



# PLC S7

English V1.0

*Manual for Creating  
Backups of the PLC*

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# 1 General

The following manual is intended to explain the procedure to perform a full backup of the PLC. This procedure is important and should be done with a certain frequency (monthly), to save all the latest changes. We recommend that you update the existing Backups, as this maintains the comments and source code, which makes it much easier to implement future modifications into the system. Creating a Backup from scratch should only be made if no previous Backups are available. The Backup procedure should be performed by personal trained in the use of technical automation software, in this case with Siemens Simatic software V5.5.

## Requirements

The following elements are required to restore a Backup back into a PLC:

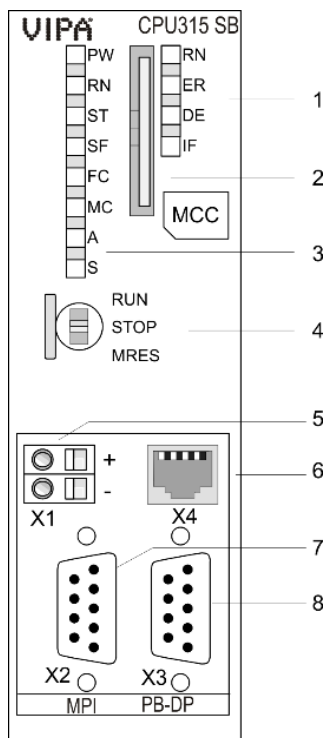
- Ethernet or "PC Adapter" (MPI) network cable, will depend on the type of PLC, usually an Ethernet cable will suffice.
- Computer or PG with the Software "SIEMENS Simatic V5.5" or a newer version (the Simatic TIA Portal **NOT** is supported).
- Automation technician or technician trained in applications of the SIMATIC and who is able to detect problems in a PLC.
- Most current backup of the PLC program.

## 2 Configure Communication to the PLC

The S7 compatible PLC's mainly support two communication methods to connect to the controller. In general it is preferable to use the Ethernet interface to connect PLC. The MPI interface is normally only used when the Ethernet interface is not available, since it requires an adapter to make the connection. In the following it is described, how to adjust the connection for the two methods. Once connected, the process of performing a backup or restore is exactly the same, independent of the selected interface.

Once communication is set, it is not necessary to change the settings again, because they will remain saved on the computer. However, if the connection to the PLC is not working, it is always recommended to check the settings again.

### 2.1 Ethernet (TCP/IP)



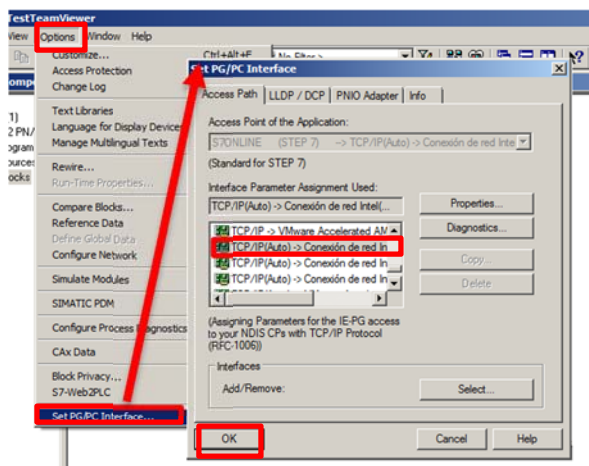
The vast majority of the S7 PLC incorporate an Ethernet interface for communication with the connected equipment. This interface is generally located in the CPU module (item 6). An ordinary Ethernet cable (Patch-Cable) is required for the connection.



Normally a switch is connected to this interface, where you can connect to any available Port.

Some smaller systems do not have a switch installed in the electrical cabinet where you can connect, and the HMI is connected directly to the internal Ethernet interface of the CPU. In this case, the HMI can be unplugged in order to connect directly to the CPU. After the backup is complete, reconnect the HMI which to continue its operation.

**WARNING! When you disconnect the HMI, this does not work and may display outdated information on the screen. Actions from the HMI will not be available while the HMI is disconnected..**



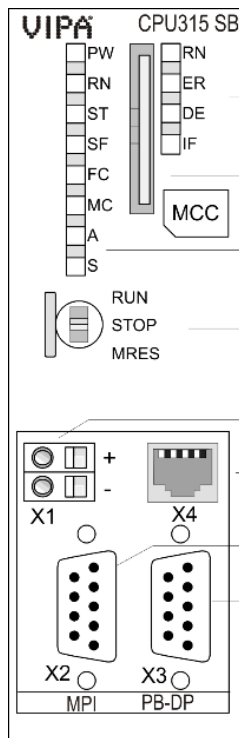
To set the type of communication in the Simatic software, one has to open the dialog in "Options" and select "Set PG/PC interface" and select the type of communication between the PLC and the PC, which normally appears as the name of your Ethernet card installed in the Computer. There is usually an option for every existing adapter on the computer (usually Ethernet and wireless card).

**INFO:** In order to connect to the PLC, one should consider setting the IP address of your network adapter of the computer, to an available address within the range accessible by the PLC. In order to adjust the local address, one must know the address of the PLC. The BatchXpert systems typically do not use addresses greater than 200 in their internal networks, so they would be available to adjust the computer.

Example: If the PLC has the address 192.168.0.11 one can use the address 192.168.0.200 to 192.168.0.254. (The first three numbers must remain the same).

*For the address of your PLC you can review Project documentation. If you do not know how to set the IP address, see the IT department of your company for assistance.*

## 2.2 MPI

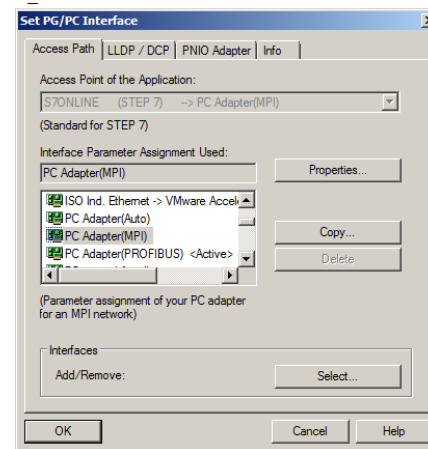


All S7 PLC incorporate a MPI interface for communications with connected equipment. This interface is generally located in the CPU module (item 7). To connect to the PLC, a special MPI adapter is required. These Adapters are available from various Suppliers, such as Siemens (6ES7 972-0CB20-0XA0).



The Programming Devices from Siemens "Field PG" (only Siemens computers, other brands always require an adapter), incorporating an internal MPI adapter, which can be connected directly with a serial cable.





To set the type of communication in the Simatic software, open the dialog located in "Options", select "Set PG / PC interface" and select the "PC Adapter (MPI)".

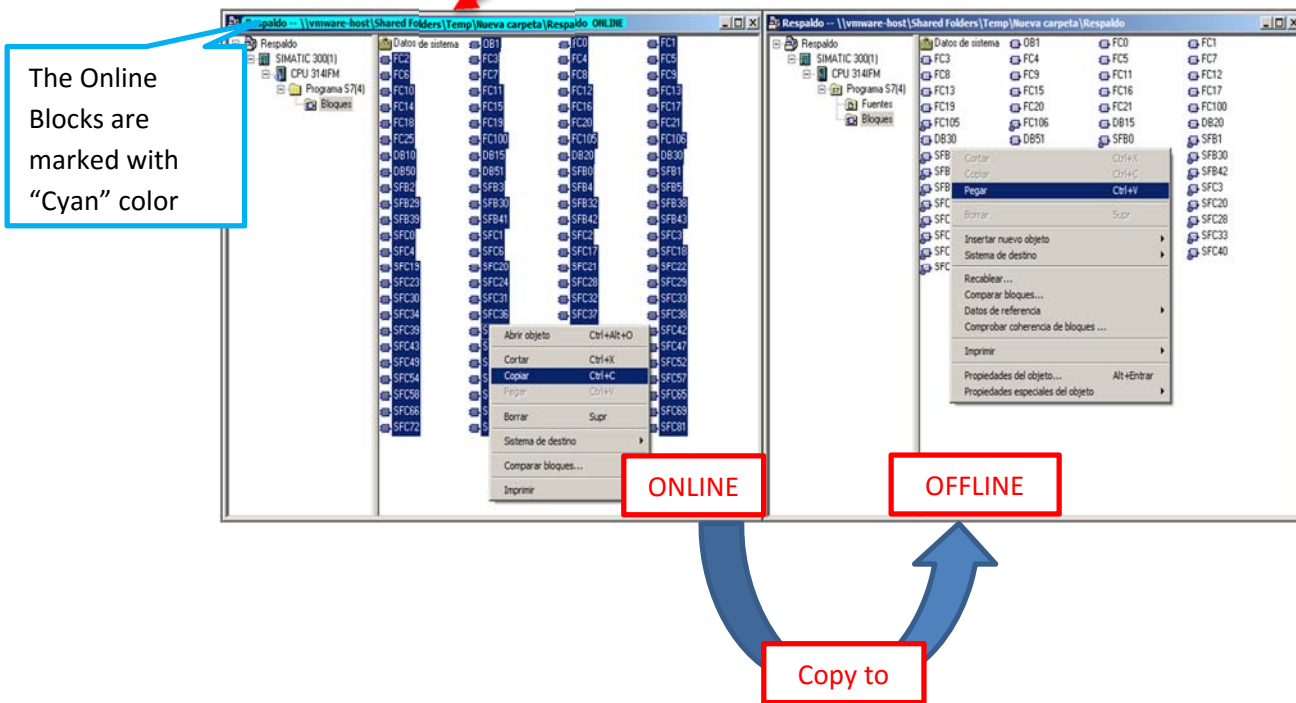


*The default MPI address of the PLC is always 2.*

### 3 Updating an existing Backup

It is always preferred to update an existing backup, as these backups usually retain the comments and source code. It is recommended to work on an existing backup if available. If no existing Backup is available, please see chapter "full Backup PLC".

- Connect the Computer to the PLC
- Open the Simatic Manager V5.5 software on our computer
- Open the hardware configuration and select "online"  to verify that the saved data are the same as the online configuration. If we agree and do not show any warning messages offline means that the configuration is equal to the online configuration. If any message "differences in the offline configuration Online" appears, you must select "load the configuration in the target system to PG". Once you finish loading data into the computer should "save"  and close the hardware configurator.
- Now click on "online"  and select "blocks"  Bloques that is on the tree online and offline project.
- **Copy all blocks from the project "online" into the Offline Project.** In the Offline We paste these blocks project, a message "overwrite" in which you should select "All" will appear.



The Online Blocks are marked with "Cyan" color

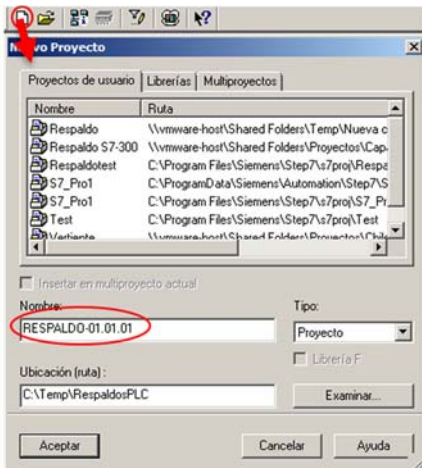
ONLINE

OFFLINE


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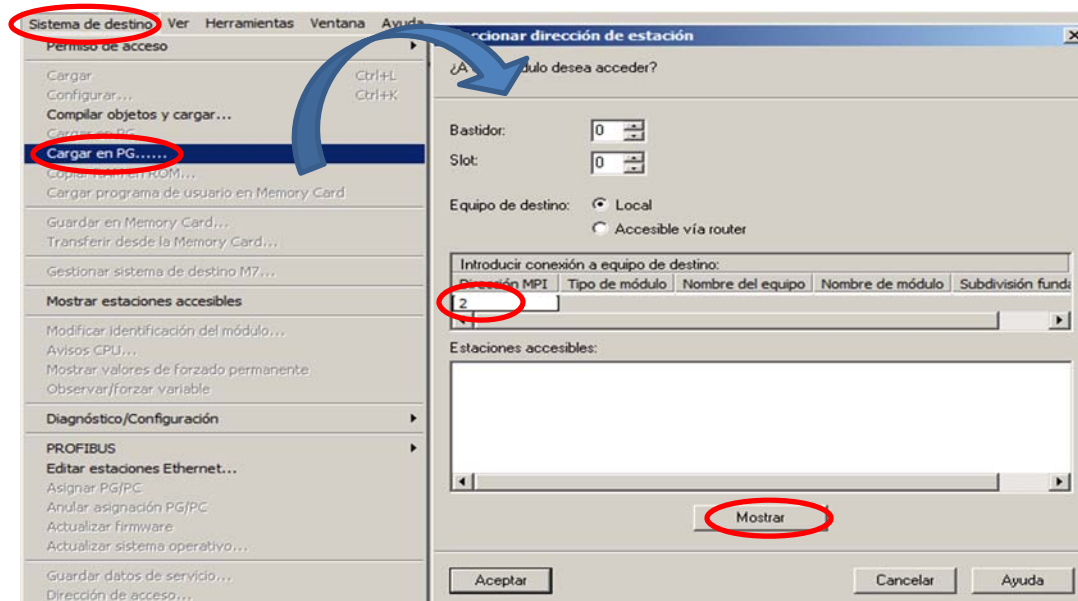
## 4 Full PLC Backup

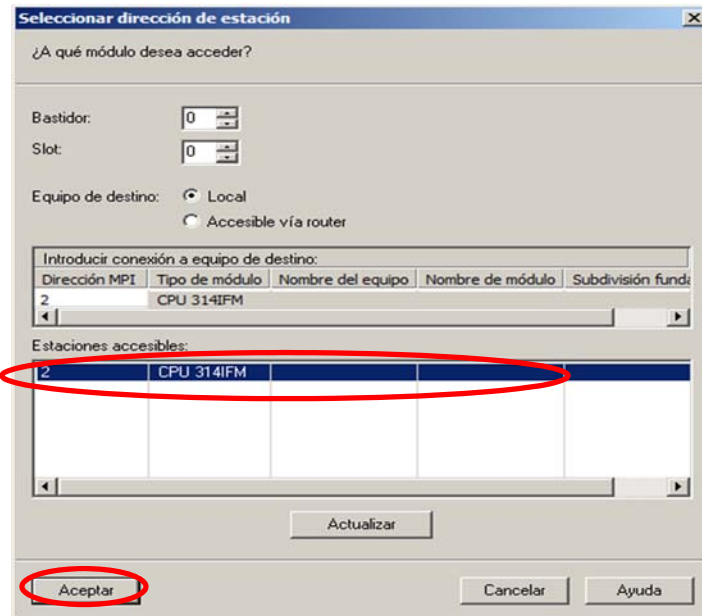
The following explanation is aimed at technicians trained in the use of automation programs.



- Connect the PLC to the Computer
- Open the Simatic Manager V5.5 Software
- Create a New Backup and Rename it according to your Backup structure.

- Check that there is connection to the PLC, this can be verified in , where PLC blocks should appear if there is connection by either Ethernet or MPI (usually **MPI address is 2** and **IP address is 192.168.0.11**). After Verifying this information close the window. The address of your PLC may be obtained from the project documentation file "**Project Information.xlsx**"
- In the newly created project go to "PLC" and click "upload to PG ... .."  
A Dialog box is opened, where the Connection Address must be entered. This depends on the type of connection used (MPI or Ethernet). To see all available Stations, click on "Show" a select one of the available stations to start the Backup





Then the PLC CPU displayed based on the address entered above, select it and click "OK", a window will appear saying it has no data frame and slot so you just have to click on "accept" reappears the same CPU selection window but with the data of the frame and slot because the system automatically assigns it, so you just have to click on "OK" in that window and start backup to back the computer.

- Then a window "copying" appears, the backup process is running. This window closes automatically after backing up the hardware and software of the controller.
- After finishing copying PLC to the computer the backup is complete and finished.