

sc200 / sc1000 Multi Sensor DTM

Short Instructions

April
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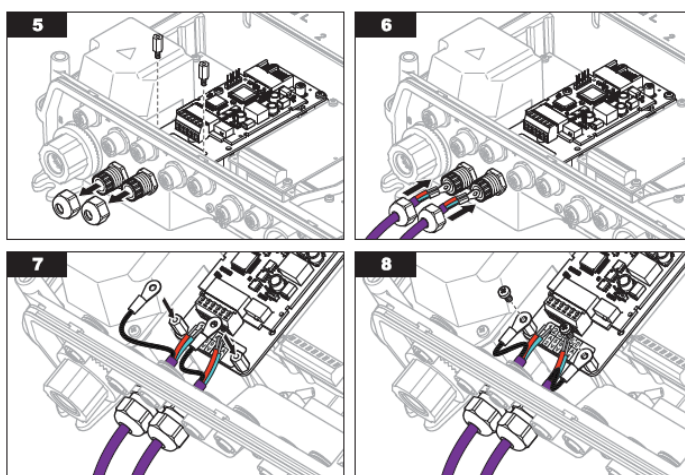
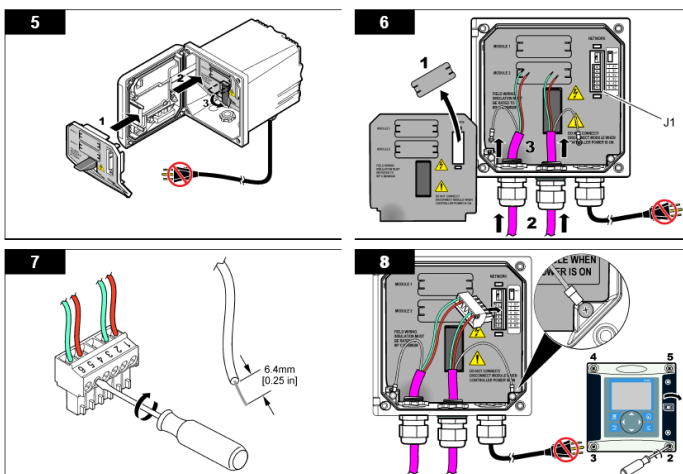
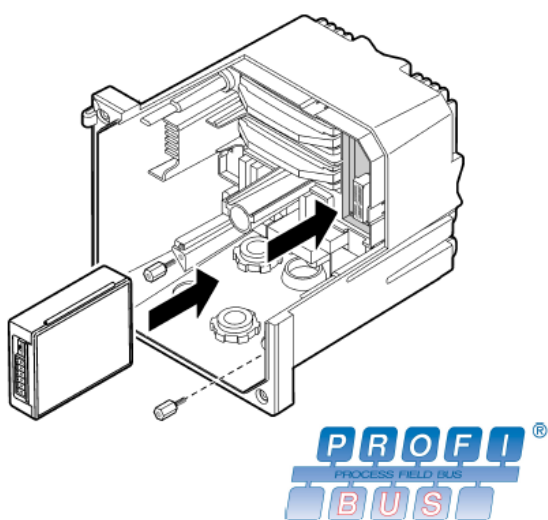
Introduction and Identification

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.

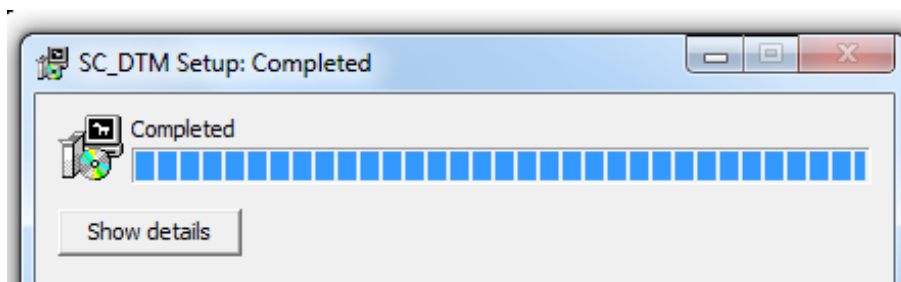
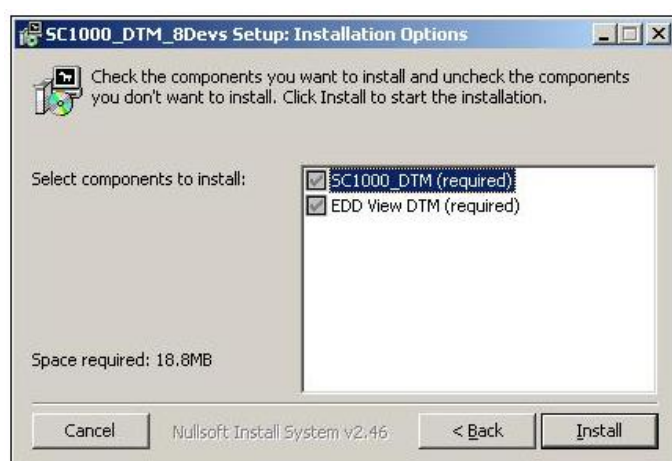
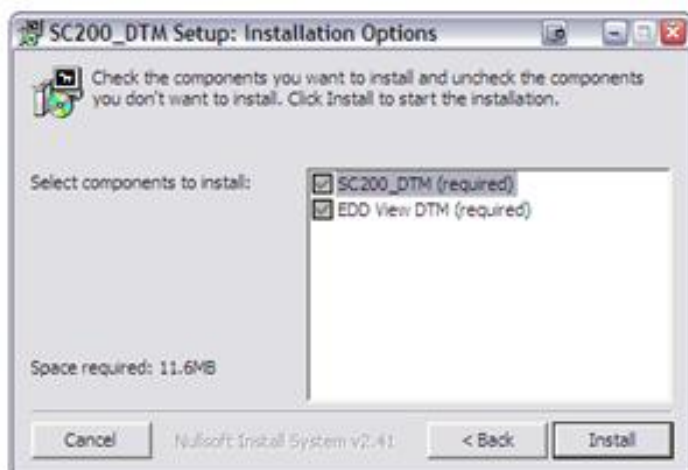
**FDT applications e.g. FieldCare or PACTware, need the “EDD View DTM” & SC_DTM installations
to adapt the devices in detail**



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*

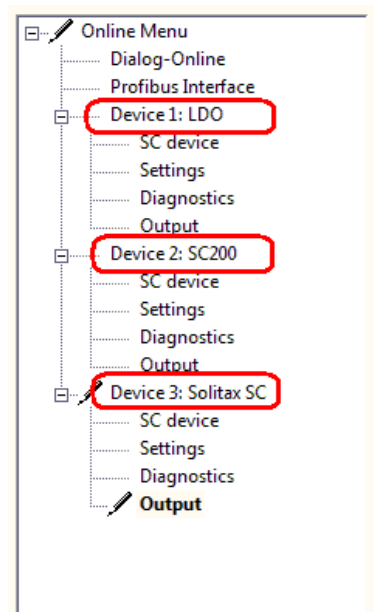
All sensors and analyzers, as well as all combinations of sensors are supported with only one universal DTM.

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.

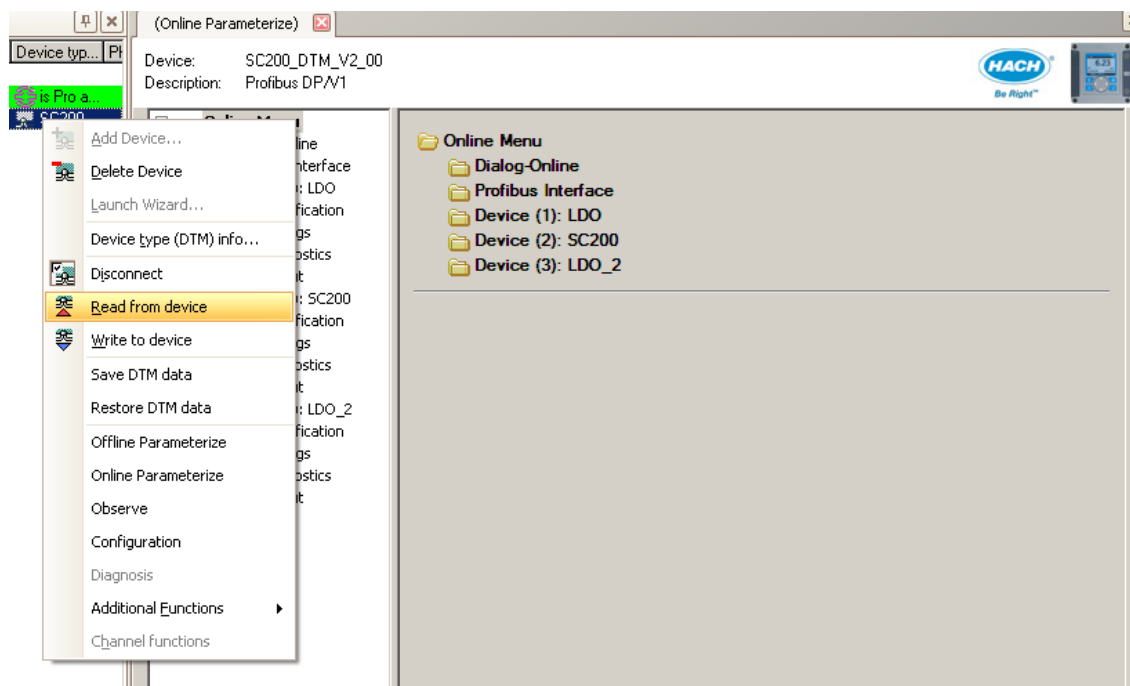
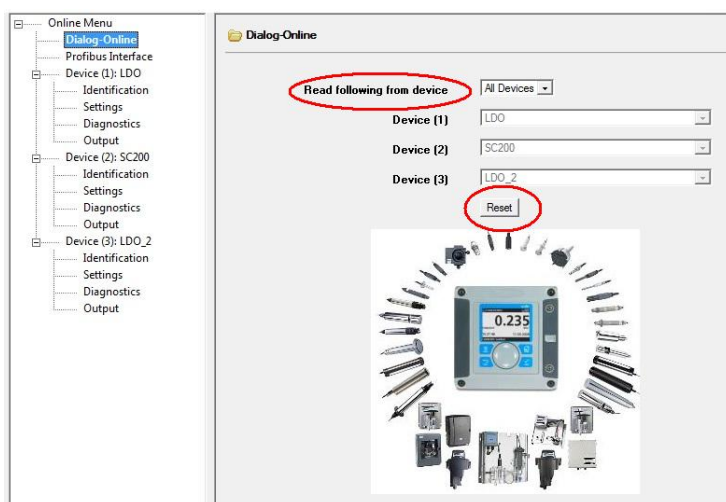
- ❑ **Dialog:** Online identification and selection of the connected probes. Click Reset and Read to accept new sensor configurations.
- ❑ **Profibus Interface** Identification of the DP/V1 Profibus interface card.
- ❑ **Device 1: Type of sensor first channel.**
- ❑ **SC device** Identification, Device 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”

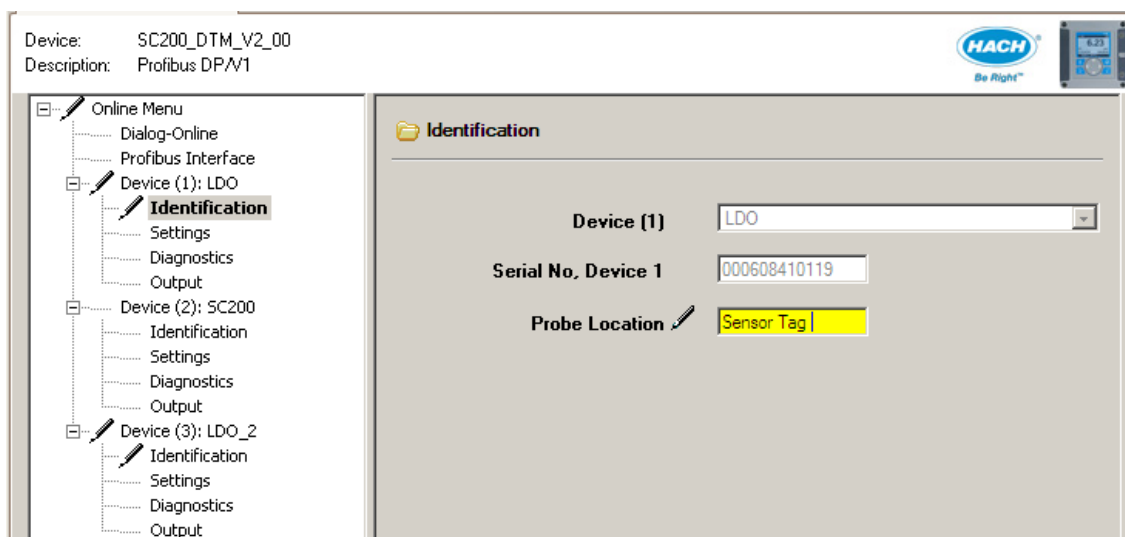
Use the “Dialog Online” option to change or accept new sensor configurations.



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.

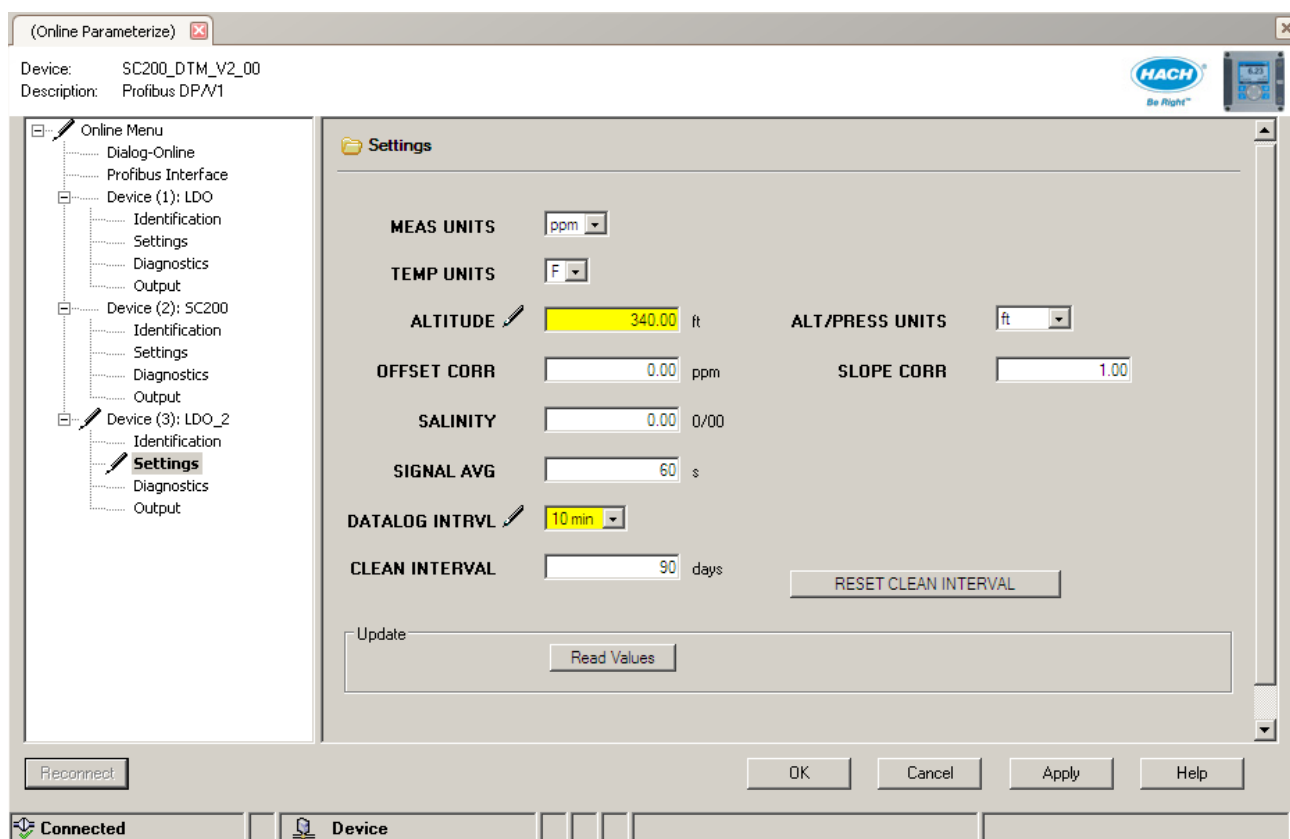
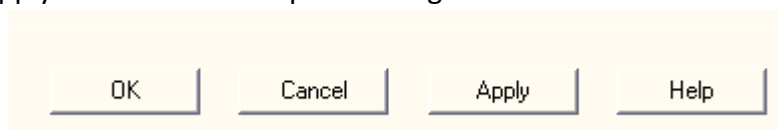
Customizing sensors and sc200 ID's is made by assigning the Tag Name to the location, which is a Read/Write parameter available for each individual device.



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	
STATUS:	ERROR:
-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.

Updating the content is done initially by entering the diagnostic page or using the “Read Values” button.

Example diagnostic page sc200

Device: SC200_DTM_V2_00
Description: Profibus DP/V1

Diagnostics

Error/Status
STATUS: ERROR:
-OK- -No Error-

Internal temperature	30.42 °C	12 V supply	12.74 V
Current from 3.3 V	0.14 A	Current from 12 V	0.17 A
Current from sensor 1	0.03 A	Current from sensor 2	0.05 A
Current from analog sensor 1	0.00 A	Current from analog sensor 2	0.00 A
Max Temperature	30.91 °C	Min Temperature	28.71 °C

Update

Example diagnostic page LDO

Diagnostics

Error/Status
STATUS: ERROR:
Common Error Maintenance Warning

MODULE INFORMATION

SW VERSION	1.02	BOOT VERS	1.00
DRIVER VERS	1		

PHASE

TOTAL PHASE	-26.11	BLUE PHASE	56.85
RED PHASE	82.96		

AMPLITUDE

BLUE AMPLITUDE	0.25	RED AMPLITUDE	0.24
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SERIAL NUMBER 402F70000002 DAYS TO CLEAN 0

SENSOR CAP LIFE 1622 days CAP LOT 12001

Update

Menu Outputs

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

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

Example "Output" page LDO