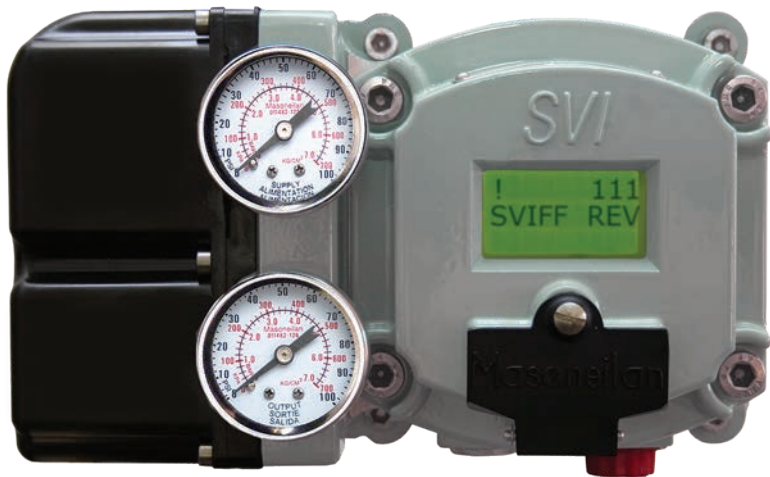


Masoneilan™ SVI™ FF Digital Positioner

Quick Start Guide (Rev. F)



About this Guide

This Quick Start Guide applies to the SVI FF instrument and supported software:

- with Firmware version 1.0.0.1 or higher
- with *Va/Vue*™ version 3.0
- with handheld communicator with DD published for SVI FF

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Document Changes

Version/Date	Changes
B/12-14	Updated headers and footers. Made a few changes to Quick Start section Changed ES-776 to Rev J.
C/02-15	Changed ES-776 to Rev. K and to Declaration of Conformity
D/03-17	Changed ES-776 to Rev. L.
E/02-20	Changed ES-776 to Rev. M. Rebranded to Baker Hughes formats. Added Product Numbering section. Added Determining Device Descriptor and Firmware Versions AP Label section. Updated Mounting the SVI FF on Rotary Valves section.
F/07-21	ES-776 instructions removed.

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Safety Information

This section provides safety information and defines the documentation symbols.

Safety Symbols

SVI FF instructions contain warnings, cautions and notes, where necessary, to alert you to safety related or other important information. Read the instructions carefully before installing and maintaining your instrument. Total compliance with all WARNING, and CAUTION notices is required for safe operation.

WARNING



Indicates a potentially hazardous situation, which if not avoided could result in serious injury or death.

CAUTION



Indicates a potentially hazardous situation, which if not avoided could result in instrument or property damage, or data loss.

NOTE



Indicates important facts and conditions.

SVI FF Product Safety

For SVI FF positioners intended for use with industrial compressed air:

Ensure that an adequate pressure relief provision is installed when the application of system supply pressure could cause peripheral equipment to malfunction. Installation must be in accordance with local and national compressed air and instrumentation codes.

General installation, maintenance or replacement

- Products must be installed in compliance with all local and national codes and standards by qualified personnel using safe site work practices. Personal Protective Equipment (PPE) must be used per safe site work practices.
- Ensure proper use of fall protection when working at heights, per safe site work practices. Use appropriate safety equipment and practices to prevent the dropping of tools or equipment during installation.
- Under normal operation, compressed supply gas is vented from the SVI FF to the surrounding area, and may require additional precautions or specialized installations.

Intrinsically Safe Installation

Products certified as explosion proof or flame proof equipment or for use in intrinsically safe installations **MUST BE**:

- Installed, put into service, used and maintained in compliance with national and local regulations and in accordance with the recommendations contained in the relevant standards concerning those environments.
- Used only in situations that comply with the certification conditions shown in this document and after verification of their compatibility with the zone of intended use and the permitted maximum ambient temperature.
- Installed, put into service and maintained by qualified and competent professionals who have undergone suitable training for instrumentation used in such areas.



WARNING *Before using these products with fluids/compressed gases other than air or for non-industrial applications, consult the factory. This product is not intended for use in life support systems.*



WARNING *Under certain operating conditions, the use of damaged instruments could cause a degradation of the performance of the system which may lead to personal injury or death.*



WARNING *Installation in poorly ventilated confined areas, with any potential of gases other than oxygen being present, can lead to a risk of personnel asphyxiation.*

Use only genuine replacement parts which are provided by the manufacturer, to guarantee that the products comply with the essential safety requirements of the European Directives.

Changes to specifications, structure, and components used may not lead to the revision of this manual unless such changes affect the function and performance of the product.

Masoneilan Help Contacts

- Email: svisupport@bakerhughes.com
- Phone: 888-SVI-LINE (888-784-5463)

Product Numbering

Refer to Masoneilan SVI FF Safe Use instructions ES-776 available in:

valves.bakerhughes.com/resource-center

Determining Device Descriptor and Firmware Versions AP Label

It is useful to track the version of the Device Descriptor (DD) and firmware version in use on your DCS and positioner respectively. This is of value in troubleshooting system issues that can arise when initially installing and later upgrading Masoneilan and non-Masoneilan system components. There are several different ways to access the required information.

Figure 1 shows the unit tag that comes attached to the unit.



Figure 1 - Unit Tag

The tag lists the following items:

<input type="checkbox"/> ID: Unique factory-set identifier for the device.	<input type="checkbox"/> Tag: User-defined. This can be changed for the specific application.
<input type="checkbox"/> Factory Node Address: Lists the factory-set field bus node address.	<input type="checkbox"/> Device Manufacturer: The six digits comprise the first part of the ID and Tag. Used to identify the DD.
<input type="checkbox"/> Device Type: A four digit code.	<input type="checkbox"/> Device and Minimum DD Revision: Represents the original firmware revision flashed during manufacture. This DD may have been upgraded since installation.
<input type="checkbox"/> Communications: Lists the protocol in use.	<input type="checkbox"/> Diagnostics: Lists the level of diagnostics with which the device was shipped. This may have been upgraded since installation.
<input type="checkbox"/> Pneumatic Train: Single Acting or Double Acting.	<input type="checkbox"/> Pneumatic Flow: Standard Flow or High Flow.
<input type="checkbox"/> Display: Indicates whether the LED display and pushbuttons are installed.	<input type="checkbox"/> Housing: Aluminum only.

The actual device ID in this case is constructed according to the following formula:

- 004745 – which is the manufacturer identifier for Masoneilan
- 0008 – which is the device type for SVI FF positioner
- _____ - 14 underscore characters
- XXXXXXXX – the eight number string for the device part number as shown in the picture below (first two letters are ignored)
- From the Live List information presented in the DCS or in the Communication DTM (Figure 2).

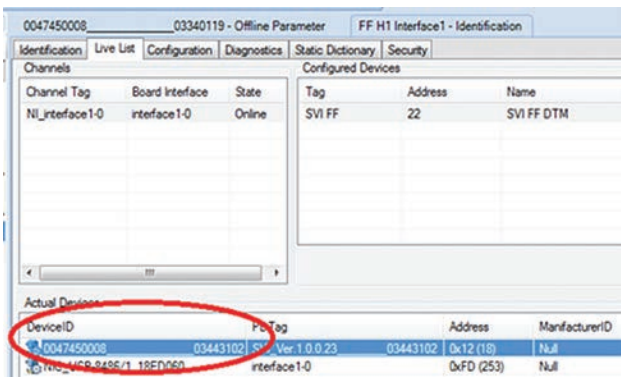


Figure 2 - Device ID: Live List

- From the DTM, when open in connected mode (note: some hosts may not support this feature):

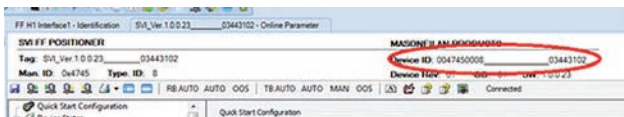


Figure 3 - Device ID: DTM

Firmware versions can also be viewed using the:

- SVI FF DTM on the Positioner tab. The firmware revision is Software Revision (Figure 4). Where the first digit, *here 1*, represents the *DD Revision*.

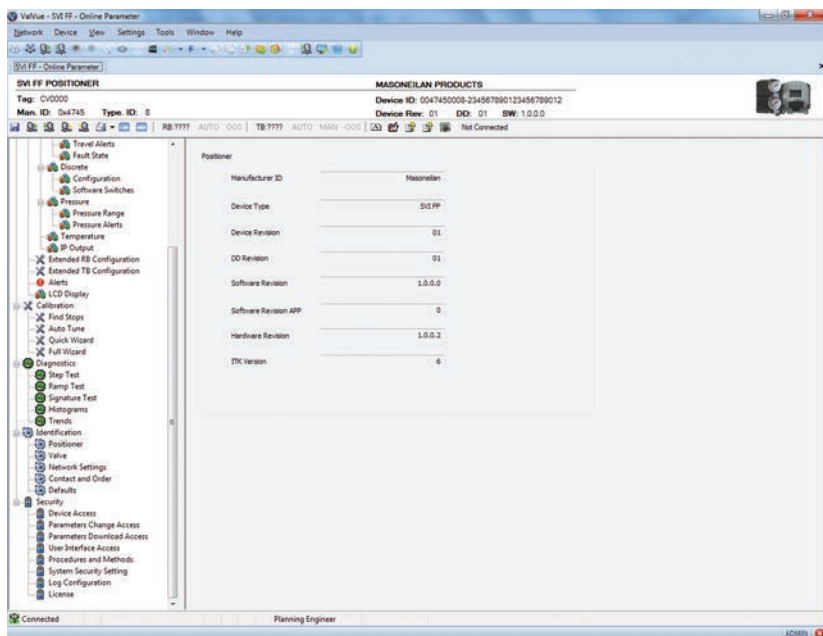


Figure 4 - Positioner Tab

- By creating/printing the SVI FF Configuration Report by:
 1. Selecting **View > Network View > Topology Pane**.
 2. Selecting the positioner, right-clicking and selecting **Additional Functions > Report**.
- Handheld by selecting **Online > SVI FF Device > Resource Block > Device > Identification**.

Installation and Set Up

The steps necessary to complete the SVI FF installation and software setup are outlined in Table 1.

Table 1 - SVI FF Installation Steps

Step No.	Procedure
1	Attach mounting bracket to the actuator.
2	Install the SVI FF magnetic assembly (rotary valves only).
3	Assemble the SVI FF on the bracket that is mounted to the valve actuator.
4	Connect the pneumatic tubing to the SVI FF.
5	Connect the air supply to the SVI FF.
6	Connect the positioner to the H1 segment by installing the SVI FF wiring.
7	Configure/calibrate using ValVue, the SVI FF DTM or a handheld using the DD. See Example Configuration on page 18 for a general example.

WARNING



Failure to adhere to the requirements listed may cause loss of life and property.

*Before installing, using, or carrying out any maintenance tasks associated with this instrument, **READ ALL THE INSTRUCTIONS CAREFULLY.***

Pushbuttons and Local Display

Pushbuttons

The local pushbuttons are located behind a hinged cover, directly below the display window. To open the cover loosen the screw and swing the cover down. Always re-fasten the cover after use to protect the pushbuttons from environmental contamination. The pushbuttons perform the following:

- Left Button - Marked with *, permits you to select or accept the value or parameter option currently displayed.
- Middle Button - Marked –, permits you to move back through the menu structure to the previous item in the menu or decrement the value currently shown in the digital display. When used to decrease a displayed value, holding the button down causes the value to decrease at a faster rate.
- Right Button - Marked +, permits you to move forward through the menu structure to the next item in the menu, or to increment the value currently shown in the digital display. When used to increase a displayed value, holding this button down causes the value to increase at a faster rate.

CAUTION



The display is limited to values between 0 and 100. Therefore, the display may show a value for the actual setpoint that is not valid if the setpoint is above 100 or below 0.

NOTE







When an exclamation point (!) appears in the SVI FF display window, it indicates that there is instrument status available.

Mounting the SVI FF on Rotary Valves

Travel Sensor Alignment

Table 2 shows the general guidelines for travel sensor alignment. Review the table prior to installing the SVI FF on a rotary valve actuator for proper alignment of the magnet. Alignment is required for proper Hall sensor operation.

Table 2 - Travel Sensor Alignment

Rotary Mounting System	Stroke Direction (An accumulated value of 100% travel = 1 stroke. The travel does not need to occur in one movement):	Magnet Orientation	Valve Position	Sensor Counts (TB: RAW_POSITION)
Rotary	<60° Rotation Clockwise or counterclockwise rotation	 <p>(0°)</p>	Closed(0%)	0 +/- 1000
	>60° Rotation Clockwise with increasing setpoint	 <p>(-45°)</p>	Full Open or Full Closed	-8000 +/- 1500 or +8000 +/- 1500
	>60° Rotation Counter Clockwise rotation with increasing setpoint	 <p>(+45°)</p>	Full Open or Full Closed	-8000 +/- 1500 or +8000 +/- 1500
General Rule for other configurations	Any amount of rotation Clockwise or counterclockwise	 <p>(0°)</p>	50% Travel (Mid-Stroke)	0 +/- 1000

Mounting the SVI FF on Reciprocating Valves

Table 3 - Reciprocating Valve Mounting Hole and Turnbuckle Length

Actuator Size Masoneilan	Stroke	Mounting Hole	Lever Hole	Turnbuckle Length
6 and 10	0.5 - 0.8" (12.7 - 20.32 mm)	A	A	1.25" (31.75 mm)
10	0.5 - 0.8" (12.7 - 20.32 mm)	A	A	1.25" (31.75 mm)
10	>0.8 – 1.5" (20.32 - 41.5 mm)	B	B	1.25" (31.75 mm)
16	0.5 - 0.8" (12.7 - 20.32 mm)	B	A	2.90" (73.66 mm)
16	>0.8 – 1.5" (20.32 - 41.5 mm)	C	B	2.90" (73.66 mm)
16	>1.5 – 2.5" (41.5 - 63.5 mm)	D	C	2.90" (73.66 mm)
23	0.5 - 0.8" (12.7 - 20.32 mm)	B	A	5.25" (133.35 mm)
23	>0.8 – 1.5" (20.32 - 41.5 mm)	C	B	5.25" (133.35 mm)
23	>1.5 – 2.5" (41.5 - 63.5 mm)	D	C	5.25" (133.35 mm)

FF Environment Minimum Settings

The general steps necessary to complete the SVI FF configuration and software setup are outlined in Figure 6.

The screenshot displays the 'Quick Start Configuration' window, which is divided into four main sections:

- Air Action:** Features two radio buttons: 'Air To Open' and 'Air To Close'. The 'Air To Close' option is selected. A red annotation next to it reads: **Step 1: Set Air Action**.
- Control Tuning:** Includes two radio buttons for 'Single Acting' (selected) and 'Double Acting'. Below these are seven radio buttons for tuning types: 'Fastest (Smallest)', 'Fast (Small)' (selected), 'Medium', 'Slow (Big)', 'Slowest (Bigest)', 'Autotune', and 'Custom'. A red annotation reads: **Step 2: Set Control Tuning by choosing Single or Double Acting and setting tuning type. Autotune is recommended, Custom Requires entering your own values.**
- Characterization Type:** Features six radio buttons: 'Linear' (selected), 'EQ% 30', 'EQ% 50', 'Quick Open', 'Camflex %', and 'Custom'. A red annotation reads: **Step 3: Set Characterization Type. Custom requires entering your own values.**
- Network Settings:** Contains two input fields. The 'Device Address' field has the value '17' and a red annotation: **Step 4: Enter a Device Address and Device Tag.** The 'Device Tag' field has the value 'SVI_111101' and a red annotation: **Step 5: Run Find Stops and then run Autotune.**

Figure 6 - Quick Start Configuration

Example Configuration

Step 1: Install the Positioner on the Valve

See *Installation and Set Up* on page 12.

Step 2: Set Tag and Address

Using NI Configurator:

1. Import DD/CFF files.

CAUTION



Do not navigate to the NI DD folder and copy the DD file onto itself.

2. Right-click on the device, select **Set Tag**, follow the prompts to enter a Tag.
3. Click **Set**.

CAUTION



Do not deactivate the Set to OOS mode checkbox. The block must be in OOS to change the Tag.

4. Right-click on the device, select **Set Address**, follow the prompts to enter an Address.

CAUTION



If the device is at the temporary address range (248 (0xF8)- 251 (0xFB)), you must set the address outside of that range.

5. Click **Set**.

CAUTION



Do not deactivate the Set to OOS mode checkbox. The block must be in OOS to change the Address.

Step 3: Basic Configuration

This section serves as an example where the AO block and TB block are configured. However, there are a number of combinations that can be configured. This discussion is valid if the positioner is controlled by the AO block.

1. For the Transducer block set:

- ACTUATOR_3.ACT_FAIL_ACTION_1 = either 1. Valve Closed (most common) or 2. Valve Open
- ACCESSORY.REMOTE_SENSOR = 0, if remote sensor is not in use (internal Hall sensor is used)
- ACTIVATE_CONTROL_SET to one of:

<input type="checkbox"/> 0: Activate Custom Control Set (required for Autotune as well - most common)	<input type="checkbox"/> 1: Activate Control Set 1 (Slowest)	<input type="checkbox"/> 2: Activate Control Set 2
<input type="checkbox"/> 3: Activate Control Set 3	<input type="checkbox"/> 4: Activate Control Set 4	<input type="checkbox"/> 5: Activate Control Set 5 (Fastest)
<input type="checkbox"/> 6: Activate Control Set 6 (Double Acting - Slow)	<input type="checkbox"/> 7: Activate Control Set 7 (Double Acting- Fast)	

- CHAR_SELECTION.TYPE to one of:

<input type="checkbox"/> 0. Linear (most common)	<input type="checkbox"/> 1. Equal Percentage (30:1)	<input type="checkbox"/> 2. Equal Percentage (50:1)
<input type="checkbox"/> 3. Quick Open (reversal from Equal Percentage (50:1))	<input type="checkbox"/> 4. Custom	<input type="checkbox"/> 5. <i>Camflex</i> TM Percentage

See Transducer Block Parameters in the SVI FF instruction manual for further settings.

2. For the AO block review/set as below:

<input type="checkbox"/> PV_SCALE.UNIT INDEX = %	<input type="checkbox"/> XD_SCALE.UNIT INDEX = %	<input type="checkbox"/> CHANNEL = <i>Position</i>
<input type="checkbox"/> SHED_OPT = <i>NORMAL SHED</i> <i>NORMAL RETURN</i>		

Step 4: Run Find Stops METHOD

Use a configuration tool (DD, SVI FF local pushbuttons or software) to run METHOD.

Step 5: Run Auto Tune METHOD

Use a configuration tool (DD, SVI FF local pushbuttons or software) to run METHOD.

Downloads

To download the complete user manual, DD, SVI FF Advanced DTM and the ValVue Suite trial program, visit:

<https://valves.bakerhughes.com/resource-center>.

Hazardous Location Installation

WARNING



Refer to ES-776 Safe Use Instructions for installing Masoneilan SVI FF in areas where there is a potential risk for explosive gas atmosphere or inflammable dust.

ES-776 instructions are available in several languages on: valves.bakerhughes.com/resource-centre

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