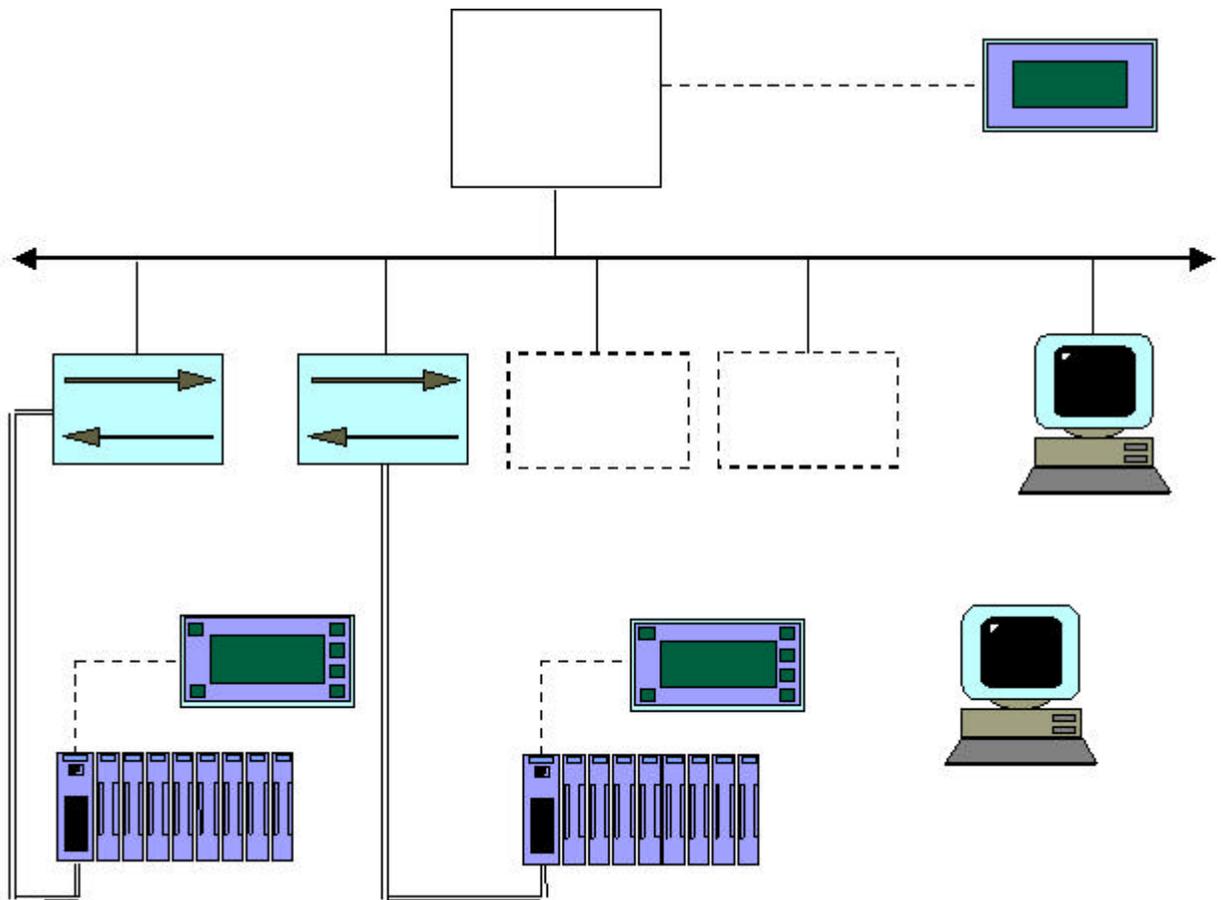


Connecting MLC 9000 to Siemens S7 CPU315-2 DP PLC via ProfiBus

This data sheet provides the user with assistance on how to connect the MLC 9000 G010 Gateway to a Siemens S7 CPU315-2-DP PLC. It assumes that the user is familiar with the programming techniques of the Siemens S7 PLC and has a sound knowledge of how to use the Step 7 programming software. It does not cover or indicate how to program the PLC, or how to use the data presented to the PLC, which is exchanged via the Gateway. Please refer to your Siemens manuals and or supplier of the equipment for further help and information.

This data sheet is applicable only to the MLC 9000 gateway from revision SL2.01 and onwards. Please refer to data sheet TD/0015/T.I.N. for information on how to install earlier version MLC 9000 Gateways. The version number for the Gateway can be found on the underside of the unit, expressed as "SL 1.xx" for earlier units and "SL 2.xx" for later spec units.

The diagram below shows how to connect a typical MLC 9000 system to a Siemens S7 CPU315-2 DP PLC using ProfiBus.



The MLC 9000 RS485 ports are connected to the PROFIBUS system via Gateways. These convert the PROFIBUS protocol to MODBUS for use by the MLC 9000. The Gateways are slave devices on the main bus, but act as masters for the RS485 MODBUS connections to the MLC 9000 attached to them.

MLC9000 Parts Required

1 or more MLC 9000-B220 Bus Communications Modules up to the maximum allowed by your PROFIBUS system

Up to 8 MLC 9000 Loop Controller Modules of any type per BCM

1 MLC 9000-G010 Gateway per MLC 9000 BCM

Parts Required- Other

1 Siemens S7 CPU315-2 DP PLC

1 Siemens SIMATIC Step7 Software

All PROFIBUS connections must use the correct PROFIBUS cables and connectors. Refer to your PLC supplier for details

Installation Using Siemens SIMATIC Step 7 Software.

Please Note: *The LED on a new Gateway will be OFF when first used, it will be green or flash red or green if the unit has already been configured or an attempt has been made to configure the unit.*

The term GSD may also be expressed as GSE in the Siemens software package.

Before configuring the Gateway, ensure that the PLC, Gateway and MLC 9000 have all been connected together correctly, as per the installation guides supplied. The MLC 9000 BCM's Modbus port should be configured at address 96, 9600 baud, no parity.

Ensure that the correct level of supply power, applicable for each piece of equipment, has been provided.

1. Apply power to the PLC, Gateway and the MLC 9000.
2. Select File – New project wizard. Follow on-screen instructions to create your project.
3. Click Next, then select the correct CPU type and MPI address for your PLC (other parameters can be left at their default values in this dialogue box).
4. A new project window will now open. Select the folder "SIMATIC 300 station".
5. Double click the "Hardware" icon. This will open the "HW Config window" and allow you to configure your PLC system.
6. From the "options menu" select "Install new GSE".
7. Insert the floppy disc, supplied with your MLC 9000 Gateway, into your "A" drive on your computer.

8. Select "Look in". Select "Drive A" from your displayed file tree.
9. Select the West GSD file.
10. The file will now be installed onto your hard disc at the correct location for the Siemens software.
11. Click OK.
12. Double click on your *DP Master* in the rack configuration window. A new window called DP Master Properties will now open.
13. Under the heading "Interface", beside the word "Networked", you should see the message "No".
14. Single click on the Properties box. You should see the message "Not networked".
15. Select New. The New subnet Profibus properties will now be displayed. Normally these settings should be satisfactory and should not require any alterations. **West Instruments advise that these settings be left at default unless you are experienced at using Profibus.**
16. Select OK.
17. You should now see the message "Profibus 1.5Mbit/s" displayed.
18. Click OK.
19. Click OK.
20. Select "Insert" from the menu bar.
21. Select "DP Master system". You should now see a dotted line representing the Profibus network, appear from the "(O)UR" window.
22. From the hardware catalogue, (this should still be open. If not then re-open it), select Profibus DP/Additional Field Devices/Gateway/MLC 9000 Gateway.
23. Click and drag the MLC 9000 Gateway folder onto the dotted line representing the Profibus Network.
24. This action will automatically open a new properties box for the Gateway. The next available node address will be highlighted. This address may require changing, to suit the node address of your Gateway, (see Gateway manual for "How to set the Gateway node address").
25. When complete click on OK.
26. Your Gateway should now appear on the Profibus dotted line and bring up a data table headed "MLC 9000 Gateway". If the data table does not appear, double click the Gateway icon on the dotted line.
27. Open the MLC 9000 folder in the Hardware catalogue by clicking on the symbol to the left of the folder. This will bring up four options as follows.

- Universal module.
- Paged area.
- Single loop LCM.
- Empty slot.

28. The data table consists of nine empty slots. To fill a slot in the data table, simply click and drag the item of your choice from the hardware catalogue into the required slot in the table. Slot 0 must always contain the "Paged area" item, whilst slots 1 through to 9 will contain the LCMs that you wish to communicate with.
29. For loops that you do not wish to communicate with or that physically do not exist, then you must fill these slots on your data table with the "Empty slot" item.

This rule only applies up-to the last LCM fitted to your BCM, after the last fitted or monitored LCM there is no need to fill any vacant slots with the "Empty Slot" item. However, West Instruments recommend that slots that are not required, should be assigned as "Empty slots", to allow for future expansion of your system

30. Select the "Save and Compile" icon from the menu bar.

31. Select the "Download to module" icon from the menu bar and follow the on screen prompts.

32. A successful configuration and download to the PLC and Gateway will be shown by the LED on the Gateway going permanently green.

33. Visual indication of successful communication to the MLC 9000 will be indicated by the flashing green RS485 LED on the MLC 9000 BCM module.

34.

To verify communication between the PLC and the Gateway/MLC 9000, proceed as follows:

1. Open the Siemens Simatic Manager software.
2. Select S7 program.
3. Select the PLC from the menu bar.
4. Select Monitor/Modify Variables. The Variable Table should open.
5. Select Insert from the menu bar
6. Select Range of Variables.
7. To read the Polled Data area for loop 1, enter iw24 in the address box (i = input to PLC, w = word format, 24 is the start address of the first word).
8. Enter 5 in the number of words box (The Polled Data consists of five 2-byte words for each loop).
9. Click OK
10. Select the Set Trigger icon
11. Set to Every cycle (leave the other parameters at the default values).
12. Select the Monitor icon. The data values should appear in the Variable Table.

To change the Setpoint of loop 1, continue as follows

13. Turn off the Monitor icon.
14. Stop the PLC
15. Select Insert from the menu bar.
16. Select Range of Variables.
17. Enter qw6 in the address box (q = output from PLC, w = word format, 6 is the start address of the Loop 1 Setpoint value).
18. Click OK
19. Enter a new valid Setpoint value in the Modify Value column.
20. Select the Modify According to Trigger icon.
21. Select the Monitor icon.
22. Start the PLC. The new Setpoint value should appear in the Variable Table.

Note: Some versions of the Siemens software use slightly different column heading in the Variable Table.

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