SIEMENS

Cerberus® LMSmodular
Cerban Splitter CBS-3

Technical Manual

Cerberus
Security
for People
and Assets

Siemens Building Technologies
Cerberus Division

1 Introduction

The Cerban Splitter CBS-3 accepts in input a serial line on which data are transmitted using Cerban protocol and outputs the signal to two serial lines with the same protocol.
The Cerban Splitter CBS-3 is composed by one CPU board to which is connected an asynchronous board with four communication lines.

1.1 Document overview

This manual is intended as a guide for planning, installation and service personnel of Cerberus systems which use CBS-3 device.
The manual is divided into 5 chapters and 1 annex; a Table of Contents and an Index allow easy referencing to the arguments.

- Chapter 1 is an introduction to the manual.
- Chapter 2 describes the product.
- Chapter 3 shows how to install the CBS-3, to supply and connect it.
- Chapter 4 shows how to configure the CBS-3.
- Chapter 5 describes how you can identify problems that can possibly arise.
- Annex A lists the firmware versions available for the Cerban Splitter

1.2 Related publications

The following documents could be useful in dealing with Cerban Splitter and understanding how it relates to other pieces of the CMS/LMS network:

- CS11 commissioning manual
- CS4 commissioning manual
- GW-20 Technical manual e1114
- GW-21 Technical manual e1112

2 Product description

2.1 The CPU board

The CPU board (Fig. 1) is the only board that composes the Cerban Splitter CBS-3.

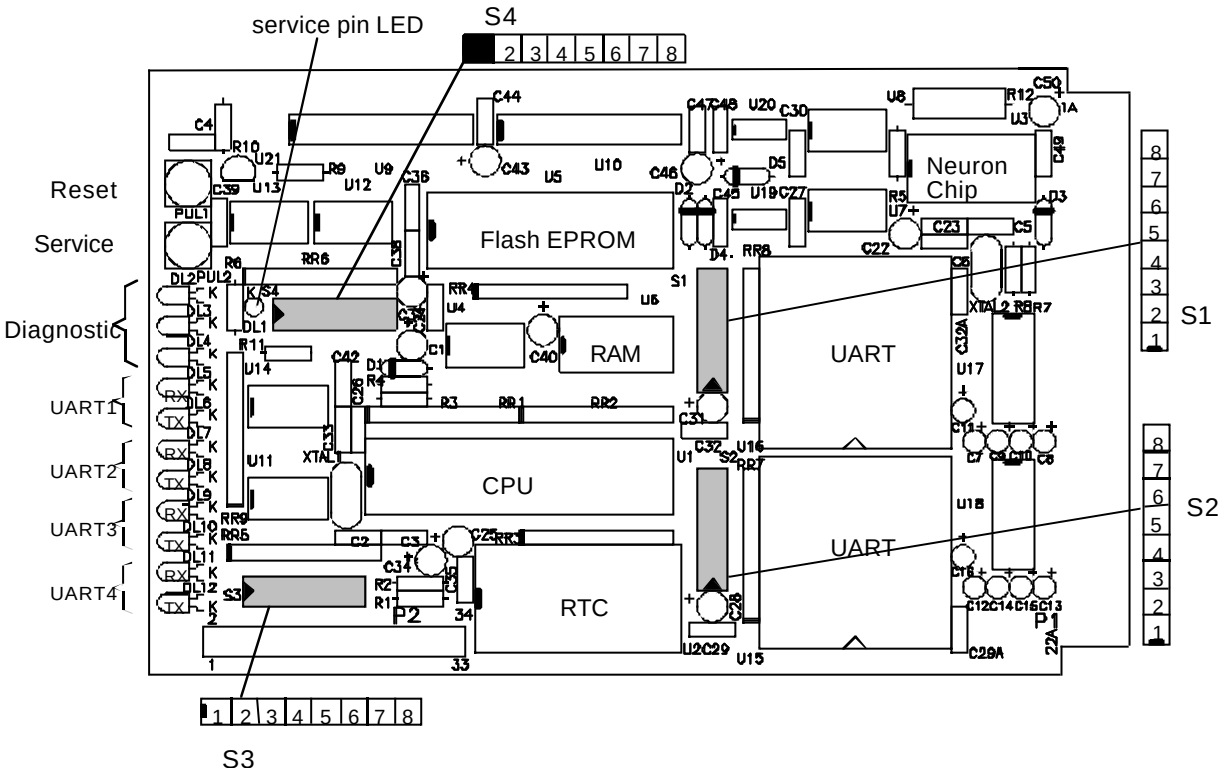


Fig. 1 The CPU board

On this board there are:

- the CPU, the RAM and Flash EPROM
- the Real Time Clock (RTC)
- two UART chips, that manage the four GW-21 serial lines
- the Neuron Chip, that lets the GW-21 to communicate with the LonWork network
- four dip switch blocks (S1 - S4), used to configure the GW-21 as described later
- one reset push-button, used to reset the board
- one service push-button, to send the service signal to the Neuron Chip
- four sets of two LEDs. These LEDs show the status of UART RX/TX lines.
- three LEDs used for diagnostic purposes.

2.2 The connection board

The connection board (CD96811) has two connectors. One is used to insert the CPU, the other is not used in CBS-3.
All the UARTs, from 1 to 4, are accessible through screw connectors located on the right side of the connection board. Only the TX, RX and GND signals are available.
In the lower right corner of the connection board there is the power supply block with two pins marked + and -. You must connect here the voltage source (10 to 30 V d.c.).

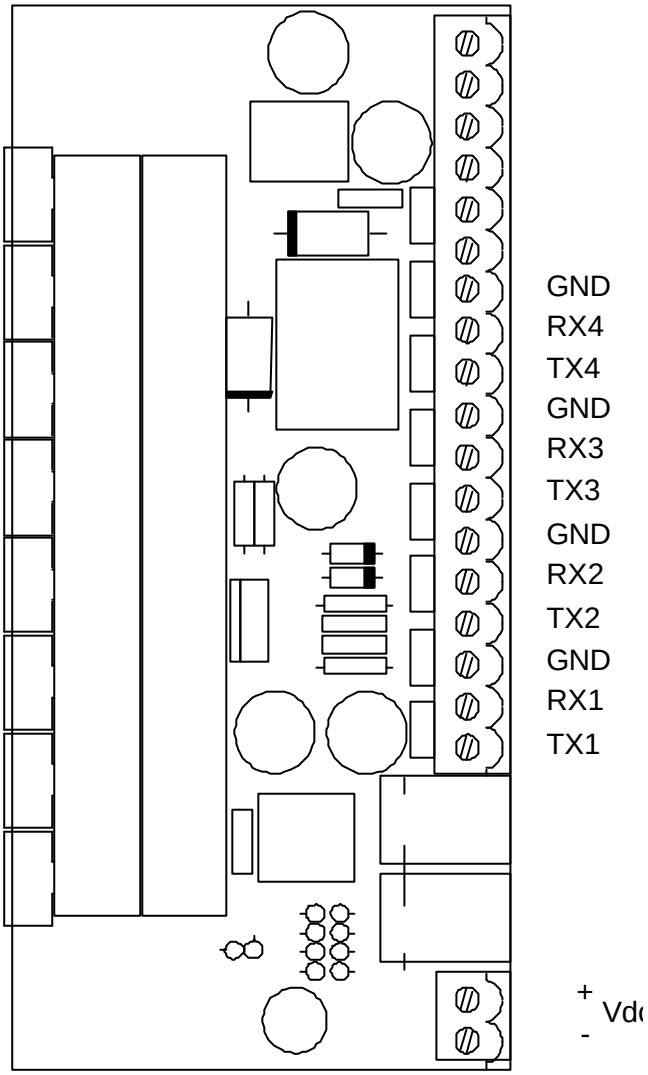


Fig. 2 The connection board

2.3 The network configuration of CBS-3

The Cerban Splitter CBS-3 is inserted in the network configuration shown in Fig. 2.4. It allows to connect any device which uses the Cerban protocol to two independent serial lines. The two lines can be connected to any device able to understand the Cerban protocol.
The following table sums up the UARTs connections to other network elements.

USART NUMBER	DEVICE	PROTOCOL
1	CS11/CS4	CERBAN
2	GATEWAY or USER DEVICE	CERBAN
3	GATEWAY or USER DEVICE	CERBAN
4	NONE	NONE

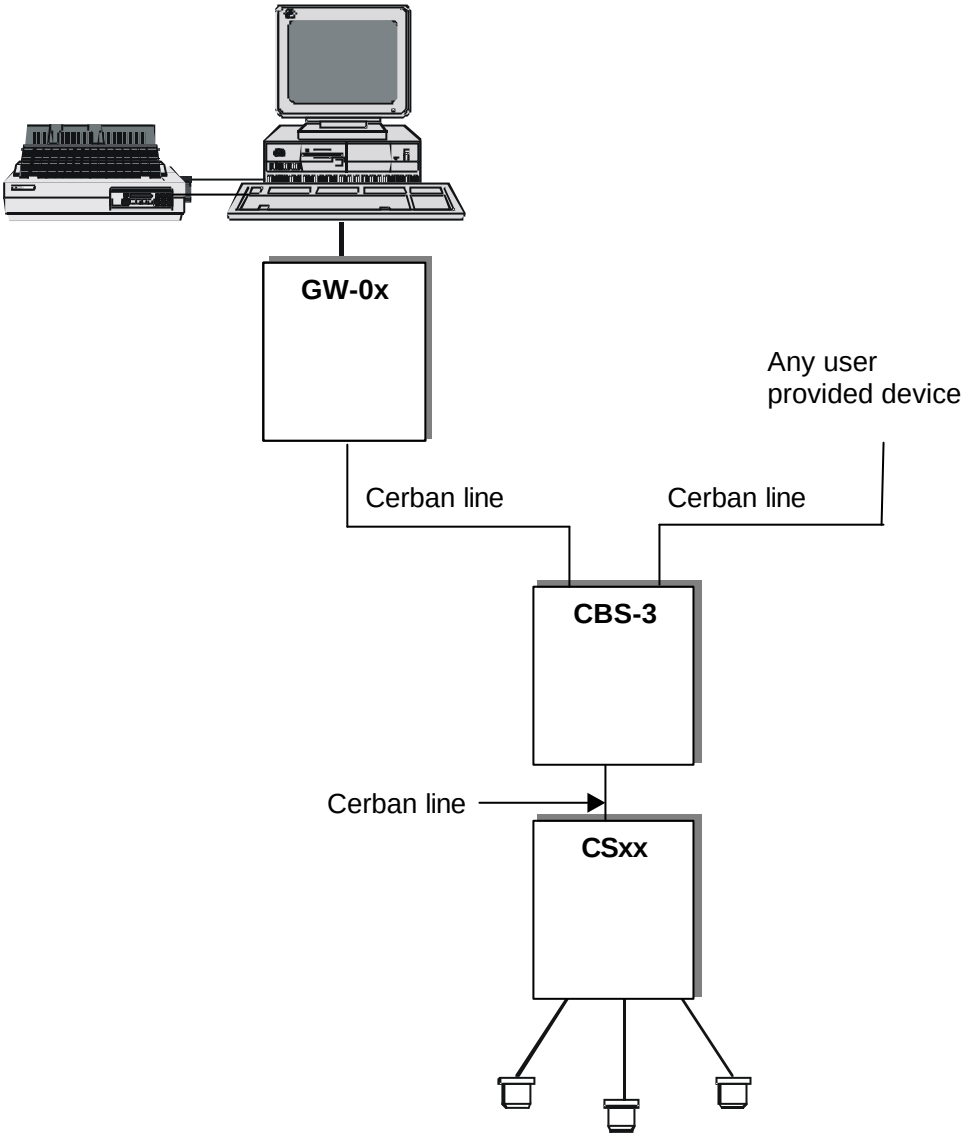


Fig. 3 The LMS/CMS network configuration

3 CPU board configuration

3.1 Introduction

On the CPU board you can find four groups of dip-switches, numbered from S1 to S4. A fifth block can be found on the expansion board if it is installed. The dip-switches replace the jumpers that were used on the CBS-3 for configuration purposes.
We will refer in this document to dip-switches with a double numbering convention: the fist number refers to the block the dip-switch belongs to, the second number is the switch position inside the block. Therefore, S1-2 means “the second dip-switch on the first block”.

CBS-3 configuration

The CBS-3 configuration can be done in two alternative ways:

- by dip-switches
- by Flash EPROM

Flash EPROM configuration is required when the Cerban Splitter has to handle interactions among subsystems. The Flash EPROM can be configured using a proper software tool provided by Cerberus Dati.

CBS-3 data-link

The CBS-3 can be connected to various devices, and namely to:

- CS11 fire detection control unit, manufactured by Cerberus
- CS4 intrusion detection control unit, manufactured by Cerberus
- CC60 gas detection unit, manufactured by Cerberus

What to configure

The switch S1-1 is used to discriminate between Flash EPROM configuration or dip-switches configuration. If it is set OFF, the dip-switches are irrelevant for configuration purposes. Otherwise, they set the CBS-3 parameters as described in the following section.

S1-1	Function
ON	Configuration by dip-switches
OFF	Configuration by Flash EPROM

Tab. 1 Function S1-1

3.2 Configuration by dip-switches

To configure the CPU board by dip-switches, the dip-switch S1-1 has to be set ON.
When you configure the CBS-3 by dip-switches you have to:

- set the Cerban vitality telegram option;
- set the ciphering option, when needed.

3.2.1 Subsystem setting

Only Cerban protocol subsystems can be used in conjunction with CBS-3.
To specify the type of subsystem connected to each UART you have to use the following two tables.
First of all define the dip-switches settings: look at Tab. 2 and identify the settings for the subsystem type you wish to connect to CBS-3. For instance, a CS11 requires the (OFF, OFF, ON) setting.
Then, using the Tab. 3, find out the dip-switches that are used by the UART to which the subsystem is connected; set the three dip-switches as specified.

In a CBS-3 up to six UART are available and so 18 dip-switches are reserved (Actually only four of them are available). They are divided into groups of three. Each group can assume the value corresponding to the subsystem you want connect.

SUBSYSTEM		**DIP-SWITCHES**	
	MSB		**LSB**
no subsystem	OFF	OFF	OFF
CS11/CZ10/CC60	OFF	OFF	ON
CS4/CZ12	OFF	ON	OFF

Tab. 2 Subsystem selection

UART	**DIP-SWITCHES**		
	MSB		**LSB**
1	S1.6	S1.5	S1.4
2	S2.4	S2.3	S2.2
3	S3.2	S3.1	S2.8
4	S3.8	S3.7	S3.6

Tab. 3 Association UART/subsystem

You must then set the communication baud rate according to the suggested protocol/baud rates (See section 6).

3.2.2 Cerban vitality telegram

The dip-switch S1-2 has the optional function to filter the Cerban vitality telegram; the dip-switch is valid for all of the Cerban line which are defined on the gateway.
The only reason to filter the vitality telegram is to limit the traffic of messages to the LMS station(s). Note that if the vitality check is enabled at LMS level, then this dip-switch must be set to ON, else LMS will generate false fault events.

S1-2	**Function**
OFF	Vitality telegram filtered
ON	Vitality telegram not filtered

Tab. 4 Cerban vitality telegram filtering

3.3 Configuration by Flash EPROM

If you have the configuration EPROM, you have to set OFF the dip-switch S1-1. The default configuration for this dip-switch set is for EPROM **not** installed, so you actually have only to verify the settings.
Even if the Flash EPROM configuration is enabled, you must set the communication baud rate with subsystems using the dip-switches and according to the suggested protocol/baud rates (See section 6).

4 Hardware installation

4.1 Inside the CS4

In the CS4 intrusion detection control unit the gateway can be mounted on some of the standard housings.
You need:

- 2 plastic spacers
- 2 self-tapping screws
- 4 metal spacers
- 2 short screws
- 2 long screws
- 2 board supports

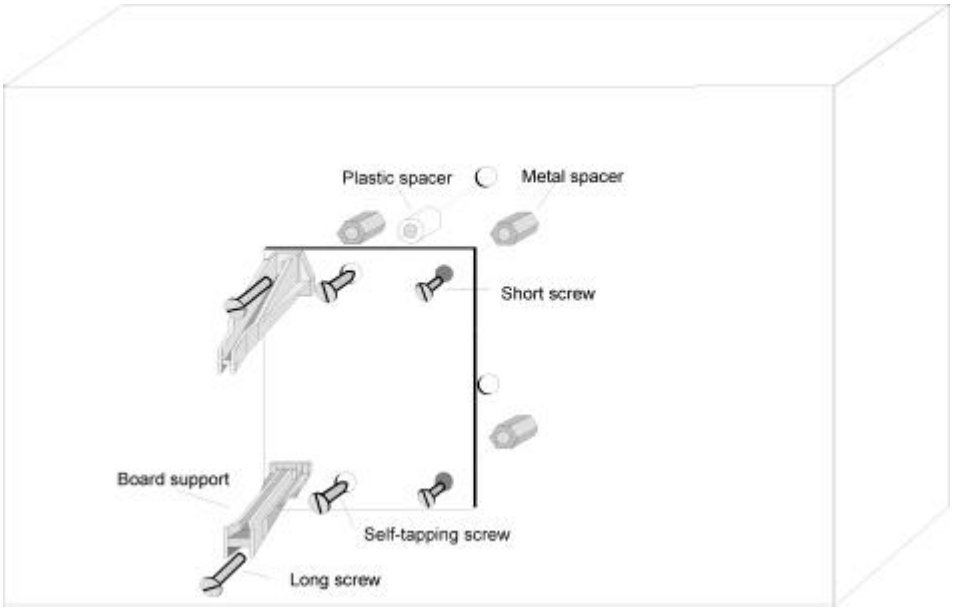


Fig. 4 Inside the CS4

4.2 Inside the CS11

In the CS11 intrusion detection control unit the gateway can be mounted on some of the standard housings.
You need:

- 4 plastic spacers
- 4 self-tapping screws
- 2 board supports

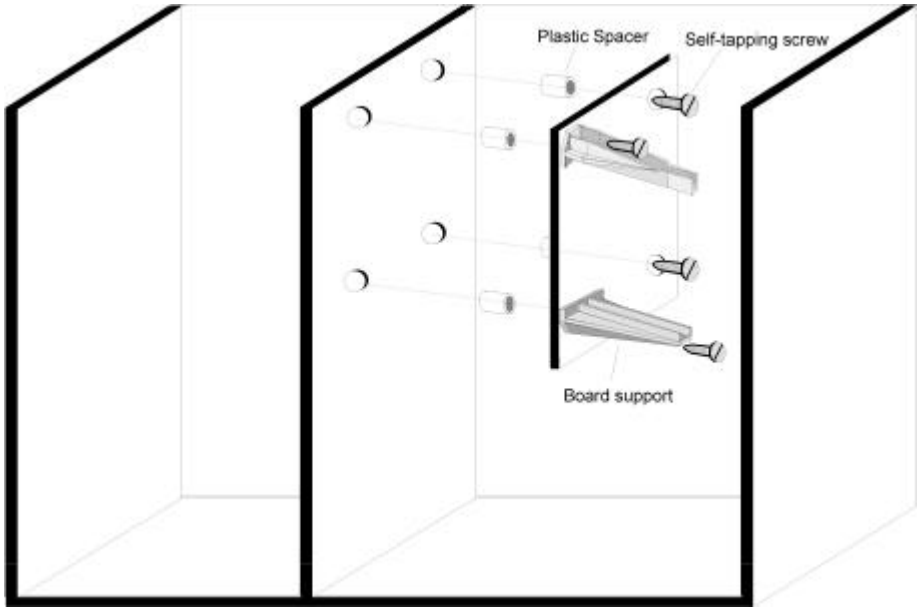


Fig. 5 Inside the CS11

4.3 Power supply

The gateway GW-21 is powered using the connector located on the connection board (Please refer to Fig. 2). Please pay attention to pin polarities.
The supply voltage must be in the range 10 to 30 V d.c.

5 Cables and connections

5.1 Connection to GW-20

The figure below shows how to connect the Cerban Splitter CBS-3 to the Gateway GW-20, to transmit messages to the CMS/LMS monitoring system.
Only UARTs 3 and 4 can be connected to the Gateway.

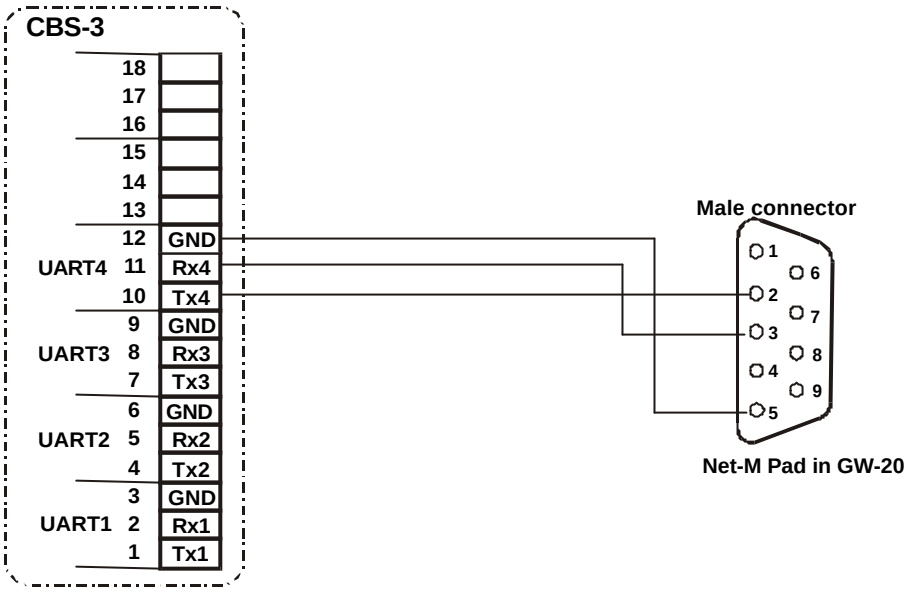


Fig. 6 GW-21/GW-20 connection (screw terminal block)

5.2 Connection to GW-21

The figure below shows how to connect the Cerban Splitter CBS-3 to the GW-21 asynchronous port.

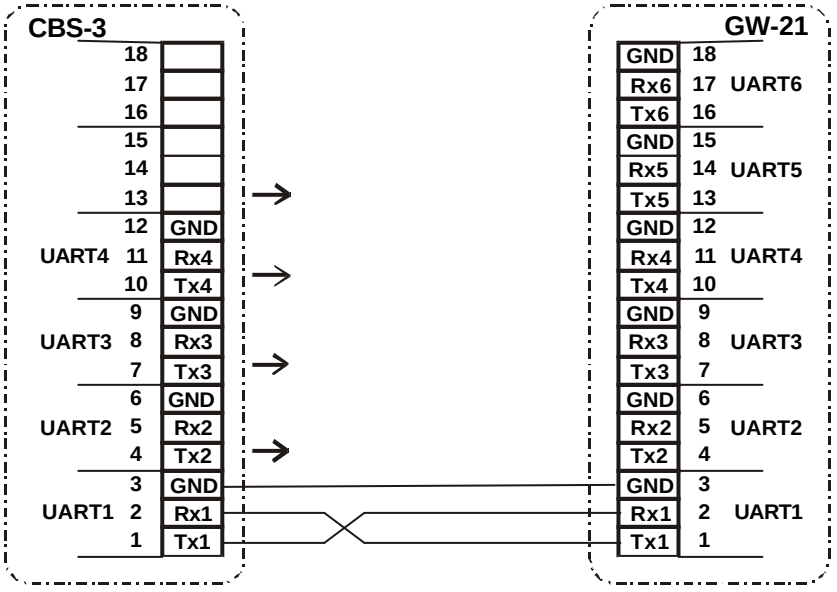


Fig. 7 Connection to GW-21

5.3 Connection to an user-provided device

The serial line getting out of the CBS-3 uses the Cerban protocol. **Be sure the device you connect to it is able to understand Cerban protocol**.
The user-provided device can be connected to UARTs 3 and 4 only. These CBS-3 lines are *master lines* and so **the user-provided device must act as a slave**.

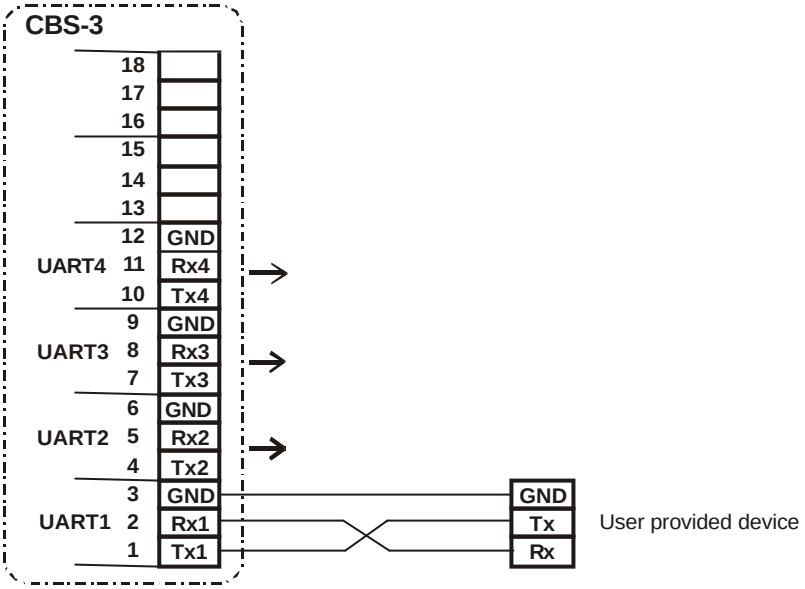


Fig. 8 Connection to an user-provided device

6 Baud rates

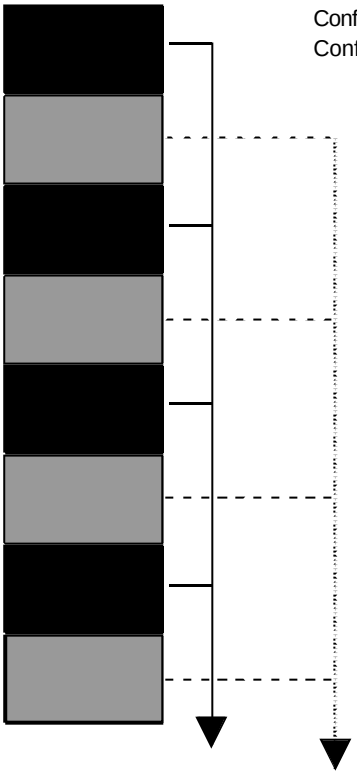
The only protocol available with CBS-3 is Cerban, that requires a baud rate setting of 300 bauds.
The following baud rates apply to the subsystems connected either to the CPU or the expansion board.

		BAUD RATE							
UART		**Spare**	**9600**	**4800**	**2400**	**1200**	**600**	**300**	**150**
1	S1.7	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S1.8	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S2.1	ON	ON	ON	ON	OFF	OFF	OFF	OFF
2	S2.5	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S2.6	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S2.7	ON	ON	ON	ON	OFF	OFF	OFF	OFF
3	S3.3	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S3.4	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S3.5	ON	ON	ON	ON	OFF	OFF	OFF	OFF
4	S4.2	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S4.3	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S4.4	ON	ON	ON	ON	OFF	OFF	OFF	OFF

Tab. 5 Dip-switch settings for baud rate

7 Dip-switches description

JUMPER	FUNCTION	VALUE
S1.1	Configuration	
S1.4	subsystem type UART 1	
S1.5	subsystem type UART 1	
S1.6	subsystem type UART 1	
S1.7	baud rate UART 1	
S1.8	baud rate UART 1	
S2.1	baud rate UART 1	
S2.2	subsystem type UART 2	
S2.3	subsystem type UART 2	
S2.4	subsystem type UART 2	
S2.5	baud rate UART 2	
S2.6	baud rate UART 2	
S2.7	baud rate UART 2	
S2.8	subsystem type UART 3	
S3.1	subsystem type UART 3	
S3.2	subsystem type UART 3	
S3.3	baud rate UART 3	
S3.4	baud rate UART 3	
S3.5	baud rate UART 3	
S3.6	subsystem type UART 4	
S3.7	subsystem type UART 4	
S3.8	subsystem type UART 4	
S4.2	baud rate UART 4	
S4.3	baud rate UART 4	
S4.4	baud rate UART 4	



S1.1	
Configuration by Flash EPROM	ON
Configuration by dip-switches	OFF

UART		BAUD RATE Spare	9600	4800	2400	1200	600	300	150
1	S1.7	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S1.8	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S1.9	ON	ON	ON	ON	OFF	OFF	OFF	OFF
2	S2.5	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S2.6	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S2.7	ON	ON	ON	ON	OFF	OFF	OFF	OFF
3	S3.3	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S3.4	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S3.5	ON	ON	ON	ON	OFF	OFF	OFF	OFF
4	S4.2	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	S4.3	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	S4.4	ON	ON	ON	ON	OFF	OFF	OFF	OFF

Subsystem	Dip-switches MSB		LSB
no subsystem	OFF	OFF	OFF
CS11/CZ10	OFF	OFF	ON
CS4/CZ12	OFF	ON	OFF

Fig. 9 Dip-switches description

Keyword index

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