GTM – GRAPHICAL TANK MONITOR OPERATOR'S MANUAL

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INTRODUCTION

The GTM – Graphical Tank Monitor is a ready to use system for tank monitoring, complete with level and temperature indication. Also included are two level alarms per tank, allowing the GTM to prevent overflow, or to actuate other devices at predetermined levels.

SENSOR INPUTS

The GTM accepts any two-wire, level sensor with a 4-20 mA output. Linear (vertical) tanks require only two point scaling, which can be performed either by keying in the current signal, or through the use of its built-in learn mode. For nonlinear applications, such as horizontal tank measurement, up to 100 scaling points can be entered via the free Crimson software package. The GTM also accepts two, or three-wire, 100 Ohm platinum RTDs to monitor tank temperature. The trending feature allows an operator to look at a history of the temperature, similar to that of a chart-recorder.

STANDARD PROGRAMMING

All standard programming is done via the bright 10.4" touchscreen. Critical parameters are protected by a programmable password, while often-changed values are accessible via an easy to use menu.

OPTIONAL FEATURES

The unit comes standard with Ethernet and RS485 ports, which allow unlimited connection possibilities to PCs, PLCs, and SCADA systems. As an option, Red Lion can configure the communications protocols, addresses, and memory map prior to shipment. The built-in web server allows users to view and control the GTM from any networked PC via standard web browser.

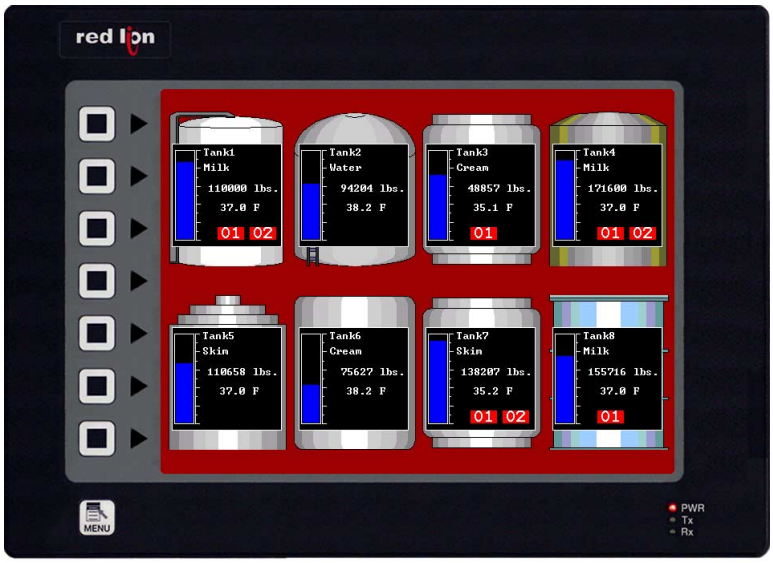
ENCLOSURE

Enclosed in a stainless steel Hoffman Concept® cabinet designed specifically for the food and beverage industry, the GMT is suitable for use in demanding applications such as those found in the dairy and beverage markets.

OPERATION

Navigation and programming is done via the bright 10.4" touchscreen.

MAIN SCREEN



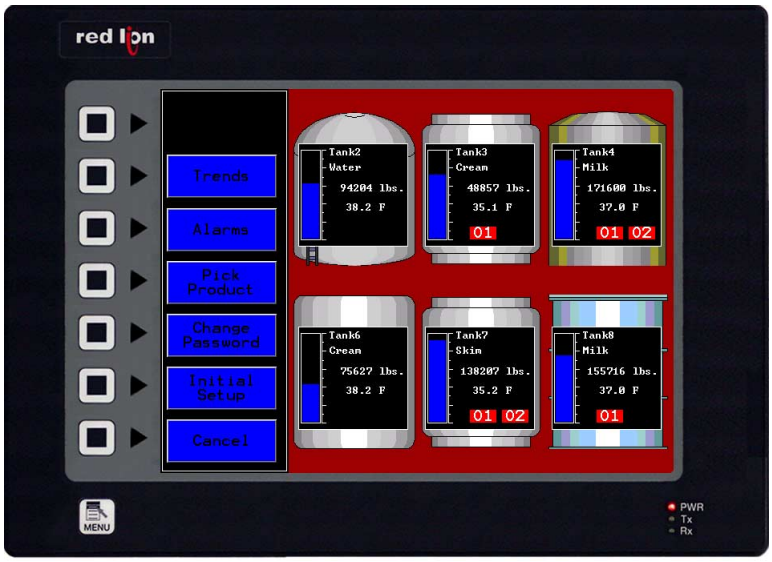
The main screen of the GTM displays all relevant information at a glance. This includes the following…

- Tank Name
- Tank Contents
- Lbs. of Product Contained
- Temperature of Contents
- Bar-graph – Graphically displays the level of the contents.
- Alarm Status – Annunciators indicate the status of each tank alarm.

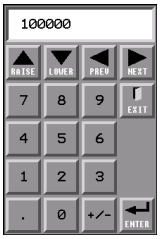
NAVIGATION

PAGES AND MENUS

Pressing the menu key from any page provides a pop-up navigation menu. You may touch the graphical button, or the physical button located next to the touchscreen, to navigate.



DATA ENTRY FIELDS



To adjust a numeric field, such as an alarm value, simply touch the field. A numeric keypad will appear, which will allow you to edit the field. Pressing enter will commit the number to memory, and close the keypad.

To adjust an alphanumeric field, such as a tank name, simply touch the field, and a keyboard will appear. The keyboard works in a similar fashion to that of a typewriter keyboard, in that SHIFT invokes uppercase for a single character, and LOCK causes the uppercase characters to remain on until you press LOCK for a second time. Pressing SYMBOL, as well as SHIFT+SYMBOL, accesses extra characters such as numeric, punctuation, and symbols.

In some rare cases, such as the Select Product menu, pressing a field causes a specific list of choices to appear. In this case, press the appropriate field to commit it to memory.

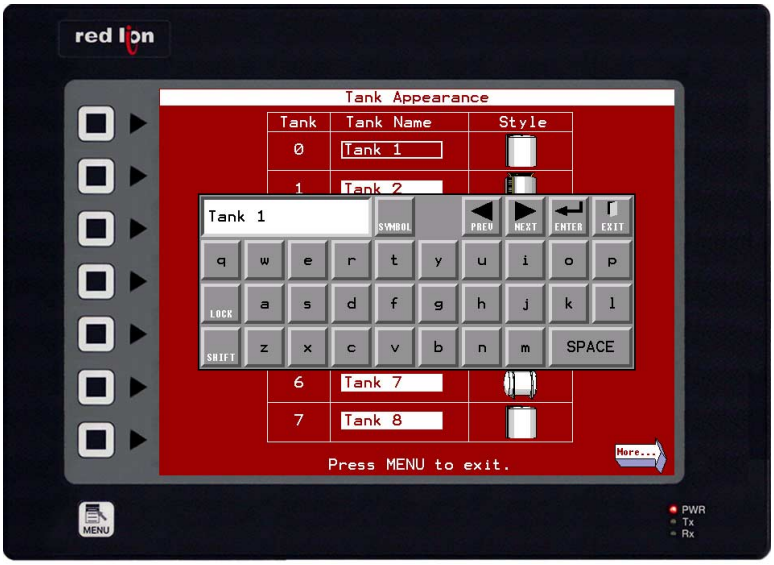
INITIAL SETUP

PASSWORD PROTECTION

Initial setup should be performed immediately after installation to ensure accurate monitoring. The proper password must be entered to access the setup menus, which prevents unauthorized or accidental changes. The default password is "0". It is strongly recommended that the password be changed to something other than the default during installation. (See Change Password.)

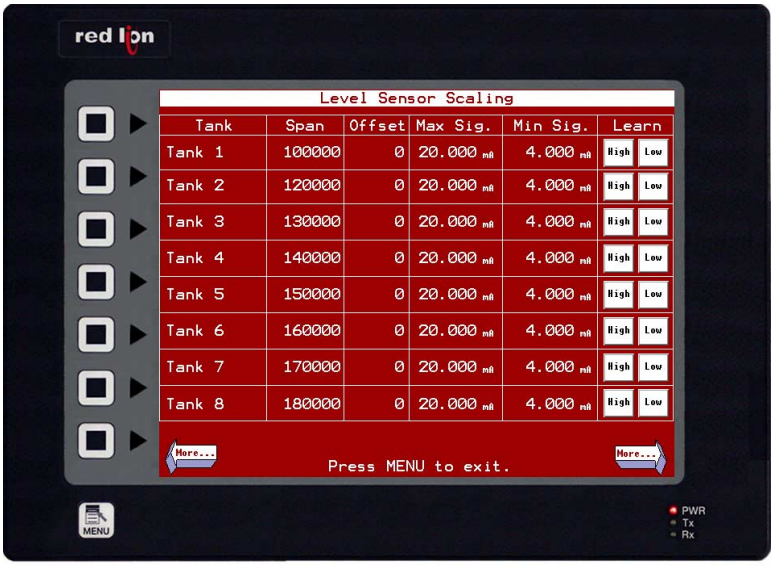
Once the proper password is entered, you may use the "<- More ->" buttons at the bottom of the screen to navigate through the various setup screens.

TANK APPEARANCE



The first page of the Initial Setup menu allows you to enter a meaningful name for each of the tanks, as well as choose a tank graphic for each. To change the tank name, simply double-tap the desired field, and an alphanumeric keypad will appear. To change a tank's graphic representation, touch the tank next to the name.

LEVEL SENSOR SCALING



Each level input must be scaled to accurately measure the contents of the tank. The Span is the value that will be displayed when the Maximum Signal is reached, and the Offset is the value that will be displayed when the Minimum Signal is reached.

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EXAMPLE 1

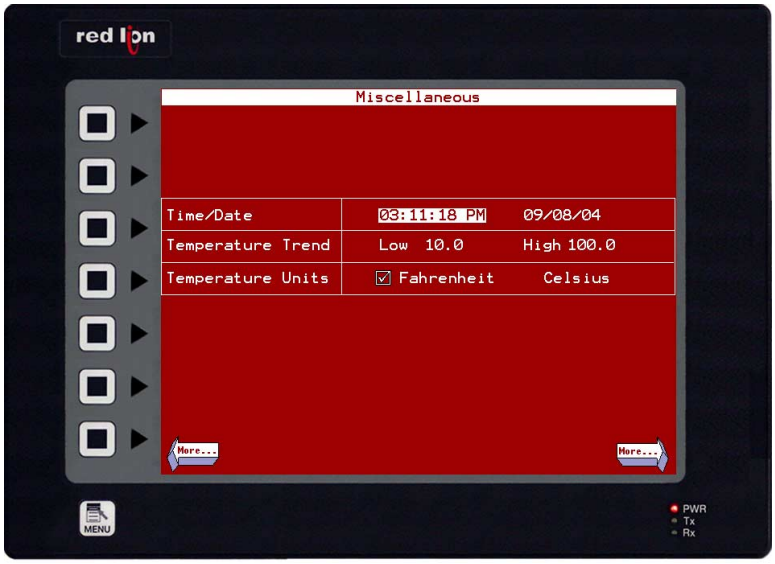
Suppose you have a pressure sensor that will transmit a 4-20 mA signal based on the level of a vessel that can hold 100,000 lbs. of water when filled to capacity. You would simply enter a Span of 100,000, and an Offset of 0, with Maximum and Minimum Signal values of 20.000 and 4.000 respectively.

EXAMPLE 2

Taking the above example a bit further, if the sensor was mounted a foot or so above the bottom of the tank, and it was determined that 700 lbs. of water was under the sensor and therefore unmeasured, you would enter 99,300 as the Span, and 700 as the Offset. The Signal values would still be 20.000 and 4.000 mA.

Instead of entering the Maximum and Minimum Signal values manually, you may also choose to allow the system to learn the actual signal. To do this, simply press the Learn High or Learn Low button when the appropriate signal level is applied.

MISCELLANEOUS

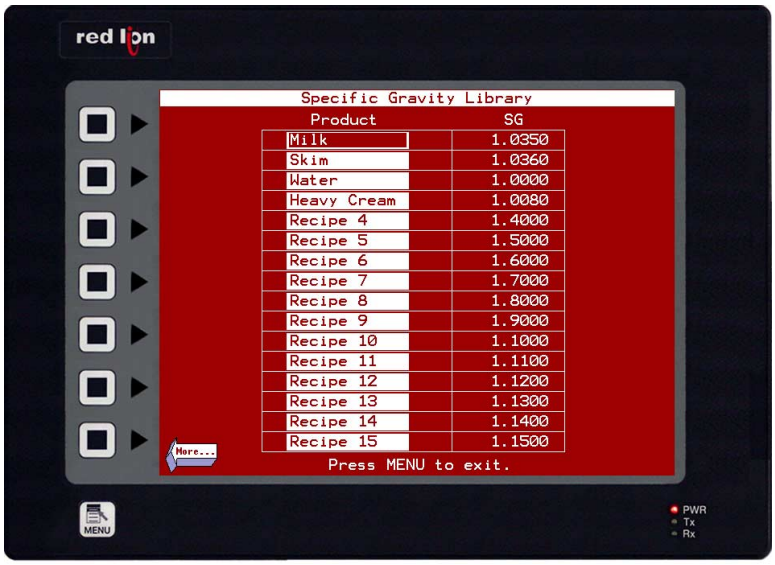


The Miscellaneous page allows the adjustment of several parameters that are loosely related. The time and date may be adjusted, which is important for the historical trending and data logging features.

The Temperature Trend Low and High values determine the minimum and maximum scale of the historical trend viewer.

The Temperature Units field allows the panel to display and record temperatures in either Fahrenheit or Celsius.

SPECIFIC GRAVITY LIBRARY



The Specific Gravity Library provides the means to store up to 16 different liquids, as well as their specific gravity. This allows the operator to assign various liquids to different tanks by name, instead of by specific gravity. (See Selecting a Product.)

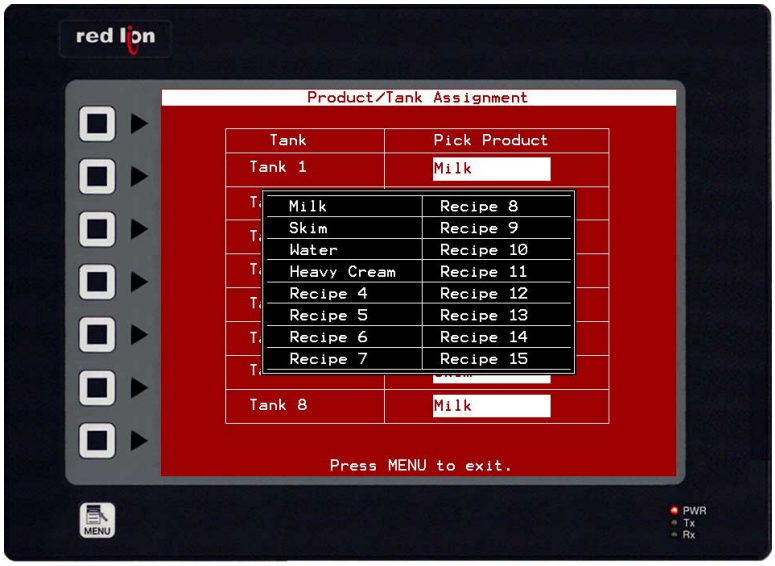
CHANGE PASSWORD

The Change Password page allows you to enter a new password to prevent access to the setup menus. After entering the current password (default password is “0”), you may enter a new one. You must enter the new password twice to ensure you know what you typed! Immediately after entering the new password for a second time, the display returns to the main page.

Pressing the Menu key at any time during the above sequence aborts the change, and the old password is retained.

SELECTING A PRODUCT (PICK PRODUCT)

As contents of a given tank are likely to change, the Pick Product page is accessible directly from the main menu.



PRODUCT SELECTION

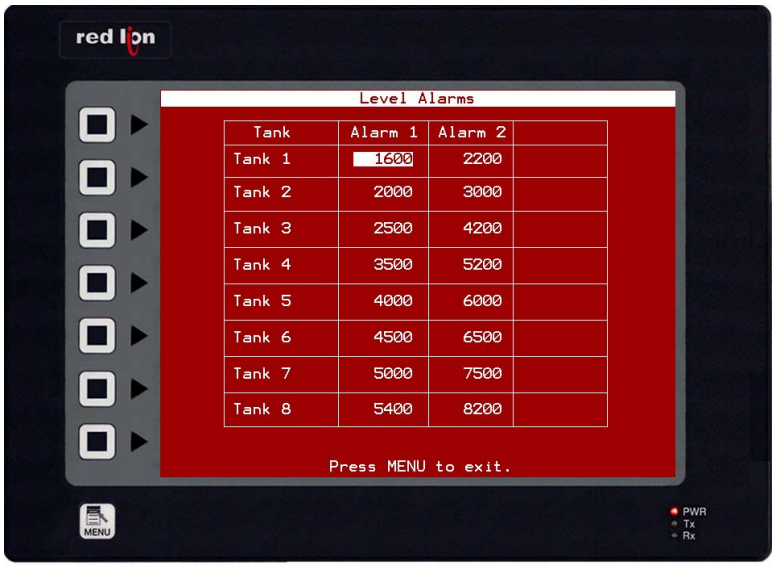
This menu allows you to select the product contained in each vessel. Simply touch the product field next to the appropriate tank, and a menu containing up to sixteen product types will be displayed. Touch the desired product to assign it to the tank.

Press the Menu key to return to the main display.

ALARMS

The GTM provides two high-acting relay outputs per tank. These may be used to energize auxiliary equipment, or two warn of overflow conditions.

SETPOINTS



The alarms menu shows the values, in lbs., at which the alarms will energize. To change a value, simply press it, and a numeric keypad will pop up. Type in the new alarm value, and press Enter.

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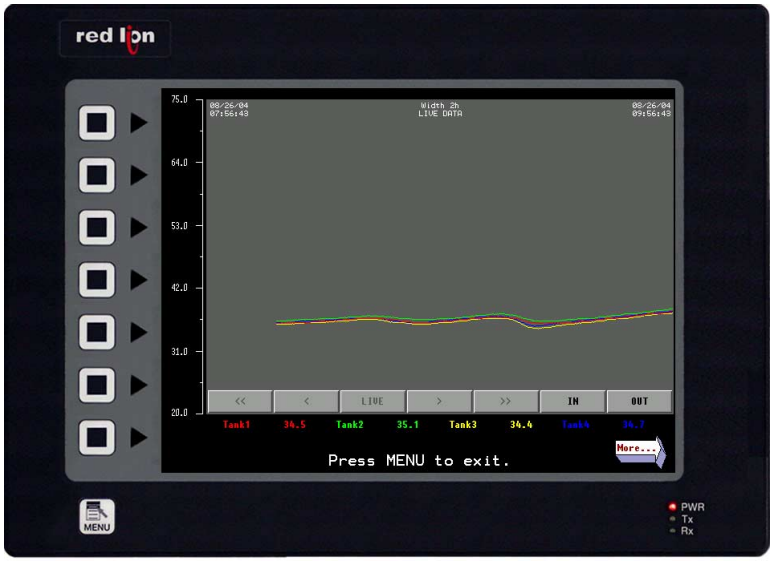
TRENDS

The Trends pages display the temperature of the vessels, as well as a historical trend. Use the "More…" buttons at the bottom to select tanks 1-4, or tanks 5-8.

ADJUSTING THE VIEW

The < and > keys at the bottom of the trend window may be used to look at historical data. If historical data is being viewed, the top of the trend window will indicate it such, otherwise it will indicate "Live Data".

The IN and OUT buttons allow you to change the amount of time being viewed at once.



CUSTOM SETTINGS

The GTM may be modified to add communications to PCs, PLCs, or SCADA systems. The built-in web server may also be enabled, and given an IP address, so that users can monitor and/or control the GTM from any networked PC, via web browser.

Linearization tables for horizontal tanks may also be created.

All of the above may be done by the user via Crimson 1 and Crimson 2 software packages; however, a thorough understanding of the hardware and software is required to ensure that no mistakes are made. For a nominal fee, Red Lion can make the necessary changes, ensuring your system works “right out of the box”.

DOCUMENTATION

The following chart may be used to record features specific to a given GTM. Alternatively, if the GTM was ordered from Red Lion with custom settings, this same chart will have been shipped with the unit, and can be found inside the enclosure.

ENABLE WEB SERVER... (CIRCLE ONE EACH)

Remote Viewing? Yes / No Remote Control? Yes / No

NODE (ADDRESS) OF SYSTEM, OR IP ADDRESS?

Address: _____

MAP PLC/SCADA COMMUNICATIONS? (CIRCLE)

Modbus TCP/IP EtherNet/IP DH485

STARTING REGISTER ADDRESS (E.G. N7:01 OR 400001)

Address: _____

Registers will be consecutively numbered in the following sequence…

	VARIABLE NAME		VARIABLE NAME		VARIABLE NAME
_____	TankName0	_____	Password	_____	RecipeNames0
_____	TankName1	_____	PasswordStored	_____	RecipeNames1
_____	TankName2	_____	PasswordNew	_____	RecipeNames2
_____	TankName3	_____	PasswordNewAgain	_____	RecipeNames3
_____	TankName4	_____	SpanTank0	_____	RecipeNames4
_____	TankName5	_____	SpanTank1	_____	RecipeNames5
_____	TankName6	_____	SpanTank2	_____	RecipeNames6
_____	TankName7	_____	SpanTank3	_____	RecipeNames7
_____	TankLevel0	_____	SpanTank4	_____	RecipeNames8
_____	TankLevel1	_____	SpanTank5	_____	RecipeNames9
_____	TankLevel2	_____	SpanTank6	_____	RecipeNames10
_____	TankLevel3	_____	SpanTank7	_____	RecipeNames11
_____	TankLevel4	_____	OffsetTank0	_____	RecipeNames12
_____	TankLevel5	_____	OffsetTank1	_____	RecipeNames13
_____	TankLevel6	_____	OffsetTank2	_____	RecipeNames14
_____	TankLevel7	_____	OffsetTank3	_____	RecipeNames15
_____	TankTemp0	_____	OffsetTank4	_____	RecipeSGs0
_____	TankTemp1	_____	OffsetTank5	_____	RecipeSGs1
_____	TankTemp2	_____	OffsetTank6	_____	RecipeSGs2
_____	TankTemp3	_____	OffsetTank7	_____	RecipeSGs3
_____	TankTemp4	_____	ScaleTempLo	_____	RecipeSGs4
_____	TankTemp5	_____	ScaleTempHi	_____	RecipeSGs5
_____	TankTemp6	_____	Out1Tank0	_____	RecipeSGs6
_____	TankTemp7	_____	Out2Tank0	_____	RecipeSGs7
_____	Alarm1Tank0	_____	Out1Tank1	_____	RecipeSGs8
_____	Alarm2Tank0	_____	Out2Tank1	_____	RecipeSGs9
_____	Alarm1Tank1	_____	Out1Tank2	_____	RecipeSGs10
_____	Alarm2Tank1	_____	Out2Tank2	_____	RecipeSGs11
_____	Alarm1Tank2	_____	Out1Tank3	_____	RecipeSGs12
_____	Alarm2Tank2	_____	Out2Tank3	_____	RecipeSGs13
_____	Alarm1Tank3	_____	Out1Tank4	_____	RecipeSGs14
_____	Alarm2Tank3	_____	Out2Tank4	_____	RecipeSGs15
_____	Alarm1Tank4	_____	Out1Tank5		
_____	Alarm2Tank4	_____	Out2Tank5		
_____	Alarm1Tank5	_____	Out1Tank6		
_____	Alarm2Tank5	_____	Out2Tank6		
_____	Alarm1Tank6	_____	Out1Tank7		
_____	Alarm2Tank6	_____	Out2Tank7		
_____	Alarm1Tank7				
_____	Alarm2Tank7				