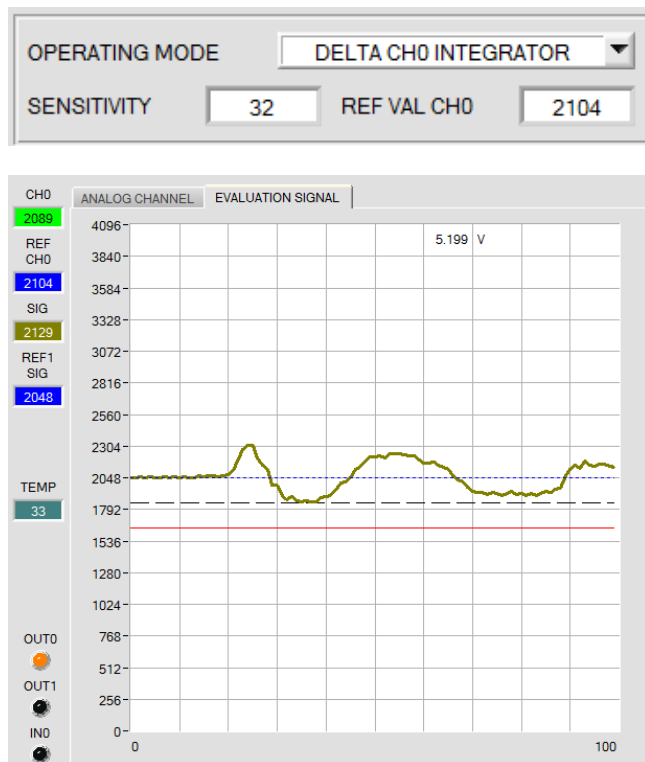


Changes after Software Update from SPECTRO1-Scope V3.0 to V3.1

Change 1:



OPERATING MODE = DELTA CH0 INTEGRATOR has been added.

With the **DELTA CH0 INTEGRATOR**, the deviation of **CH0** to a reference value for **CH0 (REF VAL CH0)** is determined, standardised to 4096 and added with 2048.

$$\text{SIG} = ((\text{REF CH0} - \text{CH0}) * 4096 / \text{REF CH0}) + 2048$$

The reference value for CH0 is displayed in display **REF CH0**. This value is usually **REF VAL CH0**. If **EXTERN TEACH = DIRECT** or **DYN** is set, then the value actually measured during the learning procedure will change from **CH0** to **REF CH0**.

A summation factor **REF CH0 - CH0** is determined with **SENSITIVITY**.

Example:

If e.g. **Sensitivity=32** has been set, 32 detected values **REF CH0 - CH0** will be added.

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 - CH0 = 0**.

If e.g. the clearance to the surface or the surface property changes, you will receive a peak below or above 2048.

This mode can be used e.g. with a transmitted light system, with which a spray jet is to be controlled. Normally, this produces only a small signal effect. This effect can be amplified with **SENSITIVITY**.

The addition with 2048 was performed so that the signal evaluation can be performed as usual, i.e. the calculation of the threshold, threshold tracing, external teaching etc. function as in **OPERATING MODE = NORMAL**.

Change 2:



The display **SIG** was introduced to improve understanding. Proceeding from **SIG**, the switching threshold and the hysteresis threshold are calculated.

Depending on **OPERATING MODE**, **SIG** is calculated as follows.

NORMAL:
SIG=CH0

DIFFERENTIATOR:

SIG = mean of CH0 via number SENSITIVITY values - current value of CH0 + 2048

$$\text{SIG} = \frac{\sum_0^{\text{Sensitivity}} \text{CH0}}{\text{Sensitivity}} - \text{CH0} + 2048$$

DELTA CH0 INTEGRATOR:

SIG = (((REF CH0 - CH0) via number **SENSITIVITY** values) * 4096 / REF CH0) + 2048

$$SIG = \frac{\sum_0^{Sensitivity} (REF\ CH0 - CH0)}{REF\ CH0} * 4096 + 2048$$

The display **REF CH0** has been added. It is used with **DELTA CH0 INTEGRATOR**. (See change 1)

The display **REF1** was renamed.

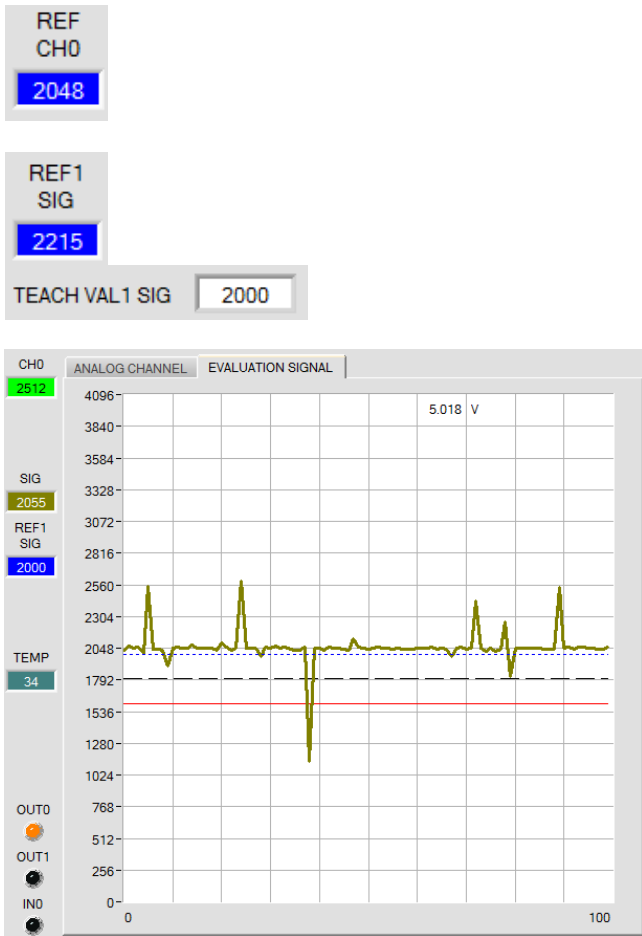
It is now called **REF1 SIG**, so that the name indicates that this reference relates to the Teach Signal **TEACH VAL1 SIG**.

TEACH VAL1 SIG was also renamed. Previously it was called **TEACH VAL 1**.

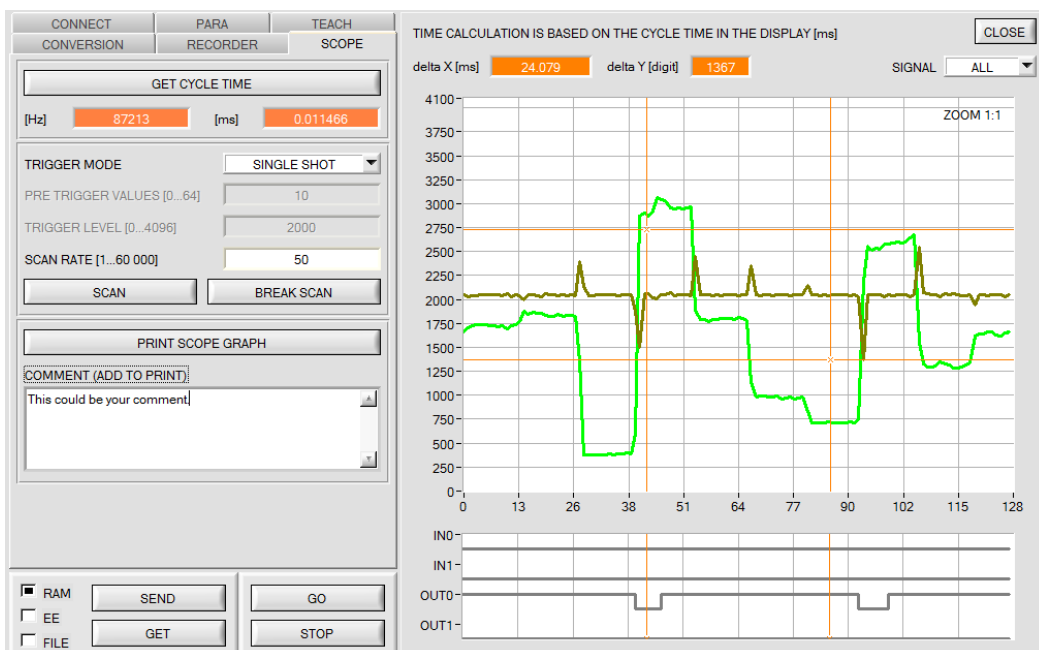
The graph now has tabs.

The value recorded by the receiver CH0 is displayed in the **ANALOG CHANNEL** tab.

The signal **SIG** calculated from CH0 is displayed in the **EVALUATION SIGNAL** tab with the appendant switching settings.



Change 3:



In addition to **CH0**, the signal value **SIG** is transferred in the **SCOPE** tab.

You can choose which signal(s) are shown in the graph via **SIGNAL**.