

# User Manual

## **ACCON-NetLink-USB compact**



# 1 PREFACE

This manual is for project developers, users and assemblers who utilize the ACCON-NetLink-USB compact.

It shows the user the handling of the ACCON-NetLink-USB compact and explains signaling functions. All necessary data for assembling should be provided to the assembler. © 2015 - 2016

## DELTA LOGIC

Automatisierungstechnik GmbH  
Stuttgarter Strasse 3  
73525 Schwaebisch Gmuend  
Germany

Phone sales: +49-(0)7171-916-120

Phone support: +49-(0)7171-916-112

Fax sales: +49-(0)7171-916-220

Fax support: +49-(0)7171-916-212

E-Mail sales: sales@deltalogic.de

E-Mail support: support@deltalogic.de

Web site: [www.deltalogic.de](http://www.deltalogic.de)

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### Note:

We have checked the content of this manual for conformity with the hardware and software described. Nevertheless, because deviations cannot be ruled out, we cannot accept any liability for complete conformity. The data in this manual have been checked regularly and any necessary corrections will be included in subsequent editions. We always welcome suggestions for improvement.

Last update 2016-09-27. All technical changes reserved.

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## 2 TECHNICAL DESCRIPTION

ACCON-NetLink-USB compact is the compact communication and programming adaptor between PC and S7 controllers. The electronics of the ACCON-NetLink-USB compact is placed in the box of a PROFIBUS connector what makes the adaptor very small and handy.

As all-rounder, the ACCON-NetLink-USB compact can be connected to the PLC via MPI, PROFIBUS and PPI. The ACCON-NetLink-USB compact independently detects the current bus settings of the PLC.

The communication of the ACCON-NetLink-USB compact and the PC is effected via USB. The device supports the parametrization of DP-Slaves via DP-V1 (class 2). A driver for SIMATIC applications (ACCON-S7-NET) is included. The ACCON-NetLink-USB compact gets its power supply via the USB cable.

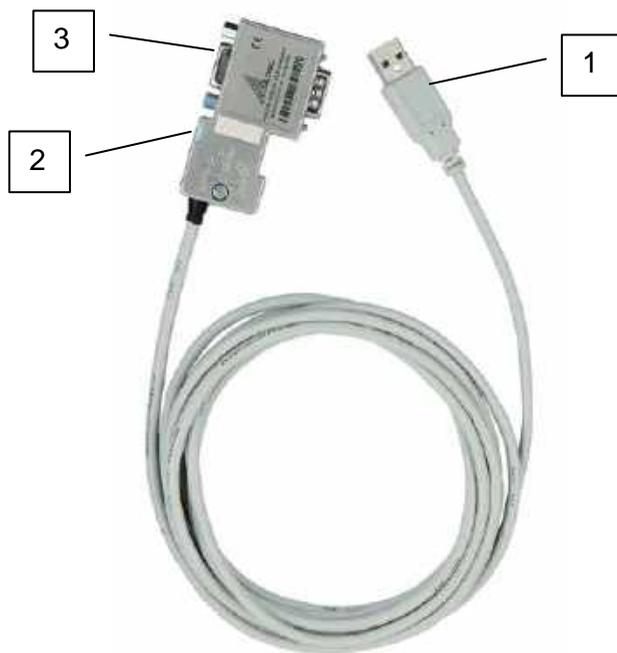
### Features:

- Automatic bus profile detection
- Full PROFIBUS speed 12 Mbps
- USB 2.0 up to 480 Mbps (Highspeed)
- Extended diagnostics options
- MPI, PROFIBUS and PPI is supported
- Supports slave parametrization via DP-V1 (class 2)
- Supports all established SIMATIC Engineering Tools
- Power supply via USB
- Plug with PG socket
- Can be used up to 60 °C

### **3 SCOPE OF DELIVERY**

- ACCON-NetLink-USB compact
- DELTA LOGIC Automatisierungstechnik-DVD including ACCON-S7-NET driver

## 4 DEVICE DESCRIPTION



*Figure 1: ACCON-NetLink-USB compact*

1. USB plug type A to connect the device to usual PCs or USB hubs.
2. Status LEDs
3. Bus plug with PG socket, switchable terminator and a 1.2 m connection cable.

## Starting the ACCON-NetLink-USB compact

During the first seconds after starting the Power LED is blue. After 25 seconds the boot procedure is already finished and the Device is ready.

### LED display

STATUS LED	POWER LED	ACTIVE LED	BUS LED
Ready to operate	BLUE		
Trying to log in on the device at the bus	BLUE		BLINKING ORANGE
Device is logged in on the bus	BLUE	GREEN	
Data exchange with a controller	BLUE	BLINKING GREEN	

*Table 1: Status LEDs*

	POWER LED	ACTIVE LED	BUS LED
Transmitting firmware update	BLINKING BLUE		BLINKING RED

*Table 2: Firmware update*

## 5 REQUIREMENTS FOR OPERATING

### Hardware requirements

Siemens S7-200-, S7-300 and S7-400 automation devices or compatible to S7. The used PCs must have a working USB interface. You can also use standard USB cards which support both Highspeed 480 Mbps and Fullspeed 12 Mbps. But to achieve a good performance you should use USB 2.0 interfaces.

### Software requirements

To use the ACCON-S7-NET drivers you need a PC including Windows XP, 2003R2, 7, 2008R2, 8.1, 2012R2, 10. On this PC the SIMATIC Device Drivers (PG/PC-Interface) have to be installed. The SIMATIC Device Drivers will be installed with e. g. STEP 7, STEP 7 lite or STEP 7-Micro/Win. By installing ACCON-S7-NET more interfaces will be added to the PG/PC-Interface.

### Assembly

Installation and assembly have to be carried out according to VDE 0100 / IEC 364. As the ACCON-NetLink-USB compact is an IP30 module it has to be built into a switchboard.

For secure operating please keep the maximum environmental temperature of 60 °C in mind.

## 6 COMMISSIONING

### Connection to the PC

Put one end of the USB cable into the USB socket of your ACCON-NetLink-USB compact and the other end into a USB port of your PC.

### Connection to the automation device

Connect the 9-pin SUB-D plug to the MPI or PROFIBUS interface of your S7 controller.

### Installation of the USB driver

When connecting an ACCON-NetLink-USB compact to the PC for the first time, the operating system tries to install a suitable device driver. This could take a while and continues as follows:



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*For the installation under Windows you need to be logged in as administrator!*

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The operating system starts an installation wizard.

1. Lay in the delivered DELTA LOGIC Automatisierungstechnik-DVD and select the folder:

S7-Adapter\ACCON-NetLink\USBDriver

Then click on »Next«.

2. Now the driver search starts.
3. If found, the installation can be started with a click on »Next«.
4. After a successful installation click on »Finish« to complete the setup.

The ACCON-NetLink-USB compact has been installed successfully and can be used now. If there are several ACCON-NetLink-USB compact devices available it is recommendable to copy the USB drivers to your hard disk. As for every ACCON-NetLink-USB compact a single driver entity is installed. Therefore the driver data is needed every time when installing an ACCON-NetLink-USB compact. Remember that you cannot use more than one ACCON-NetLink-USB compact on a single PC, simultaneously.



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Latest driver and firmware versions can be found on our web site at [www.deltalogic.de](http://www.deltalogic.de) in the section »Downloads«.

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## Installation Software

The driver ACCON-S7-NET can be installed by executing the file »SetupAcconS7Net.exe« from the DELTA LOGIC Automatisierungstechnik-DVD (<DVD-drive>\S7-Adapter).

### Set PG/PC Interface

1. Open the SIMATIC PG/PC Interface.

The following points have to be in the dialog »Set PG/PC Interface«:

- ACCON-S7-NET NLSUB(MPI)
- ACCON-S7-NET NLSUB(PPI)
- ACCON-S7-NET NLSUB(PROFIBUS)



Figure 2: Set PG/PC Interface

## 7 BUS SETTINGS

The ACCON-NetLink-USB compact can be used with three different bus systems: PPI, MPI and PROFIBUS.

### Configuration example: MPI

The MPI configuration contains station-related settings and net-related settings.

The most important setting of the bus configuration is the station address. This is the address of the ACCON-NetLink-USB compact when going online on the bus. The station address can be in the range from »0« to »126« as long as the chosen address is smaller or equal as the highest station address. This address is allowed only once.

The timeout can be set in the station-related settings of the ACCON-S7-NET driver. If there is no response to a driver enquiry within the set timeout, a communication error is sent to the SIMATIC application. The decrease of the timeout has no effect on the performance. 60 000 ms is the recommended timeout value.

In the net-related settings you have to adjust the transmission rate as well as the HSA of the automation system to which should communicated with.

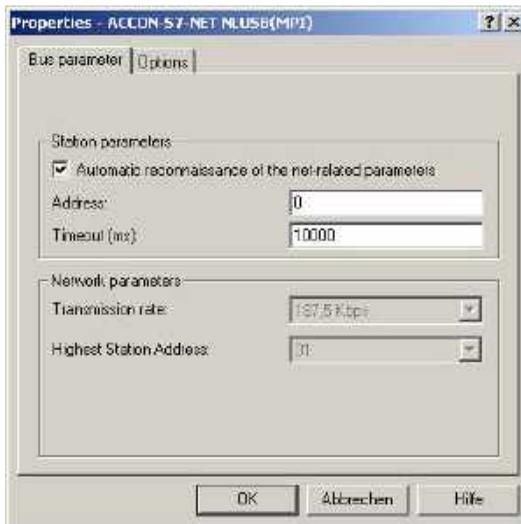


Figure 3: Automatic bus profile detection activated

To ease the configuration it is possible to activate the function »Automatic reconnaissance of the net-related parameters activated«. Thus the ACCON-NetLink-USB compact gets the bus parameters independently. So the ACCON-NetLink-USB compact can be used with different automation systems without changing the bus settings.

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*The automatic reconnaissance of the net-related parameters cannot be used when the function »Cyclic distribution of the bus parameters« is not activated respectively not supported in the used PLC, e. g.:*



*- using S7-200*

*- older Siemens S7 CPUs*

*- if the ACCON-NetLink-USB compact is the only master at the bus*

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When using the autobaud function the initialization lasts a bit longer because the online parameters have to be determined. It is possible that the autobaud function does not work correctly at slower transmission rates (e. g. 19.2 Kbps) or global data communication.

## PROFIBUS communication

The PROFIBUS configuration is the same as the MPI configuration. Only the net-related parameters are wider. With PROFIBUS the additional settings for bus profile and bus parameters are available:

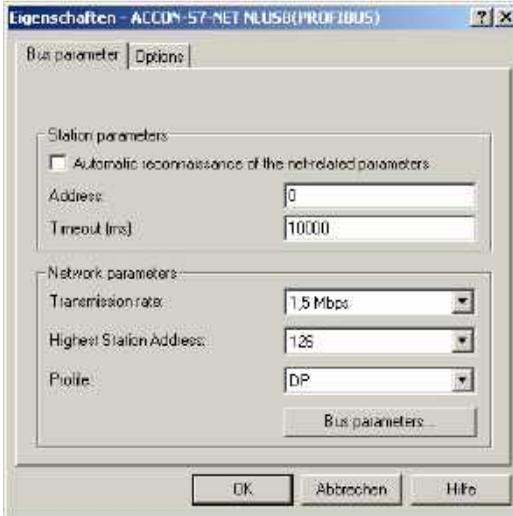


Figure 4: Automatic bus profile detection deactivated

### Profile:

Under PROFIBUS there are the profiles »DP«, »Standard« and »User-defined«. You have to select the profile which is already used in the automation system.

### Bus parameters:

Unlike to MPI the bus parameters under PROFIBUS are not constant and change in relation to the number and type of the used PROFIBUS stations.

You should always use the PROFIBUS parameters which are set in the actual automation system (look for the STEP7 project).



Figure 5: Bus parameters

To sidestep these partly complex steps you can use the function »Automatic reconnaissance of the net-related parameters« under PROFIBUS.

To get the » Automatic reconnaissance of the net-related parameters« to work, you have to activate the »Cyclic distribution of the bus parameters« in the hardware parametrization of the interface.



## PPI communication

The PPI configuration is the same as the MPI configuration, but the automatic reconnaissance of the net-related parameters is not possible with S7-200 controllers.

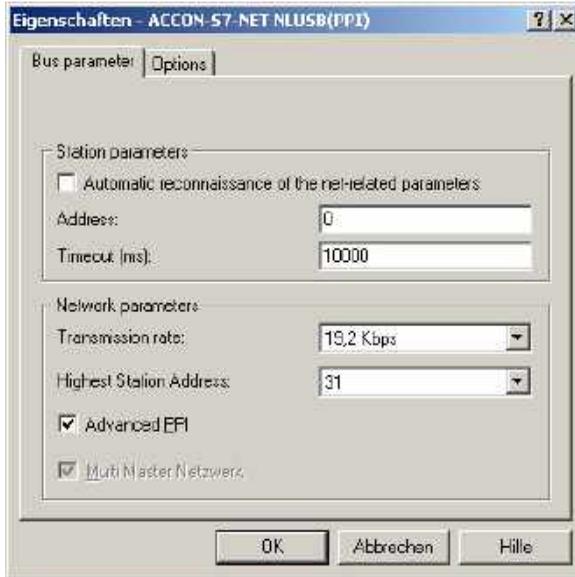


Figure 7: Bus settings PPI

For more information of the use of Advanced PPI look for the help of the S7-200 programming software.



*To communicate with a EM 277 you have to activate Advanced PPI*

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*Latest driver and firmware versions can be found on our web site in the »Download« section.*

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## Driver options

In the tab »Options« you can select the language of the dialogs and messages. Furthermore the driver versions are displayed.

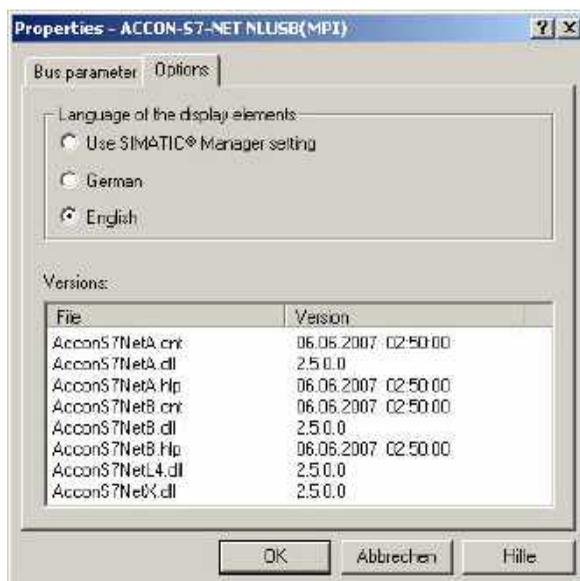


Figure 8: Driver options

## Language of the display elements

After switching the language you have to call the settings window again to accept the changes.

## Version information

The names and versions of all drivers are indicated here.

If problems occur you can quickly check if the correct versions are installed by indicating the driver data.



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*You will find the latest drivers and firmware versions on our web site at [www.deltalogic.de](http://www.deltalogic.de) in the »Download« section.*

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### Diagnostics function:

This function can be found via **Set PG/PC-Interface > Diagnostics**. There you can execute hardware diagnostics of the module. The following values can be determined:

1. List of all reachable stations at the bus.
2. Bus parameters which the ACCON-NetLink-USB compact uses on the bus.

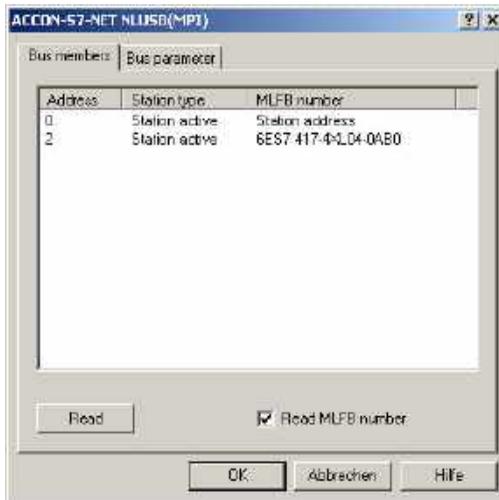


Figure 9: Diagnostics function

Click on the button »Read« to determine the values.

Notes about the stations:

- Address: Bus address of the station
- Station type: There are active (Master) and passive (Slave) stations
- MLFB number: The order number of the station is only shown if the option »Read MLFB number« is activated. The used ACCON-NetLink-USB compact is shown as »Station address«.

Notes about the bus parameters:

If there is no automatic reconnaissance of the net-related parameters, the manually set bus parameters of the ACCON-NetLink-USB compact are shown.

## 8 TROUBLE SHOOTING

Error	Cause	Solution
Power LED is off	-ACCON-NetLink-USB compact has no voltage supply -The used MPI socket has not the necessary 24 VDC	- Plug MPI/PROFIBUS cable on PLC interface - Apply 24 VDC externally
<b>Configuration of the ACCON-NetLink-USB compact via ACCON-S7-NET</b>		
The message »ACCON-NetLink-USB compact cannot be parametrized now.« appears	ACCON-NetLink-USB compact is active on the bus during parametrization	ACCON-NetLink-USB compact has to be inactive during parametrization
ACCON-NetLink-USB compact always reboots	Power supply of the USB interface is not efficient enough	- Use an USB hub with an external power supply - External power supply
The program STARTER <sup>®</sup> has problems when accessing a MICROMASTER <sup>®</sup> or SINAMICS <sup>®</sup>	Failure and application monitoring too low	1. Increase the timeout in the PG/PC-Interface to 80000ms. 2. Increase failure monitoring to 200ms and application monitoring to 5000ms

## 9 FREQUENTLY ASKED QUESTIONS

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Q: When I would like to use another ACCON-NetLink-USB compact or a different USB port of my PC I have to install an USB driver again although I already used an ACCON-NetLink-USB compact on this PC before.

A: In general, all USB devices have their own serial number so they can be identified as an already known device. If you are using two USB units of the same type there will be two driver instances installed on your PC, too.

The USB driver is located on the provided DELTA LOGIC Automatisierungstechnik-DVD (<DVD-drive>\ACCON-NetLink\S7-Treiber\) or just download it from our web site [www.deltalogic.de](http://www.deltalogic.de).

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Q: During the usage of an ACCON-NetLink-USB compact with an external hub or a separate USB card unexpected errors occur. Disconnecting and reconnecting the USB cable between ACCON-NetLink-USB compact and hub does not work.

A: When e.g. the power supply of the hub is too weak for the ACCON-NetLink-USB compact, some of the hubs are reporting an error to the host system (PC).

To solve the problem with the ACCON-NetLink-USB compact use an external power supply for this device.

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Q: I get an error message when accessing the controller.

A: Check the error message.

The problem may be the setting of the PG/PC interface (e.g. PROFIBUS instead of MPI, address already in use, etc.) or the ACCON-NetLink-USB compact, for example, if it is not connected or the necessary USB driver has not been installed, yet.

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Q: There are no dialog settings in the Simatic Manager.

A: When you installed the ACCON-S7-NET driver for the first time you have to add it to the PG/PC interfaces, too. Make sure that you have administrator rights when installing the driver. After a successful installation you have to reboot your system. Simatic Manager Version 5.1 is minimum!

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Q: It is not possible to go online when the adapter is put on the PROFIBUS.

A: If possible use the autobaud function. If not desired or possible you have to check the PROFIBUS' timing parameters in the STEP7 project planning. Via the »Bus Parameters« button you can enlist the read off values into the extended bus parameter settings. You have to increase the »TRT« (Target Rotation Time) parameter in the ACCON-NetLink-USB compact as well as on the PLC.

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Q: If I set the ACCON-NetLink-USB compact to autobaud in the PG/PC interface and try to go online, the active LED lights up briefly before a message appears telling me that the bus parameters cannot be determined.

A: Please deactivate the autobaud function in the NETLink-S7-NET driver (PG/PC interface) and set the correct baud rate and the correct profile.

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Q: If I open various connections via the STEP7 driver, the connection sometimes breaks off or error messages appear saying that it is not possible to establish a connection.

A: For the communication with S7-300 modules it may be necessary to parameterize the communication resources. You can influence the assignment of existing »Connection Resources« under object properties of the CPU in the hardware configuration.

## 10 TECHNICAL DATA

Supported operating systems	No restrictions (the driver for SIMATIC ACCON-S7-NET is only compatible with Windows XP, 2003R2, 7, 2008R2, 8.1, 2012R2, 10)
Hardware requirements	USB interface
Supported PLCs	S7-200, S7-300, S7-400
Weight in kg	ca. 0.11
Dimensions (W x H x D) in mm	64 x 40 x 17
Protection type	IP 20
Voltage supply	5 VDC
Power consumption	USB 500 mA
Operating temperature	0 °C to 60 °C
Temperature storage/ transport	-20 °C to 90 °C
Relative humidity	Operating 5 % to 85 % at 30 °C Storage 5% to 93% at 40 °C
Connection cable to the PC	USB cable (3 m)
Supported bus profiles	MPI, DP, standard, Universal (DP/FMS), user-defined with automatic detection, PPI
Supported transmission rate of the bus connection to the PLC	9.6 Kbps to 12 Mbps with automatic detection
Supported transmission rates USB	12 Mbps (USB 1.1) und 480 Mbps (USB 2.0)
Max. number of connections to MPI, PROFIBUS, PPI	32

Supported software	ACCON-S7-EasyLog, ACCON-AGLink, DELTA LOGIC S7/S5-OPC-Server. With the driver for SIMATIC ACCON-S7-NET the following software can be used; SIMATIC Manager from V5.3, WinCC, WinCC flexible, ProTool, STEP7-Micro/WIN, TIA Portal
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Table 3: Technical Data

## Pin assignment

### Assignment of the MPI/PROFIBUS interface

Pin	Signal	Meaning
1	-	Not used
2	GND	Ground/ voltage supply (looped-through)
3	RxD / TxD-P	Received/transmission data-P
4	-	Not used
5	DGND	Ground for bus termination (looped-through)
6	DVCC	5 VDC for bus termination (looped-through)
7	VCC	24 VDC power supply (looped-through)
8	RxD / TxD-N	Received/transmission data -N
9	-	Not used

Table 4: Pin assignment MPI/PROFIBUS

### Assignment USB interface

Pin	Signal	Meaning
1	VCC	5 VDC
2	D-	Data -
3	D+	Data+
4	GND	Ground

*Table 5: Pin assignment USB*

The ACCON-NetLink-USB compact is supplied with a shielded 3 m USB 2.0 cable. The cable has an USB plug type A.

The length of a connection between PC and ACCON-NetLink-USB compact must not exceed 3 m or the voltage drop in the cable gets too high. When bridging longer distances please use an USB hub with external voltage supply.

#### **Updates on the Internet:**

You can find the latest drivers and firmware versions on [www.deltalogic.de](http://www.deltalogic.de) in the download section.