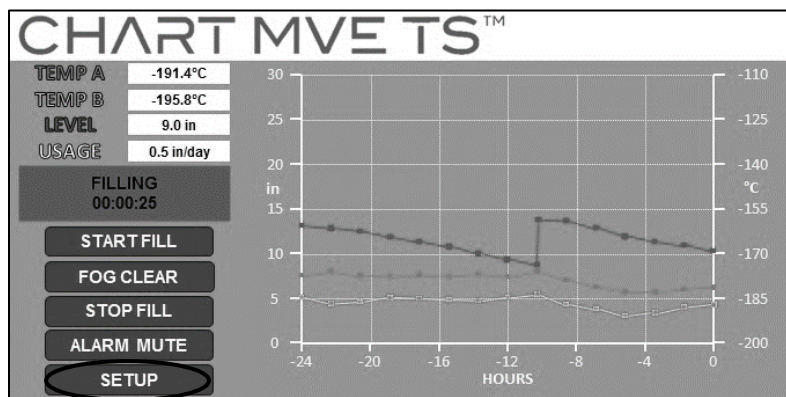
The following section describes how to adjust temperature alarm settings. At any time during the following procedure, the user may exit the menu by pressing the “EXIT” button to return to the “monitor” display mode. After 60 seconds of inactivity, the controller will automatically return to the “monitor” display mode.

NOTE: Security Level 2 or higher is required to adjust temperature settings (see “Password and Security Setup” section for details).

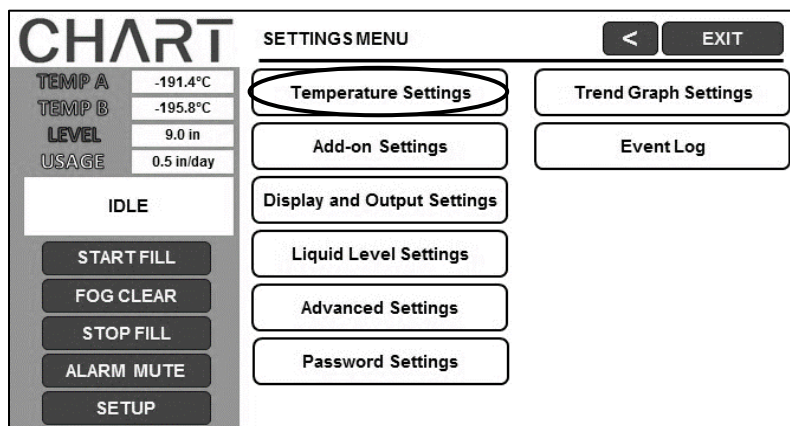
To exit any menu screen and return to the previous menu, press “<” key.

1. Press “Setup”

Controller will prompt for a password. Type in the password using the number pad that appears and press “Enter”.



2. Press “Temperature Settings”



MVE TS Quick Reference Guide

3. Press “Temperature A Settings”

NOTE: To access Temperature B Settings select “Temperature B Settings” instead.

CHART TEMPERATURE SETTINGS < EXIT

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

LN₂ Saturation Temperature -195.8°C

Temperature A Settings
Temperature B Settings
Inlet Temperature Settings

4. Press “ENABLED” or “DISABLED” next to “Temperature Probe A”

This will enable or disable the selected temperature probe. Pressing “ENABLED” will change the probe status to “DISABLED” and pressing “DISABLED” will change the probe status to “ENABLED”.

CHART TEMPERATURE A SETTINGS < EXIT

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

Temperature Probe A **ENABLED**

High Alarm Setpoint -110.0°C

High Alarm **ENABLED**

Low Alarm Setpoint -200.0°C

Low Alarm **ENABLED**

Initiate High Temp. A Alarm Test Temperature A Calibration

MVE TS Quick Reference Guide

5. Press the value displayed next to “High Alarm Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the High Alarm Setpoint using the number pad that appears on screen and then press “Enter” to save the new value. Be sure to include “-” when entering negative values.

The screenshot shows the 'CHART' interface with the 'TEMPERATURE A SETTINGS' screen. On the left, a sidebar displays 'TEMP A' at -191.4°C, 'TEMP B' at -195.8°C, 'LEVEL' at 9.0 in, and 'USAGE' at 0.5 in/day. Below this is an 'IDLE' status and buttons for 'START FILL', 'FOG CLEAR', 'STOP FILL', 'ALARM MUTE', and 'SETUP'. The main area is titled 'TEMPERATURE A SETTINGS' and includes a back arrow and an 'EXIT' button. It lists settings for 'Temperature Probe A' (ENABLED), 'High Alarm Setpoint' (-110.0°C, which is circled), 'High Alarm' (ENABLED), 'Low Alarm Setpoint' (-200.0°C), and 'Low Alarm' (ENABLED). At the bottom are buttons for 'Initiate High Temp. A Alarm Test' and 'Temperature A Calibration'.

6. Press the value displayed next to “Low Alarm Setpoint”

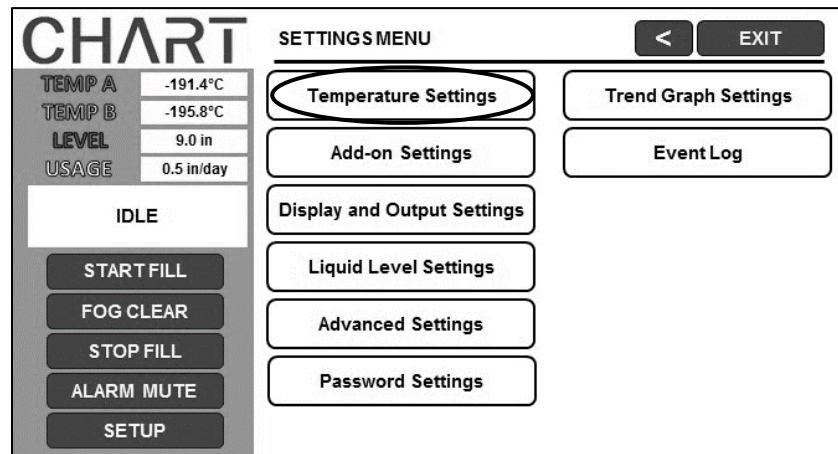
The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the Low Alarm Setpoint using the number pad that appears on screen and then press “Enter” to save the new value. Be sure to include “-” when entering negative values.

This screenshot is identical to the previous one, showing the 'CHART' interface with 'TEMPERATURE A SETTINGS'. The 'Low Alarm Setpoint' value of -200.0°C is now circled, indicating it is the selected item for adjustment.

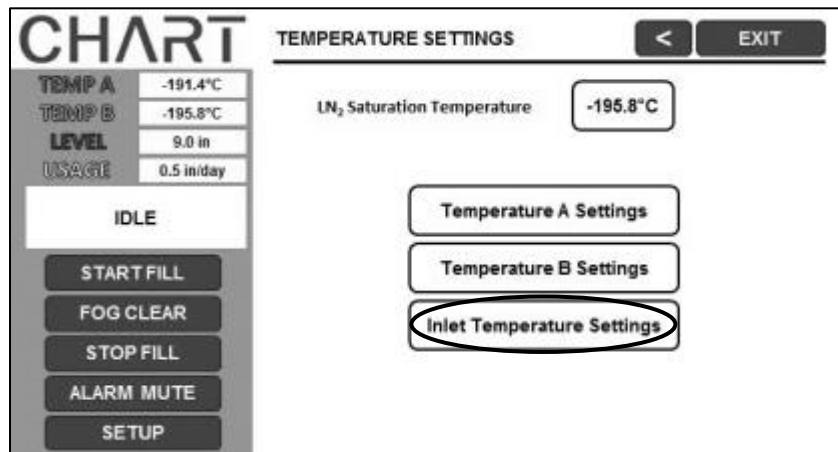
MVE TS Quick Reference Guide

Adjusting Inlet Temperature Settings (Hot Gas Bypass)

1. Press “Temperature Settings”



2. Press “Inlet Temperature Menus”



MVE TS Quick Reference Guide

3. The current Hot Gas Bypass settings will be displayed

The current inlet temperature is displayed, along with the hot gas bypass setpoints.

CHART		INLET TEMPERATURE SETTINGS	
TEMP A	-191.4°C	Inlet Temperature	23°C
TEMP B	-195.8°C	Hot Gas Bypass and Alarm	ENABLED
LEVEL	9.0 in	Inlet Temperature Setpoint	-69.9°C
USAGE	0.5 in/day	Hot Gas Bypass Alarm Delay	5 minutes
IDLE		Stuck Valve Alarm	DISABLED
START FILL		Stuck Open Delay	30 minutes
FOG CLEAR		Stuck Closed Delay	30 minutes
STOP FILL		Inlet Temperature Calibration	
ALARM MUTE			
SETUP			

4. Press “ENABLED” or “DISABLED” next to “Hot Gas Bypass and Alarm”

This will enable or disable the Hot Gas Bypass feature. Pressing “ENABLED” will change the hot gas bypass status to “DISABLED” and pressing “DISABLED” will change the hot gas bypass status to “ENABLED”.

CHART		INLET TEMPERATURE SETTINGS	
TEMP A	-191.4°C	Inlet Temperature	23°C
TEMP B	-195.8°C	Hot Gas Bypass and Alarm	ENABLED
LEVEL	9.0 in	Inlet Temperature Setpoint	-69.9°C
USAGE	0.5 in/day	Hot Gas Bypass Alarm Delay	5 minutes
IDLE		Stuck Valve Alarm	DISABLED
START FILL		Stuck Open Delay	30 minutes
FOG CLEAR		Stuck Closed Delay	30 minutes
STOP FILL		Inlet Temperature Calibration	
ALARM MUTE			
SETUP			

MVE TS Quick Reference Guide

5. Press the value displayed next to “Inlet Temperature Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the inlet temperature setpoint (if desired) using the number pad that appears on screen and then press “Enter” to save the new value.

CHART

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

INLET TEMPERATURE SETTINGS < EXIT

Inlet Temperature	23°C
Hot Gas Bypass and Alarm	ENABLED
Inlet Temperature Setpoint	-69.9°C
Hot Gas Bypass Alarm Delay	5 minutes
Stuck Valve Alarm	DISABLED
Stuck Open Delay	30 minutes
Stuck Closed Delay	30 minutes

Inlet Temperature Calibration

6. Press the value displayed next to “Hot Gas Bypass Alarm Delay”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the hot gas bypass alarm delay (if desired) using the number pad that appears on screen and then press “Enter” to save the new value.

CHART

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

INLET TEMPERATURE SETTINGS < EXIT

Inlet Temperature	23°C
Hot Gas Bypass and Alarm	ENABLED
Inlet Temperature Setpoint	-69.9°C
Hot Gas Bypass Alarm Delay	5 minutes
Stuck Valve Alarm	DISABLED
Stuck Open Delay	30 minutes
Stuck Closed Delay	30 minutes

Inlet Temperature Calibration

MVE TS Quick Reference Guide

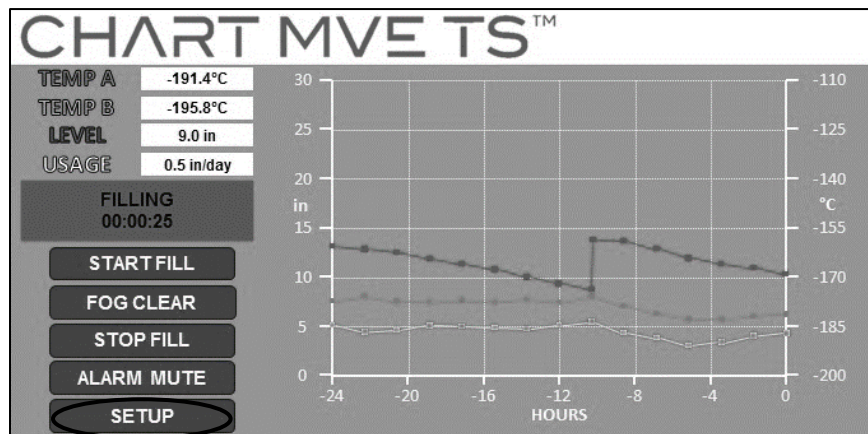
Adjusting Liquid Level & Liquid Level Alarm Settings

The following section describes how to adjust liquid nitrogen level settings and the high/low level alarms. NOTE: Security Level 2 or higher is required to adjust the Level and Level Alarm settings (See “Password and Security Setup” section for details).

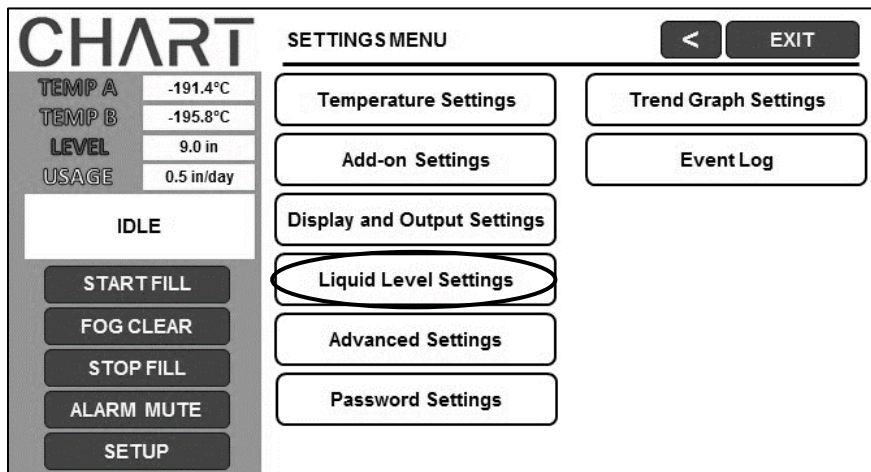
NOTE: To exit any menu screen and return to the previous menu press “<” key.

1. Press “Setup”

Controller will prompt for a password. Type in the password using the number pad that appears and press “Enter”.



2. Press “Liquid Level Settings”



MVE TS Quick Reference Guide

3. Press the value displayed next to “High Level Alarm Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the High Level Alarm Setpoint using the number pad that appears on screen and then press “Enter” to save the new value.

CHART

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

LIQUID LEVEL SETTINGS < EXIT

High Level Alarm Setpoint 10.0 in
High Level Setpoint 9.0 in
Low Level Setpoint 7.0 in
Low Level Alarm Setpoint 6.0 in

Advanced Level Settings

4. Press the value displayed next to “High Level Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the High Level Setpoint using the number pad that appears on screen and then press “Enter” to save the new value.

CHART

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

LIQUID LEVEL SETTINGS < EXIT

High Level Alarm Setpoint 10.0 in
High Level Setpoint 9.0 in
Low Level Setpoint 7.0 in
Low Level Alarm Setpoint 6.0 in

Advanced Level Settings

MVE TS Quick Reference Guide

5. Press the value displayed next to “Low Level Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the Low Level Setpoint using the number pad that appears on screen and then press “Enter” to save the new value.

CHART LIQUID LEVEL SETTINGS < EXIT

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

IDLE

START FILL

FOG CLEAR

STOP FILL

ALARM MUTE

SETUP

High Level Alarm Setpoint 10.0 in

High Level Setpoint 9.0 in

Low Level Setpoint 7.0 in

Low Level Alarm Setpoint 6.0 in

Advanced Level Settings

6. Press the value displayed next to “Low Level Alarm Setpoint”

The number pad will be displayed once the value to be adjusted is selected. Type in a new value for the Low Level Alarm Setpoint using the number pad that appears on screen and then press “Enter” to save the new value.

CHART LIQUID LEVEL SETTINGS < EXIT

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

IDLE

START FILL

FOG CLEAR

STOP FILL

ALARM MUTE

SETUP

High Level Alarm Setpoint 10.0 in

High Level Setpoint 9.0 in

Low Level Setpoint 7.0 in

Low Level Alarm Setpoint 6.0 in

Advanced Level Settings

Adjusting Display and Output Settings

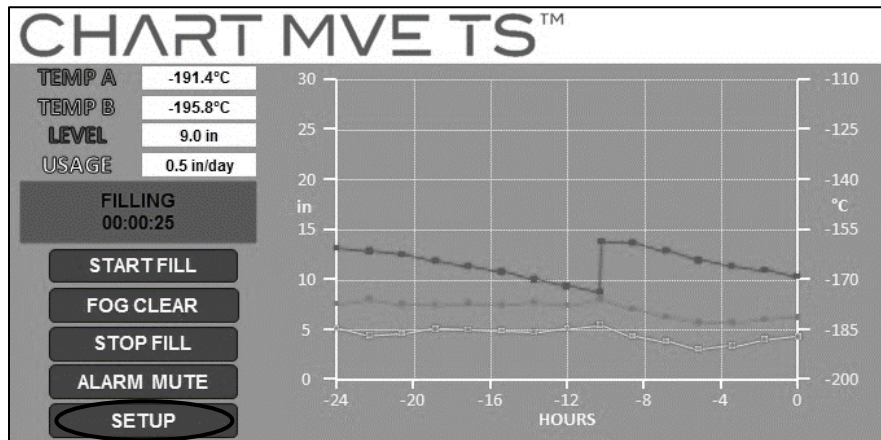
MVE TS Quick Reference Guide

The units of measurement displayed by the MVE TS may be adjusted to accommodate the needs of the user. Temperature measurement may be displayed in Kelvin (K), degrees Celsius (°C), or degrees Fahrenheit (°F). The amount of liquid nitrogen in the freezer may be displayed in inches (in), millimeters (mm). In addition, the amount of liquid nitrogen consumed by the freezer (liquid usage) may be shown on the display.

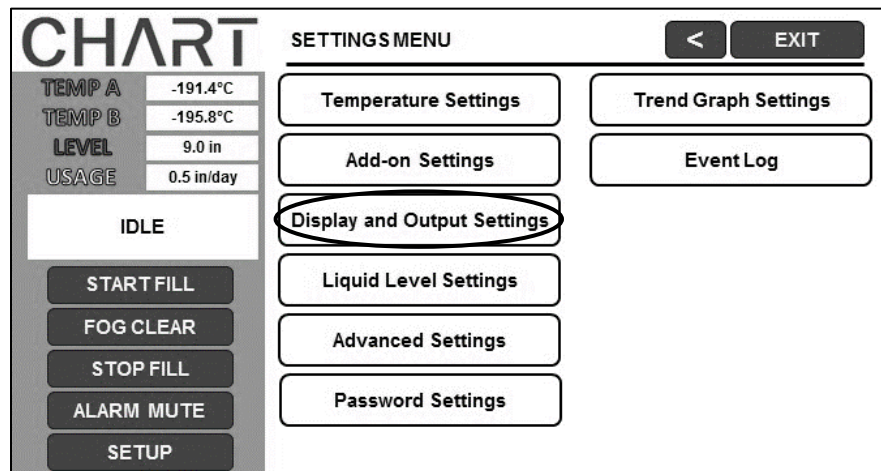
NOTE: Security Level 1 is required to adjust the display and output settings (See “Password and Security Setup” section for details).

1. Press “Setup”

Controller will prompt for a password. Type in the password using the number pad that appears and press “Enter”.



2. Press “Display and Output Settings”



MVE TS Quick Reference Guide

3. Press the units displayed next to “Temperature Units”

Press the “°C”, “°F”, or the “K” option for “Temperature Units”.

CHART

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

DISPLAY AND OUTPUT SETTINGS

Temperature Units °C
Level Units in
Display Liquid Usage DISABLED

Advanced Display and Output Settings

4. Press the units displayed next to “Level Units”

Press the “in” or “mm” option for “Level Units”.

CHART

TEMP A -191.4°C
TEMP B -195.8°C
LEVEL 9.0 in
USAGE 0.5 in/day

IDLE

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

DISPLAY AND OUTPUT SETTINGS

Temperature Units °C
Level Units in
Display Liquid Usage DISABLED

Advanced Display and Output Settings

MVE TS Quick Reference Guide

5. Press “ENABLED” or “DISABLED” next to “Display Liquid Usage”

This will enable or disable the liquid usage feature. Pressing “ENABLED” will change the liquid usage status to “DISABLED” and pressing “DISABLED” will change the liquid usage status to “ENABLED”.

The screenshot shows the CHART MVE TS interface. On the left, there's a sidebar with the 'CHART' logo and a list of status indicators: TEMP A (-191.4°C), TEMP B (-195.8°C), LEVEL (9.0 in), and USAGE (0.5 in/day). Below these are buttons for START FILL, FOG CLEAR, STOP FILL, ALARM MUTE, and SETUP. The main area is titled 'DISPLAY AND OUTPUT SETTINGS' and has a back arrow and an EXIT button. It contains three settings: Temperature Units (°C), Level Units (in), and Display Liquid Usage (DISABLED). The 'DISABLED' button for Display Liquid Usage is circled in red. At the bottom, there's a button for 'Advanced Display and Output Settings'.

CHART		DISPLAY AND OUTPUT SETTINGS	
TEMP A	-191.4°C	Temperature Units	°C
TEMP B	-195.8°C	Level Units	in
LEVEL	9.0 in	Display Liquid Usage	DISABLED
USAGE	0.5 in/day		

Buttons: START FILL, FOG CLEAR, STOP FILL, ALARM MUTE, SETUP

Advanced Display and Output Settings

MVE TS Quick Reference Guide

Password and Security Setup

The MVE TS can store up to 10 different passwords. Each password can be assigned its own security level ranging from Level 1 to Level 4. Table 3 below shows which settings can be changed with each security level. A security level of 4 is required to adjust any password. The default (or “Global”) password for the MVE TS is “3456”. All parameters may be adjusted by using this password. Record all passwords and security settings and store in a safe place. NOTE: MVE recommends changing the global password, as it is common to all units. If the global password has been forgotten, contact MVE Customer Service for details on how to reset passwords.

Table 3: Security Levels and Definitions

FEATURE	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Fill Start	X	X	X	X
Fill Stop	X	X	X	X
Alarm Mute	X	X	X	X
Change Display Units	X	X	X	X
Temp Settings		X	X	X
Level Settings		X	X	X
Time/Date		X	X	X
Calibration Probes		X	X	X
Change Languages		X	X	X
Hot Gas Bypass Settings		X	X	X
OFAF Setting			X	X
Communication Settings			X	X
Programming			X	X
Password Settings				X

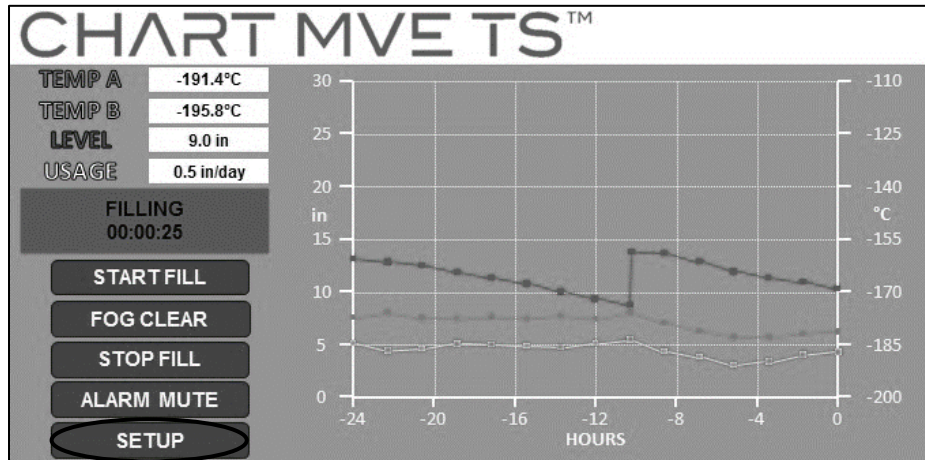
MVE TS Quick Reference Guide

This section details how to enable / disable password entry mode as well as how to change and setup multilevel security passwords.

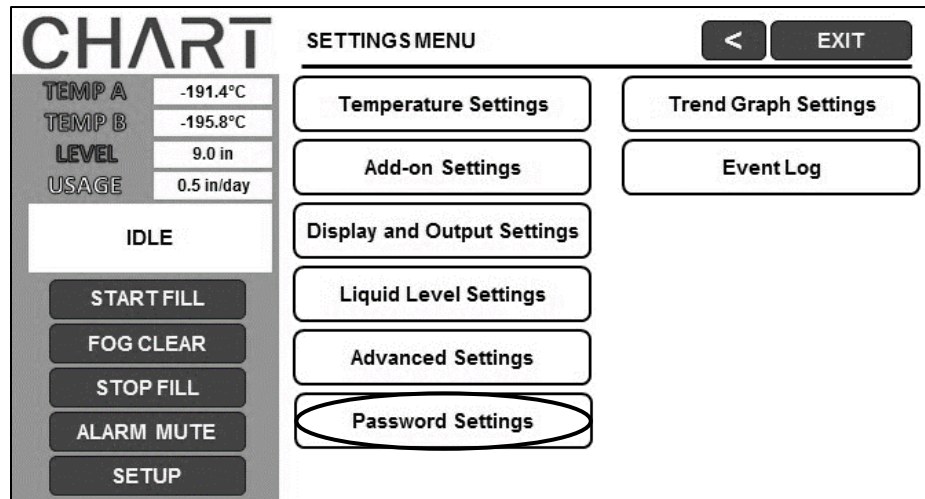
NOTE: Security Level 4 is required to setup or change passwords.

1. Press “Setup”

Controller will prompt for a password. Type in the password using the number pad that appears and press “Enter”.



2. Press “Password Settings”



MVE TS Quick Reference Guide

3. Press “ENABLED” or “DISABLED” next to “Password Entry Mode”

This will enable or disable the password entry mode. Pressing “ENABLED” will change the password entry mode to “DISABLED” and pressing “DISABLED” will change the password entry mode to “ENABLED”.

CHART

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

MODE: **IDLE**

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

PASSWORD SETTINGS < EXIT

Password Entry Mode: **DISABLED**

Set Password 1	Set Password 6
Set Password 2	Set Password 7
Set Password 3	Set Password 8
Set Password 4	Set Password 9
Set Password 5	Set Password 10
Set Global Password	

4. Press the desired password to setup or adjust.

CHART

TEMP A	-191.4°C
TEMP B	-195.8°C
LEVEL	9.0 in
USAGE	0.5 in/day

MODE: **IDLE**

START FILL
FOG CLEAR
STOP FILL
ALARM MUTE
SETUP

PASSWORD SETTINGS < EXIT

Password Entry Mode: **DISABLED**

Set Password 1	Set Password 6
Set Password 2	Set Password 7
Set Password 3	Set Password 8
Set Password 4	Set Password 9
Set Password 5	Set Password 10
Set Global Password	

5. Enter a new password and password level.

MVE TS Quick Reference Guide

Alarms and Descriptions

Table 4: Alarms and Descriptions

Alarm Display	Description
High Temp A	The temperature of Probe A is above the user defined High Temperature setting.
High Temp B	The temperature of Probe B is above the user defined High Temperature setting.
Low Temp A	The temperature of Probe A is below the user defined Low Temperature setting.
Low Temp B	The temperature of Probe B is below the user defined Low Temperature setting.
High Level	The depth of LN2 inside the freezer is above the user defined High level setting.
Low Level	The depth of LN2 inside the freezer is below the user defined Low level setting.
Usage Warning	The consumption of LN2 has doubled.
Usage Alarm	The consumption of LN2 has increased by a factor of 5.
Fill Time	The amount of time required to complete a fill cycle exceeds the user defined Fill Time setting.
Bypass Time	The amount of time required to complete a bypass cycle exceeds the user defined Bypass Time setting.
Temp A Calibration	The temperature of Probe A is lower than absolute zero.
Temp B Calibration	The temperature of Probe B is lower than absolute zero.
Bypass Calibration	The temperature of the Bypass Probe is lower than absolute zero.
Low Battery	The voltage of the back up batteries has dropped below 21 volts.
Power Failure	The primary power has been disconnected for at least 30 minutes.
Lid Open	The lid on the freezer has been open longer than the user specified time.
Communication Loss	The controller has lost communications with the display.



**If any alarms occur, contact your authorized
MVE Distributor or customer / technical service.**

Customer/Technical Service:

USA:
Phone: 1-800-482-2473
Fax: 1-888-932-2473

Europe:
Phone: +44 (0) 1344 403 100
Fax: +44 (0) 1344 429 224

Asia:
Phone: +61 297 494333
Fax: +61 297 494666

NOTES



2200 Airport Industrial Dr., Ste 500
Ball Ground, GA 30107, U.S.A.
www.chartbiomed.com

Unit 2, Maxdata Centre
Downmill Road
Bracknell
Berks RG12 1QS, United Kingdom



Innovation. Experience. Performance.™

21081123 rev A

Copyright © 2016 Chart Industries

Chart Inc. reserves the right to discontinue its products, or change the prices, materials, equipment, quality, descriptions, specifications and/or processes to its products at any time without prior notice and with no further obligation or consequence. All rights not expressly stated herein are reserved by us, as applicable.