

ISC CAM PLC Example Projects

This document describes how to implement the communication with ISC CAM in the line PLC program. Intralox provides example projects for Siemens Tia Portal (15.1/16) and Rockwell Studio 5000. These projects are intended to give an example on how to communicate with ISC CAM and get all important information to the line PLC.

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1.0 Device configuration

There are two devices included on the example project. If more are necessary, please see point 5.0 on how to add more devices. If only one device is required, the second device can just be removed.

1.1 Ip-address

If IP-address needs to be changed, please do so in the device configuration.

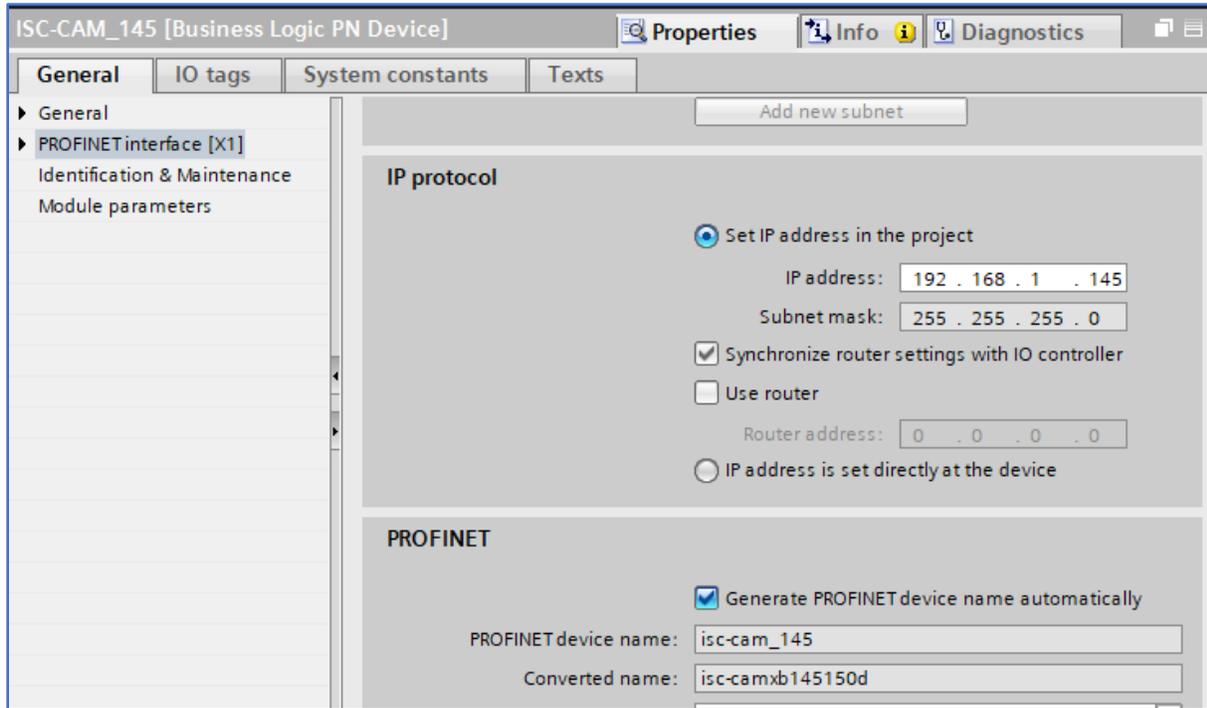


Figure 1 Ip address in TIA portal

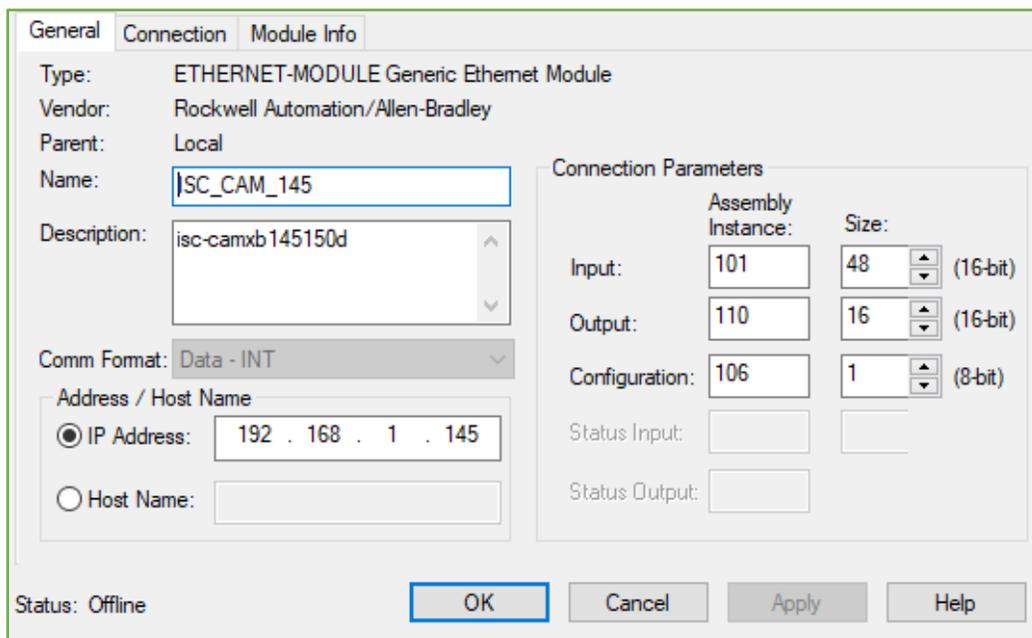


Figure 2 Ip address in Studio 5000

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1.2 Assigning device name

TIA portal: in order to connect to the device properly, go to device configuration and assign the device name.

Studio 5000: This step is not required on Studio 5000.

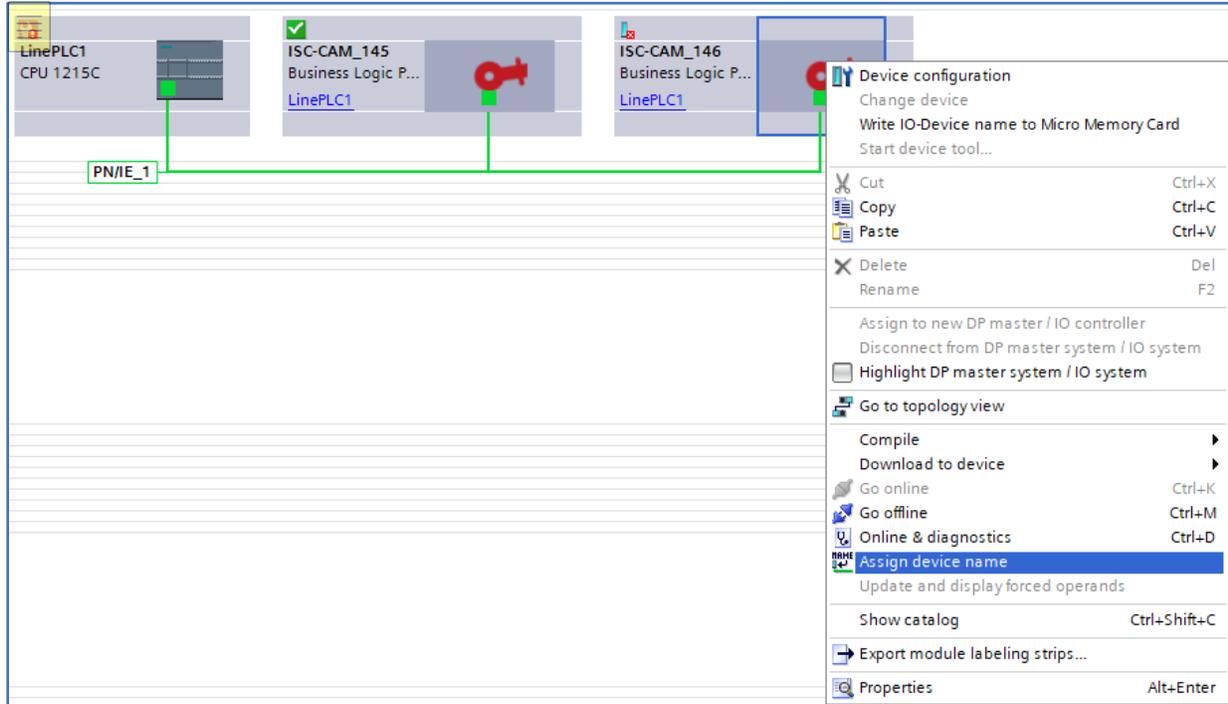


Figure 3 Assigning device name in TIA portal

1.3 Communication speed

The default communication speed between ISC CAM and the line PLC is set on Tia portal to automatic and Studio 5000 to 10ms. This value may be changed in order to optimize the line PLC, this can be done in the device configuration.

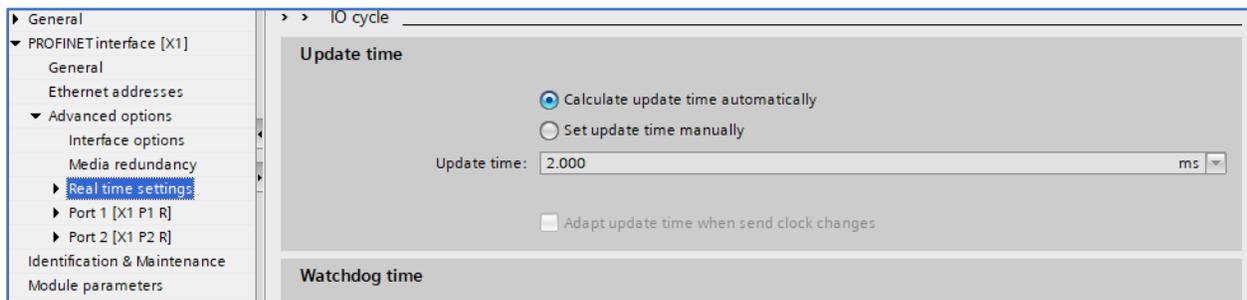


Figure 4 Tia portal

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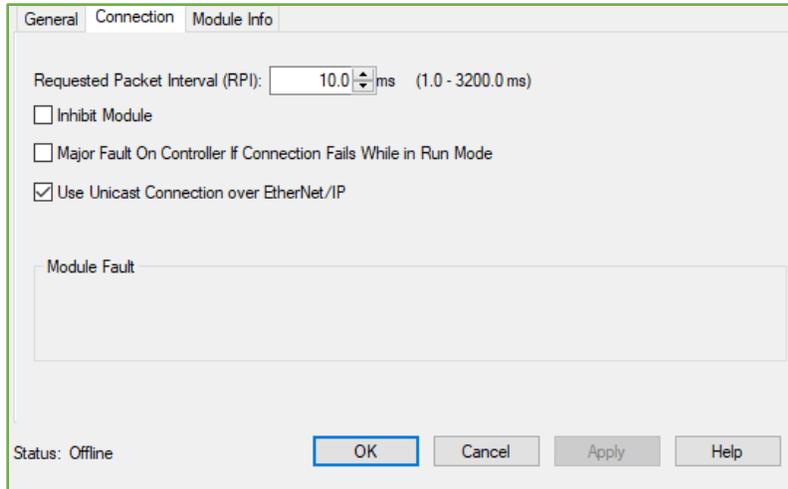


Figure 5 Studio 5000

1.4 IO-modules

Each device should have 48 Words data coming in and 16 Words/INT data going out. These values should not be changed.

2.0 Device specific blocks

Each device has 3 separate blocks dedicated to the device. In these blocks the necessary communication and data handling is happening.

Tia Portal: each device has its own folder.

Studio 5000: Each device has blocks named after them.

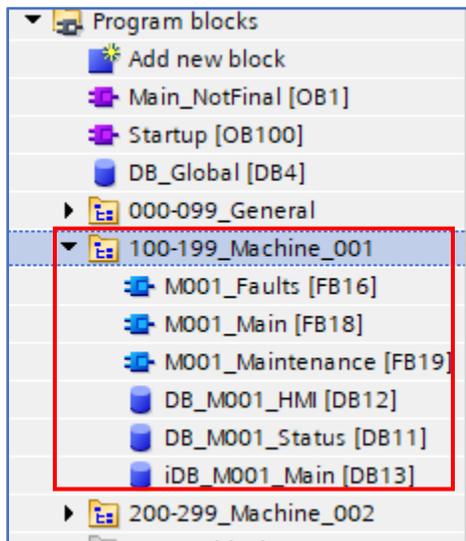


Figure 6 Tia portal device blocks

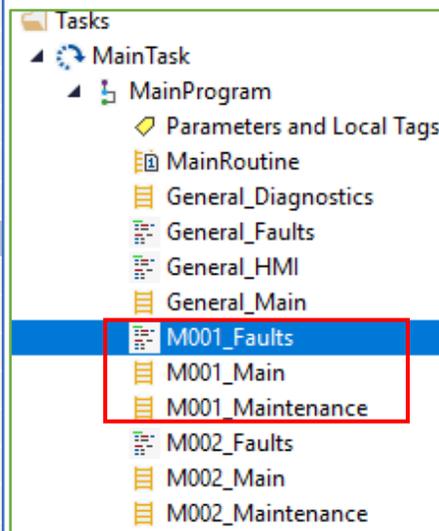


Figure 7 Studio 5000 device blocks

2.1 Data

Tia Portal: For the data, you can see the different DB's with the information.

Studio 5000: For the data, you can see the different tags on Controller tags.

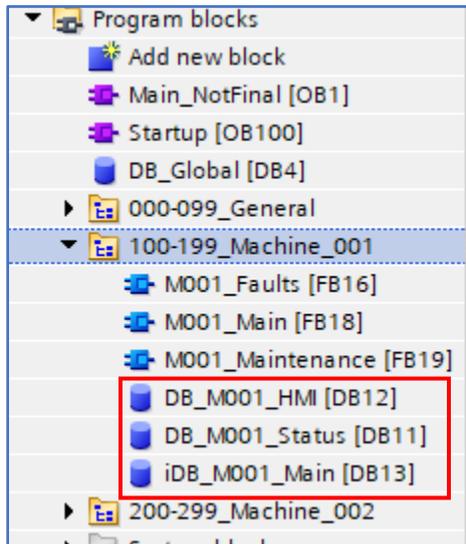


Figure 8 Tia portal

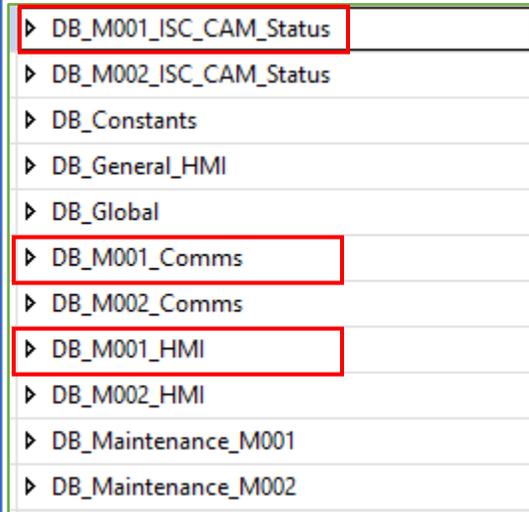


Figure 9 Studio 5000

3.0 HMI tags

On the DB for HMI you can access all the parameters that can be handy to use on a HMI.

3.1 Faults

In faultbits you can see all separate alarms. These alarms are being triggered by the alarms coming from the ISC CAM. Alarms are staying high until they are being reset by the GeneralRestBtnCmd from the "DB_General_HMI".

Fault boolean will show if there is any fault present that have not been reset.

FaultBits		*dt_JSCCAM_Ala...
CommsAlarm	Bool	
Fault8Alarm	Bool	
Fault9Alarm	Bool	
Fault10Alarm	Bool	
Fault11Alarm	Bool	
Fault12Alarm	Bool	
Fault13Alarm	Bool	
Fault14Alarm	Bool	
Fault15Alarm	Bool	
Fault0Alarm	Bool	
Fault1Alarm	Bool	
Fault2Alarm	Bool	
Fault3Alarm	Bool	
Fault4Alarm	Bool	
Fault5Alarm	Bool	
Fault6Alarm	Bool	
Fault7Alarm	Bool	
Fault	Bool	

Figure 10 Faults

3.2 MaintenanceCounters

On maintenance counters you can see all the warnings that can be triggered with set thresholds. Each warning can be set up and reset individually. When the warning bit is high it means that parts of the equipment should be checked. For each maintenance point there is a standard threshold that is being setup on the 'Startup' block.

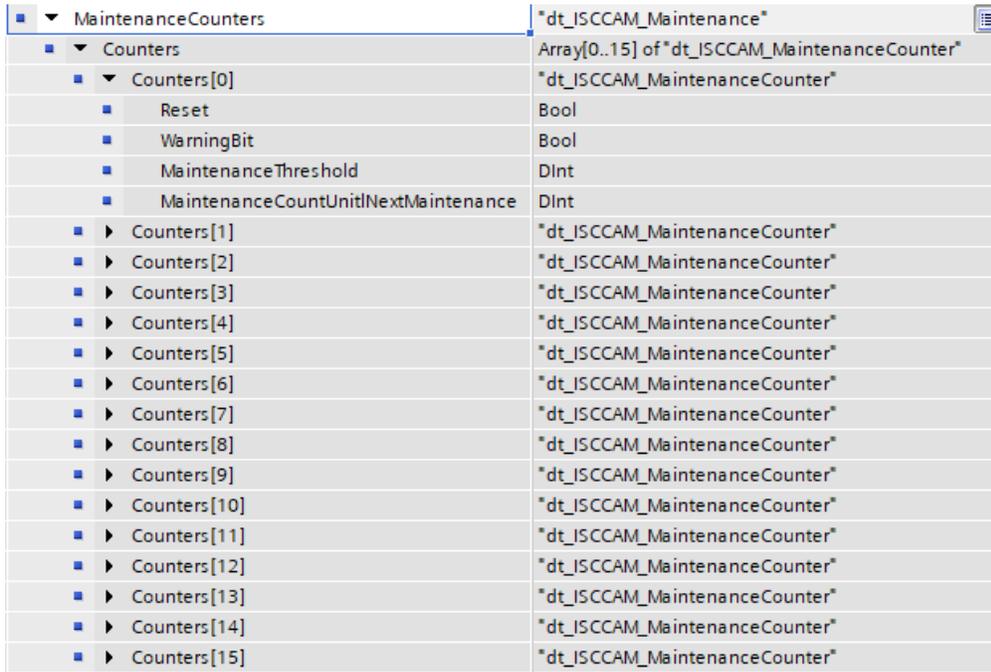


Figure 11 Maintenance counters

List of all the maintenance warnings and the default threshold values:

Counter	Default Alarm frequency	Maintenance Warnings
Counters[0]	Every 8000 h	Check belt elongation. If Elongation >3%, replace belt
Counters[1]	Every 8000 h	Check the belt for contaminants. Clean if necessary (reduced friction, belt rollers not spinning)
Counters[2]	Every 8000 h	Check wearstrip thickness. Replace when below 1 mm
Counters[3]	Every 8000 h	Check helix rollers for contamination (reduced friction), spinning difficulties, orange sleeves coming off. Clean if necessary
Counters[4]	Every 8000 h	Check transfer rollers for contamination (reduced friction), spinning difficulties. Clean if necessary

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Counters[5]	Every 16000 h	Check return rollers for spinning difficulties or damages
Counters[6]	Every 16000 h	Check oil level on drive motor
Counters[7]	Every 8000 h	Check activation cylinder for smooth movement and wear signs on the bronze bushings. Clean the stem. Zone0
Counters[8]	Every 8000 h	Check activation cylinder for smooth movement and wear signs on the bronze bushings. Clean the stem. Zone1
Counters[9]	Every 8000 h	Check activation cylinder for smooth movement and wear signs on the bronze bushings. Clean the stem. Zone2
Counters[10]	Every 16000 h	Check pneumatic system for air leakage

4.0 Auxiliary sensors

Auxiliary sensor FB can be used to create alarms if any auxiliary sensors are being used. These sensors would be connected straight to the PLC.

You can find the auxiliary sensor FB in the following locations:

Tia portal: General folder – Auxiliary sensors.

Studio 5000: Add-On Instructions

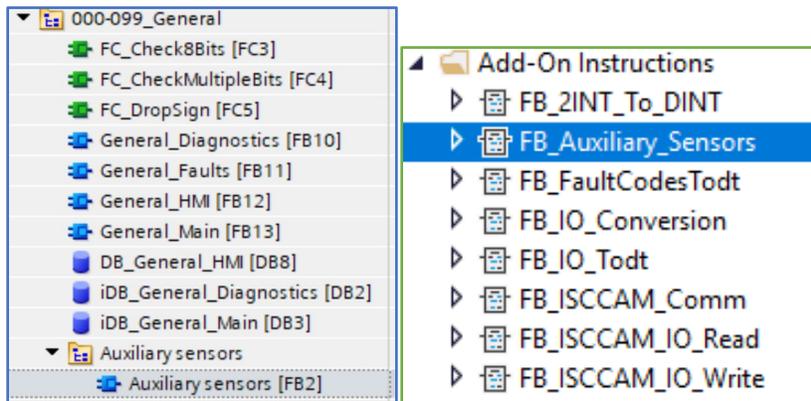


Figure 12 Tia portal

Figure 13 Studio 5000

Calling this function allows you to connect the signals from the sensor to the FB and get the active alarms.

Tia portal: Only applicable sensors can be connected.

Studio 5000: Any unused sensor input value needs to be set to 1.

The alarms can be reset with a reset signal. The output alarms can be connected to HMI tags.

5.0 Adding a new device

Follow these steps to add a new device to the project:

1. Add the device to hardware configuration and set up parameters as it is on the examples
2. **Tia portal:** Copy folder of existing machine (100-199_Machine_001 / 200-299_Machine_002) and name it accordingly. Change the names of the blocks inside the folder as well.
Studio 5000: copy the routines named per machine and change the names accordingly.

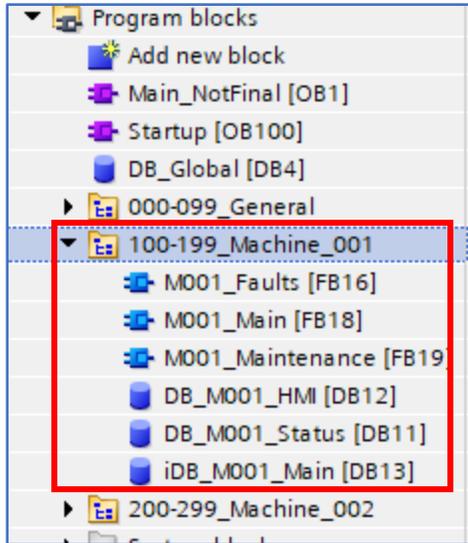


Figure 14 Tia portal

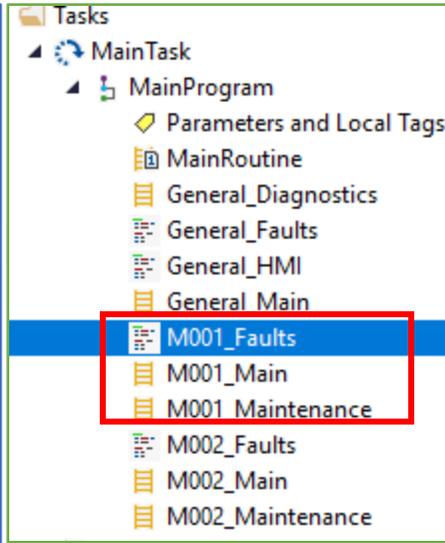


Figure 15 Studio 5000

3. **Studio 5000:** Make sure the blocks are connected properly. In machine main routine, it needs to call the same machine maintenance and fault routines. Add necessary tags on the controller tags and make sure correct tags are referenced within the routines.

Tia portal: make sure that on the machine Main FB the correct HW ID is used when calling the communication FB.

4. Call the copied machine Main block to the main routine.

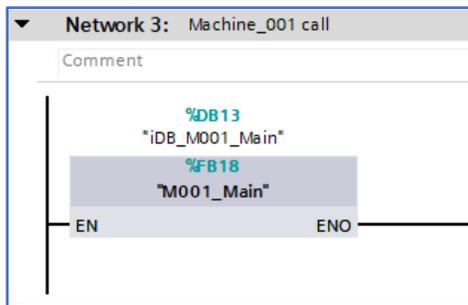


Figure 16 Tia portal



Figure 17 Studio 5000

5. Add the default threshold values for the maintenance notifications on the startup block.

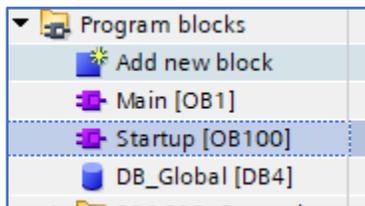


Figure 18 Tia portal

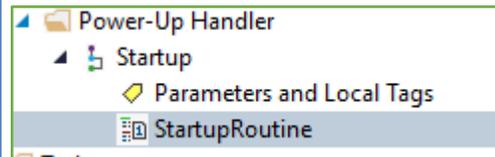


Figure 19 Studio 5000