SMI2-M Using Spy Mode

1. Introduction

The example explains how to set up the exchange of the SMI2-M indicator in Spy mode. In this mode, the indicator listens to the bus, awaiting a request with the specified parameters. This enables the integration of indicators into systems where a network master is already in place and cannot be reconfigured to poll another slave device.

As an example, consider the case where the programmable relay PR102 is connected to the akYtec Cloud service via the Gx24 line network gateway. Suppose one of the values read by akYtec Cloud also needs to be displayed on the SMI2-M indicator. In this case, the SMI2-M cannot be used in network master mode, as akYtec Cloud is already the master, and only one master can exist on the RS-485 bus. Therefore, the SMI2-M operates in a special Spy mode.

Parameter	Gx24	PR102	SMI2-M
Interface	RS-485	RS-485-1	RS-485
Protocol	Modbus RTU		
Operating mode	Master	Slave	Spy
Address	-	16	-
Baud rate	115200		
Number of data bits	8		
Parity	-		
Stop bit	1		

Table 1. Device network settings

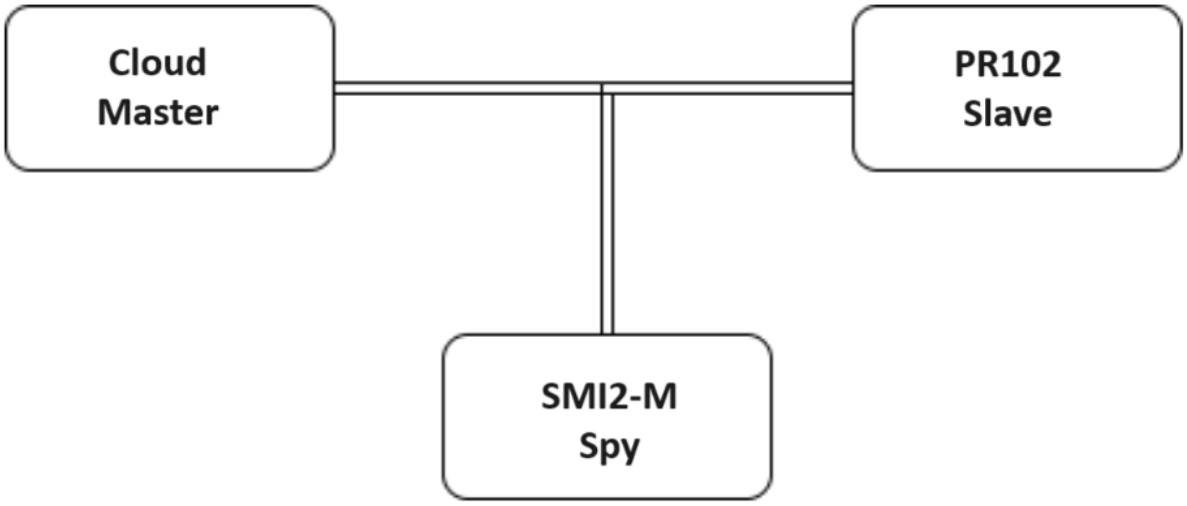


Figure 1. Communication block diagram

2. Setting up PR102

Create a project in akYtec ALP for the desired PR model. Go to the **Device** menu and select **Device configuration**. In the **Interfaces > RS-485, Slot 1, Slave** tab, configure the network settings according to Table 1.

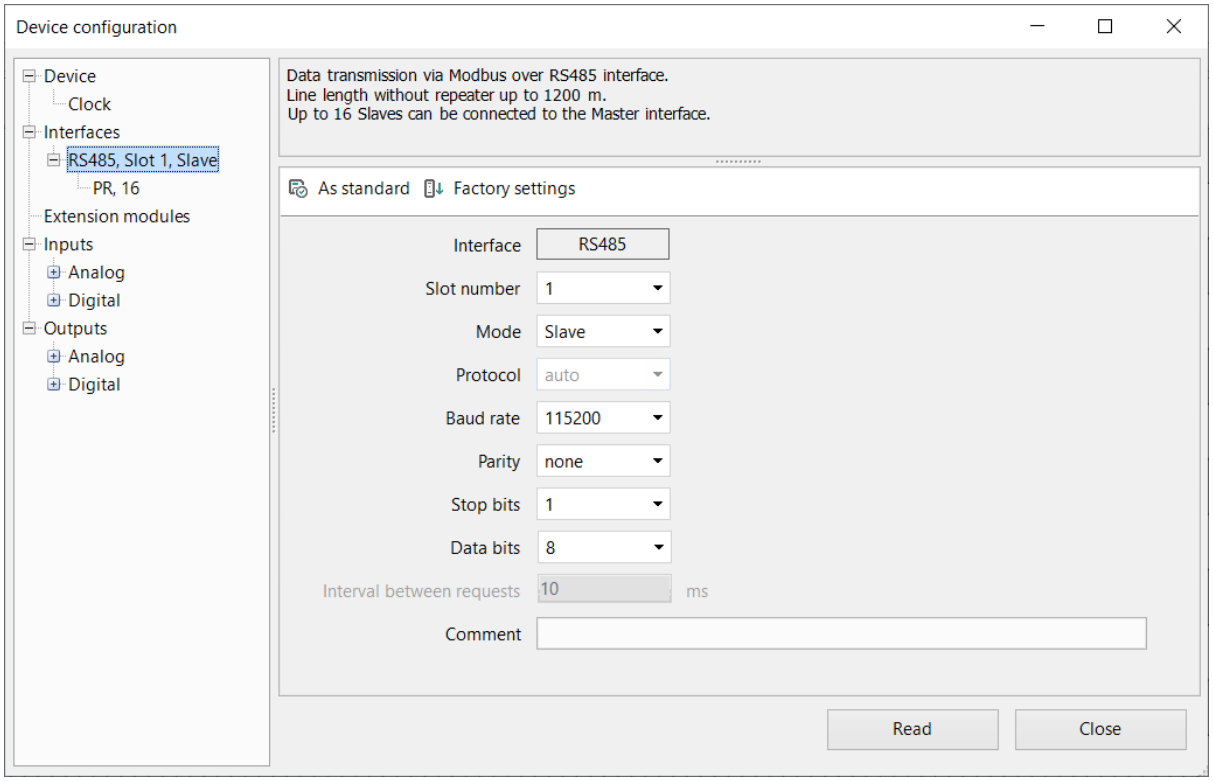


Figure 2. PR interface configuration

In the slave device node (**PR, 16**), specify the address (**16** – according to Table 1.) and add a new network variable (**rValue** for example) with address **512** of the floating-point type (**REAL**).

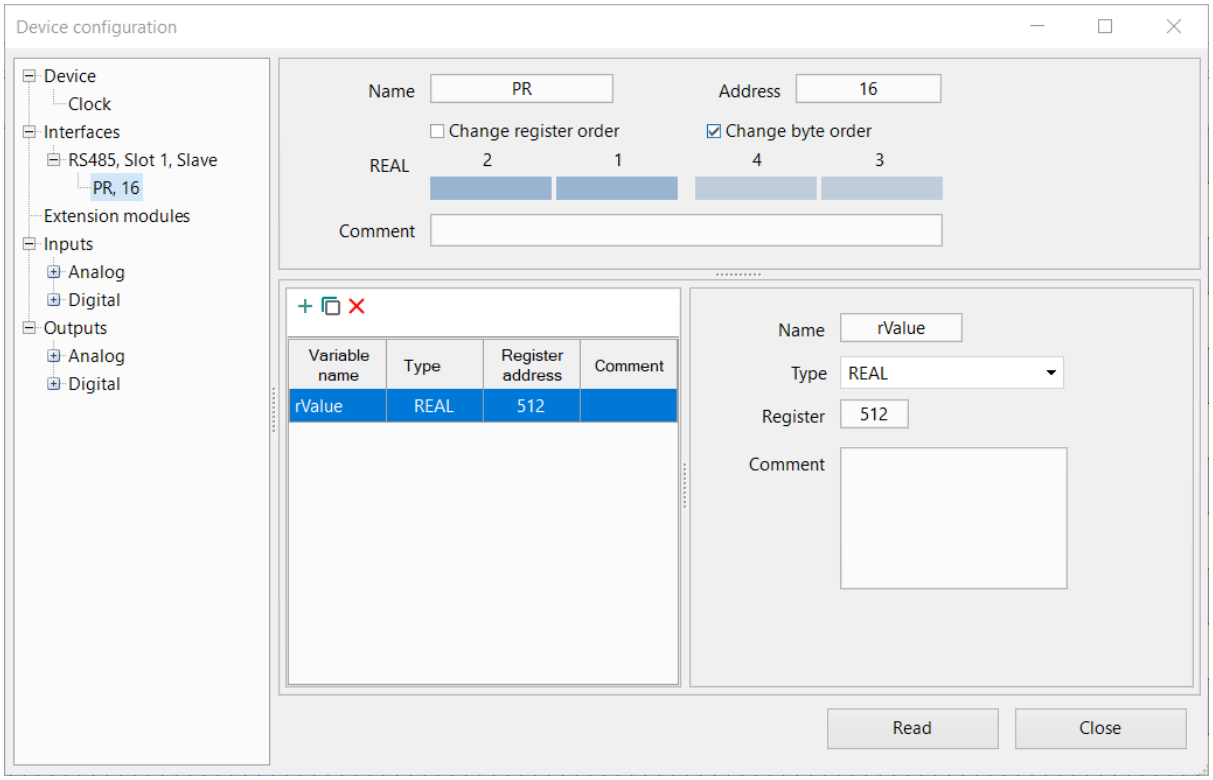


Figure 3. Slave register configuration

Assign the **rValue** variable to the first analog input in the program. The analog input setup can be found under the **Inputs > Analog** tab.

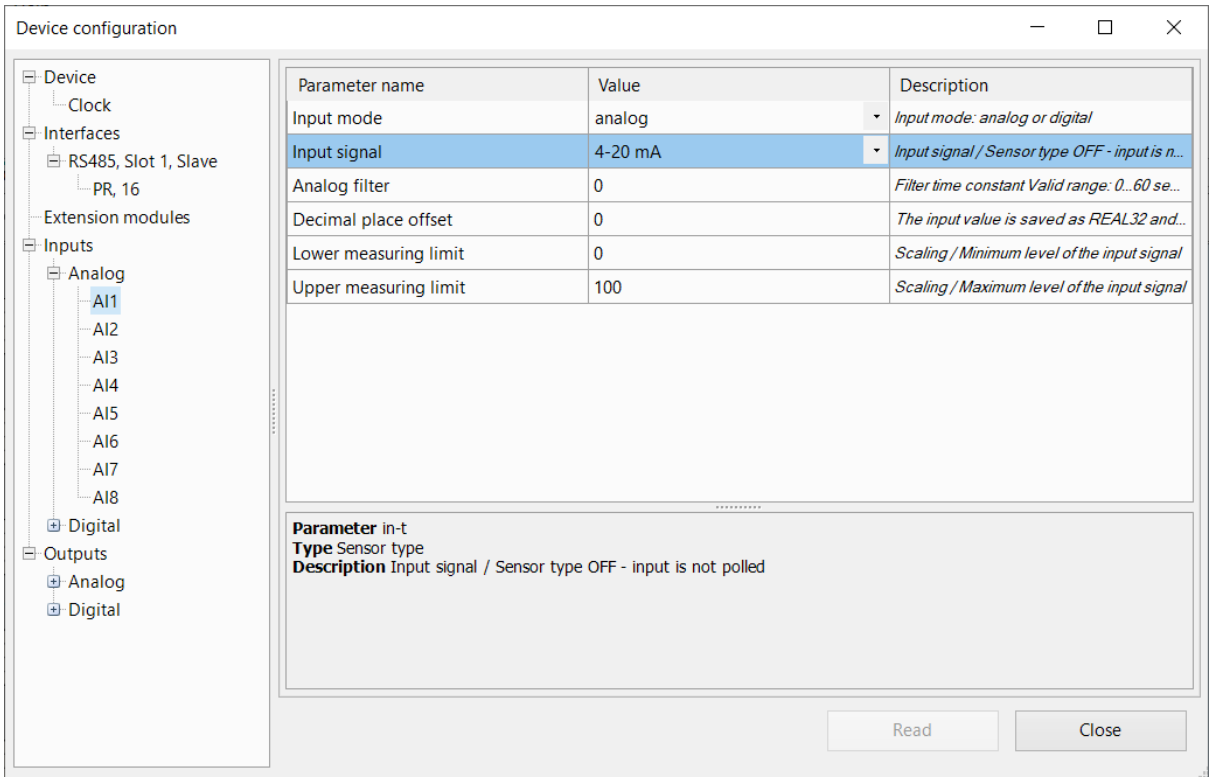


Figure 4. Analog input settings

3. Setting up akYtec Cloud

This example does not cover adding the PR102 to the akYtec Cloud service. Relevant information is provided in the manual of the network gateway and akYtec Cloud. However, it's important to note that when adding a device, you must specify its network settings and address according to Table 1.

One parameter has been added for the device: as per section 2, it has address 512 (i.e., 0x200 – **Note**: in akYtec Cloud, register addresses are specified in HEX), and its type is **float** (floating point). To display the parameter correctly, ensure the option "Check the Register Order: Low Register First" is selected.

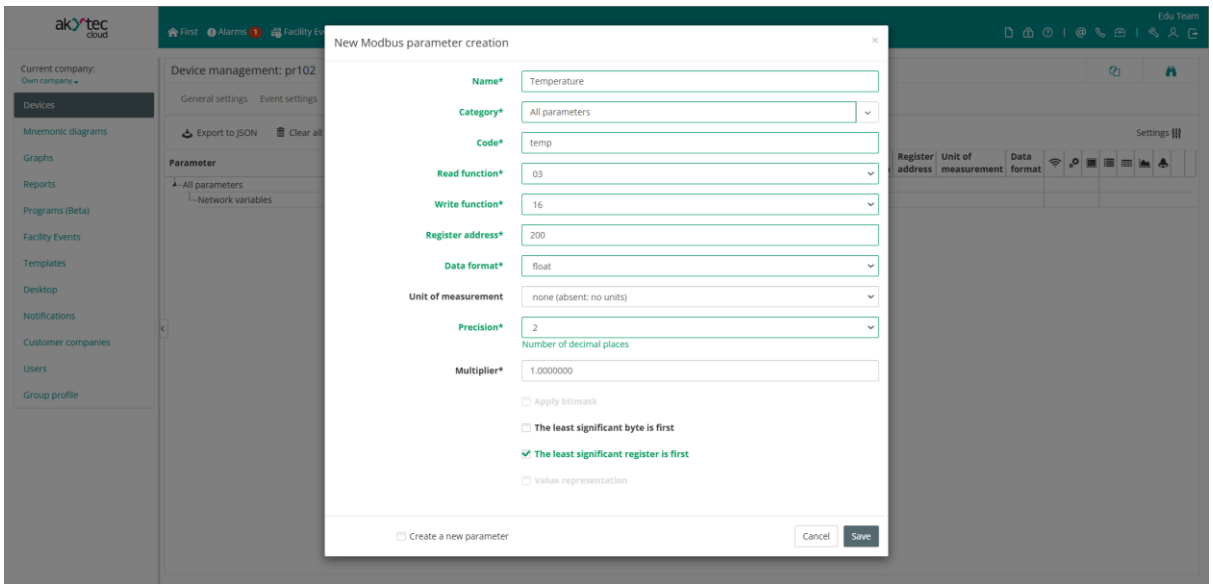


Figure 5. akYtec Cloud parameter settings

4. Setting up SMI2-M

Configuration of the SMI2-M is done through the akYtec ToolPro software. To configure the indicator, connect it to a PC using a MicroUSB/USB cable. Launch akYtec ToolPro and click the **Add Device** button. Specify the virtual COM port number (which can be found in the Windows Device Manager), select **akYtec Auto Detection Protocol**, set the connection mode to **Auto**, and assign address **1** under the **Find device** button. Click the **Find** button, then the **Add devices** button to add the device.

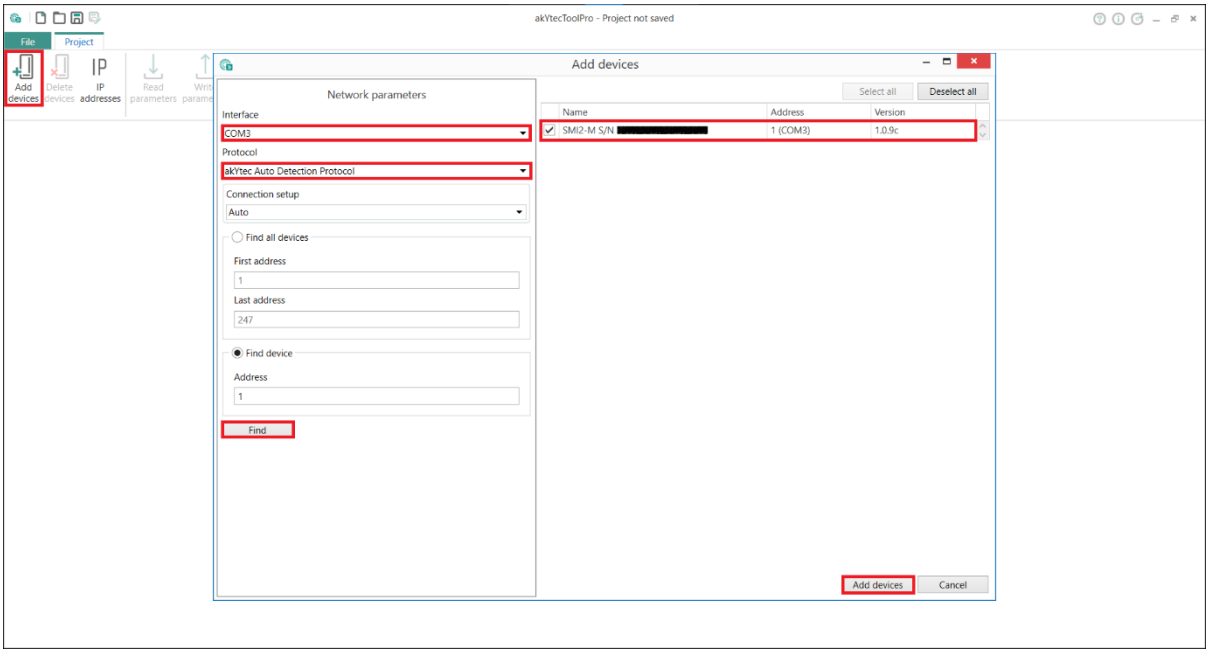


Figure 6. Connecting to SMI2-M in akYtec ToolPro

In the **RS-485 interface** tab, configure the network parameters according to Table 1. In the **Device settings** tab, set the **Operation mode** to **SPY**. Under the **Spy mode** tab, specify the parameters of the request that the SMI2-M will expect:

- Target device address = 16 (according to Table 1)
- Modbus function = 0x03 (according to Figure 5)
- Register address = 512 (according to Figure 3)

In the **Display** tab, specify the type of data as **REAL**. Additionally, you can configure the decimal point position and other parameters.

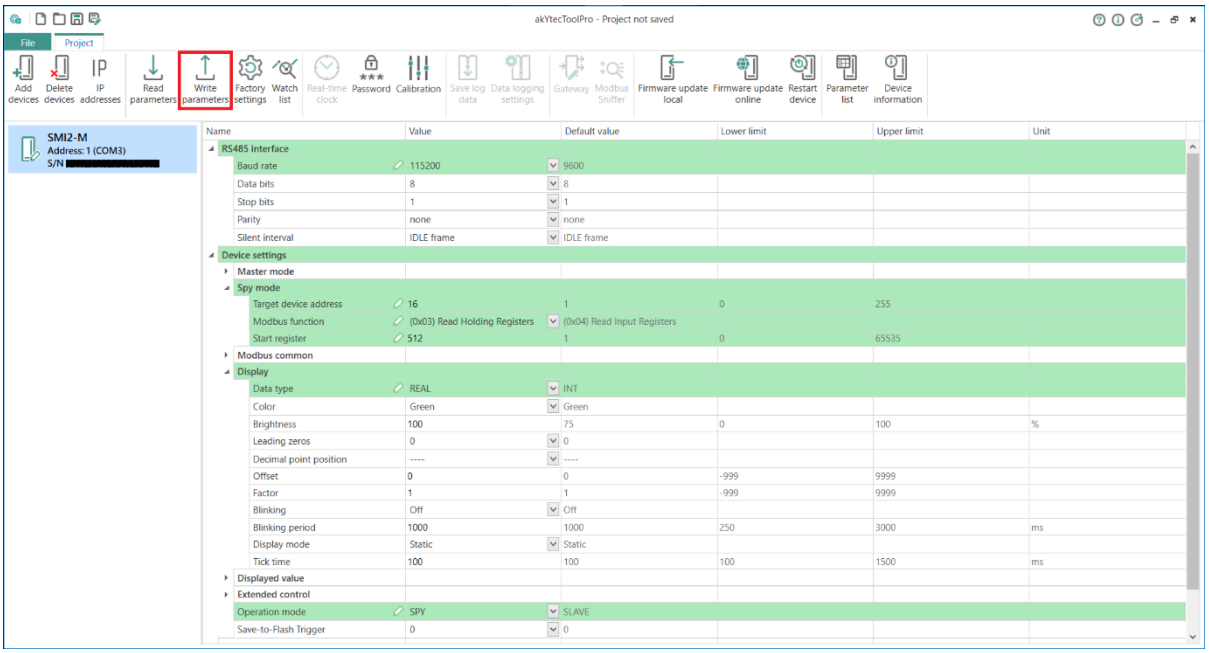


Figure 7. SMI2-M configuration

Click the **Write parameters** button to save the settings to the device.

5. Working with an example

Connect the devices and supply power to them. Load the project onto the PR102 and ensure that the switch on the device is in the **Run** position. The value of the first analog input will be displayed in both akYtec Cloud and on the SMI2-M.