

Rosemount™ 2230 Graphical Field Display



Contents

About this guide..... 3

Overview..... 6

General information..... 9

Installation..... 10

Configuration and operation.....26

1 About this guide

This Quick Start Guide provides basic guidelines for installation and configuration of the Rosemount 2230 Graphical Field Display.

NOTICE

Read this manual before working with the product. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product.

For equipment service or support needs, contact your local Emerson representative.

Spare Parts

Any substitution of non-recognized spare parts may jeopardize safety. Repair, e.g. substitution of components etc, may also jeopardize safety and is under no circumstances allowed.

Rosemount Tank Radar AB will not take any responsibility for faults, accidents, etc caused by non-recognized spare parts or any repair which is not made by Rosemount Tank Radar AB.

NOTICE

The products described in this document are NOT designed for nuclear-qualified applications. Using non-nuclear qualified products in applications that require nuclear-qualified hardware or products may cause inaccurate readings. For information on Rosemount nuclear-qualified products, contact your local Emerson Sales Representative.

⚠ WARNING

WARNING - Substitution of components may impair Intrinsic Safety.

WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque.

AVERTISSEMENT - Ne pas ouvrir en cas de présence d'atmosphère explosive.

⚠ WARNING

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

Ensure only qualified personnel perform the installation.

Use the equipment only as specified in this manual. Failure to do so may impair the protection provided by the equipment.

Do not perform any service other than those contained in this manual unless you are qualified.

To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

Substitution of components may impair Intrinsic Safety.

⚠ WARNING

Explosions could result in death or serious injury

Verify that the operating environment of the gauge is consistent with the appropriate hazardous locations certifications.

Before connecting a handheld communicator in an explosive atmosphere, ensure that the instruments are installed in accordance with intrinsically safe or non-incendive field wiring practices.

Do not remove the instrument cover in explosive atmospheres when the circuit is live.

⚠ WARNING

High voltage that may be present on leads could cause electrical shock.

Avoid contact with the leads and terminals.

Make sure the main power to the Rosemount 2410 Tank Hub is off and the lines to any other external power source are disconnected or not powered while wiring the device.

⚠ WARNING

Electrical shock could cause death or serious injury.

Use extreme caution when making contact with the leads and terminals.

⚠ WARNING**Physical access**

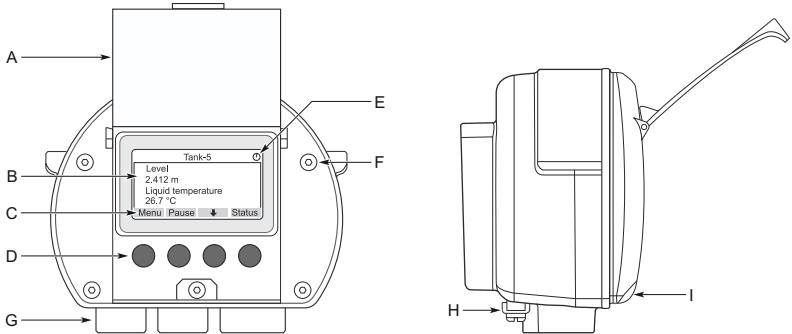
Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

2 Overview

2.1 Components

Figure 2-1: Rosemount 2230 Components



- A. Weather protection lid⁽¹⁾
- B. Display
- C. Menu
- D. Soft keys
- E. Activity indicator
- F. Cover screw (x6)
- G. Cable entries: two ½ - 14 NPT (optional: adapters for two M20 x 1.5)
- H. Ground screw
- I. Clip for locking the weather protection

2.2 Getting started

2.2.1 System start-up

The standard start-up procedure of a Rosemount Tank Gauging system that includes devices such as the Rosemount 2460 System Hub, Rosemount 2410 Tank Hub, Rosemount 5900S Radar Level Gauge, and the Rosemount 2240S Multi-input Temperature Transmitter can be summarized as follows:

Procedure

1. Install the devices on the appropriate locations.

⁽¹⁾ It is recommended that the lid is closed whenever possible to protect the LCD from exposure by ultraviolet radiation from the sun.

2. Assign Modbus addresses⁽²⁾ for the Rosemount 2410 Tank Hub, for level gauges such as the Rosemount 5900S Radar Level Gauge, and for auxiliary tank devices (ATD) such as the Rosemount 2240S Multi-input Temperature Transmitter. The Modbus addresses will be stored in the built-in databases of the Rosemount 2410 Tank Hub and the Rosemount 2460 System Hub.
3. Verify that the total current consumption of devices connected to the Tankbus does not exceed 250 mA⁽³⁾. In an Emerson Wireless system the maximum current is 200 mA.
4. Wire the devices.
 - a) Connect field devices to the Tankbus.

Note

Devices must be configured in the tank database⁽²⁾⁽³⁾ of the Rosemount 2410 Tank Hub in order to be able to communicate on the Tankbus.

- b) Connect the Rosemount 2410 Tank Hub to the Rosemount 2460 System Hub.
 - c) Connect the Rosemount 2460 System Hub to the control room PC with TankMaster software. The 2460 may be connected via a Rosemount 2180 Field Bus Modem, or directly via RS 232 or RS 485.
5. Install the TankMaster software in the control room PC.
6. Configure the devices by using the TankMaster WinSetup configuration tool as described in the Rosemount Tank Gauging [System Configuration Manual](#) (Document no. 00809-0300-5100).

2.2.2 Start-up in a FOUNDATION™ Fieldbus system

To start up Rosemount Tank Gauging devices in a FOUNDATION Fieldbus system:

Procedure

1. Prepare the start-up by recording information that will be needed for configuration of various field devices as described in the Rosemount Tank Gauging System Configuration manual. This may for example include tank geometry,

⁽²⁾ See the Rosemount Tank Gauging [System Configuration Manual](#) (Document no. 00809-0300-5100) for more information.

⁽³⁾ See the Rosemount 2410 Tank Hub [Reference Manual](#) (Document No. 00809-0100-2410) for more information.

antenna type, number of temperature elements and other configuration parameters.

2. Connect the field devices, such as the Rosemount 5900S Radar Level Gauge and the Rosemount 2240S Multi-input Temperature Transmitter, to the FOUNDATION Fieldbus network.
3. Configure the field devices by using AMS Device Manager (or any other FOUNDATION Fieldbus host supporting DD4).

See the Reference Manual for the respective field device and the Rosemount Tank Gauging [System Configuration Manual](#) (Document No. 00809-0300-5100) for more information on how to configure various Rosemount Tank Gauging devices.

3 General information

3.1 Service support

For service support contact the nearest Emerson Automation Solutions /Rosemount Tank Gauging representative. Contact information can be found on the web site www.Emerson.com.

3.2 Product certifications

See the Rosemount 2230 [Product Certifications](#) document for detailed information on the existing approvals and certifications.

3.3 Product recycling/disposal

Recycling of equipment and packaging should be taken into consideration and disposed of in accordance with local and national legislation/regulations.

4 Installation

4.1 Installation considerations

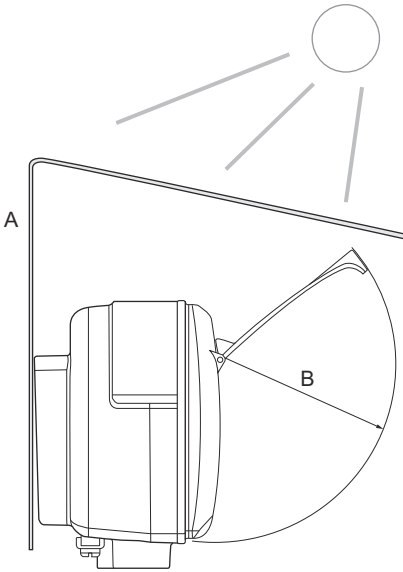
The Rosemount 2230 Graphical Field Display can be installed either on the tank roof or at the foot of the tank for a flexible and convenient read-out of tank data.

The Rosemount 2230 is designed for mounting on a wall or a pipe. It is important to provide space for opening the weather protection lid which prevents degradation of the LCD display due to sunlight exposure.

Consider the following when finding an appropriate location for the Rosemount 2230 Graphical Field Display:

- Mount the Rosemount 2230 in a location where it is protected from excessive sunlight. This will reduce exposure to ultra violet (UV) radiation and extend the life-time of the LCD.
- In case the LCD can not be protected from sunlight and UV radiation, it is recommended that the weather protection lid is closed whenever the Rosemount 2230 is not used.
- An external weather protection is recommended to protect the LCD from sunlight and UV radiation in order to extend its life-time. A weather protection can be sourced locally or ordered from factory.
- When mounting the Rosemount 2230 display ensure that sufficient space is provided for opening the lid, see [Figure 4-1](#).

Figure 4-1: Space Required for Opening the Lid



- A. Weather protection (optional)
- B. 93 mm (3.7 in.)

4.2 Mechanical installation

4.2.1 Mounting the graphical display

The Rosemount 2230 Graphical Field Display is designed for mounting on a wall or a pipe.

Wall mounting with bracket

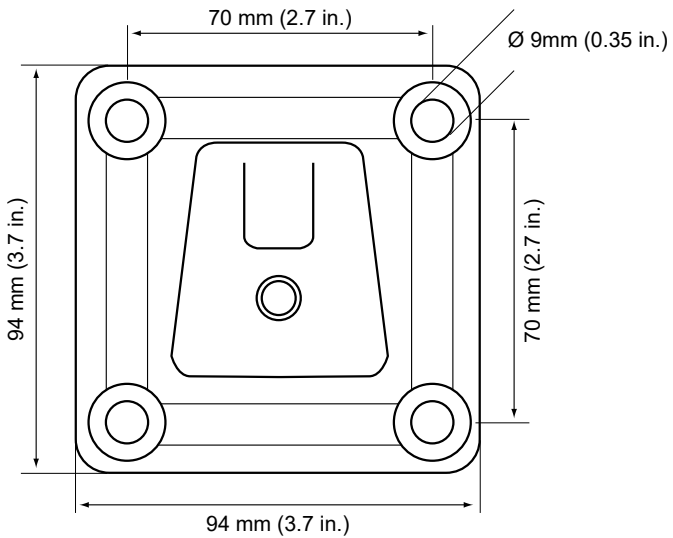
The Rosemount 2230 Graphical Field Display can be mounted on a wall by using the mounting kit supplied by Emerson.

Procedure

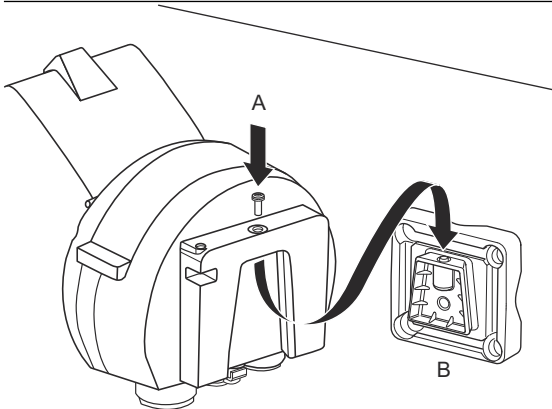
1. Mount the bracket on the wall by using four M8 screws and flat washers.

Note

Countersunk screws are not suitable.



2. Attach the Rosemount 2230 display to the bracket on the wall by sliding it from the top downwards.



- A. Locking screw
- B. Bracket

3. Secure the display to the bracket by tightening the locking screw.

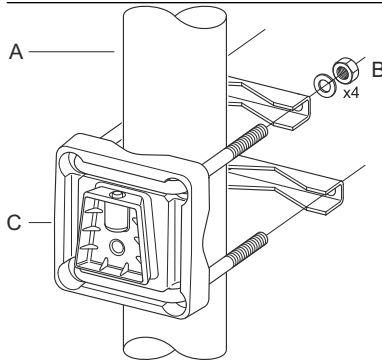
Pipe mounting

The Rosemount 2230 Graphical Field Display can be mounted on pipes ranging from a diameter of 33 mm to 60 mm by using an optional mounting kit supplied by Emerson.

Procedure

1. Attach the bracket to the pipe.

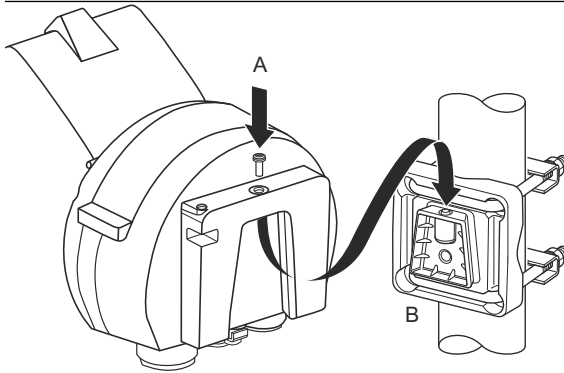
Ensure that the Rosemount 2230 is placed in a direction so that the display is clearly visible and wiring can be properly connected.



- A. 1 - 2 inches
- B. 4 nuts and washers
- C. Bracket

2. Tighten the nuts. Use moderate torque to ensure that the bracket does not break.

3. Attach the display to the bracket by sliding it from the top downwards.



- A. Locking screw
- B. Bracket

4. Secure the display to the bracket by tightening the locking screw.

4.3 Electrical installation

4.3.1 Cable/conduit entries

The electronics housing has two ½ - 14 NPT entries (optional: adapters for two M20×1.5). Minifast and Eurofast adapters are also available. The connections are made in accordance with local or plant electrical codes.

Make sure that unused ports are properly sealed to prevent moisture or other contamination from entering the electronics housing.

Note

Use enclosed metal plug to seal the unused entry/entries. The plastic plugs mounted at delivery are not sufficient as seal!

Note

Thread sealing (PTFE) tape or paste on male threads of conduit is required to provide a water/dust tight conduit seal and to meet the required degree of ingress protection as well as to enable future removal of the plug/gland.

4.3.2 Grounding

The housing should always be grounded in accordance with national and local electrical codes. Failure to do so may impair the protection provided by the equipment. The most effective grounding method is direct connection to earth ground with minimal impedance.

There is an external grounding screw located at the bottom of the housing and an internal grounding screw located inside the housing, see [Figure 4-2](#).


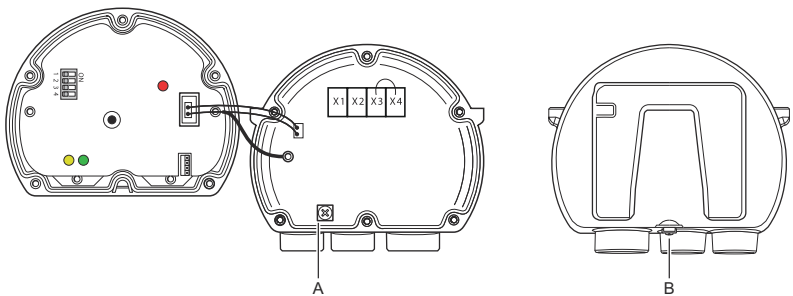
The internal ground screw is identified by a ground symbol: 

Figure 4-2: Grounding Screws



A. Internal ground

B. External ground. Cable diameter minimum 4 mm²

Note

When grounding the display via threaded conduit, make sure the connection provides sufficient low impedance.

Grounding - FOUNDATION™ Fieldbus

Signal wiring of the fieldbus segment can not be grounded. Grounding out one of the signal wires may shut down the entire fieldbus segment.

Shield wire connection

To protect the fieldbus segment from noise, grounding techniques for shield wire usually require a single grounding point for shield wire to avoid creating a ground loop. The ground point is typically at the power supply (Rosemount 2410 Tank Hub).

The Rosemount Tank Gauging devices are designed for “daisy-chain” connection of shield wiring in order to enable a continuous shield throughout the Tankbus network. The shield wire terminal in the Rosemount 2230 is not connected to ground. It merely provides electrical continuity to daisy-chained Tankbus cables.

4.3.3 Cable selection

Use shielded twisted pair wiring for the Rosemount 2230 in order to comply with FISCO⁽⁴⁾ requirements and EMC regulations. The cables must be approved for use in hazardous areas, where applicable. In the U.S. explosion-proof conduits may be used in the vicinity of the vessel.

We recommend cable size 0.75 mm² (18 AWG) in order to facilitate wiring. Cables within the range 22 AWG to 16 AWG (0.5 to 1.5 mm²) can be used in order to minimize the voltage drop to the Rosemount 2230 display.

Tankbus cabling must be approved for use in minimum 85°C to match requirements for all devices in a Rosemount Tank Gauging system.

The FISCO specification requires that cables for the Tankbus comply with the following parameters:

Table 4-1: FISCO Cable Parameters

Parameter ⁽¹⁾	Value
Loop resistance	15 Ω/km to 150 Ω/km
Loop inductance	0.4 mH/km to 1 mH/km
Capacitance	45 nF/km to 200 nF/km

⁽⁴⁾ See IEC 61158-2, IEC 60079-11, and IEC 60079-25.

Table 4-1: FISCO Cable Parameters (continued)

Parameter ⁽¹⁾	Value
Maximum length of each spur ⁽²⁾ cable	60 m in apparatus class IIC and IIB
Maximum cable length including trunk ⁽³⁾ and spurs	1000 m in apparatus class IIC and 1900 m in apparatus class IIB

- (1) For further information see requirements of the IEC 61158-2 standard.
 (2) A spur is an unterminated part of the network.
 (3) A trunk is the longest cable path between two devices on the fieldbus network, and is the part of the network which has terminations at both ends. In the Rosemount Tank Gauging system, a trunk is typically located between the Rosemount 2410 Tank Hub and a segment coupler or the last device in a daisy-chain configuration.

4.3.4 Hazardous areas

When the Rosemount 2230 is installed in a hazardous area, national and local regulations and specifications in applicable certificates must be observed, see [Product certifications](#).

4.3.5 Power requirements

The Rosemount 2230 is powered over the intrinsically safe Tankbus by the Rosemount 2410 Tank Hub. The 2410 feeds the intrinsically safe fieldbus segment by acting as a FISCO power supply on the Tankbus (9 - 17.5 Vdc, polarity insensitive). The Rosemount 2230 has a current consumption of 30 mA.

See the Rosemount 2410 [Reference Manual](#) (Document no. 00809-0100-2410) for more information.

When installed in a FOUNDATION™ Fieldbus system, the Rosemount 2230 is powered by the FF segment with standard fieldbus power supplies.

4.3.6 Tankbus

The Rosemount Tank Gauging system is easy to install and wire. Devices can be “daisy-chained” thus reducing the number of external junction boxes.

In a Rosemount Tank Gauging system devices communicate with a Rosemount 2410 Tank Hub via the intrinsically safe Tankbus. The Tankbus complies with the FISCO⁽⁵⁾ FOUNDATION Fieldbus standard. The Rosemount 2410 acts as power supply to the field devices on the Tankbus. A FISCO system enables more field devices to be connected

(5) FISCO=Fieldbus Intrinsically Safe Concept

to the segment compared to conventional IS systems based on the entity concept.

Termination

A terminator is needed at each end of a FOUNDATION™ Fieldbus network. Generally, one terminator is placed in the fieldbus power supply, and the other one in the last device in the fieldbus network.

Note

Ensure that there are **two** terminators on the fieldbus.

In a Rosemount Tank Gauging system the Rosemount 2410 Tank Hub acts as power supply. Since the tank hub normally is the first device in the fieldbus segment, the built-in termination is enabled at factory.

Other devices such as the standard version of the Rosemount 5900S Radar Level Gauge, the Rosemount 2230 Graphical Field Display, and the Rosemount 2240S Multi-input Temperature Transmitter also have built-in terminators which can easily be enabled by inserting a jumper in the terminal block when necessary.

Segment design

When designing a FISCO fieldbus segment a few requirements need to be considered. Cabling has to comply with FISCO requirements.

You will also have to ensure that the total operating current of the connected field devices is within the output capability of the Rosemount 2410 Tank Hub. The 2410 is able to deliver 250⁽⁶⁾ mA. Consequently, the number of field devices has to be considered so that the total current consumption is less than 250 mA. See section "Power Budget" in the Rosemount 2410 [Reference Manual](#) (Document no. 00809-0100-2410) for more information.

Another requirement is to ensure that all field devices have at least 9 V input voltage at their terminals. Therefore you will have to take into account the voltage drop in the fieldbus cables.

Distances are normally quite short between the Rosemount 2410 Tank Hub and field devices on the tank. In many cases you can use existing cables as long as the FISCO requirements are fulfilled.

See chapter "The Tankbus" in the Rosemount 2410 Tank Hub [Reference Manual](#) for more information on segment design of a Rosemount Tank Gauging system.

⁽⁶⁾ In Smart Wireless Systems the 2410 can deliver 200 mA on the Tankbus

4.3.7 Wiring

Use the following wiring procedure for the Rosemount 2230:

Prerequisites

Note

Ensure that o-rings and seats are in good condition prior to mounting the cover in order to maintain the specified level of ingress protection. The same requirements apply for cable inlets and outlets (or plugs). Cables must be properly attached to the cable glands.

Procedure

1. Unscrew and remove all screws at the front of the display.
 2. Remove the cover carefully. Take care of the locking spring for the weather protection hatch.
-

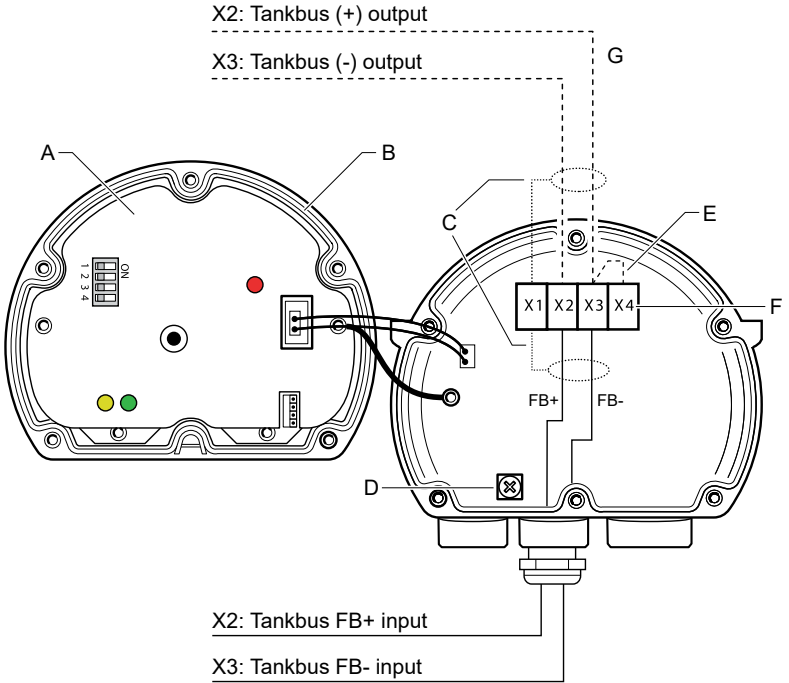
Note

Do not disconnect the cables between the display front and the circuit board. Ensure that the compartment is protected against water in case of rain.

3. Run the Tankbus cable through the gland.
4. Connect the Tankbus wires to the **X2** and **X3** terminals.
Ensure that the positive lead is connected to the terminal marked **FB+** and the negative lead to the terminal marked **FB-**.
5. Connect the cable shield to the "Shield Loop Through" (X1) terminal.
6. If the Rosemount 2230 display is the last device on the Tankbus, connect a jumper for the built-in termination.
7. Replace the cover. Make sure that the sealing and the locking device for the weather protection hatch are placed in the correct positions.
8. Firmly tighten the screws on the front cover.

Cable connections

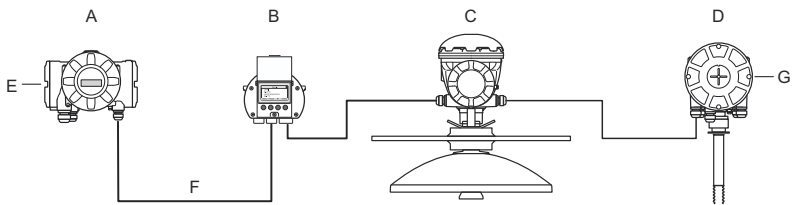
Figure 4-3: Rosemount 2230 Cable Connections



- A. Front cover
- B. X4: Tankbus terminator /Sealing
- C. Cable Shield
- D. Internal grounding
- E. Jumper for built-in termination
- F. X4: Tankbus terminator
- G. Daisy-chain connection to other field devices

Daisy-chain connection

The Rosemount 2230 can be daisy-chained to other field devices via the Tankbus, see [Figure 4-4](#).

Figure 4-4: Wiring Diagram for Rosemount 2230

- A. Rosemount 2410
- B. Rosemount 2230
- C. Rosemount 5900
- D. Rosemount 2240S
- E. Shield Wire connected at power supply
- F. Tankbus
- G. Built-in terminator enabled on the last device

Procedure

1. Unscrew and remove all six screws on the front of the Rosemount 2230.
2. Remove the cover carefully. Take care of the locking device for the weather protection hatch.

Note

Do not disconnect the cables between the display front and the circuit board.

3. Disconnect the termination jumper from the X3 terminal.

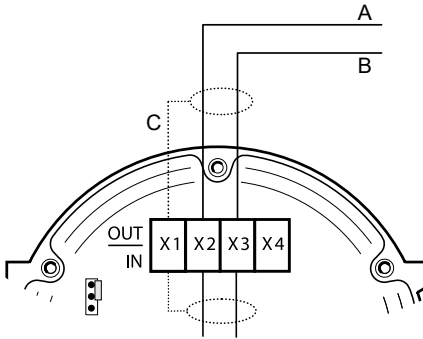
Note

Ensure that a terminator is enabled on the last device that is connected to the Tankbus.

4. Run the new Tankbus cable into the Rosemount 2230 compartment through a suitable gland.

5. Connect the outgoing Tankbus wires to the X2-out and X3-out terminals as shown in [Figure 4-5](#).

Figure 4-5: Daisy-chain Wiring

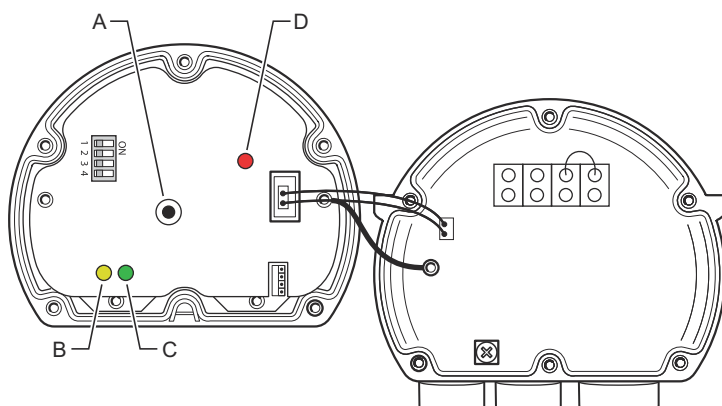


- A. X2: out
- B. X3: out
- C. X1: Cable Shield

6. Connect the cable shield to the X1 terminal.
7. Replace the cover. Make sure the sealing and the locking device for the weather protection hatch are placed in the correct positions.
8. Firmly tighten the six screws on the front cover.

4.4 LED signals and reset button

The Rosemount 2230 has three LED signals that show communication and status.

Figure 4-6: LED Signals

- A. *Reset button*
- B. *Tankbus Receive (yellow)*
- C. *Tankbus Transmit (green)*
- D. *Status LED*

Status LED

The status LED indicates error codes using different blinking sequences. In normal operation the LED flashes every other second. When an error occurs, the LED flashes a sequence that corresponds to a code number followed by a five second pause. This sequence is continuously repeated.

Communication LEDs

Tankbus communication is indicated by a pair of LEDs, see [Figure 4-6](#). When you connect the Tankbus cables you can check the communication status with the LEDs.

Reset button

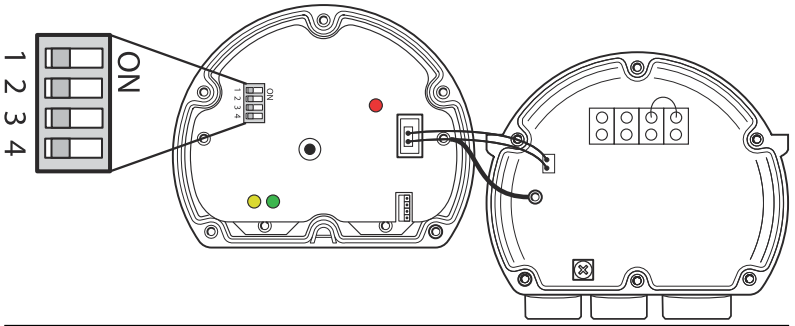
You may use the **Reset** button to force a restart of the Rosemount 2230 display. Restarting the Rosemount 2230 has the same effect as switching off and on the power supply.

The Restart option will connect the Rosemount 2230 display to the Rosemount 2410 Tank Hub and perform start-up tests of software and hardware.

4.5 DIP switches

The Rosemount 2230 is equipped with four DIP switches as illustrated in [Figure 4-6](#).

Figure 4-7: DIP Switches



The switches control the following settings:

Table 4-2: Rosemount 2230 DIP Switches

Number	Name	Description
1	Simulate	Enables simulation for test of Field Diagnostics in open FF systems.
2	Write Protect	Enables write protection of configuration data.
3	Spare	Not used.
4	Spare	Not used.

Simulate switch

The Simulate switch is used for simulation of Field Diagnostics conditions. It may be useful when testing the alarm setup.

Write protect switch

The Write Protect switch can be used to protect the Rosemount 2230 from unintentional changes of the current configuration.

4.6 Ambient temperature

The Rosemount 2230 is equipped with a temperature sensor for measuring ambient temperature. The temperature can be displayed on the field display and in the TankMaster software.

Ambient temperature affects the readability and response time of the LCD. This is particularly notable in extremely cold weather. The Rosemount 2230 automatically adjusts the LCD contrast based on the ambient temperature. The temperature sensor also controls the minimum toggle time used by the Rosemount 2230.

5 Configuration and operation

5.1 Introduction

This chapter provides information about configuration and operation of the Rosemount 2230 Graphical Field Display.

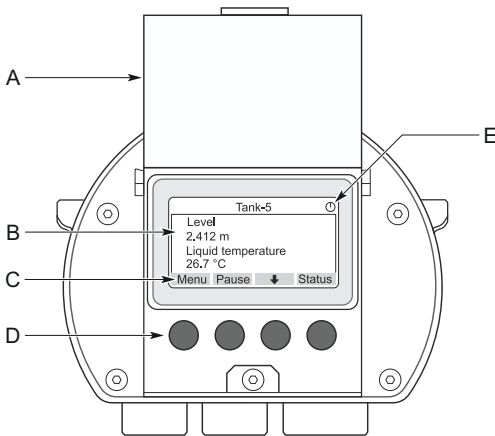
For information on how to use TankMaster WinSetup to configure the Rosemount 2230, see the Rosemount Tank Gauging [System Configuration Manual](#) (Document no. 00809-0300-5100).

5.1.1 The Rosemount 2230 Graphical Field Display

The Rosemount 2230 is a graphical display designed for viewing tank data in tough environments. It features adjustable LCD contrast, backlight, multi-language support, and communication failure indication.

The Rosemount 2230 can be used in systems based on the Rosemount™ 2410 Tank Hub as well as in FOUNDATION™ Fieldbus networks. The Rosemount 2230 is powered by the Tankbus and automatically detects which kind of system it is connected to.

Figure 5-1: The Rosemount 2230 Display



- A. Weather protection lid
- B. Display
- C. Softkey functions
- D. Softkeys
- E. Activity indicator

Note

It is recommended that the lid is closed whenever possible to protect the LCD from exposure by ultraviolet radiation from the sun.

The four softkeys allow you to navigate through the different menus and to select various functions for tank data viewing and service.

Menu	Opens the Main Menu with various options for configuration of the Rosemount 2230 display.
Pause	Stops toggling the measurement variables until the Resume button is pressed.
Down arrow ↓	Lets you scroll through the list of measurement variables and tanks.
Status	Lets you view the current status of the presented measurement variable.

A symbol in the upper right-hand corner of the display indicates that the Rosemount 2230 is operating and communicates on the Tankbus.

Adjust the display contrast

The Rosemount 2230 automatically adjusts display contrast to optimize for changes of ambient temperature. The contrast can be manually adjusted when further fine-tuning is desired. To increase the display contrast, press the two buttons on the right-hand side simultaneously. To decrease the contrast, press the two buttons on the left-hand side. It takes approximately 10 seconds to adjust from minimum to maximum contrast. The contrast can also be adjusted by using the **Contrast** service command: **Menu** → **Service** → **LCD Contrast**.

5.1.2 Configuration tools

Different tools are available for configuration of a Rosemount 2230.

In systems with Rosemount 2410 Tank Hub:

- Rosemount TankMaster Winsetup

In FOUNDATION™ Fieldbus systems:

- Rosemount 475 Field Communicator
- AMS Device Manager for FOUNDATION Fieldbus systems
- FOUNDATION Fieldbus hosts supporting DD4

TankMaster is an Emerson inventory management software package for installation and configuration of tank gauging field devices.

The WinSetup package provides you with powerful and easy-to-use tools for installation and configuration. See the Rosemount [System](#)

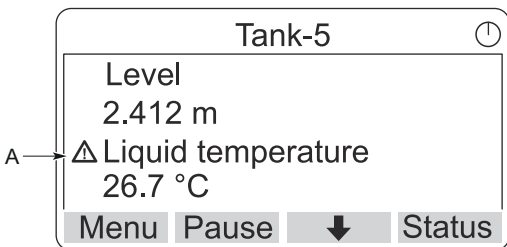
[Configuration Manual](#). For more information on how to configure the Rosemount 2230 Display by using TankMaster Winsetup.

For DeltaV users, the DD can be found at [Emerson.com/DeviceInstallKits](https://www.emerson.com/DeviceInstallKits). For other hosts that use Device Descriptions (DD) and DD Methods for device configuration, the latest DD versions can be found on FOUNDATION's website at [Fieldbus.org](https://www.fieldbus.org).

5.1.3 Activity and alarm indication

The Rosemount 2230 display shows an alarm warning symbol for simulated or manual measurement values as illustrated in [Figure 5-2](#) and [Figure 5-3](#).

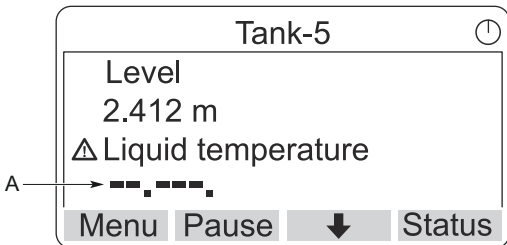
Figure 5-2: Simulated or Manual Value



A. Alarm symbol

For invalid measurement data, the alarm symbol is displayed and no data appears in the measurement value field as illustrated in [Figure 5-3](#).

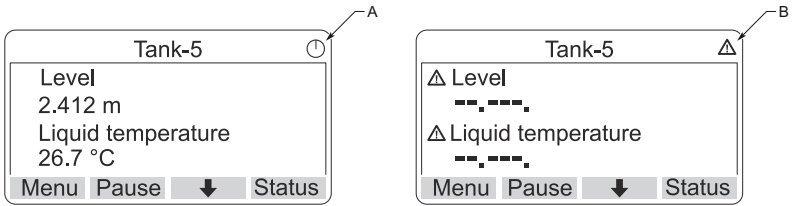
Figure 5-3: Invalid Value



A. Invalid value

The activity indicator spins continuously to indicate that the Rosemount 2230 is operating normally. In case of a communication problem an alarm symbol is displayed instead.

Figure 5-4: Activity Indicator

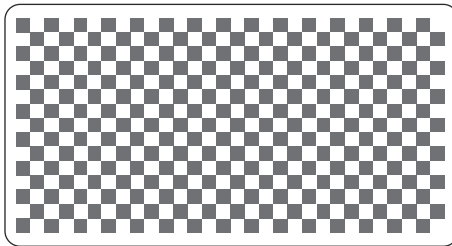


- A. Normal operation
- B. Communication problems

5.1.4 Start-up procedure

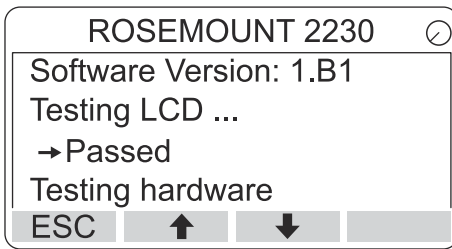
The Rosemount 2230 display performs a test of the LCD screen when powered on.

Figure 5-5: Test Screen



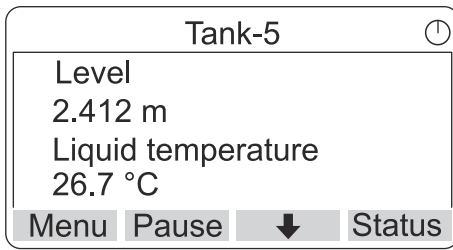
After the LCD test is done the start-up screen will appear.

Figure 5-6: Start-up Screen



Once the start-up procedure is finished, the Rosemount 2230 will return to the view that was used last time the display was powered on.

Figure 5-7: View Mode



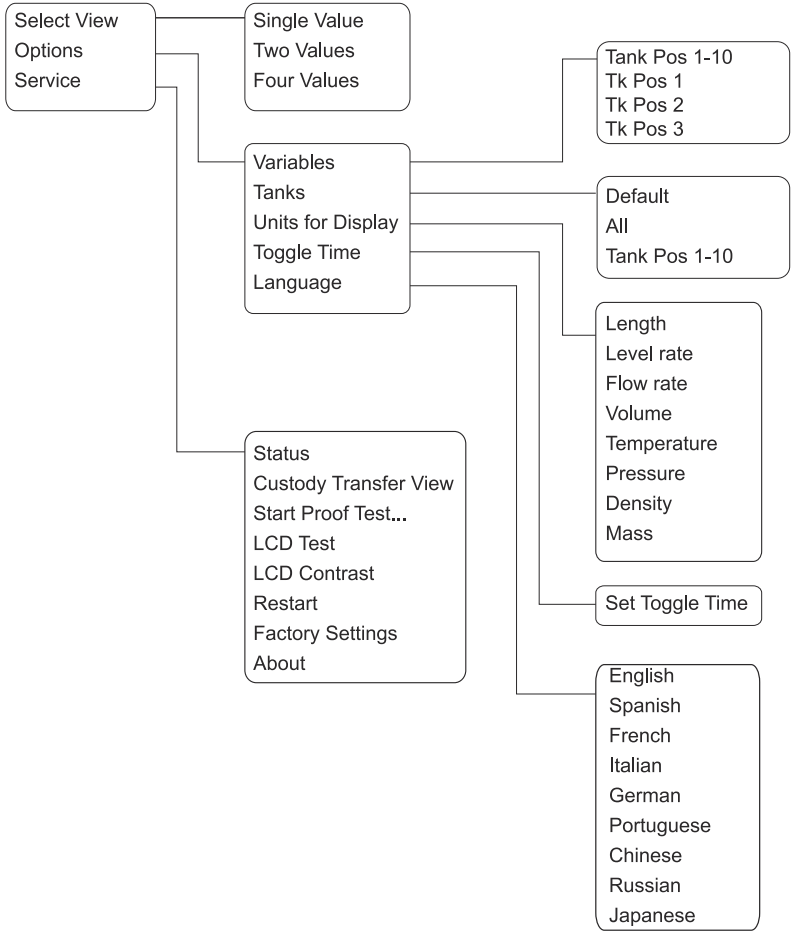
5.2 Configuration using TankMaster WinSetup

The TankMaster software package provides you with powerful and easy-to-use tools for installation and configuration of a Rosemount Tank Gauging system. See the Rosemount Tank Gauging [System Configuration Manual](#) for more information on how to configure Auxiliary Tank Devices (ATD) such as the Rosemount 2230.

5.3 Menu tree

The Rosemount 2230 lets you navigate in a menu structure as illustrated in [Figure 5-8](#).

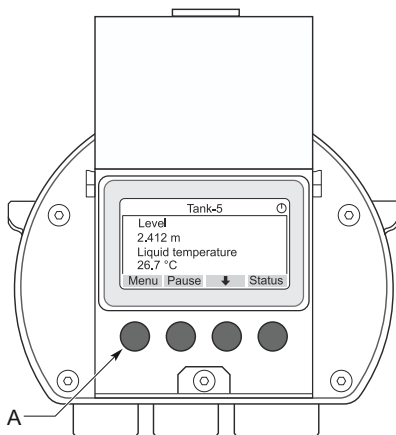
Figure 5-8: Rosemount 2230 Menu Tree



5.4 Main menu

In normal operation the Rosemount 2230 display is in View Mode and shows the current measurement values for the selected tanks. In case of an alarm, a graphical symbol appears on the screen.

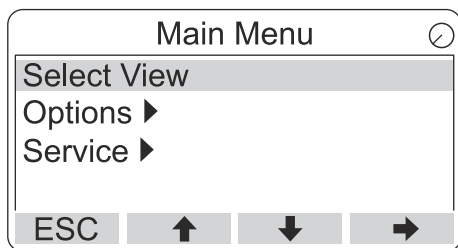
Figure 5-9: Rosemount 2230 Graphical Field Display in View Mode



A. Press the Menu softkey to navigate to the Main Menu

To navigate from View Mode to the Main Menu, press the **Menu** softkey on the left-hand side.

Figure 5-10: Main Menu



The Main Menu includes the following options:

- Select View** Select the preferred view.
- Options** Select variables and tanks to display, as well as measurement units, toggle time, and language.
- Service** Includes the functions Status, Custody Transfer View, LCD Test, Restart, and Factory Settings. It

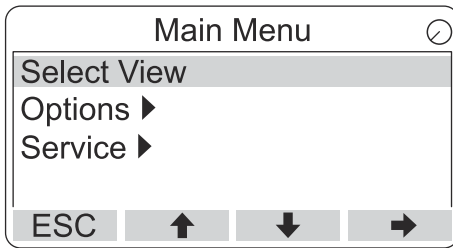
also includes the About option which shows the current software version.

5.5 Select the number of data fields

In the Select View menu, you can specify the number of measurement values to be displayed in View Mode.

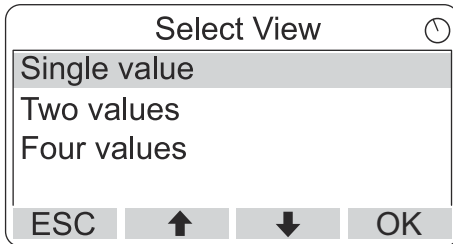
Procedure

1. In View Mode, press the **Menu** button to navigate to the Main menu.
2. Highlight the **Select View** menu item using the **↑** and **↓** softkeys.



3. Press the **→** softkey.
4. In the **Select View** menu, use the **↑** and **↓** softkeys to navigate to the desired option.

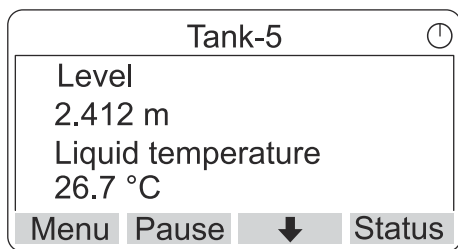
Example



5. Press the **OK** softkey to select the desired option. Then the Rosemount 2230 returns to View Mode.

Example

For example, using the Two Values option will present a view like this:



5.6 Options menu

In the Options menu, the following items are available for a Rosemount 2230 connected to a Rosemount 2410 Tank Hub:

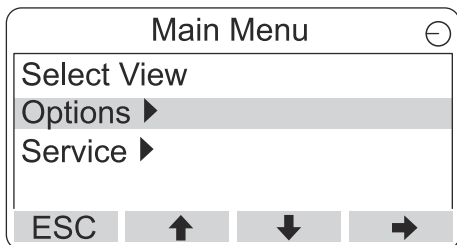
- Variables⁽⁷⁾
- Tanks⁽⁷⁾
- Units for Display
- Toggle Time
- Language

⁽⁷⁾ *Not available in FOUNDATION™ Fieldbus systems without Rosemount 2410 Tank Hub.*

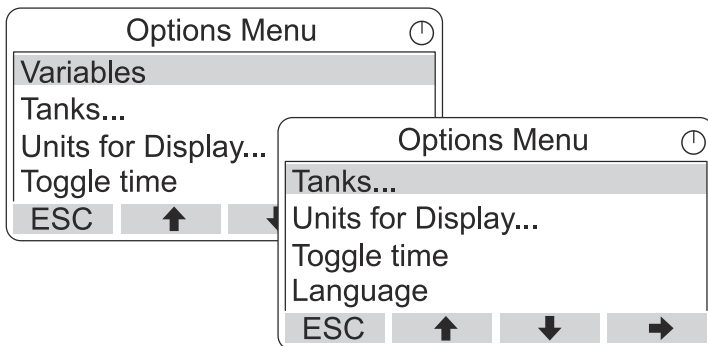
5.6.1 Choose an item in the options menu

Procedure

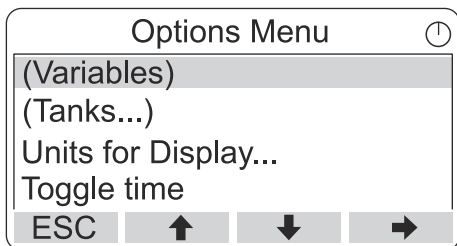
1. In View Mode, press the **Menu** button to open the Main menu.
2. Highlight the **Options** menu item by using the **↑** and **↓** softkeys.



3. Press the **→** softkey.
4. In the **Options Menu**, use the **↑** and **↓** softkeys to navigate to the desired menu item.



In FOUNDATION™ Fieldbus systems some options are not available. This is indicated as illustrated below:



5. Press the **→** softkey to continue to the selected menu.

5.6.2 Variables

In the Select Variables menu⁽⁸⁾, you can choose which variables to present in View Mode.

The following options are available:

- | | |
|--------------------------|--|
| Tank Pos 1-10 | Configure a common set of variables to be presented for all tanks. Tank Position refers to the position in the tank database of the Rosemount 2410 Tank Hub. |
| Tk Pos 1, 2, 3... | Configure variables individually for each tank. |

See [Table 5-2](#) for a list of available variables.

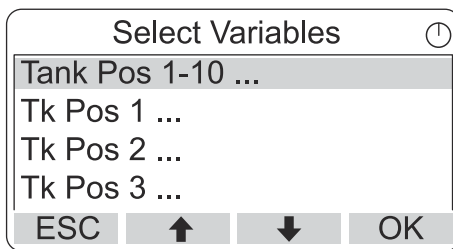
Select variables to be displayed

The Select Variables menu allows you to select variables to be displayed in View Mode.

Option “Tank Pos 1-10” can be used to specify a common set of variables to be used for all tanks connected to the same Rosemount 2410 Tank Hub. In addition to this you can configure tanks individually by specifying a unique set of variables for each tank. Note that the individual configuration will be added to the configuration that is common for all tanks.

Procedure

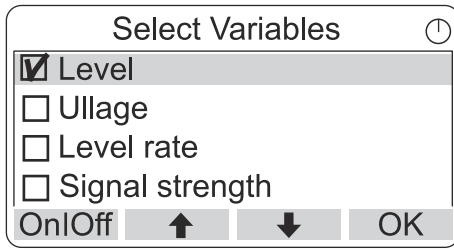
1. In View Mode, press **Menu** → **Options** → **Variables**.
2. Use the **↑** and **↓** softkeys to navigate to the desired Tank Position item.



3. Press the **OK** softkey to continue to the **Selected Variables** list.

⁽⁸⁾ Not available in FOUNDATION™ Fieldbus systems.

4. In the **Select Variables** list, choose the variables you wish to show in View Mode.



5. When finished, press **OK** to return to View Mode.

Table 5-2: Selectable Variables

Variable	Description
Level	Product level in the displayed tank
Ullage	Ullage is the distance from the Tank Reference Point to the product surface
Level Rate	How the product in the tank moves when emptying or filling the tank
Signal Strength	The signal strength of the radar level gauge
Free Water Level	The level of water in the bottom of the tank. Available when a water level sensor is connected to the tank
Vapor Pressure	Measured vapor pressure
Liquid Pressure	Measured liquid pressure
Air Pressure	Measured air pressure in the tank
Ambient Temperature	Air temperature outside the tank
Vapor Temperature	Temperature of vapor inside the tank
Liquid Average Temperature	Average temperature of the product in the tank
Tank Temperature	Average temperature of the product and vapor in the tank
Temperature 1 To 16	Individual temperature of each selected temperature spot element
Observed Density	Calculated density based on the product level and pressure
Reference Density	Reference density as specified with the configuration tool
Flow rate	Measured flow rate
Tot Obs Volume	Total observed product volume in the tank
User defined 1 to 5	Custom measurement variable
Middle Pressure	Measured pressure from transmitter P2
Tank Height	Tank Reference Height
Δ Level	Difference between two product levels
Custom TMV 1-10	Custom tank variables

Table 5-2: Selectable Variables (continued)

Variable	Description
Level %	Product level presented in a bargraph
Ullage %	Ullage value presented in a bargraph

Select variables using a configuration tool

Variables to present in the View Mode can also be configured by using the TankMaster WinSetup configuration program, a 475 Field Communicator, the AMS Device Manager or other host system. For more information see the Rosemount Tank Gauging [System Configuration Manual](#) (Document no. 00809-0300-5100).

5.6.3 Select tanks menu

In the **Select Tanks** menu⁽⁹⁾, you can specify which tanks to show in View Mode.

The following items are available:

Default	View all tanks that are configured in the Tank Database of the 2410 Tank Hub.
All	Display all available tanks in View Mode.
Tank Pos 1-10	Specify which tanks to present in View Mode.

Select which tanks to present

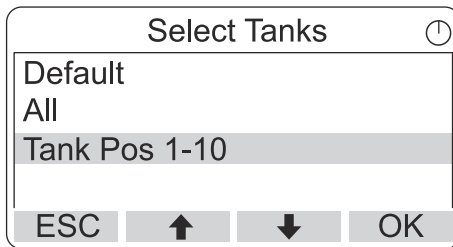
The Tank Pos 1-10 menu lets you select which tanks to present in View Mode. Up to ten tanks can be displayed.

Prerequisites

Note that the tanks need to be configured in the tank database of the Rosemount 2410 Tank Hub⁽¹⁰⁾.

Procedure

1. In View Mode, press **Menu** → **Options** → **Tanks**.
2. Use the **↑** and **↓** softkeys to navigate to the **Tank Pos 1-10** menu item.

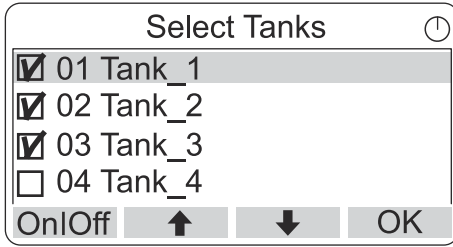


3. Press the **OK** softkey to continue to the list of tanks.

⁽⁹⁾ Not available in FOUNDATION™ Fieldbus systems.

⁽¹⁰⁾ See the Rosemount 2410 Tank Hub [Reference Manual](#) (Document no. 00809-0100-2410).

- 4. Use the **↑** and **↓** softkeys to navigate to the desired tank.



- 5. Press the **On/Off** softkey to select the tank.
- 6. When finished, press the **OK** softkey to return to View Mode.

5.6.4 Set the measurement units for displayed variables

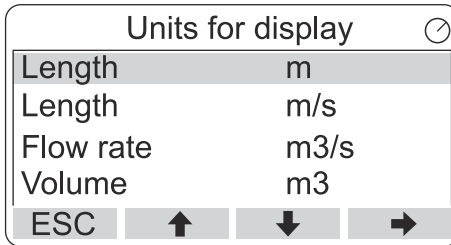
In the Units for Display menu, you can see which measurement units that are used for the displayed variables. To change measurement unit:

Procedure

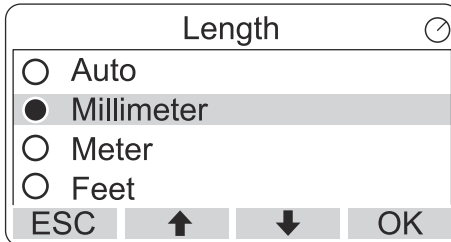
1. In View Mode, press **Menu** → **Options** → **Units for Display**.
2. Use the **↑** and **↓** softkeys to navigate to the desired variable menu item.

Example

In the example, the Length variable was chosen.



3. Press the **→** softkey to continue to the list of options for the selected variable.
4. Use the **↑** and **↓** softkeys to navigate to the desired measurement unit.



5. Press the **OK** softkey to select the unit and return to Units for Display.

Measurement units

Table 5-3: Available Measurement Units for the Rosemount 2230

Variable	Available Measurement Units
Auto	The display is controlled by the Multiple Analog Output Block configuration.
Length	The following units are available for Level and Ullage: <ul style="list-style-type: none"> • Millimeter • Meter • Feet • Imperial 1/16
Level rate	The following units are available for Level rate: <ul style="list-style-type: none"> • Meter/second • Meter/hour • Feet/second • Feet/hour
Flow rate	The following units are available for Flow rate: <ul style="list-style-type: none"> • Cubic meter/hour • Barrel/hour • US gallon/hour • UK gallon/hour • Liter/minute
Volume	The following units are available for Volume: <ul style="list-style-type: none"> • Cubic meter • Barrel • US gallon • UK gallon • Liter
Temperature	The following units are available for Temperature: <ul style="list-style-type: none"> • Degrees Celsius • Degrees Fahrenheit • Kelvin

Table 5-3: Available Measurement Units for the Rosemount 2230
(continued)

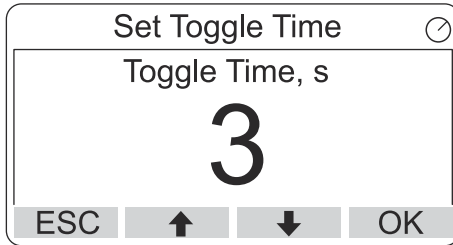
Variable	Available Measurement Units
Pressure	The following units are available for Pressure: <ul style="list-style-type: none"> • Bar • Pascal • Kilo pascal • Atmosphere • PSI • Bar Absolute • Bar Gauge • PSI Absolute • PSI Gauge
Density	The following units are available for Density: <ul style="list-style-type: none"> • Kilogram/Cubic m • Kilogram/Liter • Degrees API
Voltage	Millivolt

5.6.5 Set the toggle time

The Toggle Time parameter specifies the time period that each value, or set of values, is presented on the display.

Procedure

1. From View Mode, press **Menu** → **Options** → **Toggle Time**.
2. Use the **↑** and **↓** softkeys to increase or decrease the Toggle Time.

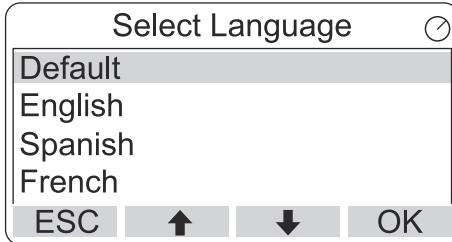


3. Press the **OK** softkey to select the desired value and return to View Mode.

5.6.6 Set the display language

Procedure

1. From View Mode, press **Menu** → **Options** → **Language**.
2. Use the **↑** and **↓** softkeys and navigate to the preferred language option:



3. Press the **OK** softkey to select the language and return to View Mode.

5.7 Service menu

In the Service Menu, the following items are available:

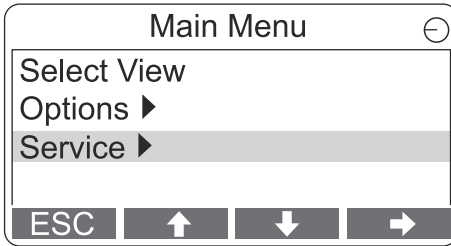
- Status
- Custody Transfer View⁽¹¹⁾
- Start Proof Test
- LCD Test
- LCD Contrast
- Restart
- Factory Settings⁽¹¹⁾
- About

(11) Not available in FOUNDATION™ Fieldbus systems

5.7.1 Choose a service menu item

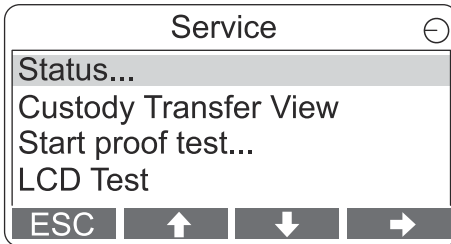
Procedure

1. In View Mode, press the **Menu** button to open the Main menu.
2. Use the **↑** and **↓** softkeys to navigate to the **Service** option.



3. Press the **→** softkey.
4. Use the **↑** and **↓** softkeys to navigate to the desired menu item.

Example



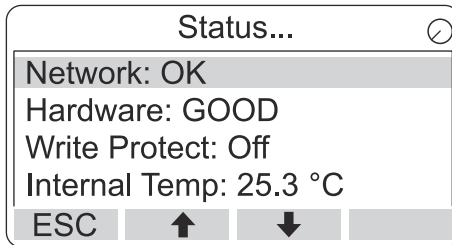
5. Press the **→** softkey to continue to the selected menu.

5.7.2 View the current device status

The Status screen shows the current status of the Rosemount 2230. Various error messages and warnings can be displayed in case of software or hardware malfunctions.

Procedure

1. In the View Mode, press **Menu** → **Service** → **Status**.
2. Press **Esc** to return to the Service menu.

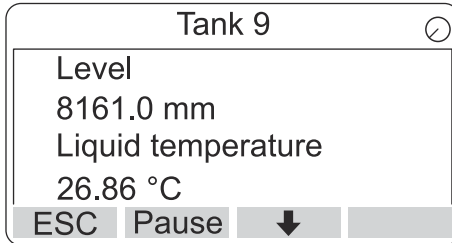


5.7.3 Open the custody transfer view

The Custody Transfer view presents Level and Liquid Temperature for each tank.

Procedure

In View Mode, press **Menu** → **Service** → **Custody Transfer**.



- Press the **Esc** softkey to return to View Mode.
- Press the **Pause** softkey to pause the display toggling.
- Press the down arrow **↓** softkey to display the next tank.

5.7.4 Start proof test

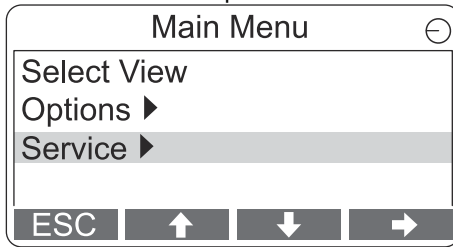
It is possible to initiate a pre-configured proof test of a Rosemount™ 5900 level gauge. This is a short introduction how to perform a proof test. See the [Rosemount 5900 and Rosemount 2410 Safety Manual](#) for a complete instruction.

Prerequisites

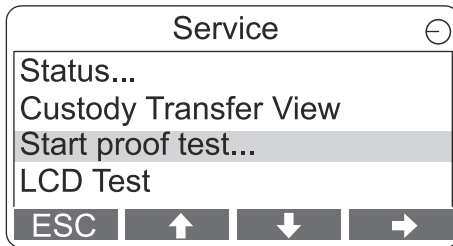
Note that the relay and/or analog output is active during the proof test.

Procedure

1. In the **Display Tank** view, select **Menu** to open the **Main Menu** view.
2. Select the **Service** option.



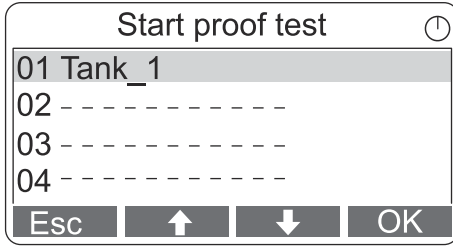
3. Select **Start proof test**.



4. Enter the **password**. Note that default password is "000".



- 5. Choose the desired tank.



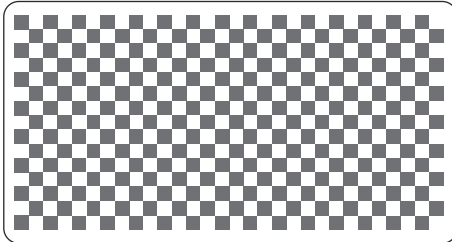
- 6. Select **OK** to continue and follow the instructions on the display.

5.7.5 Open the LCD test view

In the LCD test two checkered patterns will be displayed testing the whole display area.

Procedure

In View Mode, press **Menu** → **Service** → **LCD Test**.



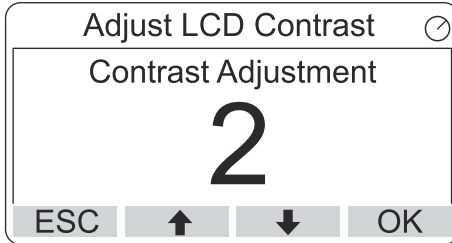
After the test is completed, the display will return to normal View Mode.

5.7.6 Adjust the LCD contrast

The Rosemount 2230 automatically adjusts display contrast to optimize for changes of ambient temperature. The contrast can be manually adjusted when further fine-tuning is desired.

Procedure

1. In View Mode, press **Menu** → **Service** → **LCD Contrast**.
2. Use the **↑** and **↓** softkeys to increase or decrease the LCD contrast.



3. Press the **OK** softkey to select the desired value and return to View Mode.

Need help?

In case the contrast is so low that the LCD cannot be properly read, it can be adjusted by pressing the appropriate buttons:

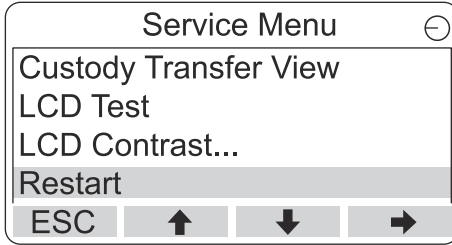
- To increase the contrast of the LCD, press the two buttons on the right-hand side simultaneously.
 - To decrease the contrast, press the two buttons on the left-hand side.
-

5.7.7 Restart the Rosemount 2230

The Restart option will perform start-up tests of software and hardware. In a Rosemount Tank Gauging system it will connect the Rosemount 2230 to the Rosemount 2410 Tank Hub.

Procedure

1. In View Mode, press **Menu** → **Service**.
2. Choose the **Restart** option and press the → softkey.

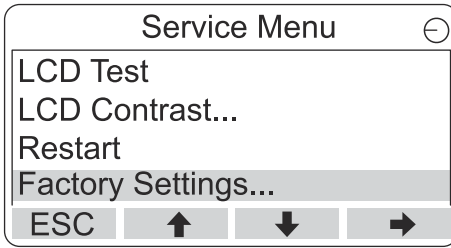


5.7.8 Restore to factory settings

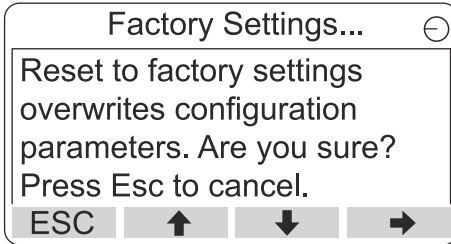
All user configuration will be lost when the Rosemount 2230 is restored to factory settings.

Procedure

1. In View Mode, press **Menu** → **Service**.
2. Choose the Factory Settings option and press the **→** softkey.



3. Press the **OK** softkey to restore the Rosemount 2230 to factory settings, or press the **Esc** softkey to cancel.



5.7.9 View the about information

The About option will present the current software version and the Rosemount 2230 serial number.

Procedure

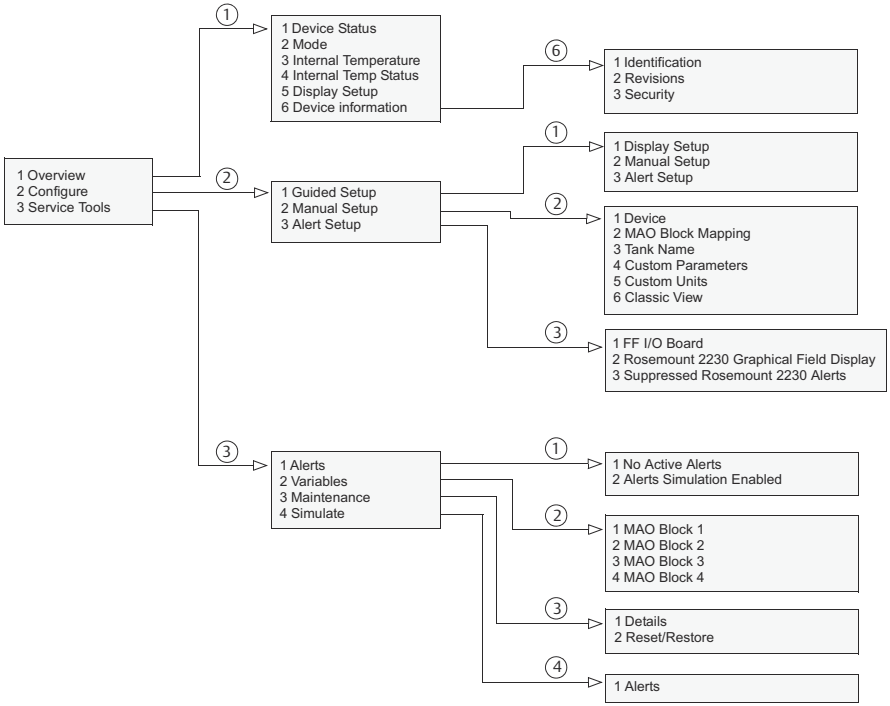
1. In View Mode, press **Menu** → **Service**.
2. Choose the **About** option and press the **➔** softkey.
3. Press the **Esc** softkey to return to the Service menu.



5.8 475 Field Communicator menu tree

The Rosemount 2230 can be configured by using a 475 Field Communicator. [Figure 5-11](#) shows the available options for configuration and service.

Figure 5-11: Field Communicator Menu Tree





Quick Start Guide
00825-0100-2230, Rev. AA
June 2023

For more information: [Emerson.com](https://www.emerson.com)

©2023 Emerson. All rights reserved.

Emerson Terms and Conditions of Sale are available upon request. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

ROSEMOUNT™

