Application Note

FESTO

VTEM BSSO compensation

This Application Note describes the procedure of BSSO compensation, a feature that can be used to enhance the control performance in applications with low volume flow rates.

VTEM

100730

Title ..... VTEM BSSO Compensation
Version 1.10
Document no. 100730
Original ..... en
Author ..... FESTO

Last saved 25.03.2025

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1 Summary

1.1 Scope of this application note

This Application Note describes the procedure of BSSO compensation, a feature that can be used to enhance the control performance in applications with low volume flow rates. When using the Festo VTEM (Motion Terminal) to control pressure, position or flow rate with very challenging conditions (e. g. very small volumes), control performance can be stabilized using this feature:

- Motion App 3 (pressure control): When used to control pressure in a very small volume, oscillations can be observed in some cases.
- Motion App 10 (flow control): When used to control a volume flow rate, the valve terminal cannot reach very low setpoints of less than 10 liters per minute.
- Motion App 33 (positioning): Applications with low friction and/or low mass can be challenging and a permanent switching of the valve terminal is audible.

➔ **Note**

The function described in this application note is intended for users with extended knowledge. It should only be used if one of the described behaviors is observed and it can impact the control performance negatively if activated otherwise.

1.2 Hardware/Software requirements

Type/Name	Version	Software/Hardware
Festo VTEM (Motion Terminal)	4.26.10 & higher	Firmware
Festo VEVM (Motion Terminal Valve)	Rev. 04 & higher	Hardware

Table 1.1: Components/Software used

2 Configuration

Follow these steps to activate BSSO compensation (see figures 2.1 to 2.4 for details):

1. Connect the VTEM to your PC via Ethernet and open the Web Configuration in a browser (see instruction manual for details).
2. Open the “Configuration” tab.
3. Open the options dialog by clicking on the gear wheel and selecting “Options…”.
4. Enable “Showing BSSO Shift settings”.
5. Open the BSSO settings by clicking on “Edit BSSO Shift settings”.
6. Enable/disable BSSO shift for each valve and output port if needed. Please note that the option is only available for a valve if it meets the requirements of table 1.1
   1. When using MA3 or MA10, select the output port that requires a control optimization.
   2. Select both output ports when using MA33.
7. Close the dialog by clicking “OK”.
8. Acknowledge the message by clicking “OK”.

➔ **Note**

BSSO Shift settings are saved persistently on the valve terminal. Changing a valve or performing a power-cycle does not affect the settings. The setting has to be deactivated manually after replacing a valve.

➔ **Note**

Adjustment of controller parameters may be necessary after activation of BSSO compensation. Please use proven parameters for this.

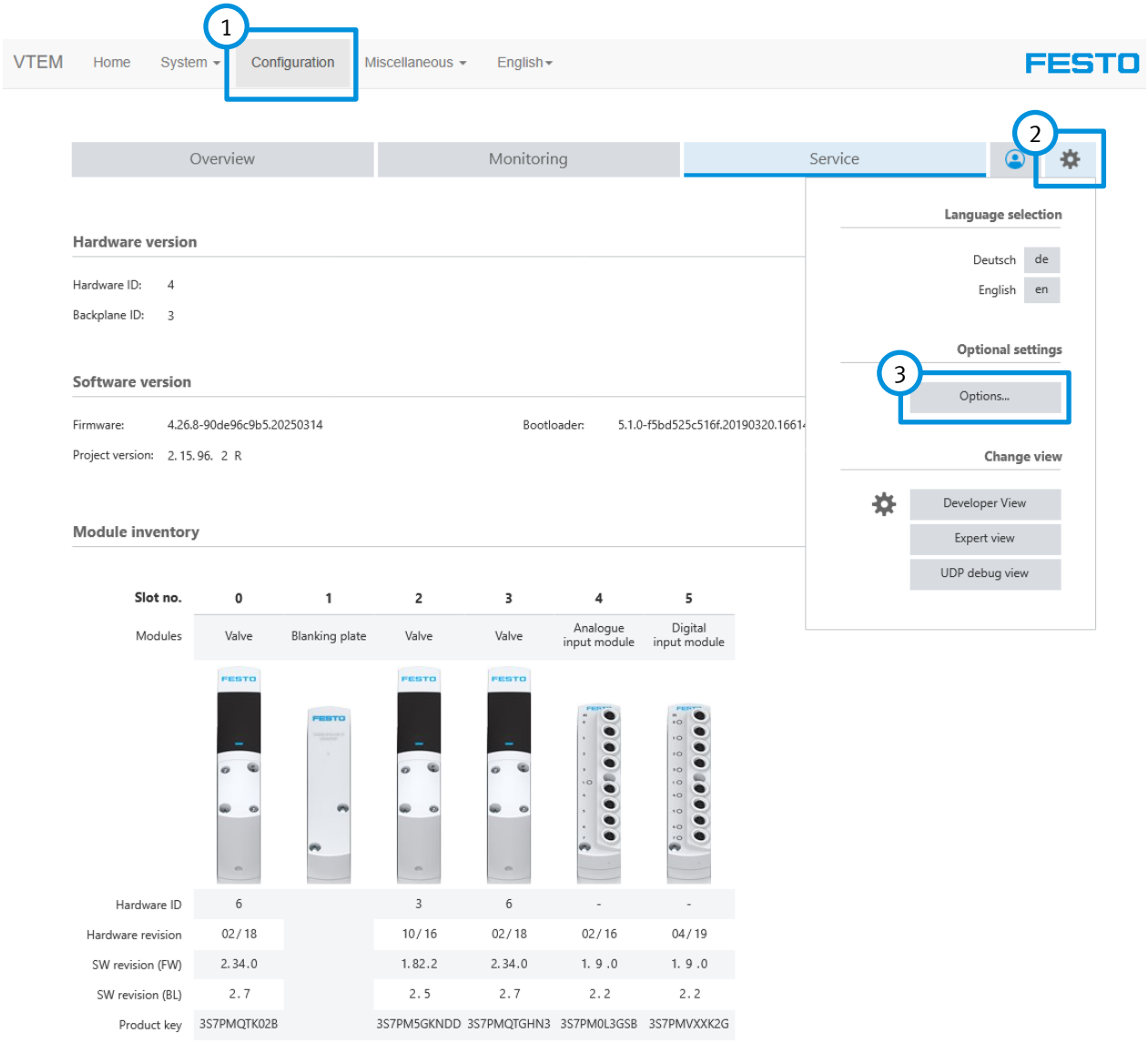

Fig. 2.1: Screenshot of Web Configuration and step-by-step procedure to open the options dialog (steps 2 & 3).

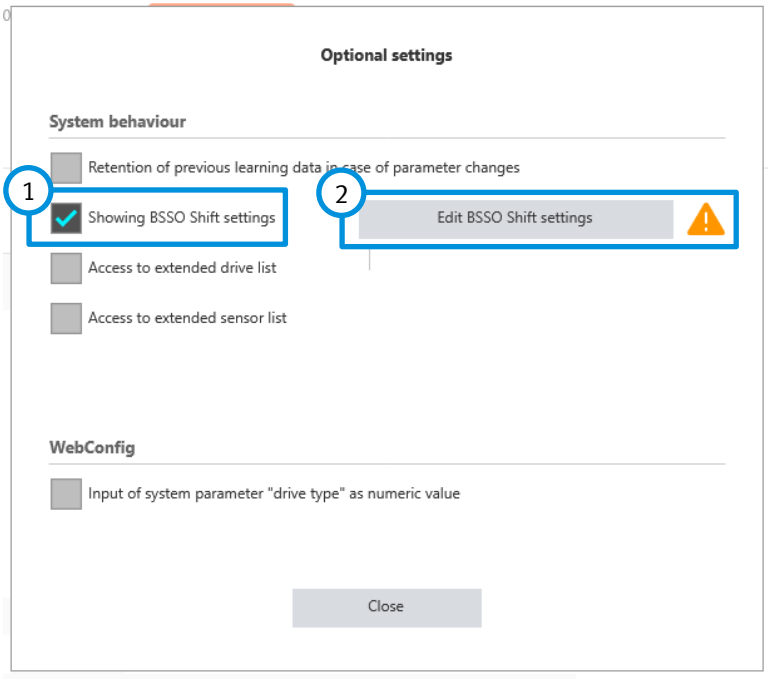

Fig. 2.2: Screenshot of options dialog to enable BSSO Shift settings (steps 4&5).

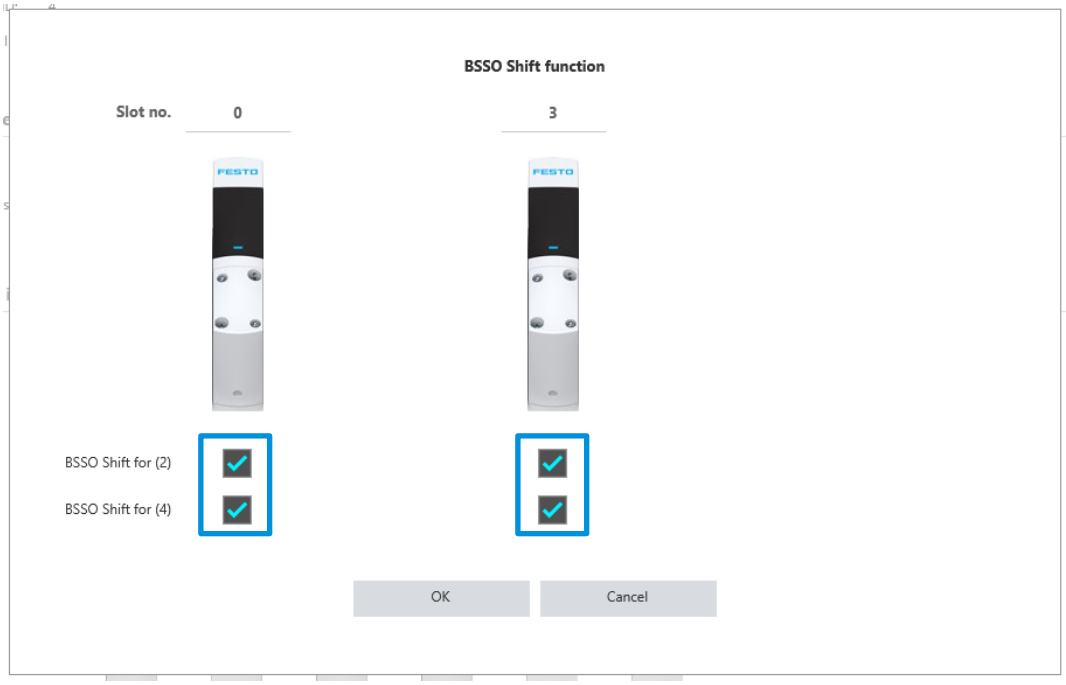

Fig. 2.3: Screenshot of BSSO Shift dialog. BSSO Shift can be activated for each valve and each output port individually (steps 6&7).

Fig. 2.4: Screenshot of acknowledgment message dialog (step 8).