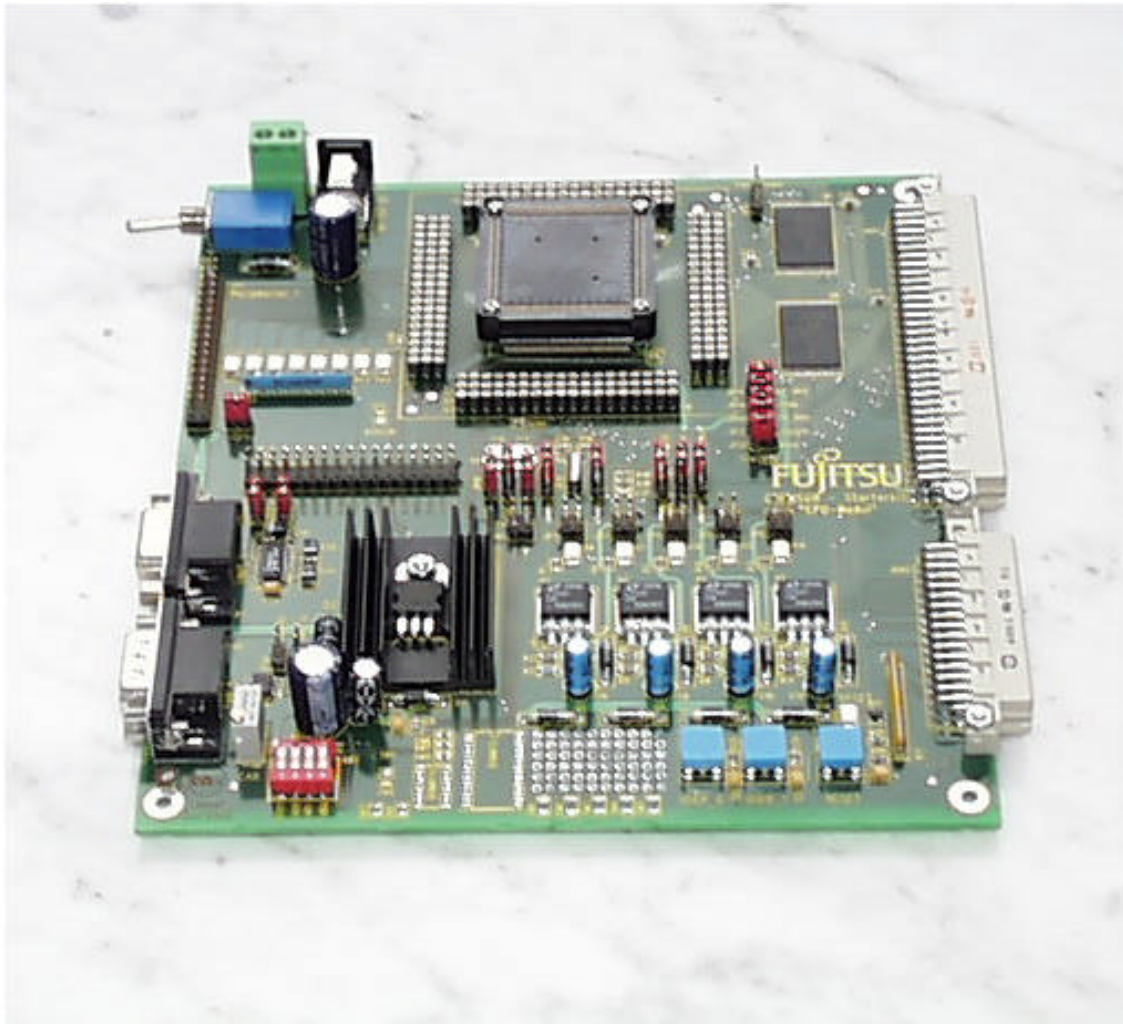


CPU-Modul Documentation

© **Fujitsu Microelectronics Europe GmbH**
Am Siebenstein 6-10
63303 Dreieich-Buchsschlag, Germany



History

Revision	Date	Comment
V1.0	08.03.01	New Document

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08.03.01 V1.0

1. Introduction

The Fujitsu CPU-Modul is a low cost multifunctional evaluation board for Fujitsu 32-Bit Flash microcontroller that makes it easy to evaluate and demonstrate almost all features of the MB91360 microcontroller series. It can be used stand alone for software development and testing as a simple target board to work with the emulator system. It gives you the possibility to develop and evaluate applications with devices of the new embedded-graphic-controller family. Its modular concept makes it available to use one of several graphic device subboards just by plugging them to the CPU board.

The board allows the designer immediately to start the software development before his own final target system is available.

2. Features

- Socket QFP208 for Microcontroller MB91F361 (or emulation socket), surrounded by headers for test-pins etc.
- 4MHz or 32 kHz crystal selectable
- DC Power supply circuit (incl. testpins for VCC, GND, power LED and switch)
- 1 MB external SRAM available for user code and data
- External Reset Button for MCU
- 2 Buttons for ext. Interrupt (USER_0 = ext. Interrupt0, USER_1 = ext. Interrupt1)
- MAX232 + DB9 (female) connector for internal UART
- CAN transceiver and DB9 (male) for internal CAN0
- 8 LEDs (on Port J)
- All peripheral pins are available by the connectors 'Peripheral_1' and 'Peripheral_2'
- Graphic controller interface

3. Jumpers and Switches

This chapter describes all jumpers and switches which can be modified on the evaluation board. The default setting is shown with a gray shaded area. All jumpers and switches are named directly on the board by its meaning, so it is very easy to set the jumpers according to the features.

3.1 Power Supply Voltage (SW1, JP11, JP12, JP13, JP14, JP15, JP25)

	Switch setting	Description
Power supply voltage (SW1)	1-2	Power ON
	2-3	Power OFF

	Jumper setting	Description
3V3 power supply (JP11)	ON (closed)	Power supply
	OFF (open)	NO Power supply

	Jumper setting	Description
5V0 power supply (JP12)	ON (closed)	Power supply
	OFF (open)	NO Power supply

	Jumper setting	Description
Bypass Capacitor Pin (JP13)	ON (closed)	Voltage regulator enable
	OFF (open)	Voltage regulator disable

	Jumper setting	Description
Power supply for SMT (JP14)	ON (closed)	Power supply
	OFF (open)	NO Power supply

	Jumper setting	Description
5V0 Power supply (JP15)	ON (closed)	Analog Power supply
	OFF (open)	NO Analog Power supply

	Jumper setting	Description
Power supply for LEDs (JP25)	ON (closed)	Power supply
	OFF (open)	NO Power supply

NOTE:

The supply voltage for the core and the IO Pins must be set. Otherwise it could happen that the controller does not work correctly!

3.2 Operating Mode (SW2)

SW2	DIP switch setting	Logical value	Description
Boot signal (SW2/1)	ON	0 (low)	Boot signal
MD2 (SW2/2)	ON	0 (low)	Internal ROM mode
MD1 (SW2/3)	ON	0 (low)	
MD0 (SW2/4)	ON	0 (low)	

3.3 UART (JP21, JP22)

	Jumper setting	Description
SOT_0 (JP21)	ON (closed)	UART0 Output enable
	OFF (open)	UART0 Output disable

	Jumper setting	Description
SIN_0 (JP22)	ON (closed)	UART0 Input enable
	OFF (open)	UART0 Input disable

Reserved future extension:

	Description
SIN_2 (JP7)	UART2 Input enable

	Description
SOT_2 (JP8)	UART2 Output enable

	Description
UART2 clock (JP9)	UART2 clock enable

3.4 Chip select enable for FLASH (JP10)

CS	Jumper setting	Description
CS2	ON (closed 1-2)	Ext. Flash – Chip-Select2
CS3	ON (closed 2-3)	Ext. Flash – Chip-Select 3

3.5 Hardware Standby (JP16)

	Jumper setting	Description
HSTX (JP16)	1-2	HSTX request is released
	2-3	

3.6 Clock Select (JP17, JP18, JP19, JP20)

	Jumper setting	Description
SELCLK (JP17)	1-2	Clock enable
	2-3	Clock disable

	Jumper setting	Description
4MHz clock (JP18)	1-2	4MHz clock enable
	2-3	4MHz clock disable

	Jumper setting	Description
32kHz clock (JP19)	1-2	32kHz clock enable
	2-3	32kHz clock disable

	Jumper setting	Description
Low pass filter (JP20)	1-2	Low pass filter for clock enable
	2-3	Low pass filter for clock disable

3.7 CAN controller interface (JP23, JP24)

	Jumper setting	Description
CAN transmit (JP23)	ON (closed)	Transmit data enable
	OFF (open)	Transmit data disable

	Jumper setting	Description
CAN receive (JP24)	ON (closed)	Receive data enable
	OFF (open)	Receive data disable

Header for Debug Signals

Power supply voltage (JP1, JP2, JP3, JP4, JP5, JP6)

- JP1 - 12V – GND
- JP2 - 5V – GND
- JP3 - 3.3V – GND
- JP4 - 2.5_1V – GND
- JP5 - 2.5_2V – GND separated voltage
- JP6 - 2.5_3V – GND separated voltage

MCU Peripheral Signals

Peripheral_1

- BUS_PH7-0 - A/D Converter input [7:0]
- BUS_PG7-0 - A/D Converter input [15:8]
- PI3 - ATGX – A/D converter Trigger input
- DA0 - D/A Converter output 0
- DA1 - D/A Converter output 1
- ALARM - Alarm comparator input
- BUS_PK7-4 - External Interrupt [7:4]
- BUS_PL3-0 - Input Capture Unit input [3:0]
- BUS_PL7-4 - Output Compare Unit output [7:4]

Peripheral_2

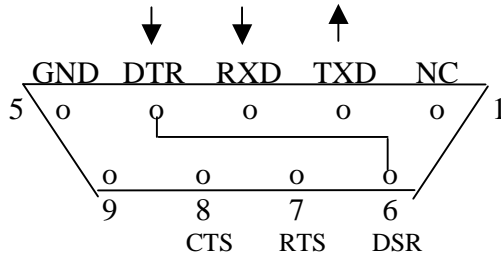
- PM0 - Sound Generator SGO
- PM1 - Sound Generator SGA
- BUS_PN5-0 - Serial I/O Interface signals (SOT3-4, SIN3-4, SCK3-4)
- BUS_PO7-0 - PPG output [7:0]
- PP5-2 - CAN Controller Signals (TX0-1, RX0-1)
- PQ5-2 - Serial I/O Interface signals (SOT1-2, SIN1-2)
- BUS_PR7-0 - PWM Pulse Generator Signals for Stepper Motor Controller

For more information please look at the Hardware Manual of the microcontroller and the Data Sheet of the SRAM 29LV400TC.

4. Connectors

4.1 Serial Interface Connector P1

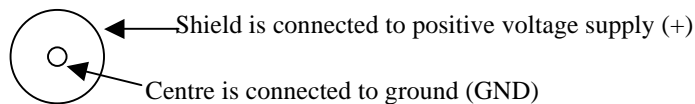
The following diagram shows the connection of the 9-pin D-Sub female connector P1 which is used for the serial interfaces.



TXD is the transmit output, RXD is the receive input. The DTR signal is used as an input, which can be connected to generate a reset.

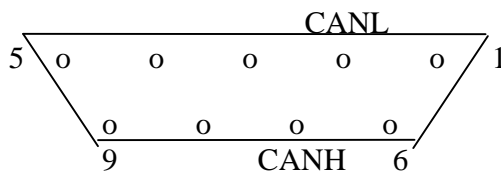
4.2 Power Connector J1

The following figure shows the power connection jack J1. This connector is used to connect an external regulated DC power supply voltage (7.5V-12V DC) to the evaluation board. It is recommended to use 7.5V to keep the power dissipation to a minimum. Otherwise an additional heat sink for the linear voltage regulator might be necessary.



4.3 CAN Interface Connector

The following diagram shows the connection of the 9-pin D-Sub male connector P2 which is used for the CAN interface.



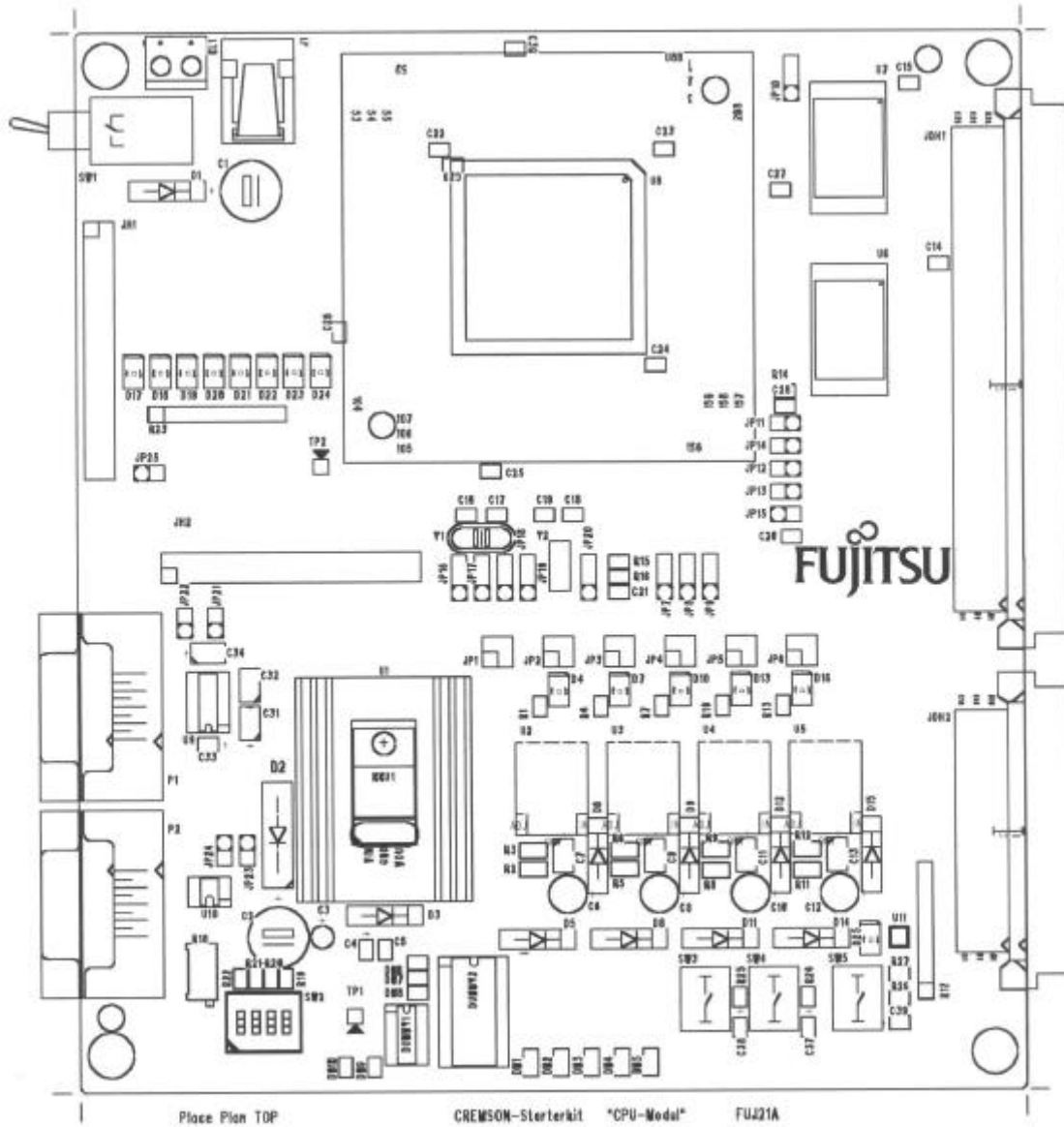
For the CAN interface the resistor trimmer R18 is used to adjust the slew rate. Take care that the slew rate is adjusted according to the local environment (CAN network configuration, transfer rate)

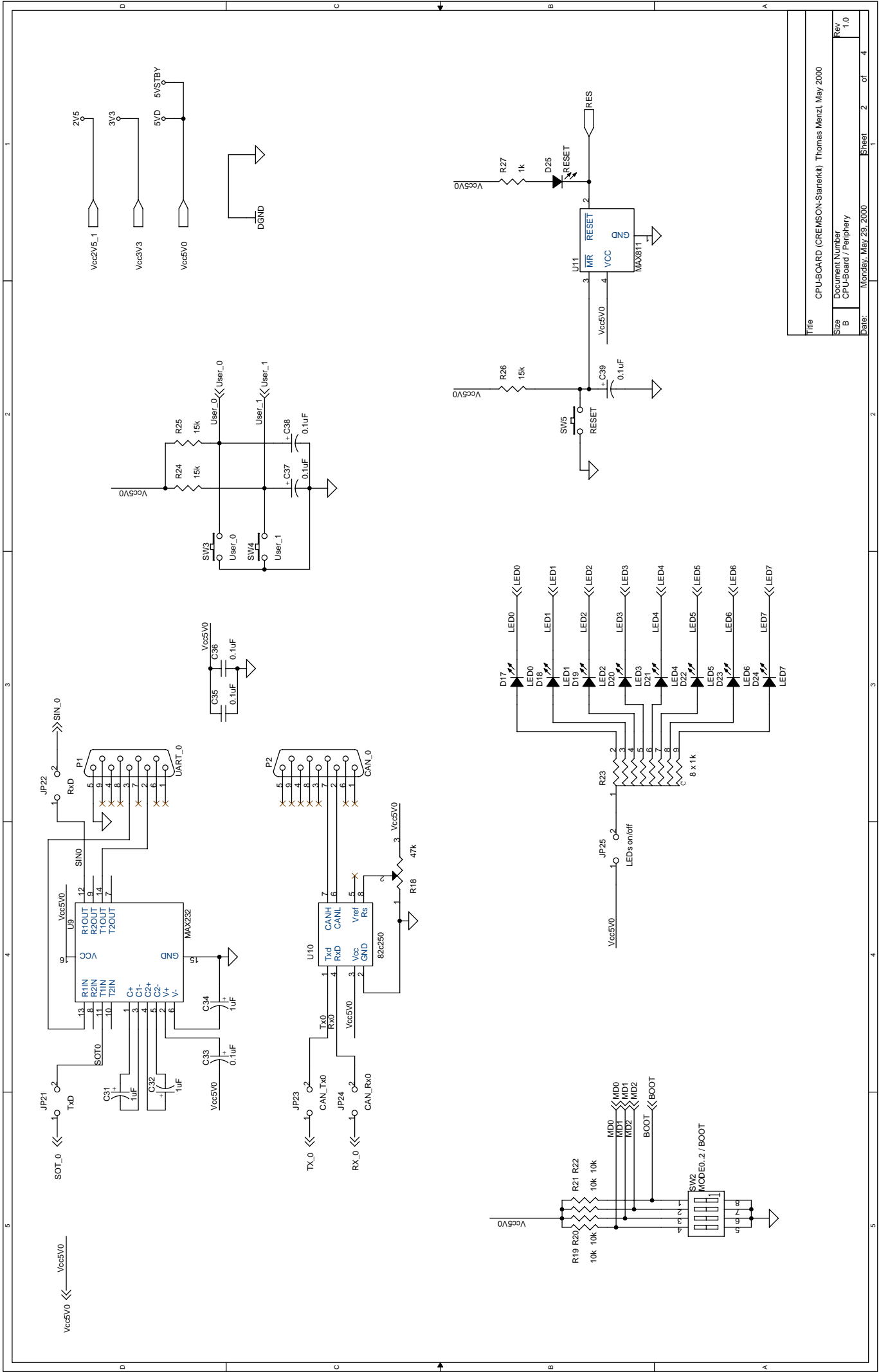
NOTE: To use the board as target for the In-Circuit-Emulator, unscrew the socket and remove the MB91F361 from the socket. Be careful not to bend any pins of the chip ! Using a vacuum chip-handler is highly recommended.

Then mount the emulator probe-cable on top of the QFP-socket. Use the provided screws and make sure the cable has the right orientation.

Follow the emulator set-up manual on the CD-ROM for any further steps.

5. Schematics and Drawings





Title			
CPU-BOARD (CREIMSON-Startkit) Thomas Menzl, May 2000			
Size	Document Number		Rev
B	CPU-Board / Periphery		1.0
Date:	Monday, May 29, 2000	Sheet	2 of 4

TP3 & TP4:
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 Messfall anzuschließen!

TP3
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