

Hardware Manual



WebCommunicator

Basic
analog
ISDN

Version 1.01, 05_03

INSYS
MICROELECTRONICS

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... about this document

The present manual describes the hardware design of the WebCommunicator (wired version: Basic/analog/ISDN).

The first chapter contains a general device description which shows the use and application possibilities of the WebCommunicator.

The next part of this document covers the externally accessible interfaces and shall assist the system integration of the WebCommunicator.

A description of the single functional groups follows this.

You find general notes about the operating system and a start assistant for the first start-up of the WebCommunicator in the last part.

Further documentation about the architecture of the SC12 chip, the operating system, and for programming own software applications, as well as C libraries, tools, demo programs and a professionally hosted developer forum can be obtained from the Beck company (www.bcl.de) under the key word IPC@CHIP.

(Please observe the conditions of use and general business conditions of Beck!!!)

1. Features

Controller:

PC architecture with FAT file system

CPU AMD 80186, 20 MHz

Memory: 512 KB RAM, 512 KB flash drive internal

Slot for 16...512 MB CompactFlash drive

Real time operating system RTOS for 16 bit DOS applications

Integrated operating system functions (usable via API):

TCP/IP stack, HTTP server, FTP server, Telnet server,

PPP server, PPP client, TFTP server, DHCP client,

UDP config server, Ethernet driver

Interfaces:

Serial RS232 (SubD, screw terminals), RS485 (screw terminals)

Ethernet 10baseT (RJ45)

Remote data communication via modem/ISDN/GSM (AT commands)

2 digital inputs (screw terminals)

2 digital relay outputs (screw terminals)

CompactFlash slot

Physical features:

Dimensions	75x100x112mm (hwxwd), without CF card
Weight	approx. 420g
Assembly	DIN rail DIN EN 500 22
Temperature range	0°C..55°C
Humidity	0 - 95%, non-condensing
Protective class	housing IP40 / screw terminals IP20
Supply voltage	10..60 V DC, 5% ripple 50..80 V DC, 5% ripple
max. current consumption	for 10V: approx. 500mA for 24V: approx. 200mA
Power consumption	Stand-by: approx. 4 Watts connect + relay: approx. 5 Watts
Relay outputs	DC 1A / 30V AC 0.5A / 125V

Note: The WebCommunicator may not be operated in wet environments !!!

2. Device Description

Basically, the WebCommunicator is a compact stand-alone PC, which provides an integrated modem (choice of analog modem, ISDN, or GSM) besides RAM, an internal flash drive for programs/data, a clock module and a series of useful hardware interfaces. Regular data connections to another modem or also a TCP/IP connection via PPP client to an internet service provider can be established with this modem. Of course, the WebCommunicator can be operated without the modem module, but respective functionalities like e.g. internet access via modem are not possible then.

There are serial interfaces like RS232 or RS485, which allow the control of own application hardware (e.g. sensors or actuators within a building automation). An Ethernet connection also exists at the WebCommunicator for connecting the device with a network. Like its big brother, the desktop PC, the WebCommunicator is also equipped with an operating system, which is very similar to the known MS DOS system in many ways.

During booting, the file CHIP.INI, a configuration file similar to CONFIG.SYS, and an AUTOEXEC.BAT are processed, in which own software can be started if required. Apart from that, the user finds the well-known DOS prompt (A:\>).

The command line command set is not extensive like the one of MS DOS, but the syntax of the available commands is nearly identical (DIR, COPY, REN, CD....).

The structure of the file system (FAT) is PC compatible. With this, the WebCommunicator is able to mount an inserted CompactFlash card (with the respective driver software) as additional external drive B:\ and use this as data and program storage for example. The same CF card can also be read and written from a PC equipped with a card drive.

Additionally, the operating system of the WebCommunicator provides some specific features, like e.g. an integrated HTTP server, i.e. the device generates web pages, which can be called via the internet, as soon as a connection with an internet provider exists via the also integrated PPP client.

The operating system provides an FTP server as well. You can exchange data files and executable programs from the PC via network or internet connection with the drives of the WebCommunicator.

The Telnet server can be used as another access possibility via network/internet.

A PPP server, TFTP server, DHCP client and an UDP config server are also integrated.

The operating system itself can easily be updated with a software tool from the PC via RS232.

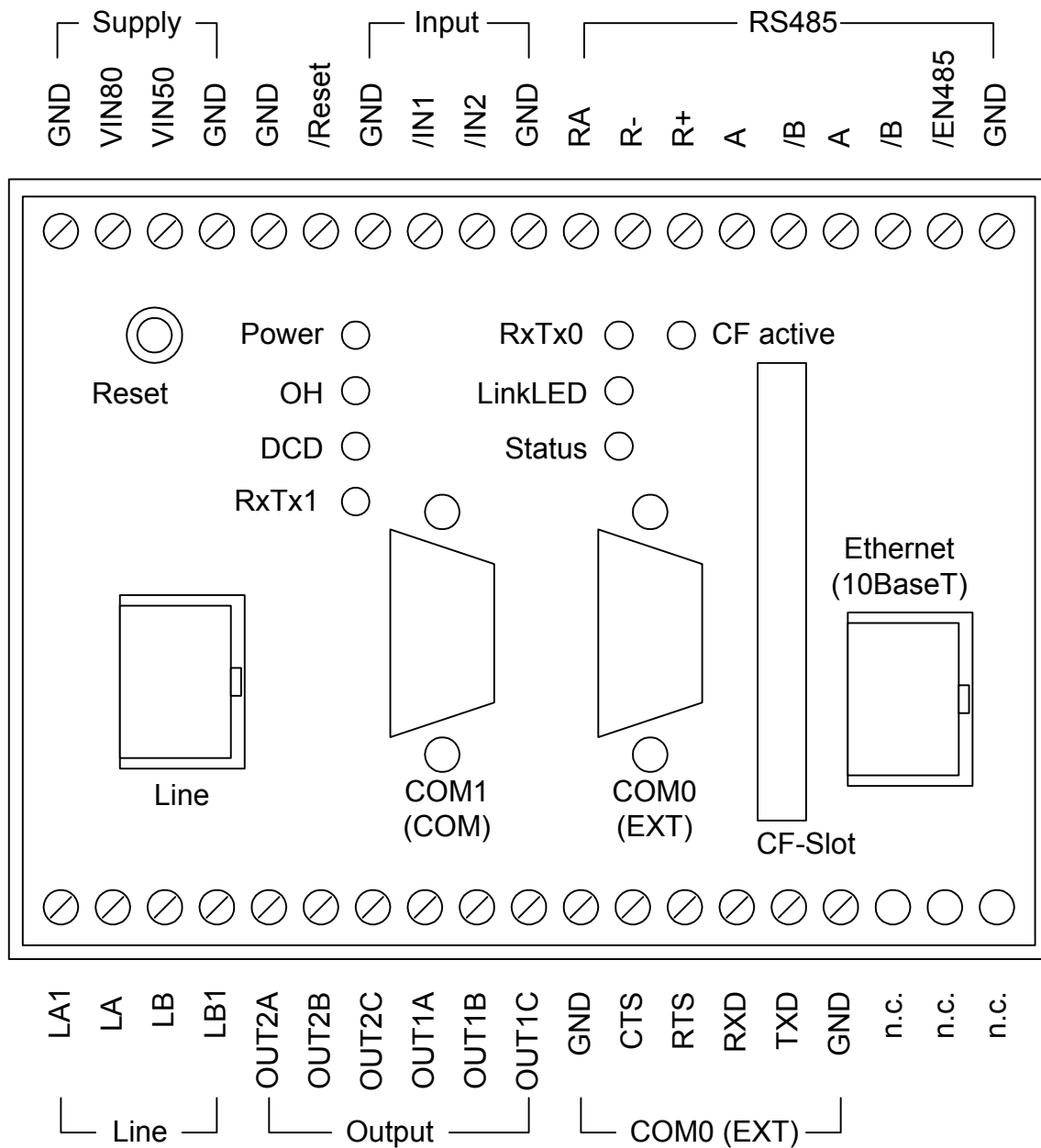
For developing own software applications in the form of EXE files, a commercial C, Pascal, etc. compiler (e.g. Borland...) or an assembler (MASM, TASM,...) is recommended. A 16 bit DOS system with an 80186 compatible processor has to be configured as target system.

A huge number of operating system functions can be used via software interrupts (INT21h, etc.) to ease the software development like for MS DOS.

The Beck company, manufacturer of the SC12, the main item of the WebCommunicator, provides also a very extensive C library to use the system functions comfortably, as well as a huge collection of demo programs free of charge, which ease the development of own programs strongly. Besides a lot of application examples, tools, operating system updates, and plenty of documentation, a very frequented forum can be found on the homepage (www.bcl.de), which helps the developer with his questions.

The design of the operating system focuses LAN and internet functionality clearly. Control and surveillance applications, possibly with e-mail alerting, for which the user is able to read the current project state or make configurations, get log files from the field to his desk via FTP, etc. etc. etc. ...

3. External Interfaces



(Figure 1: connection overview WebCommunicator wired)

3.1 Screw Terminals

3.1.1 Supply

The WebCommunicator is equipped with a very flexible power supply input and accepts DC voltages of 10 – 80 Volts.

Screw terminal layout – supply:

VIN80	Voltage input for the range from 50 to 80 Volts
VIN50	Voltage input for the range from 10 to 60 Volts
GND	Device ground

3.1.2 Reset

If the reset input is connected with the device ground GND for at least 3 seconds, a reset is triggered at the web server as well the modem/ISDN/GSM module.

3.1.3 Inputs

Both digital inputs are equipped with pull-up resistors internally and are activated by connecting them with GND.

Both inputs are connected with the SC12 as well as with the alarm inputs of the integrated modem module.

This means that not only the SC12 application software but also the alarm function of the modem module can be controlled (alarm text, SMS... for this see INSYS I-module Designers Guide wired/wireless).

Screw terminal layout – input:

/IN1	digital input #1
/IN2	digital input #2
GND	Device ground

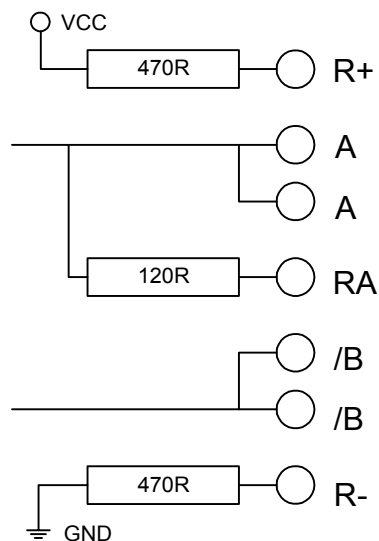
3.1.4 RS485 (EXT/com0)

The serial EXT interface of the SC12 is activated as RS485 port by setting a coding bridge. The data lines A und /B are lead twice out to the terminal strip that the internally existing pull-up, pull-down, and bus terminating resistors can be hooked up comfortably from outside.

If the device is at an end position of the RS485 bus, the terminating resistor is to be hooked up by connecting RA with /B. If the device is connected somewhere in the middle of the bus, RA has to be left open.

The data lines should be biased at at least one location of the bus using the resistors R+ (at A) and R- (at /B) to prevent a floating of the data lines.

Connection diagram



(Figure 2: RS485 connection)

Screw terminal layout – RS485

RA	internal bus terminating resistor, connected with data line A
R-	internal pull-down resistor to bias the data line /B
R+	internal pull-up resistor to bias the data line A
A	positive data line of the symmetrical RS485 bus
/B	negative data line of the symmetrical RS485 bus
/EN485	bridge to GND activates the RS485 port
GND	Device ground

Note: The data direction at the RS485 two-wire line can be switched over (RTS0) internally by the SC12.

3.1.5 Phone Line

The connection to the phone line (analog, ISDN, GSM, depending on the used module) can either take place using the screw terminals or the RJ45 socket. Both connection methods are equivalent.

Screw terminal layout – phone/ISDN:

	analog modem	ISDN	Type
LA1	line for downstream devices	STB / b2	out
LA	phone line	SRB / b1	in
LB	phone line	SRA / a1	in
LB1	line for downstream devices	STA / a2	out

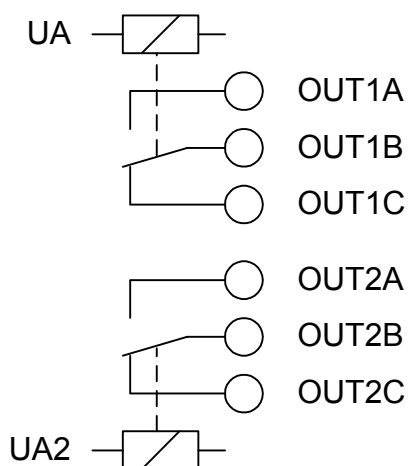
Note: This connection only exists in the 'wired' version (Basic, analog modem and ISDN) of the WebCommunicator.

3.1.6 Outputs

The WebCommunicator has two relay outputs. The change-over contact OUTxB is switched to OUTxA or OUTxC depending on the state of the control signal UA or UA2.

Output #1 (UA) is served by the modem (AT*Y... see Designers Guide). Output #2 (UA2) is controlled by the SC12 (PIO#13). If a modem/ISDN/GSM module is used, which supports two outputs, a switching of UA2 by the modem has no effect. This line is not connected through.

Connection diagram



(Figure 3: switch outputs)

Screw terminal layout – output:

OUT1A	switch output modem module, make contact
OUT1B	switch output modem module
OUT1C	switch output modem module, break contact
OUT2A	switch output SC12, make contact
OUT2B	switch output SC12
OUT2C	switch output SC12, break contact

Status table of the relay outputs:

	OUT1	OUT2
Signal	UA	UA2
Control by	Modem/ISDN/GSM	SC12
Idle state	B-C switched	B-C switched
State after power-up	depending on stored profile	B-C switched (without user software)
Control	AT*Y1 switches A-B AT*Y0 switches B-C	PIO#13 ='1' switches A-B PIO#13 ='0' switches B-C

3.1.7 RS232 (EXT/com0)

You can communicate with the serial EXT interface of the SC12 using this RS232 port in normal operation. However, if the RS485 port is activated (/EN485 terminal), RS232 cannot be used anymore.

The RS232 access can also take place using the SubD-9/m socket alternatively. Both connection methods are equivalent.

Screw terminal layout – EXT:

CTS	Input
RTS	Output
RXD	Input
TXD	Output
GND	Device ground

3.2 Front connectors**3.2.1 Phone Line (RJ45)**

The connection to the phone network (analog, ISDN, GSM, depending on the used module) can either take place using the screw terminals or the RJ45 socket. Both connection methods are equivalent.

RJ45 - PinOut

	Analog modem	ISDN	Type
1			n.c.
2			n.c.
3	LB1	STA / a2	out (for downstream devices)
4	LB	SRA / a1	in
5	LA	SRB / b1	in
6	LA1	STB / b2	out (for downstream devices)
7			n.c.
8			n.c.

Note: This connection only exists in the 'wired' version (analog modem and ISDN) of the WebCommunicator.

3.2.2 COM/com1 (SubD-9/f)

This RS232 port serves mainly for configuration at the server or at the modem/ISDN/GSM module without having to disconnect the SC12 device from its application environment.

The WebCommunicator detects a connected PC with running terminal software at the active DTR line and connects the COM interface of the SC12 with this socket automatically. If the DTR signal is inactive ('1') again after disconnecting the PC, the SC12 will be connected with the modem module again.

There is also the possibility to access the integrated modem/USDN/GSM module directly using this connection, and to configure it manually. But the SC12 software has to address a special port pin for this, which activates this connection.

COM - PinOut:

	Signal	Type
1	DCD	out
2	RXD	out
3	TXD	in
4	DTR	in
5	GND	Ground
6	DSR	out
7	RTS	in
8	CTS	out
9	RI	out

3.2.3 EXT/com0 (SubD-9/m)

You can communicate with the serial EXT interface of the SC12 using this RS232 port in normal operation. However, if the RS485 port is activated (/EN485 terminal), RS232 cannot be used anymore.

The RS232 access can also take place using the screw terminal. Both connection methods are equivalent.

EXT - PinOut:

	Signal	Type
1	DCD	n.c.
2	RXD	in
3	TXD	out
4	DTR	connected with DSR
5	GND	Ground
6	DSR	connected with DTR
7	RTS	out
8	CTS	in
9	RI	n.c.

3.2.4 CompactFlash slot

The CompactFlash slot is connected with the SC12 via an I/O data bus and can address commercial CF cards with the respective driver software as external DOS drive. The card should be formatted with the FAT file system for this.

The pin layout of this port corresponds with the standard pin layout for CF slots; any CF card can be used therefore.

The CF card has to be inserted before switching on the WebCommunicator.

3.2.5 Ethernet / 10BaseT (RJ45)

The WebCommunicator can be connected with 10MBit/sec to a network or directly to the network card of a PC.

When connecting to a network switch or hub, a regular patch cable has to be used. The direct connection to a PC network card works with a crossed cable.

Ethernet - PinOut:

	Signal
1	TX+
2	TX-
3	RX+
4	n.c.
5	n.c.
6	RX-
7	not connected
8	not connected

3.3 LED Indicators

Power	Device is ready for operation
OH	modem has hooked off and established a connection with the phone network
DCD	data connection established
RxTx1	activity at the receive/transmit data lines to the RS232 configuration port (COM/com1)

RxTx0	activity at the receive/transmit data lines to the RS232/485 application port (EXT/com0)
LinkLED	activity at the Ethernet line
Status	can be controlled by the application software

CF-active	activity of the CompactFlash slot
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The WebCommunicator consists essentially of two main components: the web server board and the communication component.

Both are connected via a bus board.

4.1 The SC12

The central element of the WebCommunicator is the SC12, an on-chip web server, which is located at the web server board. The SC12 contains an 80186 compatible processor core, 512K RAM, an internal flash drive with 512K as well as a scalable, multitasking capable RT operating system, similar to DOS, with a TCPIP stack, PPP server and client, HTTP server, FTP server, Ethernet driver and much more.

Detailed information about the SC12 can be found at the manufacturer.

(Beck company: www.bcl.de)

The following table shows the assignment of the SC12 pins to the functional groups:

Pin	Configuration	Port assignment
1	RXD0	EXT/com0 port, connected with the RS232 or RS485 interface. RTS0 works as data direction switch for RS485. '0'= drive '1'= receive
2	TXD0	
3	CTS0	
4	RTS0	
6	RXD1	COM/com1 port, connected with modem/ISDN/GSM module or with RS232 interface in case of configuration.
5	TXD1	
25	CTS1	
26	RTS1	
27	PIO4	DTR line to modem (is used to hang up, see modem description, command „AT&D2“)
28	PIO3	Used for multiplexer switching: '0'= RS232 direct to modem '1'= regular operation
30	I2C_SDA	I2C bus, connected with the RTC
31	I2C_SCL	
18	TPTX+	Ethernet
19	TPTX-	
20	TPRX+	
21	TPRX-	
17	LinkLED	Indication of the Ethernet activity
8 .. 15	AD0 .. AD7	IO bus, connected with CF slot and status port
22	RD#	
23	WR#	
24	ALE	
29	PCS6#	Used as chip select for IO bus
7	PIO13	Control of the relay output UA2: '0'=relay output 2: B and C connected '1'=relay output 2: A and B connected

4.2 The CompactFlash Slot At The IO Bus

At the IO bus of the SC12 there is also a CompactFlash port, which can be used with the respective driver software to access FAT formatted CF cards as external program or data storage. These cards can also be read and written by a PC with the respective drive. Data activity at the CF interface is indicated with a LED.

The used SC12 pins are listed in the table under 4.1.

Note: When using a CF card, this must be inserted into the CF port when the device is switched off. The WebCommunicator can be switched on then.

4.3 The Status Port At The IO Bus

In addition, the IO bus is connected with a port (Adr.0x640), from which important system states can be read.

Port 0x640 (only read access):

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
/EN485	/CRDIN	OH	UE2	UE	RI	DCD	DTR

Port bits:

	Signal	Function
#7	/EN485	'0' for RS485 (bridge is set) '1' for RS232
#6	/CRDIN	'0' for inserted CF card
#5	OH	'0' as soon as modem/ISDN module occupies the line (Off Hook)
#4	UE2	State of the 2. input at the screw terminal
#3	UE	State of the 1. input at the screw terminal
#2	RI	'0' for incoming calls (Ring Indicator)
#1	DCD	'0' modem has established connection (Data Carrier Detect)
#0	DTR	'0' = configuration cable connected at COM (com1) '1' = normal, COM is connected with modem/ISDN/GSM

4.4 The EXT Interface As RS232 Or RS485 Application Port

One of the two serial interfaces of the SC12 (EXT/com0) can be used for external application hardware either as RS232 or as RS485 interface (half-duplex). The configuration as RS485 is performed by setting a bridge in the screw terminal strip (/EN485 to device ground). The RS485 data lines are available at the screw terminals then.

In addition to this, there is the possibility to hook up a terminating resistor at the screw terminals as well as to bias the bus lines via pull-up/down resistors. The RTS line is used to determine the data direction. ('0' = drive '1' = receive)

If the configuration bridge is missing, the RS232 interface is active at the screw terminals and the SubD jack. Data activity is indicated with a LED.

The current configuration can be queried from the SC12 at the status port (0x640h, Bit#7).

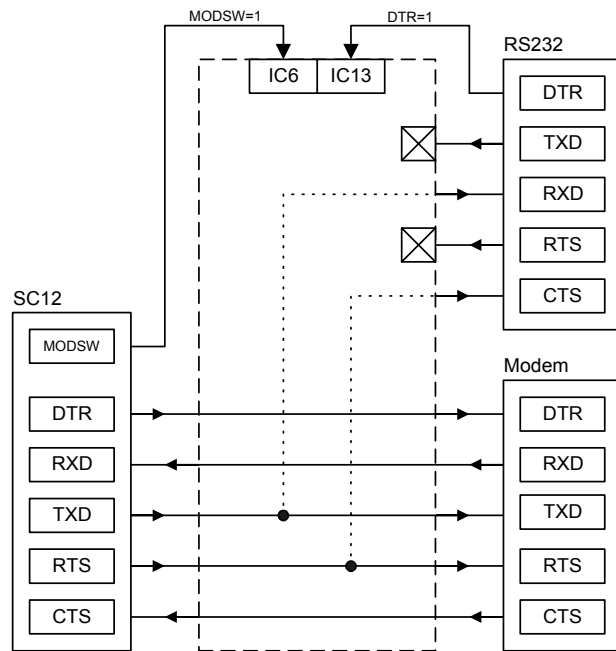
4.5 The COM Interface As RS232 Configuration Or Modem Connection

The second serial interface of the SC12 (COM/com1) is connected with the communication component. Usually it is connected with the modem/ISDN/GSM module. The SC12 has to control the DTR line to the modem via an IO pin (PIO#4).

But if a device, which has activated its own DTR line, is connected to the RS232 interface of the communication component, the RS232 interface at the SubD jack is addressed instead of the modem. A local system configuration via notebook can be made for example in this way without having to disconnect data lines, which are firmly connected with the device. The SC12 is informed via port 0x640, bit #0 about the connection partner of its COM interface.

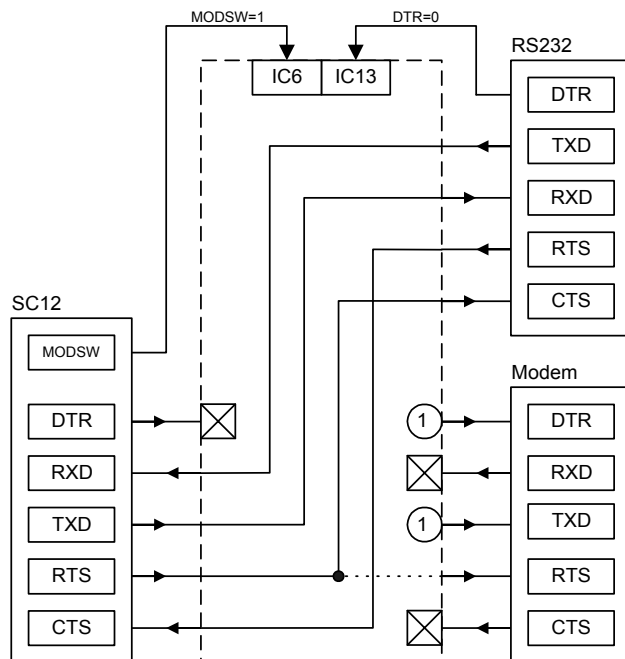
If a configuration is necessary directly at the modem/ISDN module, the SC12 can establish a direct data connection between the RS232 jack and the modem/ISDN module by activating the IO pin PIO#3 (MODSW='0'). This makes it possible to change the modem configuration manually for example.

Device internal multiplexer control the connection COM1, D-Sub jack and modem.



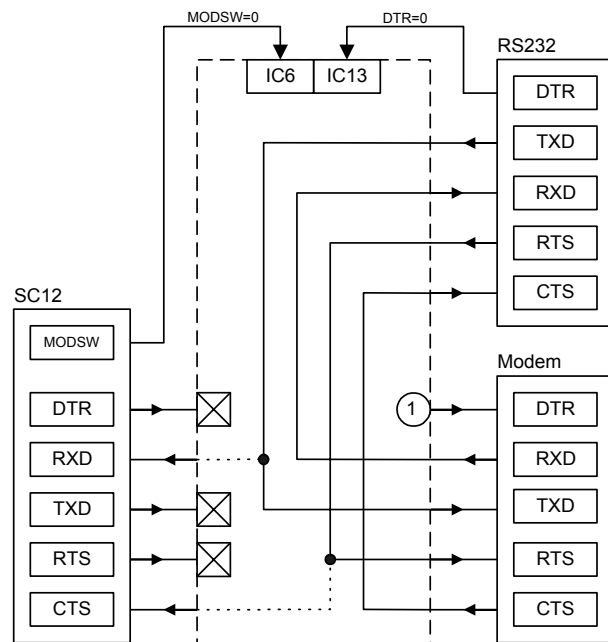
The regular operation mode (Beck chip connected with modem, external RS232 inactive) is selected, if no DTR is at the external RS232 interface (=HIGH) and if the line MODSW (PIO3) from the Beck chip is HIGH.

(Figure 5: multiplexer in regular operation)



The configuration mode is selected, as soon as the DTR line is activated at the external RS232, and „MODSW“ (PIO3) from the Beck chip is „High“. The external DTR line is also at the I/O port 0x640 (IC1), so that the software is able to detect the insertion of the configuration cable.

(Figure 6: multiplexer in configuration mode, RS232 at COM)



The third possible operation mode connects the modem directly with the external RS232 interface. This operation mode is selected from the Beck chip via the line „MODSW“ (PIO3) = 0. All signals except “DTR” are directly hooked up from the modem module to the RS232.

(Figure 7: multiplexer in modem configuration mode, RS232 to modem module)

PIO3 is hooked up to input with pull-up in default state, so to “1”. With this it is possible to access the COM1 interface of the Beck chip directly via RS232 without software.

4.6 I2C Bus And RealTimeClock

For applications, which contain a real-time function, a RealTimeClock is connected with the SC12 via an I2C bus (I2C basic address 0x64h). The INTA output of the clock is connected with a LED, which can be addressed to indicate the application state.

The used SC12 pins are listed in the table under 4.1.

The alarm output (INTRA) of the RTC can be programmed via I2C access to the control register except to "Low" and "High" also as flasher unit, so that a flashing of the connected LED is possible without assistance of the processor. You can take further information about programming the RTC and the I2C bus from the data sheet of the RTC manufacturer.

(RS5c372A, www.ricoh.co.jp/lsi/english/)

4.7 Ethernet

The Ethernet interface of the SC12 is connected with the RJ45 jack via a transformer. The LinkLED is operated via the reset logic and indicates data volume at the Ethernet line.

4.8 The Communication Component

Since the modem/ISDN/GSM modules mounted at this component provide some additional IO and alarm functions independently from the WebCommunicator (see INSYS I-module Designers Guide wired/wireless), several signal lines are connected through permanently between the module and the IO screw terminal and LEDs to support these functions. If a signal is present at the digital inputs UE or UE2 for example, this can be evaluated by the SC12 as well as by the modem.

The digital output UA2 is an exception here. If a modem/ISDN/GSM module is used, which supports two outputs, the second output cannot be used by the modem. The control of the UA2 output at the screw terminal is taken over by the SC12 via PIO#13. The corresponding modem line is not connected through.

Status table of the relay outputs:

	OUT1	OUT2
Signal	UA	UA2
Control by	Modem/ISDN/GSM	SC12
Idle state	B-C switched	B-C switched
State after power-up	depending on stored profile	B-C switched (without user software)
Control	AT*Y1 switches A-B AT*Y0 switches B-C	PIO#13 ='1' switches A-B PIO#13 ='0' switches B-C

Also located at the communication component are a wide range power supply (10..80V inputs), a speaker unit, a reset switch as well as the phone network connection, either via RJ45 jack or via screw terminals (not for GSM).

5. Notes

5.1 Scalable Operating System

The operating system for the WebCommunicator is available in six different versions. According to the application requirements, it is possible to use smaller versions, which do without unnecessary functions, but provide more memory for the user at the internal drive in return. So it is recommended to use an operating system version without PPP client/server for a WebCommunicator without built-in modem for example.

(see SC12 documentation, Beck company)

The latest versions of each can be downloaded from WWW.BCL.DE.

(Please observe the conditions of use and general business conditions of Beck!!!)

5.2 Operating System Update

If an operating system update is necessary (for example also after fatal failure of the own software), you use CHIPTOOL.EXE, a service tool of Beck (www.bcl.de), to flash a clean system to the WebCommunicator.

Using the menus BIOS > Program flash you get to an entry mask, in which you set the update method.

The user has to decide, which system version he wants to upload.

Then he can select, whether he wants to update via RS232 EXT port or via Ethernet TCP/IP. The Ethernet method requires the entry of either serial number or IP address of the device. Both details can be queried via command line command before (commands 'IPCFG' and 'VER').

Note: The flash process deletes all data at drive A:\> !!!

5.3 Factory Default Settings At Delivery

The following settings are made in the file CHIP.INI of the WebCommunicator at delivery:

COM	19200 baud, 8N1, no handshake
EXT	19200 baud, 8N1, no handshake
IP	Adr.: 192.168.100.210 Nmsk.: 255.255.255.0 Gtwy.: 0.0.0.0
Telnet	Port 23 (standard) User0: 'tel0' Pswd0.: 'tel0' User1: 'tel1' Pswd1.: 'tel1'
FTP	User0: 'ftp0' Pswd0.: 'ftp0' User1: 'ftp1' Pswd1.: 'ftp1'
HTTP	Web directory: A:\WEB\ Main page: internal SC12 default page
Console	Standard input: EXT, TELNET Standard output: EXT, TELNET

The system settings can always be adapted to your own requirements in the configuration file CHIP.INI. Details about this can be found in the documentation of Beck (RTOS/APIDOCxxxx.pdf, www.bcl.de).

Note: When booting, the SC12 is configured according to the settings in CHIP.INI first. Then, the AUTOEXEC.BAT will be processed. Since the operating system is capable of multitasking, it may happen that several processes are executed at the same time when processing. If the AUTOEXEC.BAT contains entries, which are independent of each other, BATCHMODE=1 has to be forced in CHIP.INI.

The execution of the AUTOEXEC.BAT can be prevented by entering CTRL-C shortly after the reset. If necessary enter it several times.

5.4 Important Documentations

The most comprehensive description of the SC12 operating system, including all command line commands, configuration possibilities, programming interfaces (APIs), etc. is available as APIDOCxxxx.PDF or also as HTML version from Beck (www.bcl.de).

The respective Release Notes and Errata Sheets to the individual versions of the operating systems are to be noted as well.

For easy understanding the SC12 hardware, the HW data sheet of the SC12 is recommended, which can be obtained from Beck as well.

Visiting the website of Beck (www.bcl.de) and the SC12 developer forum from time to time is also very recommendable to get always the latest info, tricks and tools around the SC12.

(Please observe the conditions of use and general business conditions of Beck!!!)

The control of the real-time clock module is described in the RS5C372A/B data sheet of RICOH. Here you find also a short explanation of the I2C bus and its functionality (www.ricoh.co.jp/lsi/english/index.html).

Books about x86 architecture, Assembler/C programming, TCP/IP or "How Does The Internet Work" are available at the bookseller of your confidence :-)

5.5 First Steps

5.5.1 Access Types

After the device has been connected to a power supply, e.g. a DC12V power supply at the VIN50 and GND terminal, you can access the command line entry of the WebCommunicator in two different ways:

Serial via EXT port:

Connect the serial port of a PC via an RS232 null modem cable with the EXT/com0 jack of the WebCommunicator. The access takes place using a terminal program, like e.g. TeraTermPro.

Basically, an access via the COM interface would be possible as well (1:1 cable). In this case, the standard input and output has to be set to COM in the CHIP.INI file as well.

ATTENTION: If no active terminal program is connected with COM, COM will be hooked up to the modem in the device. If STDIN/OUT is on

COM, all system outputs (e.g. boot message...) are sent to the modem, which interprets these as commands. All modem responses are considered as commands from the operating system again ... therefore CAUTION!

Via Telnet:

Connect the Ethernet connection of the WebCommunicator with a 1:1 patch cable to a network hub. The control PC has to be connected to the same network segment.

The device can also be connected directly to the network card of a PC with a crossed patch cable.

The access takes place using a TCP/IP capable terminal program, like e.g. TeraTermPro.

For this, terminal program has to be configured to the IP address (default: 192.168.100.210) and the Telnet port number (default: 23).

Another method of a Telnet connection can be made using the program CHIPTOOL.EXE, which is available from Beck for communicating with the SC12. Under the menu item CHIP->FIND you find a list of all devices found at the network. With a right-click to the found device, you can select e.g. 'Telnet'. This causes the start of a windows-internal Telnet terminal. The advantage of Chiptool: you don't have to know the IP address, the LAN is scanned automatically.

At the begin of each Telnet session, the WebCommunicator requests the entry of an username and a password.

(Default: User: tel0 / Pass: tel0 or User: tel1 / Pass: tel1).

5.5.2 The Command Line

If a connection to the command line (shell) of the operating system has been established successfully, the WebCommunicator will answer the entry of <CR> with the prompt 'A:\>'.

(If not, check the settings of the terminal program or select different access type)

Now you can move through the file system with the commands known from MS DOS (CD, MD, RD, DIR...) and start executable .EXE files.

All possible commands are displayed with the command HELP.

The program EXTIDE.EXE is the CompactFlash driver of Beck. When executing this program, a CF card will be installed as external drive B:\>. But the CF card has to be inserted already when powering-up!!!

With CHIPEDIT.EXE, a text editor of Beck, you can create and edit ASCII files. So you can e.g. adapt the system configuration in CHIP.INI and change the passwords...etc.

If the CF card remains in the device permanently, an AUTOEXEC.BAT is recommendable, in which EXTIDE.EXE is started automatically.

5.5.3 Transfer Files

If you want to transfer data or program files to/from WebCommunicator, you have different possibilities again.

X Modem:

The X modem protocol is used for transmission via EXT interface (null modem cable). The following command will be entered in the command line of the WebCommunicator for this: XTRANS EXT R FILENAME.xxx. Then, the device expects a file via the EXT port, which is sent from the PC with the terminal program (e.g. TeraTermPro).

ATTENTION: Configure X modem protocol !!!

(XTRANS COM R FILENAME.xxx makes the whole thing happen via the COM port.)

If you replace the 'R' in the command with an 'S', the transmission takes place in the other direction, to the PC.

Note: It is a characteristic feature of the X modem protocol, to transmit only fixed block sizes, i.e. most of the time, some 0xFFh bytes are added to the data, what results no negative effect yet.

FTP:

A very comfortable solution is the transmission via FTP. An Ethernet connection has to exist for this (crossed patch cable at the PC or via network hub). For this, an FTP client software (LeechFTP, WS-FTP...) is required at the PC. After connection set-up, the WebCommunicator requests username and password.

(Default: User:ftp0 / Pass: ftp0 or User:ftp1 / Pass: ftp1).

CHIPTOOL.EXE of Beck can be used here again. Under the menu item CHIP->FIND you find a list of all devices found at the network. With a right-click to the found device, you can select e.g. 'FTP'. This causes the start of a windows-internal FTP client. The advantage of Chiptool: you don't have to know the IP address, the LAN is scanned automatically. However, this client does not have an graphical interface, but you'll find your way quickly using the HELP command.

Note: When transmitting non-text files, select the 'binary' format.

5.5.4 HTTP Access To The Internal Website

An TCP/IP connection (Ethernet) has to exist here as well. An internet browser (Internet Explorer, Netscape...) is used at the PC for this. After entering the IP address, the default website of the SC12 should be displayed.

If you want to set-up an own website, which has been created before with an HTML editor (MS-Word, Frontpage, ...), you have to transfer all files belonging to it to the web root directory, which is set in CHIP.INI (default= A:\WEB\), first. The sub-directory structure of the HTML page has to be maintained so that the links to further pages, figures, etc. work.

Then, the initial page has to be set in CHIP.INI finally. For this you have to enter the addition 'MAINPAGE=pagename.HTM' in the category [WEB].

Now, you can admire the own web page.

If the IP address is not known, you are able to scan the network with CHIPTOOL for the WebCommunicator again.

(CHIP > FIND > right-click onto the device > HTTP)

Note: A dynamical website, at which variable contents can be displayed and user inputs can be processed, requires the creation of a specific application software, which connects with the CGI interface of the operating system.

Revision History

Version	State	Revision	Name
1.00	22.05.03	First edition, developer version	TP/CG/GM

Technical modifications as well as errors reserved 05/03

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