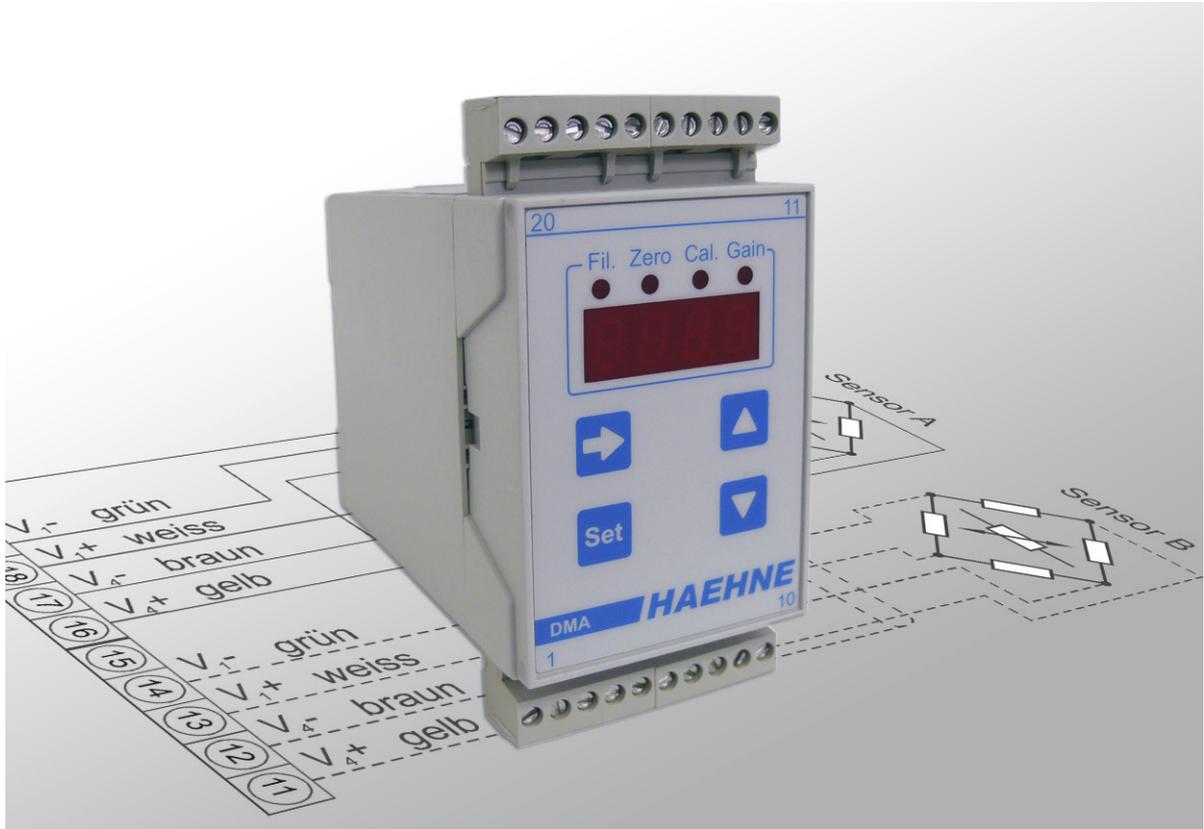


Digital Measuring Amplifier DMA3

Adjustment Instruction



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The selected sequence of the adjustment steps is based on experience in practice situations. Other sequences of adjustment steps are certainly possible.

Operating Mode

The DMA2 is a strain gauge amplifier processes sensor signals in the analog mode. The parameter values, however, are digitally adjusted. LEDs indicate the operating status. The digital display shows the parameter value respectively the output signal.

Adjustment Modes

Zero adjust calibration

- either automatically by key operation (details: see page 6)
- or manual: moving the zero point by the amount of the web weight on the measuring/idler roll

The second possibility is useful if e.g. the web tension control system is preloaded with the defined web weight either while in operation or at standstill. Another application can be e.g. a silo which cannot be completely emptied and has a certain amount of weight remaining.

Amplification parameter defined by a value (gain)

In this case the gain is calculated and correspondingly adjusted

Example

Sensor data: nominal rating 1,5 m V/V
bridge supply voltage: 10 V
(the output signal is therefore 15 mV = 0.015 V at nominal force)

Amplifier output: 10 V at nominal web tension
0 V at zero web tension

$$\text{Gain} = \frac{10\text{V}}{0,015\text{ V}} = 666,6\bar{6} \approx 666,7$$

If the sensor is operating below its nominal force then the amplification must be increased.

Example

The maximum sensor load is only 75% of nominal force.

The output signal is therefore only:

$$15\text{ mV} \cdot \frac{75\%}{100\%} = 11,25\text{ mV}$$

this leads to:

$$\text{Gain} = \frac{10\text{V}}{0,01125\text{ V}} = 888,8\bar{8} \approx 888,9$$

Amplification adjustment with calibration weights

In this operating modes the web tension measurement equipment is loaded with calibration weights and the amplification is adjusted accordingly. This is the more realistic but more cumbersome method.

Operation

Preparation

- Apply power to the amplifier with connected sensors. Wait 15 minutes to warm up.
- Ensure that the completely mounted sensors are loaded with the normal pre-load acting in the regular operating mode without any additional extraneous loads. In the case of Web tension sensors this is the roll weight without any web (foil, paper, ...)

Adjustment mode

First press and hold the SET key to switch from the operating mode into the adjustment mode, afterwards press the menu key  briefly and release the SET key.

The display indicates the 1. menu step which can now be changed.

For the second, third and any additional menu step do not press the SET key instead use the menu key  to select the desired menu point, for instance, to make changes.

Storing of changes

Press the SET key until the LED goes OFF. This activates the adjustment procedure and the LED lights up until the procedure is completed. The amplifier switches now automatically into the operating mode.

Leaving the adjustment mode without storage

When exceeding the waiting time of 20 seconds the amplifier switches without changes automatically into the operating mode. An alternative is pressing the menu key beyond the 8. menu step.

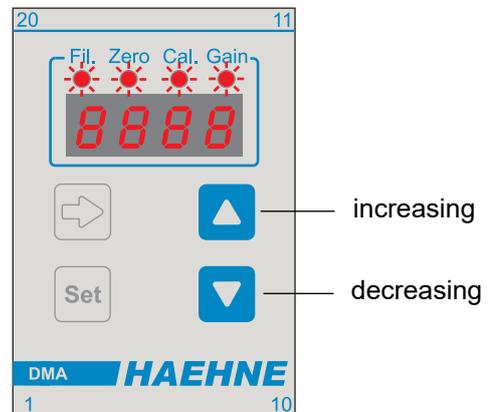
Pre-Adjustments / Operating Modes

Display intensity

(7. Menu step)

select the menu step "display intensity" in the adjustment mode.

- select the display intensity of the LEDs
- all four LEDs blink during the adjustment
- store adjustment

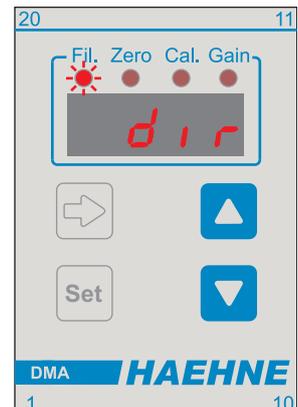
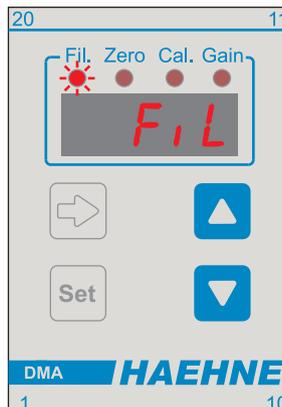


Filter type of the current output

(1. Menu step)

select the menu point "filter type" in the adjustment mode

- select the operating mode
- LED blinks during the adjustment
- store adjustment
- if "FIL" was selected then the LED remains ON in the operating mode



Adjustment of the parameters

 The input signal must **not** change during the following adjustment procedures

Automatic zero point adjustment

(2. Menu step)

select the menu point "zero point adjustment" in the adjustment mode.

- store adjustment

ALTERNATIVELY:

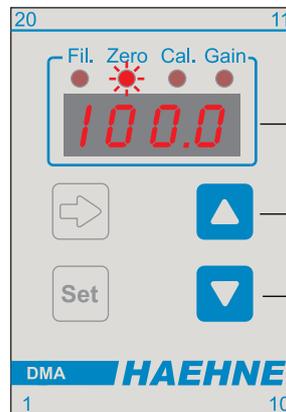
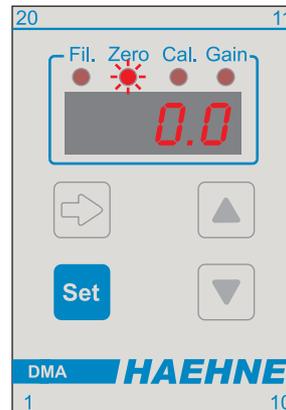
Manual zero point adjustment

(2. Menu step)

select the menu point "zero point adjustment" in the adjustment mode.

- select adjustment range
- move zero point, for instance by entering the weight of the web as a value
- store selection

 See also: [Adjustment Modes](#) on page 2



adjustment range:
-10.0 ...100.0%

increasing

decreasing

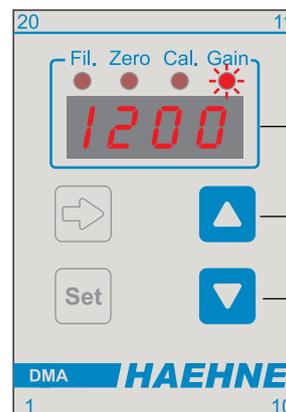
The step velocity increases with the key holding time

Entering amplification as gain value

(4. Menu step)

- calculate amplification (siehe section "[Adjustment Modes](#)" on page 2)
- if no sensor is connected then terminals 18 + 19 or 13 + 14 have to be connected with each other.
- Select the menu point "Gain" in the adjustment mode
- select the desired amplification
- store the adjustment

 The zero point must be adjusted anew In case of manual zero point adjustment or in case of the unipolar operating mode



adjustment range:
250 ...4000

increasing

decreasing

The step velocity increases with the key holding time

ALTERNATIVELY: see next page

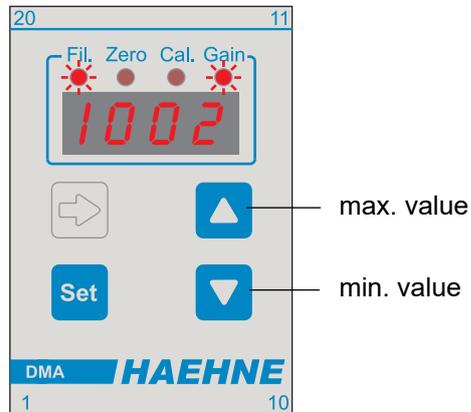
Peak value display

(6. Menu step)

- read stored peak values

A change of the output signal range or the displayed value will return the display to null.

- erase the value with the "SET" key



Fault display during operation

Exceeding the maximum output signal voltage of approximately (-) 12 V

-OFL

OFL

Interrupted sensor cable

1OFL