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Getting Started with HC15

Siemens Cellular Engines

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1 Introduction

HC15 is the first Siemens wireless module to offer UMTS and GSM capability on the same device. The benefit is that the HC15 includes HSDPA capability in a UMTS network and also all common mobile connectivity features like voice, short messages, GPRS and EGPRS.

The HC15 modules need to connect to an adequate host device, such as the Evaluation Board DSB75. Designed to help application manufacturers and system integrators to test and develop their HC15 host application, the DSB75 provides all interfaces and peripherals needed to run the HC15.

The purpose of this document is to guide you through the process of connecting the hardware, installing the software on a Windows XP system, and, last but not least, making the first data transmission via UMTS and HSDPA.

1.1 Related Documents

- [1] HC15 AT Command Command Set
- [2] HC15 Hardware Interface Description
- [3] DSB75 Support Box Evaluation Kit for Siemens Cellular Engines

2 Installation and Configuration

2.1 Technical Requirements for Running HC15 on DSB75

- HC15 module
- HC15 driver package contained in a zipped file: "HC15_01000_usb_ndis_driver.zip". Please follow the installation guidelines provided below: First install the Connection Manager and prepare the driver installation (see chapter 2.2), then connect the HC15 to the DSB75 (see chapter 2.3), finally install the drivers (see chapter 2.4).

NOTE: If drivers from earlier HC15 preview releases are still installed it is recommended to uninstall them first. See chapter 2.6.

- Windows XP computer, minimum USB 1.1 connector
- USB cable
- DSB75 Evaluation Board providing the application interface between the HC15 USB port and the computer's USB port.
- Adapter for mounting the HC15 module onto the DSB75
- 9 to 15 Volts power supply applied at the DSB75 for powering up the DSB75 and the connected HC15 module
- 1 mini antenna cable (50 Ohms) from the Hirose U.FL connector on the HC15 module to the Hirose U.FL on the DSB75; 1 external RF antenna connecting to the SMA connector of the DSB75 (product name: SMARTEQ MiniMag), both delivered with DSB75
- Metal plate for grounding the external RF antenna, min. 20 cm x 20 cm
- Optional: Handset, e.g Handset for Siemens products from Votronic delivered with DSB75
- Terminal program to control the USB port under Windows, for example Windows Hyperterminal
- UICC card
- Service provider settings for access to the GPRS and HSDPA services, as a rule the following:
 - APN (network operator specific Name of Access Point that connects the GSM network to the Internet)
 - Primary and secondary DNS
 - IP address (DHCP or static)
 - QoS settings
 - User name and password

HC15 offers two ways to access the GPRS or HSDPA networks: either the Siemens Wireless Ethernet Adapter controlled by the Siemens Connection Manager or a dial-up network connection set up via the Siemens HSDPA Modem. For details see Chapter 3.10.

 Make sure to operate the HC15 always with the UICC card inserted in the DSB75 card reader and a valid SIM PIN entered. This is because most AT commands require SIM PIN authentication.

2.2 Installing Siemens Connection Manager and Preparing Driver Installation

Before you start unpack the "HC15_01000_usb_ndis_driver.zip" file to a folder on your Windows XP system. Double-click the "autorun.exe" file from the dezipped driver package. The following installation sequence will run:

		InstallShield	Wizard	
				Preparing to Install
🙀 Connection Manager - I	InstallShield Wizard			Connection Manager Setup is preparing the InstallShield
J	Welcome to the InstallShield Wizard f Connection Manager	for		Wizard, which will guide you through the program setup process. Please wait.
	The InstallShield(R) Wizard will install Connection N	Manager on		Configuring Windows Installer
	your computer. To continue, click Install.	nanagor on		
1	WARNING: This program is protected by copyright international treaties.	: law and		Cancel
Install Cancel		Press I the Cor	Install to start the installation of nnection Manager.	
Connection Manager - I Installing Connection Man	installShield Wizard ager		The prindicate	ogress of the installation will be

It is possible that there are up to 3 warning messages saying that the drivers are not digitally signed. Please ignore the messages and press *Continue anyway*.

	👹 Connection Manager - InstallShield Wizard	
	Installing Connection Manager The program features you selected are being installed.	44
	Please wait while the InstallShield Wizard installs Connection Manage may take several minutes. Status:	r. This
the ted, is will 1.		
as	InstallShield	Cancel

Now the installation of the Connection Manager is completed, and the driver software is preinstalled. The installer will automatically finish the installation.

The program features you selected are being installed.

Status

Please wait while the InstallShield Wizard installs Connection Manager. This may take several minutes.

Launching driver Installer

Next, connect the HC15 module as described in chapter 2.3.

2.3 Installing the Hardware

To properly connect the HC15 module and all accessories to the DSB75 Board follow these steps:

- Check that the all switches of the DSB75 Board are set as described in the Appendix.
- Attach the adapter board to the 80-pin header located on the DSB75 Board. Take gentle care that all pins are aligned correctly, then press down evenly on the adapter board until it is firmly seated.
- Connect the one end of the mini antenna to the Hirose U.FI connector of the DSB75 board and attach the other end to the Hirose U.FL connector located on the module's top side.
- Mount the HC15 module upside down onto the 50-pin board-to-board connector of the adapter board.
- Screw the external antenna (MiniMag) into the SMA connector on the DSB75. To improve the antenna performance use the metal plate for grounding. The external antenna should be positioned in the center of the metal plate.
- Connect the Western plug of the handset to the Western jack on the DSB75.
- Make sure that the power supply adapter is switched to 9 Volts, and connect the power cables to the red and black connectors of the DSB75.
- Plug the USB cable to the computer's USB port and to the USB port of the DSB75. See Chapter 2.4 to continue.





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Figure 2: DSB75 with HC15 module and all accessories connected

2.4 Installing USB and Ethernet Drivers

The HC15 driver package consists of three virtual devices, one by one automatically installed:

- Siemens USB Com Port driver
- Siemens Wireless Ethernet Adapter driver
- Siemens HSDPA USB Modem driver

During the installation, the HC15 USB interface will be assigned two virtual COM ports, one for the virtual modem port and one for the virtual application port. Windows will automatically allocate the next available COM port to each virtual interface.

After plugging the USB cable Windows detects the HC15 as a new USB device.



HC15 startup v01

Cancel

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Found New Hardware Wizard		
Please wait while the wizard installs the software		
H	Siemens Wireless Ethernet Adapter	
hcusbnet.sys To C:\WINDOWS\system32\DRIVERS		
	< <u>B</u> ack <u>N</u> ext > Cancel	

Now the installation of the "Siemens Wireless Ethernet Adapter" will start. Click *Next.*

The progress of the driver installation is indicated.

It is possible that there are up to 3 warning messages saying that the drivers are not digitally signed. Please ignore the messages and press *Continue anyway*.



Press *Finish* to complete the "Siemens Wireless Ethernet Adapter" installation.

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Now the installation of the "Siemens HSDPA USB Modem" will start. Click *Next*.

The progress of the driver installation is indicated.

It is possible that there are up to 3 warning messages saying that the drivers are not digitally signed. Please ignore the messages and press *Continue anyway*.

Press *Finish* to complete the "Siemens HSPDA USB Modem" installation.



Finally, you will get a message saying that the drivers are correctly installed.

2.5 Installed Devices and Tools

After successful installation, the devices listed below are available. Under Windows XP, you can use the *Device Manager* to check that all components are properly installed and configured.



GPRS / HSDPA provider. See also Chapter

Siemens HSDPA USB Modem

- AT command and data interface, also referred to as "Modem" port if queried using the AT^SQPORT command.
- Intended particularly for HSDPA and GPRS data connections.
- The virtual COM port Windows has assigned to the AT command and data interface is listed in the *Device Manager* under *Modems*.
- The port number can be gathered from *Control Panel* | *Phone and Modem Options*. This COM port can be used to set up dial-up network connections. The bit rate set by default on the *Modem* property page is not relevant for USB and can be left unchanged. On the *Advanced* tab you can put the command string used to define the PDP context for your

Phone and Modem Options ?X 3.7.	
Dialing Rules Modems Advanced Siemens HSDPA USB Modem Properties	? ×
General Modem Diagno Siemens HSDPA USB Modem Propertie	s <u>? ×</u>
Port: COM17 Driver Details	Power Management
Modem Attached General Modem D	iagnostics Advanced
Siemens AG WM USB Modem Not prese Speaker volume Extra Settings	
Signers AG WM USB Modern #2 Not press	
Seners 1307 X 030 Woden COM7 Seners 1307 X 030 Woden COM3 att-cadcont=1 "IP" "internet t-mobile"	
Standard 19200 bps Modem #2 COM7	
COM6 <u>Maximum Port Speed</u>	
- Dial Control	
🗖 🔟 🔟 dit for di	
Add Remove	
OK Cancel	Port Settings
Change <u>D</u> ef	ault Preferences
	OK Cancel

Siemens USB Com Port

- AT command interface, also referred to as "Application" port if queried using the AT^SQPORT command.
- Mainly intended for controlling the HC15 module, for receiving URCs, can be used also for sending, receiving, writing and reading short messages. Not intended as data interface for HSDPA and GPRS.
- The virtual COM port Windows has assigned to this port is listed in the *Device Manager* under *Ports (COM&LPT)*.

Siemens Wireless Ethernet Adapter

- Wireless network adapter intended for HSDPA and GPRS data connections.
- Listed in the Device Manager under Network adapters.
- Software controlled by the *Siemens Connection Manager*. To open the program in Windows XP, click *Start*, point to *Programs*, select *Siemens*, select *HSDPA USB Modem* and click *Connection Manager*. See chapters 3.10 and 3.10.1 for details of how to set up a connection.

2.6 Uninstalling Drivers and the Connection Manager

Select Control Panel -> Add or Remove Programs and Connection Manager Press Remove to select the uninstaller of the Connection Manager and the HC15 drivers.

Add <u>N</u> ew Programs	🕵 Connection Manager	Size	1.22MB
-	Click here for support information.	Used	occasionally
		Last Used On	07.11.2006
Add/Remove Windows	To remove this program from your computer, click Rem	iove.	Remove
Add or Remove	Programs 🕅	Please press Yes to start th	e uninstaller.
Are you	u sure you want to remove Connection Manager from your computer?		
	Yes No	The Connection Manager drivers will be removed.	and all HC15

2.7 Uninstalling Drivers and Tools from Earlier HC15 Releases

The following procedures apply only to drivers of earlier HC15 releases supplied as preview samples for testing only.

2.7.1 Uninstalling Earlier Drivers

Under Windows XP, open the *Device Manager* and select the drivers as described in chapter 2.5. Keep in mind that the drivers are listed in the *Device Manager* only when the module is switched on. Right-click the driver and, from the resulting menu, select *Uninstall*.



2.7.2 Uninstalling Earlier Connection Manager

Old versions of the Siemens Connection Manager were installed in Windows XP under *Program Files* | *Siemens* | *ConnectionManager*. To uninstall the program simply remove the "conman.exe" file.

3 Using the HC15 Module

The following examples show the basic steps required to register to the network, to select UMTS mode or GSM mode and to attach to HSDPA or GPRS.

The examples are based on a UICC card provisioned by the German network operator T-Mobile. The used UICC card is capable of UMTS and GSM and enables the subscriber to switch back and forth between both networks.

3.1 AT Command Interpreter

AT commands can be entered on two interfaces of the HC15 module:

- Siemens HSDPA USB Com Port
- Siemens HSDPA USB Modem

Yet, we recommend that the Siemens HSDPA USB Com Port be used for controlling the HC15 module, eg. for entering AT commands and receiving URCs, while the Siemens HSDPA USB Modem is mainly intended for use as a modem. For greater detail refer to [1], especially the chapters "AT Command Interpreter" and "Unsolicited Result Code Presentation".

As described in Chapter 2.5, each interface is assigned a virtual COM port of its own, which enables accessing the interface from the host application or, accordingly, the dial-up connection. To easily identify both interfaces you can use the AT^SQPORT command:

AT^SQPORT	On the AT command interface, the Siemens
Application	HSDPA USB Com Port is referred to as
OK	"Application".
AT^SQPORT Modem OK	On the AT command interface, the Siemens HSDPA USB Modem is referred to as "Modem".

If you need to operate the HC15 from both interfaces at a time, bear in mind that both are handled by the same AT command interpreter. As a result, AT commands entered on both interfaces are not executed in parallel but sequentially, one after the other. So, an AT command issued on one interface will be buffered on this interface to be executed after the other interface has completed processing earlier AT command(s). The buffered command string is not echoed, but will be indicated when executed.

3.2 Switching on the HC15

The HC15 can be started by pressing the IGT key of the DSB75. Please wait approximately 2 seconds before using the module, for example before entering AT commands.

Disconnecting and plugging the USB cable during operation is not supported.

3.3 Switching off the HC15

To shut down the HC15 module, enter the AT^SMSO command. This enables the ME to save all data and perform an orderly shutdown.

AT^SMSO OK The ME switches off.

The HC15 module can also be switched off by using the IGT line as described in [1] (see AT^SCFG) and [1] (see section "Configuring the IGT Line for Use as ON/OFF Switch").

3.4 Registering to the Network

Make sure to operate the HC15 always with the UICC card inserted in the DSB75 card reader and a valid SIM PIN entered. This is because most AT commands require SIM PIN authentication.

Write command: AT+CPIN=<pin>[, <new pin>]

at+cpin? +CPIN: SIM PIN OK at+cpin=1234 OK at+cpin? +CPIN: READY OK Entering the SIM PIN.

3.5 Selecting UMTS or GSM

The GSM 07.07 operator selection command AT+COPS has been enhanced to enable the subscriber to select whether to use UMTS or GSM. You can quickly switch back and forth between both network types while the ME remains registered.

Write command: AT+COPS=<mode>[, <format>[, <oper>[, <act>]]]

The parameter <act> (access technology) can take the values listed below. The parameter is stored non-volatile.

- 0 GSM network
- 2 UMTS network

Note: By factory default, an automatic network selection mode is set which enables the ME to select either UMTS or GSM, depending on the network coverage. This automatic mode remains enabled until you explicitly set either UMTS or GSM using the <act> parameter of AT+COPS. Setting the <act> parameter forces the ME to select either UMTS only or accordingly, GSM only. If the specified network is not available, the network registration will be disabled.

at+cops? +COPS: 0,0,"T-Mobi OK	le D",2	Querying the current network mode. The ME is registered to the German operator T-Mobile and uses UMTS.
at+cops=0,,,0 OK at+cops? +COPS: 0,0,"T-Mobi	#(or at+cops=,,,0) le D",0	Selecting the GSM network. Query the current network type. The response confirms that the ME has changed to the GSM network.
at+cops=0,,,2 OK at+cops? +COPS: 0,0,"T-Mobi	#(or at+cops=,,,2) le D",2	Selecting the UMTS network.
ок		
at+cpin? +CPIN: READY		There is no need to enter the SIM PIN again.
ОК		

Furthermore, the command AT+COPS serves to query or specify several modes of selecting the GSM network operator. These functions are not discussed in this document.

3.6 Attaching to the HSDPA or GPRS Network

After PIN authentication, the HC15 module automatically tries to attach to the HSDPA or, accordingly, GPRS network.

at+cgatt?	Querying the current service state.
+CGATT: 1	The ME is attached, depending on the
	selected network type (see AT+COPS), it is
OK	either attached to the HSDPA or GPRS
	service.

3.7 Defining the PDP Context

Use the AT+CGDCONT command to configure the correct provider settings. The PDP context is stored non-volatile.

Write command: AT+CGDCONT=<cid>[, <PDP_type>[, <APN>[, <PDP_addr>]]]

at+cgdcont=1,"IP","internet.t-mobile" OK	Specifying the PDP context (example shows the APN of the German network provider T-Mobile).
at+cgdcont? +CGDCONT: 1,"IP","internet.t-mobile","",0,0 OK	Checking the current PDP context definition.

The focus of this document is only on the parameters <cid>, <PDP_type> and <APN>. The string parameters must be enclosed in quotation marks.

Under Windows XP, the PDP context can, optionally, be entered on the *Modem* property page as described in Chapter 2.5.

3.8 Making a Voice Call (MO)

The commonly used GSM 07.07 dialing command ATD is fully applicable both in the UMTS and the GSM network.

To make a mobile originated voice call enter ATD, type the destination number and add a semicolon. The result code OK will be returned immediately after dialing, prior to call setup.

To end the call, use the AT+CHUP command (ATH is for data calls only).

atd030111111111; OK at+clcc +CLCC: 1,0,0,0,0,"030111111111",129,"Tom"	The HC15 subscriber makes a voice call. Checking the call status (MO call is active).
AT+CHUP OK	The HC15 subscriber terminates the call.
at+clcc OK	Checking the call status (no call).

3.9 Answering a Voice Call (MT)

A mobile terminated voice call is indicated by the RING URC. To answer the call, enter ATA.

To terminate the call use AT+CHUP.

3.10 HSDPA or GPRS Data Transfer

HC15 offers two alternatives to access the GPRS or HSDPA networks:

- The Siemens Connection Manager provided for the Siemens Wireless Ethernet Adapter See chapter 3.10.1.
- A dial-up network connection via the installed *Siemens HSDPA Modem* as described in chapter 3.10.2.

In either case the ME must be registered to the network. So, before trying to connect to the data services ensure that SIM PIN authentication was done from the host application. To take advantage of HSDPA make sure that the <act> parameter of AT+COPS equals "2". For GPRS the parameter shall be "0". It is recommended to configure these settings on the *Siemens HSDPA USB Com Port*.

3.10.1 HSDPA or GPRS Data Transfer via Siemens Wireless Ethernet Adapter

The easiest way is using the *Siemens Connection Manager* installed along with the HC15 driver package.

- To open the tool in Windows XP, click *Start*, point to *Programs*, select *Siemens*, select *HSDPA USB Modem* and click *Connection Manager*.
- Use the Select Device listbox to choose the Siemens Wireless Ethernet Adapter. When opened the first time or after disabling the adapter, the listbox may be empty.
- Check the *APN Name* box and enter the APN (Access Point Name) of your service provider.
- necessary, check lf the Authentication Preference box and select the type of authentication protocol. Otherwise, PAP and CHAP apply default. Username bv and password are also provider dependent.
- Press the *Connect* button to set up a connection. Then simply open your Internet browser. The box on the rightmost bottom represents the signal strength.

đ	Siemens Connection Manag	er						_	
C	onnection Profiles Statistics								
5	Siemens Wireless El	hernet Ada:	apter						•
ſ	- Override								
									-
		0		0		0		0	=
	Secondary DNS:	0		0		0		0	-
	Primary NBNS:	0		0		0		0	-
	Secondary NBNS:	0		0		0		0	-
	APN Name:	internet.t	-mobil	9					-
	IP Address:	0		0		0		0	-
	Authentication Preference:	PAP and C	HAP						-
	Username:								
	Password:								
	Connect								
	✓ Systray on minimized								
	Auto Connect				(3))		UM	TS	
_									

 To close the connection press the Disconnect button (available when connected).

The *Auto Connect* check box on the leftmost bottom can be activated if you want the Siemens Wireless Ethernet Adapter to automatically connect to the network each time you restart the HC15. This option can be used particularly with a flat rate subscription. In this case, take care that the SIM PIN authentication is also done automatically.

3.10.2 HSDPA or GPRS Data Transfer via Dial-Up Network

Before dialing, make sure that the virtual COM port is not used by any application (eg. by a terminal program or by the host application).

Also, ensure that you have the PDP context for your service provider defined by using the AT+CGDCONT command. The command string can be entered either on the *Modem* property page on the *Windows Control Panel* or in the host application (see Chapters 2.5 and 3.7).

From to the *Control Panel*, choose *Network Connections* and select the dial-up connection created for HC15. (Instructions on how to create a new dialup connection can be found in chapter 4.1)

The correct dial string *99***1# should already be given, if entered in the *Phone number* box when the dial-up connection was added. Otherwise, you can type the number here before dialing.

User name and password may or may not be required, depending on the network operator.

The connection is properly established when the following messages are reported:

Connecting GPRS_HSDPA...

Verifying username and password...

Connecting GPRS_HSDPA

Registering your o

Conn

9% o

Connecting GPRS_HSDPA...

51

Dialing *99***1#

k	Connect GPR5_HSDPA ?	×			
ר ק ר					
ן ר ג	User name:				
	Password:				
 Save this user name and password for the following users: Me ogly Anyone who uses this computer 					
5	Djal: *99***1#	_			
	Dial Cancel Properties Help				
omputer on the network					
ect	ing GPRS_HSDPA				
]	Authenticated.				
	Cance				
HS	55etup.exe Completed	×			
2					
ig: etup.exe from www.hyperionics.com					

To verify the data rates for up- and/or downlink, you can use, for example, the file download status dialog of your Internet browser.

8	
Saving:	
HS5Setup.exe from	n www.hyperionics.com
Estimated time left Download to: Transfer rate:	25 sec (242 KB of 3,11 MB copied) C:\Documents and Set\HSSSetup.exe 117 KB/Sec
Close this dialo	g box when download completes
	Open Open Folder Cancel

Terminating the dial-up connection

To stop a HSDPA or GPRS data connection disconnect the dial-up connection. This can be done in two ways:

- 1. Double-click the dial-up network connection icon in the system tray. In the resulting connection status dialog press the *Disconnect* button.
- 2. The other way is available on the *Network Connections* page of the *Control Panel*: Rightclick the active connection to open a context menu where to choose *Disconnect*.

💺 GPRS_HSDPA Sta	tus		? ×
General Details			
Connection Status: Duration: Speed:		Connect 00:00: 115.2 Kt	ted 24 ops
Activity	Sent —	Receiv	ed
Bytes: Compression: Errors: Properties	1.609 0 % 0		07 1% 0
			ose

Note that when you close the dial-up connection the echo will be automatically deactivated and needs to be activated again in the application.

4 Appendix I

4.1 Adding and Configuring a New Dial-Up Connection

This chapter describes how to create and configure a new dial-up connection when using the installed Siemens HSDPA USB Modem to access the GPRS or HSDPA network:

4.1.1 Adding a New Dial-up Connection

Open the *Control Panel*, double-click *Network Connections*, select *Create a new connection* on the left side of the panel.



The Network Connection Wizard opens. Click Next to continue. Put a check mark on Connect to the Internet and click Next.

New Connection Wizard				
New Connection Wizard Network Connection Type What do you want to do?	Velcome to the New Connection Vizard			
Connect to the Internet Connect to the Internet Connect to the Internet	To switch to the Internet.			
Connect to the network at my workplace Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.	network.			
Set up an advanced connection Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.	<u>o connect to a wireless network, view wireless networks</u> range			
ZBack Nevt \ Cancel	o continue, click Next.			

Select the option Set up my connection manually and click Next. Select Connect using a dial-up modem and click Next.

	New Connection Wizard	
	Getting Ready The wizard is preparing	to set up your Internet connection.
	How do you want to cor	nect to the Internet?
	C Choose from a	a list of Internet service providers (ISPs)
	Set up my cor	nnection <u>m</u> anually
New Connection Wizard Internet Connection How do you want to connect to the Internet?	Ś	nection, you will need your account name, password, and a r your ISP. For a broadband account, you won't need a phone got from an ISP
 Connect using a dial-up modem This type of connection uses a modem and a regular or IS Connect using a broadband connection that req and password This is a high-speed connection using either a DSL or cat refer to this type of connection as PPPoE. Connect using a broadband connection that is a This is a high-speed connection using either a cable mode connection. It is always active, and doesn't require you to 	DN phone line. u ires a <u>u</u>ser name ole modem. Your ISP may I lways on m, DSL or LAN sign in.	<u>≺B</u> ack <u>N</u> ext > Cancel
< <u>B</u> ack	<u>N</u> ext > Cancel	

Select the modem driver that you want to use for the dial-up connection. Click *Next* to continue. Type an appropriate *Connection name* and click *Next*.

	New Connection Wizard		
	Select a Device This is the device that will be	used to make the connection.	I)
	You have more than one dial-	up device on your computer.	
	Select the devices to use in the	his connection:	
	Modem - Siemens HS	DPA USB Modem (COM17)	_
		200 bps Modem #2 (COM7) 100 bps Modem (COM3)	
New Connection Wizard		(GPRS) (COM6)	
Connection Name What is the name of the service that provides your Intern	net connection?		
Type the name of your ISP in the following box.			
ISP N <u>a</u> me			
GPBS HSDPA			
[
The name you type here will be the name of the connectio	on you are creating.	< <u>Back</u> Next>	Cancel
		4	
< <u>B</u> ack	<u>N</u> ext > Cancel		

In the *Phone number* box, put the dial string *99***1# commonly used to access the GPRS network.

Note: The number "1" added before the hash determines that the first PDP context shall be used. The number must be identical to the <cid> value set with AT+CGDCONT (see Chapter 3.7)

		New Connection Wizard	
		Phone Number to Dial What is your ISP's pho	one number?
		Type the phone number	per below.
		*99***1#	
		You might need to you need the extra hear a modern sour	p include a "1" or the area code, or both. If you are not sure a numbers, dial the phone number on your telephone. If you and, the number dialed is correct.
			< <u>B</u> ack <u>N</u> ext > Cancel
Depending on the	e network, you	New Connection Wizard	
name and a <i>Password</i> for the dial-up connection. If not required, you may leave all boxes empty. Click <i>Next</i> and in		You will need an acco	mation ount name and password to sign in to your Internet account.
		Type an ISP account r safe place. (If you have	name and password, then write down this information and store it in a ve forgotten an existing account name or password, contact your ISP.)
the resulting dialog	g, click <i>Finish</i> .	<u>U</u> ser name:	<u> </u>
		Password:	
		<u>C</u> onfirm password:	
		Use this account	name and password when anyone connects to the Internet from
New Connection Wizard			ternet connection
S	Completing the Nev Wizard	w Connection	
	You have successfully complet create the following connection	ted the steps needed to n:	< <u>B</u> ack <u>N</u> ext > Cancel
GPRS_HSDPA • Make this the default of • Share with all users of • Use the same user nar The connection will be saved Connections folder. • Add a shortcut to this con	nnection is computer & password for everyone		
	The connection will be saved i Connections folder.	n the Network	
	Add a shortcut to this conn	ection to my desktop	
	To create the connection and	close this wizard, click Finish.	
	< <u>B</u> ack	Finish Cancel	

This will cause the *Connect...* dialog to appear (screen is shown in Chapter 4.1.2). Yet, at this moment, it is recommended that you press *Cancel* in order to check, and if necessary, to configure the dial-up connection as described in Chapter 4.1.2.

4.1.2 Configuring a Dial-up Connection

Every newly created dial-up connection should be configured before using it to establish a PPP connection.

Open the *Control Panel*, double-click *Network Connections*, select the dial-up connection you want to configure. In the resulting *Connect...* dialog, press the *Properties* button.



On the *General* tab, select the modem you want to configure. The correct dial string *99***1# should already be given, if entered before in the *Phone number* box when the dial-up connection was added (see Chapter 4.1.1).

Select the *Security* tab to verify or edit authentication options for PPP connections.

By default, MS Windows XP enables the option *Typical* with unsecured passwords for the commonly used but unsafe PAP authentication method. As this is the minimum level of security supported in all networks the setting usually enables the subscriber to make a connection, though at the expense of security.

GPRS_HSDPA Properties	<u>?</u> ×			
General Options Security Networking Advanced				
- Security options	[]			
Typical (recommended settings)				
Allow unsecured password]			
Automatically use my Windows logon name and password (and domain if any)				
Require data encryption (disconnect if none)				
C Advanced (custom settings)				
Using these settings requires a knowledge <u>Settings</u>				
Interactive logon and scripting				
🗖 <u>R</u> un script:	-			
Edit Browse				
OK Ca	incel			

Many network operators apply more secure authentication methods for PPP connections, such as CHAP. For access to these networks, activate the *Advanced (custom setting)* option and press the *Settings* button. On the resulting *Advanced Security Settings* property page, enable / disable the authentication protocols according to the information provisioned by your service provider.

GPR5_HSDPA Properties	Advanced Security Settings
General Options Security Networking Advanced	Data encryption:
Security options C Iypical (recommended settings) ⊻alidate my identity as follows:	Optional encryption (connect even if no encryption) Logon security Use Extensible Authentication Protocol (EAP)
Automatically use my Windows logon name and password (and domain if any) Require data encryption (disconnect if none)	Allow these protocols
Advanced (custom settings) Using these settings requires a knowledge <u>Settings</u>	Unencrypted password (PAP) Shiva Password Authentication Protocol (SPAP) Challenge Handshake Authentication Protocol (CHAP) Microsoft CHAP (MS-CHAP)
Interactive logon and scripting I Show terminal window Bun script: Edit Browse	Allow older MS-CHAP version for <u>W</u> indows 95 servers Microsoft CHAP Version 2 (MS-CHAP v2) Eor MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)
OK Cancel	OK Cancel

Note: If an attempt to connect to a HSDPA or GPRS network fails, check that the authentication protocols are properly set.

PPI

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? X

On the Networking tab, the default settings are acceptable in most cases: The drop-down menu shows PPP: Windows 95/98/NT/2000, Internet for the type of dialup server as default.

In the PP LCP e compressi

PP settings box, verify that Enable extensions, Enable software sion are selected and click OK.	Settings This connection uses the following items:
PP Settings ?	
 Enable LCP extensions Enable software compression Nacetista enable link service link service 	Install Uninstall Properties
I Negotiate multi-link for single link connections	Description
OK Cancel	Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
	OK Cancel

BARS_HSDPA Properties

Type of dial-up server I am calling: PPP: Windows 95/98/NT4/2000. Internel

General Options Security Networking Advanced

Select the Internet Protocol (TCP/IP) on the Networking tab and press the Properties button to go to the General page:

In most cases, it is sufficient to accept the default settings:

Obtain an IP address automatically and Obtain DNS server address automatically. Otherwise, you have to select the options Use the following IP address / Use the following DNS addresses and specify the IP addresses provisioned by your network operator.

network

The Advanced button opens further а property page where you can set your preferences when local working in а network and a dial-up network at the same time.



4.2 Abbreviations

Abbreviation	Description
APN	Access Point Name
CHAP	Challenge Handshake Authentication Protocol
GPRS	General Packet Radio Service
HSDPA	High-Speed Downlink Packet Access
IP	Internet Protocol
ME	Mobile Equipment
МО	Mobile Originated
MT	Mobile Terminated
PAP	Password Authentication Protocol
PDP context	Packet Data Protocol context
ТА	Terminal Adapter
TE	Terminal Equipment
UICC	Universal Integrated Circuit Card
UMTS	Universal Mobile Telecommunication System
URC	Unsolicited Result Code

5 Appendix II

This chapter refers to the DSB75 Board and the adapter board needed to mount a HC15 module onto the DSB75 Board.

The focus is on the configuration of several switches you may be required to change for use with HC15. A detailed description of the DSB75 Board is given in [3].

Please check that all slide switches (S100 - S103) on your HC15-DSB75 adapter board are set as shown in Figure 3.



Figure 3: HC15-DSB75 adapter board – switch settings

Figure 4 shows the DSB75 Board and provides an overview of the connectors and switches relevant for HC15. Please note that the factory settings of the DSB75 Board are not fully applicable to HC15. The switches marked red or yellow must be set as shown. The switches marked green need not be changed.

SIEMENS



