

**Datalogic SmartVS**  
**AOI user manual**  
**(Rockwell PLC)**

# 1. GENERAL INFORMATION

**PLC Model:** L33ERM

**SW Version:** Studio 5000 Logix Designer Release 32.01

# 2. INTERFACE

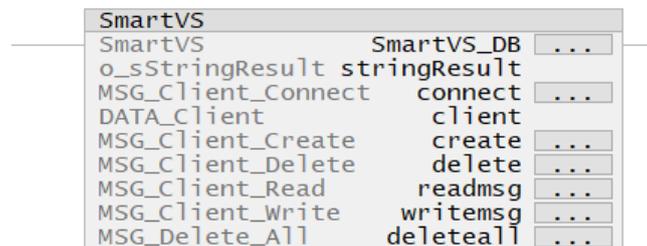


Figure 1: AOI SmartVS.

<b>Input</b>	<b>Type</b>	<b>Description</b>
SmartVS_DB.i_xEnable	BOOL	Enable / disable the connection to the SmartVS device
SmartVS_DB.i_xWrite	BOOL	Enables (on the rising edge) the sending of the format change command (job) to the SmartVs device
SmartVS_DB.i_xReset	BOOL	FB reset that allows you to restart from the initial state (PLC disconnected from the device) or to resume execution following an error
SmartVS_DB.i_iJobData	INT	X value of the format data to be loaded. It must be between 0 and 31
SmartVS_DB.i_iPaddr1	INT	Connection ID. It must have a value between 1 and 4095
SmartVS_DB.i_iPaddr2	INT	Value of the 1st byte of the IP address of the SmartVS device
SmartVS_DB.i_iPaddr3	INT	Value of the 2nd byte of the IP address of the SmartVS device
SmartVS_DB.i_iPaddr4	INT	Value of the 3rd byte of the IP address of the SmartVS device

<b><i>InOut</i></b>	<b><i>Type</i></b>	<b><i>Description</i></b>
o_sStringResult	STRING	Indicates whether the format change procedure was successful or not, or if an error occurred: <ul style="list-style-type: none"> <li>- "Job x DONE" -&gt; Format change performed</li> <li>- "Job x FAIL" -&gt; Format change not performed</li> <li>- "Error State" -&gt; Error state</li> </ul>
MSG_Client_Connect	MESSAGE	Enable socket connection
DATA_Client	SKT_AOI_TCP_CLIENT	Instance of the AOI SKT_AOI_TCP_CLIENT within the AOI SmartVS that manages TCP / IP communication with the SmartVS device
MSG_Client_Create	MESSAGE	Create the socket
MSG_Client_Delete	MESSAGE	Disconnect and delete the socket
MSG_Client_Read	MESSAGE	Reads the response of the device via socket
MSG_Client_Write	MESSAGE	Send the format change request to the device via socket
MSG_Delete_All	MESSAGE	Disconnect and delete all sockets (automatically called on first cycle and after reset)

<b><i>Output</i></b>	<b><i>Type</i></b>	<b><i>Description</i></b>
SmartVS_DB.o_xEnabled	BOOL	Connection to device established
SmartVS_DB.o_xError	BOOL	Indicates that there is an error. A reset is necessary to restart the AOI / resume execution
SmartVS_DB.o_iErrorCode	INT	Error code (in HEX)
SmartVS_DB.o_diExtErrorCode	DINT	Error code extension (in HEX)

### 3. OPERATION

The SmartVS Add-On Instruction (AOI) allows TCP / IP communication between the Rockwell PLC and the SmartVS device in order to perform the format change procedure (job) and receive feedback.

#### 3.1 Initial setting

Before enabling the connection, the IP address of the connection must be set. This is set "byte by byte" via the SmartVS\_DB.i\_iPaddr1, SmartVS\_DB.i\_iPaddr2, SmartVS\_DB.i\_iPaddr3 and SmartVS\_DB.i\_iPaddr4 inputs. It will therefore be composed according to the following structure:

SmartVS\_DB.i\_iPaddr1. SmartVS\_DB.i\_iPaddr2. SmartVS\_DB.i\_iPaddr3. SmartVS\_DB.i\_iPaddr4

N.B. : The MESSAGES defined as InOut of the AOI SmartVS are already set correctly for communication purposes. Do not modify these MESSAGES either through the "Configuration Dialog" (accessible directly from the block, see fig. 2) or from "Controller tags".

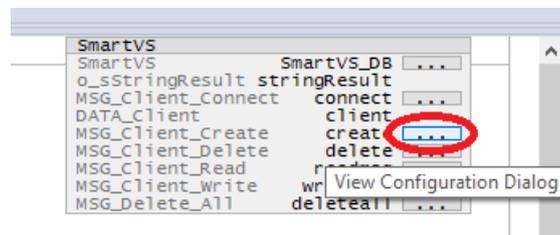


Figure 2: How to get in "Configuration Dialog".

#### 3.2 Rated operation

After the initial setting, the block can be enabled by setting the i\_xEnable input to "1". If the setting is not performed or the IP values are incorrect, the AOI will enter the error state and a reset will be required (i\_xReset).

Once the connection has been created, the o\_xEnabled output is set to "1" and the AOI is ready to start the format change procedure. As long as i\_xEnable is at "1" the connection will remain enabled; if it is set to "0", the communication will be disconnected (and o\_xEnabled will return to "0").

After setting the "x" format to be loaded on the device via i\_iJobData (the value must be between 0 and 31), you can proceed with sending the format change request via the i\_xWrite input. Attention: the request is sent on the rising edge of this input.

The device will respond to the format change request with positive or negative feedback. In the event of a positive feedback, the input o\_sStringResult will show "Job x DONE", otherwise "Job x FAIL" will be displayed followed by information on the reason for the operation failure.

After receiving the feedback, the device is ready to send a new format change request (unless there are any errors).

### 3.3 Status and error codes

Any type of error brings the AOI into the error state, which is reported in o\_sStringResult as "Error State", by setting o\_xError to "1" and providing a hexadecimal error code in o\_iErrorCode (and a possible extension of the o\_diExtErrorCode code).

This state can only be got out by setting i\_xReset to "1".

Only one internal error of the AOI is possible, indicated by the code:

16 # 0017 -> the device feedback did not provide an interpretable response (DONE or FAIL); indicates a probable error in the response of the SmartVS device

All other error codes (and related extensions) are related to the MESSAGES used within the AOI SmartVS for communication with the device. These codes can be found in the Rockwell manual.

In case of error 16 # 0017, the i\_xReset input equal to "1" puts the AOI back in the condition of waiting for an i\_xWrite command and resets the InOut o\_sStringResult. For all other errors, however, the reset disconnects the connection (if present) and returns the AOI to its initial state (with all outputs reset) pending the creation of a new connection.

**Warning:** in this case, if i\_xEnable has remained set to "1", the AOI immediately tries to recreate the connection after the reset.

### 3.4 Multiple devices

If you need to use more than one SmartVS device connected to the PLC, in addition to adding an AOI to the program for each device used, you must remember to:

- instantiate the new AOI (define a new data structure of the SmartVS type, called for example and generically SmartVS\_DBx)
- properly modify the IP address (input SmartVS\_DBx. i\_iIPAddr1, SmartVS\_DBx. i\_iIPAddr2, SmartVS\_DBx. i\_iIPAddr3, SmartVS\_DBx. i\_iIPAddr4)
- copy the MESSAGE structures defined in "Controller tags" and assign them to the InOuts of the new AOI
- set the MESSAGES via "Configuration Dialog" (accessible directly from the block, see fig. 2) updating the "Source Element" and the "Destination Element"