

Service Information Letter 10_2010

1 MAS-100 NT and MAS-100 NT Ex

Instruments affected: all MAS-100 NT and MAS-100 NT Ex

Change level: optional
 recommend by MBV
 mandatory
 for information only

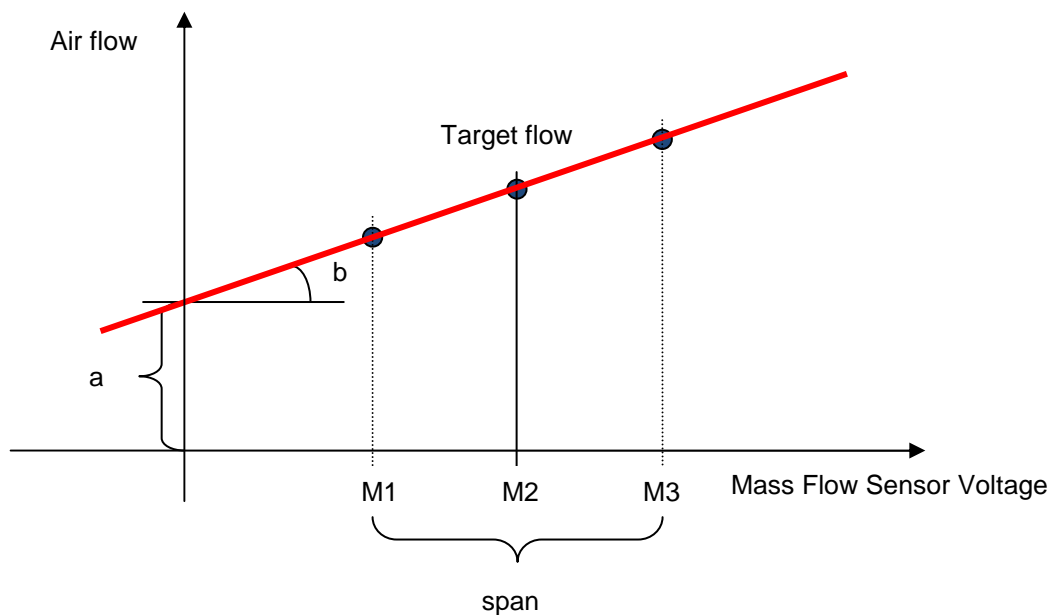
2 Reason

Customers observed an alternation in air flow on a DA-100 when changing from the manual calibration menu to the manual adjustment menu. The observed deviation is typically in the range of 5%.

This Service Information Letter explains the technical background of this effect and why it doesn't represent a malfunction of the instrument or the calibration / adjustment procedure.

Adjust Curve

The MAS-100 NT / Ex. uses a linear calibration curve as defined in



$$\text{Air flow} = a + b * \text{mass flow sensor voltage}$$

where a represents an offset and b the slope of the curve.

Adjustment

There are 3 types of calibration approaches:

1-point adjustment

One measurement is taken: "M2". Only the offset a is influenced by the calibration. The slope b of the curve remains.

2-point adjustment

2 Measurements are taken: "M1" and "M3". The distance is defined in the *span* parameter. The slope of the curve remains.

3-point adjustment

3 Measurements are taken: "M1", "M2" and "M3". Now both parameters offset a and slope b are changed.

3 Procedure

In the *manual calibration mode* the MAS-100 NT / Ex. runs in a feedback mode: The calibration curve is used to translate the signal from the flow sensor into the needed PWM signal for the blower. If the air flow is too low the blower speed is increased until it matches the target flow rate.

In the *manual adjustment mode* a 1-point calibration is performed. The feedback loop is disabled and the blower speed is directly controlled by the manually entered PWM value. Due to internal memory restriction only the PWM setting of the 3rd point M3 (=target flow + span/2) of the current adjustment is available as starting point.

Naturally this point is too high (by span/2) hence the observed increase in air flow.

Please note: the adjustment curve has not been changed at this point. If the adjustment is aborted the calibration curve remains unchanged and in normal operation (or manual calibration mode) the instrument will still run at the previously defined target flow.

4 Work around

Using a DA-100

Don't be confused by the changed flow when entering *manual adjustment mode*. Proceed as normal with your adjustment procedure.

Using a DA-100 NT

Using the build-in RS-232 interface of the DA-100 NT the adjustment procedure can be performed fully automatic making the *manual adjustment mode* obsolete. This adjustment is typically triggered externally via the PC SW and is performed as a 3-point adjustment.

Please note: MBV AG is offering an upgrade from a DA-100 to DA-100 NT as a service.

Stäfa, October 22nd 2010



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CTO