



sc200 / sc1000 Multi Sensor DTM

Short Instructions

April

2014





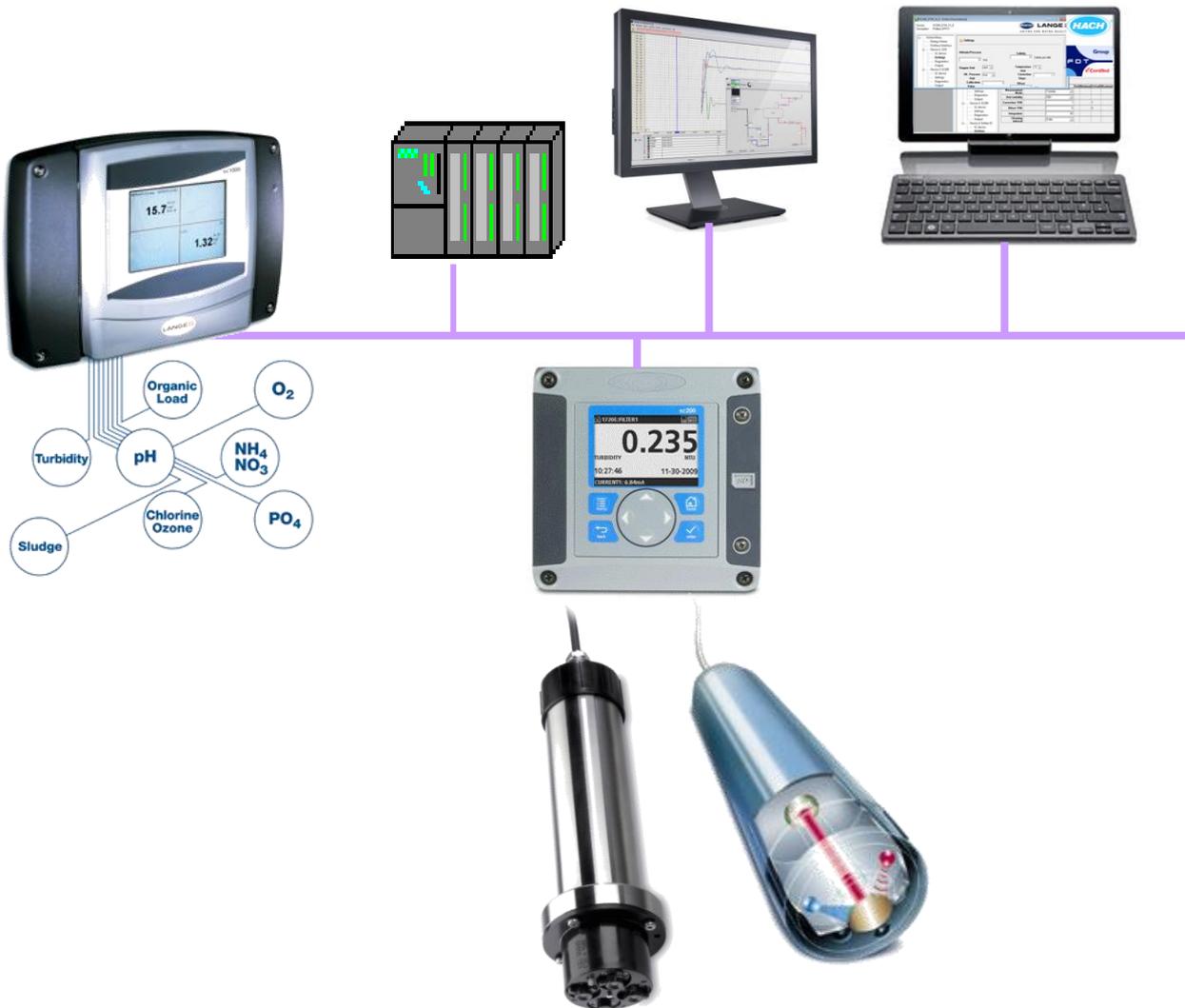
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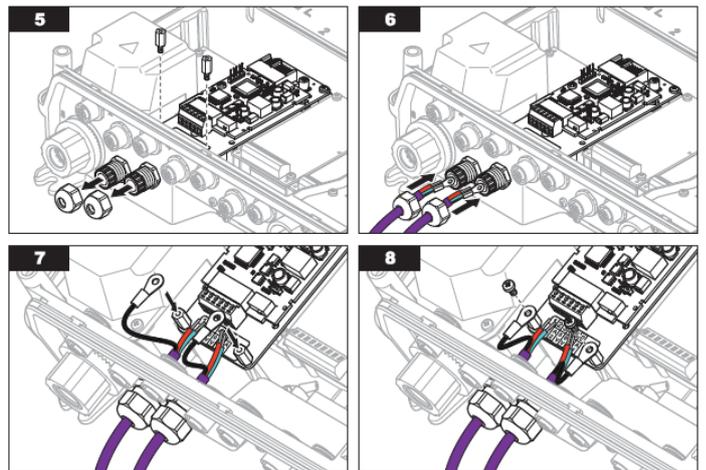
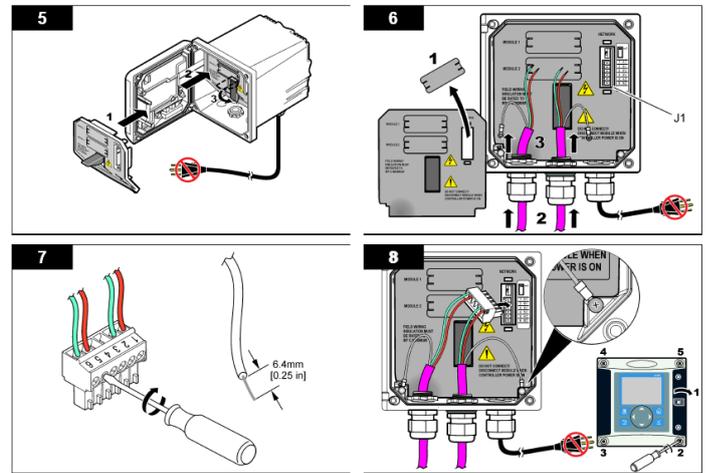
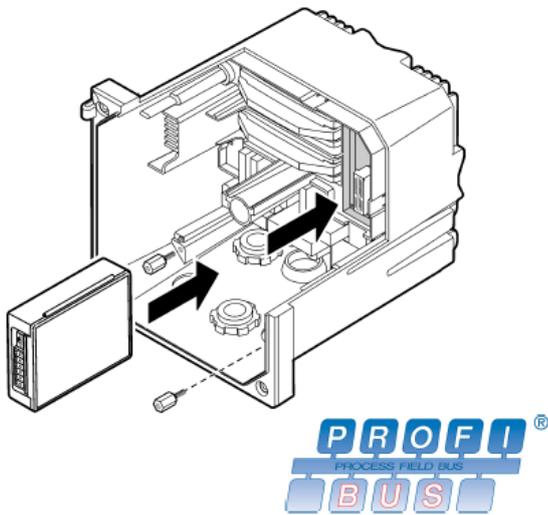
Introduction and Identification

The sc200 and sc1000 standard controller are part of the platform for all intelligent probes and analyzers from HACH / HACH-LANGE. The sc platform is a full digital communication system based on open standards. Equipped with the Profibus interface card, the sc200/sc1000 controller provides the complete range of values and parameters in a standardized method for up to two sensors (dual channel controller) and for up to 8 sensors (sc1000 multi channel controller). The modular structure allows using the same GSD file for all sensors and analyzer. Both controllers are PNO/PTO certified Profibus DP/V1 devices which allows the access from master class1 (PLC SCADA) and master class 2 systems e.g. FDT frame applications like PACTWare and other compatible FDT applications. The sc200 and sc1000 Multi Sensor DTM's are carefully tested and certified by the FDT group.



Requirements - SC Controller

1. **sc200** equipped with Profibus network card, standard versions could be upgraded for Profibus using article number **YAB102 (Profibus Upgrade Kit)**
2. **sc1000** equipped with Profibus network card YAB103, standard versions could be upgraded for Profibus using article number **YAB105 (Profibus Upgrade Kit)**
3. **GSD file HALA09AC.GSD** for general configuration



Note: Please reboot the controller after the first configuration and start up. Start-up takes approximately 60 seconds.



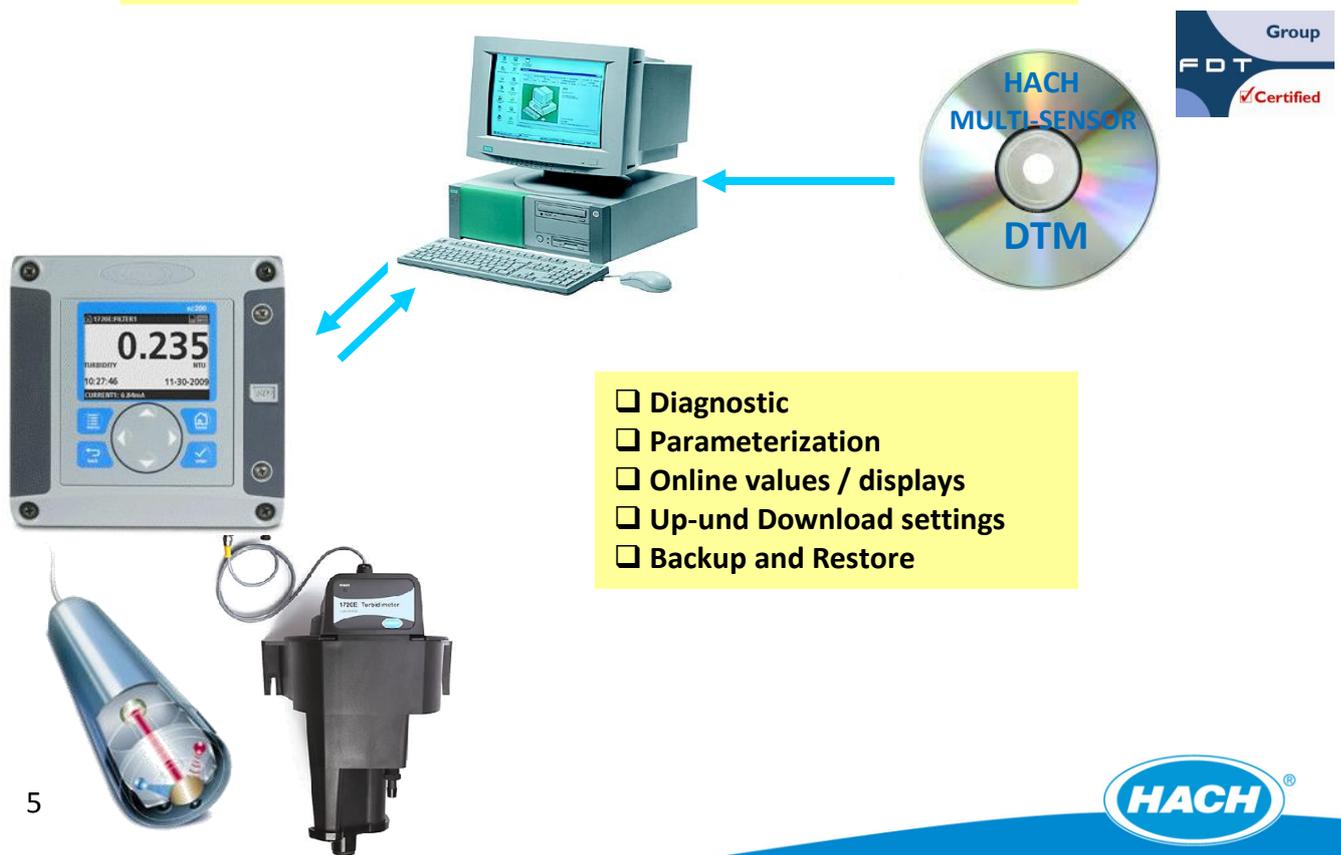
Operation Overview

The sc200 Dual Channel Controller equipped with Profibus provides all information from up to two sensors to the Profibus network. The sc1000 Multi Channel Controller equipped with Profibus provides all information for up to 8 sensors.

Only one universal DTM is required to operate two sensors plus the sc200 controller, up to 8 sensors with sc1000.

The SC-MULTI-SENSOR DTM enables the FDT operations and faceplates to run and operate the sc probes and analyzers. These files are used to describe the entire probe/sensor properties as well as the menus, online windows and the faceplate behavior.

FDT applications e.g. FieldCare or PACTware, need the “EDD View DTM” & SC_DTM installations to adapt the devices in detail

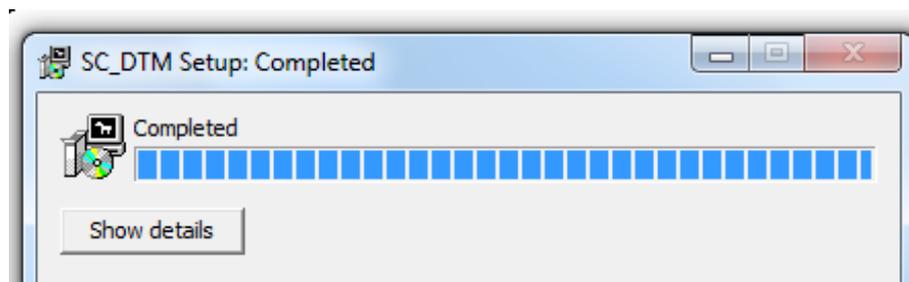
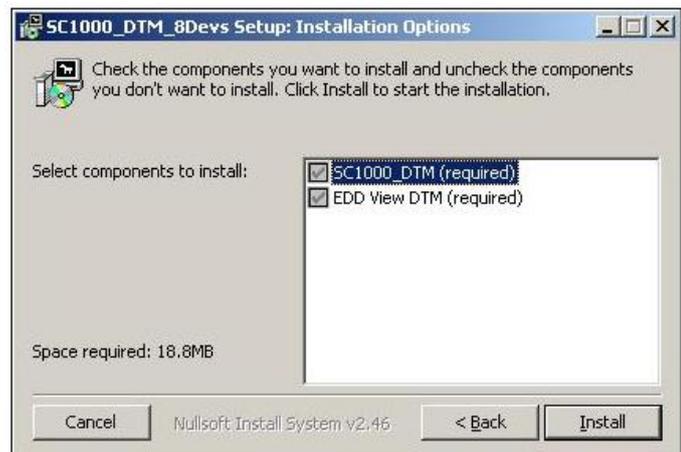




DTM Installation

Using the standard Microsoft Windows software installer

1. Download the MULTI-SENSOR DTM software installer from either hach.com or hach-lange.com. Search the site for DTM and choose the downloads option to find the download file sc1000 or sc200 Multi-Sensor DTM.
2. Extract the files to an easy to find location such as the desktop. Double click executable file and follow the installation dialog.



3. Now update the device catalog of your FDT frame application.



Sensors and Analyzers supported by the universal *SC_DTM*

All sensors and analyzers, as well as all combinations of sensors are supported with only one universal DTM.

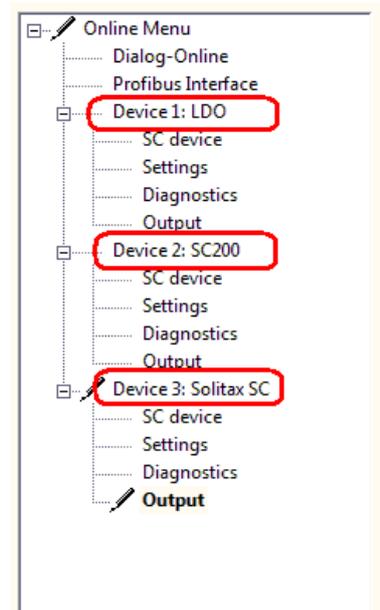
| Supported Sensors and Combinations | |
|------------------------------------|--|
| Device type | |
| Solitax sc | t-line, ts-line, inline, hs-line, highline Suspended Solids/Turbidity Sensor |
| 34xx | Contacting Conductivity Digital Gateway |
| 37xx | Inductive Conductivity Digital Gateway |
| 1720E sc | Turbidimeter |
| 9184sc | Hypochlorous Acid Chlorine Amperometric Sensor |
| 6120600 | Combination pH or ORP Digital Gateway |
| Ultraturb sc | Turbidimeter (<i>plus</i> and <i>seawater</i> versions) |
| Surface Scatter 7 sc | Turbidimeter |
| LDO sc | Dissolved Oxygen Sensor (LXV416.99.0xxx1 and 5790000x) |
| LDO sc Model 2 | Dissolved Oxygen Sensor (LXV416.99.2xxx1 and 9020000x) |
| pHD sc | Differential pH or ORP Sensor |
| NH4D sc | Ammonium ISE Sensor |
| NO3D sc | Nitrate ISE Sensor |
| AN-ISE sc | Ammonium and Nitrate Combination ISE Sensor |
| AISE sc | Ammonium ISE Sensor |
| NISE sc | Nitrate ISE Sensor |
| Amtax sc | Ammonia Analyzer |
| Phosphax sc | High Range Phosphate Analyzer |
| Phosphax sc | Low Range Phosphate Analyzer |
| sc200 | Universal Controller |
| 9012900 | sc200 Analog pH/ORP/Dissolved Oxygen Sensor Module |
| TSS sc | TriClamp, HT, VARI, Titanium2, Titanium7 Suspended Solids/Turbidity Sensor |
| UVAS sc | UV ₂₅₄ Absorbance/Transmittance Sensor (<i>plus</i> and <i>eco</i> versions) |
| Nitratax sc | Nitrate Analyzer (<i>plus</i> , <i>clear</i> , and <i>eco</i> versions) |
| 1200-S sc | Digital pH Sensor |
| ClF10 sc | Amperometric Free Chlorine Sensor |
| CLT10 sc | Amperometric Total Chlorine Sensor |
| FP360 sc | Oil-In-Water Sensor |
| Sonatax sc | Sludge Level Sensor |



DTM Structure Overview

Sensor DTM's are all structured in the same manner for offline and online windows. The sc200 DTM shows 3 devices, the sc100 DTM up to 8 devices.

- ❑ **Dialog:** Online identification and selection of the connected probes. Click Reset and Read to accept new sensor configurations.
- ❑ **Profibus Interface** Identification of the DP/V1 Profibus interface card.
- ❑ **Device 1: Type of sensor first channel.**
- ❑ **SC device** Identification, Device ID, Serial number and sensor name of the first sensor/channel
- ❑ **Settings:** All settings from the first sensor. The white background color indicates that the entry is writeable. Opening the faceplate in MAINTENANCE mode allows only the read access; write access is available using the "SPECIALIST" mode.
- ❑ **Diagnostics:** Diagnostic data derived from the first sensor.
- ❑ **Output (Measurement Values)** All output values derived from the first sensor.
- ❑ **Device 2: sc200 controller**
- ❑ **SC device** Identification, Serial number, and Tag name of the sc200 controller.
- ❑ **Settings:** All settings regarding mathematical sc200 operations.
- ❑ **Diagnostics:** Diagnostic data derived from the sc200 like int. temperatures, voltages, and current consumption.
- ❑ **Output** Current output and calculated value derived from the sc200 controller.
- ❑ **Device 3: Type of sensor second channel.**
- ❑ **SC device** Identification, Device ID, Serial number and sensor name of the second sensor/channel
- ❑ **Settings:** All settings from the second sensor. The white background color indicates that the entry is writeable. Opening the faceplate in MAINTENANCE mode allows only the read access; write access is available using the "SPECIALIST" mode.
- ❑ **Diagnostics:** Diagnostic data derived from the second sensor.
- ❑ **Output (Measurement Values)** All output values derived from the second sensor.

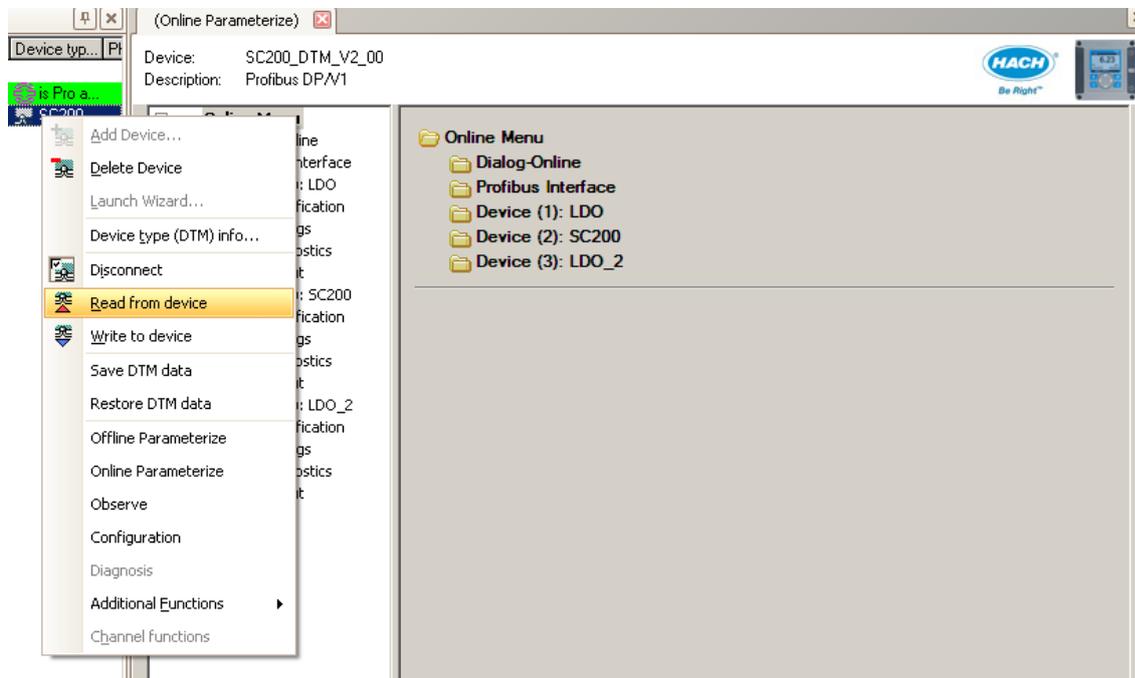
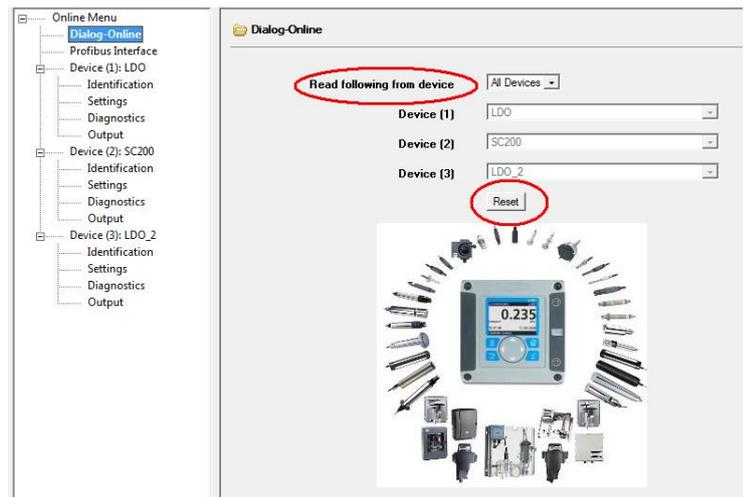




Online Identification of connected devices

Due to the generic structure of the Multi Sensor DTM, identification and recognition of the connected sensor configuration always require a initial “READ DATA FROM DEVICE”

Use the “Dialog Online” option to change or accept new sensor configurations.





Menu Identification

The worldwide unique identification for all sc devices is a combined key using the serial number and the device ID (type of sensor). These parameters are write protected.

Customizing sensors and sc200 ID's is made by assigning the Tag Name to the location, which is a Read/Write parameter available for each individual device.

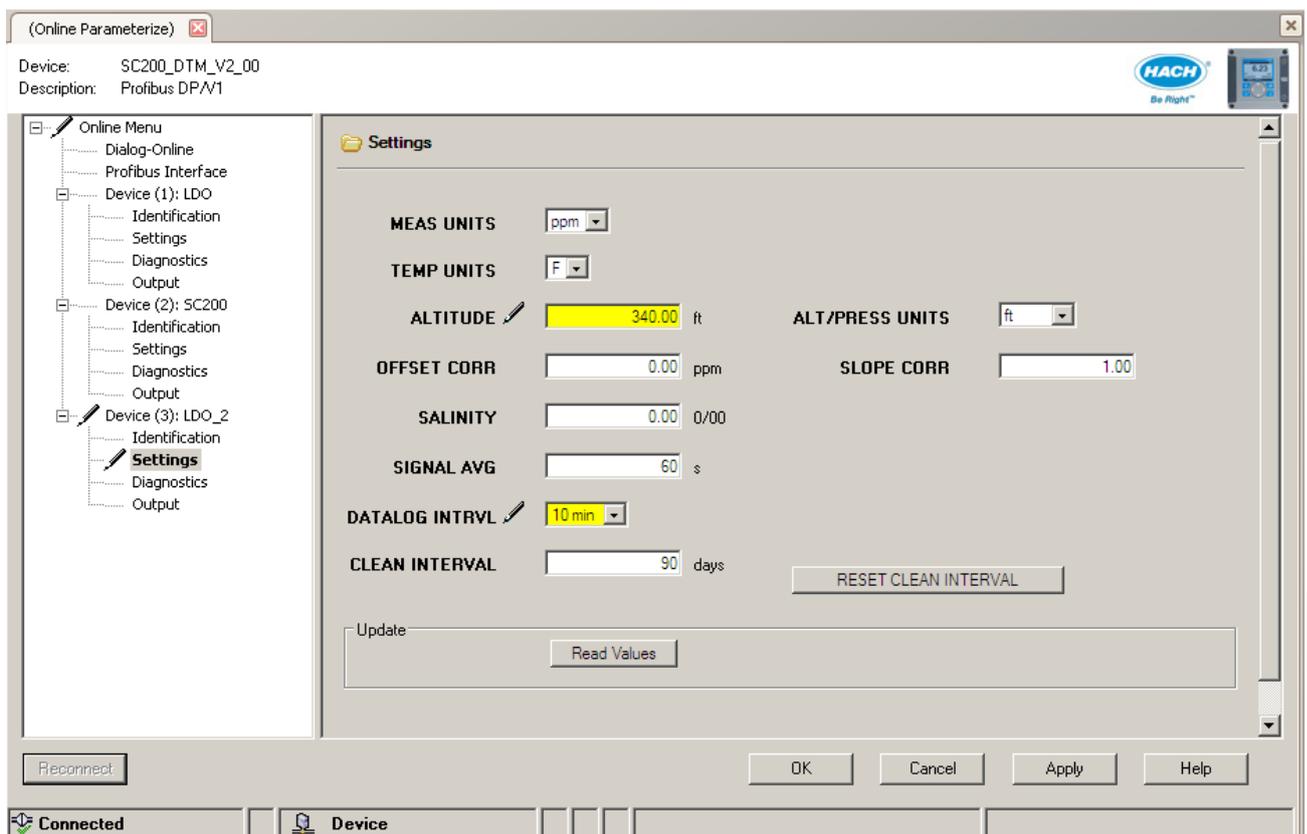
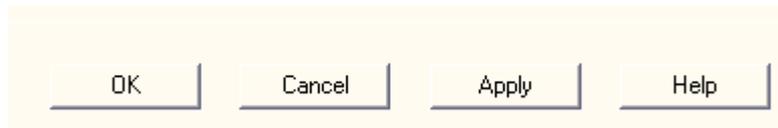




Menu Settings

Set up menus are related to the kind of sensor (Device ID). Due to the digital smart design of the sc sensor platform, default settings stored inside the intelligent sensors may fit to most applications.

The “Settings” menu provides access to all sensor related set up parameters in online and offline mode. All settings could be uploaded from the device or downloaded to the device using the “Apply” button. The complete configuration could be stored at the PC.





Menu Diagnostics

Diagnostic menus are related to the kind of sensor (Device ID). The definition of Error and Status indications are the same for all sc sensors and analyzers.

| | |
|--------------|------------|
| Error/Status | |
| S T A T U S: | E R R O R: |
| -OK- | -No Error- |

List of error and status messages related to sensors and analyzers:

Table 9 Error messages

| Message | Indication |
|----------------------------------|---|
| Measurement calibration error | An error has occurred during the last calibration |
| Electronic adjustment error | An error has occurred during the last electronic calibration |
| Cleaning error | The last cleaning cycle failed |
| Measuring module error | A failure has been detected in the Measurement Module |
| System re-initialization error | Some settings are inconsistent and have been reset to factory defaults |
| Hardware error | A general hardware error has been detected |
| Internal communication error | A communication failure within the device has been detected |
| Humidity error | Excessive humidity has been detected within the device |
| Temperature error | Temperature within the device exceeds a specified limit |
| Sample warning | Some action is required with the sample system |
| Questionable calibration warning | The last calibration may not be accurate |
| Questionable measurement warning | One or more of the device measurements are out of range or are of questionable accuracy |
| Safety warning | A condition has been detected which may result in a safety hazard |
| Reagent warning | The reagent system requires attention |
| Maintenance required warning | The device requires maintenance |

Table 10 Status indicator messages

| Status 1 | Note |
|----------------------------|--|
| Calibration in progress | The device is in a calibration mode. Measurements may not be valid. |
| Cleaning in progress | The device is in a cleaning mode. Measurements may not be valid. |
| Service / Maintenance menu | The device is in a service or maintenance mode. Measurements may not be valid. |
| Common error | The device has recognized an error. See Error Register for Error Class. |
| Measurement 0 Quality Bad | Precision of measurement is out of specified limits. |
| Measurement 0 Low Limit | Measurement is below the specified range. |
| Measurement 0 High Limit | Measurement is above the specified range. |
| Measurement 1 Quality Bad | Precision of measurement is out of the specified limits. |
| Measurement 1 Low Limit | Measurement is below the specified range. |
| Measurement 1 High Limit | Measurement is above the specified range. |
| Measurement 2 Quality Bad | Precision of measurement is out of the specified limits. |
| Measurement 2 Low Limit | Measurement is below the specified range. |
| Measurement 2 High Limit | Measurement is above the specified range. |
| Measurement 3 Quality Bad | Precision of measurement is out of the specified limits. |
| Measurement 3 Low Limit | Measurement is below the specified range. |
| Measurement 3 High Limit | Measurement is above the specified range. |



Menu Outputs

Output menus are designed to support a dynamic measurement monitor, displaying the measurements, units, and status information, which are updated periodically.

The screenshot shows the 'Output' menu for a device. The 'Measurement Mode' is set to 'Turbidity'. The 'TRB Value FNU' is 0.13 and the 'TRB Value EBC' is 0.03. The 'Wiper status' is set to 'run wiper cycle'. The 'Error/Status' field shows 'STATUS: -OK-' and 'ERROR: -No Error-'. Buttons for 'OK', 'Cancel', 'Apply', and 'Help' are visible at the bottom.

The DTMs allow sensors equipped with a cleaning device or wiper e.g. SOLITAX, ULTRATURB to start a cleaning cycle remotely.

Example "Output" page LDO

The screenshot shows the 'Output' page for an LDO device. The device is identified as 'SC200_DTM_V2_00' with description 'Profibus DP/V1'. The main display shows 'DO' at 6.62 ppm and 'DO %sat' at 81.53. 'Temperature' is 77.43 F. The error status is '-OK-' and '-No Error-'. Buttons for 'Read Values' and 'Read values cycle' are at the bottom.