

Title: How to control SigmaLogic7 Modbus with Siemens PLC

Product(s): SigmaLogic7 Modbus, Siemens Simatic S7-1200

Doc. No. AN.MTN.09

Application Overview

This document explains how to configure and make a basic program to control a SigmaLogic7 Modbus Servopack with a Siemens PLC Simatic S7-1200. The PLC code is given only as a basic example purpose. More code and validation will have to be done to be used on a real application.

Before going forward reading this application note, it is strongly recommended to look the following e-Learning to have a basic knowledge of the Sigmalogic functionalities and setup:

- https://www.yaskawa.com/downloads/search-index/details?showType=details&docnum=eLV.SigmaLogic.01.Quickstart_Cnfg
- https://www.yaskawa.com/links?type=documents&docnum=eLM.SigmaLogic7.01.SL7_Modbus

Products Used & Application Requirements

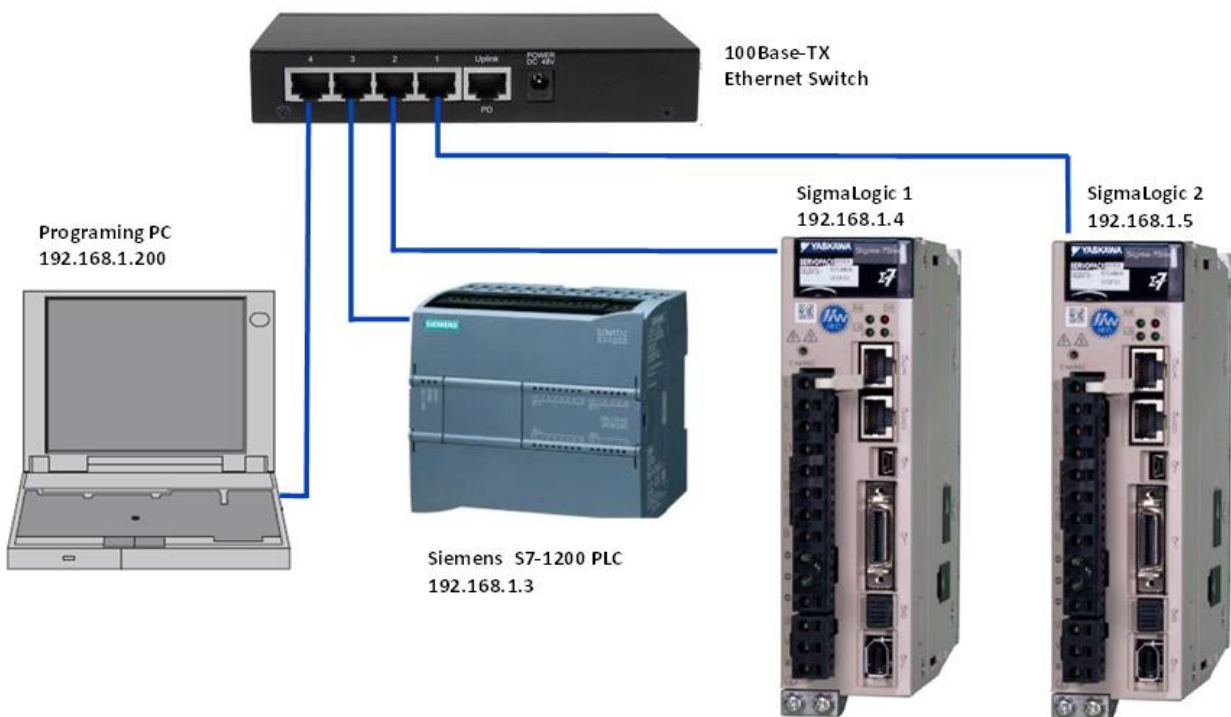
| Component | Product and Model Number |
|--------------|---|
| PLC | Siemens Simatic S7-1200 Cpu 1212c (6ES7 212-1BE40-0XB0) |
| Servopack | SigmaLogic7 Modbus (Firmware 3.3, Software 2.0.0) |
| Motor | Sigma-5 and Sigma-7 Series |
| Software | LogicWorks version 2.0.0 |
| PLC Software | STEP 7 Pro version V14 SP1 |

Ethernet IP Setup

Set the IP address for each device. In this configuration example the following addresses are used:

- SigmaLogic 1 192.168.1.4
- SigmaLogic 2 192.168.1.5
- Siemens PLC 192.168.1.3

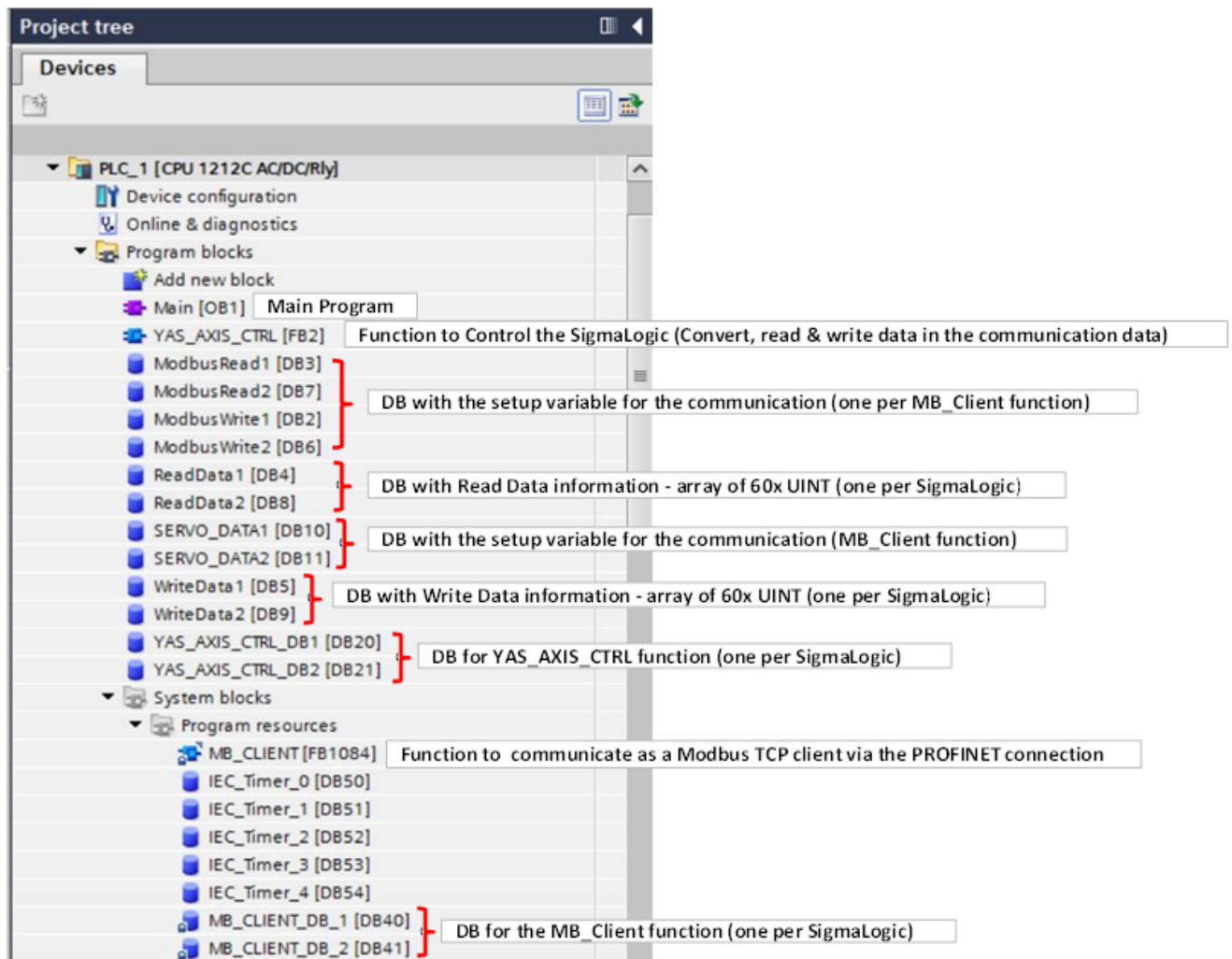
Configuration Example:



SigmaLogic Configuration

For this example, the default configuration was used in the SigmaLogic drives. The IP address for each SigmaLogic is only setup parameter that was changed. The user units are in motor turns. Make sure to update your IP address in the DB MB_Client data. (See page6)

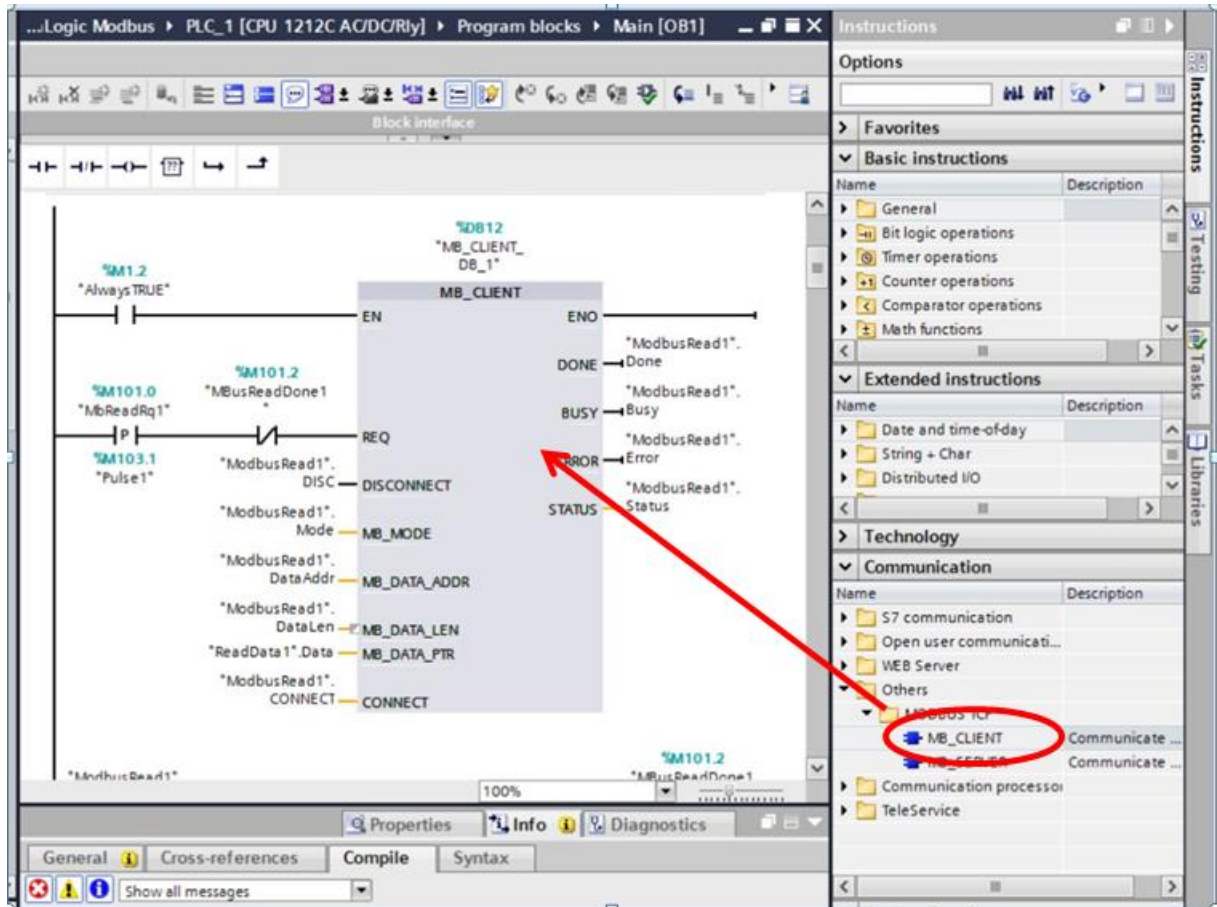
Siemens PLC - Project Tree Layout



Siemens PLC - MB_CLIENT function

The main function that has to be used is MB_CLIENT from the communication instruction library (Please see screen shot below). This instruction communicates as a Modbus TCP client via the PROFINET connection. With the "MB_CLIENT" instruction, a connection is established between the client and the server. It send Modbus requests and receive responses, it is also controlling the connection termination of the Modbus TCP client.

- Each "MB_CLIENT" connection must use a unique instance DB.
- For each "MB_CLIENT" connection, a unique server IP address must be specified.
- Each "MB_CLIENT" connection requires a unique connection ID.



For this configuration example, a DB with variables was created to generate the variable for the input and output data of each MB_Client function. For each SigmaLogic there is a ModbusRead DB and ModbusWriteDB.

| SigmaLogic1 | SigmaLogic2 |
|--------------------|--------------------|
| ModbusRead1 (DB3) | ModbusRead2 (DB3) |
| ModbusWrite1 (DB2) | ModbusWrite2 (DB2) |
| ReadData1 (DB4) | ReadData2 (DB4) |
| WriteData1 (DB5) | WriteData2 (DB5) |

Modbus Read DB

| ModbusRead1 | | | | | | | | | |
|-------------|-------------------|---------------------|-------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|
| | Name | Data type | Start value | Retain | Accessible f... | Writa... | Visible in ... | Setpoint | Comment |
| 1 | Static | | | | | | | | |
| 2 | REQ | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3 | DISC | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4 | Done | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5 | Busy | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 6 | Error | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7 | Status | Word | 16#0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 8 | StatusSave | Word | 16#0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 9 | Mode | USInt | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 10 | DataAddr | UDInt | 30045 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 11 | DataLen | Int | 60 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 12 | CONNECT | TCON_IP_v4 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13 | Interfaceld | HW_ANY | 64 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | HW-identifier of IE-interface submodule |
| 14 | ID | CONN_OUC | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | connection reference / identifier |
| 15 | ConnectionType | Byte | 11 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | type of connection: 11=TCP/IP, 19=UDP (17=TCP) |
| 16 | ActiveEstablished | Bool | true | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | active/passive connection establishment |
| 17 | RemoteAddress | IP_V4 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | remote IP address (IPv4) |
| 18 | ADDR | Array[1..4] of Byte | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 19 | ADDR[1] | Byte | 192 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 20 | ADDR[2] | Byte | 168 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 21 | ADDR[3] | Byte | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 22 | ADDR[4] | Byte | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 23 | RemotePort | UInt | 502 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | remote UDP/TCP port number |
| 24 | LocalPort | UInt | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | local UDP/TCP port number |

Modbus Write DB

| ModbusWrite1 | | | | | | | | | |
|--------------|-------------------|---------------------|-------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--|
| | Name | Data type | Start value | Retain | Accessible f... | Writa... | Visible in ... | Setpoint | Comment |
| 1 | Static | | | | | | | | |
| 2 | REQ | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3 | DISC | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4 | Done | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5 | Busy | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 6 | Error | Bool | false | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7 | Status | Word | 16#0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 8 | StatusSave | Word | 16#0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 9 | Mode | USInt | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 10 | DataAddr | UDInt | 40001 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 11 | DataLen | Int | 60 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 12 | CONNECT | TCON_IP_v4 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13 | Interfaceld | HW_ANY | 64 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | HW-identifier of IE-interface submodule |
| 14 | ID | CONN_OUC | 2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | connection reference / identifier |
| 15 | ConnectionType | Byte | 11 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | type of connection: 11=TCP/IP, 19=UDP (17=TCP) |
| 16 | ActiveEstablished | Bool | true | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | active/passive connection establishment |
| 17 | RemoteAddress | IP_V4 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | remote IP address (IPv4) |
| 18 | ADDR | Array[1..4] of Byte | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 19 | ADDR[1] | Byte | 192 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 20 | ADDR[2] | Byte | 168 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 21 | ADDR[3] | Byte | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 22 | ADDR[4] | Byte | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | IPv4 address |
| 23 | RemotePort | UInt | 502 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | remote UDP/TCP port number |
| 24 | LocalPort | UInt | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | local UDP/TCP port number |

All the data needed for the correct configuration is in the Start value (default value) of each variable in the ModbusRead & Modbus Write DB.

Below there is a Description of each parameter for the MB CLIENT function coming from the DB ModbusRead, ModbusWrite, ReadData and WriteData. **Make sure to update the IP address in the parameter (STOP and START CPU after to update the data):**

- EN - Function Enable (TRUE)
- REQ - Communication Request (One shot)
- Disconnect - Disconnect the communication connection (0=Connected)
- MB_MODE - Modbus Request Mode (0=Read, 1= Write)
- MB_DATA_ADDR - Data Starting Address (Read= 30045, Write= 40001)
- MB_DATA_LEN - Data Length (60x UINT registers)
- MB_DATA_PTR - Pointer to a data buffer for the data (ReadData or WriteData)
- CONNECT – Connection information structure
 - Interfaced (64)
 - ID (unique for each MB Client)
 - Connection Type (11= TCP)
 - ActiveEstablished (TRUE)
 - **Remote Address (IP Adresse)**
 - Remote Port (502)
- Done - Modbus request completed without errors.
- Busy - Modbus request being processed
- Error - Error occurred. The cause of error is indicated by the STATUS parameter.
- Status – Communication Status
 - 0000 - Instruction executed without errors.
 - 0001 - Connection established.
 - 0003 - Connection terminated.
 - 7000 - No job active and no connection established (REQ=0, DISCONNECT=1).
 - 7001 - Connection establishment triggered.
 - 7002 - Intermediate call. Connection is being established.
 - 7003 - Connection is being terminated.
 - 7004 - Connection established and monitored. No job processing active.
 - 7005 - Data is being sent.
 - 7006 - Data is being received.
 - 8xxx - Error Status,

The Sigmalogic take around 20sec to start. A timeout timer was added in the code example to refresh the communication every 4 second if the communication is not established.

Siemens PLC - ReadData & WriteData

Reading data are stored in the ReadData DB (array of 60 UINT). Writing data are taken from the WriteData DB (Array of 60 UINT). The value can be directly changed in the WriteData DB to control the SigmaLogic. The Memory map can be found in the document “*SigmaLogic Modbus_TCP Memory Map.xlsx*”. In this configuration, the Data is written from register **40001** to **40060**. It is read from **30045** to **300104**.

Siemens PLC - YAS_AXIS_CTRL

YAS_AXIS_CTRL function was created to simplify the data management from the communication (read and write data). This function is taking care of the data type conversion. It is taking 60 x UINT from the Read Data DB and converting them in usable data (BOOL, DINT etc) . It is also converting usable data in 60 x UINT to store them in the WriteData DB.

A DB have to be created for each SigmaLogic (**YAS_AXIS_CTRL_DBx**). In the configuration example, a **SERVO_DATAx** DB was also created to create variable giving information to the Input and Ouput of **YAS_AXIS_CTRL** function.

| SigmaLogic1 | SigmaLogic2 |
|--------------------------|--------------------------|
| YAS_AXIS_CTRL_DB1 (DB20) | YAS_AXIS_CTRL_DB2 (DB21) |
| SERVO_DATA1 (DB10) | SERVO_DATA2 (DB11) |

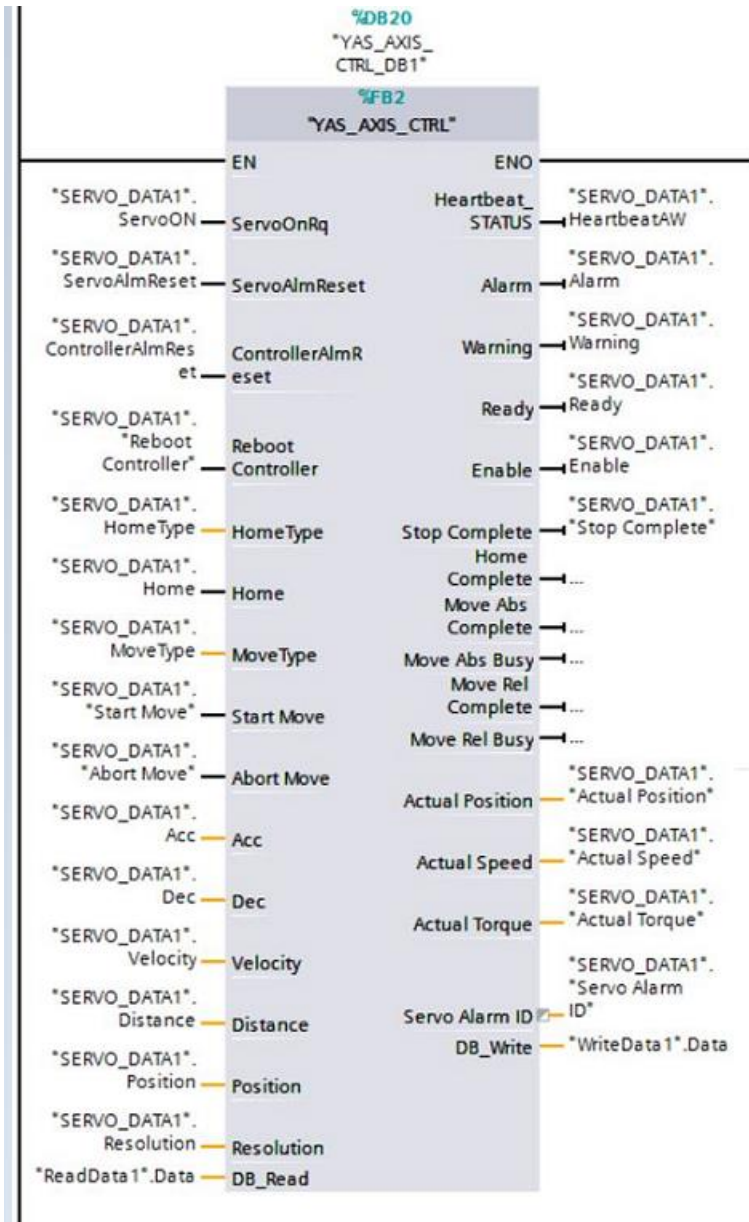
To run the SigmaLogic, the user can open the **SERVO _DATA** DB and manually change the information:

- Motion Profile (accel, decel, speed, distance, position)
- ServoOn Rq
- Error Reset (Controller or drive)
- Homing
- Etc.

It can also be used to monitor information:

- Actual Position
- Actual Speed
- Error
- Status
- Etc.

YAS_AXIS_CTRL Function:



Servo_DATA DB:

| SERVO_DATA1 | | | | | | | | | |
|-------------|----------------------|-----------|-------------|---------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | Name | Data type | Start value | Monitor value | Retain | Accessible f... | Writa... | Visible in ... | Setpoint |
| 1 | ▼ Static | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | ▣ ServoON | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3 | ▣ ServoAlmReset | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4 | ▣ ControllerAlmReset | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5 | ▣ Reboot Controller | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6 | ▣ HomeType | Int | 1 | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7 | ▣ Home | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8 | ▣ Start Move | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9 | ▣ Abort Move | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 | ▣ HeartbeatAW | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11 | ▣ Acc | DInt | 5000 | 5000 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 12 | ▣ Dec | DInt | 5000 | 5000 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13 | ▣ Velocity | DInt | 1000 | 1000 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 14 | ▣ Distance | DInt | 2000 | 2000 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 15 | ▣ Position | DInt | 0 | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 16 | ▣ Resolution | Int | 3 | 3 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 17 | ▣ MoveType | Int | 1 | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 18 | ▣ Alarm | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 19 | ▣ Warning | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 20 | ▣ Ready | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 21 | ▣ Enable | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 22 | ▣ Stop Complete | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 23 | ▣ Home Complete | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 24 | ▣ Move Abs Complete | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 25 | ▣ Move Abs Busy | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 26 | ▣ Move Rel Complete | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 27 | ▣ Move Rel Busy | Bool | false | FALSE | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 28 | ▣ Actual Position | DInt | 0 | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 29 | ▣ Actual Speed | DInt | 0 | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 30 | ▣ Actual Torque | DInt | 0 | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 31 | ▣ Servo Alarm ID | UInt | 0 | 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

More information on the SigmaLogic7 Modbus can be found in the SigmaLogic7 DirectControl User Guide:

<https://www.yaskawa.com/downloads/search-index/details?showType=details&docnum=TM.SigmaLogic7.01>

It will describe in details each functions and other information about the interface needed for the programmer to enable the servo, execute motion operations and monitor axis feedback.