

# SPECTRO2-Scope: Changes after Software Update from SPECTRO2-Scope V1.5 to V1.6

This manual summarises the changes that were made with the software update from **SPECTRO2 V1.5 to V1.6**.

A software update from V1.x to V1.6 can be performed quite easily.

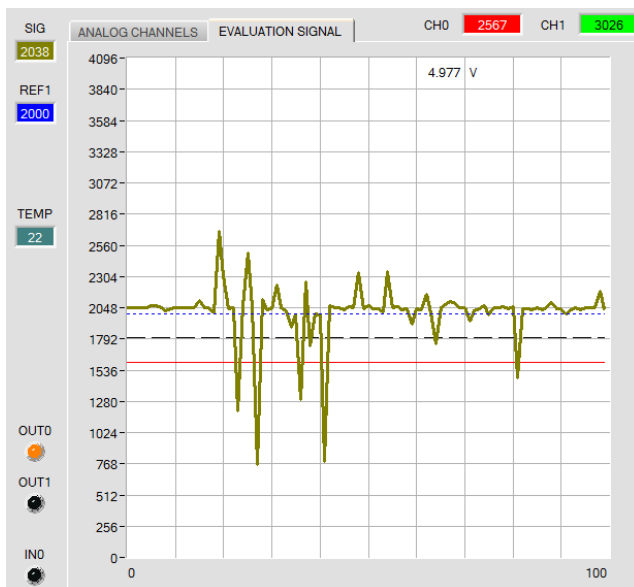
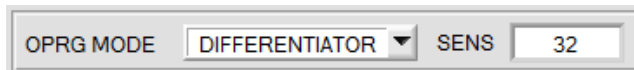
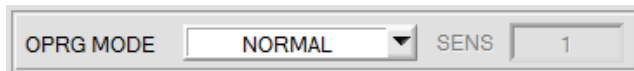
All you need is the FirmwareLoader V1.1 and the firmware files for version V1.6.

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:



**OPRG MODE** (Operating Mode) is used to set the sensor's operating mode.

With **NORMAL** the sensor operates normally, i.e. **SIG** is calculated from the receiver signals and is used as it is.

**DIFFERENTIATOR** means that **SIG** is calculated as with **NORMAL** but is evaluated differentially, i.e. the emphasis is on changes of the signal.

The **SENSITIVITY** parameter is used to set the sensitivity of the differentiator.

Example:

If a value of e.g. **SENSITIVITY=32** is set, an average is formed from 32 recorded **SIG** values.

The difference of this average from the current value is added to 2048.

This means that the resulting **SIG** value is 2048 if there is no change.

If for example the distance from the surface or the surface structure changes, the resulting value will show a deflection that may lie below or above the value of 2048.

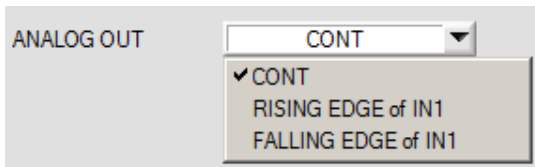
## Change 2:



**ANALOG RANGE** has been extended with **0-MAX when IN0**.

As long as input IN0 is HI, a maximum **SIG** value is determined in the sensor.  
After IN0 drops, the analog signal is fully output (0-10 V and/or 4-20mA) within this **0-MAX** range.

## Change 3:



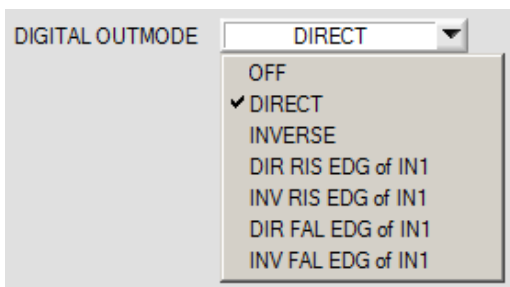
**ANALOG OUT** has been extended with **FALLING EDGE of IN1**.  
There are now three settings that define the time when the analog signal is output.

**CONT:** The analog signal is output continuously.

**RISING EDGE of IN1:** The analog signal only is output when there is a rising edge at IN1.

**FALLING EDGE of IN1:** The analog signal only is output when there is a falling edge at IN1.

## Change 4:



**DIGITAL OUTMODE** has been extended with  
**DIR RIS EDG of IN1** (Direct at a rising edge of IN1)  
**INV RIS EDG of IN1** (Inverse at a rising edge of IN1)  
**DIR FAL EDG of IN1** (Direct at a falling edge of IN1)  
**INV FAL EDG of IN1** (Inverse at a falling edge of IN1)

The state of **OUT0** and **OUT1** depends on **OUTMODE** and **THRESHOLD MODE** as follows:

	<b>THRESHOLD MODE LOW and HI</b>	<b>THRESHOLD MODE WIN</b>
<b>OUTMODE OFF</b>	OUT0=0 VDC OUT1=0 VDC	OUT0=0 VDC OUT1=0 VDC
<b>OUTMODE DIRECT</b>	OUT0=0 VDC OUT1=0 VDC	OUT0=0 VDC OUT1=0 VDC if <b>SIG</b> is within the tolerance window OUT1=0+24 VDC if <b>SIG</b> is outside the tolerance window
<b>OUTMODE INVERSE</b>	OUT0=+24 VDC OUT1=0 VDC	OUT0=+24 VDC OUT1=0 VDC if <b>SIG</b> is outside the tolerance window OUT1=0+24 VDC if <b>SIG</b> is within the tolerance window

**DIR RIS EDG of IN1** (Direct at a rising edge of IN1)  
**INV RIS EDG of IN1** (Inverse at a rising edge of IN1)  
**DIR FAL EDG of IN1** (Direct at a falling edge of IN1)  
**INV FAL EDG of IN1** (Inverse at a falling edge of IN1)

As opposed to **DIRECT** and **INVERSE** the outputs here only are refreshed when there is a rising (**RIS**) or falling (**FAL**) edge at input IN1.

On the user interface the respective state of the outputs is visualised by the **OUT0** and **OUT1** LEDs.

## Change 5:

THRESHOLD MODE

TEACH VAL 1

THRESHOLD CALC 1

TOLERANCE 1  HYSTERESIS 1

TEACH VAL 2

THRESHOLD CALC 2

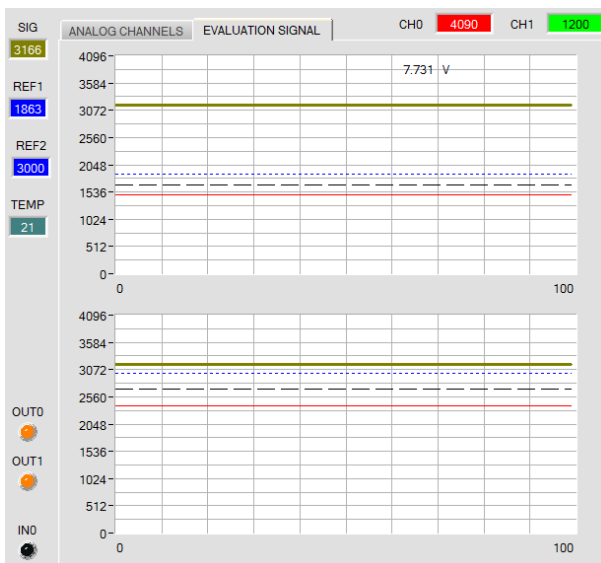
TOLERANCE 2  HYSTERESIS 2

**THRESHOLD MODE = 2 TRSH** has been introduced. 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 6:

RECORD MODE

**RECORD MODE = AUTO TRIGGERED** has been added.

If **RECORD MODE = AUTO TRIGGERED** is selected, and **ANALOG OUT = RISING** or **FALLING EDGE** of **IN1** is selected or a function that needs **IN1** is selected under **DIGITAL OUTMODE**, the sensor, when **START RECORD** is pressed, automatically sends a data frame after every drop of input **IN1**. This data frame is captured and recorded by the recorder. **STOP RECORD** stops the automatic sending of the sensor.