IPETRONIK

IPEMOTION
Software

IPEmotion_PlugIn_SIEMENS_PLC_V01_05_00

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1 Important and general information

1.1 Important information

Please follow these instructions before and during the use and application on any IPETRONIK product!

1.1.1 Safety and Warning instructions

Please follow the instructions **and** information as contained in the user manual!

1. The user can **influence an electronic system by applying the IPETRONIK product**. This might cause risk of personal injury or property damages.
2. The **use and application of the IPETRONIK product is permitted only to qualified professional staff**, as well as, only in appropriate manner and in the designated use.
3. **Before using an IPETRONIK measurement system** in the vehicle it **has to be verified** that **no function of the vehicle, which is relevant for secure operation, might be influenced**:
   - by the installation of the IPETRONIK measurement system in the vehicle,
   - by an potential malfunction of the IPETRONIK system during the test drive.

   In order to avoid possible danger or personal injury and property damages, appropriate actions are to be taken; such actions have to bring the entire system into a secured condition (e.g. by using a system for emergency stop, an emergency operation, monitoring of critical values).

   Please check the following points to avoid errors:

   - Adaption of sensors to components of the electrical system / electronics, brake system, engine and transmission control, chassis, body.
   - Tap of one or several bus systems (CAN, LIN, ETHERNET) including the required electrical connection(s) for data acquisition.
   - Communication with the vehicle's control units (ECUs), especially with such of the brake system and/or of the engine and transmission control (power train control system).
   - Installation of components for remote data transmission (mobiles, GSM/GPRS modems, WiFi and Bluetooth components).

   The products can be operated in extended temperature ranges greater $70\,^{\circ}\mathrm{C}$ and therefore the operator has to take safety measures to avoid any skin burnings on hot surfaces while touching the products.

4. **Before** directly or indirectly using **the data acquired by an IPETRONIK measurement system to calibrate control units, please review the data regarding to plausibility**.
5. With regard to the application of IPETRONIK products in vehicles during use on public roads the manufacturer and/or registered user of the vehicle **has to ensure that all changes/modifications have no influence concerning the license of the vehicle or its license of operation.**
6. **User does agree to the instructions and regulations as mentioned above.** In case the user does not agree with the instructions and regulations as mentioned above, he has to notify this expressly and immediately in writing to IPETRONIK before confirming the sales contract.

1.2 Terms and conditions

See IPETRONIK website for details: https://www.ipetronik.com/

1.2.1 Legend of used icons

	Tip	*This icon indicates a useful tip that facilitates the application of the software.*
	Information	*This icon indicates additional information for a better understanding.*
	Attention!	*This icon indicates important information to avoid potential error messages.*

1.2.2 Support

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2 PlugIn overview

2.1 PlugIn description

With the SIEMENS PLC PlugIn you have access to the SIEMENS PLC systems. The PlugIn is able to read data from the PLC and write data to the PLC. Therefor this PlugIn is useful for test bench application where an interface to the SIEMENS PLC is needed.

2.2 PlugIn installation

In order to use the PlugIn together with IPEmotion you need to install it. The PlugIn is available for download from the IPETRONIK website: https://www.ipetronik.com/ When you have installed the PlugIn, you need to launch the IPEmotion software. Then you need to access the application menu and open the OPTIONS. In the OPTIONS you can activate the PlugIn as indicated below.

The PlugIn is supporting the following Windows operating systems:

- 32 bit
- 64 bit

3 PlugIn configuration

3.1 Functional architecture

The following diagram shows the schematic system architecture. You need to establish a USB or ETH connection between your PC and the PLC. If you have a new SIEMATIC S7 PLC based on the TIA Portal you can establish a direct Ethernet connection between PLC and your IPEmotion computer. However, if you have the S7 300 / 400 PLC you need an a USB or ETH interface adapter from Softing or Deltalogic.

The supported interfaces to communicate to the different PLC systems can be summarized as:

- S7 TCP-IP TIA — Direct Ethernet connection provided the PLC is running on the TIA portal.
- S7 TCP-IP — Direct Ethernet connection provided the PLC based on Step 7 program has CP343 industrial ethernet communication interface module.
- S7 NetLink-Pro — This is a hardware adapter from Deltalogic with and Ethernet output for STEP 7 programs.
- S7 NetLink USB — This is a USB hardware adapter from Deltalogic to connect to the PLC with STEP 7 program.
- S7 Softing — This is a USB hardware adapter from Softing to connect to the PLC with STEP 7 program.
- S7 PG/PC — his is the direct programming interface to the PLC running with a STEP 7 program.

3.2 Creating interface systems

In order to configure your measurement, you need to change to the SIGNALS work space and select the SIEMENS PLC PlugIn from the hardware system drop down list if you like to create the system manually. If you use a USB interface adapter you can run the automatic hardware detection to create your interface system.

Interface systems [3_SIE]

3.2.1 TIA project configuration

When your PLC is based on the TIA project you create the TIA interface system. The you have to enter the IP-address of the PLC to establish and Ethernet connection to your PC.

TIA interface system created [4_SIE]

TIA project import is the most convenient way to create all channel on the IPEmotion side. You have to select the TIA interface in the device try and then you can perform the TIA configuration import.

TIA project import [5_SIE]

In the file open dialog you select the TIA project file.

- .ap1
- .agl

TIA file search dialog [6_SIE]

After selecting the TIA project file a import dialog is provided where you can select the channels / variable you like to use in your measurement application. The import supports all typs of data elements from inputs, output status and data blocks elements as indicated in the device tree.

Channel selection from import dialog [7_SIE]

When the import is complete the channels are displayed in the channel grid.

Selected channels from TIA project are created [8_SIE]

On channel level you have in the Path tab sheet an indication of the symbol project path.

TIA symbol path [9_SIE]

3.2.2 STEP 7 project configuration

If you like interface your IPEmotion to a STEP 7 Siemens S300 /S400 PLC you can use e.g. the Deltalogic USB interface. When the USB connection between PC, interface hardware and PLC is established, you can run a hardware detect to establish a connection the PLC. If the connection is not possible you can change the settings in the Deltalogic adapter, which is explained at the end xxxx.

USB interface to STEP 7 PLC [15_SIE]

The fastes way to get access to the PLC variables is to use the S7 project import. However, if you know the variable names and the Start Byte and Bit addresses you can create the variables manually too.

Import S7 project [16_SIE]

It is not sufficient to select the S7 project file only. Rather you need to have a complete export of the S7 project (.s7p) structure including all subfolders too. The import is retrieving all relevant data from some of the sub-folders in order to create all variables.

[17_SIE]

After selecting the .s7p project file you are guided to the import dialog. Here you can select individual or all channels you like to integrate to your measurement application.

Variable selection

[18_SIE]

The imported channels / variables are now visible in your channel grid.

Import result [19_SIE]

3.2.3 Manual Deltalogic USB adapter configuration

In the case that the PLC hardware detection via the Deltalogic USB adapter is causing problems you can make configuration changes in the ACCON AG Link software. The AGLink40 Config software is included in the setup of the PlugIn in the following directory:

- Win 7: C:\Program Files (x86)\IPETRONIK**IPEmotion PlugIn SIEMENS PLC V01.05.00**

When you start the AGLink40 Config software you need to define a directory where to store the configuration file. The storage location has to be in the following ProgramData directory:

- Win 7 C:\ProgramData\IPETRONIK**IPEmotion 2017 R3**\MAL\IPETRONIK\SIEMENS PLC

Storage directory of the ACCON AG-Link Settings file [20_SIE]

In the interface setting dialog you select on Device 0 the NetLink USB interface. Then you can disable the automatic configuration and update the communication settings manually.

ACCON AG Link – manual configuration [21_SIE]

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