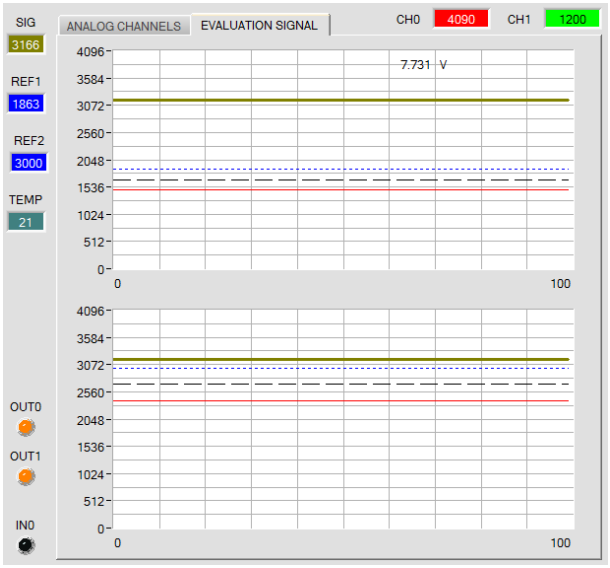
SPECTRO2-Scope:
Changes after Software Update
from SPECTRO2-Scope V1.7 to V1.8

This manual summarises the changes that were made with the software update from **SPECTRO2 V1.7** to **V1.8**.

A software update from V1.x to V1.8 can be performed quite easily.
All you need is the FirmwareLoader V1.1 and the firmware files for version V1.8.
The FirmwareLoader V1.1 can be found on the software CD that is provided with the sensor or can be downloaded from our homepage.
The firmware files are available from your sensor supplier.
The respective procedure is exactly described in the **"Manual FirmwareLoader V1_1"** file.

Change 1:

THRESHOLD MODE = 2 TRSH has been renamed to **2 TRSH SIG**.
The evaluation has remained the same.



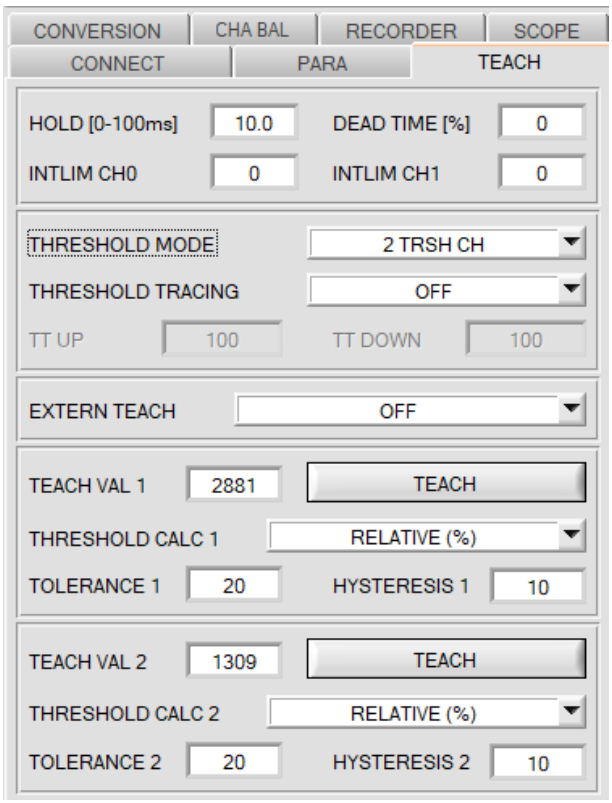
THRESHOLD MODE = 2 TRSH SIG:
2 switching thresholds are available in this mode.

Switching threshold1(2) = **REF1(2)** – **TOLERANCE 1(2)**
Hysteresis threshold1(2) = **REF1(2)** – **HYSTERESIS 1(2)**

When the current **SIG** measurement value falls below switching threshold 1 or 2, the digital output **OUT0** or **OUT1** is set to error.
When the current measurement value rises above hysteresis threshold 1 or 2 again, the error output is reset again.

Change 2:

THRESHOLD MODE = 2 TRSH CH was implemented.



THRESHOLD MODE = 2 TRSH CH:
Two switching thresholds are also available in this mode.

Switching threshold1(2) = **REF1(2)** – **TOLERANCE 1(2)**
Hysteresis threshold1(2) = **REF1(2)** – **HYSTERESIS 1(2)**

In contrast to **2 TRSH SIG**, **SIG** will not be evaluated here, but **CH0** and **CH1**.
If the current measured value **CHO** or **CH1** undercuts the switching threshold 1 or 2, the digital output **OUT0** or **OUT1** will be set to fault.
If the current measured value then exceeds the hysteresis threshold 1 or 2 again, the fault output will be rescinded.

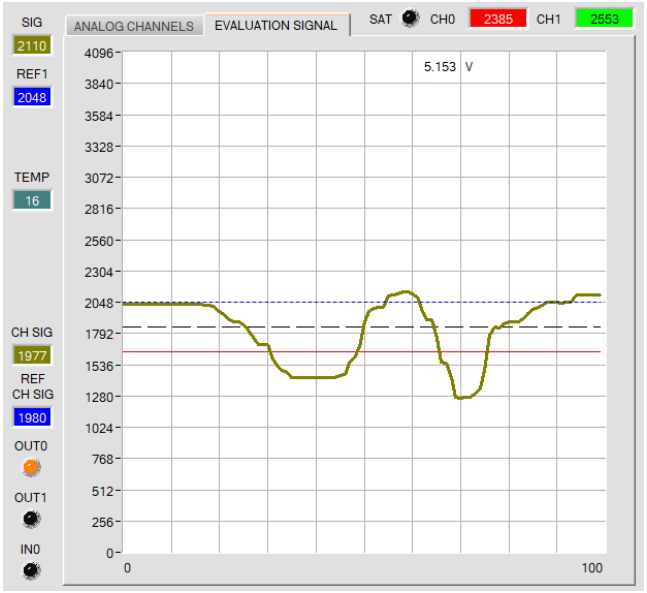
PLEASE NOTE:
OPERATING MODE = DIFFERENTIATOR and **DELTA CH SIG INTEGRATOR** are not available if **THRESHOLD MODE = 2 TRSH CH**, as the process only works with the measured value **SIG** in both cases.

EXTERN TEACH = MAX, MIN and **(MAX+MIN)/2** with **THRESHOLD MODE = 2 TRSH CH** is also not possible, as the min./max. search relates only to **SIG**.

SIG is no longer used to switch the digital outputs, but is still calculated and displayed, as it can be issued in analogue form.

Change 3:

OPERATING MODE = DELTA CH SIG INTEGRATOR was implemented.



With **DELTA CH SIG INTEGRATOR** the deviation of **CH SIG** from a reference value for **CH SIG (REF VAL CH SIG)** is determined, standardized to 4096 and added with 2048.

SIG=(((REF CH SIG – CH SIG) via number **SENSITIVITY** values) *** 4096 / REF CH SIG) + 2048**

$$\text{SIG}=\frac{\sum_{1}^{Sensitivity}(REF\ CH\ SIG-CH\ SIG)}{\text{REF CH SIG}}*4096+2048$$

CH SIG: result of the calculation method set under **EVALUTION MODE**

REF CH SIG: corresponds either with **REF VAL CH SIG** or with **TEACH EXTERNAL = DIRECT** or **DYN** is set to the value of **CH SIG**.

SENSITIVITY determines the summation factor **REF CH SIG – CH SIG**.

Example:
If e.g. **Sensitivity=10** has been set, 10 detected values **REF CH SIG – CH SIG** are summated.
The sum is standardised to 4096.
The standardised value is added with 2048.
You receive a value of 2048 for **SIG** if the sum of **REF CH0 SIG – CH SIG = 0.**
If e.g. the clearance to the surface or the surface property changes, you will receive a peak below or above 2048.

PLEASE NOTE:
The **INTEGRATOR** function is not available with **THRESHOLD MODE = 2 TRSH CH**.