EDD Operating Manual

Honeywell

Searchpoint Optima Plus
Electronic Device Description (EDD)

Content

1 Introduction

The purpose of this document is to support the plant operators with commissioning, operation, configuration and diagnosis of the Searchpoint Optima Plus Infrared Gas Detector, which will be in the following called Optima Plus.

The Optima Plus is an infrared point hydrocarbon gas detector certified for use in potentially explosive atmospheres. The unit's infrared detection principle offers the fastest speed of response and fail-to-safe operation, ensuring that your plant is compliant, your personnel are protected and your production process can deliver maximum uptime. The IR principle allows detection without background oxygen, as required for bead type detectors, while the plug-in handheld device allows fault diagnosis, change of gas type and event log access.

For the HART interface, Honeywell Analytics has created an electronic device description (EDD), which describes all parameters, methods and menus for operating the device through the HART interface. Such EDD-file can be used by so-called host software, which is interpreting the EDD and offering the content to an operator.

The Optima Plus EDD covered by this manual is intended to be used with the AMS Device Manager. Emerson AMS Device Manager is a software package used to commission and maintain Optima Plus device.

WARNING

For safety reasons this equipment must be operated by qualified personnel only. Read and understand the instruction manual completely before operating or servicing the equipment. For information regarding the Optima Plus device, please check the Optima Plus Device Technical Manual

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2 Required software and components

In order to be able to use the Optima Plus HART EDD and to go online with the device you need the following components:

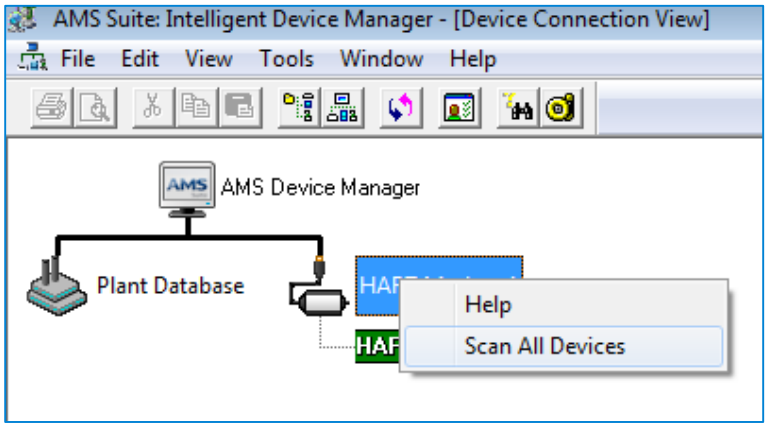
- AMS Revision 12 Device Manager (it represents the EDD-host application. For information about the AMS software please contact Emerson Process Solutions http://www2.emersonprocess.com/)
- Go to the Honeywell Analytics link: http://www.honeywellanalytics.com/en/products/Searchpoint-Optima-Plus and then go to Software and download Honeywell Analytics Optima Plus HART EDD AMS Installation Package
- HART modem (RS232 or USB interfaces of the companies Endress+Hauser, Microflex or MACTek).

Please make sure that you install a HART 7 DCS system (see AMS EDD-host above), since Optima EDD is not compatible with older versions like HART 5 and HART 6.

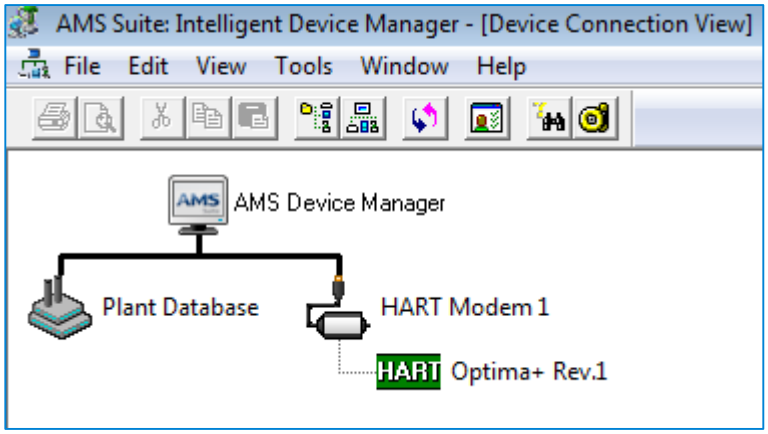
3 Establish connection with the device

After completion of §2, please follow the steps described below for establishing the connection with your device using a serial HART modem. If you are using other EDD host application, the further presented screens might differ:

1. Launch the AMS host application
2. Connect the serial HART modem (and eventually the HART Multiplexer) as described in the Optima Plus device manual (http://www.honeywellanalytics.com/en/products/Searchpoint-Optima-Plus)
3. Connect the modem connector to the PC COM port (serial modem) or USB port (USB Modem)
4. Right-click on “HART Modem” in the AMS program and select “Scan All Devices” to add the Optima EDD-HART and to connect device:

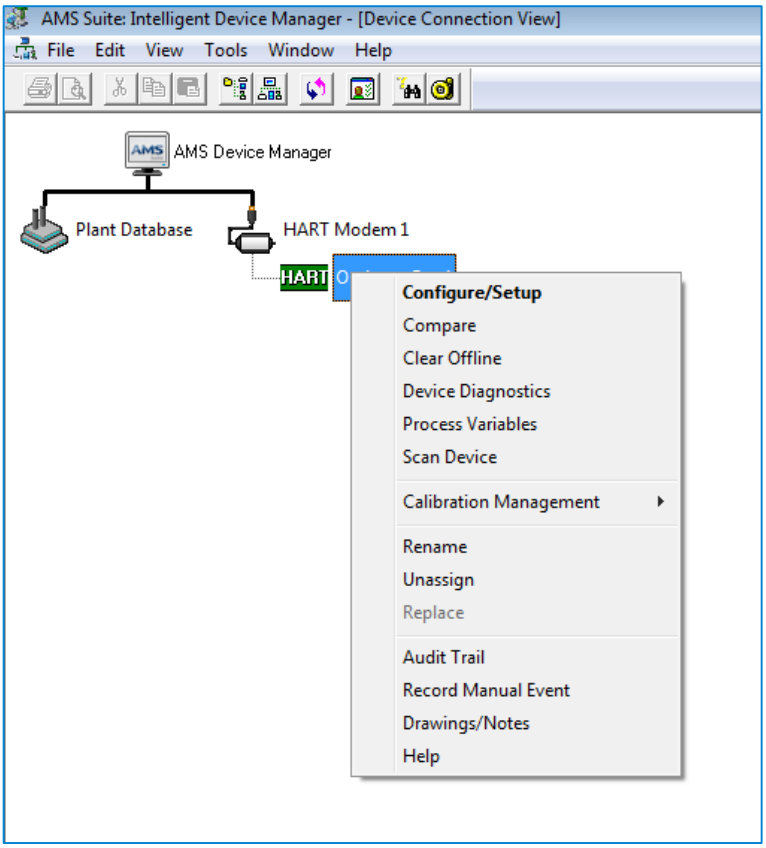


5. The connected device will appear in the tree. The name can be changed by using the “Rename” option (see menu list in §4):



4 Program menu structure and items

By right-clicking on the device name you will find a menu list. Some menu items are characteristic for EDD and some for host (in the shown example AMS Device Manager):



EDD characteristic menu items:

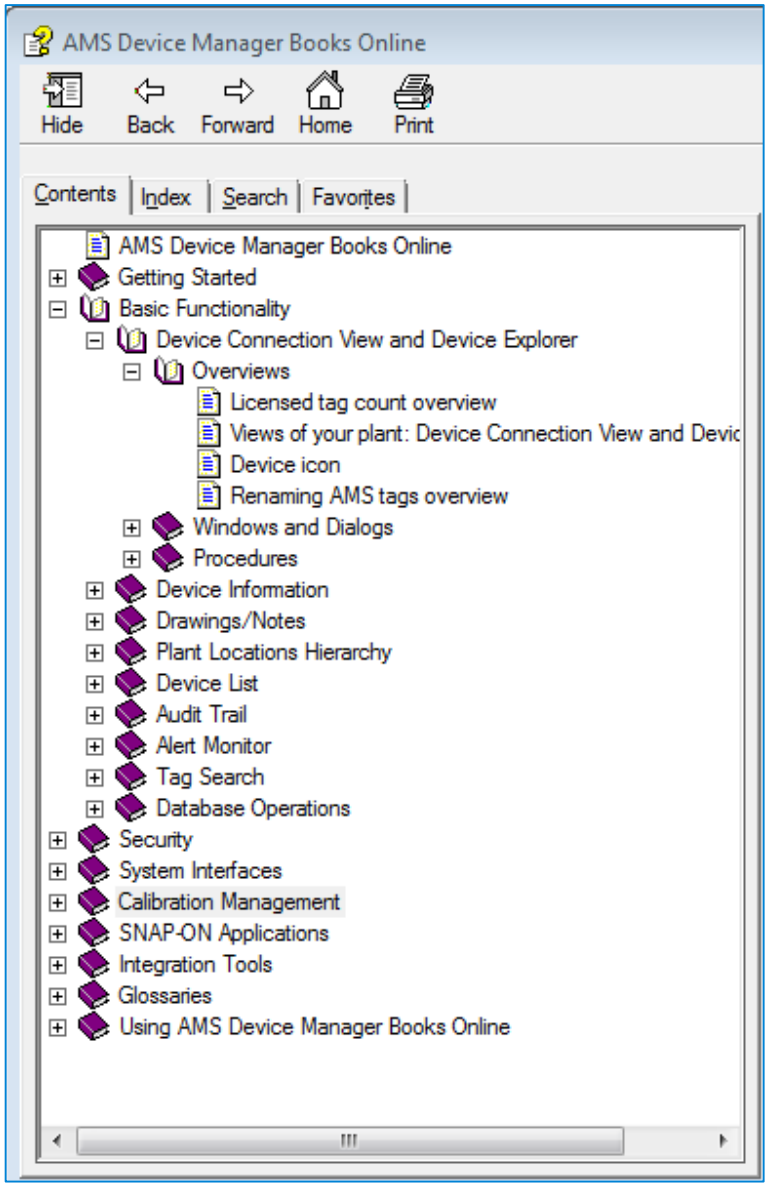
- Configure/Setup (offers information regarding the complete device parameters which can be set according to your measurement application and real time information about the current status of the device)
- Device Diagnosis (offers information for maintenance engineers regarding the faults, warnings, alarms, etc)
- Process Variables (offers information regarding the device operation status)

AMS host characteristic menu items:

The other items shown in the figure above are host characteristic items:

- Compare
- Clear Offline
- Scan Device
- Calibration Management
- Rename
- Unassign
- Audit Trail
- Record Manual Event
- Drawings/Notes
- Help

In the following pages we will describe the EDD characteristic items. For more information regarding the host specific items, please check the AMS Documentation or go to “Help” item:



5 Configure/Setup

After following the steps 1-5 from §3, please double click on device name to open the startup screen. This will contain the three main function groups which allow you to configure and monitor the device:

- Configure/Setup
- Device Diagnostics
- Process Variables

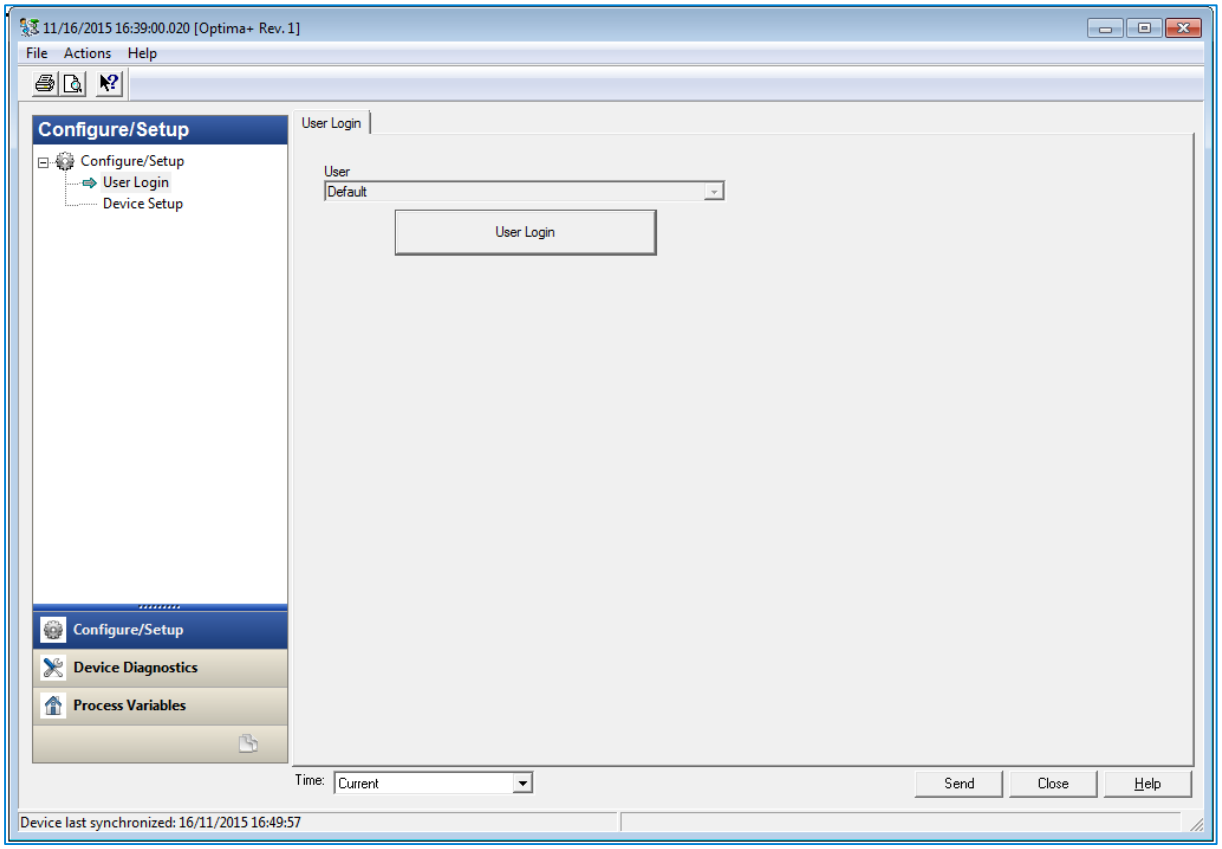
5.1 User Login

Login level is determined according to the passcode number. The Optima Plus Electronic Device Description (EDD) has three security levels. Some of the screens in this manual are visible only after password has been entered.

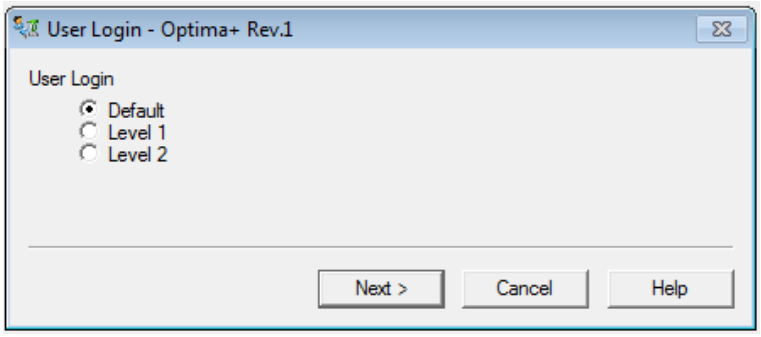
The Optima Plus Device EDD security levels are:

- Default (read only, allows the user to view the software settings, no password required)
- Level 1 (entering a level-1 password will allow the user to view and change the software settings). This is relevant for maintenance engineers. The standard 8 digits password is provided by Honeywell and can be changed by user
- Level 2 allows an advanced view of software settings and is relevant for Honeywell Field Engineer only.

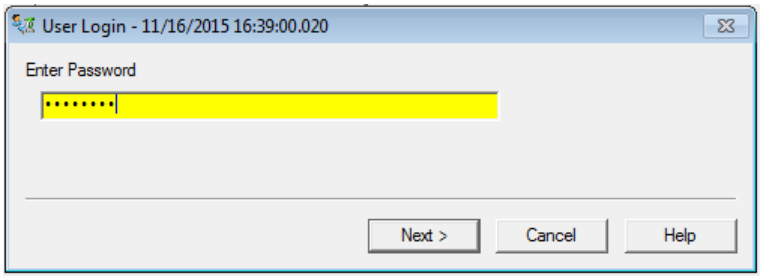
To view the security level you are entitled to access, select “Configure/Setup/User Login” to login:



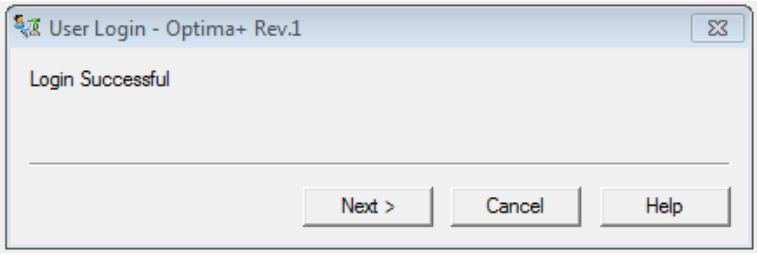
- User (displays the user's current access level)
- User Login button (click on the User Login button to enter a passcode)
- Now choose your security level and click "Next":



- In case of security level 1, please enter the eight digits password:



- Now you are logged in and you can click "Next" to see the settings:



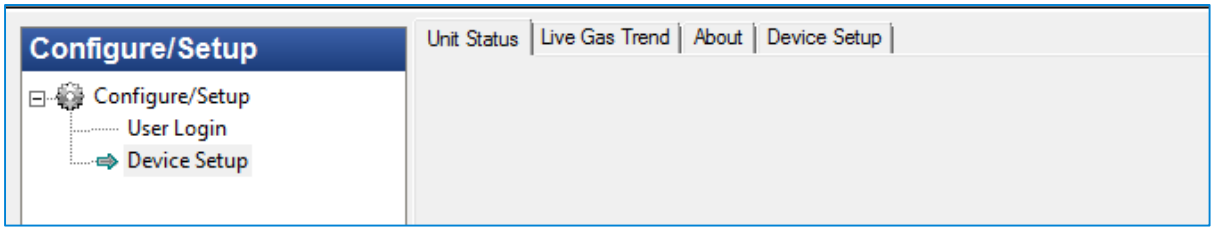
5.2 Device Setup

WARNING

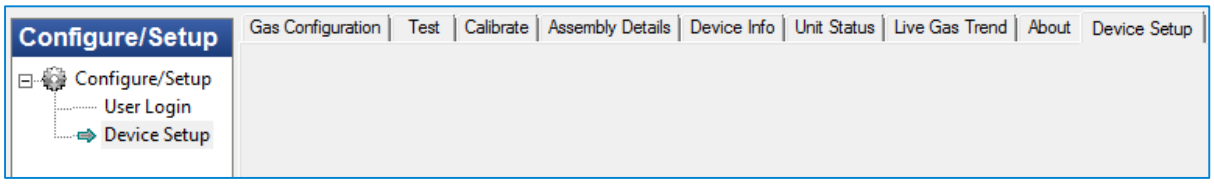
For safety reasons this equipment must be operated by qualified personnel only. Read and understand the instruction manual completely before operating or servicing the equipment. Inappropriate or incorrect use of an instrument adjusted with AMS can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or setting.

After following the steps 1-5 from §3, please double click on device name to open the startup screen. This will contain the three main function groups which allow you to configure and monitor the device (Configure/Setup, Device Diagnostics and Process Variables)

- "Device Setup" can be seen in "Default" security level as follows:



- "Device Setup" can be seen in "Level 1 and 2" security level as follows:

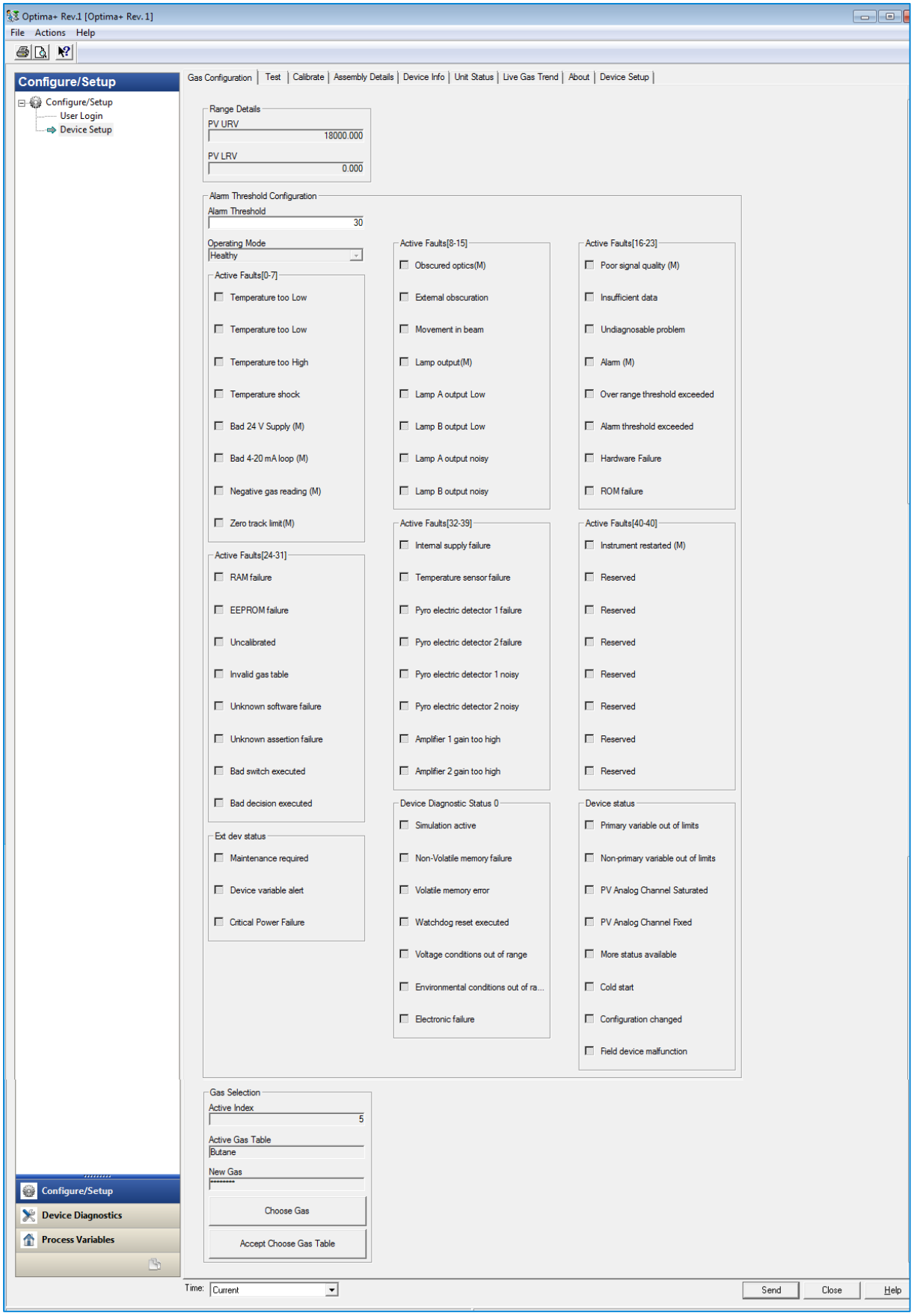


In the following pages, all menus above will be presented. Depending on your security level, you may not see some of those screens.

5.2.1 Gas Configuration

The "Gas Configuration" function is available for the security level 1 and 2. It allows the maintenance engineers examination of all faults, warnings, and informational messages.

If any alarms or warnings have been activated, a check mark will be displayed in the square adjacent to it. A detailed description of the alarms and warnings can be found in the Optima Plus Device Technical Manual §14.2.

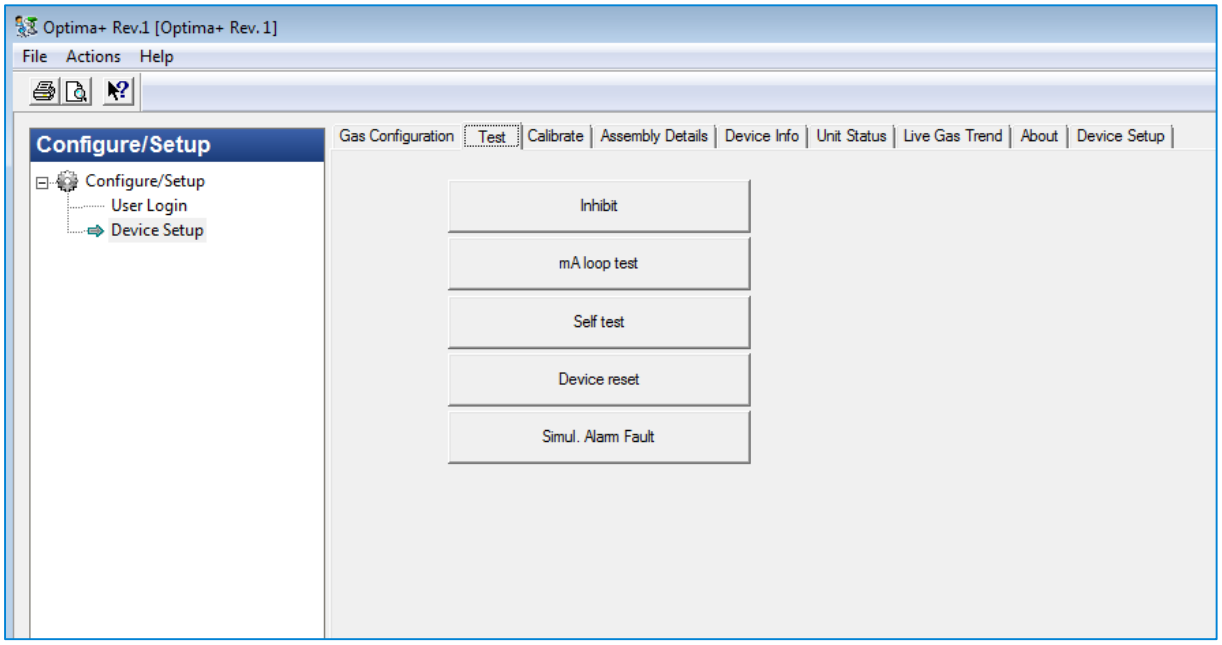

Optima+ Rev.1 [Optima+ Rev. 1]
File Actions Help
Configure/Setup
Configure/Setup
User Login
Device Setup
Gas Configuration | Test | Calibrate | Assembly Details | Device Info | Unit Status | Live Gas Trend | About | Device Setup
Range Details
PV URV
18000.000
PV LRV
0.000
Alarm Threshold Configuration
Alarm Threshold
30
Operating Mode
Healthy
Active Faults[0-7]
Temperature too Low
Temperature too Low
Temperature too High
Temperature shock
Bad 24 V Supply (M)
Bad 4-20 mA loop (M)
Negative gas reading (M)
Zero track limit(M)
Active Faults[8-15]
Obscured optics(M)
External obscuration
Movement in beam
Lamp output(M)
Lamp A output Low
Lamp B output Low
Lamp A output noisy
Lamp B output noisy
Active Faults[16-23]
Poor signal quality (M)
Insufficient data
Undiagnosable problem
Alarm (M)
Over range threshold exceeded
Alarm threshold exceeded
Hardware Failure
ROM failure
Active Faults[24-31]
RAM failure
EEPROM failure
Uncalibrated
Invalid gas table
Unknown software failure
Unknown assertion failure
Bad switch executed
Bad decision executed
Active Faults[32-39]
Internal supply failure
Temperature sensor failure
Pyro electric detector 1 failure
Pyro electric detector 2 failure
Pyro electric detector 1 noisy
Pyro electric detector 2 noisy
Amplifier 1 gain too high
Amplifier 2 gain too high
Active Faults[40-40]
Instrument restarted (M)
Reserved
Reserved
Reserved
Reserved
Reserved
Reserved
Reserved
Ext dev status
Maintenance required
Device variable alert
Critical Power Failure
Device Diagnostic Status 0
Simulation active
Non-Volatile memory failure
Volatile memory error
Watchdog reset executed
Voltage conditions out of range
Environmental conditions out of ra...
Electronic failure
Device status
Primary variable out of limits
Non-primary variable out of limits
PV Analog Channel Saturated
PV Analog Channel Fixed
More status available
Cold start
Configuration changed
Field device malfunction
Gas Selection
Active Index
5
Active Gas Table
Butane
New Gas
Choose Gas
Accept Choose Gas Table
Configure/Setup
Device Diagnostics
Process Variables
Time:
Current
Send
Close
Help

The gas configuration function provides following features:

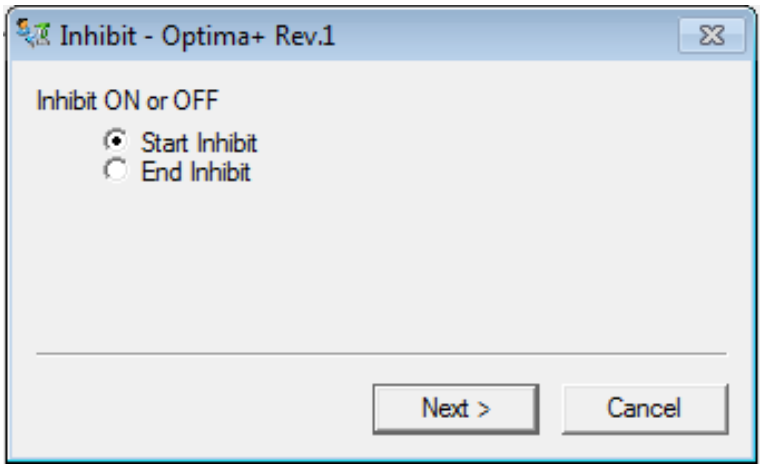
- Range Details (the upper and lower limits shall be entered here). The Range and options change according to Optima Plus:
  - PV URV (sensor's full scale value)
  - PV LRV (sensor's lower range value)
- Alarm Threshold Configuration (the upper and lower limits shall be entered here)
- Operating Mode (six operating modes are displayed in this area)
  - Healthy
  - Warning
  - Fault
  - Alarm
  - Inhibit
  - Forced
- Active Faults 0 - 40 (if any faults occur, they are displayed in the square adjacent)
- Ext dev status (the corresponding warning, fault or action is displayed here)
- Device Diagnostic Status 0 (data indicating that the device has detected conditions relating to its operating status, validity of variable and internal processes)
- Device Status (data indicating that the device has detected conditions relating to its hardware and external processes. Eight device statuses are displayed in this area)
- Gas Selection (the name of the gas will then be displayed here)
- Active Index (the gas calibration Index is displayed here)
- Active Gas Table (the name of the gas is displayed here)
- New gas (name of the new gas to be in use)
- Choose gas Button (the options in the dropdown box are:
  - First gas
  - Last gas
  - Next gas
  - Previous gas
- Accept Choose Gas table (confirm the chosen gas)

5.2.2 Test

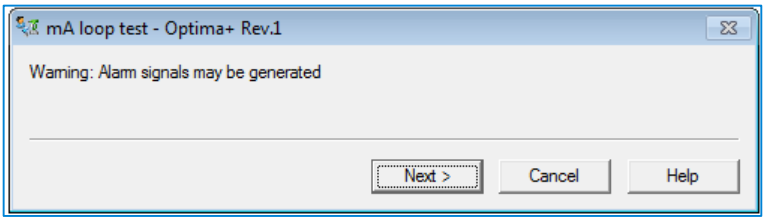
Other important item in "Device Setup" is "Test". The test function is available for the security level 1 and 2 and provides following features:



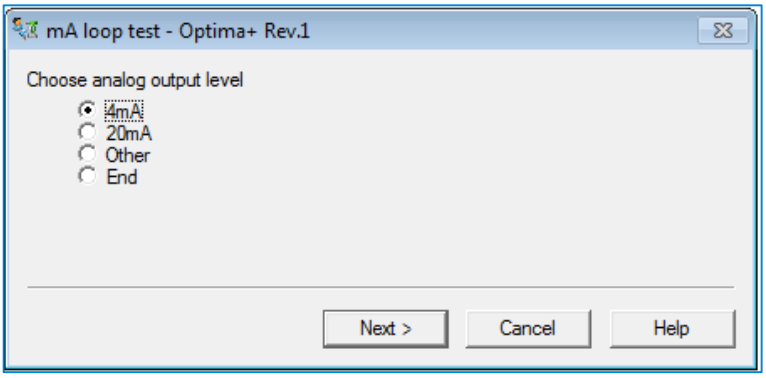
- Inhibit Device Button (this allows the functioning of the Optima Plus to be tested without creating an external alarm):
  - Start Inhibit
  - End Inhibit



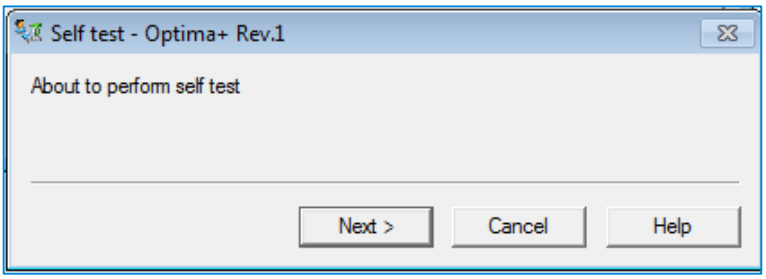
- mA loop Test Button (a test will be started to check the connections and cabling):



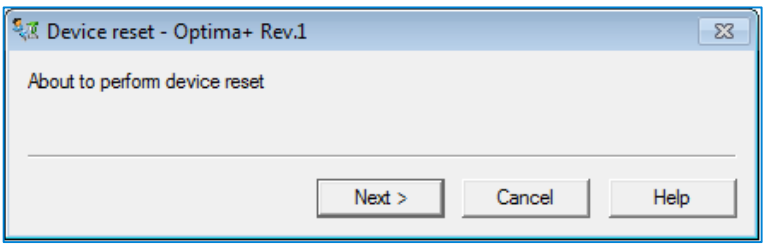
  - The analog output shall be chosen:



- Self Test (this action instructs the unit to complete a self test cycle):

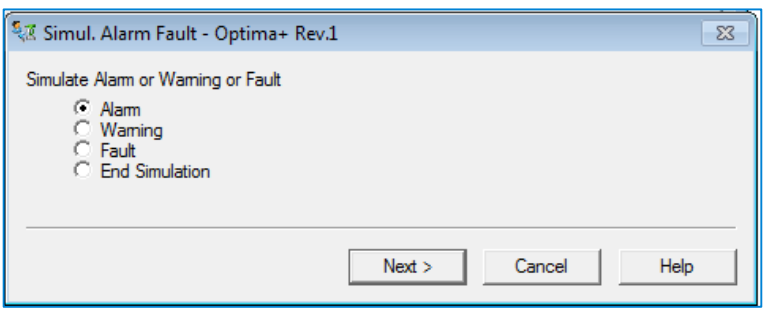


  - After clicking “Next”, a “Performing Test” and then a “Self Test ok” window will appear.
- Device Reset Button (selecting this option forces the unit to reboot):



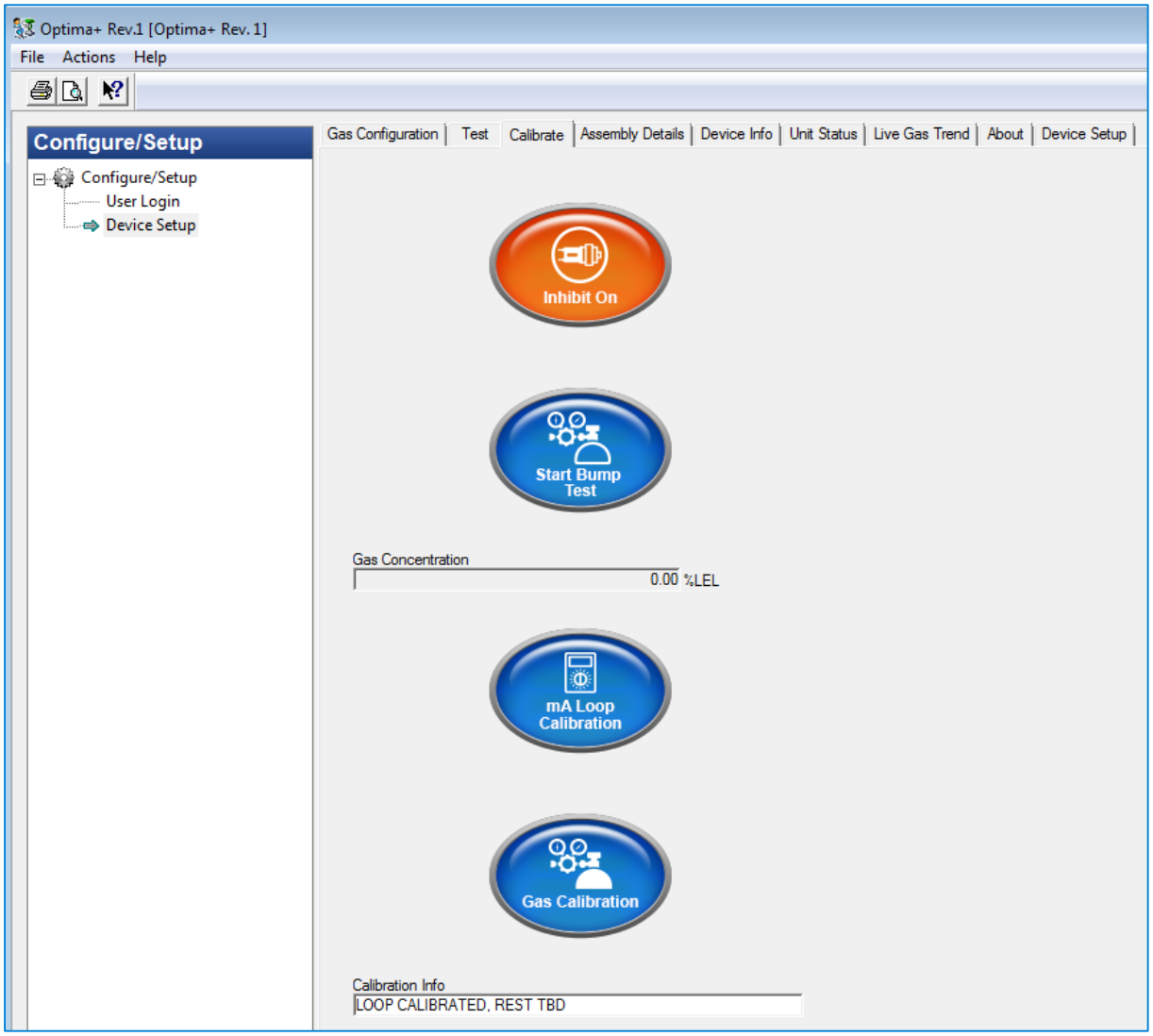
  - After clicking “Next”, a “Device Reset ok” and then a “Device will return to normal operation” window will appear.

- Simulation Alarm/Fault Button (alarms and faults can be simulated to verify that the sensors are operating properly without requiring conditions that trigger actual alarms or faults. A simulation, in effect, forces a sensor into inhibit mode. Simulations can be accomplished either at the sensors with an appropriate test gas or remotely through the EDD. The EDD display responds just as it would with a real alarm or fault). The possible test simulations are Alarm, Warning, Fault. To end simulation, choose “End Simulation”:



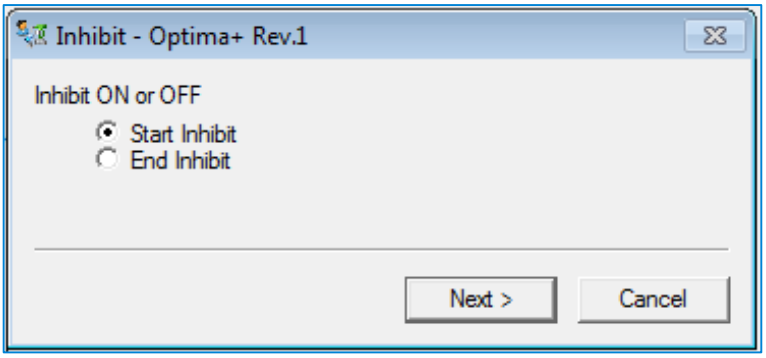
5.2.3 Calibrate

Other important item in the “Device Setup” is “Calibrate”. It is available for the security level 1 and 2:

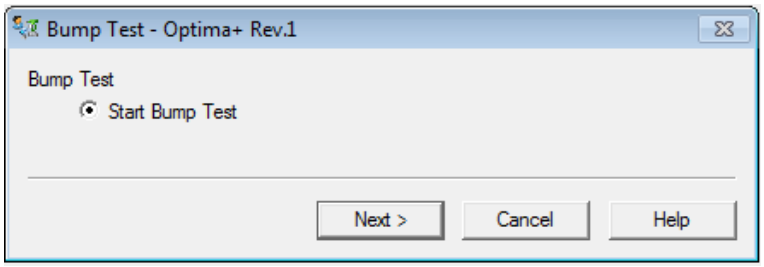


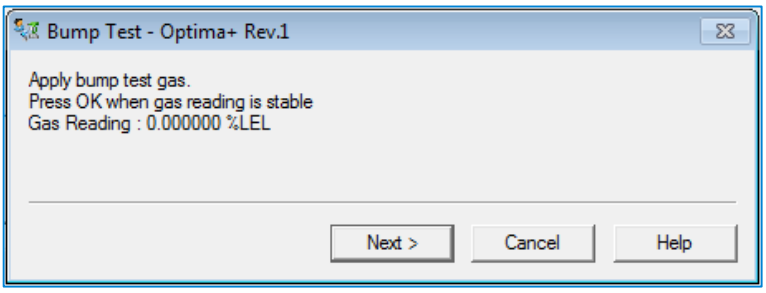
The calibration function provides following features:

- Inhibit On/Off Button (this allows the functioning of the Optima Plus to be tested without creating an external alarm)

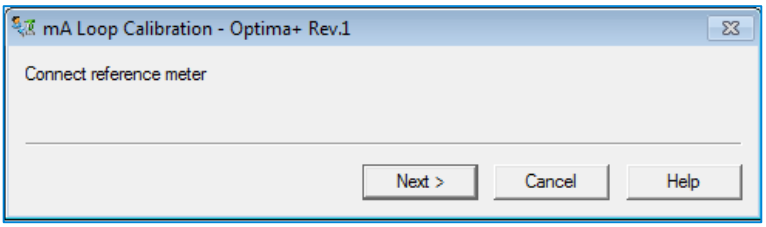


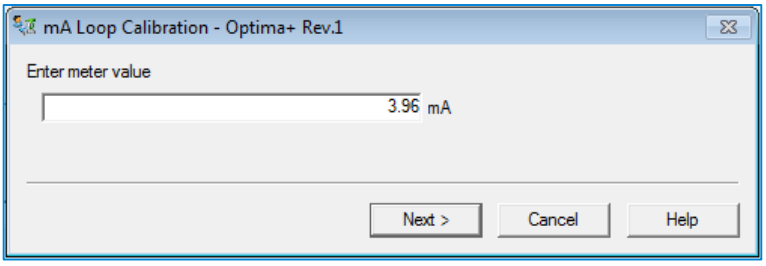
- Start Bump Test button (pressing this button will allow functional response checks to be initiated, then please click next)



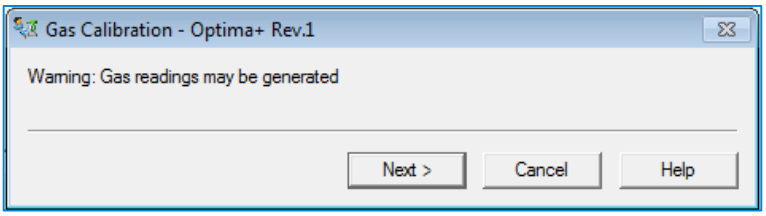


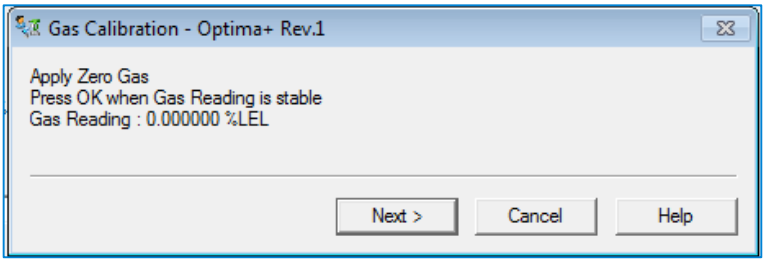
- Gas Concentration (the gas concentration is based on the current configurations)
- mA loop Calibration Button (pressing this button will allow the milliamp output parameters to be changed from the factory settings):



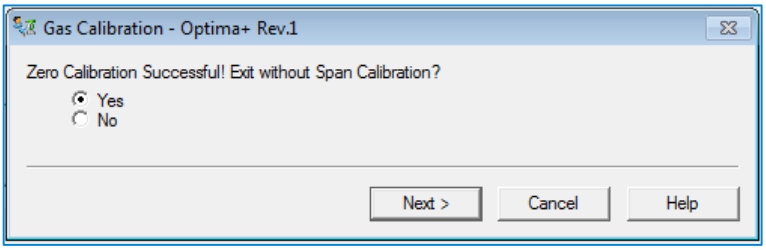


- Gas Calibration Button (pressing this button will allow the gas calibration procedure to be initiated, then please click next)

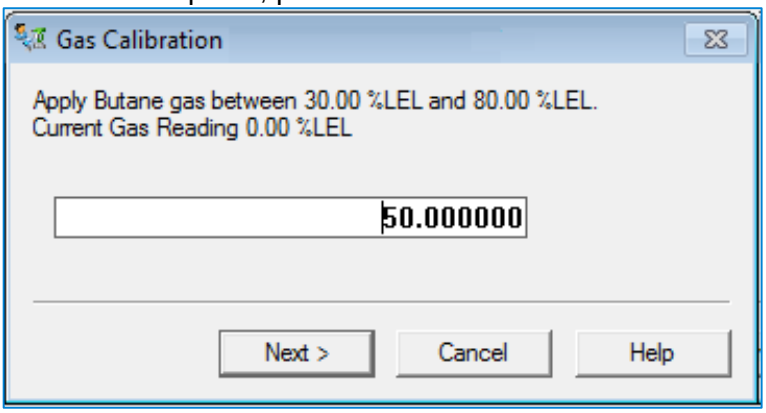


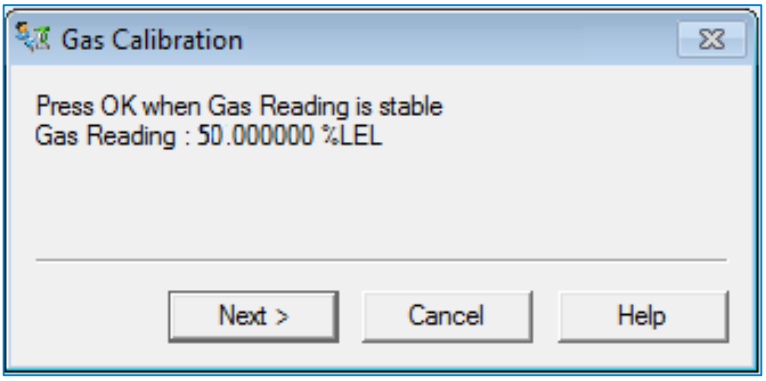


- Choose span calibration if required



- If span calibration required, proceed follow the next instructions:

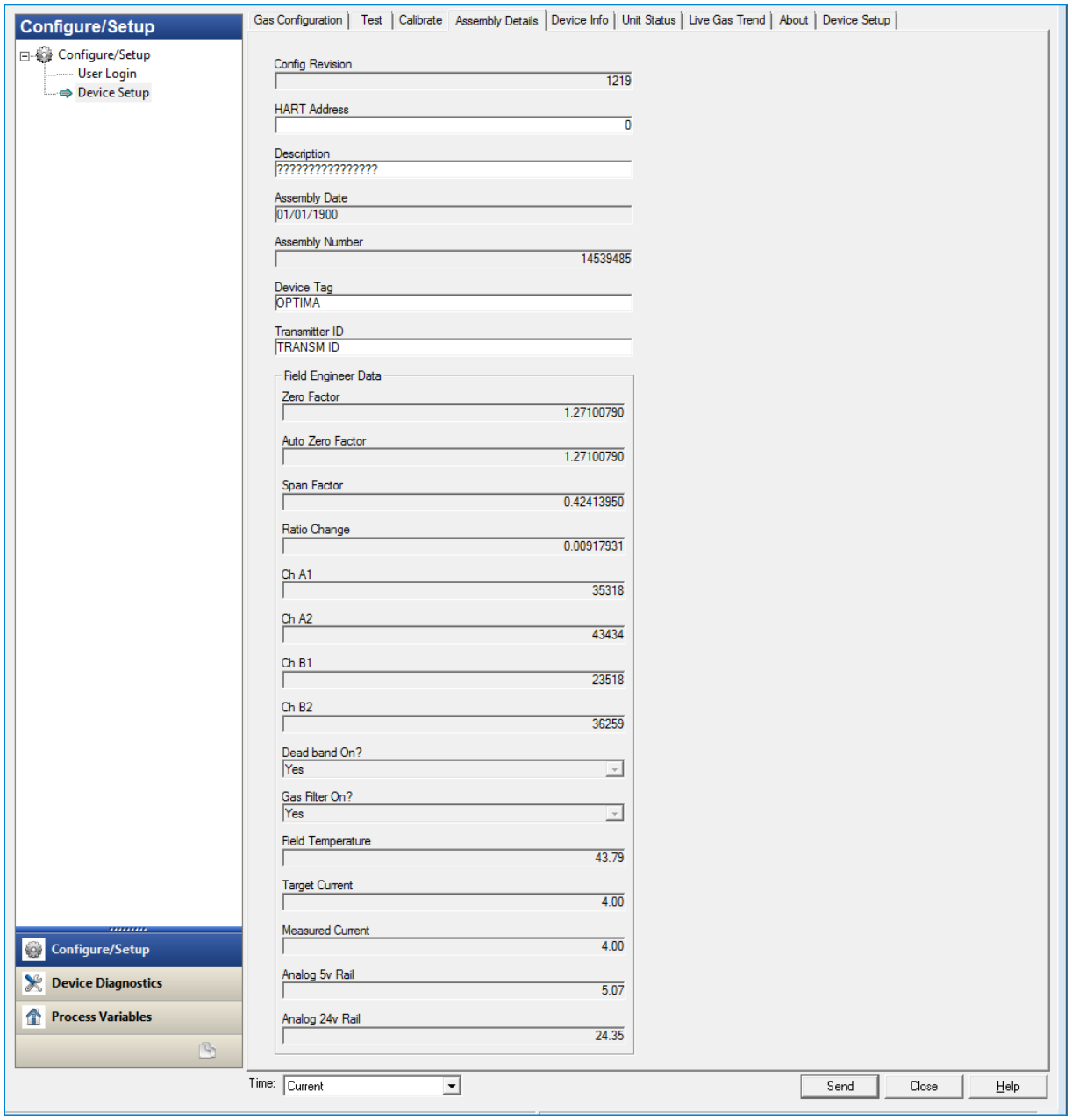




- Calibration Info (information regarding the current calibration state is displayed here)

5.2.4 Assembly Details

The “Assembly Details” is available for the security level 1 and 2 and contains following information:



- Config Revision (provides information about the configuration version number)
- HART Address (defines the protocol address of the unit when connected into a multi-drop digital network, used only in specialist applications)
- Description (a user-configurable space, typical used to display such information as the location of the sensor)
- Assembly Date
- Assembly Number (a manufacturer's reference number)
- Device Tag (a user-configurable space, typical used to display the equipment type)
- Transmitter ID (this can be set if a long tag is used for HART addressing)

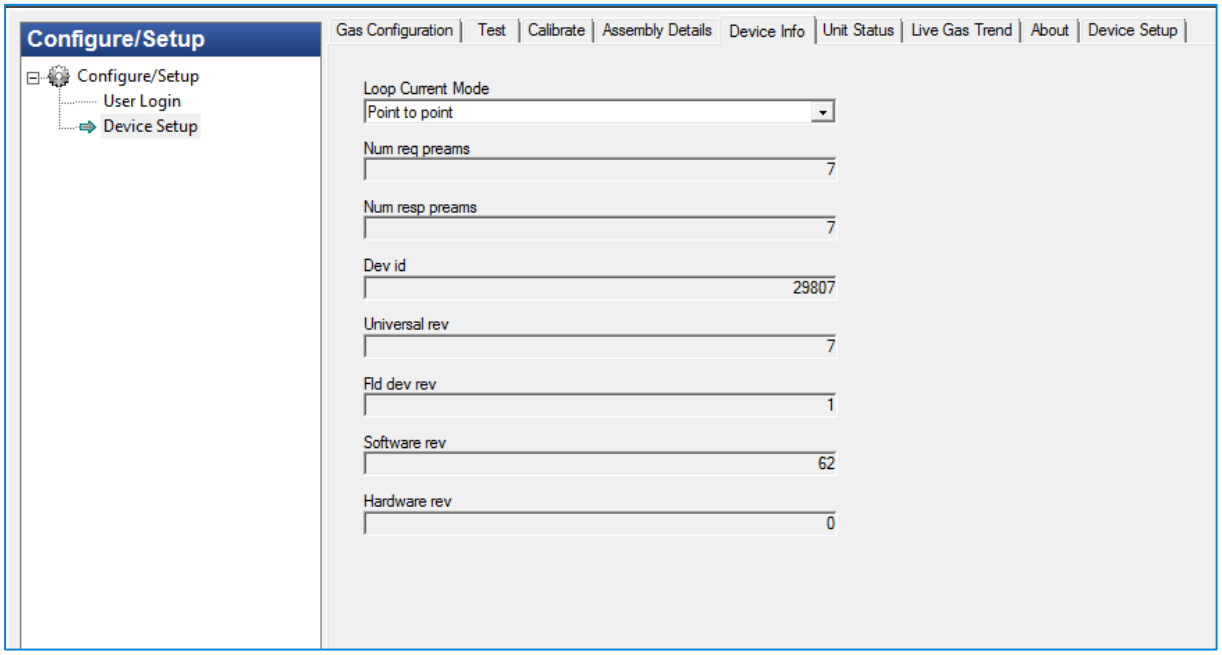
Information only for security level 2, Honeywell Field Engineers:

- Zero Factor
- Span Factor
- Ratio Change
- Ch A1
- Ch A2

- Ch B1
- Ch B2
- Dead band On (yes/no)
- Gas Filter On (yes/no)
- Field Temperature (device temperature)
- Target Current (reference current value)
- Measured current (measured current value)
- Analog 5v Rail

5.2.5 Device Info

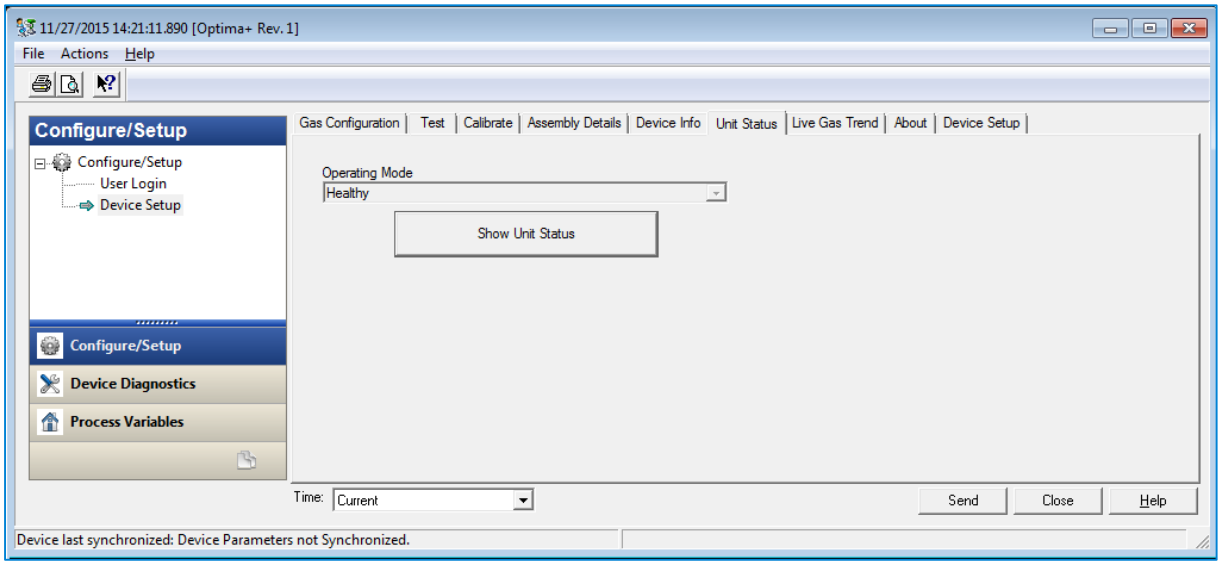
The “Device Info” item is available for the security level 1 and 2 and provides information about the HART settings:



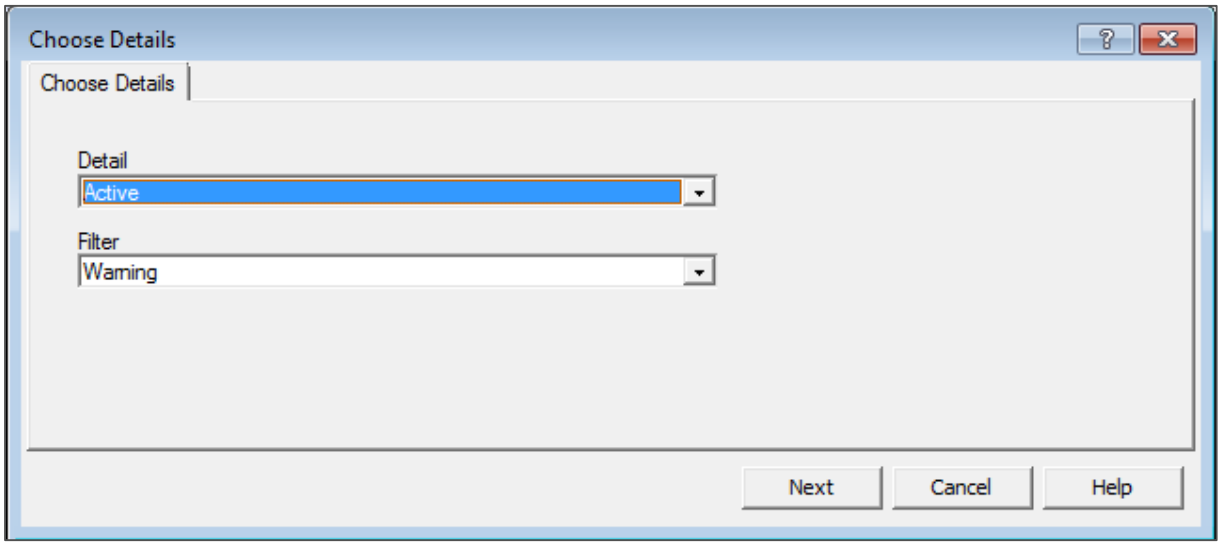
- Loop current mode (the options are available “Multi drop” and “Point to point”)
- Num req preams (Number of request preambles required from the host request by the field device)
- Num resp preams (Number of preambles to be send in the response message from the field device to the host)
- Device ID (a manufacturer’s reference number)
- Universal Rev (a manufacturer’s reference number)
- Fld Dev Rev (Field device revision number)
- Software Rev (displays the current Optima Plus software revision number)
- Hardware Rev (revision of hardware)

5.2.6 Unit Status

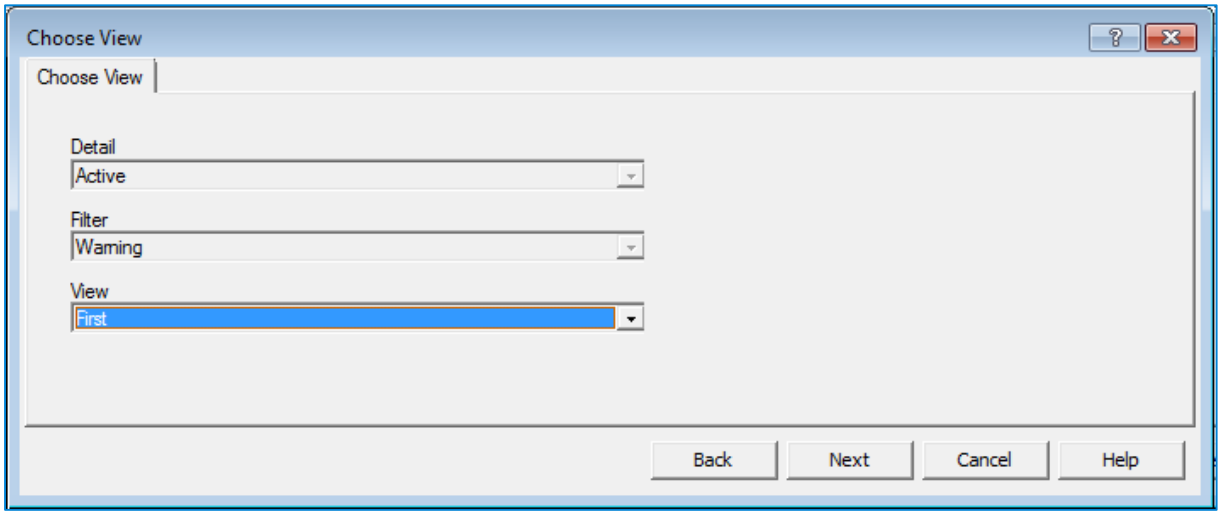
In the “Unit Status”, all faults, warnings, and history are captured:



- Operating Mode (six operating modes are displayed in this area)
  - Healthy
  - Warning
  - Fault
  - Alarm
  - Inhibit
  - Forced
- Show Unit Status Button (status filtering options are shown here)
- Choose Details
  - Detail (Active, Event History and Latched for Level 2 only)
  - Filter (the filtering options are warning, fault)



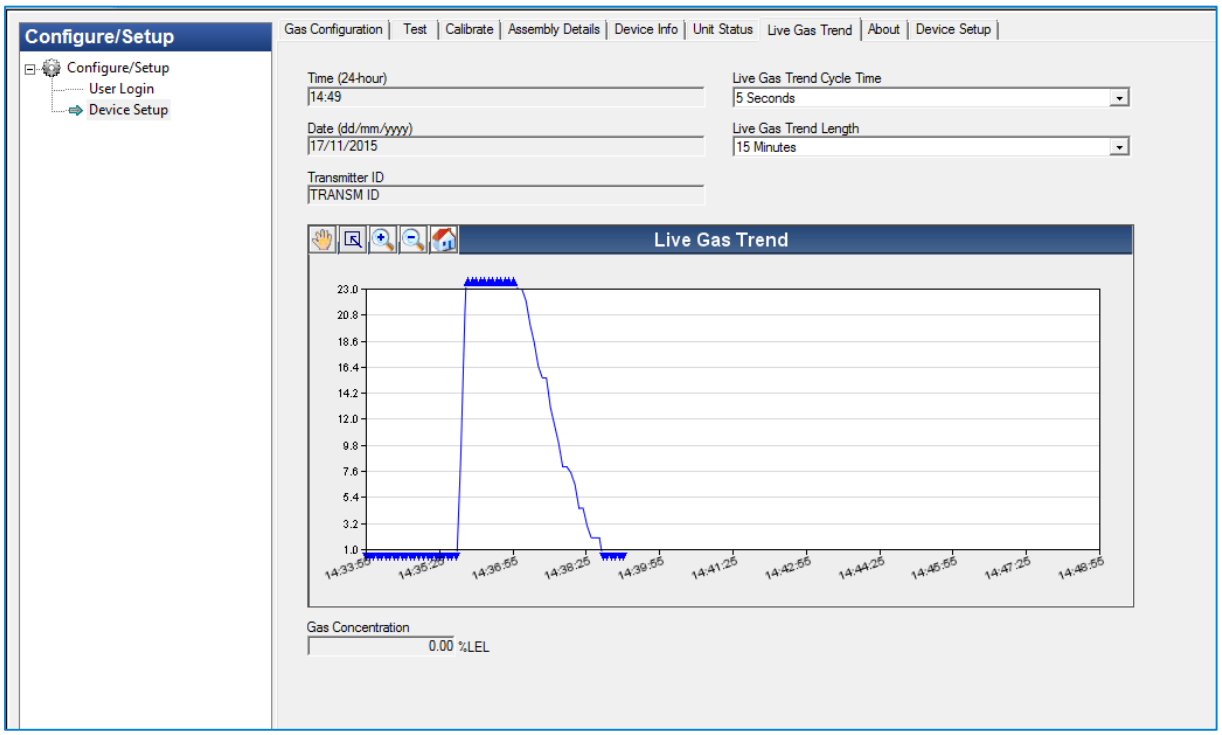
- Choose View
  - Detail (Active, Event History and Latched for Level 2 only)
  - View (filters events beginning with the most recent or the oldest)



5.2.7 Live Gas Trend

The “Live Gas Trend” tab displays the chart and other relevant information.

In the Live Gas Trend chart is tracked the gas concentration (in blue). The sampling interval displayed in the chart can be up to one hour.



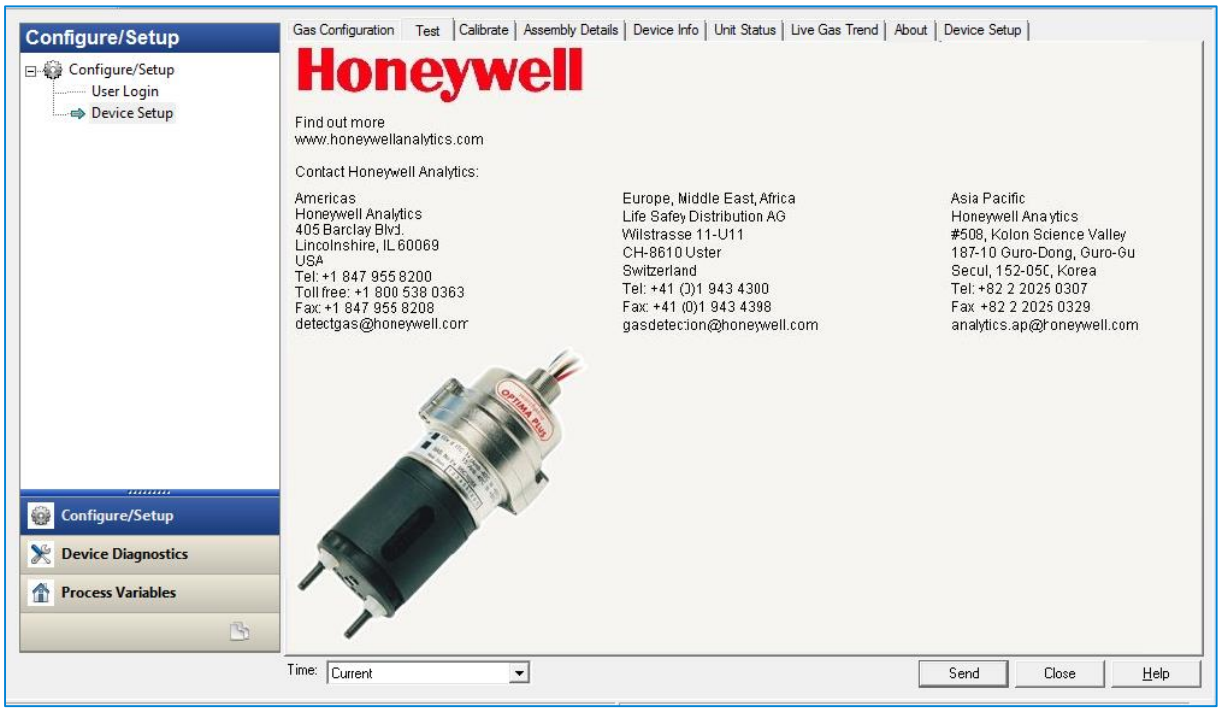
- Time (current time, time format is HH:MM)
- Date (current date, date format is DD/MM/YY)
- Transmitter ID (this can be set if a long tag is used for HART addressing)
- Live Gas Trend Cycle Time (The desired cycle time can be selected from the dropdown box)
- Live Gas Trend Length (the time of the display shown at one time is entered in this space)

- Live Gas Trend (chart, source, variables and values for X and Y-Axis) with the following icons from left to right:

  - Plan (allows the chart to be moved to the left or the right)
  - Area zoom (used to examine a section of the chart)
  - Zoom in (used to view a smaller section of the chart)
  - Zoom out (used to view a larger section of the chart)
  - Reset (return to the original display)
- Gas concentration (the gas concentration is displayed in this space)

5.2.8 About

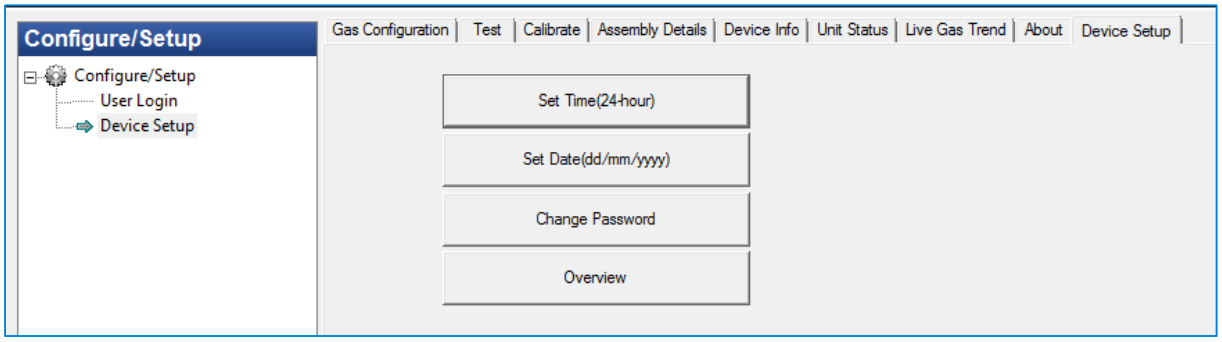
The following information is displayed in the “About” tab:



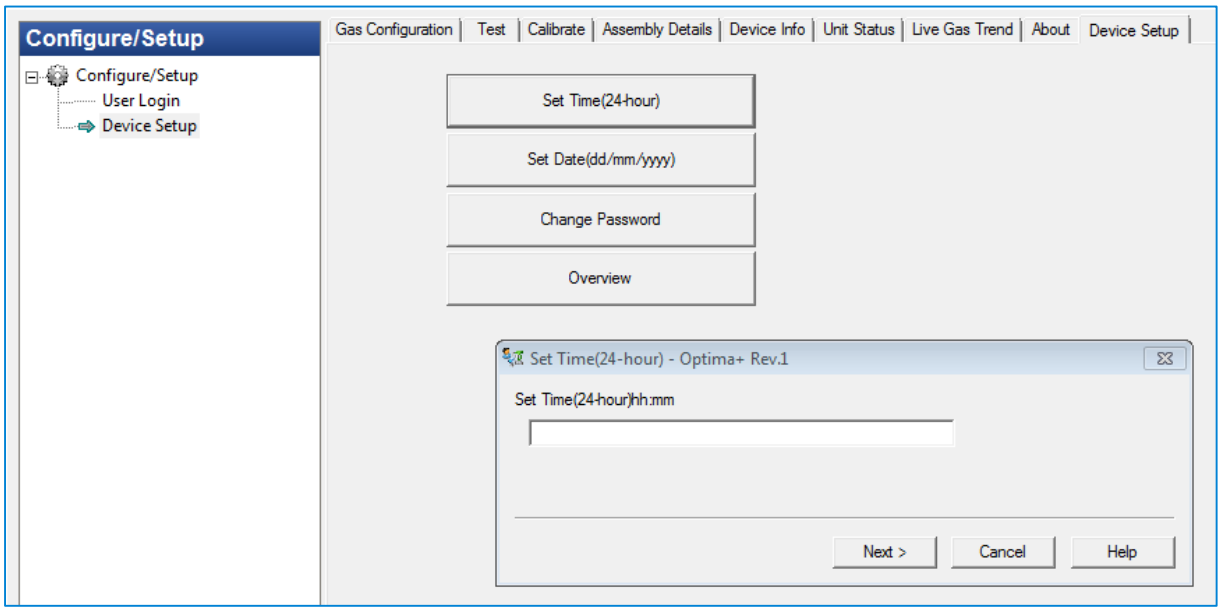
The About tab displays the URL of the Honeywell Analytics website and contact information for our headquarters in North America, South America, Europe, the Middle East, Africa, and the Asia Pacific region.

5.2.9 Device Setup

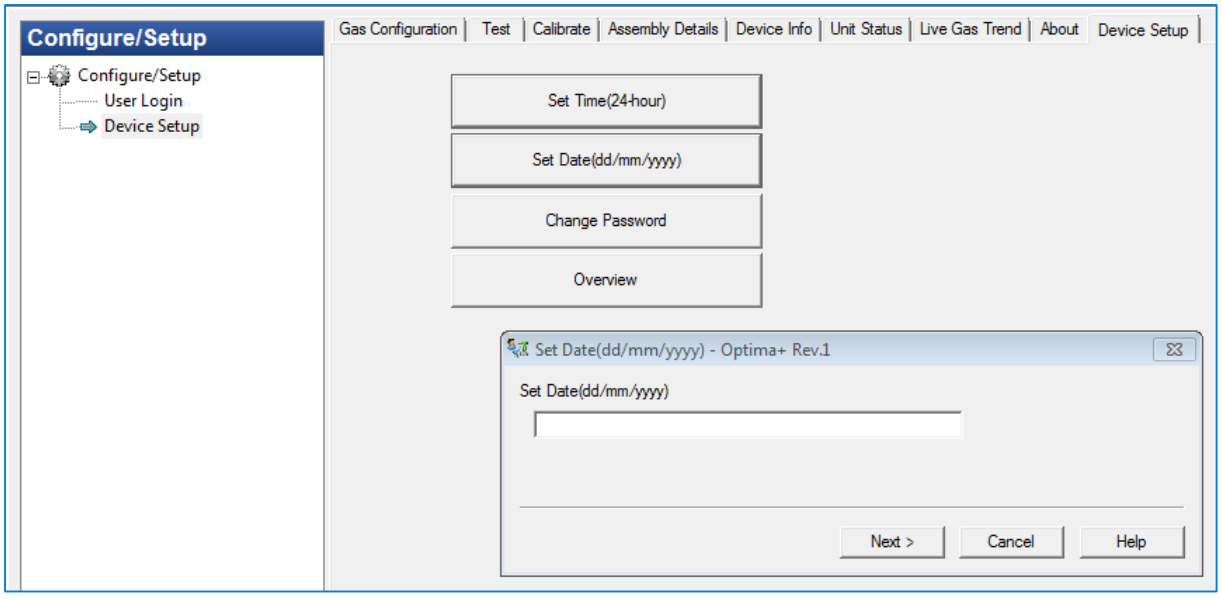
The “Device Setup” function offers real time information about the basic settings and current status of the device:



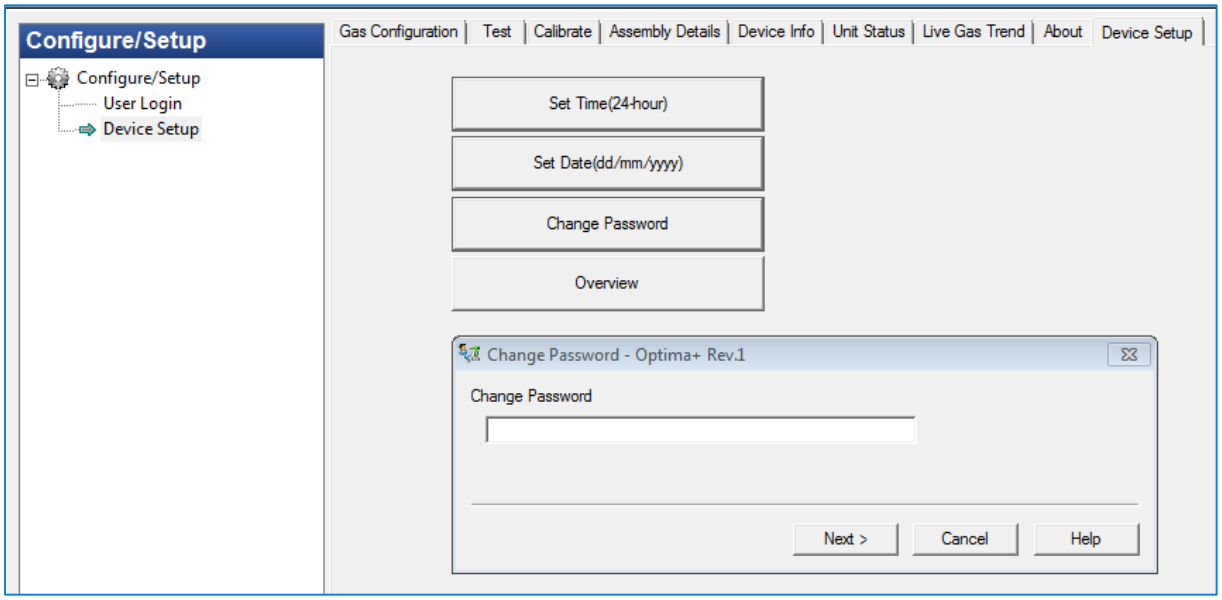
- Set Time (current time, time format is HH:MM), visible for security level 1 and 2



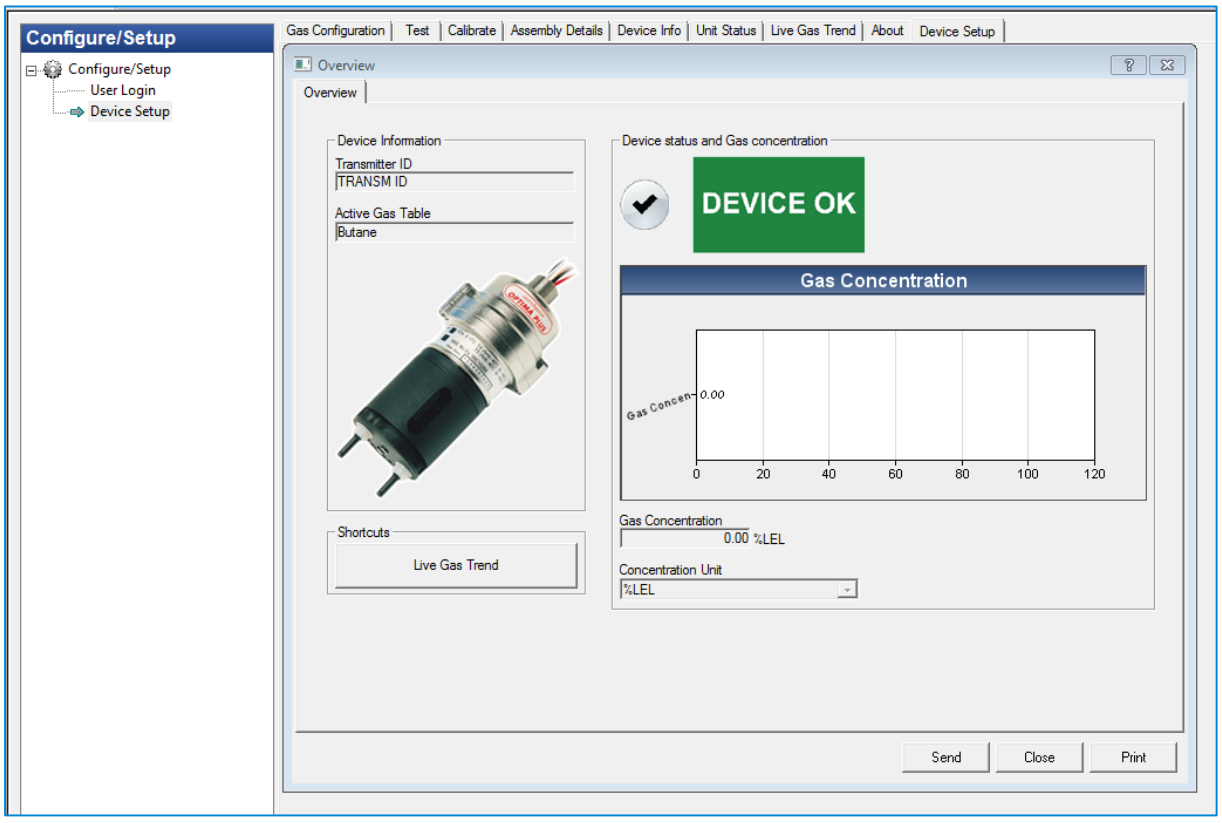
- Set Date (current date, date format is DD/MM/YY) visible for security level 1 and 2



- Change Password (set new access code) visible for security level 1



- Overview gives information about the current status of the device:



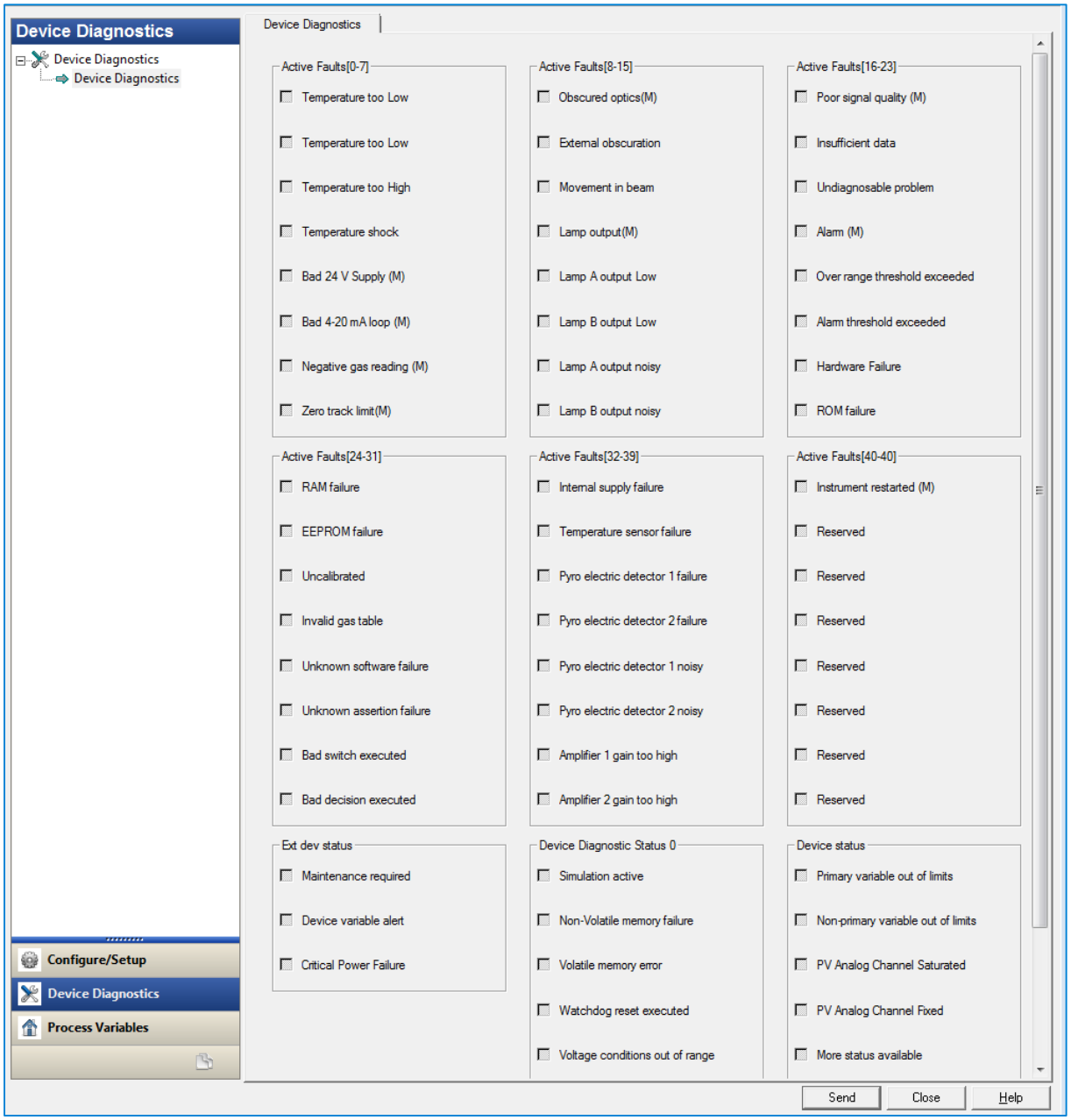
- Transmitter ID (the serial number of the Optima Plus)
- Active Gas Table (the target gas)
- Photograph (a typical transmitter/sensor system is displayed, representing the specified)
- Shortcuts (the button will immediately display the Live Gas Trend screen)
- Live Gas Trend Button (goes to the chart described in §5.2.7)
- Device status display. The following state of the Optima Plus in order of increasing severity can be shown in this area:

Status	Symbol
Device OK	
Warning	
Fault	
Alarm	

- Gas concentration trend (a trend of the measured concentration is displayed)
- Gas concentration (the gas concentration is based on the current configurations)
- Concentration unit (the concentration units are, for example, Vol %, LEL*Meters, or PPM)

5.3 Device Diagnostics

“Device Diagnostics” function group offers information for maintenance engineers regarding the faults, warnings, alarms, etc:

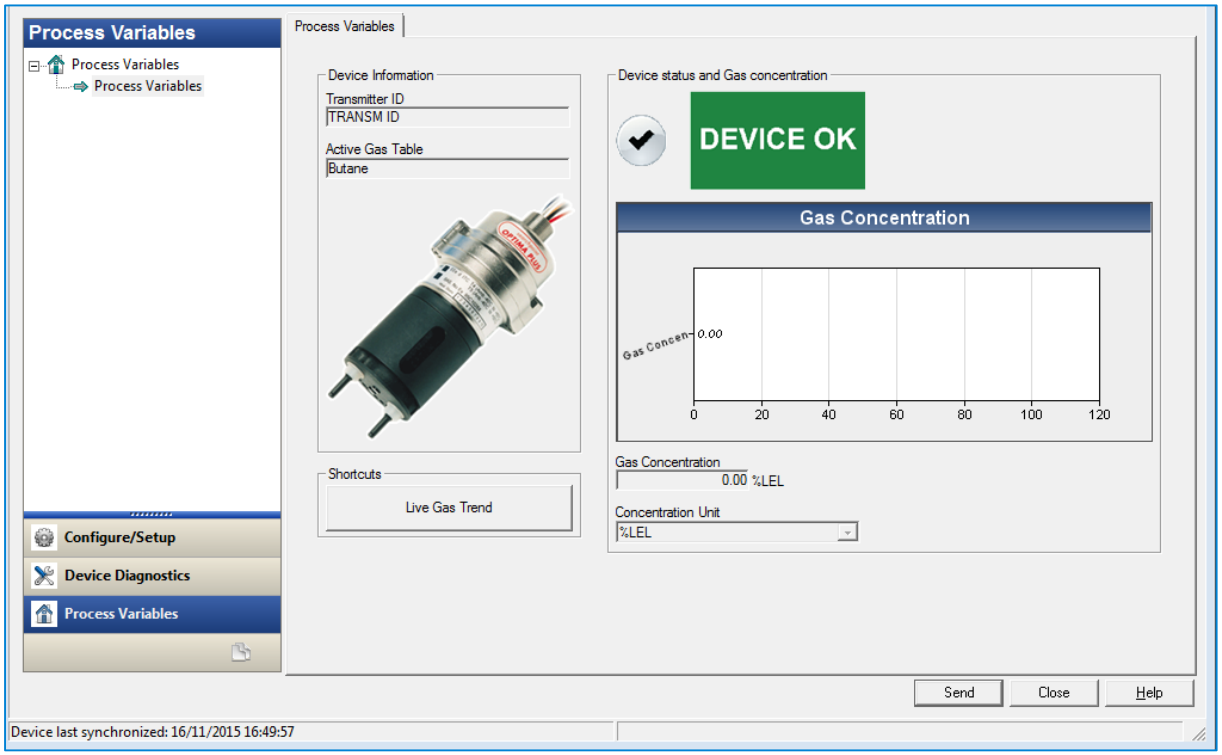


- Active Faults 0 – 7 (if any of the 8 faults occur, they are displayed in the square adjacent)
- Active Faults 24 – 31 (if any of the 8 faults occur, they are displayed in the square adjacent)
- Ext dev status (the corresponding warning, fault or action is displayed here)
- Active Faults 8 – 15 (if any of the 8 faults occur, they are displayed in the square adjacent)
- Active Faults 32 – 39 (if any of the 8 faults occur, they are displayed in the square adjacent)
- Device Diagnostic Status 0 (data indicating that the device has detected conditions relating to its operating status, validity of variable and internal processes)
- Active Faults 16 – 23 (if any of the 8 faults occur, they are displayed in the square adjacent)
- Active Faults 40 – 40 (if any faults occur, they are displayed in the square adjacent)

- Device Status (data indicating that the device has detected conditions relating to its hardware, validity of variable, operating status and internal processes. Eight device statuses are displayed in this area)

5.4 Process Variables

"Process Variables" function group gives information about the current status of the device (as described also in 5.2.9):



- Transmitter ID (the serial number of the Optima Plus)
- Active Gas Table (the target gas)
- Photograph (a typical transmitter/sensor system is displayed, representing the specified)
- Shortcuts (the button will immediately display the Live Gas Trend screen)
- Live Gas Trend Button (goes to the chart described in §5.2.7)
- Device status display. The following state of the Optima Plus in order of increasing severity can be shown in this area:

Status	Symbol
Device OK	DEVICE OK
Warning	WARNING
Fault	FAULT
Alarm	ALARM

- Gas concentration trend (a trend of the measured concentration is displayed)
- Gas concentration (the gas concentration is based on the current configurations)
- Concentration unit (the concentration units are, for example, Vol %, LEL*Meters, or PPM)

Find out more at www.honeywellanalytics.com

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