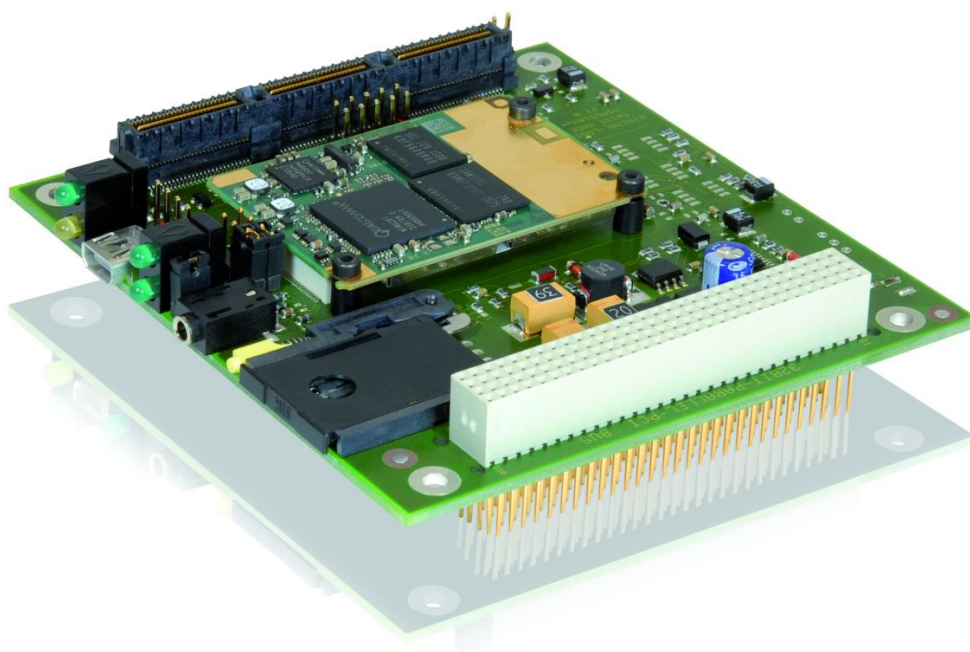


» Kontron User's Guide «



MSMGS104EX

Document Revision 100

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1 User Information

1.1 About this Document

This document provides information about products from Kontron AG and/or its subsidiaries. No warranty of suitability, purpose, or fitness is implied. While every attempt has been made to ensure that the information in this document is accurate, the information contained within is supplied "as-is" and is subject to change without notice.

For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

1.2 Copyright Notice

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1.3 Trademarks

The following lists the trademarks of components used in this board.

- » IBM, XT, AT, PS/2 and Personal System/2 are trademarks of International Business Machines Corp.
- » Microsoft is a registered trademark of Microsoft Corp.
- » Intel is a registered trademark of Intel Corp.
- » All other products and trademarks mentioned in this manual are trademarks of their respective owners.

1.4 Standards

Kontron AG is certified to ISO 9000 standards.

1.5 Warranty

This Kontron AG product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron AG will, at its discretion, decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron AG will not be responsible for any defects or damages to other products not supplied by Kontron AG that are caused by a faulty Kontron AG product.

1.6 Technical Support

Technicians and engineers from Kontron AG and/or its subsidiaries are available for technical support. We are committed to making our products easy to use and will help you use our products in your systems.

Please consult our Web site at <http://www.kontron.com/support> for the latest product documentation, utilities, drivers and support contacts. Consult our customer section <http://emdcustomersection.kontron.com> for the latest BIOS downloads, Product Change Notifications and additional tools and software. In any case, you can always contact your board supplier for technical support.

1.7 Environmental Protection Statement

This product has been manufactured to satisfy environmental protection requirements wherever possible. Many of the components used (structural parts, printed circuit boards, connectors, batteries, etc.) are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations. All components within this product fulfill the requirements of the RoHS (Restriction of Hazardous Substances Directive). The product is soldered with a lead free process.

1.8 RoHS Commitment

Kontron Compact Computers AG (Switzerland) is committed to develop and produce environmentally friendly products according to the Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC) and the Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) established by the European Union. The RoHS directive was adopted in February 2003 by the European Union and came into effect on July 1, 2006. It is not a law but a directive, which restricts the use of six hazardous materials in the manufacturing of various types of electronic and electrical equipment. It is closely linked with the Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC, which has set targets for collection, recycling and recovery of electrical goods and is part of a legislative initiative to solve the problem of huge amounts of toxic e-waste.

Each European Union member state is adopting its own enforcement and implementation policies using the directive as a guide. Therefore, there could be as many different versions of the law as there are states in the EU. Additionally, non-EU countries like China, Japan, or states in the U.S. such as California may have their own regulations for green products, which are similar, but not identical, to the RoHS directive.

RoHS is often referred to as the "lead-free" directive but it restricts the use of the following substances:

- » Lead
- » Mercury
- » Cadmium
- » Chromium VI
- » PBB and PBDE

The maximum allowable concentration of any of the above mentioned substances is 0.1% (except for Cadmium, which is limited to 0.01%) by weight of homogeneous material. This means that the limits do not apply to the weight of the finished product, or even to a component but to any single substance that could (theoretically) be separated mechanically.

1.8.1 RoHS Compatible Product Design

All Kontron Compact Computers (KCC) AG standard products comply with RoHS legislation.

Since July 1, 2006, there has been a strict adherence to the use of RoHS compliant electronic and mechanical components during the design-in phase of all KCC AG standard products.

1.8.2 RoHS Compliant Production Process

Kontron Compact Computers AG selects external suppliers that are capable of producing RoHS compliant devices. These capabilities are verified by:

- » A confirmation from the supplier indicating that their production processes and resulting devices are RoHS compliant.
- » If there is any doubt of the RoHS compliancy, the concentration of the previously mentioned substances in a produced device will be measured. These measurements are carried out by an accredited laboratory.

1.8.3 WEEE Application

The WEEE directive is closely related to the RoHS directive and applies to the following devices:

- » Large and small household appliances
- » IT equipment
- » Telecommunications equipment (although infrastructure equipment is exempt in some countries)
- » Consumer equipment
- » Lighting equipment – including light bulbs
- » Electronic and electrical tools
- » Toys, leisure and sports equipment
- » Automatic dispensers

It does not apply to fixed industrial plants and tools. The compliance is the responsibility of the company that brings the product to market, as defined in the directive. Components and sub-assemblies are not subject to product compliance. In other words, since Kontron Compact Computers AG does not deliver ready-made products to end users the WEEE directive is not applicable for KCC AG. Users are nevertheless encouraged to properly recycle all electronic products that have reached the end of their life cycle.

1.9 Swiss Quality

- » 100% Made in Switzerland
- » This product was not manufactured by employees earning piecework wages
- » This product was manufactured in humane work conditions
- » All employees who worked on this product are paid customary Swiss market wages and are insured
- » ISO 9000:2001 (quality management system)

1.10 The Swiss Association for Quality and Management Systems

The Swiss Association for Quality and Management Systems (SQS) provides certification and assessment services for all types of industries and services. SQS certificates are accepted worldwide thanks to accreditation by the Swiss Accreditation Service (SAS), active membership in the International Certification Network, IQNet, and co-operation contracts/agreements with accredited partners.

www.sqs.ch

The SQS Certificate ISO 9001:2000 has been issued to Kontron Compact Computers AG in the field of development, manufacturing and sales of embedded computer boards, embedded computer modules and computer systems. The certification is valid for three years at which time an audit is performed for recertification.

2 Introduction

2.1 MSMGS104EX Ordering Information

Part / Option	Part Number	Description
MSMGS104ex	801754	GSM/UMTS HC25 adapter
GSM/UMTS	801781	HC25 module

2.2 Understanding MSMGS104EX Functionality

The MICROSPACE® PCI/104-Express expansion card MSMGS has a slot for Siemens HC25-GSM/UMTS communication modules as well as a SIM card bracket. The Siemens GSM/UMTS module has its own part number and must be ordered separately.

» The MSMGS104EX is PCI/104-Express, version 1.0, compliant.

2.3 MICROSPACE® Documentation

This manual is written for the original equipment manufacturer (OEM) who plans to build computer systems based on the single board MICROSPACE-PC. It is for integrators and programmers of systems based on the MICROSPACE-Computer family. This manual provides instructions for installing and configuring the board and describes the system and setup requirements. This document contains information on hardware requirements, interconnections, and details of how to program the system. Please check the Product CD for further information and manuals.

2.4 MSMGS104EX Benefits

MICROSPACE PCI/104-Express embedded computer boards comply with the PC/104 Consortium form factor 3.55 × 3.775 inches (90.17 × 95.89 mm) and are available in "stack through" versions.

3 Specifications

Note: All information is subject to change without notice.

3.1 Functional Specifications

Bus

- » Standard: PCI/104express
- » Size: 32 bit PCIe

3.2 Dimensions

- » Length: 90 mm
- » Width: 96 mm
- » Height: 15 mm

3.3 Electrical Specifications

Power Supply

- » Working: 3.3 / 5 Volt / 1W

3.4 Environmental Specifications

Temperature

- » Operating, standard version: -25°C to +70°C
- » Operating, industrial version: -25°C to +85°C (ask Kontron Compact Computers AG)
- » Non-operating (storage): -55°C to +85°C

Vibration

- » 5 to 2000 Hz

Humidity

- » 5% to 90% (non-condensing)

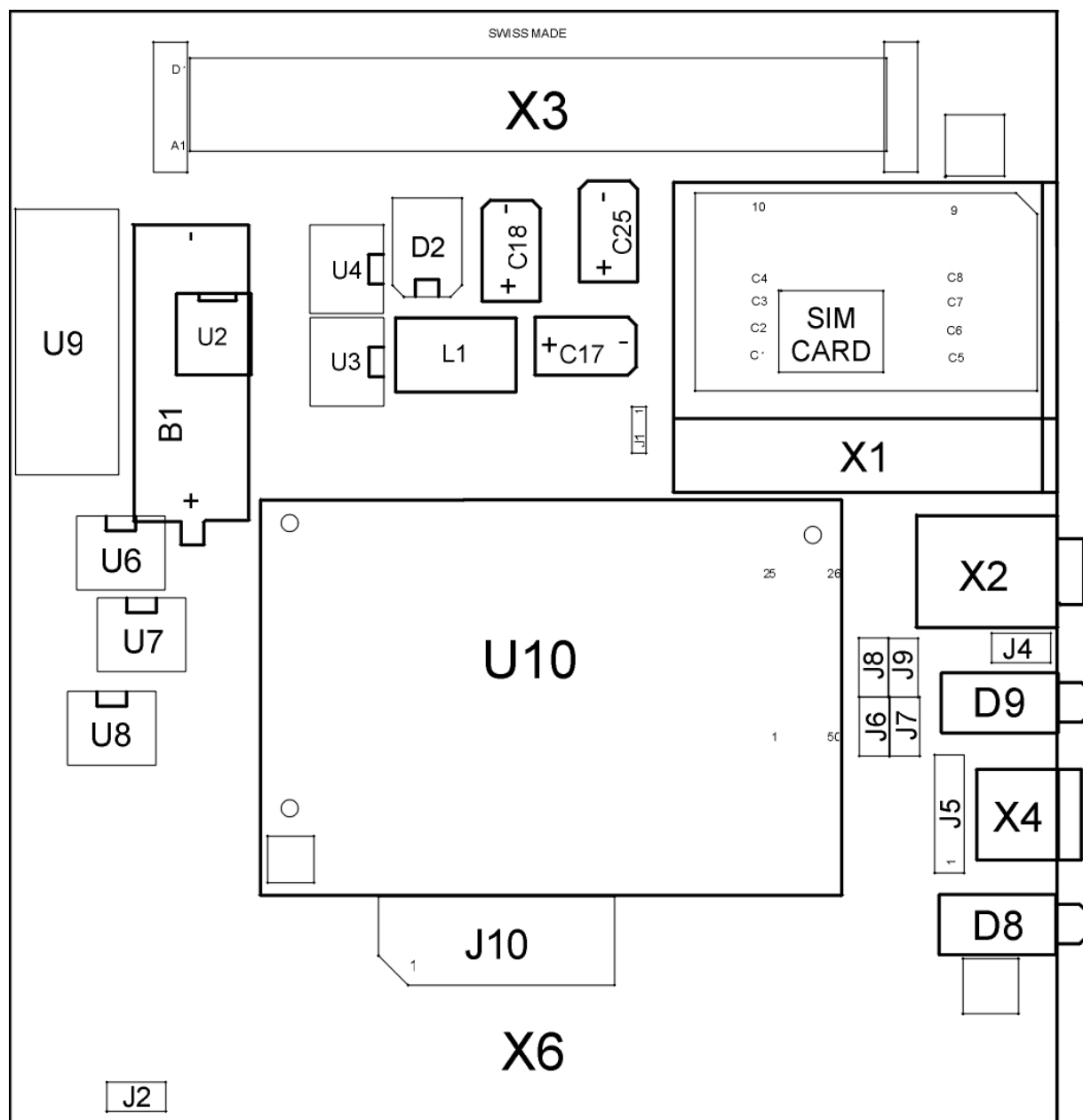
Shock

- » 10 g

4 MSMGS104EX Connectors & Jumpers

4.1 Connector & Jumper Locations

4.1.1 Top View



MSMGS104EX V2.0 TOP

4.2 Connector References

4.2.1 X2 Headset

Pin	Signal
1	GND
2	Audio IN
3	Audio Out
4	NC
5	NC

4.2.2 X4 Mini-USB Connector

Pin	Signal
1	VCC
2	USB +
3	USB -
4	GND
5	Ground
6	Ground

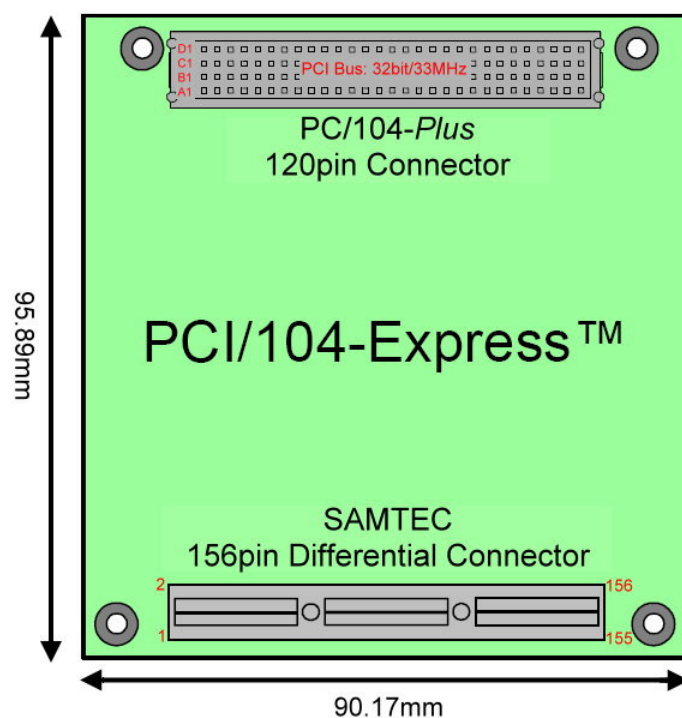
4.2.3 J5 USB Connector

Pin	Signal
1	VCC
2	USB +
3	USB -
4	GND

4.2.4 X5 PCI/104-Express Bus (Bottom View Signal Assignment)

Pin	Signal		Signal	Pin
2	PE_RST#	+5 Volts	Reserved (GPIO0)	1
4	3.3V		3.3V	3
6	USB0+		USB1+	5
8	USB0-		USB1-	7
10	GND		GND	9
12	PEx1_OT+		PEx1_1T+	11
14	PEx1_OT-		PEx1_1T-	13
16	GND		GND	15
18	PEx1_3T+		PEx1_2T+	17
20	PEx1_3T-		PEx1_2T-	19
22	GND		GND	21
24	PEx1_OR+		PEx1_1R+	23
26	PEx1_OR-		PEx1_1R-	25
28	GND		GND	27
30	PEx1_3R+		PEx1_2R+	29
32	PEx1_3R-		PEx1_1R-	31
34	GND		GND	33
36	PEx1_0Clk+		PEx1_1Clk+	35
38	PEx1_0Clk-		PEx1_1Clk-	37
40	5V_Always		5V_Always	39
42	PEx1_3Clkp+		PEx1_2Clk+	41
44	PEx1_3Clk-		PEx1_2Clk-	43
46	PWRGOOD		CPU_DIR	45
48	PEx16_x8_x4_Clk+		SMB_DAT	47
50	PEx16_x8_x4_Clk-		SMB_CLK	49
52	PSON#		SMB_ALERT	51
54	PEG_ENA#		Reserved / Wake#	53
56	GND		GND	55
58	PEx16_OT(0)+ / SDV00R+	+5 Volts	PEx16_OT(8)+	57
60	PEx16_OT(0)- / SDV00R-		PEx16_OT(8)-	59
62	GND		GND	61
64	PEx16_OT(1)+ / SDV01G+		PEx16_OT(9)+	63
66	PEx16_OT(1)- / SDV01G-		PEx16_OT(9)n-	65
68	GND		GND	67
70	PEx16_OT(2)+ / SDV00B+		PEx16_OT(10)+	69
72	PEx16_OT(2)- / SDV00B-		PEx16_OT(10)-	71
74	GND		GND	73
76	PEx16_OT(3)+ / SDV00CLK+		PEx16_OT(11)+	75
78	PEx16_OT(3)- / SDV00CLK-		PEx16_OT(11)-	77
80	GND		GND	79
82	PEx16_OT(4)+ / SDV01R+		PEx16_OT(12)+	81
84	PEx16_OT(4)- / SDV01R-		PEx16_OT(12)-	83
86	GND		GND	85
88	PEx16_OT(5)+ / SDV01G+		PEx16_OT(13)+	87
90	PEx16_OT(5)- / SDV01G-		PEx16_OT(13)-	89
92	GND		GND	91
94	PEx16_OT(6)+ / SDV01B+		PEx16_OT(14)+	93
96	PEx16_OT(6)- / SDV01B-		PEx16_OT(14)-	95
98	GND		GND	97
100	PEx16_OT(7)+ / SDV01CLK+		PEx16_OT(15)+	99
102	PEx16_OT(7)- / SDV01CLK+		PEx16_OT(15)-	101
104	GND		GND	103

Pin	Signal		Signal	Pin
106	SDVO_CLK	+12 Volts	SDVO_DAT (PENA#)	105
108	GND		GND	107
110	PEx16_OR(0)+ / SDVO_TVCI+		PEx16_OR(8)+	109
112	PEx16_OR(0)- / SDVO_TVCI-		PEx16_OR(8)-	111
114	GND		GND	113
116	PEx16_OR(1)+ / SDVO_INT+		PEx16_OR(9)+	115
118	PEx16_OR(1)- / SDVO_INT-		PEx16_OR(9)-	117
120	GND		GND	119
122	PEx16_OR(2)+ / SDVO_STALL+		PEx16_OR(10)+	121
124	PEx16_OR(2)- / SDVO_STALL-		PEx16_OR(10)-	123
126	GND		GND	125
128	PEx16_OR(3)+		PEx16_OR(11)	127
130	PEx16_OR(3)-		PEx16_OR(11)-	129
132	GND		GND	131
134	PEx16_OR(4)+		PEx16_OR(12)+	133
136	PEx16_OR(4)-		PEx16_OR(12)-	135
138	GND		GND	137
140	PEx16_OR(5)+ / SDVO1_INT+		PEx16_OR(13)+	139
142	PEx16_OR(5)- / SDVO1_INT-		PEx16_OR(13)-	141
144	GND		GND	143
146	PEx16_OR(6)+		PEx16_OR(14)p	145
148	PEx16_OR(6)-		PEx16_OR(14)n	147
150	GND		GND	149
152	PEx16_OR(7)+		PEx16_OR(15)+	151
154	PEx16_OR(7)-		PEx16_OR(15)-	153
156	GND		GND	155



4.2.5 X6 PCI/104-Express Bus (Top View Signal Assignment)

Pin	Signal		Signal	Pin
1	Reserved (GPIO0)	+5 Volts	PE_RST#	2
3	3.3V		3.3V	4
5	USB1+		USB0+	6
7	USB1-		USB0-	8
9	GND		GND	10
11	PEx1_1T+		PEx1_0T+	12
13	PEx1_1T-		PEx1_0T-	14
15	GND		GND	16
17	PEx1_2T+		PEx1_3T+	18
19	PEx1_2T-		PEx1_3T-	20
21	GND		GND	22
23	PEx1_1R+		PEx1_0R+	24
25	PEx1_1R-		PEx1_0R-	26
27	GND		GND	28
29	PEx1_2R+		PEx1_3R+	30
31	PEx1_1R-		PEx1_3R-	32
33	GND		GND	34
35	PEx1_1Clk+		PEx1_0Clk+	36
37	PEx1_1Clk-		PEx1_0Clk-	38
39	5V_Always		5V_Always	40
41	PEx1_2Clk+		PEx1_3Clk+	42
43	PEx1_2Clk-		PEx1_3Clk-	44
45	CPU_DIR		PWRGOOD	46
47	SMB_DAT		PEx16_x8_x4_Clk+	48
49	SMB_CLK		PEx16_x8_x4_Clk-	50
51	SMB_ALERT		PS0N#	52
53	Reserved / Wake#		PEG_ENA#	54
55	GND		GND	56
57	PEx16_0T(8)+	+5 Volts	PEx16_0T(0)+ / SDV00R+	58
59	PEx16_0T(8)-		PEx16_0T(0)- / SDV00R-	60
61	GND		GND	62
63	PEx16_0T(9)+		PEx16_0T(1)+ / SDV01G+	64
65	PEx16_0T(9)n-		PEx16_0T(1)- / SDV01G-	66
67	GND		GND	68
69	PEx16_0T(10)+		PEx16_0T(2)+ / SDV00B+	70
71	PEx16_0T(10)-		PEx16_0T(2)- / SDV00B-	72
73	GND		GND	74
75	PEx16_0T(11)+		PEx16_0T(3)+ / SDV00CLK+	76
77	PEx16_0T(11)-		PEx16_0T(3)- / SDV00CLK-	78
79	GND		GND	80
81	PEx16_0T(12)+		PEx16_0T(4)+ / SDV01R+	82
83	PEx16_0T(12)-		PEx16_0T(4)- / SDV01R-	84
85	GND		GND	86
87	PEx16_0T(13)+		PEx16_0T(5)+ / SDV01G+	88
89	PEx16_0T(13)-		PEx16_0T(5)- / SDV01G-	90
91	GND		GND	92
93	PEx16_0T(14)+		PEx16_0T(6)+ / SDV01B+	94
95	PEx16_0T(14)-		PEx16_0T(6)- / SDV01B-	96
97	GND		GND	98
99	PEx16_0T(15)+		PEx16_0T(7)+ / SDV01CLK+	100
101	PEx16_0T(15)-		PEx16_0T(7)- / SDV01CLK+	102
103	GND		GND	104

Pin	Signal		Signal	Pin
105	SDVO_DAT (PENA#)	+12 Volts	SDVO_CLK	106
107	GND		GND	108
109	PEx16_OR(8)+		PEx16_OR(0)+ / SDVO_TVCI+	110
111	PEx16_OR(8)-		PEx16_OR(0)- / SDVO_TVCI-	112
113	GND		GND	114
115	PEx16_OR(9)+		PEx16_OR(1)+ / SDVO_INT+	116
117	PEx16_OR(9)-		PEx16_OR(1)- / SDVO_INT-	118
119	GND		GND	120
121	PEx16_OR(10)+		PEx16_OR(2)+ / SDVO_STALL+	122
123	PEx16_OR(10)-		PEx16_OR(2)- / SDVO_STALL-	124
125	GND		GND	126
127	PEx16_OR(11)		PEx16_OR(3)+	128
129	PEx16_OR(11)-		PEx16_OR(3)-	130
131	GND		GND	132
133	PEx16_OR(12)+		PEx16_OR(4)+	134
135	PEx16_OR(12)-		PEx16_OR(4)-	136
137	GND		GND	138
139	PEx16_OR(13)+		PEx16_OR(5)+ / SDVO1_INT+	140
141	PEx16_OR(13)-		PEx16_OR(5)- / SDVO1_INT-	142
143	GND		GND	144
145	PEx16_OR(14)p		PEx16_OR(6)+	146
147	PEx16_OR(14)n		PEx16_OR(6)-	148
149	GND		GND	150
151	PEx16_OR(15)+		PEx16_OR(7)+	152
153	PEx16_OR(15)-		PEx16_OR(7)-	154
155	GND		GND	156

4.3 Jumpers

The Jumpers for the GSM circuit on this product:

Default settings in bold!

Jumper	Structure	1-2 / Open	2-3 / Closed
J1	Select modem	MC45/55	MC75/HC25
J4	USB enable over PCIexpress	Disable	Enable
J6	HC25 connected to	Disable	Enable
J7	USB con J5/x4		
J8	HC25 connected to	Disable	Enable
J9	PCIexpress USB		

5 The GSM/UMTS Module HC25

This section is taken from the Siemens HC25 Hardware Interface Description:

5.1 Features of the HC25

Feature	Implementation
General Features	
Frequency Bands	UMTS/HASDPA: tri-band, 850//1900/2100MHz GSM/GPRS/EDGE: quad-band, 850/900/1800/1900MHz
GSM Class	Small MS
Output Power	Class 4 (+33dBm $\pm$ 2dB) for EGSM850 Class 4 (+33dBm $\pm$ 2dB) for EGSM900 Class 1 (+30dBm $\pm$ 2dB) for GSM1800 Class 1 (+30dBm $\pm$ 2dB) for GSM1900 Class E2 (+27dBm $\pm$ 3dB) for GSM 850 8-PSK Class E2 (+27dBm $\pm$ 3dB) for GSM 900 8-PSK Class E2 (+26dBm +3/-4dB) for GSM 1800 8-PSK Class E2 (+26dBm +3/-4dB) for GSM 1900 8-PSK Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdI Class 3 (+24dBm +1/-3dB) for UMTS 1900, WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdV
Power Supply	$3.2V \leq V_{BATT+} \leq 4.2V$
Physical	Dimensions: 50 mm x 34 mm x 4.5 mm Weight: approx. 10 g
RoHS	All hardware components are fully compliant with the EU RoHS Directive.
HSDPA Features	
3GPP Release 5	3.6 Mbps, UL 384 kbps UE CAT.[1-6], 11, 12 supported Compressed mode (CM) supported according to 3GPP TS25.212
UMTS Features	
3GPP Release 4	PS data rate: 384 kbps DL / 384 kbps UL CS data rate: 64 kbps DL / 64 kbps UL
GSM / GPRS / EGPRS Features	
Data Transfer	GPRS » Multislot class 10 » Full PBCCH support » Mobile station class B » Coding scheme 1-4 EGPRS » Multislot class 10 » EDGE E2 power class for 8 PSk » Downlink coding schemes: CS 1-4, MCS 1-9 » Uplink coding schemes: CD 1-4, MCS 1-9 » BEP reporting » SRB loopback and test mode B » 8-bit, 11-bit RACH » PBCCH support » 1 phase/2 phase access procedures » Link adaptation and IR » NACC, extended UL TBF » Mobile station class B CSD » V.110, RLP, non-transparent » 9.6 kbps
SMS	Point-to-point MT and MO Cell broadcast Text and PDU mode
Fax	Group 3; Class 1

Feature	Implementation
GSM / GPRS / EGPRS Features (continued)	
Audio	Audio speech codecs GSM: AMR, EFR, FR, HR 3GPP: AMR CEPT supervisory tones supported DTMF supported 6 audio modes: Approval, Router, Handset, Headset, Speakerphone and Transparent TTY support selecting a dedicated audio mode Download of audio parameters Gains and volumes can be controlled by AT commands 9 ringing melodies supported CEPT and ANSI supervisory tones supported
Software	
AT Commands	AT-Hayes GSM 07.05 and 07.07, Siemens AT commands for RIL compatibility (NDIS/RIL)
Microsoft™ Compatibility	RIL/NDIS for Windows Mobile™
SIM Application Toolkit	SAT Class C
Firmware Update	Firmware update from host application over USB
Interfaces	
USB	Supports a USB 2.0 full speed (12 Mbit/s) device interface
Wakeup Control	Signal pin to wake up an inactive USB Host into an active state

5.2 UICC/SIM Interface

HC25 has an integrated UICC/SIM interface compatible with the 34.121 USIM Testing IC Card standard. This is wired to the host interface (board-to-board connector) in order to be connected to an external SIM card holder. Six pins on the board-to-board connector are reserved for the UICC/SIM interface.

The UICC/SIM interface supports 3V and 1.8V UICC cards.

The CCIN pin serves to detect whether a tray (with SIM card) is present in the card holder. Using the CCIN pin is mandatory for compliance with the GSM 11.11 recommendation, if the mechanical design of the host application allows the user to remove the SIM card during operation. To take advantage of this feature, an appropriate SIM card detect switch is required on the card holder. For example, this is true for the model supplied by Molex, which has been tested to operate with HC25 and is part of the Siemens reference equipment submitted for type approval.

Signals of the UICC/SIM interface (board-to-board connector)

Signal	Description
CCGND	Separate ground connection for SIM card to improve EMC. Be sure to use this ground line for the SIM interface rather than any other ground pin or plane on the module.
CCCLK	Chip card clock.
CCVCC	SIM supply voltage.
CCIO	Serial data line, input and output.
CCRST	Chip card reset.
CCIN	Input on the baseband processor for detecting a SIM card tray in the holder. If the SIM is removed during operation the SIM interface is shut down immediately to prevent destruction of the SIM. The CCIN pin is active low. The CCIN pin is mandatory for applications that allow the user to remove the SIM card during operation. The CCIN pin is solely intended for use with a SIM card. It must not be used for any other purposes. Failure to comply with this requirement may invalidate the type approval of HC25.

Note: No guarantee can be given, nor any liability accepted, if loss of data is encountered after removing the SIM card during operation. Also, no guarantee can be given for properly initializing any SIM card that the user inserts after having removed a SIM card during operation. In this case, the application must restart HC25.

5.3 Antenna Connector

Product specifications of U.FL-R-SMT connector

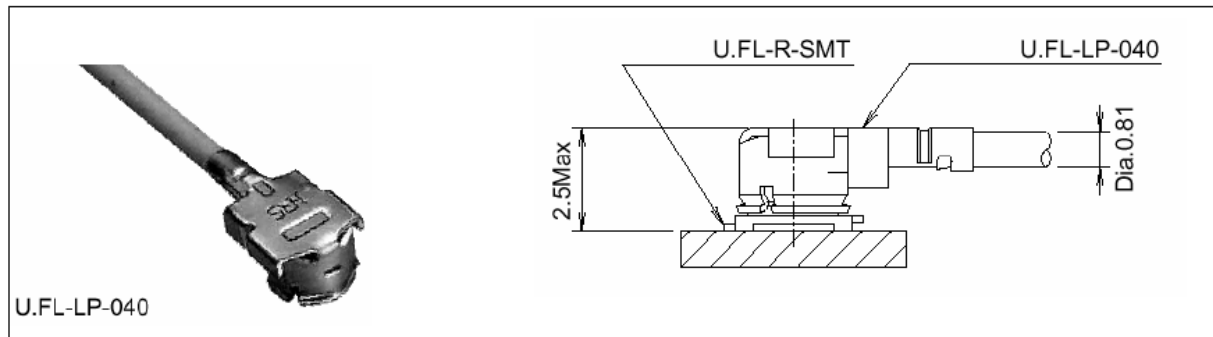
Item	Specification	Conditions
Temperature Cycle	No damage, cracks and looseness of parts. Contact resistance: center 25m Ω outside 15m Ω	Temperature: +40°C → 5 to 35°C → +90°C → 5 to 35°C Time: 30 min → within 5 min → 30 min within 5 min
Salt Spray Test	No excessive corrosion	48 hours continuous exposure to 5% salt water

Material and finish of U.FL-R-SMT connector and recommended plugs

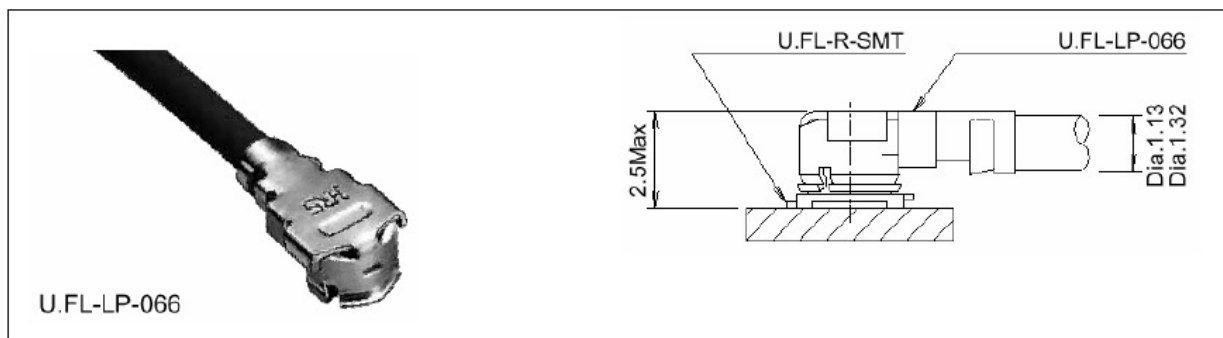
Part	Material	Finish
Shell	Phosphor bronze	Silver plating
Male Center Contact	Brass	Gold plating
Female Center Contact	Phosphor bronze	Gold plating
Insulator	Plug: PBT Receptacle: LCP	Black Beige

Mating plugs and cables can be chosen from the Hirose U.FL series. Examples are shown below. For the latest product information, contact your Hirose dealer or visit the Hirose home page, for example www.hirose.com.

U.FL-R-SMT connector with U.FL-LP-040 plug



U.FL-R-SMT connector with U.FL-LP-066 plug



5.4 Regulatory and Type Approval Information

Directives

99/05/EC	Directive of the European Parliament and of the council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (in short referred to as R&TTE Directive 1999/5/EC). The product is labeled with the CE conformity mark  0682
2002/95/EC	Directive of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) 

Standards of North American type approval

CFR Title 47	Code of Federal Regulations, Part 22 and Part 24 (Telecommunications, PCS); US Equipment Authorization FCC
UL 60 950	Product Safety Certification (Safety requirements) 
NAPRD.03 V3.9.1	Overview of PCS Type certification review board Mobile Equipment Type Certification and IMEI control PCS Type Certification Review board (PTCRB)
RSS132, RSS133	Canadian Standard

Standards of European type approval

3GPP TS 51.010-1	Digital cellular telecommunications system (Release 5); Mobile Station (MS) conformance specification
ETSI EN 301 511 V9.0.2	Candidate Harmonized European Standard (Telecommunications series) Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands covering essential requirements under article 3.2 of the R&TTE directive (1999/5/EC) (GSM 13.11 version 7.0.1 Release 1998)
GCF-CC V3.23.1	Global Certification Forum - Certification Criteria
ETSI EN 301 489-1 V1.4.1	Candidate Harmonized European Standard (Telecommunications series) Electro Magnetic Compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common Technical Requirements
ETSI EN 301 489-7 V1.2.1 (2000-09)	Candidate Harmonized European Standard (Telecommunications series) Electro Magnetic Compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)
IEC/EN 60950-1 (2001)	Safety of information technology equipment (2000)

Standards of European type approval (continued)

EN 301 489-24 V1.2.1	Electromagnetic compatibility and Radio Spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment
EN 301 908-01 V2.2.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements of article 3.2 of the R&TTE Directive
EN 301 908-02 V2.2.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third Generation cellular networks; Part 2: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive
3GPP TS 34.124	Electromagnetic Compatibility (EMC) for mobile terminals and ancillary equipment.
3GPP TS 34.121	Technical Specification Group Radio Access Network; Terminal conformance specification; Radio transmission and reception (FDD)
3GPP TS 34.123-1	User Equipment (UE) conformance specification; Part 1: Protocol conformance specification.
3GPP TS 34.123-3	User Equipment (UE) conformance specification; Part 3: Abstract Test Suites.

Requirements of quality

IEC 60068	Environmental testing
DIN EN 60529	IP codes

Standards of the Ministry of Information Industry of the People's Republic of China

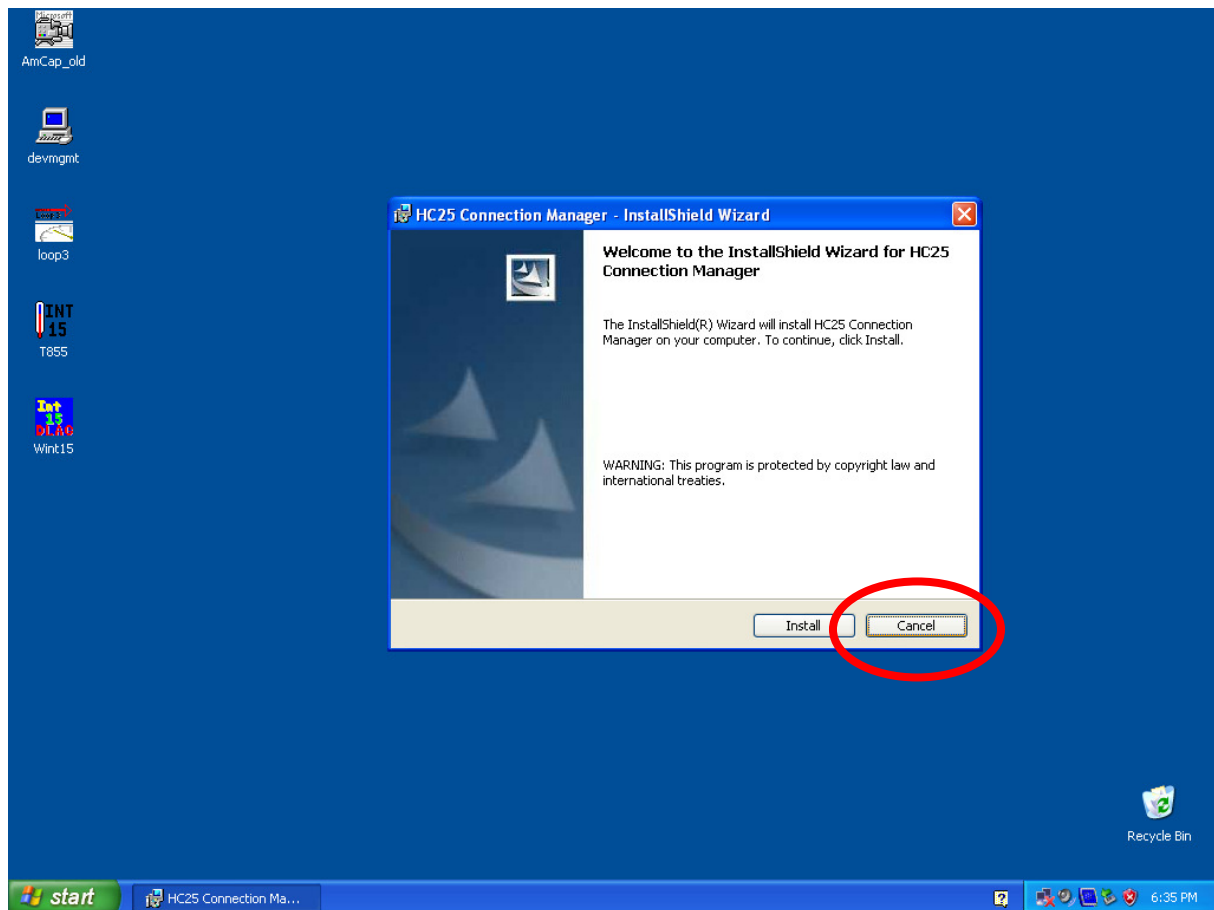
SJ/T 11363-2006	"Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products" (2006-06).
SJ/T 11364-2006	"Marking for Control of Pollution Caused by Electronic Information Products" (2006-06). According to the "Chinese Administration on the Control of Pollution caused by Electronic Information Products" (ACPEIP) the EPUP, i.e., Environmental Protection Use Period, of this product is 20 years as per the symbol shown here, unless otherwise marked. The EPUP is valid only as long as the product is operated within the operating limits described in the Siemens Hardware Interface Description. Please see Table 6 for an overview of toxic or hazardous substances or elements that might be contained in product parts in concentrations above the limits defined by SJ/T 11363-2006. 

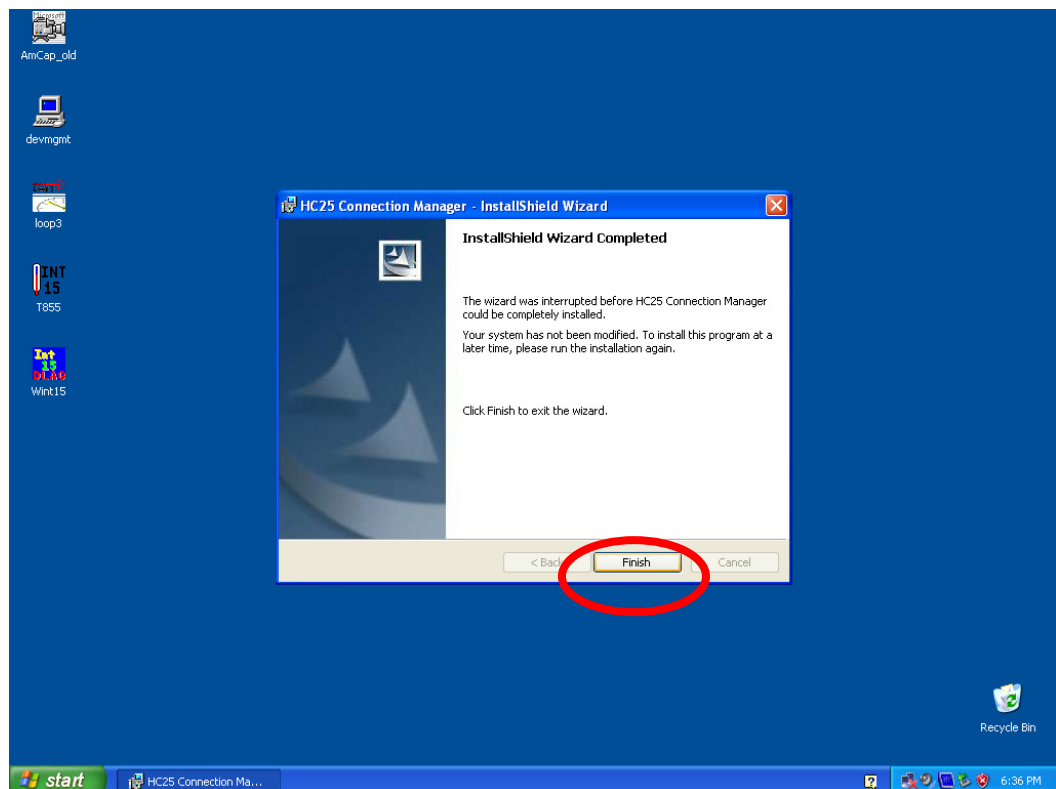
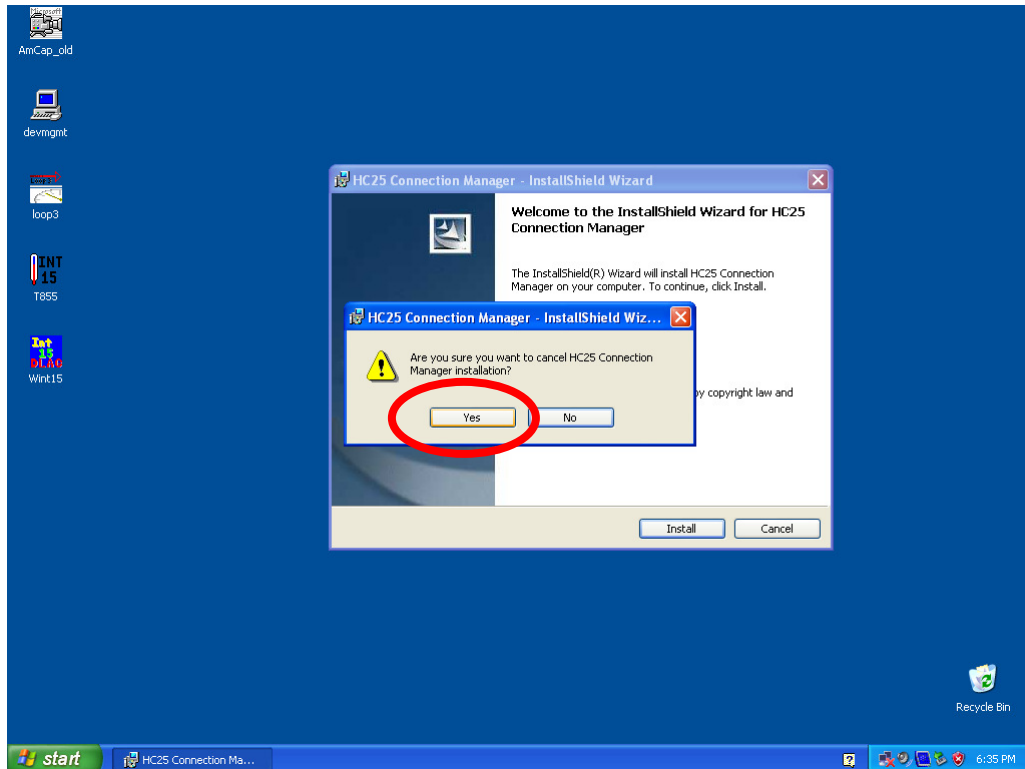
5.5 HC25 Installation

If this module is not yet installed, a USB device will be shown in the task bar.

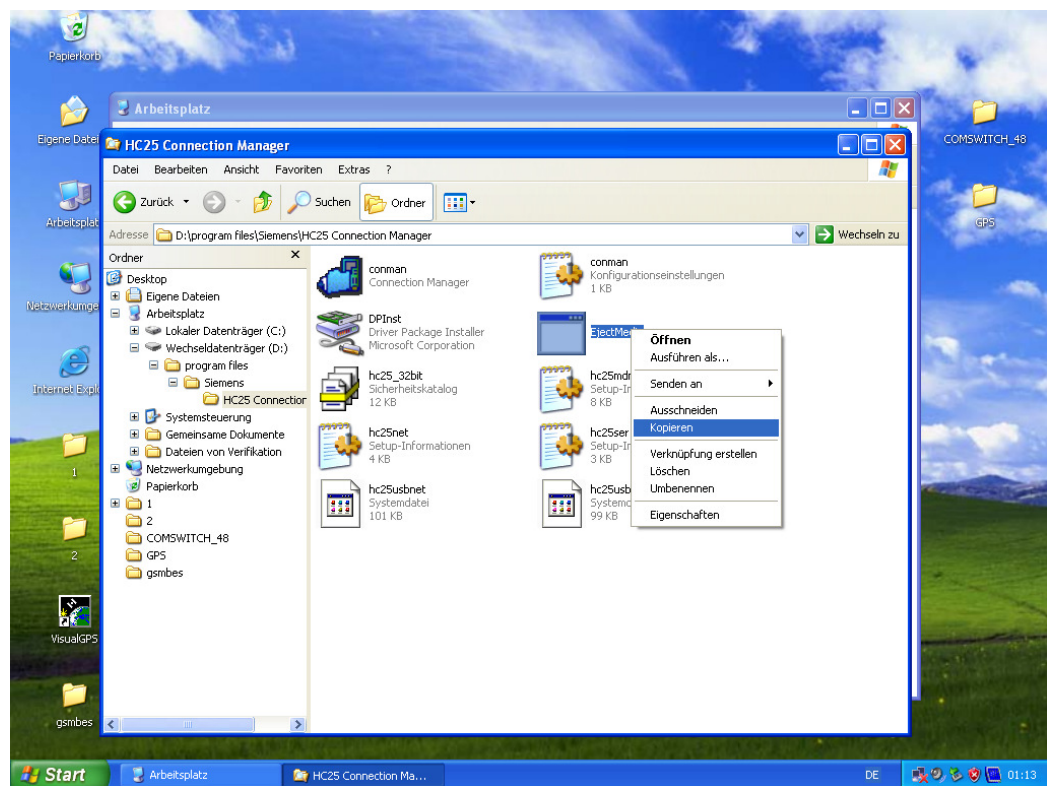
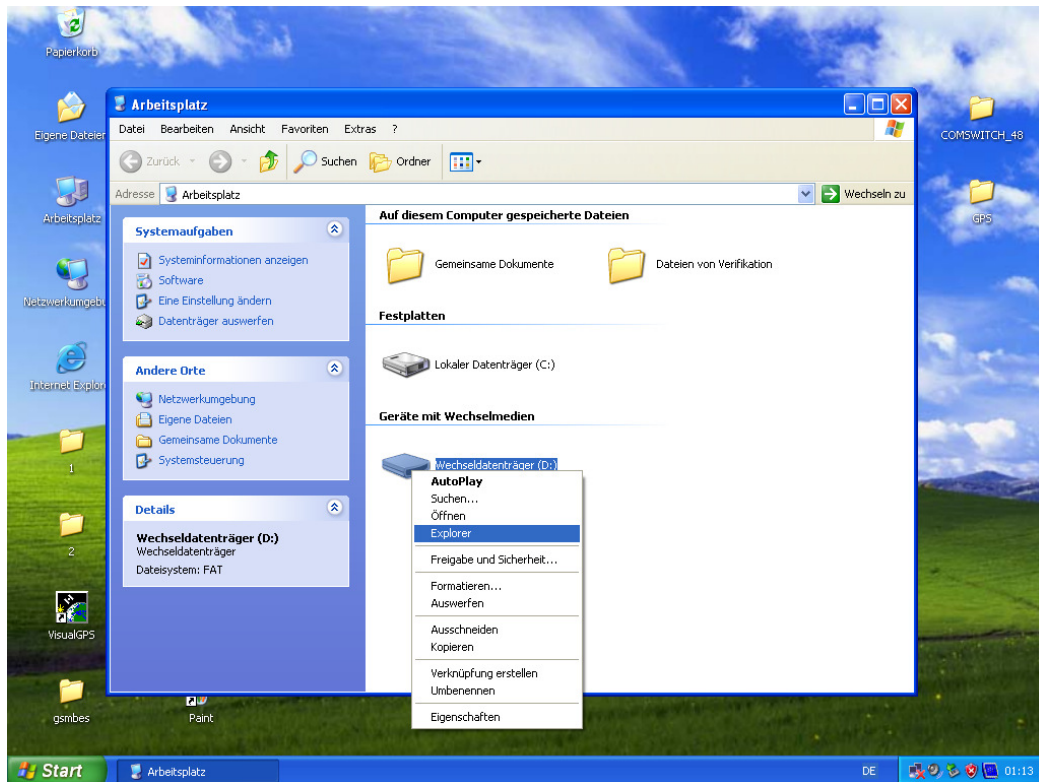


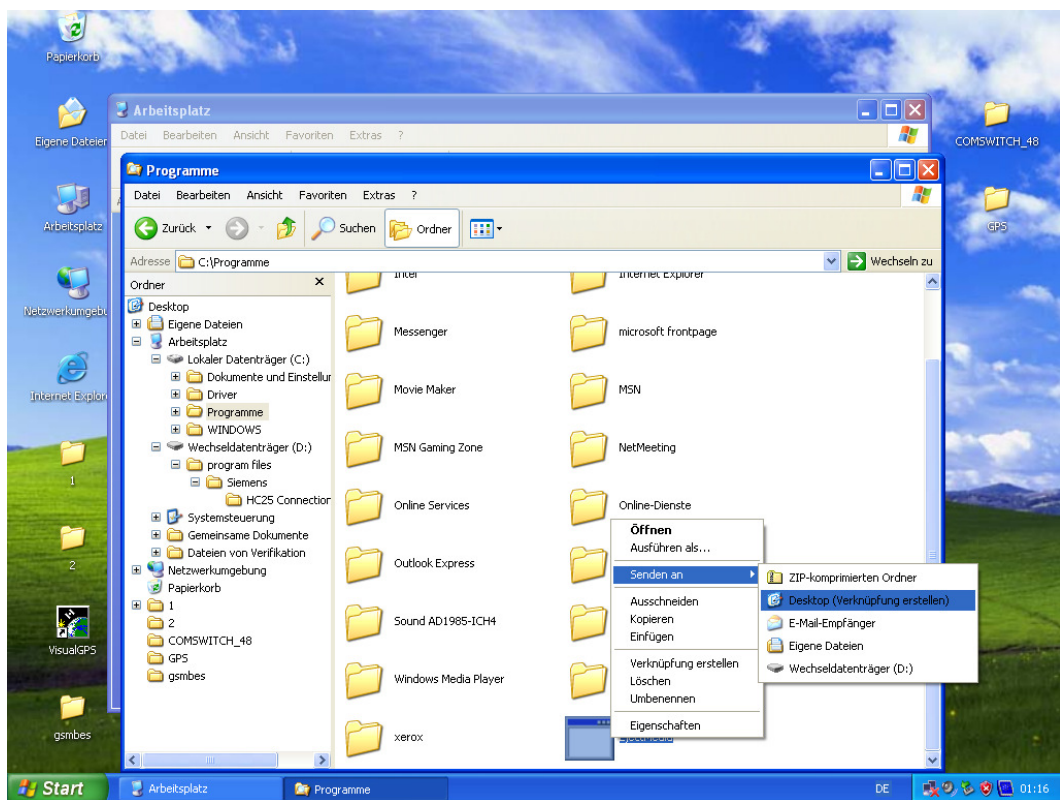
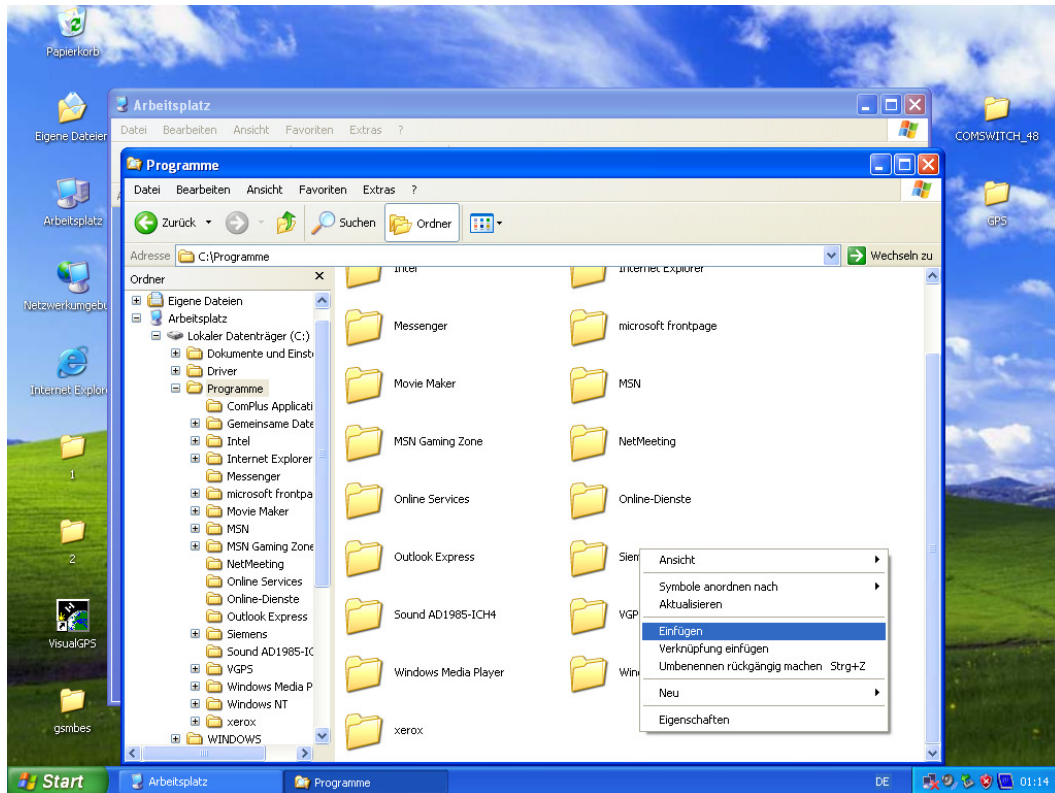
At Autostart, end the installation according to the next 3 screens.

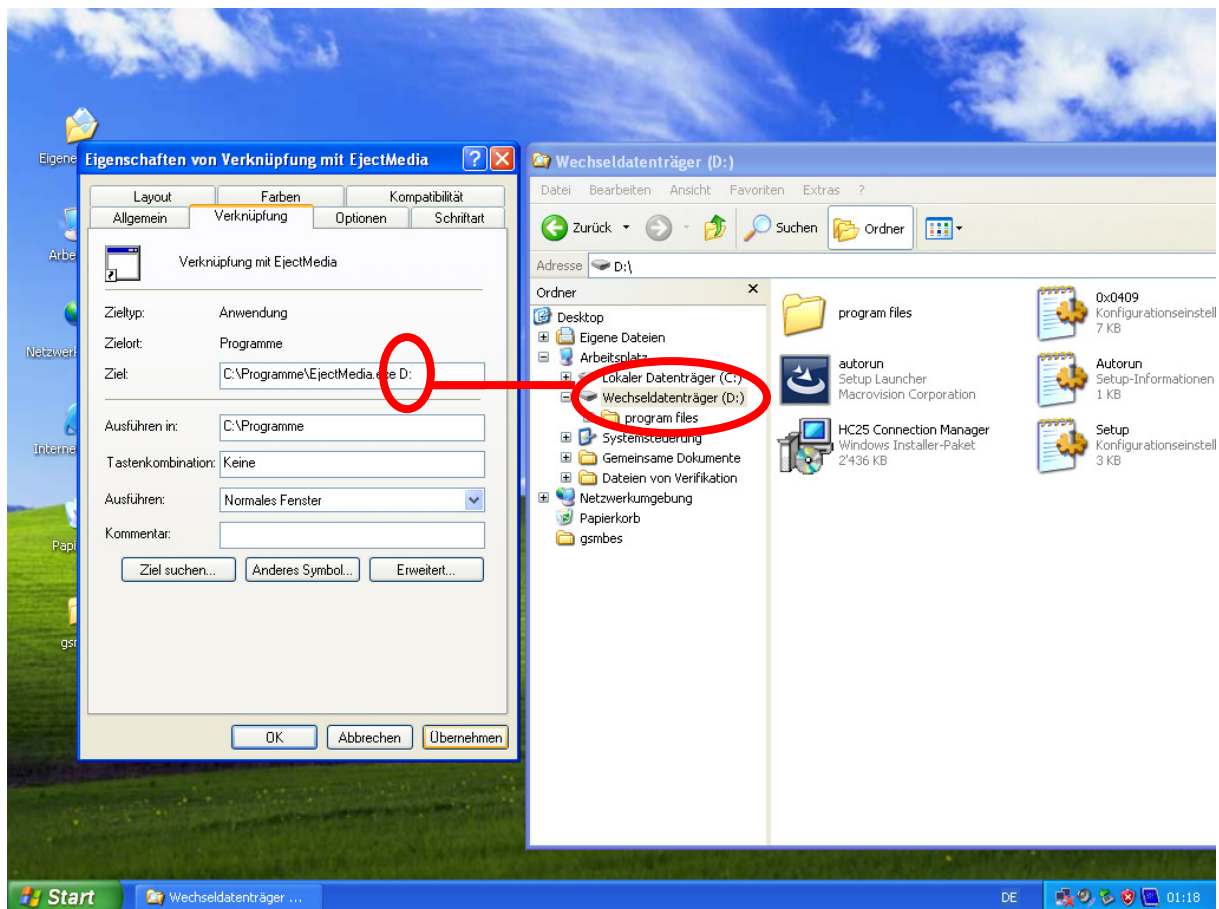
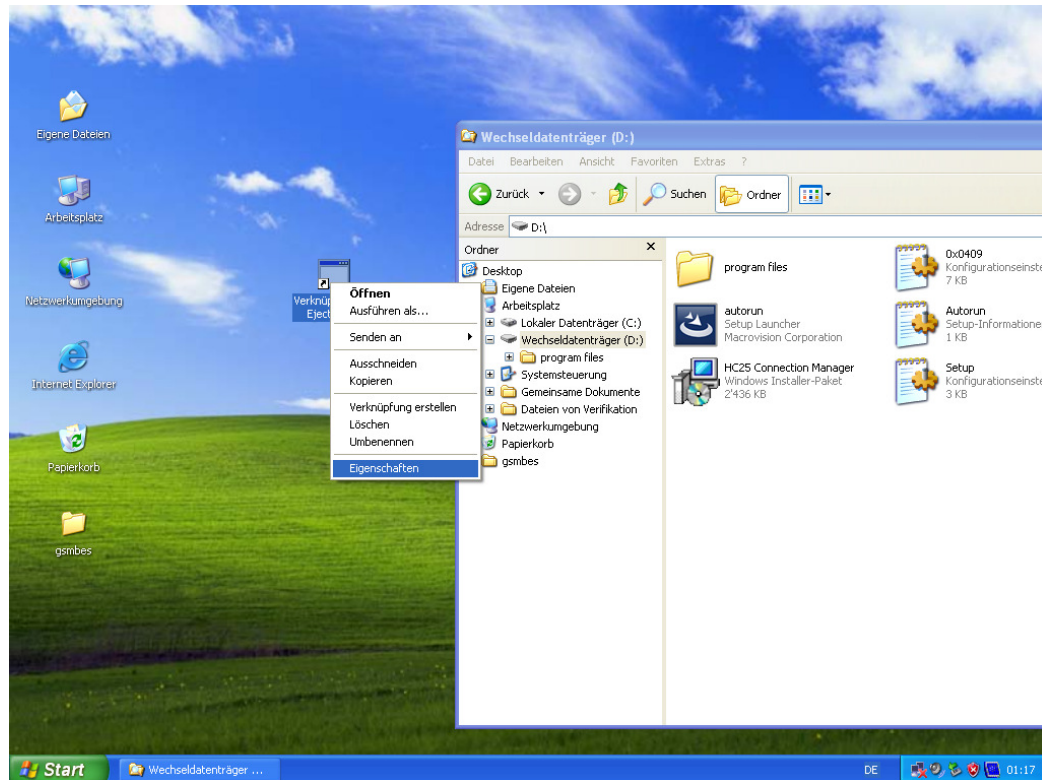


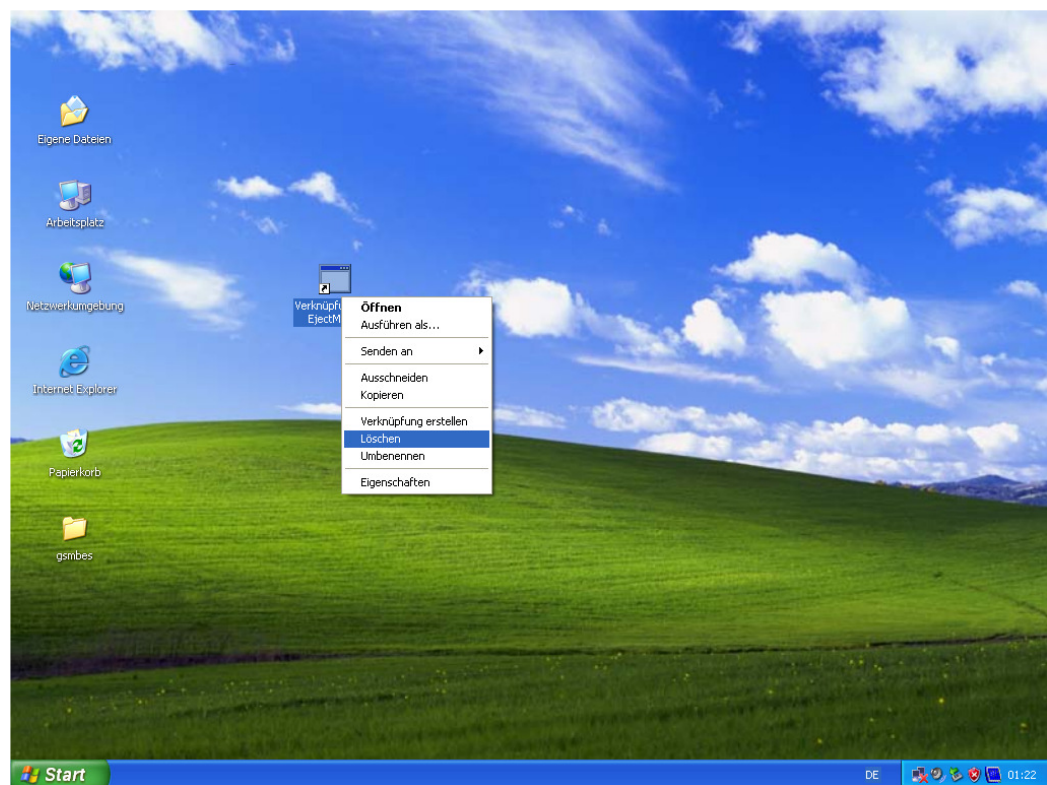
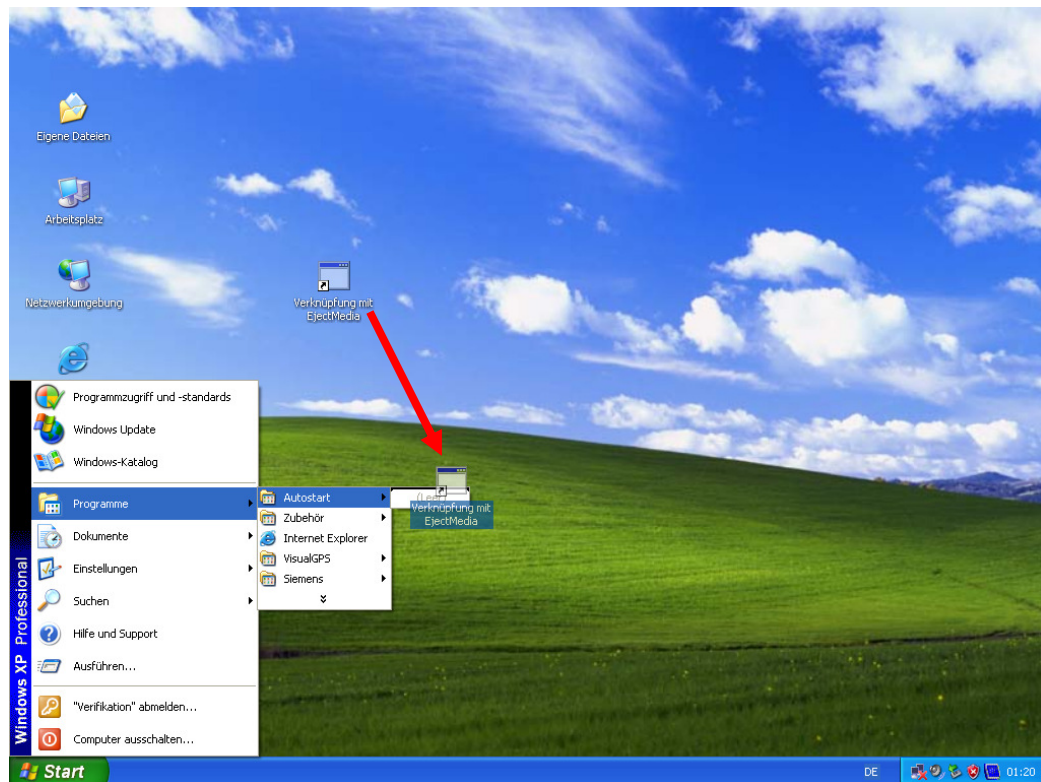


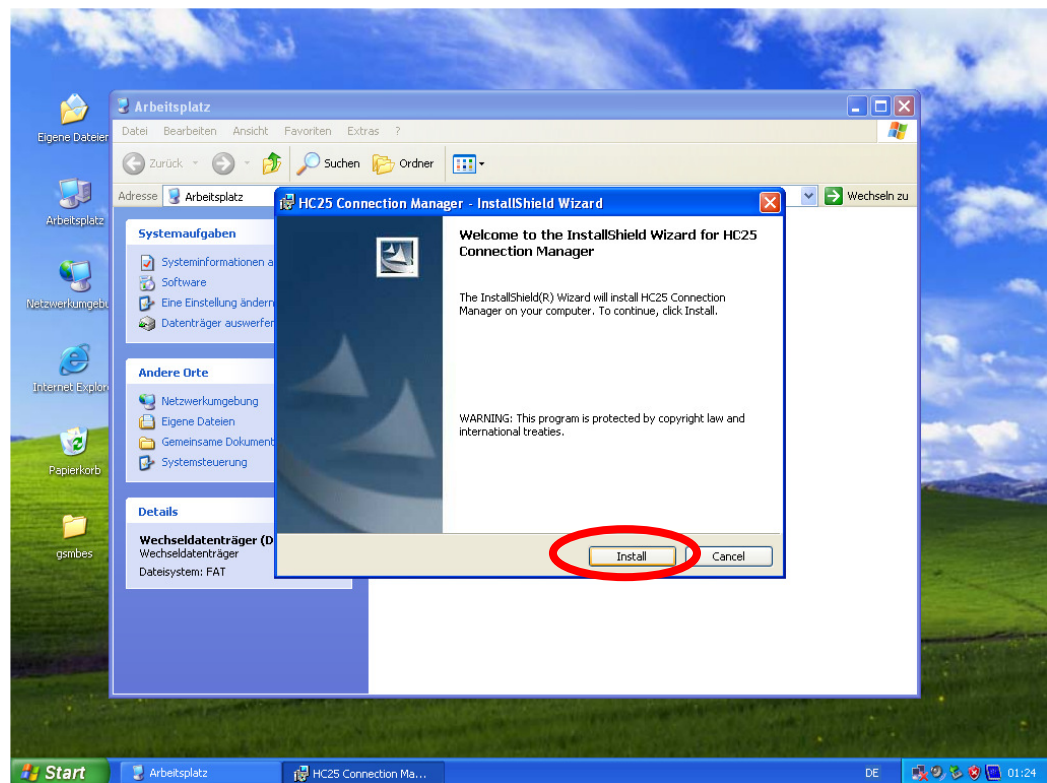
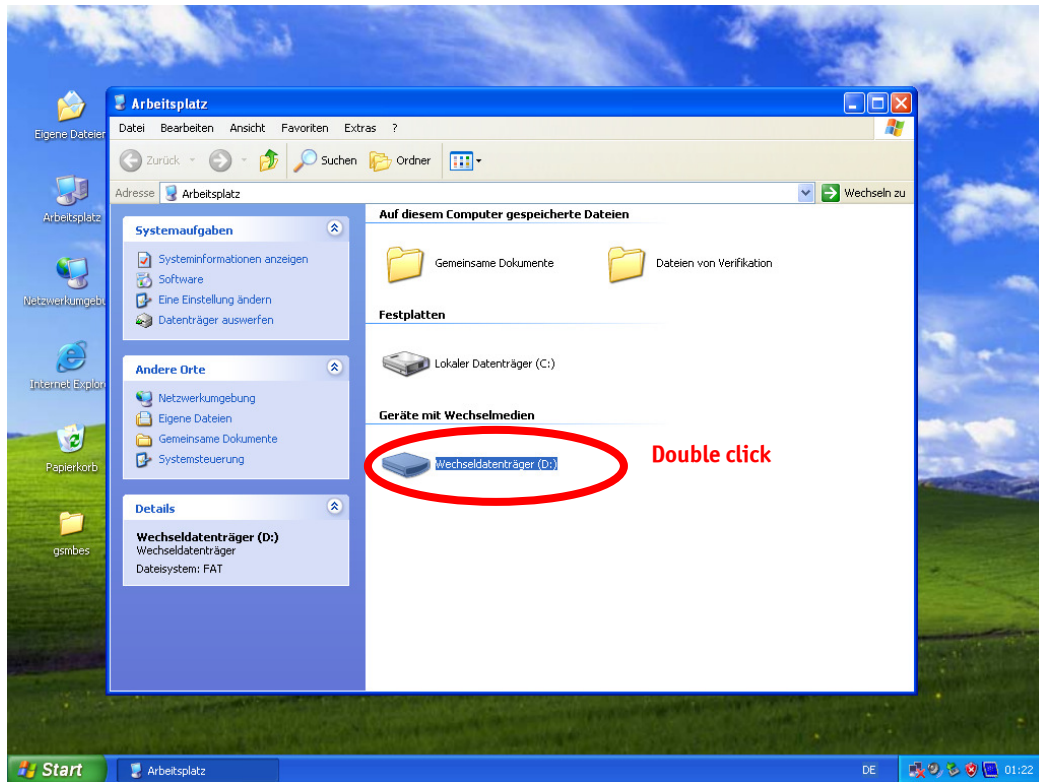
Install HC25 according to the following screens:

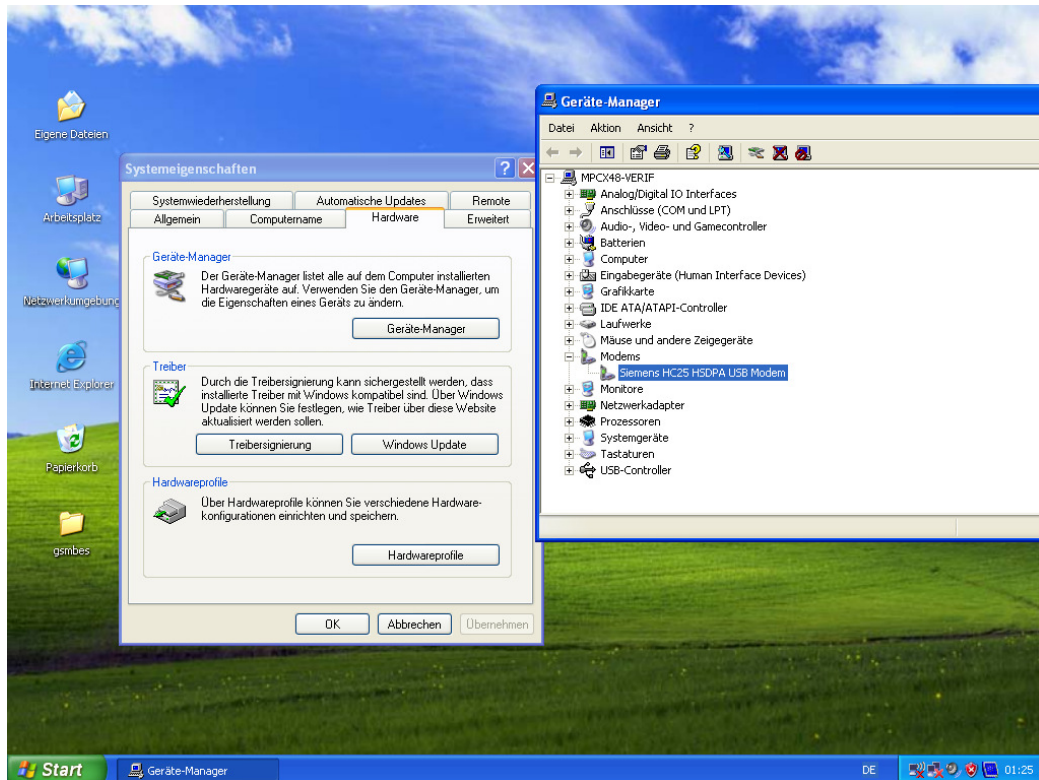






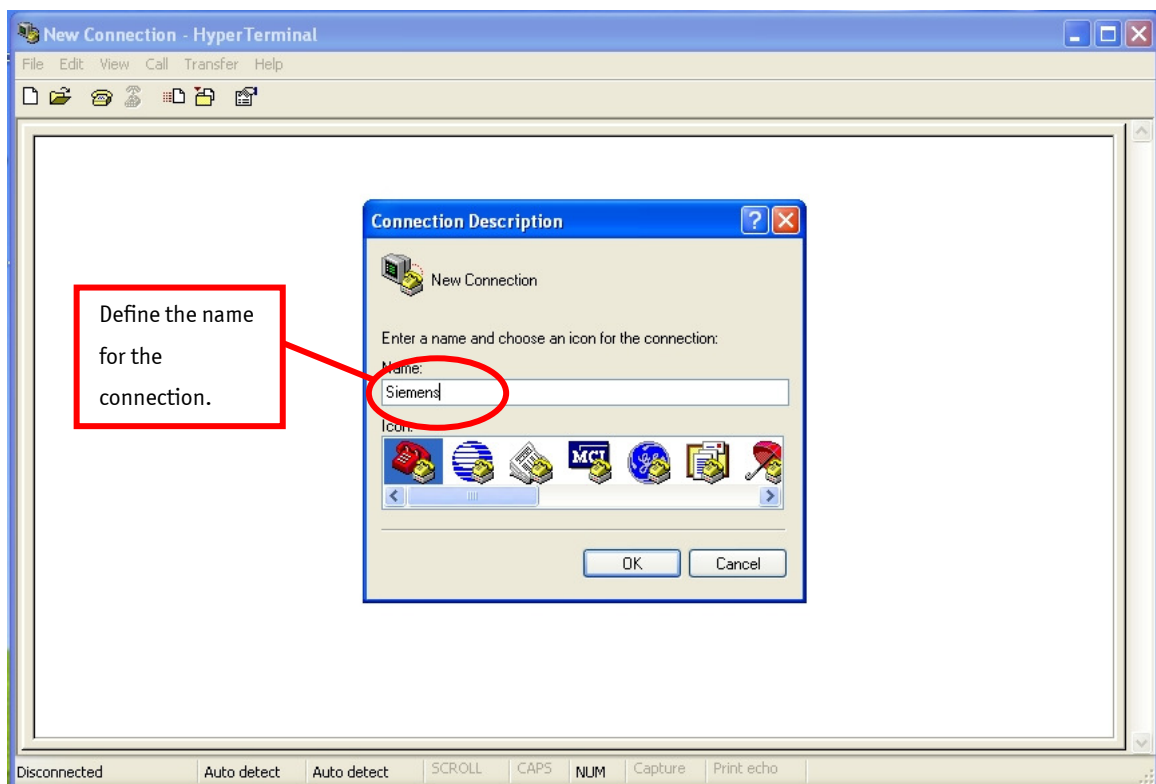




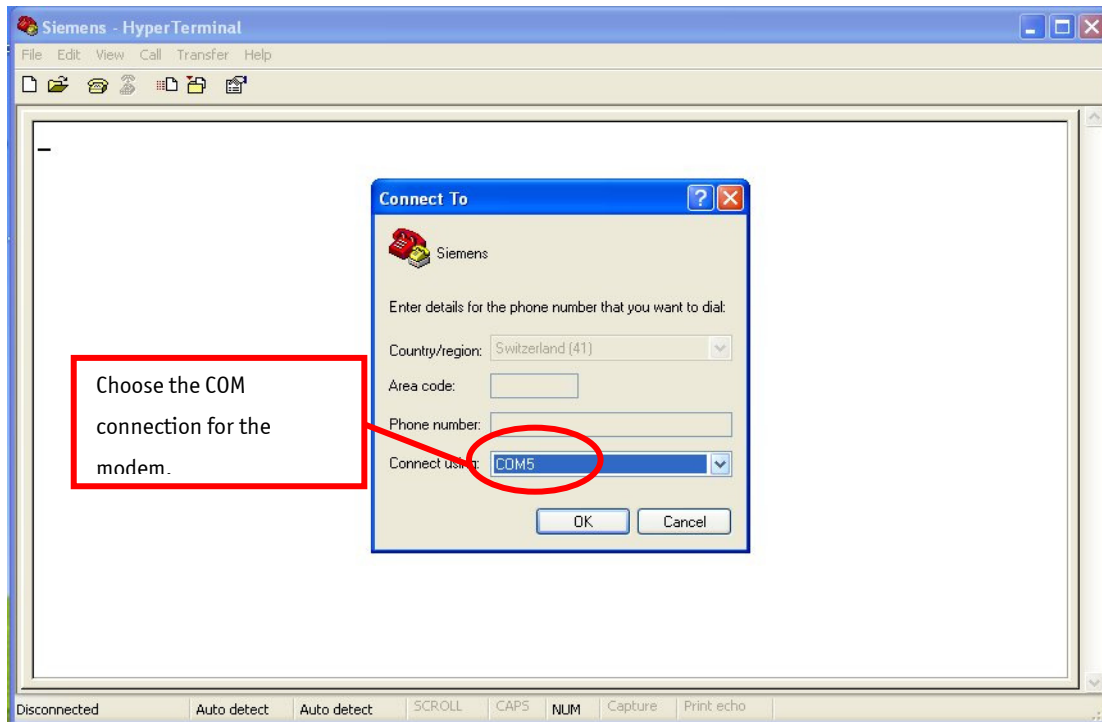


5.6 HC25 HyperTerminal Setting, Telephone Choice

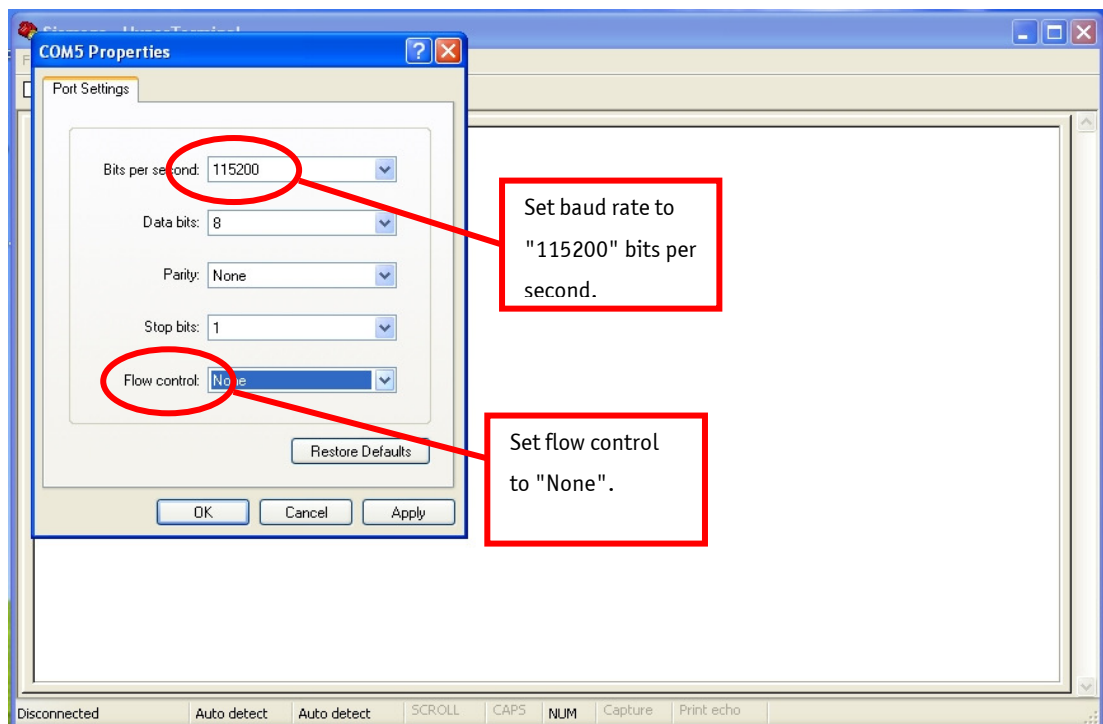
1. Choose the connection name:



2. Choose the COM connection:



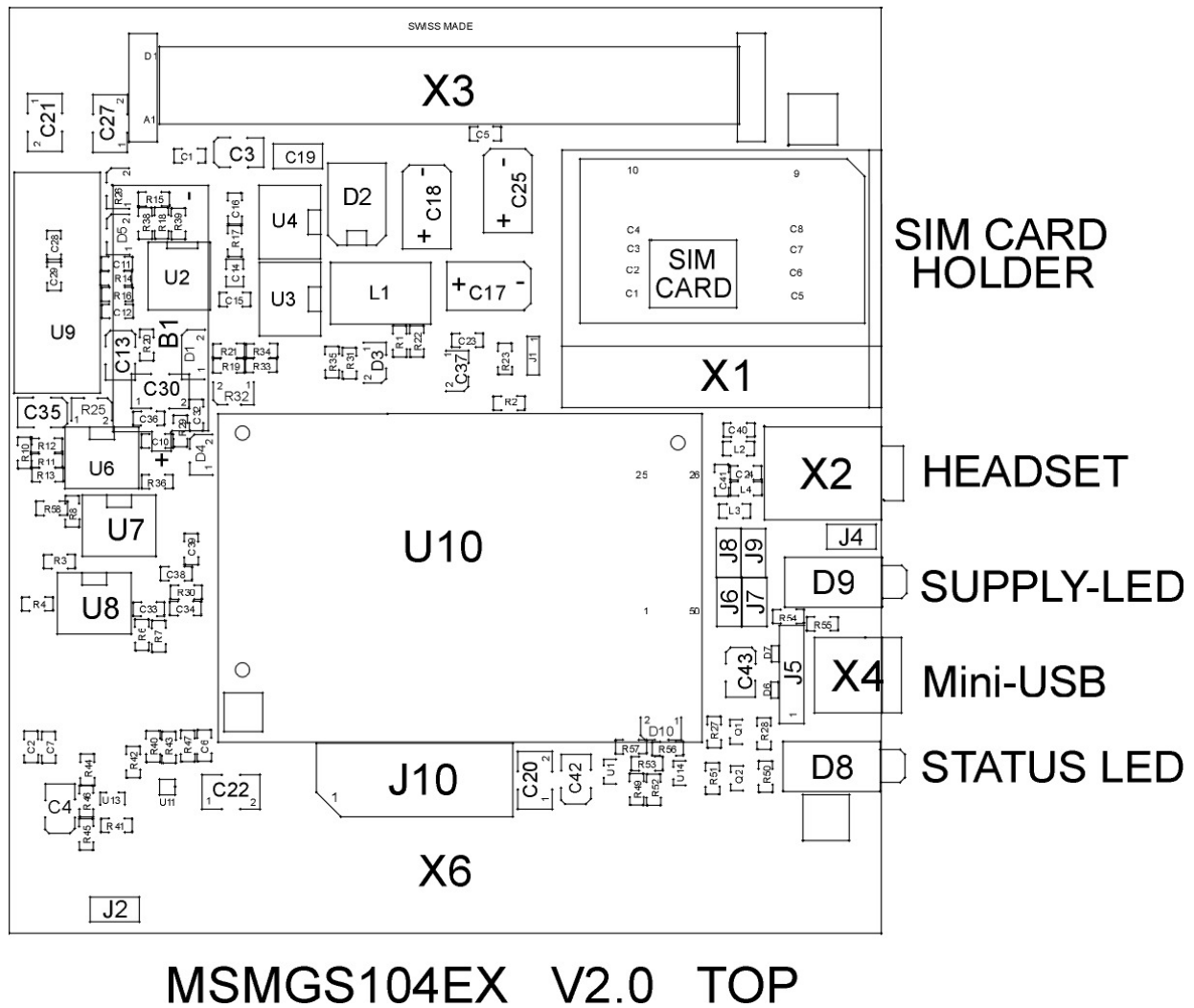
3. Settings for the connection:



- | | | |
|---------------|---|---|
| ati | → | displays information about the GSM module |
| ate1 | → | allows the input to be visible |
| AT^SUSB? | → | ask for the current status (flash drive or modem) |
| at+cpin=xxxx | → | validate the PIN code |
| atd07xxxxxxx; | → | execute voice call |

6 Assembly Views

6.1 Top View



7 Appendix A: Architecture Information

The following sources of information can help you better understand PC architecture.

7.1 Buses

7.1.1 ISA, Standard PS/2 – Connectors

- » AT Bus Design: Eight and Sixteen-Bit ISA, E-ISA and EISA Design, Edward Solari, Annabooks, 1990, ISBN 0-929392-08-6
- » AT IBM Technical Reference, Volumes 1&2, 1985
- » ISA & EISA Theory and Operation, Edward Solari, Annabooks, 1992, ISBN 0929392159
- » ISA Bus Specifications and Application Notes, Jan. 30, 1990, Intel
- » ISA System Architecture, Third Edition, Tom Shanley and Don Anderson, Addison-Wesley Publishing Company, 1995, ISBN 0-201-40996-8
- » Personal Computer Bus Standard P996, Draft D2.00, Jan. 18, 1990, IEEE Inc
- » Technical Reference Guide, Extended Industry Standard Architecture Expansion Bus, Compaq 1989

7.1.2 PCI/104

- » Embedded PC 104 Consortium
- » The consortium provides information about PC/104 and PC/104-Plus technology. You can search for information about the consortium on the Web.
- » PCI SIG
- » The PCI-SIG provides a forum for its ~900 member companies, who develop PCI products based on the specifications that are created by the PCI-SIG. You can search for information about the SIG on the Web.
- » PCI & PCI-X Hardware and Software Architecture & Design, Fifth Edition, Edward Solari and George Willse, Annabooks, 2001, ISBN 0-929392-63-9.
- » PCI System Architecture, Tom Shanley and Don Anderson, Addison-Wesley, 2000, ISBN 0-201-30974-2.

7.2 General PC Architecture

- » Embedded PCs, Markt&Technik GmbH, ISBN 3-8272-5314-4 (German)
- » Hardware Bible, Winn L. Rosch, SAMS, 1997, 0-672-30954-8
- » Interfacing to the IBM Personal Computer, Second Edition, Lewis C. Eggebrecht, SAMS, 1990, ISBN 0-672-22722-3
- » The Indispensable PC Hardware Book, Hans-Peter Messmer, Addison-Wesley, 1994, ISBN 0-201-62424-9
- » The PC Handbook: For Engineers, Programmers, and Other Serious PC Users, Sixth Edition, John P. Choisser and John O. Foster, Annabooks, 1997, ISBN 0-929392-36-1

7.3 Ports

7.3.1 RS-232 Serial

- » EIA-232-E standard
- » The EIA-232-E standard specifies the interface between (for example) a modem and a computer so that they can exchange data. The computer can then send data to the modem, which then sends the data over a telephone line. The data that the modem receives from the telephone line can then be sent to the computer. You can search for information about the standard on the Web.
- » RS-232 Made Easy: Connecting Computers, Printers, Terminals, and Modems, Martin D. Seyer, Prentice Hall, 1991, ISBN 0-13-749854-3
- » National Semiconductor: The Interface Data Book includes application notes. Type "232" as search criteria to obtain a list of application notes. You can search for information about the data book on National Semiconductor's Web site.

7.3.2 Serial ATA

Serial AT Attachment (ATA) Working Group. This X3T10 standard defines an integrated bus interface between disk drives and host processors. It provides a common point of attachment for systems manufacturers and the system. You can search for information about the working group on the Web. We recommend you also search the Web for information on 4.2 I/O cables, if you use hard disks in a DMA3 or PIO4 mode.

7.3.3 USB

USB Specification

USB Implementers Forum, Inc. is a non-profit corporation founded by the group of companies that developed the Universal Serial Bus specification. The USB-IF was formed to provide a support organization and forum for the advancement and adoption of Universal Serial Bus technology. You can search for information about the standard on the Web.

7.4 Programming

- » C Programmer's Guide to Serial Communications, Second Edition, Joe Campbell, SAMS, 1987, ISBN 0-672-22584-0
- » Programmer's Guide to the EGA, VGA, and Super VGA Cards, Third Edition, Richard Ferraro, Addison-Wesley, 1990, ISBN 0-201-57025-4
- » The Programmer's PC Sourcebook, Second Edition, Thom Hogan, Microsoft Press, 1991, ISBN 1-55615-321-X
- » Undocumented PC, A Programmer's Guide to I/O, CPUs, and Fixed Memory Areas, Frank van Gillewe, Second Edition, Addison-Wesley, 1997, ISBN 0-201-47950-8

8 Appendix B: Document Revision History

Revision	Date	Edited by	Changes
100	011.Feb.2010	WAS	Changed to new Kontron Corporate Design from DLAG V1.0A including title photo.

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