



Handbücher / Manuals



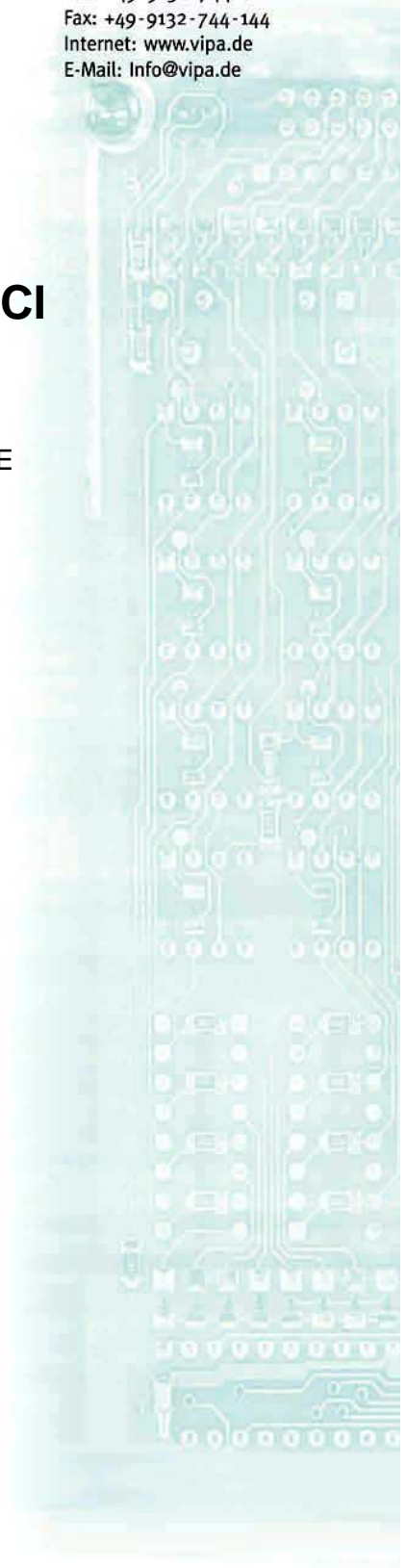
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Manual

VIPA CPU 51xPCI

Order No.: VIPA HB105E
Rev. 03/49



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The contents of this manual was carefully examined to ensure that it conforms with the described hardware and software. However, discrepancies can not be avoided. The specifications in this manual are examined regularly and corrections will be included in subsequent editions. We gratefully accept suggestions for improvement.

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Content

Outline This product supplement contains all information required for the deployment of the Slot-PLC CPU 51xPCI in your PC.
The here described Slot-PLC is a CPU 51x with integrated Profibus-DP master.

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Order data

Type	Order number	Description
CPU 516PCI	VIPA 516-1BM00	CPU 516PCI with Profibus-DP master, 256/512kB w/l memory
CPU 517PCI	VIPA 517-1BM00	CPU 517PCI with Profibus-DP master, 512kB/1MB w/l memory
MMC	VIPA 953-0KX00	MMC storage module
USB-MMC reading device	VIPA 950-0AD00	USB adapter for MMC programming
Green Cable	VIPA 950-0KB00	PC/AG download cable
WinPLC7	VIPA WinPLC7	Programming tool
WinNCS	VIPA SW-WinNCS	Parameterization software for Profibus-DP under Win 95/98/NT
OPC-Server	VIPA SW860M	Driver license for MPI included with CPU 51x
	VIPA SW860T	Driver license for TCP/IP (read/write)
Manual	VIPA HB105E	Manual Slot-PLC

System overview

General



The CPU 51xPCI is a fully adequate PLC-CPU in form of a PCI-slot card for PC-based applications.

The range of performance is adequate to a CPU 317DPM from the System 300V from VIPA. The programming takes place via standard programming tools like e.g. WinPLC7 from VIPA or STEP[®]7 from Siemens. For the link up to the process level there is as well a MP²I as a Profibus-DP master interface. Further on, the VIPA OPC-Server is included in the delivery.

After the hardware installation, the card is linked up to the PC as COM interface. For the PCI card is working independent from the PC, you have to provide it external with DC 24V.

As an independent storage medium the PCI card contains a MMC slot for customary in the trade Multi Media Cards (MMC).

Memory

The CPU 51xPCI can be ordered in two memory versions:

Order-No	Typ	Memory
VIPA 516-1BM00	CPU 516PCI	work memory: 256kByte load memory: 512kByte
VIPA 517-1BM00	CPU 517PCI	work memory: 512kByte load memory: 1MByte

Properties

The following properties are characterizing this CPU:

- Instruction compatible to S7-300 from Siemens (except CPU 318)
- Operational independent from PC, due to the external DC 24V supply
- max. 512 kByte work memory for application
- max. 1 MByte load memory
- Integrated Profibus-DP master
- MP²I- and Profibus interface
- OPC-Server included in consignment (incl. license for MPI driver)
- MMC as external storage medium for CPU and Profibus-DP master

Instruction compatibility	<p>The Slot-PLC 51xPCI is instruction compatible to STEP[®]7 from Siemens and may be programmed via the STEP[®]7 manager from Siemens.</p> <p>An extensive function library is included in the consignment.</p>
Profibus-DP master section	<p>For the link up to Profibus, the CPU includes a Profibus-DP master.</p> <p>During the operation the DP master overlays an adjustable address area in the CPU with its own data areas. The address range is configured in your projecting tool (e.g. WinNCS from VIPA or hardware configurator from Siemens).</p>
Project engineering of the DP master	<p>The project engineering of the Profibus-DP master may be done under WinNCS from VIPA or in the hardware configurator from Siemens.</p> <p>After the hardware installation incl. driver, the Slot-PLC is linked up as COM interface. Via this interface you may access the CPU and the Profibus-DP master. This allows an easy data exchange with the normal programming tools on your PC.</p> <p>For accesses on the Profibus-DP master from an external PC, the MP²I interface is at your disposal.</p>
MPIInterface	<p>The Slot-PLC provides 2 MPIInterfaces:</p> <p>The 1st is led out as MP²I adapter. Additionally to the MPI functionality it also provides the possibility for a point-to-point connection via the "Green Cable" from VIPA.</p> <p>The 2nd MPI adapter is available as virtual COM interface in the PC. For this you will find an according driver in the consignment, that must be included in the PCI card installation.</p>
Operating options via PLC-Tool	<p>For operating the CPU via the PC the program "PLC-Tool" is included in the consignment. For monitoring and operating of the CPU, your PC shows an user interface that is modeled on the schematic view on a CPU front.</p> <p>Via the PLC-Tool you may request the LED state and monitor resp. change the operating mode of the CPU.</p>
Multi Media Card as external storage medium	<p>CPU and Profibus-DP master are both using the Multi Media Card (MMC) as external storage medium, independent from the PC. For the installation and dismantling of the MMC you have to open the PC.</p> <p>The MMC is available at VIPA.</p>
Integrated power supply	<p>The CPU has an integrated power supply, that has to be provided with DC 24V via the frontside. The power supply is protected against polarity inversion and overcurrent.</p> <p>Due to the external voltage supply, you may operate your Slot-PLC card independent from the PC.</p>

Hints for the deployment of the MPI interface

What is MP²I?

The MP²I jack combines 2 interfaces in 1:

- MP interface
- RS232 interface

Please regard that the RS232 functionality is only available by using the Green Cable from VIPA.

Deployment as MP interface

The MP interface provides the data transfer between CPUs and PCs. In a bus communication you may transfer programs and data between the CPUs interconnected via MPI.

Connecting a common MPI cable, the MPI jack supports the full MPI functionality.



Important notes for the deployment of MPI cables!

Deploying MPI cables at the CPUs from VIPA, you have to make sure that Pin 1 is not connected. This may cause transfer problems and in some cases damage the CPU!

Especially Profibus cables from Siemens, like e.g. the 6XV1 830-1CH30, must not be deployed at MP²I jack.

For damages caused by nonobservance of these notes and at improper deployment, VIPA does not take liability!

Deployment as RS232 interface only via "Green Cable"



For the serial data transfer from your PC, you normally need a MPI transducer. Fortunately you may also use the "Green Cable" from VIPA. You can order this under the order no. VIPA 950-0KB00.

The "Green Cable" supports a serial point-to-point connection for data transfer via the MP²I jack exclusively for VIPA CPUs (System 100V, 200V, 300V and 500V from VIPA).

Please regard the hints for the deployment of the "Green Cable" on the following page.

Green Cable from VIPA

What is the Green Cable?



The Green Cable is a green connection cable, manufactured exclusively for the deployment at VIPA System components.

The Green Cable is a programming and download cable for VIPA CPUs 11x, 21x, 31x, 51x and VIPA fieldbus masters. The Green Cable from VIPA is available under the order no. VIPA 950-0KB00.

The Green Cable allows you to:

- *transfer projects serial*
Avoiding high hardware needs (MPI transducer, etc.) you may realize a serial point-to-point connection via the Green Cable and the MP²I jack. This allows you to connect components to your VIPA-CPU that are able to communicate serial via an MPI adapter like e.g. a visualization system.
- *execute firmware updates of the CPUs and fieldbus masters*
Via the Green Cable and an upload application you may update the firmware of all recent CPUs 11x, 21x, 31x, 51x and certain fieldbus masters (see Note).



Important notes for the deployment of the Green Cable

Nonobservance of the following notes may cause damages on system components.

For damages caused by nonobservance of the following notes and at improper deployment, VIPA does not take liability!



Note to the application area

The Green Cable may exclusively be deployed directly at the concerning jacks of the VIPA components (in between plugs are not permitted).

At this time, the following components support the Green Cable:

CPUs 11x, 21x, 31x, 51x and the fieldbus masters 208-1xx01 from VIPA.



Note to the lengthening

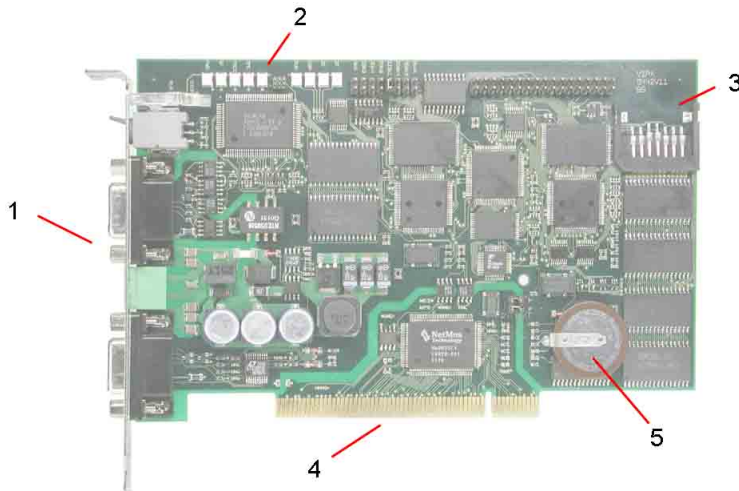
The lengthening of the Green Cable with another Green Cable res. The combination with further MPI cables is not permitted and causes damages of the connected components!

The Green Cable may only be lengthened with a 1:1 cable (all 9 Pins are connected 1:1).

Structure

Overview

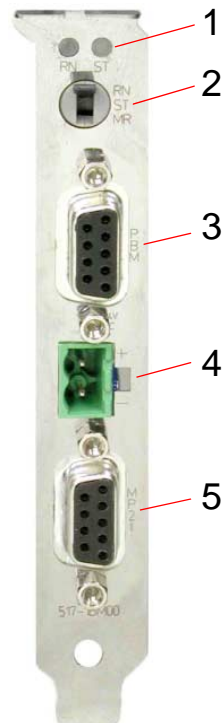
The following components are to find on the PCI slot card



- [1] MP²I-, Profibus interface and port for DC 24V
- [2] LEDs for commissioning
- [3] Port for MMC
- [4] PCI-Bus pins
- [5] Lithiummaccu for clock and user memory

Plugs and jacks

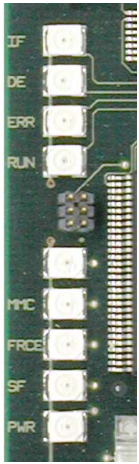
The plug-in module has the following jacks and plugs:



- [1] RUN/STOP LEDs
- [2] Operating mode switch
- [3] Profibus-DP master jack
- [4] External DC24V power supply plug
- [5] MP²I jack

Components

LED bar



On the plug-in module you can see a LED bar for status monitoring of the CPU and the Profibus-DP master. Especially at the commissioning and the external usage of the module, the state of your CPU and your Profibus-DP master is shown.

At deployment inside a PC, you may issue the state of the LEDs on your PC via the delivered software PLC-Tool.

The usage and the according colors of the LEDs are to see in the following tables:

CPU section

Label	Color	Description
		The upper LED is not addressed
MMC	red	blinks at MMC access
FRCE	yellow	blinks as soon as variable are forced (fixed)
SF	red	blinks at system errors (hardware defect)
PWR	yellow	CPU section is provided internal with 5V



Note!

All LEDs of the CPU sections are blinking for three times at access on an invalid MMC or if the MMC is pulled out during reading.

Profibus-DP master section

Label	Color	Description
IF	red	Initialization error at wrong parameterization
DE	yellow	DE (Data exchange) shows communication via Profibus.
ERR	red	blinks at slave break-down
RUN	green	If only RUN blinks, the DP master is in RUN. The slaves are addressed and the outputs are 0 ("clear"-state). If RUN+DE are on, the DP-Master is in "operate"-state (Data exchange with the slaves).

LEDs at connection panel

Above the operating mode lever there are 2 LEDs, showing the operating state:

Label	Color	Description
STOP	red	CPU is in STOP
RUN	green	CPU is in RUN

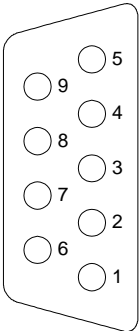
Jacks and plugs

On the PC plug-in module the following jacks are led out:

Profibus-DP master interface DPM

Via the 9-pin RS485 interface you link up the integrated Profibus-DP master to Profibus. The RS485 jack has the following pin occupancy:

9-pin jack



Pin	Occupancy
1	Screen
2	not used
3	RxD/TxD-P
4	CNTR-P
5	GND
6	5V (max. 70mA)
7	not used
8	RxD/TxD-N
9	not used



Note!

Please make sure to activate the terminating resistors at the bus ends!

MP²I adapter

MPI serves the connection to the process level. Here you may transfer programs and data between the MPI participants.

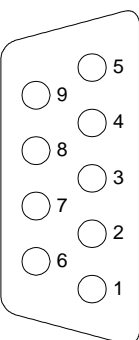
Besides the MPI functionality, the MP²I adapter also allows the serial point-to-point connection via the "Green Cable".

The "Green Cable" may only be used at the Slot-PLC from VIPA and the CPUs of the Systems 100V, 200V and 300V from VIPA.

Via "Green Cable" you may also parameterize the integrated Profibus-DP master.

The MP²I jack has the following pin occupancy:

9-pin jack



Pin	Occupancy
1	reserved
2	GND
3	RS485_A
4	RS485_CTS
5	GND
6	Vcc
7	+24V DC
8	RS485_B
9	RS485_RTS

Port for MMC

For a PC independent backup of your project, there is a MMC port on the plug-in module.

The CPU and the integrated Profibus-DP master are both using the MMC as external storage module.

The MMC (Multi Media Card) is available at VIPA with the order number VIPA 953-0KX00.

For the MMC uses a file system, you may organize its content at the PC with the USB-MMC reading device from VIPA.

The MMC reading device has the order no.: VIPA 950-0AD00.

**Attention!**

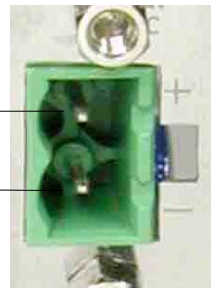
At deployment of a MMC, please regard, that it has to be preformatted with the FAT16 file system. The VIPA MMCs are always delivered preformatted.

Voltage supply

The plug-in module is only useable, if it is provided external with DC 24V. Herefore there is a plug on the connection panel with the following pin occupancy:

Connection
+ DC 24V

Connection Ground



For the cabling a plug-in jack is delivered in the consignment. For connecting your supply conductors it has got screw clamps.

Battery buffer for clock and RAM

The Slot-PLC contains an internal battery (accu) for protecting the RAM at a power break-down. Additionally the accu buffers the internal clock.

The accu is directly reloaded via the integrated voltage supply by means of a special loading electronic and guarantees a buffer of minimum 30 days.

The battery has to be error free, so the CPU may switch to RUN.

If an error occurs at the integrated accu, the CPU switches to STOP. At this event you should check the Slot-PLC card. Please contact VIPA!

Deployment PLC-CPU

Outline

The CPU is instruction set compatible to STEP[®]7 from Siemens. The access from the programming interface of the PC on the CPU resp. on the Profibus-DP master happens via a virtual COM interface, that is provided from a driver.

For controlling the CPU there is a comfortable user program in the consignment, which shows the operating modes on the desktop and allows the setting of the operating modes RUN and STOP and the OVERALL_RESET. These settings may be also made by the integrated operating mode lever.

Via the integrated MP²I and Profibus interface, you establish the connection to the process level.

If your programming package is on an external PC, you may access the CPU and the Profibus-DP master via MP²I.



Note!

The project engineering of the CPU requires a thorough knowledge of the Siemens STEP[®]7 configuration tools!

The periphery area from VIPA covers an address range from 0 to 255. Out of that, the addresses from 0 to 127 are assigned to the process image.

At Siemens, analog modules are stored from the address 256 on per default. At VIPA-CPU's the analog modules are stored from 128 to 255!

Restricted use of CPU parameters

The CPU does not use all parameters that you may define in your projecting tool. The following parameters are exploited at that time:

General:

MPI address of the CPU
maximum MPI address

Time alarm :

OB10: active
execution
start date
time-of-day

Start-up:

Start-up at scheduled configuration
unequal effective config.

Prompter alarm :

OB35: execution

Remanence:

No. of bit mem. bytes from MB0
No. of S7-timers from T0
No. of S7-counters from Z0

Cycle / pulse bit memory:

Cycle watching time
Cycle load due to communications
Timing flags with flag byte no.

Internal project transfer

As soon as the PC-plug-in module is built in and the according driver has been installed, the plug-in module is linked up as virtual COM interface. By selecting the COM interface in your programming resp. parameterization tool, you gain internal access to the CPU and the Profibus master. Additionally there is a 2nd MPI at your disposal via the external MP²I jack.

External project transfer

The data transfer is managed via MPI. If your programming unit (PU) has no MPI port, you may use the VIPA "Green Cable" to establish a serial point-to-point connection from your PC to MPI.

The "Green Cable" has the order no. VIPA 950-0KB00 and may only be used with the VIPA CPU 51xPCI and the CPUs of the System 100V, 200V and 300V.

- Connect your PU with the CPU
- Via **PLC** > *Load to module* in your projecting tool you transfer the project into the CPU.

Usage of the MMC

As external storage medium a Multi Media Card (MMC) is deployed. The MMC is available from VIPA and has the order no. VIPA 953-0KX00. The MMC is delivered preformatted.

The MMC slot is located on the plug-in module. For plugging the MMC in or pulling it out, you have to open the PC.

Transfer CPU → MMC

When the MMC is plugged-in, the application program is stored on the MMC via a write command. This is controlled by means of the Siemens STEP[®]7 Manager via **PLC** > *Copy RAM to ROM*.

During the write process the red "MMC"-LED of the CPU is blinking.

Transfer MMC → CPU

The transfer of the application program from the MMC into the CPU takes always place after an OVERALL_RESET.

The blinking of the red LED "MMC" of the CPU marks the active transfer.

If there is no valid application program on the MMC or if the transfer should fail, the CPU switches to STOP and the red "STOP"-LED blinks three times.

**Note!**

You must remember that the memory size has been tailored to the CPU! If the application program is larger than the memory available on the CPU, the content of the MMC is not transferred into the CPU.

It is advisable to compress the application program before transferring it into the MMC. This doesn't happen automatically.

When deploying a MMC, please make sure that it is preformatted.

Operating modes

For monitoring and controlling the operating modes, the operating tool PLC-Tool is included to the consignment. Further information about installation and deployment of the operating tool, you may find in the documentation of PLC-Tool. The CPU can be in one of 3 operating modes, that may be also be chosen via the operating lever on the plug-in module.

In the following the operating modes are described:

- operating mode STOP
- operating mode START-UP
- operating mode RUN

Certain conditions in the operating modes START-UP and RUN require a specific reaction from the system program. In this case the application interface is often provided by a call to an organization block that was included specifically for this event.

Operating mode STOP

- Processing of the application program has stopped.
- If the program was being processed before, the values of counters, timers, flags and the contents of the process image are retained during the transition to the STOP mode.
- Outputs are inhibited, i.e. all digital outputs are disabled.
- If the program was being processed before, you will find an information block with the interrupt cause in the USTACK.
- RUN-LED off
- STOP-LED on

Operating mode START-UP

- During the transition from STOP to RUN a call is issued to the start-up organization block OB 100. The length of this OB is not limited. The processing time for this OB is not monitored. The start-up OB may issue calls to other blocks.
- All digital outputs are disabled during the start-up, i.e. outputs are inhibited.
- RUN-LED blinks
- STOP-LED off

When the CPU has completed the start-up OB, it assumes the operating mode RUN.

Operating mode RUN

- The application program in OB 100 is processed in a cycle. Under the control of alarms other program sections can be included in the cycle.
- All timers and counters, being started by the program, are active and the process image is updated with every cycle.
- The BASP-signal (outputs inhibited) is deactivated, i.e. all digital outputs are enabled.
- RUN-LED on
- STOP-LED off

Overall_Reset

Outline

During the OVERALL_RESET the entire user memory (RAM) and the remanent memory area is erased.

Data located in the memory card is not affected.

You should always issue an overall reset to your CPU before loading an application program into your CPU, to ensure that all blocks have been cleared from it.

OVERALL_RESET by means of the function selector

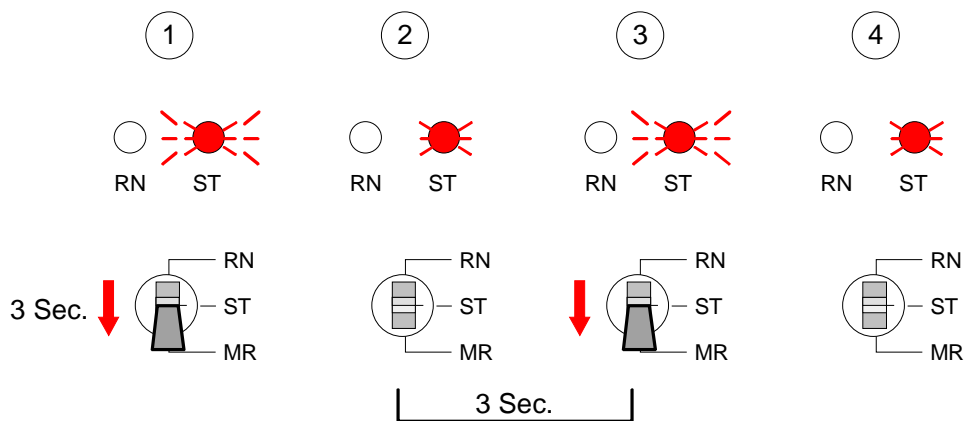
Condition

The operating mode of the CPU is STOP. Place the function selector on the CPU in position "STOP" → The ST-LED is on.

OVERALL_RESET

- Place the function selector in the position MR and hold it in this position for app. 3 seconds. → The ST-LED changes from blinking to permanently on.
- Place the function selector in the position STOP and switch it to MR and quickly back to STOP within a period of less than 3 seconds. → The ST-LED blinks (overall reset procedure).
- The overall_reset has been completed when the STOP-LED is on permanently. → The ST-LED is on.

The following figure illustrates the above procedure:



OVERALL_RESET via PLC-Tool At deployment of the operating software PLC-Tool you may initialize the OVERALL_RESET via the button [M-RES].
The button is available as soon as your CPU is in STOP.

OVERALL_RESET via STEP[®]7 Manager from Siemens *Conditions*
Your CPU has to be in STOP.
Via the menu command **PLC** > *Operating Mode* you switch your CPU in STOP.

OVERALL_RESET

Via the menu command **PLC** > *Clear/Reset* you request the OVERALL_RESET.

In the dialog window you may switch your CPU to STOP if you didn't that yet and start the OVERALL_RESET.

During the OVERALL_RESET procedure the STOP-LED is blinking.

When the STOP-LED changes to permanently on, the OVERALL_RESET has been finished.

Automatic reload After the OVERALL_RESET the CPU attempts to reload the parameters and the program from the memory card. → The MMC-LED blinks.
When the reload has been completed, the LED extinguishes. The operating mode of the CPU will be STOP or RUN, depending on the position of the function selector.

Deployment Profibus-DP master

Outline

The Profibus-DP master integrated in the Slot-PLC is function compatible to the Profibus-DP master of the CPU 315-2DP from Siemens.

The Profibus-DP master has to be configured via the hardware configurator from Siemens.

During the start-up, the DP master automatically integrates its data areas into the address range of the CPU. A configuration of the CPU is not necessary.

The Profibus-DP master and the CPU are both using the Multi Media Card (MMC) as external storage medium.

You may transfer your project to the Profibus-DP master via the internal (virtual) COM interface (driver see consignment) or via the external MP²I-adapter. Here you transfer your Profibus project into the CPU via MPI and the CPU passes the project data on to the Profibus-DP master section.

At accesses from an external PC via RS232C to MPI, you need a RS232C/MPI-transducer. But you may also use the "Green Cable" from VIPA, that enables a serial point-to-point connection via the MP²I-port.

Deployment with the CPU

Via the Profibus-DP master you may link up up to 125 Profibus-DP slaves to the CPU. The DP master communicates with the slaves and includes the data areas into the address range of the CPU. There may occur a maximum of 256 Byte input and 256 Byte output data.

At every POWER_ON resp. after an OVERALL_RESET, the CPU fetches the I/O mapping data from the DP master.

At a slave fail down, the ER-LED is blinking. If you have parameterized a receipt confirmation delay (QVZ) for a slave, the CPU switches to STOP, if this slave breaks down. If you didn't parameterize a receipt confirmation delay, the CPU runs on.

As soon as the BASP signal is coming from the CPU (CPU in STOP), the DP master sets the outputs of the connected periphery to zero. Independent from the CPU, the DP master stays in RUN.

Project engineering DP-Master

For the project engineering of the Profibus-DP master you have to deploy the hardware manager from Siemens. Your Profibus projects are transferred to the Slot-PLC via MPI by means of the PLC functions. The Slot-PLC passes the data on to the Profibus-DP master.

Preconditions

For the project engineering of the Profibus-DP master at the Slot-PLC, the following preconditions have to be fulfilled:

- Hardware manager from Siemens is installed.
- At deployment of Profibus slaves of the Systems 100V and 200V from VIPA: GSD-files are integrated in the hardware configurator.
- Transfer possibility between projecting tool and Slot-PLC is available (internal realization as virtual COM interface via driver).

**Note!**

For the project engineering of the CPU and the Profibus-DP master a thorough knowledge of the STEP[®]7 manager and the hardware configurator from Siemens is required!

Install hardware configurator from Siemens

The hardware configurator is part of the STEP[®]7 configuration tool from Siemens. It serves the project engineering. The modules that you may configure here are to find in the hardware catalog.

For the deployment of Profibus slaves of the Systems 100V and 200V from VIPA, the import of the modules to the hardware catalog via the GSD-files from VIPA is necessary.

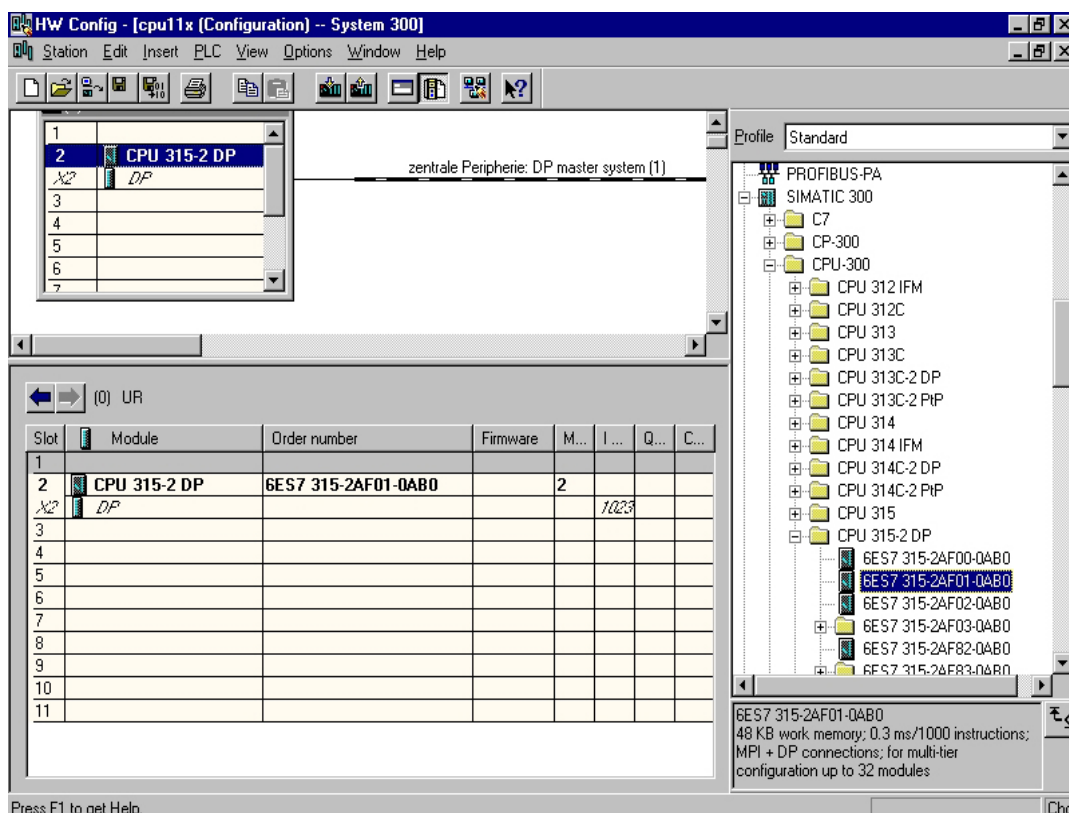
Import GSD-file

- Copy the delivered GSD-files *.GSD into your GSD directory ... \siemens\step7\s7data\gsd
- Start the hardware configurator from Siemens
- Close all projects
- Choose **Options** > *New GSD file...*
- Select the names of the new GSD-files

The modules of the VIPA Systems 100V resp. 200V are now integrated in the hardware catalog and may be projected.

Project engineering

- Create a new project.
- Add a profile rail from the hardware catalog.
- Add the "CPU 315-2DP".
You find the CPU with Profibus-DP master in the hardware catalog in:
Simatic300/CPU-300/CPU315-2DP/6ES7 315-2AF01-0AB0
- Assign a Profibus address to your DP master.
- Click on DP, select the operation mode "DP master" via *Object properties* and confirm your entry with OK.
- Click on "DP" with the right mouse button, choose "Insert master system" and create a new Profibus subnet via NEW.



Now your Profibus-DP master is ready configured. Connect your slaves with periphery with the DP-Master.

- For the project engineering of Profibus-DP slaves, you fetch the according Profibus slave in your hardware catalog and drag'n'drop it on the subnet of your DP master.
- Assign a valid Profibus address to the slave.
- Connect the modules of your slave system in the order you plugged them in, by assigning addresses and parameterizing the modules if needed.



Note!

Please regard, that the analog modules from Siemens are parameterized from the address 256 on per default. The VIPA-CPU stores the analog modules from 128 to 255!

**DP-Master
operating modes**

After NETZ_EIN (i.e. POWER_ON) the DP master switches automatically to RUN. We abstained an operating mode lever for the DP master.

**STOP → RUN
(automatically)**

After a STOP → RUN transition of the CPU, the DP master gets its bus parameters.

Now it establishes a connection to its DP slaves. During this time only the RUN-LED is blinking. When the communication has been completed and at valid bus parameters, the DP master switches to Data Exchange (DE). The LEDs RUN and DE are blinking.

When receiving wrong/invalid parameters, the DP master switches to RUN and monitors a parameterization error via the IF-LED. The DP master is now linked up to the bus with the following default bus parameters:

Default-Bus-Parameter: Address: 1; Transfer rate: 1,5 MBaud.

RUN

During RUN mode, the RUN- and the DE-LEDs are blinking. Now data may be transferred. In the event of an error, like e.g. a DP slave break down, this is shown at the DP master via the ERR-LED and an alarm to the CPU is initiated.

**Note!**

If the CPU switches to STOP during operation, the DP master stays in RUN. Due to the BASP signal, all outputs of the peripheral modules connected via DP slaves, are set to zero.

Deployment of the MMC

Outline

As external storage medium, the Multi Media Card (MMC) is deployed. The MMC is available at VIPA under the order no. VIPA 953-0KX00.

The CPU and the integrated Profibus-DP master are both using the memory card as external storage medium.

The data transfer from the CPU to the MMC takes place via the hardware configurator from Siemens at plugged in MMC.

The reading of the MMC takes always place after an OVERALL_RESET.

MMC file system

The MMC modules are delivered by VIPA preformatted with the FAT16 file format. Via a MMC reading device from VIPA (Order no. VIPA 950-0AD00), you may include your MMC as external disk drive in your PC system.



Attention!

Please make sure, that the MMC you use is formatted with the FAT16 file system. The MMCs from VIPA are always delivered preformatted.

Required files

There may be several projects and subfolders on one MMC storage module. You just have to regard, that the recent CPU and DP master project has to be in the root directory and has the file name: **S7PROG.WLD**. For the CPU program and the DP master project engineering is created in the hardware configurator from Siemens and is stored in a project, one talks of "hardware configuration".



Note!

If you don't configure the DP master via the hardware configurator from Siemens, but via ComProfibus from Siemens resp. WinNCS from VIPA, your project on the MMC has to be named: **DPM.2BF**.

The 2BF file has to be transferred to the MMC with a MMC reading device.

Please regard, that a hardware configuration of the Profibus master has always the priority before a 2BF file.

**Transfer
CPU → MMC**

When the MMC is plugged-in, the content of the battery buffered RAM is stored on the MMC via a write command. This is controlled by means of the Siemens STEP[®]7 Manager via **PLC** > *Copy RAM to ROM*.

During the write process the yellow "MMC"-LED of the CPU is blinking.

**Note!**

If you initialize the write command without a plugged MMC, an error message about insufficient memory occurs.

**Transfer
MMC → CPU**

The transfer of the application program from the MMC into the CPU takes always place after an OVERALL_RESET.

The blinking of the yellow LED "MMC" of the CPU marks the active transfer.

If there is no valid application program on the MMC or if the transfer should fail, the CPU switches to STOP and the "STOP"-LED blinks three times.

The DP master is now at the network with the following default parameters:

Default-Bus-Parameter: Address: 1; Transfer rate: 1,5 MBaud

**Note!**

You must remember that the memory size has been tailored to the CPU! If the application program is larger than the memory available on the CPU, the content of the MMC is not transferred into the CPU.

It is advisable to compress the application program before transferring it into the MMC. This doesn't happen automatically.

When deploying a MMC, please regard that it is preformatted.

Commissioning and Start-up behavior

Check list for the commissioning

- Open your PC
- If not yet done, plug a MMC in the PC card
- Insert the Slot-PLC plug-in module in one not occupied PCI slot
- For commissioning, leave the cabinet open. This makes the access to the MMC and LEDs easier.
- Built up your PLC system



Note!

The installation of the Slot-PLC plug-in module should only be executed by properly trained personnel!

Inadequate handling may cause damages at the module and the PC.

Boot PC

During the start-up of the PC the new hardware is recognized. To include the plug-in module as virtual COM interface, there is an according driver on the delivered CD. On the CD in the directory "Driver" you will find the driver assigned to your operating system.

Select this during the hardware installation. The plug-in module is now included automatically in your system as virtual COM interface.

Switch on external power supply

Please switch on the external power supply. Afterwards there are some actions in the CPU, further described under "Start-up behavior".

Start-up at delivery

In delivery state, the CPU is reset.

After a STOP→RUN transition of the CPU, the DP master gets its parameter data.

For these are not available in the empty CPU, the DP master uses its default parameters (Adr.:1, 1,5 MBit) from the ROM, monitors this via the "IF"-LED and switches to RUN.

The CPU switches into RUN without program.

Start-up with valid data in the CPU

If there is an application and Profibus parameters in the battery buffered RAM of the CPU, at a STOP→RUN transition of the CPU, the parameters are transmitted to the DP master. The master establishes a communication to its DP slaves. At successful communication and valid bus parameters, the DP master switches to Data Exchange (DE). The LEDs RUN and DE are blinking.

The CPU switches to RUN with its application.

Technical Data

Electrical Data	VIPA 516-1BM00	VIPA 517-1BM00
Supply voltage (external)	DC 24V (-15% ... +20%)	
Current consumption	max. 1 A	
Dissipation power	5 W	
System Data		
Program memory internal	256kByte	512kByte
Load memory	512kByte	1024kByte
Memory external	MMC	
Accu buffer/Clock	yes/yes	
Bit memory	8192	
Timer/Counter	256/256	
Addressable I/O		
- digital	1024	
- analog	128	
Processing time Bit/Word	typ. 0,18ms / 0,78ms/k	
Modules	OB1/10/35/40/100	
- FBs	1024	
- FCs	1024	
- DBs	2047	
Interfaces		
- MP ² I	8 static and 8 dynamic MPI connections / 187 kBaud, RS232: 38,4kBaud 9,6kBaud to 12MBaud	
- DP master		
Operating conditions		
Operating temperature	0°C...+55°C	
Storing temperature	-20°C...+85°C	
Relative humidity	95% without condensation	
EMV/BURST/ESD	EN 61000-4-2 / EN 61000-4-4 (up to Level 3: 8kV / 2,5kV)	
Supplements		
WinPLC7 Programming tool	VIPA WinPLC7	
MMC storage module	VIPA 953-0KX00	
USB-MMC reading device	VIPA 950-0AD00	
Green Cable	VIPA 950-0KB00	
Measurements		
Length x Width	174 x 106 (1 PCI-Slot)	