Communications

For SITRANS LUT400 (HART)

Manual · 08/2012

SIEMENS

Safety Guidelines: Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel: This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Unit Repair and Excluded Liability:

- The user is responsible for all changes and repairs made to the device by the user or the user's agent.
- All new components are to be provided by Siemens Milltronics Process Instruments.
- Restrict repair to faulty components only.
- Do not reuse faulty components.

Warning: Cardboard shipping package provides limited humidity and moisture protection. This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.
This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Note: Always use product in accordance with specifications.

- For a selection of Siemens Milltronics level measurement manuals, go to:
  www. siemens.com/processautomation. Under Process Instrumentation, select *Level Measurement* and then go to the manual archive listed under the product family.
- For a selection of Siemens Milltronics weighing manuals, go to:
  www. siemens.com/processautomation. Under Weighing Technology, select *Continuous Weighing Systems* and then go to the manual archive listed under the product family.

Table of Contents

Introduction

Overview

The SITRANS LUT400 ultrasonic controller may be operated via remote communications, using various PC software such as:

- SIMATIC PDM
- Web Browser Interface (used with Web Server Abyss - provided for your convenience)
- AMS Device Manager
- Field Communicator 375/475 (FC375/FC475) (HART)
- A Field Device Tool (FDT), such as PACTware or Fieldcare

Please consult the appropriate manufacturer's operating instructions for general details on how to operate each software package.

Safety Notes

Special attention must be paid to warnings and notes highlighted from the rest of the text by grey boxes.

> **Note:** means important information about the product or that part of the operating manual.

The Manual

This manual provides information on the use of SITRANS LUT400 with various remote communications software packages noted above. The manual is designed to help you get the most out of your ultrasonic device when used in conjunction with a remote communications tool. It provides information for the various tools in the following areas:

- Features and Functions
- Installation, Startup, and Configuration of the SITRANS LUT400
- Quick Start Wizards and Pump Control Wizards
- Changing parameters
- Parameter menus

This manual should be used in conjunction with the SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)[1] to help you set up your device via remote communications for optimum performance. We always welcome suggestions and comments about manual content, design, and accessibility. Please direct your comments to techpubs.smpi@siemens.com.

For other Siemens level measurement manuals, go to: www.siemens.com/level, and look under **Level Measurement.**

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1. See DVD shipped with device or download manual from product page of our website: Go to www.siemens.com/sitransLUT400 > **Technical Info > Manuals/ Operating instructions**.

Technical Support

If you have any technical questions about the device described in these Operating Instructions and do not find the answers, you can contact Customer Support:

• Via the Internet using the **Support Request**:
Support request (http://www.siemens.com/automation/support-request)

• Via Phone:
  • Europe: +49 (0) 911 895 7222
  • America: +1 423 262 5710
  • Asia-Pacific: +86 10 6475 7575

Further information about our technical support is available on the Internet at
Technical support (http://support.automation.siemens.com/WW/view/en/16604318)

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base online on the Internet at:

Service & Support (http://www.siemens.com/automation/service&support)

There you will find:

• The latest product information, FAQs, downloads, tips and tricks.
• Our newsletter, providing you with the latest information about our products.
• Our bulletin board, where users and specialists share their knowledge worldwide.
• Your local contact partner for Industry Automation and Drives Technologies in our partner database.
• Information about field service, repairs, spare parts and lots more under "Services".

Additional Support

Please contact your local Siemens representative and offices if you have additional questions about the device.

Find your contact partner at:

Local contact person (http://www.siemens.com/automation/partner)

Abbreviations and Identifications

Short form	Long Form	Description
AMS	Emerson AMS Device Manager	software package used to commission and maintain SITRANS LUT400
DD	See EDD	
DTM	Device Type Manager	a type of software that 'plugs into' a Field Device Tool (FDT).
EDD	Electronic Device Description	(also referred to as DD)
FC	Field Communicator 375/475	HART device used to commission and maintain SITRANS LUT400
FDT	Field Device Tool	a standard used in software packages designed to commission and maintain field devices such as SITRANS LUT400
LCD	Liquid Crystal Display	
LUI	Local User Interface	
PDM	SIMATIC Process Device Manger	software package used to commission and maintain SITRANS LUT400
PMD	Primary Measuring Device	
PV	Primary Value	measured value
USB	Universal Serial Bus	

Notes

Operation via SIMATIC PDM 6 (HART)

(SITRANS LUT400 compatible with PDM version 6.1)

Features

SIMATIC PDM is a software package used to commission and maintain SITRANS LUT400 and other process devices. Please consult the LUT400 online help for details on using SIMATIC PDM. (More information can be found at www.siemens.com/simatic-pdm.)

SIMATIC PDM monitors the process values, alarms and status signals of the device. It allows you to display, compare, adjust, verify, and simulate process device data; also to set schedules for calibration and maintenance.

Functions

> **Notes:**
> - For a complete list of parameters, see *Parameter reference (LUI)* in LUT400 operating instructions[1].
> - While the device is in PROGRAM MODE, the output remains active and continues to respond to changes in the device.

Parameters are identified by name and organized into function groups. The menu structure for SIMATIC PDM is almost identical to that of the SITRANS LUT400 LCD. See *LCD Menu Structure* in LUT400 operating instructions[1] for a complete list of parameters in chart format.

For a list of parameters that do not appear in the menu structure and are accessed via pull-down menus in SIMATIC PDM see page 25. See also *Changing parameter settings using SIMATIC PDM* on page 24 for more details.

Feature	page	Function
Quick Start (Level)	9	Device configuration for simple level applications
Quick Start (Volume)	12	Device configuration for simple volume applications
Quick Start (Volume - Linearization)	15	Device configuration for volume applications using complex vessel shapes
Quick Start (Flow)	19	Device configuration for simple flow applications
Pump Control Wizard	21	Pump control setup
Echo Profile Utilities	26	Echo profile viewing/comparison

Operation - PDM

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1. SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

Feature (cont'd)	page	Function
TVT Shaper	28	Manual TVT adjustment
Auto False Echo Suppression	29	Screen out false echoes
Maintenance	31	Set schedules for device/sensor maintenance
Process Variables	35	Monitor process variables and level trend

SIMATIC PDM version

Check the support page of our website to make sure you have the latest version of SIMATIC PDM, the most recent Service Pack (SP) and the most recent hot fix (HF). Go to:

http://support.automation.siemens.com/WW/
llisapi.dll?func=cslib.csinfo&lang=en&objiD=10806857&subtype=133100

Electronic Device Description (EDD)

You can locate the EDD in Device Catalog, under **Sensors/Level/Echo/Siemens AG/ SITRANS LUT400**. (The EDD is written for forward compatibility.)
As a guideline to locate the correct EDD, the major and minor numbers should match between the EDD revision and the Firmware revision in the device (e.g. major and minor numbers in bold text: **1.00**.00-04).

To check it in PDM, go to **SITRANS LUT400 HART > Identification > Device**.
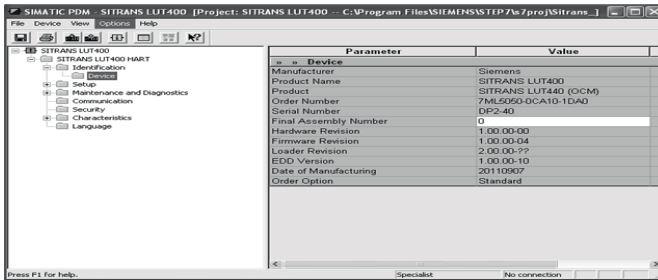
matching Firmware and EDD revisions

Installing a new version of SIMATIC PDM requires the most recent Service Pack (SP) and the most recent hot fix (HF).

To install a new EDD

- Go to www.siemens.com/sitransLUT400 > **Support > Software Downloads** to download the most up-to-date EDD from the product page of our website.
- Save the files to your computer and extract the zipped file to an easily accessed location.
- Launch **SIMATIC PDM – Manage Device Catalog**, browse to and select the folder which contains the unzipped EDD file.

Configuring a new device

Notes:
- The first time the device is configured, you will be prompted to select a language (English, German, French, Spanish or Chinese). To change the language again, use Language parameter [see *Parameter reference (LUI)* in LUT400 operating instructions[a]].
- Clicking on **Cancel** during an upload from device to SIMATIC PDM will result in some parameters being updated.
- Application Guides for setting up HART devices with SIMATIC PDM can be downloaded from the product page of our website at: www.siemens.com/sitransLUT400.

[a.] SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

1) Check that you have the most recent EDD, and if necessary update it (see *To install a new EDD* above).
2) Configure the device using the Quick Start Wizard. See *Quick Start Wizard via SIMATIC PDM* on page 7.

Before initiating a Quick Start Wizard to configure the device, you may wish to gather the necessary parameter values. Parameter Configuration Charts listing all parameters and available options for each application type are available on our website. Go to: www.siemens.com/sitransLUT400 > **Support > Application Guides**. You can record data and select from options on the chart that apply to your application, then complete the *Quick Start Wizard via SIMATIC PDM* on page 7.

Quick Start Wizard via SIMATIC PDM

Note: The layout of the dialog boxes shown may vary according to the resolution setting for your computer monitor.

The graphic Quick Start Wizard provides an easy step-by-step guide to help you configure the device for a simple application.

Please consult the operating instructions or online help for details on using SIMATIC PDM. (Application Guides for setting up Siemens HART instruments with SIMATIC PDM are available on our website: www.siemens.com/processautomation.)

1. If you have not already done so, check that you have the most up-to-date Electronic Device Description (EDD) for your instrument. (See *Configuring a new device* on page 7.)
2. Launch SIMATIC Manager and create a new project for LUT400. (Application Guides for setting up HART devices with SIMATIC PDM can be downloaded from the product page of our website at www.siemens.com/sitransLUT400.)

3. After opening object in SIMATIC PDM, set the product capabilities when prompted. If you do not know the model connected, click on **Read Product Capabilities from Device**, and the model will be automatically selected.

This setting decides what parameters are visible from the PDM menus.

4. Open the menu **Device – Master Reset** and click on **OK** to perform a reset to Factory Defaults.
5. After the reset is complete upload parameters to the PC/PG.
6. Configure the device via the Quick Start Wizard for your application.

Quick Start Wizard steps

Notes:
- The Quick Start wizard settings are inter-related and changes apply only after you click on **Apply and Transfer** at the end of the final step.
- Initial Quick Start parameter values are not default values and do not necessarily reflect the current device configuration.
- The format of date fields in PDM will reflect the user's operating system configuration.
- Click on **BACK** to return and revise setting or **Cancel** to exit the Quick Start.

Open the **Device** menu in SIMATIC PDM and select the Quick Start applicable to your application:
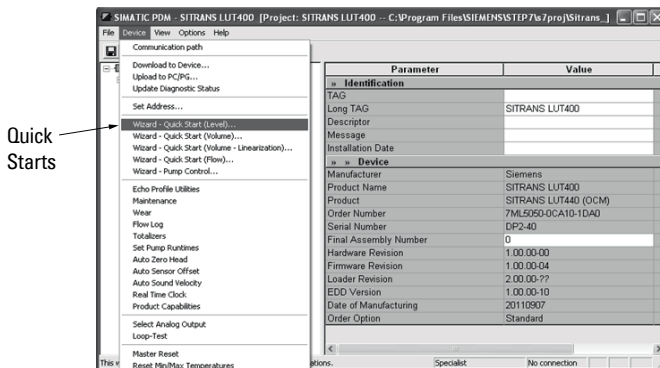
- Quick Start (Level) (see page 9)
- Quick Start (Volume) (see page 12)
- Quick Start (Volume - Linearization) (see page 15)
- Quick Start (Flow) (see page 19)

Follow steps within the wizard to configure your device.

Quick Start (Level)

Step 1 – Identification

1. You can accept the default values without modification (TAG, Long TAG, Descriptor, Message, and Installation Date fields can be left blank),

OR

1. Click on **Read Data from Device** (if this is not the first time running the Quick Start Wizard).
2. The default Language is English. Select a different language value from the drop-down box if you wish to change the language displayed on the device.

3. After making all desired changes, click on **Next**.

Step 2 – Application

1. Select the Transducer that will operate with the LUT400.
2. Select the Application Type (Level, Space, Distance).

Operation - PDM

3.   Select the Temperature Source (Transducer, Fixed Temperature, External TS-3, Average of Transducer and TS-3), and if Fixed, enter the Fixed Temperature value.

4.   Click on **Next**.

Step 3 - Ranges

1.   Modify parameters as required.
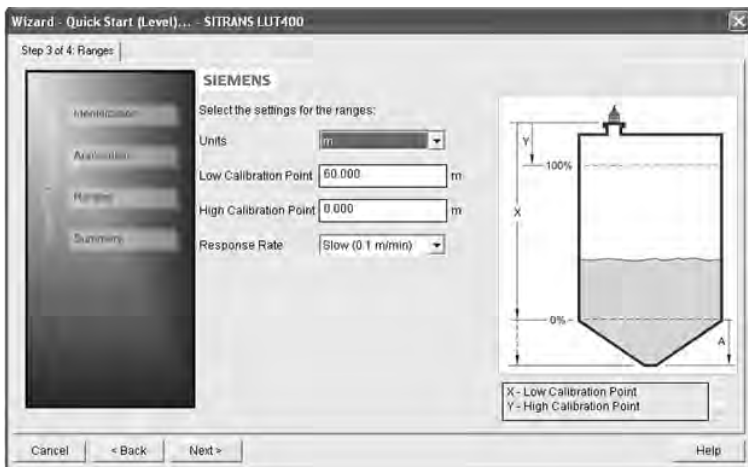
2.   Click on **Next**.

Step 4 – Summary

1.   Check parameter settings, and click on **Cancel** to abort, or apply your changes.

2. Click **Apply** to save your changes and return to the main menu, or click **Apply and Transfer** to save your changes and transfer settings to the device.

The message **Quick Setup was successful** will appear. Click on **OK**.

Configuration via the SIMATIC PDM Quick Start Wizard for a Level application is now complete.

Quick Start (Volume)

Use this wizard to configure volume applications employing standard vessel shapes.

Open the menu **Device – Wizard - Quick Start (Volume):**

Step 1 – Identification

1. You can accept the default values without modification (TAG, Long TAG, Descriptor, Message, and Installation Date fields can be left blank),

OR

1. Click on Read Data from Device (if this is not the first time running the Quick Start Wizard).
2. The default Language is English. Select a different language value from the drop-down box if you wish to change the language displayed on the device.

3. After making all desired changes, click on **Next**.

Step 2 – Application

1. Select the Transducer that will operate with the LUT400.
   The **Application Type** defaults to **Volume**.

2. Select the Temperature Source (Transducer, Fixed Temperature, External TS-3, Average of Transducer and TS-3), and if Fixed, enter the Fixed Temperature value.

3. Click on **Next**.

Step 3 - Vessel Shape

The vessel shapes shown are predefined.

To describe a more complex shape see *Quick Start (Volume - Linearization)* on page 15.

1. Select a Vessel Shape for your Volume application.

2. Click on **Next**.

Step 4 - Ranges

1. Modify parameters as required. (Vessel Dimension A and L are required for certain Vessel Shapes selected in previous step.)

2. Click on **Next**.

Step 5 – Summary

1. Check parameter settings, and click on **Cancel** to abort, or apply your changes.
2. Click **Apply** to save your changes and return to the main menu, or click **Apply and Transfer** to save your changes and transfer settings to the device.

The message **Quick Setup was successful** will appear. Click on **OK.**

Configuration via SIMATIC PDM Quick Start Wizard for a simple Volume application is now complete.

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Quick Start (Volume - Linearization)

Use this wizard to configure volume applications employing more complex vessel shapes.

Using Linearization via the Quick Start wizard

You can use the linearization feature to define a more complex vessel shape and enter up to 32 level breakpoints where the corresponding volume is known. The values corresponding to 0% and 100% levels must be entered. Breakpoints can be ordered from top to bottom or the reverse, but should be entered in the wizard from the bottom to the top of the vessel so that the characterization chart accurately reflects values as they are entered.

Example:
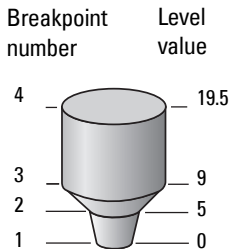
Break-point no.	Level value (m)	Volume value (l)
1 (0%)	0	0
2	5	500
3	9	3000
4 (100%)	19.5	8000
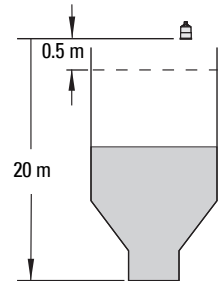
Note: values are for example purposes only.

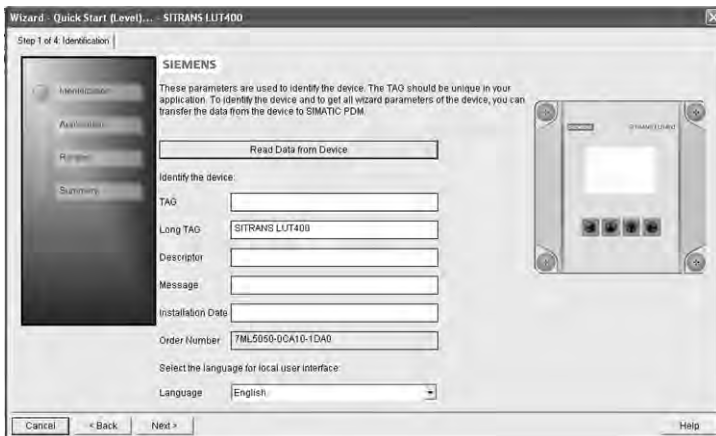Open the menu **Device – Wizard - Quick Start (Volume - Linearization):**

Step 1 – Identification

1. You can accept the default values without modification (TAG, Long TAG, Descriptor, Message, and Installation Date fields can be left blank),

OR

1. Click on Read Data from Device (if this is not the first time running the Quick Start Wizard).

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2.   The default Language is English. Select a different language value from the drop-
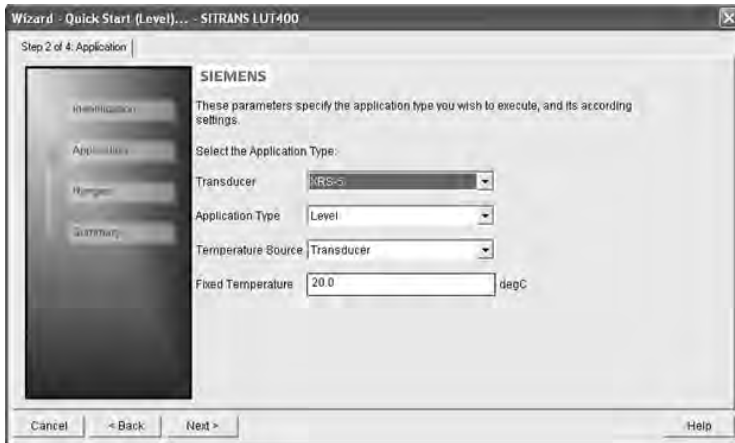   down box if you wish to change the language displayed on the device.

3.   After making all desired changes, click on **Next**.

Step 2 – **Application**

1.   Select the Transducer that will operate with the LUT400.
   The **Application Type** defaults to **Volume**.
2.   Select the Temperature Source (Transducer, Fixed Temperature, External TS-3,
     Average of Transducer and TS-3), and if Fixed, enter the Fixed Temperature value.

3.   Click on **Next**.

Step 3 – **Vessel Shape**

1.   In this step, there are two options: **Linearization Table** and **Curve Table**. Breakpoints
     will be entered in the same manner regardless of the table type selected, however a
     different algorithm is used for Curve Table, to smooth the lines between breakpoints.

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For example, use Curve Table when vessel sides are more rounded rather than straight angles. Make a selection and click on **NEXT.**
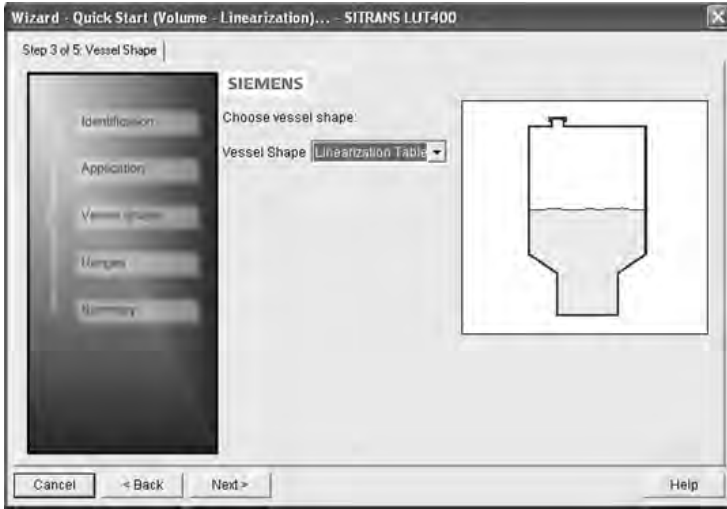
Step 4 - Ranges

1. Modify parameters as required.
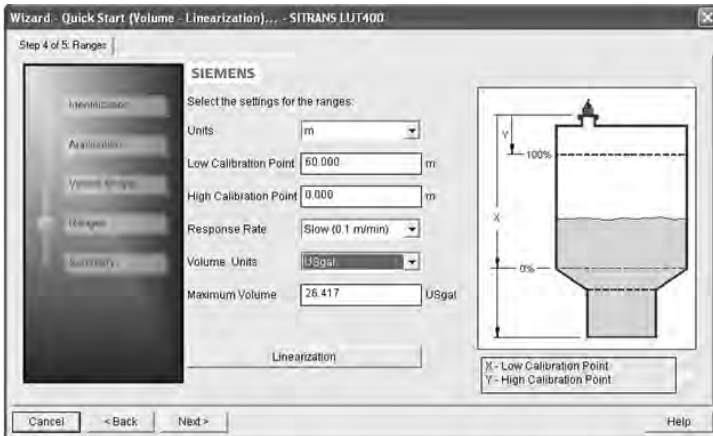
2. Click on **Linearization** to set breakpoints.
3. In the **Linearization** window click on the appropriate **Breakpoint** tab to open the dialog window.

a. Enter the desired Level and Volume values, and click on **OK.**

Notes:
- The **Reset** button resets values to the values in the offline table.
- When entering breakpoints via the wizard, values should be entered from the bottom to the top of the vessel so that the characterization chart accurately reflects values as they are entered.
  - To add points for Level and Volume equal to 0, enter these points first.
  - When using a linear table, add at least two points.
  - When using a curve table, add at least four points.
- If entering or modifying breakpoints via the parameter menu (after initial wizard is complete), ensure *2.6.1.Vessel Shape* is set to **Linearization Table** prior to level/volume values being transferred, otherwise two uploads must be performed:
  - a) one to read Linearization Table as enabled,
  - b) and one to transfer breakpoint values.

c. Back in the Step 4 of 5: Ranges window, click on **NEXT.**

Step 5 - Summary

1. Check parameter settings, and click on **Cancel** to abort, or apply your changes.
2. Click **Apply** to save your changes and return to the main menu, or click **Apply and Transfer** to save your changes and transfer settings to the device.

The message **Quick Setup was successful** will appear. Click on **OK.**

Configuration via SIMATIC PDM Quick Start Wizard for a Volume application with a complex vessel shape is now complete.

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Quick Start (Flow)

Step 1 – Identification

1) You can accept the default values without modification (TAG, Long TAG, Descriptor, Message, and Installation Date fields can be left blank),

OR

1) Click on Read Data from Device (if this is not the first time running the Quick Start Wizard).
2. The default Language is English. Select a different language value from the drop-down box if you wish to change the language displayed on the device.
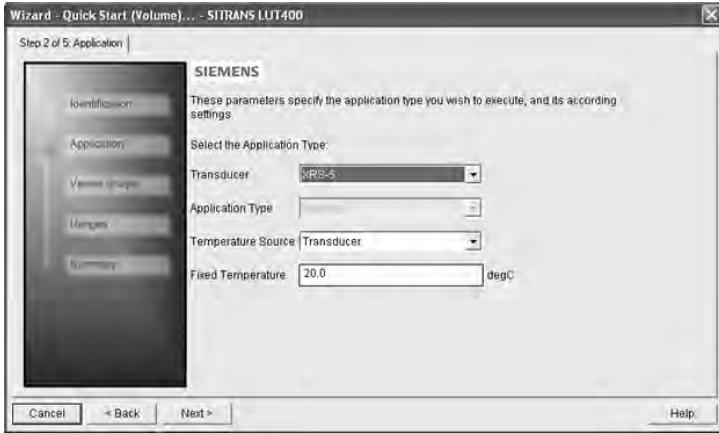

3) After making all desired changes, click on **Next**.

Step 2 – Application

1) Select the Transducer that will operate with the LUT400.
2) Select the Temperature Source (Transducer, Fixed Temperature, External TS-3, Average of Transducer and TS-3), and if Fixed, enter the Fixed Temperature value.
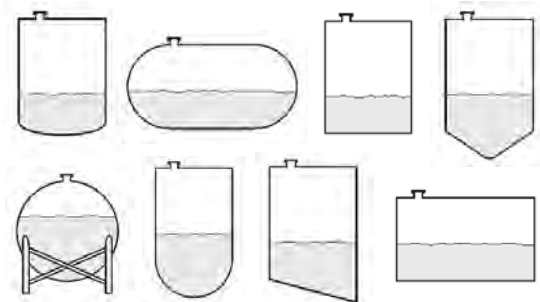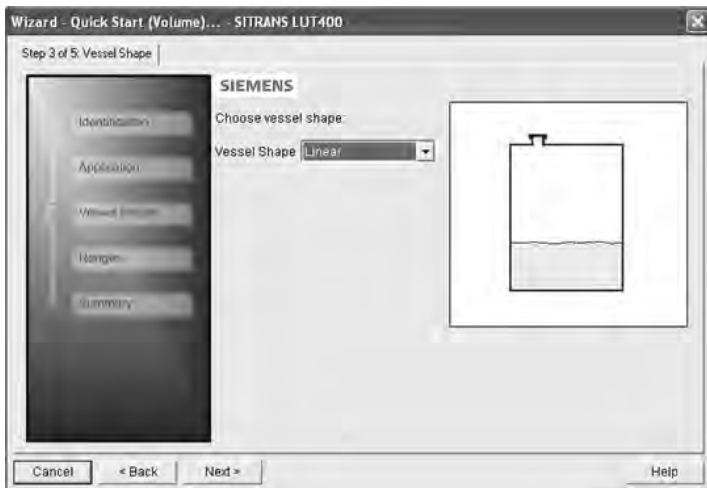

3) Click on **Next**.

Step 3 – Primary Device Shape

1) Select a Primary Measuring Device for your Flow application and change Units if desired.
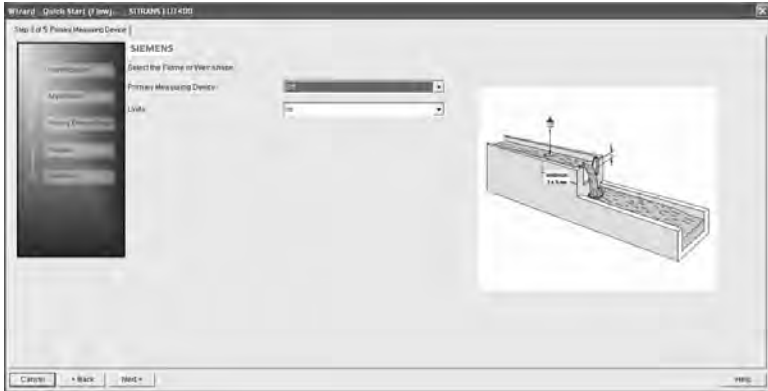
2) Additional parameter default values appear depending on the Primary Measuring Device selected. Modify as required.

3) Click on **Next**.

Step 4 - Ranges

1) Modify parameters as required.
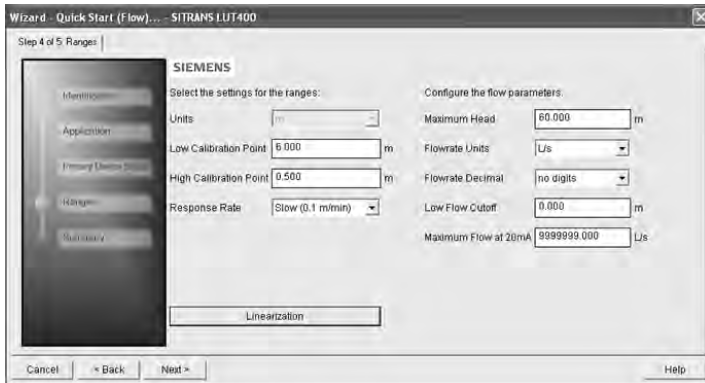
2) If PMD selected in Step 3 was **Universal Head Flow**, the Linearization button will appear in Step 4. Click on **Linearization** to set Head and Flow Breakpoints, then click **OK** to return to the Step 4.

3) Click on **Next**.

> **Notes:**
> - If entering or modifying breakpoints via the parameter menu (after initial wizard is complete), ensure *2.15.1.Primary Measuring Device (PMD)* is set to **Universal Head Flow** prior to head/flow values being transferred, otherwise two uploads must be performed:
>   - a) one to read Universal Head Flow as enabled,
>   - b) and one to transfer breakpoint values.

Step 5 – Summary
1. Check parameter settings, and click on **Cancel** to abort, or apply your changes.
2. Click **Apply** to save your changes and return to the main menu, or click **Apply and Transfer** to save your changes and transfer settings to the device.

The message **Quick Setup was successful** will appear. Click on **OK.**

Configuration via SIMATIC PDM Quick Start Wizard for a Flow application is now complete.

# Pump Control Wizard

The Pump Control Setup Wizard provides an easy step-by-step guide to help you configure the pumps and relays for a simple application.

Pump Control Wizard steps

Notes:
- Complete the appropriate Quick Start Wizard (Level, Volume, or Volume Linearization) prior to programming pump control.
- The Pump Control Setup Wizard settings are inter-related and changes apply only after you click on **Apply and Transfer** at the end of the final step.
- Initial Pump Control Wizard parameter values are not default values and do not necessarily reflect the current device configuration.
- Click on **BACK** to return and revise setting or **Cancel** to exit the Pump Control Wizard.

Launch SIMATIC PDM, open the menu **Device – Wizard - Pump Control**, and follow steps.
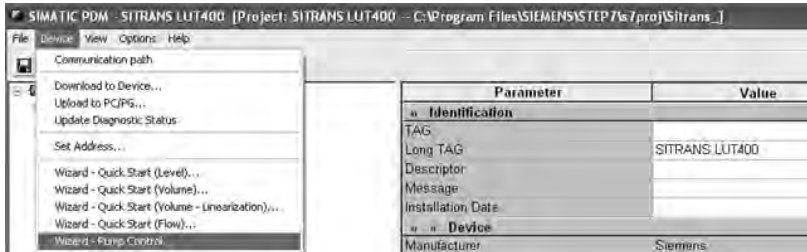
Step 1 – Application

1) Enable pump control, and select which relay is wired to Pump 1. (The relay for Pump 2 will be set automatically based on your selection for Pump 1.)
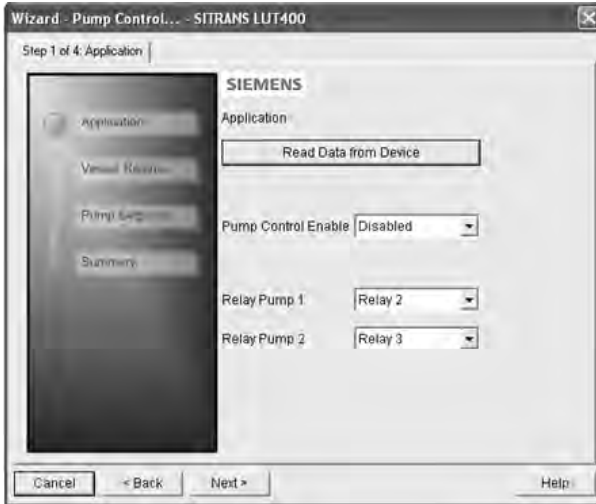
2. Click on **Next**.

Step 2 – Vessel Regime

1) Select the Pump Control Mode.
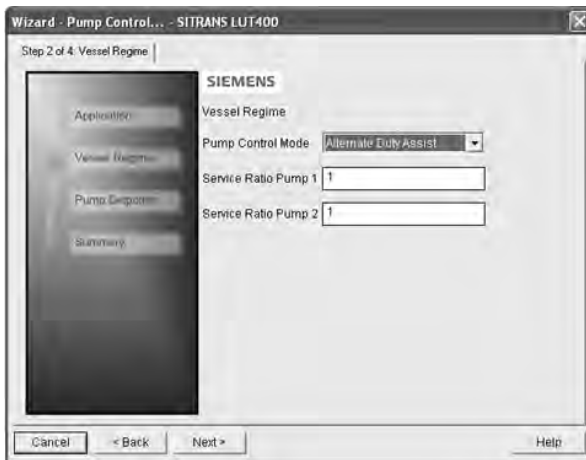
2. If Service Ratio Duty Assist, or Service Ratio Duty Backup selected enter the Service Ratio for each pump.

3. Click on **Next**.

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Step 3 – Pump Setpoints

1) Enter the start level (ON Setpoint), and stop level (OFF Setpoint) for each pump, then click on **Next**.
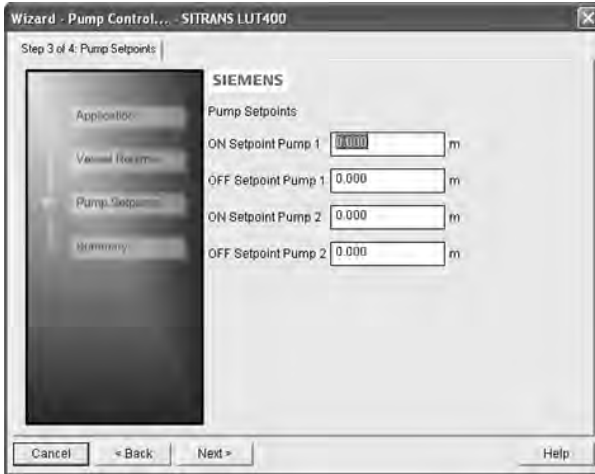
Step 4 – Summary

1. Check parameter settings, and click on **Cancel** to abort, or apply your changes.
2. Click **Apply** to save your changes and return to the main menu, or click **Apply and Transfer** to save your changes and transfer settings to the device.
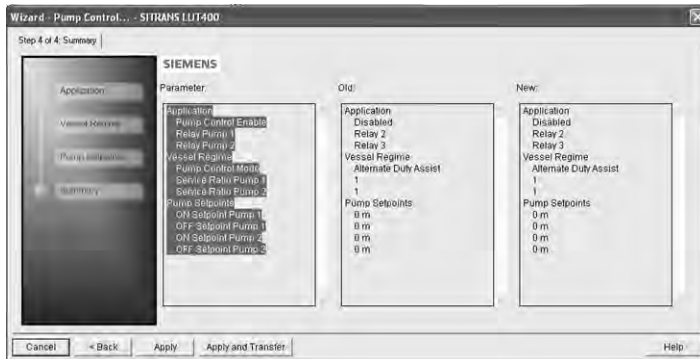
Pump configuration via PDM Pump Control Wizard is now complete.

Changing parameter settings using SIMATIC PDM

Notes:
- For a complete list of parameters, see *Parameter reference (LUI)* in LUT400 operating instructions[a].
- Clicking on **Cancel** during an upload from device to SIMATIC PDM will result in some parameters being updated.

a. SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

Many parameters are accessed via the 5-level menu in PDM. See *Parameters accessed via pull-down menus* below for the others.

1) Launch SIMATIC PDM, connect to SITRANS LUT400, and upload data from the device.
2) Adjust parameter values in the parameter value field and then press **Enter.** The status fields read **Changed**.
3) Open the Device menu, click on **Download to device**, then use **File – Save**, to save parameter settings. The status fields are cleared.

value fields

Parameters accessed via pull-down menus

You have access to a number of functions via pull-down menus from the menu bar under Device or View.

For a complete list, see pull-down menus below.
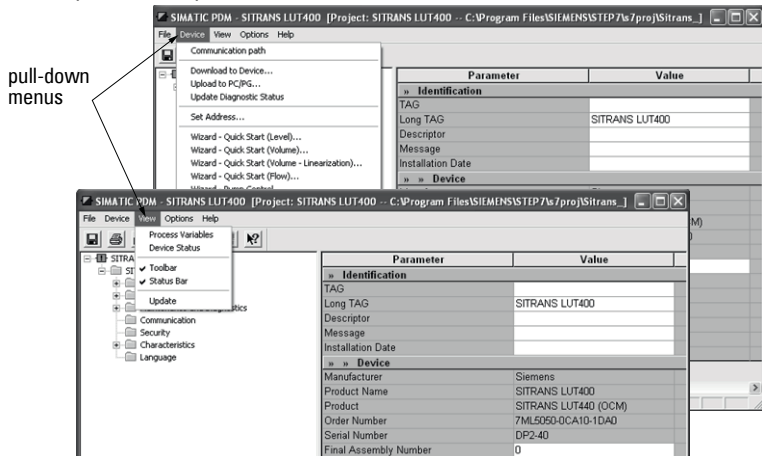
pull-down menus

Pull-down menus

Device menus	page	View menus	page
Communication path	-	Process Variables Device Status	35 38
Download to Device Upload to PC/PG Update Diagnostic Status	- - -	Toolbar Status Bar	- -
Set Address	26		
Wizard - Quick Start (Level) Wizard - Quick Start (Volume) Wizard - Quick Start (Volume - Linearization) Wizard - Quick Start (Flow) * Wizard - Pump Control	9 12 15 19 21		
Echo Profile Utilities Maintenance Wear Flow Log * Totalizers * Set Pumps Runtimes * Auto Zero Head * Auto Sensor Offset Auto Sound Velocity Real Time Clock Product Capabilities	26 31 32 32 32 32 33 33 33 33 33		
Select Analog Output Loop-Test	34 34		
Master Reset Reset Min/Max Temperatures Reset Totalizers * Configuration Flag Reset	34 35 35 35	Update	-
HART Communication	35		

* Selected menus visible only if Product Capabilities set to **Pump and Flow** or **OCM**.

Set Address

Open the menu **Device – Set Address** to set device Polling Address.
(Loop current mode can be enabled to use HART Multi-drop Mode. For more details, see
HART multi-drop mode in *General Operation* section of LUT400 operating instructions[1].)

Echo Profile Utilities

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1.   SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

Echo Profile

When the Echo Profile Wizard is launched from PDM, the current echo profile will display.
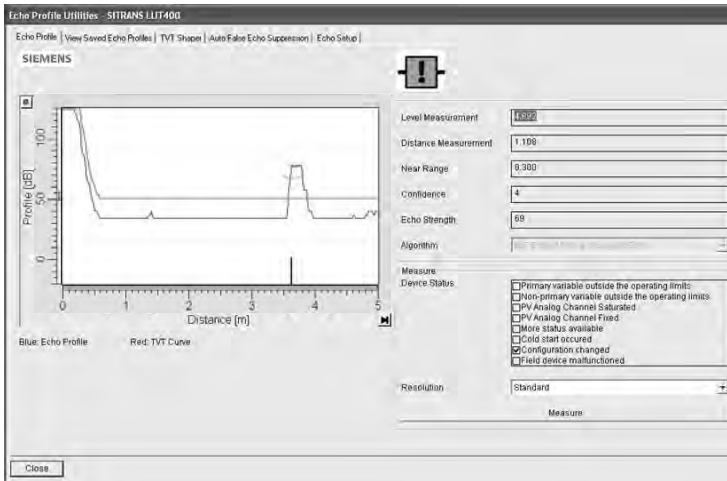
Click on the Measure button to reload the profile. (Select Standard Resolution to update the profile faster. Detailed Resolution uploads all data points.)

> **Note:** If a communication error exists, the profile will not display, and all parameter values will be set to 0.

Echo profile saving

> **Notes:**
> • Double click on each axis and record the Xscale and Data Scale values, so that you can restore the default view by resetting to these values.
> • You can save a profile or delete a saved profile.
> • After saving a profile click on **Close**, not the **x** button, to close the Echo Profile Utilities window: otherwise the profile will not be saved.
> • After saving a profile go to **View Saved Echo Profiles** tab to view it.

Echo profile data logging

You can store up to 60 profiles at a selected interval (maximum 60 minutes).
Inside Echo Profile Utilities, in the **Echo Profile Time Based Storage** window:
• Enter the desired interval between stored profiles.
• Enter the desired number of profiles to be stored (maximum 60).
• Click on **Start**. A message appears warning of the time delay and warning that all previous saved profiles will be overwritten. Click on **OK** to proceed. The new profiles will be saved with their date and time.

View Saved Echo Profiles

To view saved profiles, click on Saved Echo Profiles, and select a profile. The selected profile with associated parameter values will display.

TVT Shaper

This feature allows you to manually adjust the TVT curve to avoid false echoes caused by obstructions. (For an explanation see *Auto False Echo Suppression* on page 29.)

Open the menu **Device – Echo Profile Utilities** and click on the tab **TVT Shaper**.

When TVT Shaper tab is selected, the current echo profile and its associated parameters will display, allowing setup of the TVT manually.

- Turn Shaper Mode **On**.
- Press **Measure** to refresh the echo profile and load the current TVT curve from the device.
- Change the position of the cursor on the TVT curve using the **Point+** and **Point–** buttons: raise and lower the curve using **Offset+** and **Offset–**.
- Alternatively, enter values for **Point** and **Offset** directly into the dialog boxes.
- Press **Transfer to Device.**

Operation - PDM

Auto False Echo Suppression

Notes:
- Make sure material level is below all known obstructions at the moment Auto False Echo Suppression is used to learn the echo profile. We recommend an empty or almost empty vessel.
- Note the distance to material level when the environment is learned, and set Auto False Echo Suppression Range to a shorter distance to avoid the material echo being screened out.

If you have a vessel with known obstructions, we recommend using Auto False Echo Suppression to prevent false echo detection. This feature can also be used if the device displays a false high level, or the reading is fluctuating between the correct level and a false high level.

The device learns the echo profile over the whole measurement range and the TVT is shaped around all echoes present at that moment. [See *2.12.3.4.Shaper Mode* in LUT400 operating instructions[1] for a more detailed explanation.]

The learned TVT will be applied over a specified range. The default TVT is applied over the remainder of the measurement range.
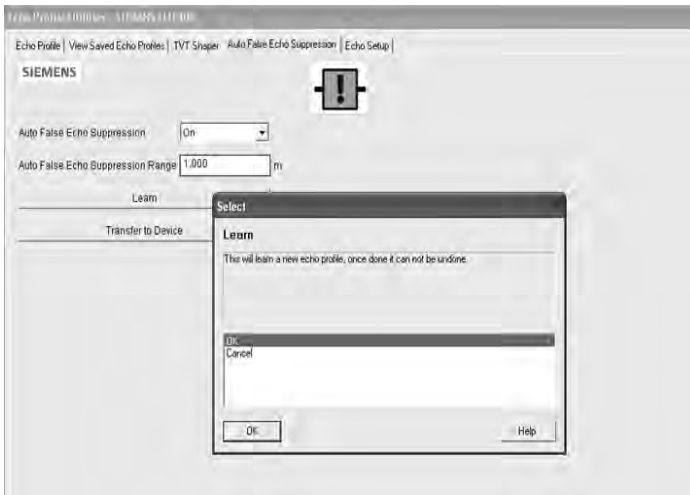
1) Make sure the material level is below all known obstructions.
2) Determine **Auto False Echo Suppression Range**. Measure the actual distance from the sensor reference point to the material surface using a rope or tape measure. Subtract 0.5 m (20") from this distance, and use the resulting value.
3) Open the menu **Device – Echo Profile Utilities** and click on the tab **Auto False Echo Suppression.**
4) Enter the value for **Auto False Echo Suppression Range** and select **On**.
5) Click on **Learn**. The message appears: '**This will learn a new TVT. Once done it cannot be undone**'. Click on **OK**.

---

1. SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

6) Once Auto TVT is complete, click on **Transfer to Device.** To exit, click on **Close**. Auto TVT is enabled and the learned TVT will be used.

7) To turn Auto False Echo Suppression off or on, reopen the **Auto False Echo Suppression** window, change the Auto False Echo Suppression to On or **Off**, and click on **Transfer to Device**.
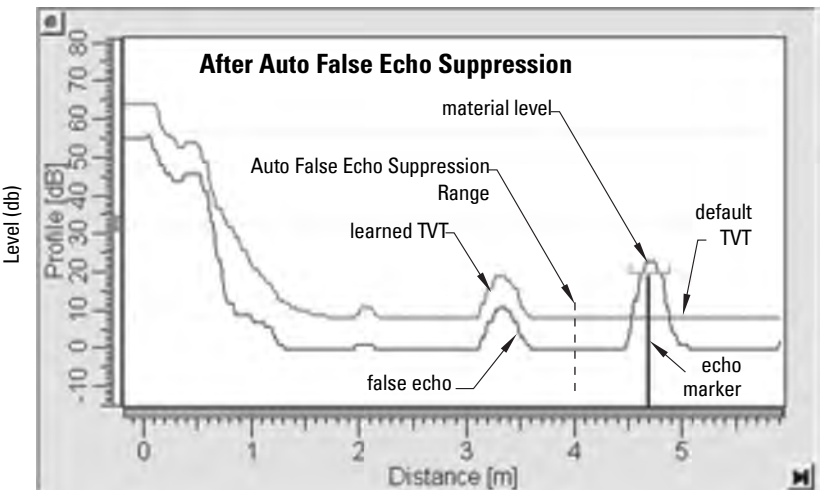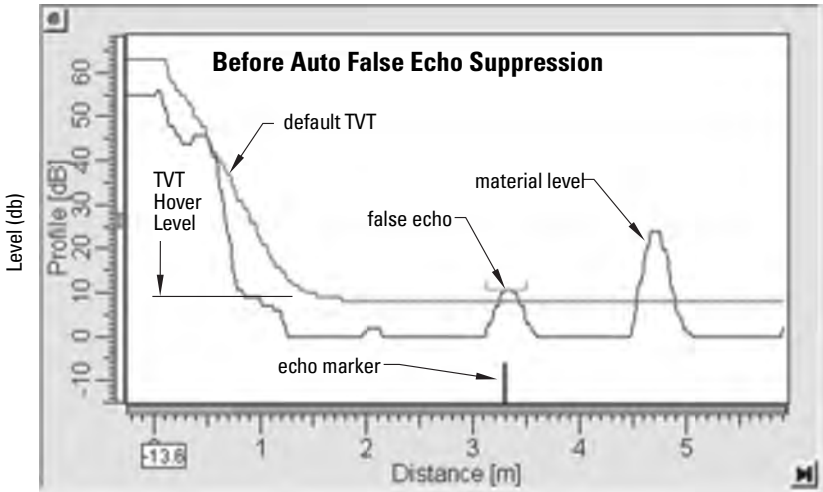
Echo setup

1. Select the Echo Setup tab to configure echo processing related product parameters.

algorithm
echo threshold
reform echo
narrow echo filter
damping filter
fill rate/min.
empty rate/min.

LOE timer
material level
fail-safe mA value
temp. source
fixed temp.
sound vel. at 20 °C

Maintenance

You can set schedules for:
- maintenance of the device based on its projected lifetime
- maintenance of the sensor based on its projected lifetime
- service
- calibration

To set Device/Sensor Maintenance schedules:
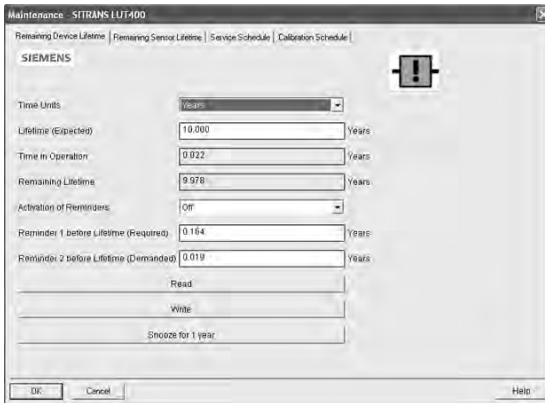
1) Open the menu **Device – Maintenance**, and click on the **Remaining Device/Sensor Lifetime** tab.
2) Modify desired values, and if desired, set reminders for either or both of **Reminder 1 (Required)/Reminder 2 (Demanded)**
3) Click on **Write**.
4) Click on **Read**, to see the effects of your modification.
5) Click on **Snooze for 1 year** to add a year to the Lifetime (Expected).

To set Service/Calibration schedules:

1) Open the menu **Device – Maintenance**, and click on the **Service/Calibration Schedule** tab.
2) Modify desired values, and if desired, set reminders for either or both of **Reminder 1 (Required)/Reminder 2 (Demanded)**.
3) Click on **Write**.
4) Click on **Read**, to see the effects of your modification.
5) Click on **Service/Calibration Performed** to reset the schedule.

Wear

Reports the number of days the device has been operating, and the number of times it has been powered up.

Open the menu **Device – Wear** to view:
- Powered-on Time
- Power-on Resets

Flow Log

Set flow logging mode, with intervals and setpoints for standard and rapid flow rates.

Open the menu **Device – Flow Log** to view:
- Flow Log Mode
- Standard Flow Log Interval
- Standard Flow Log Setpoint
- Rapid Flow Log Interval
- Rapid Flow Log Setpoint

Totalizers

Two different totalizers can be setup: OCM Flow Totalizer, Pumped Volume Totalizer.

Open the menu **Device – Totalizers** to view:

OCM Flow Totalizer

- Totalizer Decimal Position
- Totalizer Multiplier
- Low Flow Cutoff

Pumped Volume Totalizer

- Totalizer Decimal Position
- Totalizer Multiplier

Set Pump Runtimes

Set runtime for each pump.

Open the menu **Device – Set Pump Runtimes** to view:
- Run Time Relay 2
- Run Time Relay 3

Operation - PDM

Auto Zero Head

Enter the actual head value to have Head Measurement calculated and an offset entered if necessary.

Open the menu **Device – Auto Zero Head** to view:
- Zero Head Offset (read only)
- Head Measurement (read only)
- Actual Head Value

Click the button 'Set Zero Head' when the Actual Head Value differs from the Head Measurement to automatically adjust Zero Head.

Auto Sensor Offset

Enter the actual distance value to have Distance Measurement calculated and a sensor offset entered if necessary.

Open the menu **Device – Auto Sensor Offset** to view:
- Sensor Offset (read only)
- Distance Measurement (read only)
- Desired Distance for Auto Sensor Offset

Click the button 'Transfer' when the Desired Distance for Auto Sensor Offset differs from the Distance Measurement to automatically adjust Sensor Offset.

Auto Sound Velocity

Enter the actual distance value to have the Distance Measurement calculated and speed of sound adjusted if necessary.

Open the menu **Device – Auto Sound Velocity** to view:
- Sound Velocity at 20 degrees C (read only)
- Distance Measurement (read only)
- Desired Distance for Auto Sound Velocity

Click the button 'Transfer' when the Desired Distance for Auto Sound Velocity differs from the Distance Measurement to automatically adjust Sound Velocity at 20 degrees C.

Real Time Clock

Use to view and change the date and time in the device.

Product Capabilities

Allows you to set the product capabilities of the device (Level, Pump and Flow, OCM), or read the product capabilities from the device.

1) Open the menu **Device – Product Capabilities**.
2) Select product capability from the drop-down box, or click on button **Read Product Capabilities from Device**.
3) Click on **OK** to save.

Operation - PDM

Select Analog Output

Allows you to set the mA Output to report Level, Distance, or Space.

1) Open the menu **Device – Select Analog Output**.
2) The **Select Analog Output** window displays the current setting: click on **OK**.
3) Select a different setting and click on **OK**.
4) The **Select Analog Output** window displays the new setting: click on **OK**.

Loop-Test

Note: The simulated AO (Analog Output) value influences output to the control system. Be sure to disconnect any pumps/processes before entering simulation.

Allows you to input a simulated value (4 mA, 20 mA, or a user-defined value) in order to test the functioning of the mA connections during commissioning or maintenance of the device. (The range is 3.5 mA to 22.8 mA: see *2.12.Signal Processing* in LUT400 operating instructions[1].)

To simulate a user-defined mA value:

1) Open the menu **Device – Loop-Test**.
2) Select **Other,** enter the new value, and click on **OK.** The message 'Field Device fixed at [new value]' appears. Click on **OK**. The Loop-Test window remains open.
3) When you are ready to end simulation, select **End** and click on **OK** to return the device to the actual output value.

Master Reset

Factory Defaults

Factory Defaults resets all parameters to the default settings with the following exceptions:
  • all identification parameters (see *3.1.Identification* in LUT400 operating instructions[1] for a list)
  • Device Address
  • Write Protection
  • Learned TVT curve
  • Auto False Echo Suppression Range
  • Shaper Mode
  • TVT Shaper breakpoints

1) Open the menu **Device – Master Reset**, select **OK** to perform a reset to Factory Defaults.
2) After the reset is complete upload parameters to the PC/PG. (If you are performing a reset after replacing the device with a different device, do not upload parameters to the PC/PG).

Operation - PDM

Reset Min/Max Temperatures

To reset the minimum/maximum temperatures, open the menu **Device – Reset Min/Max Temperatures** and perform a reset.

Reset Totalizers

To reset the LCD current and daily totalizers to zero, open the menu **Device – Reset Totalizers** and perform a reset.

Configuration Flag Reset

To reset the configuration flag, open the menu **Device – Configuration Flag Reset** and perform a reset.

HART Communication

Sets the number of request/response preambles (default 5).

We recommend you do not change this value.

Process Variables

Overview

To compare outputs in real time, open the menu **View – Process Variables** and click on the **Overview** tab to see reading (level, space, distance); analog output; range and loop current.

Operation - PDM
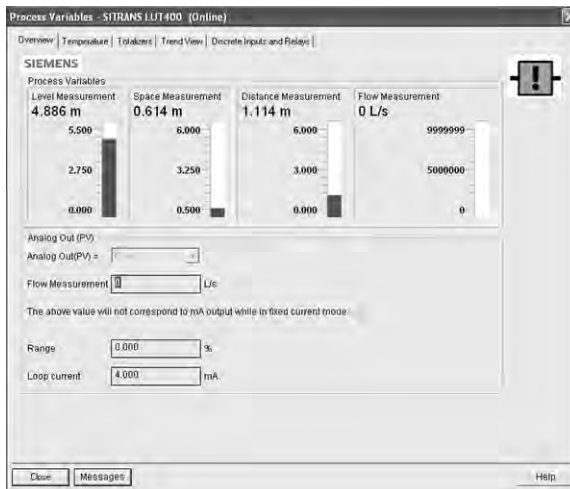
Temperature

To see current, highest and lowest process temperatures, click on the **Temperature** tab.
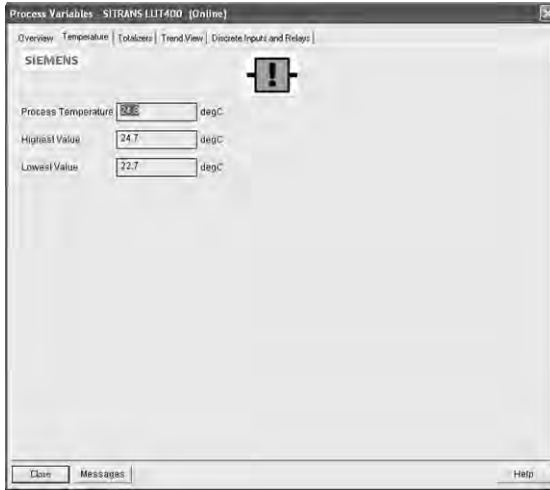
Totalizers

To see OCM Flow and Pumped Volume Totalizers, click on the **Totalizers** tab.

Operation - PDM
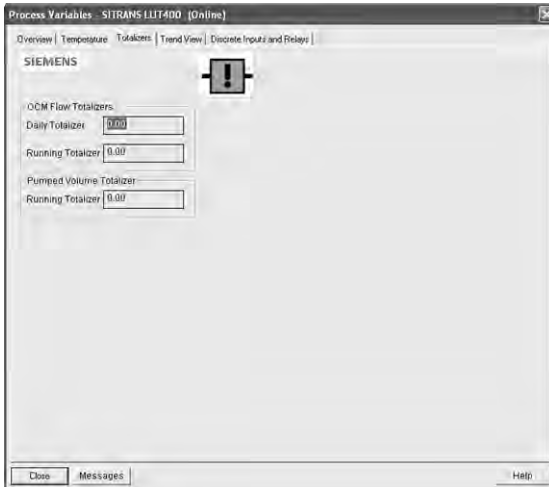
Trend View

Click on the **Trend View** tab to view trend lines.
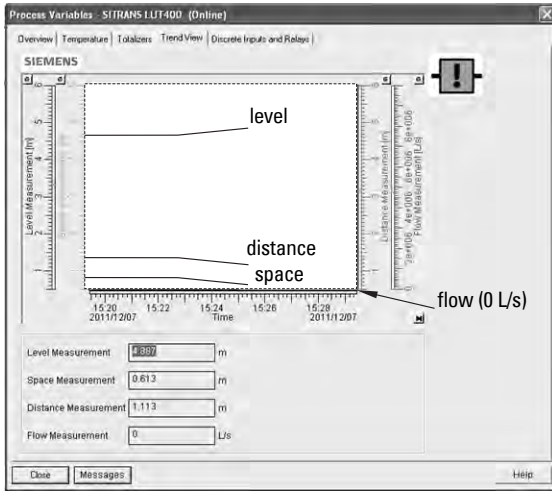
4 trend lines can be monitored: (distinguished by color in SIMATIC PDM).

The Primary Variable (PV) is one of six process variables set in *2.5.1.Current Output Function*. [Refer to *Parameter reference (LUI)* in LUT400 operating instructions[1].] Trend lines can display Level, Space, Distance, Volume or Flow.

Discrete Inputs and Relays

The Discrete Inputs and Relays tab displays programmation and state for DIs and relays.

Operation - PDM
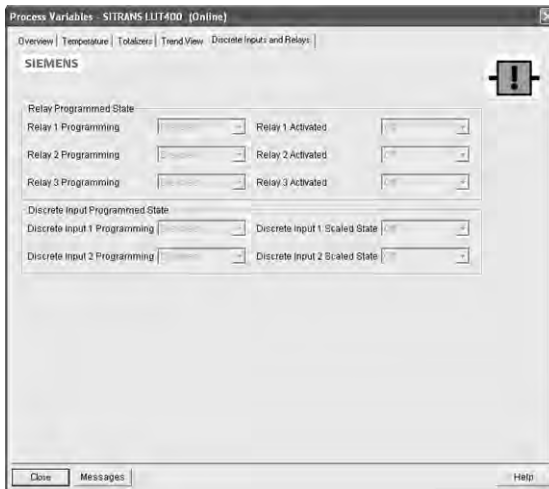
Device Status

Open the menu **View – Device Status** to view Diagnostics, Device Status, Hardware/Firmware (HW/FW) Status, and Maintenance status.

In the Diagnostics window, click on **Update diagnostics** to update diagnostic information and refresh linked icons.

Update

Open the menu **View – Update** to refresh the screen.

Operation via Web Browser (USB)

Features

The web browser interface in SITRANS LUT400, designed to work with Windows XP, makes monitoring and adjustments easy. Internet Explorer installed on a computer can be used to configure the SITRANS LUT400, and the Web Server *Abyss* is supplied for your convenience. The web browser is available in English only.

Functions

SITRANS LUT400 parameters organized into six main function groups allow you to configure and monitor the device:

• Identification
• Setup
• Maintenance and Diagnostics
• Communication
• Security
• Language

See *Browser Menu Parameter Function Groups* on page 44 for a list[1] of parameters that can be configured via the web browser interface.

Installation

To install the USB driver and web browser interface, use the small DVD provided with the device (or go to: www.siemens.com/sitransLUT400 and click on **Support> Software Downloads**).

Installing the USB driver

To install the driver:

1. Insert DVD provided into your computer DVD drive.
2. Connect SITRANS LUT400 to your computer via the USB cable and apply power to the device.
3. On the *Found New Hardware Wizard* window, select option to **Install from a list or specific location**, and click **Next.**
4. When prompted to choose your search and installation options, select *Search for the best driver*, and *Include this location in the search*, then click **Browse**.
5. Navigate to the DVD drive on your computer (typically D:/ or E:/) to browse the DVD supplied. Navigate to **Continuous Measurement>Ultrasonic Controllers>Software and support>SITRANS LUT400** and select the file **usbser_x.xx.xx-xx.inf** (where x.xx.xx-xx is the version). Click **OK**.
6. Click **Next** in the *Hardware Wizard*.
7. Click **Continue Anyway** on the *Hardware Installation* window.
8. Click **Finish** to close the *Hardware Wizard*.

Installation of the USB driver is now complete.

Operation - Browser

Installing the web browser interface

To install the web browser:

1. Use Windows Explorer to browse to the installation file on your computer DVD drive: **Continuous Measurement>Ultrasonic Controllers>Software and support >SITRANS LUT400\SITRANS_LUT400_HA_BROWSER_DD_x_xx_xx_xx.exe** (where x_xx_xx_xx is the version).
2. Double-click the **.exe** file to install the web browser.

   Click **Next**.
3. Read and **accept** the Siemens licence agreement, then click **Next**.
4. Browse to, or accept the default file location (recommended), where the web browser will be installed, then click **Next**.
5. On the *Select Start Menu Folder* window, browse to desired folder, or accept the default folder (recommended), then click **Next**.
6. Click **Install**. You will be prompted to confirm the installation of the *Abyss Web Server*. Click **OK**.
7. Read and **agree** to the *Abyss Web Server licence agreement*.
8. Check only the *Abyss Web Server (required)* component to install, and click **Next**.

9. Browse to desired folder, or accept the default destination folder (recommended), for the Abyss Web Server installation, then click **Install**.
10. On the *Abyss Web Server Startup Configuration* window, select **Manual Startup**. Click **OK**.

Operation - Browser

11. When prompted to start the Abyss Web Server click **No**, and on the next window showing installation *Completed*, click **Close**.
12. Click **Finish** to exit the Setup Wizard.

Installation of the Browser is now complete.

Accessing the device via the web browser

Before accessing the device via the browser for the first time, you must know the communication port (COMPORT) to which the device is attached. This information can be found in the Device Manager on your computer.

Communication port setting

1. Go to **Start > Settings > Control Panel** and double-click **System** to open the properties window. Click on **Device Manager** located on the **Hardware** tab.
2. Open **Ports (COM & LPT)** and note the COM number assigned to **USB CDC serial port emulation**.

To access the device via the web browser, double-click the desktop shortcut **SITRANS LUT400,**

or go to **Start > Programs > SITRANS LUT400 HART Browser Interface** (created during the installation process). The Abyss server will autostart (if not already running) and the following window will appear:
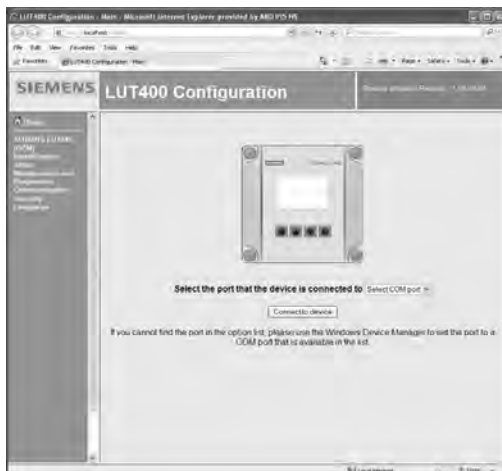
Select the COMPORT that the device is connected to on your computer from the drop-down box. (This is the COMPORT number noted above in step 2 of *Communication port setting* .) The

COMPORT must only be entered once, when initially accessing the device. The comport setting will be retained by the computer for all LUT400 devices that are connected in future.

Note: The web browser interface will only work with a device configured using COMPORT 1 to 9.

The menu on the left will display after a few seconds, and reflects a general configuration at this point.

Click on **Connect to device**. The following screen will appear.
[SITRANS LUT440 (OCM) device is shown here for example purposes.]

Click on **Home** to update menu, based on your device configuration.

Operation - Browser

Changing parameter settings using the browser

To enter parameter values, click on a bulleted function group on the left of the window. Parameters will display on the right, or the function group on the left will expand to show more levels. (Click on Home to collapse all parameter function groups.)

parameter menu levels — value field — drop-down box — click to apply changes
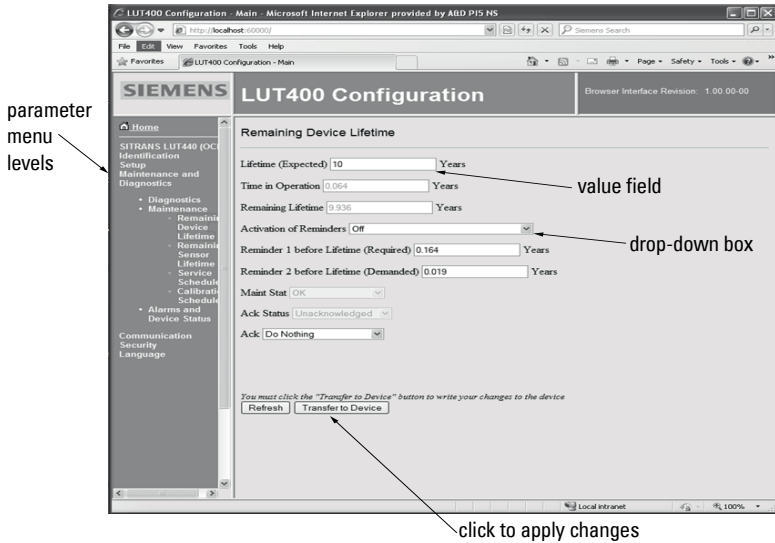
To edit a parameter value, click on the value field and type a value, or select from the drop-down box.

As you enter values on each menu level, click **Cancel** to abort or **Transfer to Device** to apply your changes.

Configuring a new device

To configure the SITRANS LUT400 for a simple application, navigate through the parameter function groups and enter values suited to your application. The Browser menu structure is very similar to the LCD Menu Structure. [See *LCD Menu Structure* for a complete list of parameters in chart format, and for more detailed explanations of each parameter, see *Parameter reference (LUI)* in the LUT400 operating instructions[1].

[1.] SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01)

Browser Menu Parameter Function Groups

Notes:
- Below is a list of parameter function groups (not individual parameters) available on the browser. A parameter number is referenced for more information on the parameters within each function group.
- An asterisk (*) in the left column means this parameter or function group will not display on the browser menu unless the SITRANS LUT400 is configured for **Pump and Flow*** or **OCM*** at startup, and the device connected supports this functionality.

*	Parameter Function Group			Parameter Number
	IDENTIFICATION			3.1
		Device		
	SETUP			2
		Sensor		2.1
		Calibration		2.2
		Rate		2.3
		Fail-Safe		2.4
		Current Output		2.5
			Current Output Function	
			Current Output Setup	
		Volume		2.6
			Level and Volume Breakpoints	
		Pumps		2.7
			Basic Setup	
			Modifiers	
			Wall Cling Reduction	
*			Energy Savings	
*			Pump Run-On	
*			Pump Start Delays	
*			Totalizers	
		Alarms		2.8
			High Level Alarm	
			Low Level Alarm	
			Switch (DI) Alarm	
			In-bounds Level Alarm	
			Out-of-bounds Level Alarm	
			Low Temperature Alarm	
			High Temperature Alarm	
			Fail-safe Fault Alarm	
*			High Flowrate Alarm	
*			Low Flowrate Alarm	
			Relay Logic	
			Time to Spill	

Operation - Browser

(cont'd)	Parameter Function Group			Parameter Number
		Discrete Inputs		2.9
			Backup Level Override	
			Discrete Input Logic	
*			Pump Interlock	
		Data Logging		2.10
			Process Value Log	
			Alarm Log	
*			Flow Log	
		Other Control		2.11
			Elapsed Time Relay	
			Time of Day Relay	
*			External Totalizer	
*			External Sampler	
		Signal Processing		2.12
			Temperature and Velocity	
			Echo Select	
			TVT Setup	
				TVT Shaper
			Measured Values	
		Display		2.13
			LCD Contrast	
		Date and Time		2.14
			Daylight Saving	
*		Flow		2.15
			Auto Zero Head	
			Basic Setup	
			PMD Dimensions	
			Universal Head vs Flow	
*		Totalizers		2.16
	MAINTENANCE AND DIAGNOSTICS			3
		Diagnostics		3.2
			Pump Records	
			Temperature Peak Values	
			Echo Quality	
		Maintenance		3.3
			Remaining Device Lifetime	
			Remaining Sensor Lifetime	
			Service Schedule	
			Calibration Schedule	
		Alarms and Device Status		[a]

(cont'd)	Parameter Function Group	Parameter Number
	COMMUNICATION	4
	SECURITY	5
	LANGUAGE	6

a. This menu displays an Alarm Summary and Device Status (list of any detected faults) that would otherwise be displayed on the optional LCD.

Operation via AMS Device Manager (HART)

(SITRANS LUT400 compatible with AMS version 10.5 and higher)

Features

AMS Device Manager is a software package used to commission and maintain SITRANS LUT400 and other process devices. Please consult the LUT400 online help, or the manufacturer's operating instructions for details on using AMS Device Manager. (You can find more information at http://www.emersonprocess.com/AMS/.)

AMS Device Manager monitors the process values, alarms and status signals of the device. It allows you to display, compare, adjust, verify, and simulate process device data. The graphic interface in SITRANS LUT400 makes monitoring and adjustments easy.

Functions

Parameters organized into three main function groups allow you to configure and monitor the device:
- Configure/Setup
- Device Diagnostics (read only)
- Process Variables (read only)

See *AMS Menu Structure* on page 76 for a chart[1] and *Changing parameter settings using AMS Device Manager* on page 66 for more details.

Feature	page	Function
Wizard - Quick Start (Level)	53	Device configuration for simple level applications
Wizard - Quick Start (Volume)	55	Device configuration for simple volume applications
Wizard - Quick Start (Volume - Linearization)	58	Device configuration for volume applications using complex vessel shapes
Wizard - Quick Start (Flow)	61	Device configuration for simple flow applications
Wizard - Pump Control	64	Pump control setup
Echo Profile	69	Echo profile viewing

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[1]. The menu structure for AMS Device Manager is almost identical to that for the SITRANS LUT400 LCD.

Operation - AMS

Feature (cont'd)	page	Function
TVT Setup	70	Screen out false echoes
Process Variables View	74	Monitor process variables and level trend
Security	72	Protect security and communication parameters from modification by the maintenance user

Electronic Device Description (EDD)

SITRANS LUT400 requires the EDD for AMS Device Manager version 10.5.

You can locate the EDD in Device Catalog, under **Sensors/Level/Echo/Siemens/SITRANS LUT400**. Check the product page of our website at www.siemens.com/sitransLUT400, under **Support->Software Downloads**, to make sure you have the latest version of the EDD for AMS Device Manager. If you need to install a new EDD, see *Configuring a new device* below.

Configuring a new device

1) Check that you have the most recent EDD, and if necessary download it from the product page listed above. Save the files to your computer, and extract the zipped file to an easily accessed location.
2) Launch **AMS Device Manager– Add Device Type,** browse to the unzipped DD file, and select it.

Startup

1. **Launch AMS Device Manager.**
   (Application Guides for setting up HART devices with AMS Device Manager can be downloaded from product page of our website at www.siemens.com/sitransLUT400.)

Operation - AMS

2) In **Device Connection View,** right-click on the device icon and select **Scan Device** to upload parameters from the device.

3) Double click the device icon to open the startup screen. The startup screen shows device identification details, and a navigation window on the left-hand side of the screen.
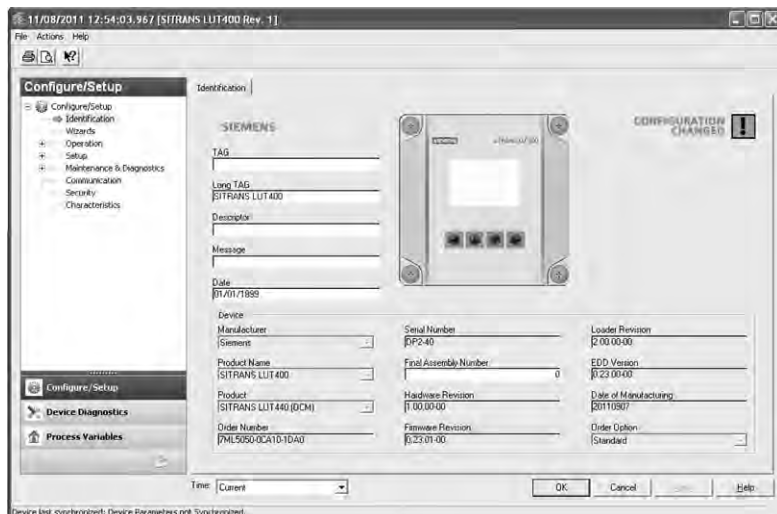
4) Configure the device using the Quick Start Wizard. See *Quick Start Wizards via AMS Device Manager* on page 52.

Before initiating a Quick Start Wizard to configure the device, you may wish to gather the necessary parameter values. Parameter Configuration Charts listing all parameters and available options for each application type are available on our website. Go to: www.siemens.com/sitransLUT400 > **Support > Application Guides**. You can record data and select from options on the chart that apply to your application, then complete the *Quick Start Wizards via AMS Device Manager* on page 52.

Master Reset

- Navigate to **Configure/Setup > Operation > Reset**
- Click on **Master Reset** and click **Next** to perform a reset to Factory Defaults (or click **Cancel** to abort).
- Scan device (see below).

Pull-down menu access

Action menu items
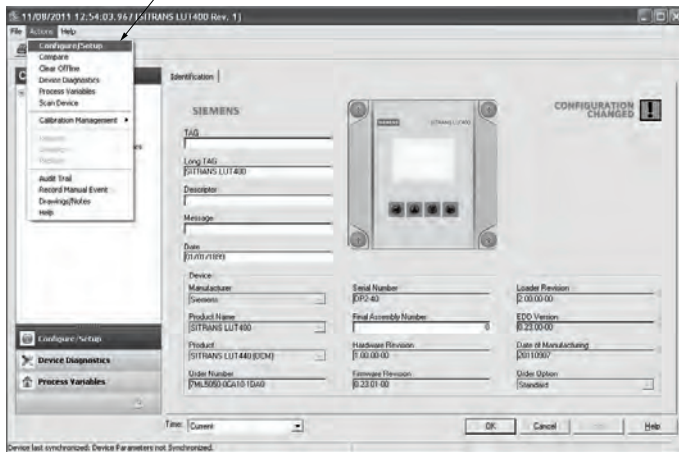
A pull-down menu under **Actions** gives alternative access to several features.

Scan Device

- Open the menu **Actions > Scan Device**.

Scan Device uploads parameters from the device (synchronizes parameters).

Operation - AMS

Device configuration

1) Navigate to **Configure/Setup > Operation** and click on any of the Operation sub-menus to open the dialog window.
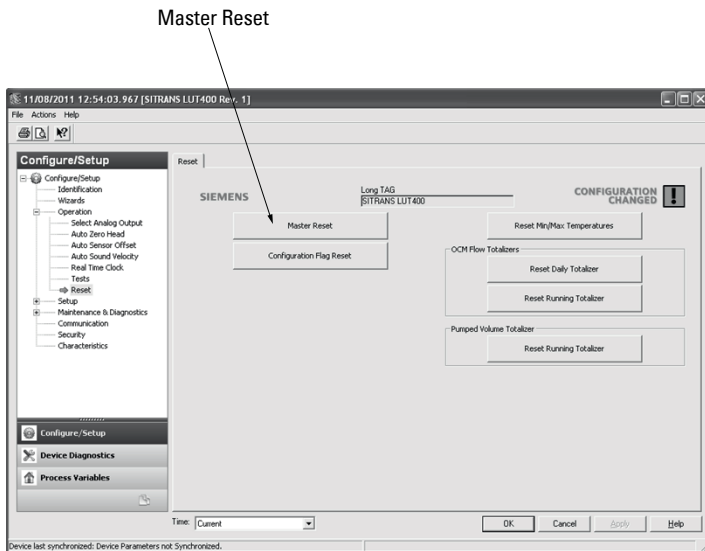
Master Reset

2) Click on **Master Reset** and perform a reset to Factory Defaults.
3) Open the pull-down menu **Actions – Scan Device** to synchronize parameters (upload parameters from the device to AMS).
4) Configure the device via the Quick Start wizard appropriate for the application.

Quick Start Wizards via AMS Device Manager

A Wizard provides an easy step-by-step Quick Start procedure that configures the device for a simple application. Four Quick Start Wizards are available via AMS Device Manager:

- *Wizard - Quick Start (Level)* on page 53
- *Wizard - Quick Start (Volume)* on page 55
- *Wizard - Quick Start (Volume - Linearization)* on page 58
- *Wizard - Quick Start (Flow)* on page 61

A Wizard to configure pumps is also available:

- *Wizard - Pump Control* on page 64

Operation - AMS

Wizard - Quick Start (Level)

Step 1 – Identification

1. Navigate to **Configure/Setup > Wizard > Wizard - Quick Start (Level)**.
2. You can accept the default values without modification. (TAG, Long TAG< Descriptor, Message, and Date fields can be left blank.) If desired, make changes then click on **Next**.
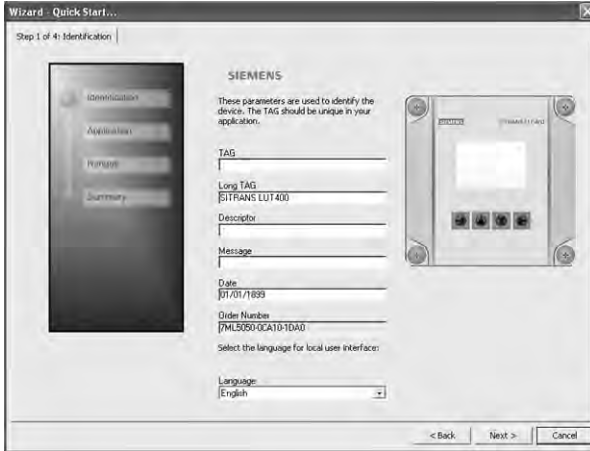
Step 2 – Application

1. Select the Siemens transducer connected to the device.
2. Select the Application Type (Level, Space, Distance[1]).
3. Select the Temperature Source, and if fixed, enter a Fixed Temperature value.
4. Click on **Next**.

---

[1]. For details see parameter *2.1.3.Sensor Mode* in SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01).

Step 3 – Ranges

1. Change units if desired (in meters by default).
2. Set High and Low Calibration points.
3. Set Response Rate.
4. Click on **Next**.
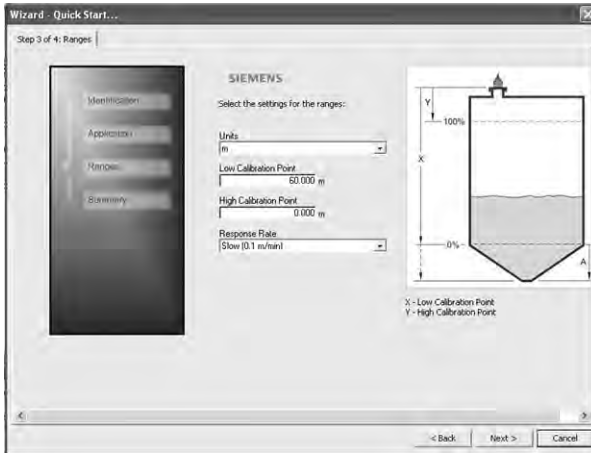
Step 4 – Summary

Check parameter settings, and click on **Cancel** to abort, or **Apply** to transfer values to the device.
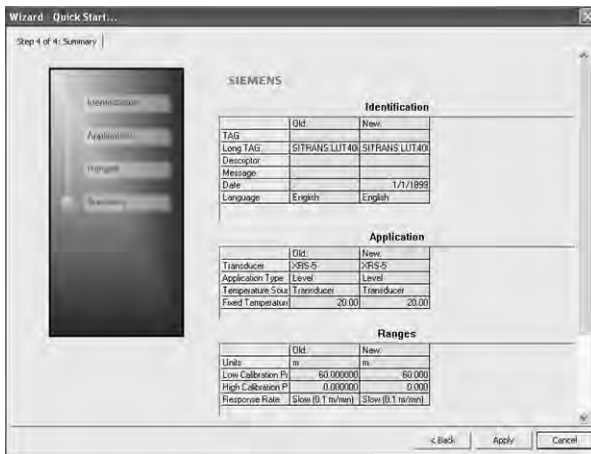
Configuration via the AMS Device Manager Quick Start Wizard for a Level application is now complete.

Wizard - Quick Start (Volume)

Step 1 – Identification

1. Navigate to **Configure/Setup > Wizard > Wizard - Quick Start (Volume)**.
2. You can accept the default values without modification. (TAG, Long TAG, Descriptor, Message, and Date fields can be left blank.) If desired, make changes then click on **Next**.
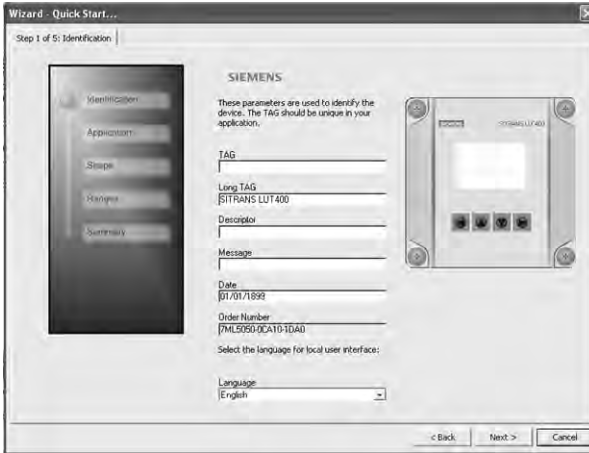
Step 2 – Application

1. Select the Siemens transducer connected to the device.
2. Application Type defaults to Volume.[1]
3. Select the Temperature Source, and if fixed, enter a Fixed Temperature value.
4. Click on **Next**.

---
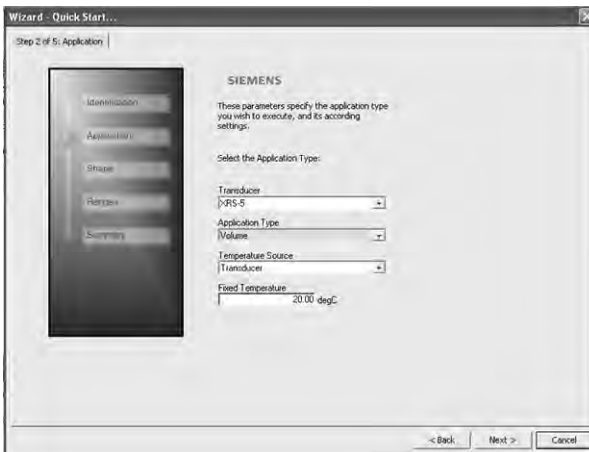
[1] For details see parameter *2.1.3.Sensor Mode* in SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01).

Step 3 – Shape

1. Select the vessel shape.
2. Click on **Next**.

Step 4– Ranges

1. Change units if desired (in meters by default).
2. Set High and Low Calibration points.
3. Set Response Rate, Volume Units, and Maximum Volume.
4. Click on **Next**.

Step 5– Summary

Check parameter settings, and click on **Cancel** to abort, or **Apply** to transfer values to the device.

Configuration via AMS Device Manager Quick Start Wizard for a simple Volume application is now complete.

Wizard - Quick Start (Volume - Linearization)

Step 1 – Identification

1) Navigate to **Configure/Setup > Wizard > Wizard - Quick Start (Volume - Linearization)**.

2) You can accept the default values without modification. (TAG, Long TAG, Descriptor, Message, and Date fields can be left blank.) If desired, make changes then click on **Next**.

Step 2 – Application

1. Select the Siemens transducer connected to the device.
2. The Application Type defaults to Volume.[1]
3. Select the Temperature Source, and if fixed, enter a Fixed Temperature value.
4. Click on **Next**.

---
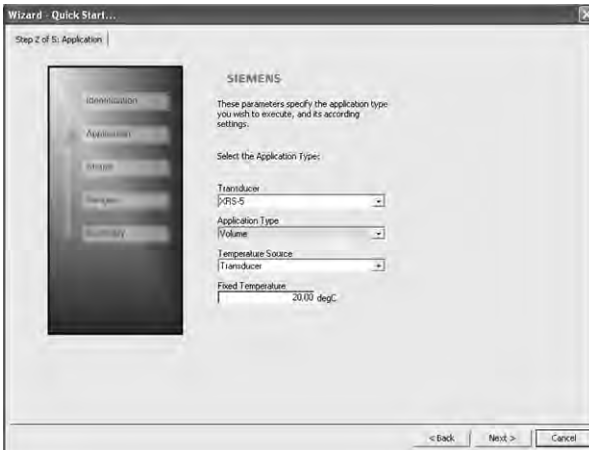
[1]. For details see parameter *2.1.3.Sensor Mode* in SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01).

Step 3 – Shape

1. Select the vessel shape (Linearization Table, or Curve Table).
2. Click on **Next**.
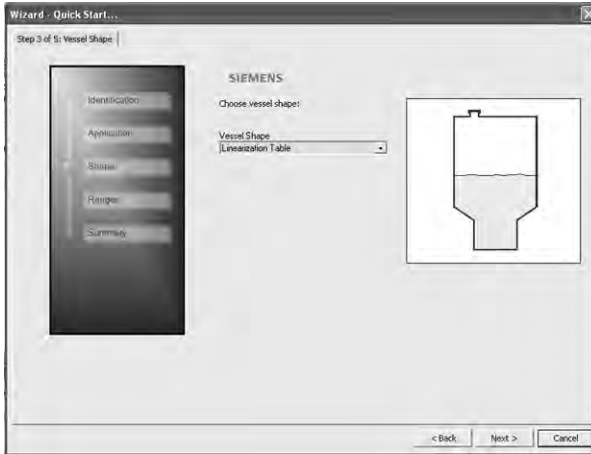
Step 4 – Ranges

1. Change units if desired (in meters by default).
2. Set High and Low Calibration points.
3. Set Response Rate, Volume Units, and Maximum Volume.
4. Click on **Next**.

Operation - AMS
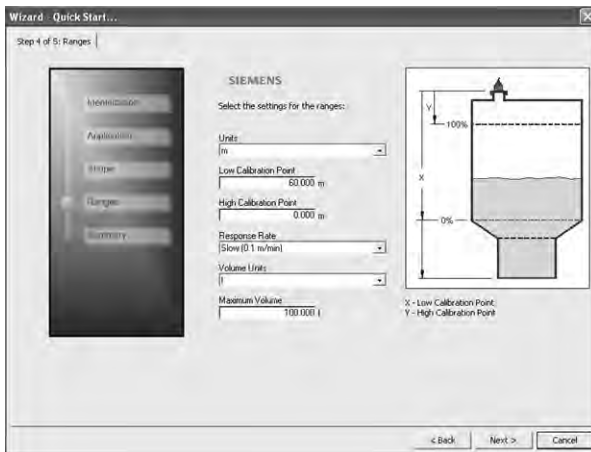
5. The Characteristic window appears. Enter the Level and Volume Breakpoint to build the characteristic curve.
Linearization values must be entered from lowest to highest.
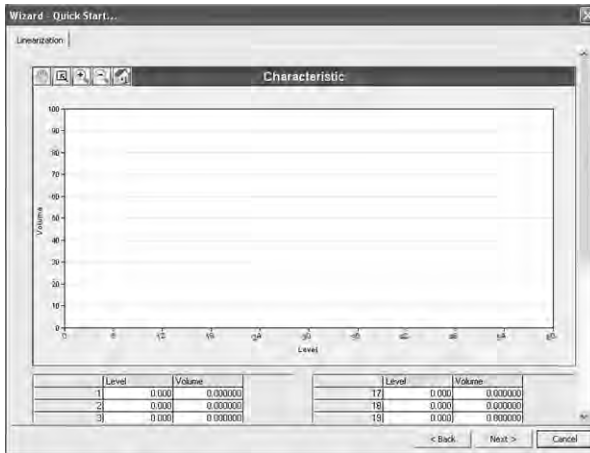
6. Click on **Next**.

Step 5 – Summary

Check parameter settings, and click on **Cancel** to abort, or **Apply** to transfer values to the device.

Configuration via AMS Device Manager Quick Start Wizard for a Volume application with a complex vessel shape is now complete.

Operation - AMS
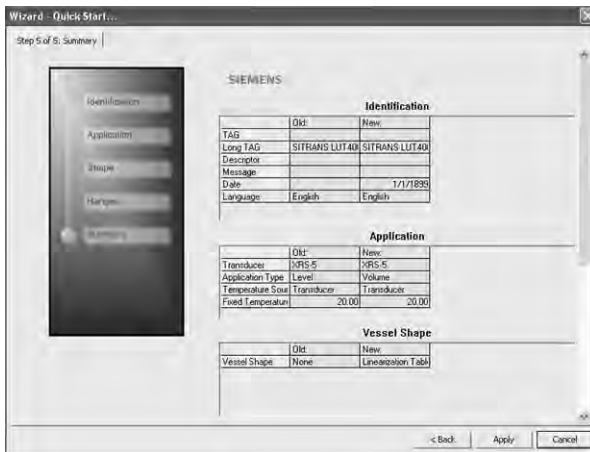
Wizard - Quick Start (Flow)

Step 1 – Identification

1) Navigate to **Configure/Setup > Wizard > Wizard - Quick Start (Flow)**.
2) You can accept the default values without modification. (TAG, Long TAG, Descriptor, Message, and Date fields can be left blank.) If desired, make changes then click on **Next**.
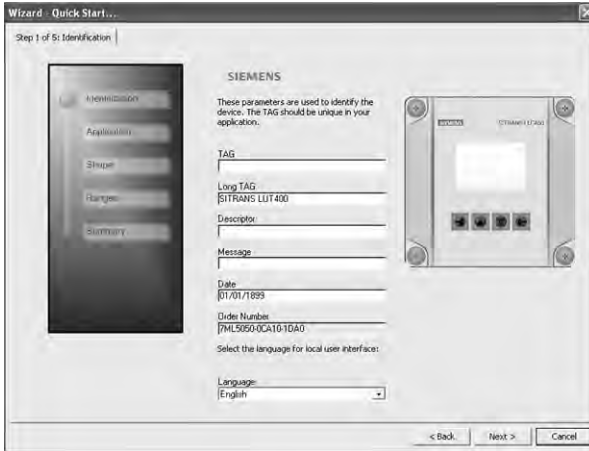
Step 2 – Application

1. Select the Siemens transducer connected to the device.
2. The Application Type defaults to Flow.[1]
3. Select the Temperature Source, and if fixed, enter a Fixed Temperature value.
4. Click on **Next**.

---
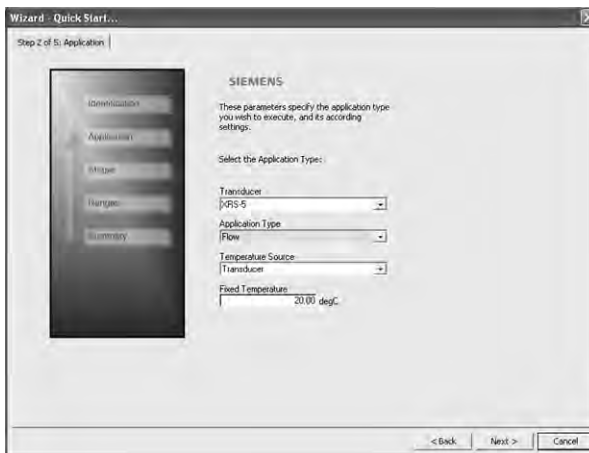
[1]. For details see parameter *2.1.3.Sensor Mode* in SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01).

Step 3 – Shape

1. Select the Primary Measuring Device (PMD). If selection is any value except Off, click into the field below, to update the screen with the various PMD dimensions requiring entry. For example, if PMD selected is **Palmer Bowlus Flume**, a value must be entered for **Maximum Flume Width, hmax**.
2. Enter all required values.
3. Click on **Next**.
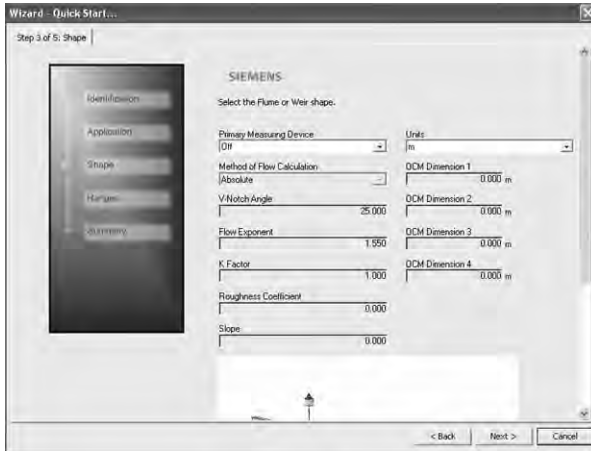
Step 4 – Ranges

1. Change units if desired (in meters by default).
2. Set High and Low Calibration points.
3. Set Response Rate, Volume Units, and Maximum Volume.
4. Select a Method of Flow Calculation, and set Maximum Head, Flowrate Units, Maximum Flow, Flowrate Decimal, and Low Flow Cutoff.
5. Click on **Next**.
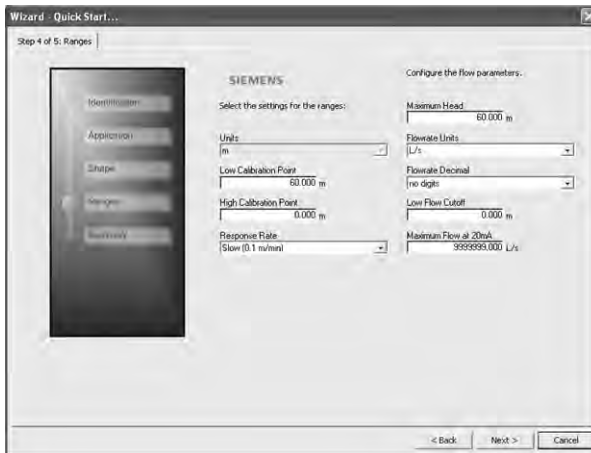
6. If PMD selected is **Universal Head Flow**, the Characteristic curve appears.

7. Set the Head and Flow Breakpoints.
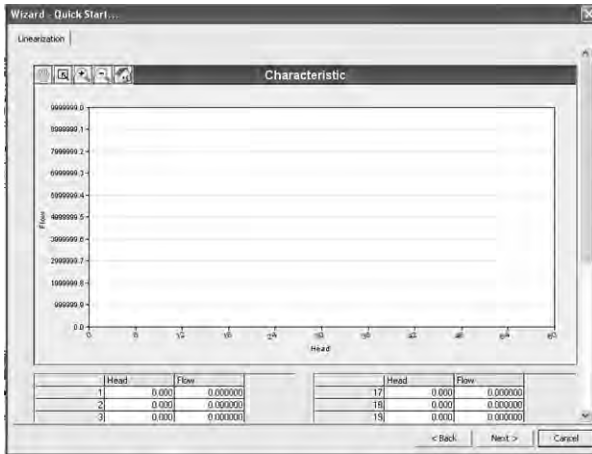
8. Click on **Next**.

Step 5 – Summary

Check parameter settings, and click on **Cancel** to abort, or **Apply** to transfer values to the device.
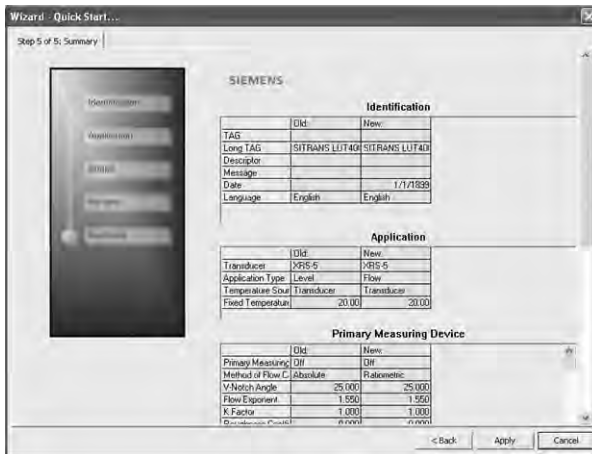
Configuration via AMS Device Manager Quick Start Wizard for a Flow application is now complete.

Wizard - Pump Control

Step 1 – Application

    1)   Navigate to **Configure/Setup > Wizard > Wizard - Pump Control**.

    2)   Enable pump control, then assign a relay to each pump.

    3)   Click on **Next**.
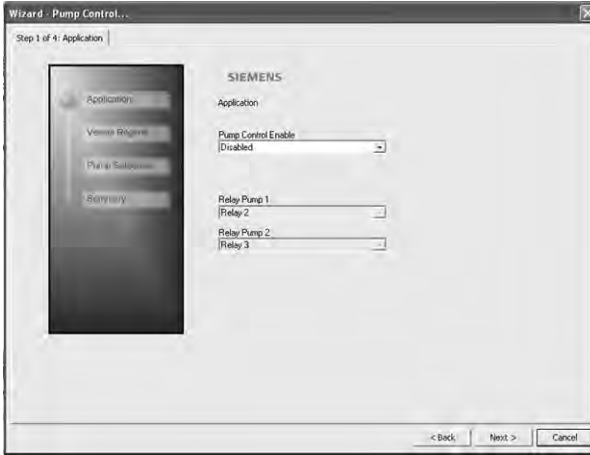
Step 2 – Vessel Regime

    1)   Select the pump control mode.

    2)   Set the service ratio for each pump.

    3)   Click on **Next**.

Operation - AMS
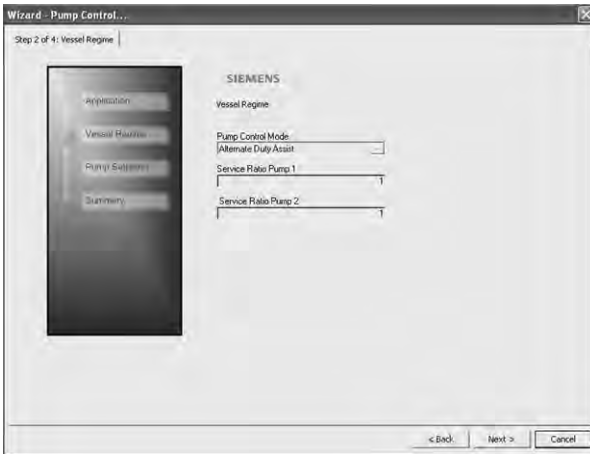
Step 3 – Pump Setpoints

1. Set the ON and OFF setpoints for each pump.
2. Click on **Next**.

Step 4 – Summary

Check parameter settings, and click on **Cancel** to abort, or **Apply** to transfer values to the device.
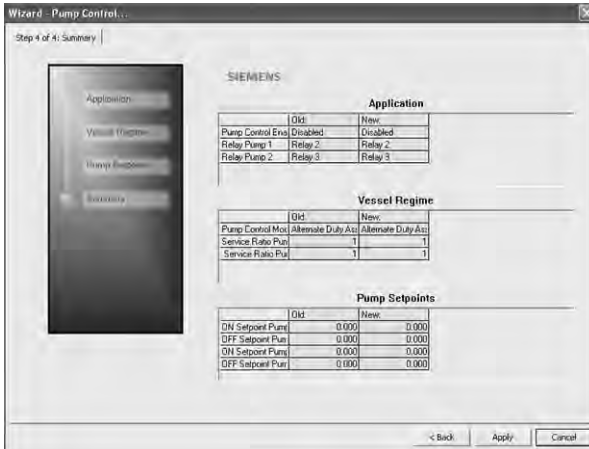
Pump configuration via AMS Device Manager Pump Control Wizard is now complete.

Changing parameter settings using AMS Device Manager

Note: For a complete list of parameters, see *AMS Menu Structure* on page 76.

1) Adjust parameter values in the parameter value field in Configure/Setup view, then click on **Apply** to write the new values to the device. The parameter field will display in yellow until the value has been written to the device.
2) Click on **OK** only if you wish to update all parameters and exit AMS.

Configure/Setup View

Operation
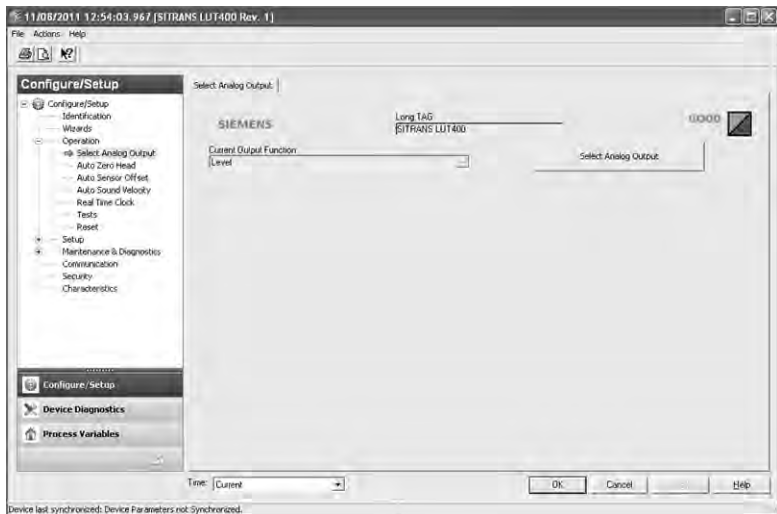
Navigate to **Configure/Setup > Operation** for access to:

Select Analog Output:
- Select analog output and current output function

Auto Zero Head
- View current head measurement, set actual head value and set zero head offset

Auto Sensor Offset
- View current distance measurement, set desired distance for auto sensor offset, and set sensor offset

Auto Sound Velocity
- View current distance measurement, set desired distance for auto sound velocity, and set sound velocity at 20 degrees Celsius.

Real Time Clock
- Set current date and time

Tests
- Perform loop-test

Reset

• Perform a master reset, reset of configuration flag (for HART communications), min/max temperatures, and totalizers

Setup
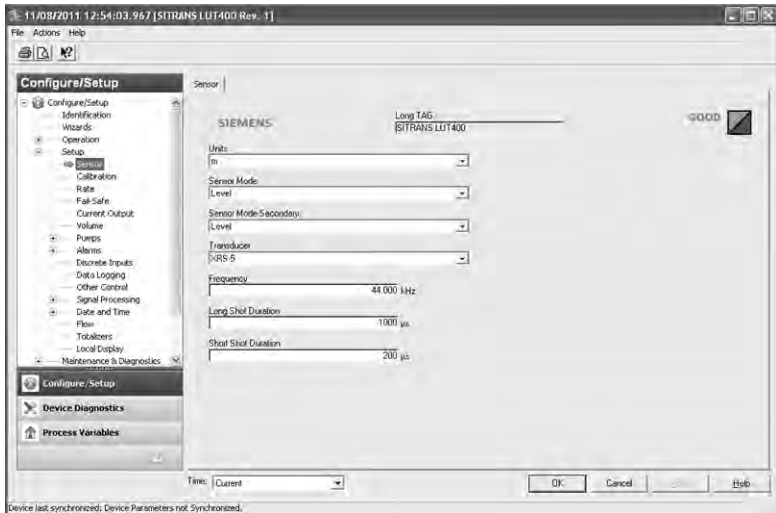
Navigate to **Configure/Setup > Setup** for access to:

Sensor

• Set primary and secondary sensor mode, units, transducer, frequency and shot durations

Calibration

• Set high and low calibration points, sensor offset, near and far ranges

Fail-Safe

• Set fail-safe value, material level, and LOE timer

Current Output

• Set current output function, and mA limits and scale values

Volume

• Allow volume calculation through setup of units, vessel shape and dimensions

Operation - AMS
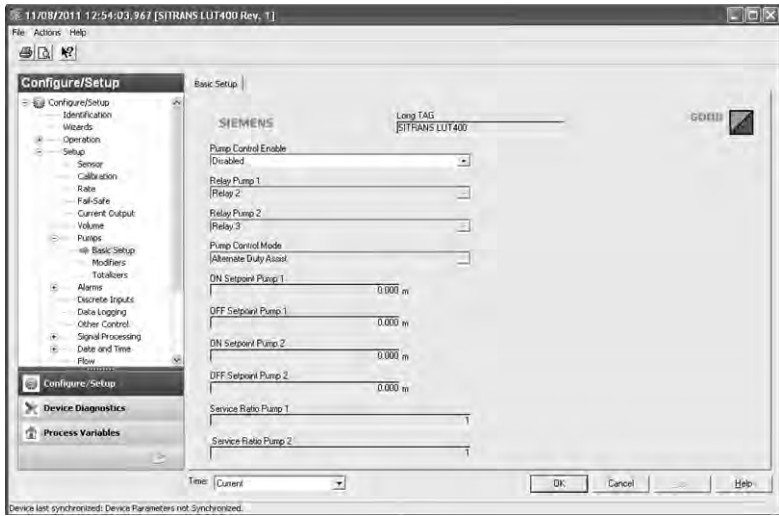
Pumps

Navigate to **Configure/Setup > Setup > Pumps** for access to:

Basic Setup
- Enable pump control, assign pump relays, pump control mode and setpoints

Modifiers
- Enable and configure wall cling reduction, pump run-on, pump start delays, and energy savings

Totalizers
- Configure pumped volume totalizers

Alarms
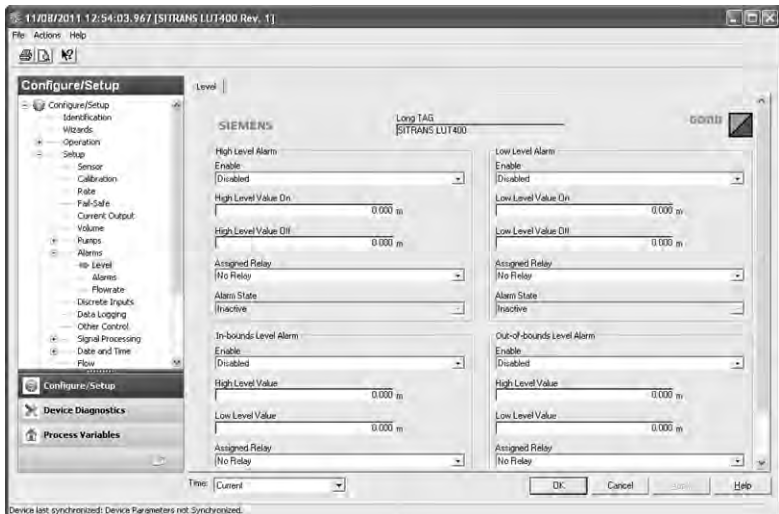
Navigate to **Configure/Setup > Setup > Alarms** for access to:

Level
- Enable and configure level alarms

Alarms
- Enable and configure non-level alarms, such as temperature, switch (DI), fail-safe, and time to spill

Flowrate
- Enable and configure flowrate alarms

Navigate to **Configure/Setup > Setup** for access to:

Discrete Inputs
- Enable and configure backup level override, DI logic, and pump interlock

Data Logging
- Configure data logging for PVs, alarms, and flow

Other Control
- Set other controls, such as elapsed time and time of day relays, external totalizers and samplers

Signal Processing
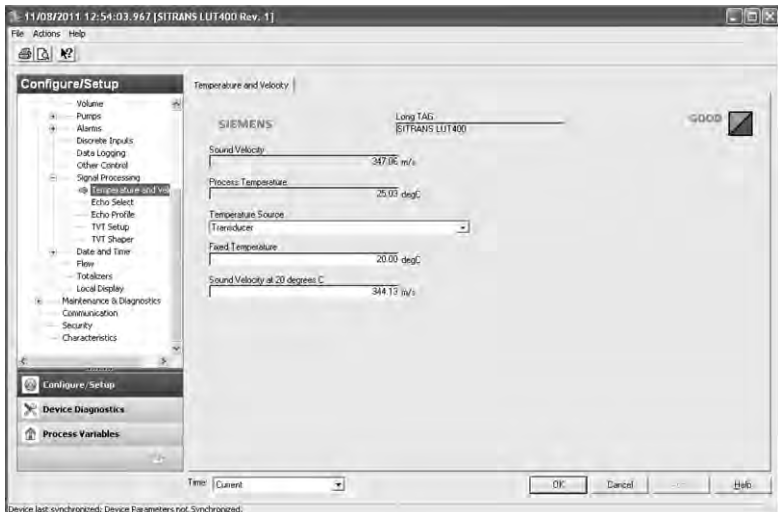
Navigate to **Configure/Setup > Setup > Signal Processing** for access to:

Temperature and Velocity
- Configure echo processing by selecting temperature and velocity

Echo Select
- Configure echo processing by selecting algorithm, thresholds, filters, and submergence detection

Echo Profile
- Measure to display current echo profile, using standard or detailed profile resolution, as well as view previous profiles
- To view a previous profile, click the drop-down arrow on the **Time** field and select the desired profile (note: available only using AMS version 10.1).

TVT Setup

- Enable shaper mode, hover level, and auto false echo suppression

TVT Shaper

- Set TVT breakpoints and view the effects of the TVT shaper modifications

Navigate to **Configure/Setup > Setup** for access to:

Date and Time

Daylight Saving

- Enable and configure daylight saving

Flow

- Configure flow by setting primary measuring device (PMD) and its dimensions, method and values for flow calculations, including head and flow breakpoints

Totalizers

- Configure OCM flow totalizers and pumped volume totalizers

Local Display

- Select Language to display on LCD

Maintenance & Diagnostics
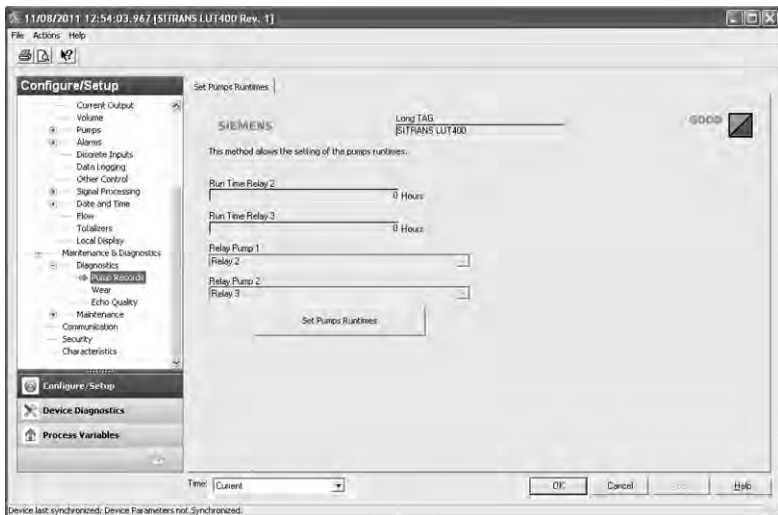
Navigate to **Configure/Setup > Maintenance & Diagnostics** for access to:

Diagnostics

Pump Records

- Set runtimes for relays assigned to a pump

Wear

- View power-on time, power-on resets, and process temperatures

Echo Quality

- View values related to echo quality

Maintenance

Transducer Enable
- Enable/disable the transducer

Remaining Device Lifetime
- View and configure maintenance settings for the device
    - a) Open the window **Remaining Device Lifetime**.
    - b) After modifying values/units as required, click on **Apply** to accept the change.
    - c) Click on **Snooze for 1 Year** to add a year to the Total Expected Sensor Life.
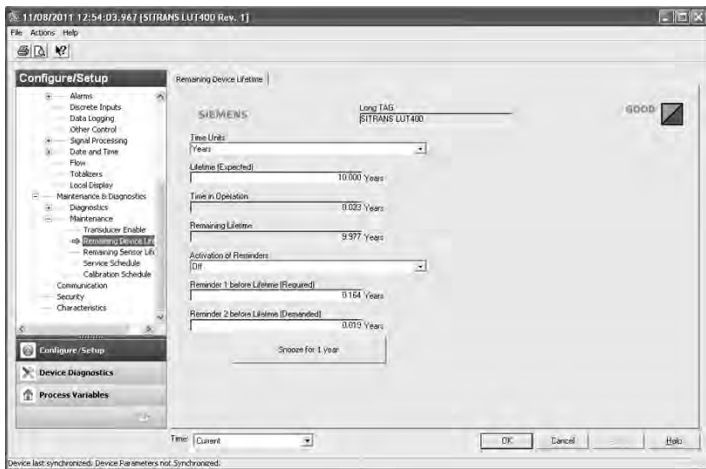
Remaining Sensor Lifetime
- View and configure maintenance settings for the sensor
    - a) Open the window **Remaining Sensor Lifetime**.
    - b) After modifying values/units as required, click on **Apply** to accept the change.
    - c) Click on **Sensor Replaced** to reset Remaining Lifetime to 0 hours.

d) Click on **Snooze for 1 Year** to add a year to the Total Expected Sensor Life.
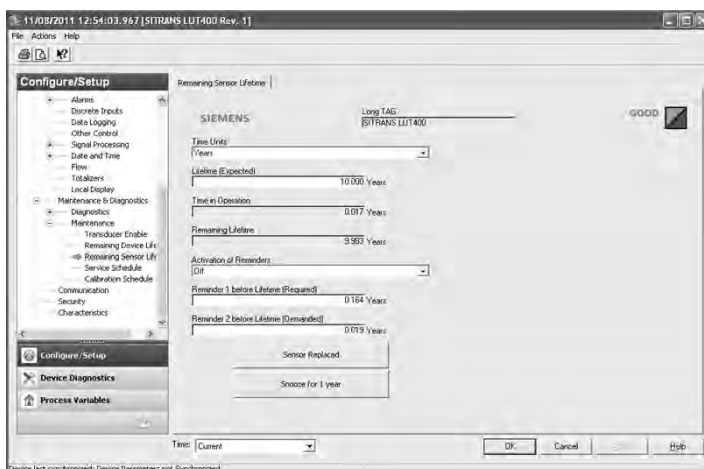
Service Schedule
- View and configure service schedules

Calibration Schedule
- View and configure calibration schedules

Communication

Navigate to **Configure/Setup > Communication** to read product information (such as Manufacturer and device IDs, device and EDD revisions), and to configure HART communication.

Security

Navigate to **Configure/Setup > Security** to enable/disable write protection.

Note: Write Protection is global and can be set via remote software (such as AMS Device Manager), or at the device.

Characteristics

Navigate to **Configure/Setup > Characteristics** to view device certificates and approvals.

Operation - AMS

Device Diagnostics View

Click on the **Device Diagnostics** bar at the bottom of the navigation window, for access to:

(Device) **Status**
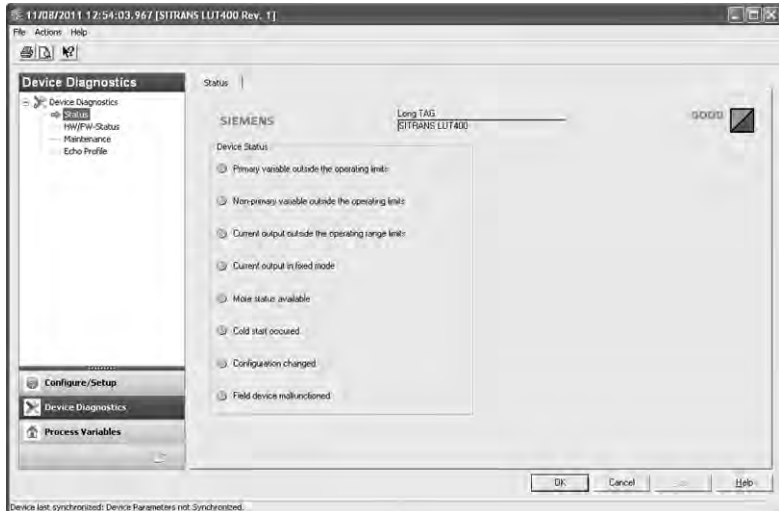
Hardware/Firmware Status
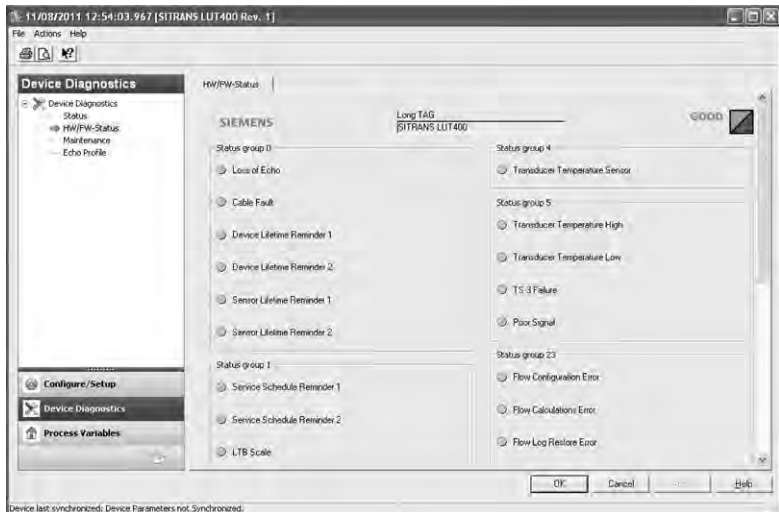
Maintenance warnings and alarms can also be viewed and acknowledged from this view, as well as having access to the **Echo Profile**.

Operation - AMS

Process Variables View
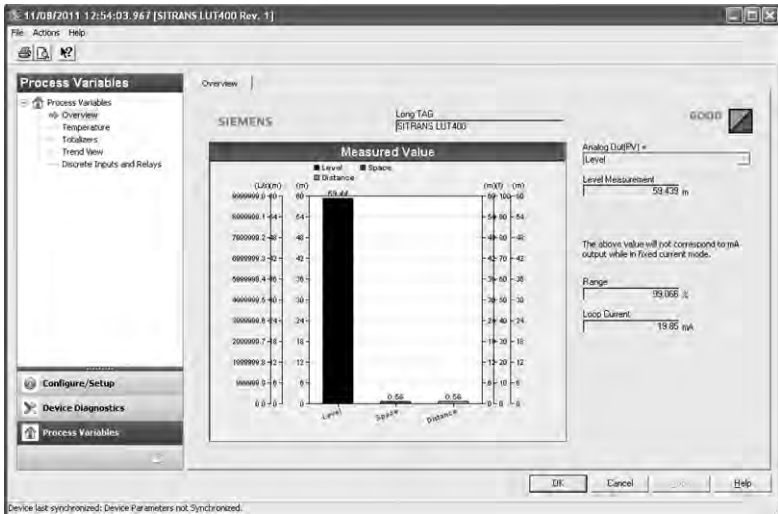
Click on **Process Variables** at the bottom of the navigation window for access to:

- Measurement values (level, space, distance)
- Temperature values
- Totalizer values
- Trend View
- Discrete Inputs and Relays

Password Protection

An AMS Device Manager administrator can configure the user to require a password. The use of passwords is recommended. A password should be assigned to the 'admin' username immediately after installing AMS Device Manager.

Each user is given an AMS Device Manager username and password and required to enter them when they start AMS Device Manager. Access to functions depends on the level of permissions granted.

Login types

- standard, local, or domain

A standard user can change their password in AMS Device Manager. A Local or Domain Windows user cannot change their password using AMS Device Manager and must request their network administrator to do so.

User Manager Utility

Usernames, passwords, and permissions are assigned to users by an AMS Device Manager administrator, using the User Manager utility on the Server Plus Station. Only a user with AMS Device Manager System Administration rights can log in to User Manager.

To configure a new user/edit existing user:
1) From the Windows taskbar select: **Start > AMS Device Manager > User Manager**.
2) Select the user type, standard (AMS Device Manager), local or domain user, and login.

From the User Manager window you are able to:
- add users
- edit existing users
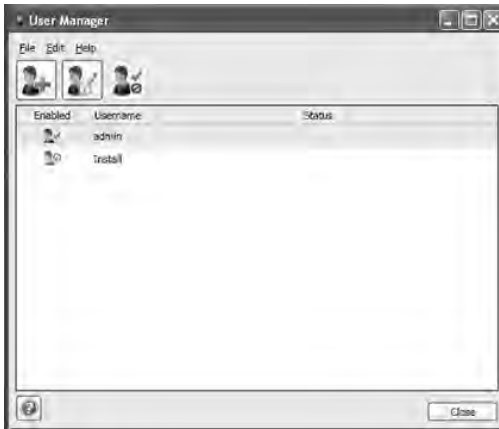
AMS Menu Structure

- **Note:** Where a parameter number is listed, more information is available for that parameter in *Parameter reference (LUI)* in the SITRANS LUT400 (HART) Operating Instructions (7ML19985MV01).

Configure/Setup Function Group						parameter number
		IDENTIFICATION				
			Identification			
				Identification (tab)		
					TAG	3.1.1
					Long TAG	3.1.2
					Descriptor	3.1.3
					Message	3.1.4
					Date	3.1.5
					Manufacturer	
					Product Name	
					Product	3.1.6
					Order Number	3.1.7
					Serial Number	
					Final Assembly Number	3.1.9
					Hardware Revision	3.1.10
					Firmware Revision	3.1.11
					Loader Revision	3.1.12
					EDD Version	
					Date of Manufacturing	3.1.13
					Order Option	3.1.14
				Wizards		
					Wizards (tab)	
					Long tag	3.1.2
				Wizard - Quick Start (Level)		
					Step 1 of 4: Identification (tab)	
					TAG	3.1.1
					Long tag	3.1.2
					Descriptor	3.1.3
					Message	3.1.4
					Date	3.1.5
					Order Number	3.1.7
					Language	6
					Step 2 of 4: Application (tab)	
					Transducer	2.1.6
					Application Type	
					Temperature Source	2.12.1.3
					Fixed Temperature	2.12.1.4

Configure/Setup Function Group (cont'd)							parameter number
						Step 3 of 4: Ranges (tab)	
						Units	2.1.1
						Low Calibration Point	2.2.1
						High Calibration Point	2.2.2
						Response Rate	
						Step 4 of 4: Summary (tab)	
						TAG	
						Long TAG	
						Descriptor	
						Message	
						Date	
						Language	
						Transducer	
						Application Type	
						Temperature Source	
						Fixed Temperature	
						Units	
						Low Calibration Point	
						High Calibration Point	
						Response Rate	
						Sensor Mode	
						Current Output Function	
						Start of Scale (= 4 mA)	
						Full Scale (= 20 mA)	
					Wizard - Quick Start (Volume)		
						Step 1 of 5: Identification (tab)	
						TAG	3.1.1
						Long TAG	3.1.2
						Descriptor	3.1.3
						Message	3.1.4
						Date	3.1.5
						Order Number	3.1.7
						Language	6
						Step 2 of 5: Application (tab)	
						Transducer	2.1.6
						Application Type	
						Temperature Source	2.12.1.3
						Fixed Temperature	2.12.1.4
						Step 3 of 5: Vessel Shape (tab)	
						Vessel Shape	2.6.1
						Step 4 of 5: Ranges (tab)	
						Units	2.1.1

						Configure/Setup Function Group (cont'd)	parameter number
						Low Calibration Point	2.2.1
						High Calibration Point	2.2.2
						Response Rate	
						Volume Units	2.6.2
						Maximum Volume	2.6.3
						Step 5 of 5: Summary (tab)	
						TAG	
						LongTAG	
						Descriptor	
						Message	
						Date	
						Language	
						Transducer	
						Application Type	
						Temperature Source	
						Fixed Temperature	
						Vessel Shape	
						Units	
						Low Calibration Point	
						High Calibration Point	
						Response Rate	
						Volume Units	
						Maximum Volume	
						Sensor Mode	
						Current Output Function	
						Start of Scale (= 4 mA)	
						Full Scale (= 20 mA)	
						Wizard - Quick Start (Volume - Linearization)	
						Step 1 of 5: Identification (tab)	
						TAG	3.1.1
						Long TAG	3.1.2
						Descriptor	3.1.3
						Message	3.1.4
						Date	3.1.5
						Order Number	3.1.7
						Language	6
						Step 2 of 5: Application (tab)	
						Transducer	2.1.6
						Application Type	
						Temperature Source	2.12.1.3
						Fixed Temperature	2.12.1.4
						Step 3 of 5: Shape (tab)	

Operation - AMS

Configure/Setup Function Group (cont'd)							parameter number
						Vessel Shape	2.6.1
						Step 4 of 5: Ranges (tab)	
						Units	2.1.1
						Low Calibration Point	2.2.1
						High Calibration Point	2.2.2
						Response Rate	
						Volume Units	2.6.2
						Maximum Volume	2.6.3
						Step 4 of 5: Linearization (tab)	
						Linearization	2.6.7
						Step 5 of 5: Summary (tab)	
						TAG	
						Long TAG	
						Descriptor	
						Message	
						Date	
						Language	
						Transducer	
						Application Type	
						Temperature Source	
						Fixed Temperature	
						Vessel Shape	
						Units	
						Low Calibration Point	
						High Calibration Point	
						Response Rate	
						Volume Units	
						Maximum Volume	
						Sensor Mode	
						Current Output Function	
						Start of Scale (= 4 mA)	
						Full Scale (= 20 mA)	
					Wizard - Quick Start (Flow)		
						Step 1 of 5: Identification (tab)	
						TAG	3.1.1
						Long TAG	3.1.2
						Descriptor	3.1.3
						Message	3.1.4
						Date	3.1.5
						Order Number	3.1.7
						Language	6
						Step 2 of 5: Application (tab)	

Configure/Setup Function Group (cont'd)							parameter number
						Transducer	2.1.6
						Application Type	
						Temperature Source	2.12.1.3
						Fixed Temperature	2.12.1.4
						Step 3 of 5: Shape (tab)	
						Primary Measuring Device	2.15.1
						Method of Flow Calculation	2.15.3.1
						V-Notch Angle	2.15.4.2
						Flow Exponent	2.15.3.2
						K Factor	2.15.4.1
						Roughness Coefficient	2.15.4.4
						Slope	2.15.4.3
						Units	2.1.1
						OCM Dimension 1	2.15.4.5
						OCM Dimension 2	2.15.4.6
						OCM Dimension 3	2.15.4.7
						OCM Dimension 4	2.15.4.8
						Step 4 of 5: Ranges (tab)	
						Units	2.1.1
						Low Calibration Point	2.2.1
						High Calibration Point	2.2.2
						Response Rate	
						Maximum Head	2.15.3.3
						Flowrate Units	2.15.3.7
						Flowrate Decimal	2.15.3.6
						Low Flow Cutoff	2.15.3.9
						Maximum Flow at 20 mA	2.15.3.4
						Step 5 of 5: Summary (tab)	
						TAG	
						Long TAG	
						Descriptor	
						Message	
						Date	
						Language	
						Transducer	
						Application Type	
						Temperature Source	
						Fixed Temperature	
						Primary Measuring Device	
						Method of Flow Calculation	
						V-Notch	
						Flow Exponent	

Configure/Setup Function Group (cont'd)							parameter number
						K Factor	
						Roughness Coefficient	
						Slope	
						OCM Dimension 1	
						OCM Dimension 2	
						OCM Dimension 3	
						OCM Dimension 4	
						Units	
						Low Calibration Point	
						High Calibration Point	
						Response Rate	
						Maximum Head	
						Flowrate Units	
						Flowrate Decimal	
						Low Flow Cutoff	
						Maximum Flow at 20 mA	
						Sensor Mode	
						Current Output Function	
						Start of Scale (= 4 mA)	
						Full Scale (= 20 mA)	
						Wizard - Pump Control	
						Step 1 of 4: Application (tab)	
						Pump Control Enable	2.7.1.1
						Relay Pump 1	2.7.1.2
						Relay Pump 2	2.7.1.3
						Step 2 of 4: Vessel Regime (tab)	
						Pump Control Mode	
						Service Ratio Pump 1	2.7.1.10
						Service Ratio Pump 2	2.7.1.11
						Step 3 of 4: Pump Setpoints (tab)	
						ON Setpoint Pump 1	2.7.1.6
						OFF Setpoint Pump 1	2.7.1.7
						ON Setpoint Pump 2	2.7.1.8
						OFF Setpoint Pump 2	2.7.1.9
						Step 4 of 4: Summary (tab)	
						Pump Control Enable	
						Relay Pump 1	
						Relay Pump 2	
						Pump Control Mode	
						Service Ratio Pump 1	
						Service Ratio Pump 2	
						ON Setpoint Pump 1	

Configure/Setup Function Group (cont'd)					parameter number
				OFF Setpoint Pump 1	
				ON Setpoint Pump 2	
				OFF Setpoint Pump 2	
		OPERATION			
			Operation		
				Select Analog Ouput (tab)	
				Long TAG	3.1.2
				Current Output Function	
				Select Analog Output	
				Auto Zero Head (tab)	
				Long TAG	3.1.2
				Zero Head Offset	2.15.3.5
				Head Measurement	2.12.5.5
				Set Zero Head Offset	
				Auto Sensor Offset (tab)	
				Long TAG	3.1.2
				Sensor Offset	2.2.3
				Distance Measurement	2.12.5.3
				Set Sensor Offset	
				Auto Sound Velocity (tab)	
				Long TAG	3.1.2
				Sound Velocity at 20 degrees C	2.12.1.5
				Distance Measurement	2.12.5.3
				Set Sound Velocity	
				Real Time Clock (tab)	
				Long TAG	3.1.2
				Current Date	2.14.1
				Current Time	2.14.2
				Set Real TIme Clock	
				Tests (tab)	
				Long TAG	3.1.2
				Loop-Test	2.5.1
				Reset (tab)	
				Long TAG	3.1.2
				Master Reset	3.2.3
				Configuration Flag Reset	
				Reset Min/Max Temperatures	
				(OCM) Reset Daily Totalizers	2.16.5
				(OCM) Reset Running Totalizer	2.16.6
				(Pumped Volume) Reset Running Totalizer	2.7.3.5
		SETUP			
			Sensor		

Configure/Setup Function Group (cont'd)						parameter number
				Sensor (tab)		
					Long TAG	3.1.2
					Units	2.1.1
					Sensor Mode	
					Sensor Mode Secondary	
					Transducer	2.1.6
					Frequency	2.1.7
					Long Shot Duration	2.1.8
					Short Shot Duration	2.1.9
				Calibration (tab)		
					Long TAG	3.1.2
					Low Calibration Point	2.2.1
					High Calibration Point	2.2.2
					Sensor Offset	2.2.3
					Near Range	2.2.4
					Far Range	2.2.5
				Rate (tab)		
					Long TAG	3.1.2
					Fill Rate per Minute	2.3.1
					Empty Rate per Minute	2.3.2
					Damping Filter	2.3.3
				Fail-Safe (tab)		
					Long TAG	3.1.2
					Material Level	2.4.1
					LOE Timer	2.4.2
					Fail-Safe mA Value	2.4.3
				Current Output (tab)		
					Long TAG	3.1.2
					Current Output Function	
					Start of Scale (=4 mA)	
					Full Scale (=20 mA)	2.5.4
					Minimum mA Limit	2.5.5
					Maximum mA Limit	2.5.6
				Volume (tab)		
					Long TAG	3.1.2
					Vessel Shape	2.6.1
					Volume Units	2.6.2
					Maximum Volume	2.6.3
					Vessel Dimension A	2.6.4
					Vessel Dimension L	2.6.5
					User Defined Unit	2.6.6
					Linearization	

				Configure/Setup Function Group (cont'd)			parameter number
			Pumps				
				Basic Setup			
					Basic Setup (tab)		
						Long TAG	3.1.2
						Pump Control Enable	2.7.1.1
						Relay Pump 1	2.7.1.2
						Relay Pump 2	2.7.1.3
						Pump Control Mode	
						ON Setpoint Pump 1	2.7.1.6
						OFF Setpoint Pump 1	2.7.1.7
						ON Setpoint Pump 2	2.7.1.8
						OFF Setpoint Pump 2	2.7.1.9
						Service Ratio Pump 1	2.7.1.10
						Service Ratio Pump 2	2.7.1.11
					Modifiers		
					Modifiers (tab)		
						Long TAG	3.1.2
						(Wall Cling Reduction) Enable	2.7.2.1.1
						Level Setpoint Variation	2.7.2.1.2
						(Pump Run-On) Enable	2.7.2.3.1
						Run-On Interval	2.7.2.3.2
						Run-On Duration Pump 1	2.7.2.3.3
						Run-On Duration Pump 2	2.7.2.3.4
						Delay Between Starts	2.7.2.4.1
						Power Resumption Delay	2.7.2.4.2
						(Energy Savings) Enable	2.7.2.2.1
						Peak Lead Time	2.7.2.2.2
						Peak 1 Start Time	2.7.2.2.3
						Peak 1 End Time	2.7.2.2.4
						Peak 2 Start Time	2.7.2.2.5
						Peak 2 End Time	2.7.2.2.6
						Peak 3 Start Time	2.7.2.2.7
						Peak 3 End Time	2.7.2.2.8
						Peak 4 Start Time	2.7.2.2.9
						Peak 4 End Time	2.7.2.2.10
						Peak 5 Start Time	2.7.2.2.11
						Peak 5 End Time	2.7.2.2.12
						Peak ON Setpoint Pump 1	2.7.2.2.13
						Peak OFF Setpoint Pump 1	2.7.2.2.14
						Peak ON Setpoint Pump 2	2.7.2.2.15
						Peak OFF Setpoint Pump 2	2.7.2.2.16
					Totalizers		

Configure/Setup Function Group (cont'd)							parameter number
					Totalizers (tab)		
						Long TAG	3.1.2
						Running Totalizer	2.7.3.1
						Totalizer Decimal Position	2.7.3.2
						Totalizer Multiplier	2.7.3.3
						Inflow/Discharge Adjust	2.7.3.4
			Alarms				
				Level			
					Level (tab)		
						Long TAG	3.1.2
						(High Level Alarm) Enable	2.8.1.1
						High Level Value On	2.8.1.2
						High Level Value Off	2.8.1.3
						Assigned Relay	2.8.1.4
						Alarm State	2.8.1.5
						(In-bounds Level Alarm) Enable	2.8.4.1
						High Level Value	2.8.4.2
						Low Level Value	2.8.4.3
						Assigned Relay	2.8.4.4
						Alarm State	2.8.4.5
						(Low Level Alarm) Enable	2.8.2.1
						Low Level Value On	2.8.2.2
						Low Level Value Off	2.8.2.3
						Assigned Relay	2.8.2.4
						Alarm State	2.8.2.5
						(Out-of-bounds Level Alarm) Enable	2.8.5.1
						High Level Value	2.8.5.2
						Low Level Value	2.8.5.3
						Assigned Relay	2.8.5.4
						Alarm State	2.8.5.5
					Alarms (tab)		
						Long TAG	3.1.2
						(Low Temperature Alarm) Enable	2.8.6.1
						Low Temperature Value On	2.8.6.2
						Low Temperature Value Off	2.8.6.3
						Assigned Relay	2.8.6.4
						Alarm State	2.8.6.5
						(High Temperature Alarm) Enable	2.8.7.1
						High Temperature Value On	2.8.7.2
						High Temperature Value Off	2.8.7.3
						Assigned Relay	2.8.7.4

Configure/Setup Function Group (cont'd)								parameter number
							Alarm State	2.8.7.5
							(Switch DI Alarm) Enable	2.8.3.1
							Discrete Input Number	2.8.3.2
							Discrete Input State	2.8.3.3
							Assigned Relay	2.8.3.4
							Alarm State	2.8.3.5
							(Fail-safe Fault Alarm) Enable	2.8.8.1
							Assigned Relay	2.8.8.2
							Alarm State	2.8.8.3
							Relay 1 Logic	2.8.11.1
							Relay 2 Logic	2.8.11.2
							Relay 3 Logic	2.8.11.3
							Level To Spill	2.8.12.1
							Minutes Left To Spill	2.8.12.2
						Flowrate (tab)		
							Long TAG	3.1.2
							(High Flowrate Alarm) Enable	2.8.9.1
							High Flowrate Value On	2.8.9.2
							High Flowrate Value Off	2.8.9.3
							Assigned Relay	2.8.9.4
							Alarm State	2.8.9.5
							(Low Flowrate Alarm) Enable	2.8.10.1
							Low Flowrate Value On	2.8.10.2
							Low Flowrate Value Off	2.8.10.3
							Assigned Relay	2.8.10.4
							Alarm State	2.8.10.5
						Discrete Inputs (tab)		
						Long TAG		3.1.2
						(Backup Level Override) Enable		2.9.1.1
						Level Override Value		2.9.1.2
						Discrete Input Number		2.9.1.3
						Discrete Input 1 Logic		2.9.2.1
						Discrete Input 1 Scaled State		2.9.2.2
						Discrete Input 2 Logic		2.9.2.3
						Discrete Input 2 Scaled State		2.9.2.4
						(Pump Interlock) Enable Pump 1		2.9.3.1
						Pump 1 Discrete Input		2.9.3.2
						(Pump Interlock) Enable Pump 2		2.9.3.3
						Pump 2 Discrete Input		2.9.3.4
						Data Logging (tab)		
						Long TAG		3.1.2
						(Process Value Log) Enable		2.10.1.1

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Configure/Setup Function Group (cont'd)							parameter number
						Process Values Log Rate	2.10.1.2
						(Alarm Log) Enable	2.10.2.1
						Flow Log Mode	2.10.3.1
						Standard Flow Log Interval	2.10.3.3
						Standard Flow Log Setpoint	2.10.3.4
						Rapid Flow Log Interval	2.10.3.5
						Rapid Flow Log Setpoint	2.10.3.6
					Other Control (tab)		
						Long TAG	3.1.2
						(Elapsed Time Relay) Enable	2.11.1.1
						Interval	2.11.1.2
						Relay Duration	2.11.1.3
						Assigned Relay	2.11.1.4
						Relay Logic	2.11.1.5
						(Time of Day Relay) Enable	2.11.2.1
						Activation Time	2.11.2.2
						Relay Duration	2.11.2.3
						Assigned Relay	2.11.2.4
						Relay Logic	2.11.2.5
						(External Totalizer) Enable	2.11.3.1
						Multiplier	2.11.3.2
						Relay Duration	2.11.3.3
						Assigned Relay	2.11.3.4
						Relay Logic	2.11.3.5
						(External Sampler) Enable	2.11.4.1
						Multiplier	2.11.4.2
						Interval	2.11.4.3
						Relay Duration	2.11.4.4
						Assigned Relay	2.11.4.5
						Relay Logic	2.11.4.6
				Signal Processing			
				Temperature and Velocity			
					Temperature and Velocity (tab)		
						Long TAG	3.1.2
						Sound Velocity	2.12.1.1
						Process Temperature	2.12.1.2
						Temperature Source	2.12.1.3
						Fixed Temperature	2.12.1.4
						Sound Velocity at 20 degrees C	2.12.1.5
				Echo Select			
					Echo Select (tab)		
						Long TAG	3.1.2

							Configure/Setup Function Group (cont'd)	parameter number
							Algorithm	2.12.2.1
							Echo Threshold	2.12.2.2
							Reform Echo	2.12.2.3
							Narrow Echo Filter	2.12.2.4
							Submergence Detection	2.12.2.5
						Echo Profile		
							Echo Profile (tab)	
							Long TAG	3.1.2
							Measure	
							Level Measurement	2.12.5.1
							Distance Measurement	2.12.5.3
							Near Range	2.2.4
							Confidence	3.2.9.2
							Echo Strength	3.2.9.3
							Algorithm	2.12.2.1
						TVT Setup		
							TVT Setup (tab)	
							Long TAG	3.1.2
							Hover Level	2.12.3.3
							Shaper Mode	2.12.3.4
							Auto False Echo Suppression	2.12.3.1
							Auto False Echo Suppression Range	2.12.3.2
							Learn	
						TVT Shaper		
							TVT Shaper (tab)	
							Long TAG	3.1.2
							Measure	
							Shaper Mode	2.12.3.4
							Transfer to device	
							TVT Breakpoints	
						Date and Time		
						Daylight Saving		
							Daylight Saving (tab)	
							Long TAG	3.1.2
							Enable	2.14.3.1
							Starting Ordinal	2.14.3.2
							Starting Day	2.14.3.3
							Starting Month	2.14.3.4
							Ending Ordinal	2.14.3.5
							Ending Day	2.14.3.6
							Ending Month	2.14.3.7

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Configure/Setup Function Group (cont'd)							parameter number
			Flow				
				Flow (tab)			
						Long TAG	3.1.2
						Primary Measuring Device	2.15.1
						Linearization	
						Method of Flow Calculation	2.15.3.1
						Flow Exponent	2.15.3.2
						Maximum Head	2.15.3.3
						Maximum Flow at 20 mA	2.15.3.4
						Zero Head Offset	2.15.3.5
						Flowrate Decimal	2.15.3.6
						Flowrate Units	2.15.3.7
						User Defined Unit	2.15.3.8
						Low Flow Cutoff	2.15.3.9
				Totalizers			
					Totalizers (tab)		
						Long TAG	3.1.2
						(OCM) Daily Totalizer	2.16.1
						(OCM) Running Totalizer	2.16.2
						(OCM) Totalizer Decimal Position	2.16.3
						(OCM) Totalizer Multiplier	2.16.4
						(OCM) Low Flow Cutoff	2.15.3.9
						(Pumped Volume) Running Totalizer	2.7.3.1
						(Pumped Volume) Totalizer Decimal Position	2.7.3.2
						(Pumped Volume) Totalizer Multiplier	2.7.3.3
				Local Display			
					Local Display (tab)		
						Long TAG	3.1.2
						Language	6
			MAINTENANCE & DIAGNOSTICS				
			Diagnostics				
				Pump Records			
					Set Pumps Runtimes (tab)		
						Long TAG	3.1.2
						Run Time Relay 2	3.2.7.1
						Run Time Relay 3	3.2.7.2
						Relay Pump 1	3.2.7.3
						Relay Pump 2	3.2.7.4
						Set Pumps Runtimes	
				Wear			
					Wear (tab)		
						Long TAG	3.1.2

Configure/Setup Function Group (cont'd)								parameter number
							Power-on Time	3.2.5
							Power-on Resets	3.2.4
							Process Temperature	2.12.1.2
							Highest Value	3.2.8.1
							Lowest Value	3.2.8.2
							Reset Min/Max Temperatures	
					Echo Quality			
						Echo Quality (tab)		
							Long TAG	3.1.2
							Figure of Merit	3.2.9.1
							Confidence	3.2.9.2
							Echo Strength	3.2.9.3
							Noise Average	3.2.9.4
							Noise Peak	3.2.9.5
			Maintenance					
				Transducer Enable				
					Transducer Enable *(tab)*			
						Long TAG		3.1.2
						Transducer Enable		3.3.1
				Remaining Device Lifetime				
					Remaining Device Lifetime (tab)			
						Long TAG		3.1.2
						Time Units		
						Lifetime (Expected)		3.3.3.1
						Time in Operation		3.3.3.2
						Remaining Lifetime		3.3.3.3
						Activation of Reminders		3.3.3.4
						Reminder 1 before Lifetime (Required)		3.3.3.5
						Reminder 2 before Lifetime (Demanded)		3.3.3.6
						Snooze for 1 year		
				Remaining Sensor Lifetime				
					Remaining Sensor Lifetime (tab)			
						Long TAG		3.1.2
						Time Units		
						Lifetime (Expected)		3.3.4.1
						Time in Operation		3.3.4.2
						Remaining Lifetime		3.3.4.3
						Activation of Reminders		3.3.4.4
						Reminder 1 before Lifetime (Required)		3.3.4.5

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Configure/Setup Function Group (cont'd)						parameter number
					Reminder 2 before Lifetime (Demanded)	3.3.4.6
					Sensor Replaced	
					Snooze for 1 year	
			Service Schedule			
				Service Schedule (tab)		
					Long TAG	3.1.2
					Time Units	
					Service Interval	3.3.5.1
					Time Since Last Service	3.3.5.2
					Time Until Next Service	3.3.5.3
					Activation of Reminders	3.3.5.4
					Reminder 1 before Service (Required)	3.3.5.5
					Reminder 2 before Service (Demanded)	3.3.5.6
					Service Performed	
			Calibration Schedule			
				Calibration Schedule (tab)		
					Long TAG	3.1.2
					Time Units	
					Calibration Interval	3.3.6.1
					Time Since Last Calibration	3.3.6.2
					Time Until Next Calibration	3.3.6.3
					Activation of Reminders	3.3.6.4
					Reminder 1 before Calibration (Required)	3.3.6.5
					Reminder 2 before Calibration (Demanded)	3.3.6.6
					Calibration Performed	
	COMMUNICATION					
		Communication				
			Communication (tab)			
					Long TAG	3.1.2
					Manufacturer's ID	
					Product ID	
					Device Revision	
					EDD Revision	
					Device ID	
					Universal Command Revision	
					Protocol	
					Common Practice Command Revision	
					Cfg chng count	

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Configure/Setup Function Group (cont'd)						parameter number
					Polling Address	
					Loop Current Mode	
					Number of Response Preambles	
					Number of Request Preambles	
		SECURITY				
			Security			
				Security (tab)		
					Long TAG	3.1.2
					Write Protection	5.1
		CHARACTERISTICS				
				Certificates / Approvals (tab)		
					Long TAG	3.1.2
					Device Certification	

Device Diagnostics Function Group						parameter number
		DEVICE DIAGNOSTICS				
			Status			
				Status (tab)		
					Long TAG	3.1.2
					(Device Status listing)	
			HW/FW-Status			
				HW/FW-Status (tab)		
					Long TAG	3.1.2
					(HW/FW-Status listing)	
			Maintenance			
				HW/FW-Status (tab)		
					Long TAG	3.1.2
					(Device Lifetime Status listing)	
					Acknowledge Warnings	3.3.3.9
					(Sensor Lifetime Status listing)	
					Acknowledge Warnings	3.3.4.9
					(Service Schedule Status listing)	
					Acknowledge Warnings	3.3.5.9
					(Calibration Schedule Status listing)	
					Acknowledge Warnings	3.3.6.9
			Echo Profile			
				Echo Profile (tab)		
					Long TAG	3.1.2
					Measure	
					Level Measurement	2.12.5.1

Device Diagnostics Function Group (cont'd)						parameter number
					Distance Measurement	2.12.5.3
					Near Range	2.2.4
					Confidence	3.2.9.2
					Echo Strength	3.2.9.3
					Algorithm	2.12.2.1

Process Variables Function Group						parameter number
		PROCESS VARIABLES				
			Process Variables			
				Overview		
					Overview (tab)	
					Long TAG	3.1.2
					Analog Out(PV) =	
					Level Measurement	2.12.5.1
					Range	
					Loop Current	
				Temperature		
					Temperature (tab)	
					Long TAG	3.1.2
					Process Temperature	2.12.1.2
					Highest Value	3.2.8.1
					Lowest Value	3.2.8.2
				Totalizers		
					Totalizers (tab)	
					Long TAG	3.1.2
					(OCM) Daily Totalizer	2.16.1
					(OCM) Running Totalizer	2.16.2
					(Pumped Volume) Running Totalizer	2.7.3.1
				Trend View		
					Trend View (tab)	
					Long TAG	3.1.2
					Level Measurement	2.12.5.1
					Space Measurement	2.12.5.2
					Distance Measurement	2.12.5.3
				Discrete Inputs and Relays View		
					Discrete Inputs and Relays (tab)	
					Long TAG	3.1.2
					Relay 1 Programming	
					Relay 2 Programming	
					Relay 3 Programming	

Process Variables Function Group (cont'd)							parameter number
						Relay 1 Activated	
						Relay 2 Activated	
						Relay 3 Activated	
						Discrete Input 1 Programming	
						Discrete Input 2 Programming	
						DIscrete Input 1 Scaled State	2.9.2.2
						DIscrete Input 2 Scaled State	2.9.2.4

Operation via Field Communicator 375/475 (FC375/FC475) (HART)

Features

The FC375/FC475 HART Communicator is a handheld communication device that is easy to use, and provides universal support for other HART devices, such as the SITRANS LUT400.

Functions

The menu structure of the FC375/475 is very similar to that of AMS Device Manager (see *Operation via AMS Device Manager (HART)* on page 47 for more detail).

• In order to configure this HART device, just as with AMS, the configuration software requires the HART Electronic Device Description (EDD) for the instrument.

To install a new EDD
• Go to www.siemens.com/sitransLUT400 > **Support > Software Downloads** to download the most up-to-date EDD from the product page of our website.
• Save the files to your computer and extract the zipped file to an easily accessed location.
• To install the EDD, run Emerson's *Field Communicator Easy Upgrade Utility.*

Configuring a new device

1) Check that you have the most recent EDD, and if necessary update it (see *To install a new EDD* above).
2) Configure the device using the Quick Start Wizard.

Before initiating a Quick Start Wizard to configure the device, you may wish to gather the necessary parameter values. Parameter Configuration Charts listing all parameters and available options for each application type are available on our website. Go to: www.siemens.com/sitransLUT400 > **Support > Application Guides**. You can record data and select from options on the chart that apply to your application, then complete the Quick Start Wizard using the FC375/475.

HART FC375/FC475 Menu Structure

Notes:
- HART Communicator 375/475 is supported by SITRANS LUT400 HART. The menu structure is aligned with the menu structure for AMS Device Manager.
- For date fields, the format for HART FC375/FC475 is MM-DD-YYYY.

SITRANS LUT400

1 PV Level

2 Configuration

    1 Identification
        1 TAG
        2 Long TAG
        3 Descriptor
        4 Message
        5 Date
        6 Device
                1 Manufacturer
                2 Product Name
                3 Product
                4 Order Number
                5 Serial Number
                6 Final Assembly Nu..
                7 Hardware Revision
                8 Firmware Revision
                9 Loader Revision
                  EDD Version
                  Date of Manufacturi...
                  Order Option

    2 Wizards
        1 Wizard - Quick Start...
                1 Step 1 of 5: Identification
                        1 TAG
                        2 Long TAG
                        3 Descriptor
                        4 Message
                        5 Date
                        6 Order Number
                        7 Language
                        8 ===========
                        9 Step 2 of 5: Application
                                1 Transducer
                                2 Application Type
                                3 Temperature Source
                                4 Fixed Temperature
                                5
                                6
                                7 ===============

8 Step 4 of 5: Ranges
    1 Units
    2 Low Calib. Pt.
    3 High Calib. Pt.
    4 Response Rate
    5
    6
    7 ============
8 Step 5 of 5: Summary
    1 TAG
    2 Long TAG
    3 Descriptor
    4 Message
    5 Date
    6 Language
    7 --------------
    8 Transducer
    9 Application Type
    Temperature Source
    Fixed Temperature

    Units
    Low Calib. Pt.
    High Calib. Pt.
    Response Rate

    Sensor Mode
    Current Output Func.
    =============
    HOME to finish wiza.

2 Wizard - Pump Control...
  1 Step 1 of 4: Application
    1 Pump Control Enable
    2
    3 Relay Pump 1
    4 Relay Pump 2
    5
    6 ===============
    7 Step 2 of 4: Vessel Regime
      1 Pump Control Mode
      2 Serv Ratio Pump 1
      3 Serv Ratio Pump 2
      4
      5
      6 ===============
      7 Step 3 of 4: Pump Setpoints
        1 ON Setpoint Pump 1
        2 OFF Setpoint Pump 1
        3 ON Setpoint Pump 2
        4 OFF Setpoint Pump 2
        5
        6 =================

7 Step 4 of 4: Summary
    1 Pump Control Enable
    2 Relay Pump 1
    3 Relay Pump 2
    4 -----------------
    5 Pump Control Mode
    6 Serv Ratio Pump 1
    7 Serv Ratio Pump 2
    8 ------------------
    9 ON Setpoint Pump 1
      OFF Setpoint Pump 1
      ON Setpoint Pump 2
      OFF Setpoint Pump 2
      ==============
      HOME to finish wiza...

3 Operation
    1 Select Analog Output
    2 Auto Zero Head
        1 Zero Head Offset
        2 Head
        3 Actual Head Value
    3 Auto Sensor Offset
        1 Sensor Offset
        2 Distance
        3 Desired Distance fo...
    4 Auto Sound Velocity
        1 Sound Veloc at 20 C
        2 Distance
        3 Desired Distance fo...
    5 Loop-Test
    6 Master Reset
        1 Yes
        2 No
    7 Reset Min/Max Temp.
    8 OCM Flow Totalizers
        1 Reset Daily Totalizer
        2 Reset Running Totalizer
    9 Pumped Volume Totalizer
        1 Reset Running Totalizer
      Configuration Flag Reset
        1 Yes
        2 No

4 Setup
    1 Sensor
        1 Units
        2 Sensor Mode
        3 Sensor Mode Seco...
        4 Transducer
        5 Frequency
        6 Long Shot Duration
        7 Short Shot Duration

2 Calibration
        1 Low Calib. Pt.
        2 High Calib. Pt.
        3 Sensor Offset
        4 Near Range
        5 Far Range
3 Rate
        1 Fill Rate per Minute
        2 Empty Rate per Mi...
        3 Damping Filter
4 Fail-Safe
        1 Material Level
        2 LOE Timer
        3 Fail-Safe mA Value
5 Current Output
        1 Current Output Func.
        2 Start Scale (=4 mA)
        3 Full Scale (=20 mA)
        4 Minimum mA Limit
        5 Maximum mA Limit
6 Volume
        1 Vessel Shape
        2 Volume Units
        3 Maximum Volume
        4 Vessel Dimension A
        5 Vessel Dimension L
        6 User Defined Unit
7 Pumps
        1 Basic Setup
                1 Pump Control Enable
                2 Relay Pump 1
                3 Relay Pump 2
                4 Pump Control Mode
                5 ON Setpoint Pump 1
                6 OFF Setpoint Pump 1
                7 ON Setpoint Pump 2
                8 OFF Setpoint Pump 2
                9 Serv Ratio Pump 1
                  Serv Ratio Pump 2
        2 Modifiers
                1 Wall Cling Reduction
                        1 Enable
                        2 Level Setpoint Vari...

2 Energy Savings
   1 Enable
   2 Peak Lead Time
   3 Peak 1 Start Time
   4 Peak 1 End Time
   5 Peak 2 Start Time
   6 Peak 2 End Time
   7 Peak 3 Start Time
   8 Peak 3 End Time
   9 Peak 4 Start Time
     Peak 4 End Time
     Peak 5 Start Time
     Peak 5 End Time
     Peak ON Pump 1
     Peak OFF Pump 1
     Peak ON Pump 2
     Peak OFF Pump 2
3 Pump Run-On
   1 Enable
   2 Run-On Interval
   3 Run-On Dur Pump 1
   4 Run-On Dur Pump 2
4 Pump Start Delays
   1 Pump Start Delay
   2 Power Resumption Del...
3 Totalizers
   1 Running Total High
   2 Running Total Low
   3 Totalizer Dec. Pos.
   3 Totalizer Multiplier
   4 Inflow/Disch. Adj.
8 Alarms
  1 Level
   1 High Level Alarm
     1 Enable
     2 High Level Value On
     3 High Level Value Off
     4 Assigned Relay
     5 Alarm State
   2 In-Bounds Level Alarm
     1 Enable
     2 High Level Value
     3 Low Level Value
     4 Assigned Relay
     5 Alarm State
   3 Low Level Alarm
     1 Enable
     2 Low Level Value On
     3 Low Level Value Off
     4 Assigned Relay
     5 Alarm State

4 Out-of-Bounds Level Alarm
    1 Enable
    2 High Level Value
    3 Low Level Value
    4 Assigned Relay
    5 Alarm State
2 Alarms
    1 Low Temperature Alarm
        1 Enable
        2 Low Temp. Value On
        3 Low Temp. Value Off
        4 Assigned Relay
        5 Alarm State
    2 High Temperature Alarm
        1 Enable
        2 High Temp. Value...
        3 High Temp. Value...
        4 Assigned Relay
        5 Alarm State
    3 Switch (DI) Alarm
        1 Enable
        2 Discrete Input Num...
        3 Discrete Input State
        4 Assigned Relay
        5 Alarm State
    4 Fail-safe Fault Alarm
        1 Enable
        2 Assigned Relay
        3 Alarm State
    5 Relay Logic
        1 Relay 1 Logic
        2 Relay 2 Logic
        3 Relay 3 Logic
    6 Time to Spill
        1 Level to Spill
        2 Minutes Left to Spill
3 Flowrate
    1 High Flowrate Alarm
        1 Enable
        2 High Flowrate Valu...
        3 High Flowrate Valu...
        4 Assigned Relay
        5 Alarm State
    2 Low Flowrate Alarm
        1 Enable
        2 Low Flowrate Valu...
        3 Low Flowrate Valu...
        4 Assigned Relay
        5 Alarm State
9 Discrete Inputs
    1 Backup Level Override
        1 Enable
        2 Level Override Value
        3 Discrete Input Num...

```
            2 Discrete Input Logic
                    1 DI 1 Logic
                    2 DI 1 Scaled State
                    3 DI 2 Logic
                    4 DI 2 Scaled State
            3 Pump Interlock
                    1 Enable Pump 1
                    2 Pump 1 DI
                    3 Enable Pump 2
                    4 Pump 2 DI
Data Logging
    1 Process Value Log
            1 Enable
            2 Proc Val Log Rate
    2 Alarm Log
            1 Enable
    3 Flow Log
            1 Flow Log Mode
            2 Std. Log Interval
            3 Std. Log Setpoint
            4 Rapid Log Interval
            5 Rapid Log Setpoint
Other Control
    1 Elapsed Time Relay
            1 Enable
            2 Interval
            3 Relay Duration
            4 Assigned Relay
            5 Relay Logic
    2 Time of Day Relay
            1 Enable
            2 Activation Time
            3 Relay Duration
            4 Assigned Relay
            5 Relay Logic
    3 External Totalizer
            1 Enable
            2 Multiplier
            3 Relay Duration
            4 Assigned Relay
            5 Relay Logic
    4 External Sampler
            1 Enable
            2 Multiplier
            3 Interval
            4 Relay Duration
            5 Assigned Relay
            6 Relay Logic
Signal Processing
    1 Temperature and Velocity
            1 Sound Velocity
            2 Process Temperature
            3 Temperature Source
            4 Fixed Temperature
            5 Sound Veloc at 20 C
```

2 Echo Select
    1 Algorithm
    2 Echo Threshold
    3 Reform Echo
    4 Narrow Echo Filter
    5 Submerge Detection
3 Echo Profile
    1 Echo Profile
    2 Level
    3 Distance
    4 Near Range
    5 Confidence
    6 Echo Strength
    7 Algorithm
4 TVT Setup
    1 Auto Echo Sup Mode.
        1 Auto Echo Sup Mode
        2 Auto Echo Sup Ran...
        3 Learn
    2 Hover Level
    3 Shaper Mode
    4 TVT Breakpoints

Date and Time
    1 Daylight Saving
        1 Enable
        2 Starting Ordinal
        3 Starting Day
        4 Starting Month
        5 Ending Ordinal
        6 Ending Day
        7 Ending Month

Flow
    1 OCM PMD
    2 Basic Setup
        1 Method of Flow Cal...
        2 Flow Exponent
        3 Maximum Head
        4 Maximum Flow at...
        5 Zero Head Offset
        6 Flowrate Decimal
        7 Flowrate Units
        8 User Defined Unit
        9 Low Flow Cutoff

Totalizers
    1 OCM Flow Totalizers
        1 Daily Total High
        2 Daily Total Low
        3 Running Total High
        4 Running Total Low
        5 Totalizer Dec. Pos.
        6 Totalizer Multiplier
        7 Low Flow Cutoff

2 Pumped Volume Totalizer
    1 Running Total High
    2 Running Total Low
    3 Totalizer Dec. Pos.
    4 Totalizer Multiplier
Local Display
    1 Language

5 Maintenance & Diagnostics
  1 Diagnostics
    1 Pump Records
      1 Set Pumps Runtimes
        1 Run Time Relay 2
        2 Run Time Relay 3
        3 Relay Pump 1
        4 Relay Pump 2
        5 Set Pumps Runtimes
    2 Wear
      1 Power-on TIme
      2 Power-on Resets
      3 Temperature
        1 Process Temperature
        2 Highest Value
        3 Lowest Value
        4 Reset Min/Max Te...
    3 Echo Quality
      1 Figure of Merit
      2 Confidence
      3 Echo Strength
      4 Noise Average
      5 Noise Peak
  2 Maintenance
    1 Transducer Enable
    2 Device Remain Life
      1 Time Units
      2 Lifetime (Expected)
      3 Time in Operation
      4 Remaining Lifetime
      5 Activation of Remi...
      6 Lifetime Remind 1
      7 Lifetime Remind 2
      8 Snooze for 1 year
    3 Sensor Remain Life
      1 Time Units
      2 Lifetime (Expected)
      3 Time in Operation
      4 Remaining Lifetime
      5 Activation of Remi...
      6 Sensor Remind 1
      7 Sensor Remind 2
      8 Sensor Replaced
      9 Snooze for 1 year

4 Service Schedule
                            1 Time Units
                            2 Service Interval
                            3 Since Last Service
                            4 Until Next Service
                            5 Activation of Remi...
                            6 Service Remind 1
                            7 Service Remind 2
                            8 Service Performed
                    5 Calibration Schedule
                            1 Time Units
                            2 Calibration Interval
                            3 Since Last Calibrat...
                            4 Until Next Calibrat...
                            5 Activation of Remi...
                            6 Cal. Remind 1
                            7 Cal. Remind 2
                            8 Cal. Performed

6 Communication
        1 Manufacturer's ID
        2 Product ID
        3 Device Revision
        4 EDD Revision
        5 Device ID
        6 Universal Comman...
        7 Protocol
        8 Common Practice....
        9 Cfg chng count
          HART Communicati...
                            1 Polling Address
                            2 Loop Current Mode
                            3 Number of Respons...
                            4 Number of Request...

7 Security
        1 Write Protection

8 Characteristics
        1 Certificates / Approvals
                            1 Device Certification

3 Device Diagnostics
        1 Device Status
          <Device status listing>
        2 HW/FW-Status
          <HW/FW-Status listing>
        3 Maintenance
                    1 Device Lifetime
                            1 Status
                            2 Ack Status
                            3 Ack Warnings
                    2 Sensor Lifetime
                            1 Status
                            2 Ack Status
                            3 Ack Warnings

---

        3 Service Schedule
            1 Status
            2 Ack Status
            3 Ack Warnings
        4 Calibration Schedule
            1 Status
            2 Ack Status
            3 Ack Warnings
    4 Echo Profile
        1 Echo Profile
        2 Level
        3 Distance
        4 Near Range
        5 Confidence
        6 Echo Strength
        7 Algorithm

4 Process Variables
    1 Overview
        1 Measured Value
        2 Analog Out(PV) =
        3 Level
        4 Space
        5 Distance
        6 PV Range
        7 Loop Current
    2 Temperature
        1 Process Temperature
        2 Highest Value
        3 Lowest Value
    3 Totalizers
        1 OCM Flow Totalizers
            1 Daily Total High
            2 Daily Total Low
            3 Running Total High
            4 Running Total Low
        2 Pumped Volume Totalizer
            1 Running Total High
            2 Running Total Low
    4 Trend View
    5 Discrete Inputs and Relays
        1 Relay Programmed State
            1 Relay 1 Programmi...
            2 Relay 2 Programmi...
            3 Relay 3 Programmi...
            4 Relay 1 Activated
            5 Relay 2 Activated
            6 Relay 3 Activated
        2 Discrete Input Programmed State
            1 DI 1 Programmed
            2 DI 2 Programmed
            3 DI 1 Scaled State
            4 DI 2 Scaled State

5 SITRANS LUT400
    <Device Image>

SITRANS LUT400

1 PV Volume

2 Configuration

    1 Identification
        1 TAG
        2 Long TAG
        3 Descriptor
        4 Message
        5 Date
        6 Device
                1 Manufacturer
                2 Product Name
                3 Product
                4 Order Number
                5 Serial Number
                6 Final Assembly Nu..
                7 Hardware Revision
                8 Firmware Revision
                9 Loader Revision
                 EDD Version
                 Date of Manufacturi...
                 Order Option

    2 Wizards
        1 Wizard - Quick Start...
                1 Step 1 of 5: Identification
                        1 TAG
                        2 Long TAG
                        3 Descriptor
                        4 Message
                        5 Date
                        6 Order Number
                        7 Language
                        8 ===========
                        9 Step 2 of 5: Application
                              1 Transducer
                              2 Application Type
                              3 Temperature Source
                              4 Fixed Temperature
                              5
                              6
                              7 ================
                        8 Step 3 of 5: Vessel Shape
                              1 Vessel Shape
                              2
                              3 Vessel Shape
                              4
                              5
                              6
                              7 ================

8 Step 4 of 5: Ranges
    1 Units
    2 Low Calib. Pt.
    3 High Calib. Pt.
    4 Response Rate
    5 Volume Units
    6 Maximum Volume
    7 Vessel Dimension A
    8 Vessel Dimension L
    9 Vessel Shape
    =============
Step 5 of 5: Summary
    1 TAG
    2 Long TAG
    3 Descriptor
    4 Message
    5 Date
    6 Language
    7 ---------------
    8 Transducer
    9 Application Type
    Temperature Source
    Fixed Temperature

    Vessel Shape

    Units
    Low Calib. Pt.
    High Calib. Pt.
    Response Rate
    Volume Units
    Maximum Volume
    Vessel DimensionA
    Vessel Dimension L

    Sensor Mode
    Current Output Func.
    =============
    HOME to finish wiza.

2 Wizard - Pump Control...
    1 Step 1 of 4: Application
        1 Pump Control Enable
        2
        3 Relay Pump 1
        4 Relay Pump 2
        5
        6 ===============
        7 Step 2 of 4: Vessel Regime
            1 Pump Control Mode
            2 Serv Ratio Pump 1
            3 Serv Ratio Pump 2
            4
            5
            6 ===============

```
                                        7 Step 3 of 4: Pump Setpoints
                                                1 ON Setpoint Pump 1
                                                2 OFF Setpoint Pump 1
                                                3 ON Setpoint Pump 2
                                                4 OFF Setpoint Pump 2
                                                5
                                                6 ==================
                                                7 Step 4 of 4: Summary
                                                        1 Pump Control Enable
                                                        2 Relay Pump 1
                                                        3 Relay Pump 2
                                                        4 -----------------
                                                        5 Pump Control Mode
                                                        6 Serv Ratio Pump 1
                                                        7 Serv Ratio Pump 2
                                                        8 ------------------
                                                        9 ON Setpoint Pump 1
                                                          OFF Setpoint Pump 1
                                                          ON Setpoint Pump 2
                                                          OFF Setpoint Pump 2
                                                          ==============
                                                          HOME to finish wiza...

3 Operation
    1 Select Analog Output
    2 Auto Zero Head
            1 Zero Head Offset
            2 Head
            3 Actual Head Value
    3 Auto Sensor Offset
            1 Sensor Offset
            2 Distance
            3 Desired Distance fo...
    4 Auto Sound Velocity
            1 Sound Veloc at 20 C
            2 Distance
            3 Desired Distance fo...
    5 Loop-Test
    6 Master Reset
            1 Yes
            2 No
    7 Reset Min/Max Temp.
    8 OCM Flow Totalizers
            1 Reset Daily Totalizer
            2 Reset Running Totalizer
    9 Pumped Volume Totalizer
            1 Reset Running Totalizer
    Configuration Flag Reset
            1 Yes
            2 No
```

4 Setup
    1 Sensor
            1 Units
            2 Sensor Mode
            3 Sensor Mode Seco...
            4 Transducer
            5 Frequency
            6 Long Shot Duration
            7 Short Shot Duration
    2 Calibration
            1 Low Calib. Pt.
            2 High Calib. Pt.
            3 Sensor Offset
            4 Near Range
            5 Far Range
    3 Rate
            1 Fill Rate per Minute
            2 Empty Rate per Mi...
            3 Damping Filter
    4 Fail-Safe
            1 Material Level
            2 LOE Timer
            3 Fail-Safe mA Value
    5 Current Output
            1 Current Output Func.
            2 Start Scale (=4 mA)
            3 Full Scale (=20 mA)
            4 Minimum mA Limit
            5 Maximum mA Limit
    6 Volume
            1 Vessel Shape
            2 Volume Units
            3 Maximum Volume
            4 Vessel Dimension A
            5 Vessel Dimension L
            6 User Defined Unit
            7 Linearization
                    1 Characteristic
                    2 Edit Characteristic
                      Level <1 to 32>
                      Volume <1 to 32>
    7 Pumps
            1 Basic Setup
                    1 Pump Control Enable
                    2 Relay Pump 1
                    3 Relay Pump 2
                    4 Pump Control Mode
                    5 ON Setpoint Pump 1
                    6 OFF Setpoint Pump 1
                    7 ON Setpoint Pump 2
                    8 OFF Setpoint Pump 2
                    9 Serv Ratio Pump 1
                    Serv Ratio Pump 2

2 Modifiers
    1 Wall Cling Reduction
        1 Enable
        2 Level Setpoint Vari...
    2 Energy Savings
        1 Enable
        2 Peak Lead Time
        3 Peak 1 Start Time
        4 Peak 1 End Time
        5 Peak 2 Start Time
        6 Peak 2 End Time
        7 Peak 3 Start Time
        8 Peak 3 End Time
        9 Peak 4 Start Time
          Peak 4 End Time
          Peak 5 Start Time
          Peak 5 End Time
          Peak ON Pump 1
          Peak OFF Pump 1
          Peak ON Pump 2
          Peak OFF Pump 2
    3 Pump Run-On
        1 Enable
        2 Run-On Interval
        3 Run-On Dur Pump 1
        4 Run-On Dur Pump 2
    4 Pump Start Delays
        1 Pump Start Delay
        2 Power Resumption Del...
3 Totalizers
    1 Running Total High
    2 Running Total Low
    3 Totalizer Dec. Pos.
    3 Totalizer Multiplier
    4 Inflow/Disch. Adj.
8 Alarms
1 Level
    1 High Level Alarm
        1 Enable
        2 High Level Value On
        3 High Level Value Off
        4 Assigned Relay
        5 Alarm State
    2 In-Bounds Level Alarm
        1 Enable
        2 High Level Value
        3 Low Level Value
        4 Assigned Relay
        5 Alarm State
    3 Low Level Alarm
        1 Enable
        2 Low Level Value On
        3 Low Level Value Off
        4 Assigned Relay
        5 Alarm State

```
                              4 Out-of-Bounds Level Alarm
                                      1 Enable
                                      2 High Level Value
                                      3 Low Level Value
                                      4 Assigned Relay
                                      5 Alarm State
              2 Alarms
                              1 Low Temperature Alarm
                                      1 Enable
                                      2 Low Temp. Value On
                                      3 Low Temp. Value Off
                                      4 Assigned Relay
                                      5 Alarm State
                              2 High Temperature Alarm
                                      1 Enable
                                      2 High Temp. Value...
                                      3 High Temp. Value...
                                      4 Assigned Relay
                                      5 Alarm State
                              3 Switch (DI) Alarm
                                      1 Enable
                                      2 Discrete Input Num...
                                      3 Discrete Input State
                                      4 Assigned Relay
                                      5 Alarm State
                              4 Fail-safe Fault Alarm
                                      1 Enable
                                      2 Assigned Relay
                                      3 Alarm State
                              5 Relay Logic
                                      1 Relay 1 Logic
                                      2 Relay 2 Logic
                                      3 Relay 3 Logic
                              6 Time to Spill
                                      1 Level to Spill
                                      2 Minutes Left to Spill
              3 Flowrate
                              1 High Flowrate Alarm
                                      1 Enable
                                      2 High Flowrate Value...
                                      3 High Flowrate Value...
                                      4 Assigned Relay
                                      5 Alarm State
                              2 Low Flowrate Alarm
                                      1 Enable
                                      2 Low Flowrate Value...
                                      3 Low Flowrate Value...
                                      4 Assigned Relay
                                      5 Alarm State
      9 Discrete Inputs
              1 Backup Level Override
                      1 Enable
                      2 Level Override Value
                      3 Discrete Input Num...
```

```
            2 Discrete Input Logic
                    1 DI 1 Logic
                    2 DI 1 Scaled State
                    3 DI 2 Logic
                    4 DI 2 Scaled State
            3 Pump Interlock
                    1 Enable Pump 1
                    2 Pump 1 DI
                    3 Enable Pump 2
                    4 Pump 2 DI
Data Logging
            1 Process Value Log
                    1 Enable
                    2 Proc Val Log Rate
            2 Alarm Log
                    1 Enable
            3 Flow Log
                    1 Flow Log Mode
                    2 Std. Log Interval
                    3 Std. Log Setpoint
                    4 Rapid Log Interval
                    5 Rapid Log Setpoint
Other Control
            1 Elapsed Time Relay
                    1 Enable
                    2 Interval
                    3 Relay Duration
                    4 Assigned Relay
                    5 Relay Logic
            2 Time of Day Relay
                    1 Enable
                    2 Activation Time
                    3 Relay Duration
                    4 Assigned Relay
                    5 Relay Logic
            3 External Totalizer
                    1 Enable
                    2 Multiplier
                    3 Relay Duration
                    4 Assigned Relay
                    5 Relay Logic
            4 External Sampler
                    1 Enable
                    2 Multiplier
                    3 Interval
                    4 Relay Duration
                    5 Assigned Relay
                    6 Relay Logic
Signal Processing
            1 Temperature and Velocity
                    1 Sound Velocity
                    2 Process Temperature
                    3 Temperature Source
                    4 Fixed Temperature
                    5 Sound Veloc at 20 C
```

2 Echo Select
    1 Algorithm
    2 Echo Threshold
    3 Reform Echo
    4 Narrow Echo Filter
    5 Submerge Detection
3 Echo Profile
    1 Echo Profile
    2 Level
    3 Distance
    4 Near Range
    5 Confidence
    6 Echo Strength
    7 Algorithm
4 TVT Setup
    1 Auto Echo Sup Mode.
        1 Auto Echo Sup Mode
        2 Auto Echo Sup Ran...
        3 Learn
    2 Hover Level
    3 Shaper Mode
    4 TVT Breakpoints
Date and Time
    1 Daylight Saving
        1 Enable
        2 Starting Ordinal
        3 Starting Day
        4 Starting Month
        5 Ending Ordinal
        6 Ending Day
        7 Ending Month
Flow
    1 OCM PMD
    2 Basic Setup
        1 Method of Flow Cal...
        2 Flow Exponent
        3 Maximum Head
        4 Maximum Flow at...
        5 Zero Head Offset
        6 Flowrate Decimal
        7 Flowrate Units
        8 User Defined Unit
        9 Low Flow Cutoff
Totalizers
    1 OCM Flow Totalizers
        1 Daily Total High
        2 Daily Total Low
        3 Running Total High
        4 Running Total Low
        5 Totalizer Dec. Pos.
        6 Totalizer Multiplier
        7 Low Flow Cutoff

2 Pumped Volume Totalizer
    1 Running Total High
    2 Running Total Low
    3 Totalizer Dec. Pos.
    4 Totalizer Multiplier
Local Display
    1 Language

5 Maintenance & Diagnostics
    1 Diagnostics
        1 Pump Records
            1 Set Pumps Runtimes
                1 Run Time Relay 2
                2 Run Time Relay 3
                3 Relay Pump 1
                4 Relay Pump 2
                5 Set Pumps Runtimes
        2 Wear
            1 Power-on TIme
            2 Power-on Resets
            3 Temperature
                1 Process Temperature
                2 Highest Value
                3 Lowest Value
                4 Reset Min/Max Te...
        3 Echo Quality
            1 Figure of Merit
            2 Confidence
            3 Echo Strength
            4 Noise Average
            5 Noise Peak
    2 Maintenance
        1 Transducer Enable
        2 Device Remain Life
            1 Time Units
            2 Lifetime (Expected)
            3 Time in Operation
            4 Remaining Lifetime
            5 Activation of Remi...
            6 Lifetime Remind 1
            7 Lifetime Remind 2
            8 Snooze for 1 year
        3 Sensor Remain Life
            1 Time Units
            2 Lifetime (Expected)
            3 Time in Operation
            4 Remaining Lifetime
            5 Activation of Remi...
            6 Sensor Remind 1
            7 Sensor Remind 2
            8 Sensor Replaced
            9 Snooze for 1 year

4 Service Schedule
>1 Time Units
>2 Service Interval
>3 Since Last Service
>4 Until Next Service
>5 Activation of Remi...
>6 Service Remind 1
>7 Service Remind 2
>8 Service Performed
5 Calibration Schedule
>1 Time Units
>2 Calibration Interval
>3 Since Last Calibrat...
>4 Until Next Calibrat...
>5 Activation of Remi...
>6 Cal. Remind 1
>7 Cal. Remind 2
>8 Cal. Performed

6 Communication
1 Manufacturer's ID
2 Product ID
3 Device Revision
4 EDD Revision
5 Device ID
6 Universal Comman...
7 Protocol
8 Common Practice....
9 Cfg chng count
HART Communicati...
>1 Polling Address
>2 Loop Current Mode
>3 Number of Respons...
>4 Number of Request...

7 Security
1 Write Protection

8 Characteristics
1 Certificates / Approvals
>1 Device Certification

3 Device Diagnostics
1 Device Status
 <Device status listing>
2 HW/FW-Status
<HW/FW-Status listing>
3 Maintenance
>1 Device Lifetime
>>1 Status
>>2 Ack Status
>>3 Ack Warnings
>2 Sensor Lifetime
>>1 Status
>>2 Ack Status
>>3 Ack Warnings

                    3 Service Schedule
                                1 Status
                                2 Ack Status
                                3 Ack Warnings
                    4 Calibration Schedule
                                1 Status
                                2 Ack Status
                                3 Ack Warnings
        4 Echo Profile
                    1 Echo Profile
                    2 Level
                    3 Distance
                    4 Near Range
                    5 Confidence
                    6 Echo Strength
                    7 Algorithm

4 Process Variables
        1 Overview
                    1 Measured Value
                    2 Analog Out(PV) =
                    3 Level
                    4 Space
                    5 Distance
                    6 Volume
                    7 PV Range
                    8 Loop Current
        2 Temperature
                    1 Process Temperature
                    2 Highest Value
                    3 Lowest Value
        3 Totalizers
                    1 OCM Flow Totalizers
                                1 Daily Total High
                                2 Daily Total Low
                                3 Running Total High
                                4 Running Total Low
                    2 Pumped Volume Totalizer
                                1 Running Total High
                                2 Running Total Low
        4 Trend View
        5 Discrete Inputs and Relays
                    1 Relay Programmed State
                                1 Relay 1 Programmi...
                                2 Relay 2 Programmi...
                                3 Relay 3 Programmi...
                                4 Relay 1 Activated
                                5 Relay 2 Activated
                                6 Relay 3 Activated
                    2 Discrete Input Programmed State
                                1 DI 1 Programmed
                                2 DI 2 Programmed
                                3 DI 1 Scaled State
                                4 DI 2 Scaled State

5 SITRANS LUT400
        <Device Image>

SITRANS LUT400

1 PV Flow

2 Configuration

    1 Identification
        1 TAG
        2 Long TAG
        3 Descriptor
        4 Message
        5 Date
        6 Device
                1 Manufacturer
                2 Product Name
                3 Product
                4 Order Number
                5 Serial Number
                6 Final Assembly Nu..
                7 Hardware Revision
                8 Firmware Revision
                9 Loader Revision
                 EDD Version
                 Date of Manufacturi...
                 Order Option

    2 Wizards
        1 Wizard - Quick Start...
                1 Step 1 of 5: Identification
                        1 TAG
                        2 Long TAG
                        3 Descriptor
                        4 Message
                        5 Date
                        6 Order Number
                        7 Language
                        8 ===========
                        9 Step 2 of 5: Application
                                1 Transducer
                                2 Application Type
                                3 Temperature Source
                                4 Fixed Temperature
                                5
                                6
                                7 ===============
                        8 Step 3 of 5: Shape
                                1 OCM PMD
                                2 Units
                                3 Method of Flow Cal...
                                4 <calculation factor based on PMD>
                                5 <calculation factor based on PMD>
                                6 <calculation factor based on PMD>
                                7 <calculation factor based on PMD>
                                8 <calculation factor based on PMD>

9 OCM Dimension 1
OCM Dimension 2
OCM Dimension 3
OCM Dimension 4
OCM PMD
==============
Step 4 of 5: Ranges
1 Units
2 Low Calib. Pt.
3 High Calib. Pt.
4 Response Rate
5 Maximum Head
6 Flowrate Units
7 Flowrate Decimal
8 Low Flow Cutoff
9 Maximum Flow at...
============
Step 5 of 5: Summary
1 TAG
2 Long TAG
3 Descriptor
4 Message
5 Date
6 Language
7 ---------------
8 Transducer
9 Application Type
Temperature Source
Fixed Temperature

OCM PMD
Method of Flow Cal..
<calculation factor>
<calculation factor>
<calculation factor>
<calculation factor>
<calculation factor>
OCM Dimension 1
OCM Dimension 2
OCM Dimension 3
OCM Dimension 4

Units
Low Calib. Pt.
High Calib. Pt.
Response Rate
Maximum Head
Flowrate Units
Flowrate Decimal
Low Flow Cutoff
Maximum Flow at 2..

Sensor Mode
Current Output Func.
Start Scale (=4 mA)
Full Scale (=20 mA)
=============
HOME to finish wiza.

2 Wizard - Pump Control…
    1 Step 1 of 4: Application
        1 Pump Control Enable
        2
        3 Relay Pump 1
        4 Relay Pump 2
        5
        6 ==============
        7 Step 2 of 4: Vessel Regime
            1 Pump Control Mode
            2 Serv Ratio Pump 1
            3 Serv Ratio Pump 2
            4
            5
            6 ===============
            7 Step 3 of 4: Pump Setpoints
                1 ON Setpoint Pump 1
                2 OFF Setpoint Pump 1
                3 ON Setpoint Pump 2
                4 OFF Setpoint Pump 2
                5
                6 =================
                7 Step 4 of 4: Summary
                    1 Pump Control Enable
                    2 Relay Pump 1
                    3 Relay Pump 2
                    4 ----------------
                    5 Pump Control Mode
                    6 Serv Ratio Pump 1
                    7 Serv Ratio Pump 2
                    8 ----------------
                    9 ON Setpoint Pump 1
                    OFF Setpoint Pump 1
                    ON Setpoint Pump 2
                    OFF Setpoint Pump 2
                    =============
                    HOME to finish wiza…

3 Operation
    1 Select Analog Output
    2 Auto Zero Head
        1 Zero Head Offset
        2 Head
        3 Actual Head Value
    3 Auto Sensor Offset
        1 Sensor Offset
        2 Distance
        3 Desired Distance fo…

4 Auto Sound Velocity
       1 Sound Veloc at 20 C
       2 Distance
       3 Desired Distance fo...
5 Loop-Test
6 Master Reset
       1 Yes
       2 No
7 Reset Min/Max Temperatures
8 OCM Flow Totalizers
       1 Reset Daily Totalizer
       2 Reset Running Totalizer
9 Pumped Volume Totalizer
       1 Reset Running Totalizer
  Configuration Flag Reset
       1 Yes
       2 No

4 Setup
1 Sensor
       1 Units
       2 Sensor Mode
       3 Sensor Mode Seco...
       4 Transducer
       5 Frequency
       6 Long Shot Duration
       7 Short Shot Duration
2 Calibration
       1 Low Calib. Pt.
       2 High Calib. Pt.
       3 Sensor Offset
       4 Near Range
       5 Far Range
3 Rate
       1 Fill Rate per Minute
       2 Empty Rate per Mi...
       3 Damping Filter
4 Fail-Safe
       1 Material Level
       2 LOE Timer
       3 Fail-Safe mA Value
5 Current Output
       1 Current Output Func.
       2 Start Scale (=4 mA)
       3 Full Scale (=20 mA)
       4 Minimum mA Limit
       5 Maximum mA Limit
6 Volume
       1 Vessel Shape
       2 Volume Units
       3 Maximum Volume
       4 Vessel Dimension A
       5 Vessel Dimension L
       6 User Defined Unit

7 Linearization
    1 Characteristic
    2 Edit Characteristic
    Level <1 to 32>
    Volume <1 to 32>

7 Pumps
    1 Basic Setup
        1 Pump Control Enable
        2 Relay Pump 1
        3 Relay Pump 2
        4 Pump Control Mode
        5 ON Setpoint Pump 1
        6 OFF Setpoint Pump 1
        7 ON Setpoint Pump 2
        8 OFF Setpoint Pump 2
        9 Serv Ratio Pump 1
        Serv Ratio Pump 2
    2 Modifiers
        1 Wall Cling Reduction
            1 Enable
            2 Level Setpoint Vari...
        2 Energy Savings
            1 Enable
            2 Peak Lead Time
            3 Peak 1 Start Time
            4 Peak 1 End Time
            5 Peak 2 Start Time
            6 Peak 2 End Time
            7 Peak 3 Start Time
            8 Peak 3 End Time
            9 Peak 4 Start Time
            Peak 4 End Time
            Peak 5 Start Time
            Peak 5 End Time
            Peak ON Pump 1
            Peak OFF Pump 1
            Peak ON Pump 2
            Peak OFF Pump 2
        3 Pump Run-On
            1 Enable
            2 Run-On Interval
            3 Run-On Dur Pump 1
            4 Run-On Dur Pump 2
        4 Pump Start Delays
            1 Pump Start Delay
            2 Power Resumption Del...
    3 Totalizers
        1 Running Total High
        2 Running Total Low
        3 Totalizer Dec. Pos.
        3 Totalizer Multiplier
        4 Inflow/Disch. Adj.

8 Alarms
    1 Level

1 High Level Alarm
    1 Enable
    2 High Level Value On
    3 High Level Value Off
    4 Assigned Relay
    5 Alarm State
2 In-Bounds Level Alarm
    1 Enable
    2 High Level Value
    3 Low Level Value
    4 Assigned Relay
    5 Alarm State
3 Low Level Alarm
    1 Enable
    2 Low Level Value On
    3 Low Level Value Off
    4 Assigned Relay
    5 Alarm State
4 Out-of-Bounds Level Alarm
    1 Enable
    2 High Level Value
    3 Low Level Value
    4 Assigned Relay
    5 Alarm State

2 Alarms
1 Low Temperature Alarm
    1 Enable
    2 Low Temp. Value On
    3 Low Temp. Value Off
    4 Assigned Relay
    5 Alarm State
2 High Temperature Alarm
    1 Enable
    2 High Temp. Value…
    3 High Temp. Value…
    4 Assigned Relay
    5 Alarm State
3 Switch (DI) Alarm
    1 Enable
    2 Discrete Input Num…
    3 Discrete Input State
    4 Assigned Relay
    5 Alarm State
4 Fail-safe Fault Alarm
    1 Enable
    2 Assigned Relay
    3 Alarm State
5 Relay Logic
    1 Relay 1 Logic
    2 Relay 2 Logic
    3 Relay 3 Logic
6 Time to Spill
    1 Level to Spill
    2 Minutes Left to Spill

```
                    3 Flowrate
                                1 High Flowrate Alarm
                                            1 Enable
                                            2 High Flowrate Value...
                                            3 High Flowrate Value...
                                            4 Assigned Relay
                                            5 Alarm State
                                2 Low Flowrate Alarm
                                            1 Enable
                                            2 Low Flowrate Value...
                                            3 Low Flowrate Value...
                                            4 Assigned Relay
                                            5 Alarm State
        9 Discrete Inputs
                    1 Backup Level Override
                                1 Enable
                                2 Level Override Value
                                3 Discrete Input Num...
                    2 Discrete Input Logic
                                1 DI 1 Logic
                                2 DI 1 Scaled State
                                3 DI 2 Logic
                                4 DI 2 Scaled State
                    3 Pump Interlock
                                1 Enable Pump 1
                                2 Pump 1 DI
                                3 Enable Pump 2
                                4 Pump 2 DI
Data Logging
                    1 Process Value Log
                                1 Enable
                                2 Proc Val Log Rate
                    2 Alarm Log
                                1 Enable
                    3 Flow Log
                                1 Flow Log Mode
                                2 Std. Log Interval
                                3 Std. Log Setpoint
                                4 Rapid Log Interval
                                5 Rapid Log Setpoint
Other Control
                    1 Elapsed Time Relay
                                1 Enable
                                2 Interval
                                3 Relay Duration
                                4 Assigned Relay
                                5 Relay Logic
                    2 Time of Day Relay
                                1 Enable
                                2 Activation Time
                                3 Relay Duration
                                4 Assigned Relay
                                5 Relay Logic
```

```
              3 External Totalizer
                      1 Enable
                      2 Multiplier
                      3 Relay Duration
                      4 Assigned Relay
                      5 Relay Logic
              4 External Sampler
                      1 Enable
                      2 Multiplier
                      3 Interval
                      4 Relay Duration
                      5 Assigned Relay
                      6 Relay Logic
Signal Processing
      1 Temperature and Velocity
                      1 Sound Velocity
                      2 Process Temperature
                      3 Temperature Source
                      4 Fixed Temperature
                      5 Sound Veloc at 20 C
      2 Echo Select
                      1 Algorithm
                      2 Echo Threshold
                      3 Reform Echo
                      4 Narrow Echo Filter
                      5 Submerge Detection
      3 Echo Profile
                      1 Echo Profile
                      2 Level
                      3 Distance
                      4 Near Range
                      5 Confidence
                      6 Echo Strength
                      7 Algorithm
      4 TVT Setup
                      1 Auto Echo Sup Mode
                              1 Auto Echo Sup Mode
                              2 Auto Echo Sup Ran...
                              3 Learn
                      2 Hover Level
                      3 Shaper Mode
                      4 TVT Breakpoints
Date and Time
      1 Daylight Saving
                      1 Enable
                      2 Starting Ordinal
                      3 Starting Day
                      4 Starting Month
                      5 Ending Ordinal
                      6 Ending Day
                      7 Ending Month
Flow
      1 OCM PMD
```

2 Basic Setup
    1 Method of Flow Cal...
    2 Flow Exponent
    3 Maximum Head
    4 Maximum Flow at...
    5 Zero Head Offset
    6 Flowrate Decimal
    7 Flowrate Units
    8 User Defined Unit
    9 Low Flow Cutoff
3 Primary Measuring...   OR   3 Linearization
    1 <calculation factor>   1 Characteristic
    2 <calculation factor>   2 Edit Characteristic
    3 <calculation factor>
    4 <calculation factor>
    5 OCM Dimension 1
    6 OCM Dimension 2
    7 OCM Dimension 3
    8 OCM Dimension 4
    9 OCM Dimension 5
      OCM Dimension 6
      OCM Dimension 7
      OCM Dimension 8
      OCM Dimension 9
      OCM Dimension 10
      OCM Dimension 11
      OCM Dimension 12
Totalizers
  1 OCM Flow Totalizers
    1 Daily Total High
    2 Daily Total Low
    3 Running Total High
    4 Running Total Low
    5 Totalizer Dec. Pos.
    6 Totalizer Multiplier
    7 Low Flow Cutoff
  2 Pumped Volume Totalizer
    1 Running Total High
    2 Running Total Low
    3 Totalizer Dec. Pos.
    4 Totalizer Multiplier
Local Display
  1 Language

5 Maintenance & Diagnostics
  1 Diagnostics
    1 Pump Records
      1 Set Pumps Runtimes
        1 Run Time Relay 2
        2 Run Time Relay 3
        3 Relay Pump 1
        4 Relay Pump 2
        5 Set Pumps Runtimes
    2 Wear
      1 Power-on TIme
      2 Power-on Resets

                        3 Temperature
                                1 Process Temperature
                                2 Highest Value
                                3 Lowest Value
                                4 Reset Min/Max Te...
                3 Echo Quality
                        1 Figure of Merit
                        2 Confidence
                        3 Echo Strength
                        4 Noise Average
                        5 Noise Peak
        2 Maintenance
                1 Transducer Enable
                2 Device Remain Life
                        1 Time Units
                        2 Lifetime (Expected)
                        3 Time in Operation
                        4 Remaining Lifetime
                        5 Activation of Remi...
                        6 Lifetime Remind 1
                        7 Lifetime Remind 2
                        8 Snooze for 1 year
                3 Sensor Remain Life
                        1 Time Units
                        2 Lifetime (Expected)
                        3 Time in Operation
                        4 Remaining Lifetime
                        5 Activation of Remi...
                        6 Sensor Remind 1
                        7 Sensor Remind 2
                        8 Sensor Replaced
                        9 Snooze for 1 year
                4 Service Schedule
                        1 Time Units
                        2 Service Interval
                        3 Since Last Service
                        4 Until Next Service
                        5 Activation of Remi...
                        6 Service Remind 1
                        7 Service Remind 2
                        8 Service Performed
                5 Calibration Schedule
                        1 Time Units
                        2 Calibration Interval
                        3 Since Last Calibrat...
                        4 Until Next Calibrat...
                        5 Activation of Remi...
                        6 Cal. Remind 1
                        7 Cal. Remind 2.
                        8 Cal. Performed

6 Communication
    1 Manufacturer's ID
    2 Product ID
    3 Device Revision
    4 EDD Revision
    5 Device ID
    6 Universal Comman...
    7 Protocol
    8 Common Practice....
    9 Cfg chng count
     HART Communicati...
            1 Polling Address
            2 Loop Current Mode
            3 Number of Respons...
            4 Number of Request...

7 Security
    1 Write Protection

8 Characteristics
    1 Certificates / Approvals
            1 Device Certification

3 Device Diagnostics
    1 Device Status
     <Device status listing>
    2 HW/FW-Status
    <HW/FW-Status listing>
    3 Maintenance
        1 Device Lifetime
            1 Status
            2 Ack Status
            3 Ack Warnings
        2 Sensor Lifetime
            1 Status
            2 Ack Status
            3 Ack Warnings
        3 Service Schedule
            1 Status
            2 Ack Status
            3 Ack Warnings
        4 Calibration Schedule
            1 Status
            2 Ack Status
            3 Ack Warnings
    4 Echo Profile
        1 Echo Profile
        2 Level
        3 Distance
        4 Near Range
        5 Confidence
        6 Echo Strength
        7 Algorithm

4 Process Variables
    1 Overview
        1 Measured Value
        2 Analog Out(PV) =
        3 Level
        4 Space
        5 Distance
        6 Flow
        7 PV Range
        8 Loop Current
    2 Temperature
        1 Process Temperature
        2 Highest Value
        3 Lowest Value
    3 Totalizers
        1 OCM Flow Totalizers
            1 Daily Total High
            2 Daily Total Low
            3 Running Total High
            4 Running Total Low
        2 Pumped Volume Totalizer
            1 Running Total High
            2 Running Total Low
    4 Trend View
    5 Discrete Inputs and Relays
        1 Relay Programmed State
            1 Relay 1 Programmi...
            2 Relay 2 Programmi...
            3 Relay 3 Programmi...
            4 Relay 1 Activated
            5 Relay 2 Activated
            6 Relay 3 Activated
        2 Discrete Input Programmed State
            1 DI 1 Programmed
            2 DI 2 Programmed
            3 DI 1 Scaled State
            4 DI 2 Scaled State

5 SITRANS LUT400
    <Device Image>

Notes

Operation via FDT (Field Device Tool)

Features

FDT is a standard used in several software packages designed to commission and maintain field devices such as SITRANS LUT400. Two commercially available FDTs are PACTware and Fieldcare.

Functions

FDT is very similar to PDM (see *Operation via SIMATIC PDM 6 (HART)* on page 5 for more detail).

- To configure a field device via FDT, you need the DTM (Device Type Manager) for the device.
- To configure a field device via SIMATIC PDM, you need the EDD (Electronic Data Description) for the device.

Device Type Manager (DTM)

A DTM is a type of software that 'plugs into' FDT. It contains the same information as an EDD but an EDD is independent of the operating system.

SITRANS DTM version 3.1

- SITRANS DTM is an EDDL interpreter developed by Siemens to interpret the EDD for that device.
- To use SITRANS DTM to connect to a device, you must first install SITRANS DTM on your system and then install the instrument EDD written for SITRANS DTM.
- You can download SITRANS DTM from our website at: http://www.siemens.com/sitransdtm. Click on **Support** then go to **Software downloads**.

Electronic Device Description (EDD)

The SITRANS LUT400 HART EDD for SITRANS DTM can be downloaded from the product page of our website.

Go to www.siemens.com/sitransLUT400 under **Support** and click on **Software Downloads.**

Configuring a new device

The full process to configure a field device via FDT is outlined in an application guide which can be downloaded from the product page of our website. Go to: www.siemens.com/sitransLUT400 under **Support** and click on **Application Guides**.

Notes

Operation - FDT (DTM)

For more information

www.siemens.com/level

www.siemens.com/continuous-weighing

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