SD-Card Adapter 2

Version of Product: 1.1

Technical Documentation

1 Introduction

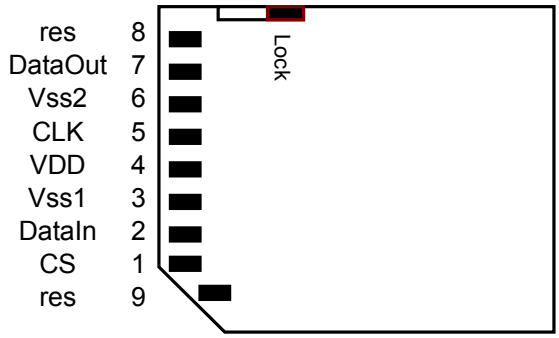
SD-Card Reader

The SD Memory Card provides application designers with a low cost mass storage device, implemented as a removable card, that supports high security level for copyright protection and a compact, easy-to-implement interface.

The SPI compatible communication mode is designed to communicate with a SD Memory Card. As any other SPI device the SD Memory Card SPI channel consists of the following four signals:

CS:	Chip Select signal
CLK:	clock signal
DataIn:	Tiger to card data signal
DataOut:	card to Tiger data signal

SD-Card Pad Definition (SPI Bus Mode)



2 Features

The SD-Card Adapter 2 is designed as I/O module for the Tiger X-Bus. It can easy connected to our products with this bus system. Additional adapter are not necessary. The SD-Card Adapter 2 can installed in a case by using the included M3 fasteners.

For reading and writing to the SD-Card you can free download our software with or without FAT system.

Note: By using FAT system the card capacitate is limited to 2GB.

Here the main features:

- SPI interface for communication
- compatible to Tiger X-Bus
- LEDs signal the state of card
- usable for SD-Card
- easy mounting with fasteners

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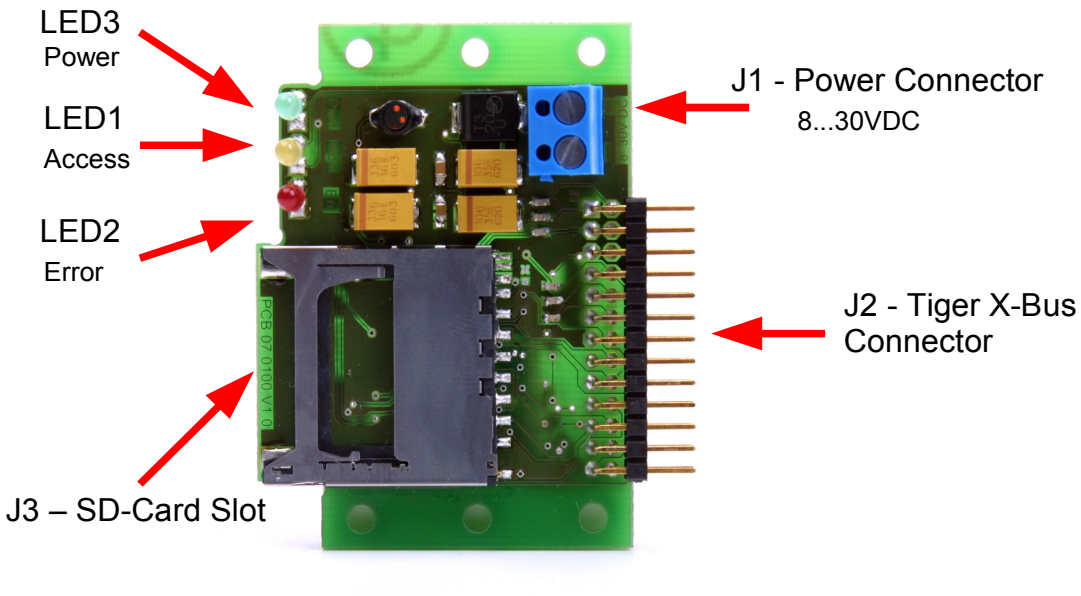
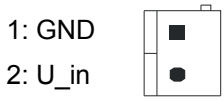


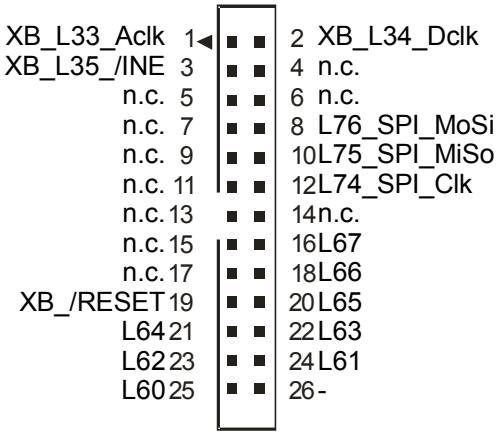
3 Control Elements and Connectors

Power Supply

You can connect the power supply 8V...30V DC at connector J1.



Connector J1



Connector J2

Tiger X-Bus Connector

At connector J2 you can plug in the Tiger X-Bus. It is used for communicate with the CPU module. Used signal pins of Tiger X-Bus are listed in the following table:

The X-Port on address **0xF8** is used to control the SD Memory Card and display the status of the card.

You can read or set them with the X-Port by using address $F8_{hex}$. The following table shows the defined Pin No and the sense of signal:

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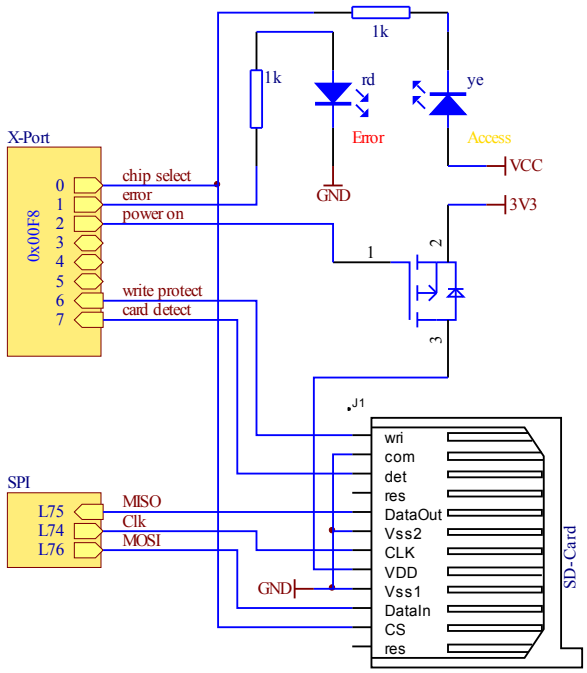

Pin No	*Signal*	*description*	*status*	
0	Access	Equal CS (Chip Select)	0	Card mounted (LED on)
			1	Card unmounted (LED off)
1	Error	Show any kind of error	0	No error (LED off)
			1	Error (LED on)
2	Power	Turn Power on or off	0	Power on
			1	Power off
6	wri	Write protection	0	Write unprotected
			1	Write protected
7	det	Card detection	0	Card detected
			1	Card not detected

SD Card Slot J3

Here you can plug in your SD-Card.

Please don't remove, if Card is mounted and the access LED is light.

LED 1 Access

The yellow Access LED light up by read or write access. The LED is connected to signal '*chip selected*' of the Card.

LED 2 Error

The red Error LED is designed for signal every kind of error by using the SD-Card. If you want write on a write protected card, this LED will be light up too.

LED 3 Power

The green Power LED light up if the power supply for the SD-Card is ready.

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4 Used IO Ports of the Tiger

TINY-Tigers IO	***used for:***
L33	on Tiger X Bus as XB_L33_Aclk (low address byte) and intern as address clock signal for the extended ports. *high active output*
L34	on Tiger X Bus as XB_L34_Dclk and intern as data clock signal for the extended ports. *high active output*
L35	on Tiger X Bus as XB_L35_/INE and intern as input enable signal for the extended ports. *low active output*
L60 to L67	multiplexed data and adress lines used by Tiger X Bus
L74	SPI clock line
L75	SPI master (Tiger) in slave out data line
L76	SPI master (Tiger) out slave in data line

5 Used Extended Port Addresses

Portaddress physical address	***bits***	***used for:***
$F8_{hex}$ (SD-Card)	0	Chip select
	1	Err LED
	2	Power on
	3	-
	4	-
	5	-
	6	Write protection
	7	Card detection

6 Technical Specifications

Absolute Maximum and Minimum Ratings

(beyond which permanent damage may occur)

maximum supply voltage Vcc (in respect of GND)	30V DC
input voltage at digital input	0...5.5V DC
operating temperature	-20°C...80°C

Electrical Specifications

supply voltage U_in	8...30V DC
supply current at 8V input voltage at 30V input voltage	 35mA 14mA
FUSES:	
F1	MiniSMD 0.14A

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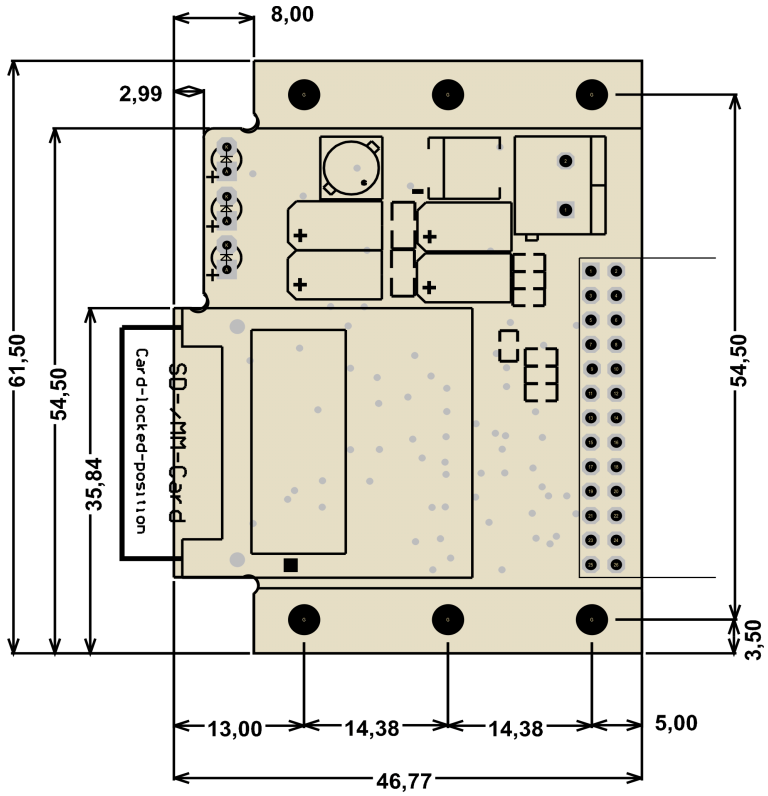
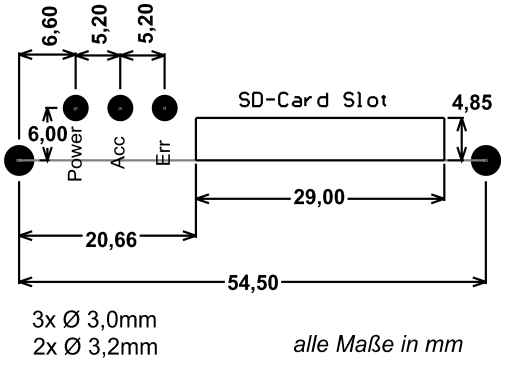
Module Dimensions



6x Ø 3,2mm

alle Maße in mm

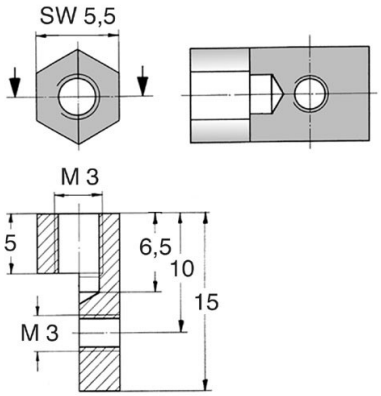
Front Dimensions



3x Ø 3,0mm
2x Ø 3,2mm

alle Maße in mm

Fastener (Ettinger Item No.: 05.60.331)



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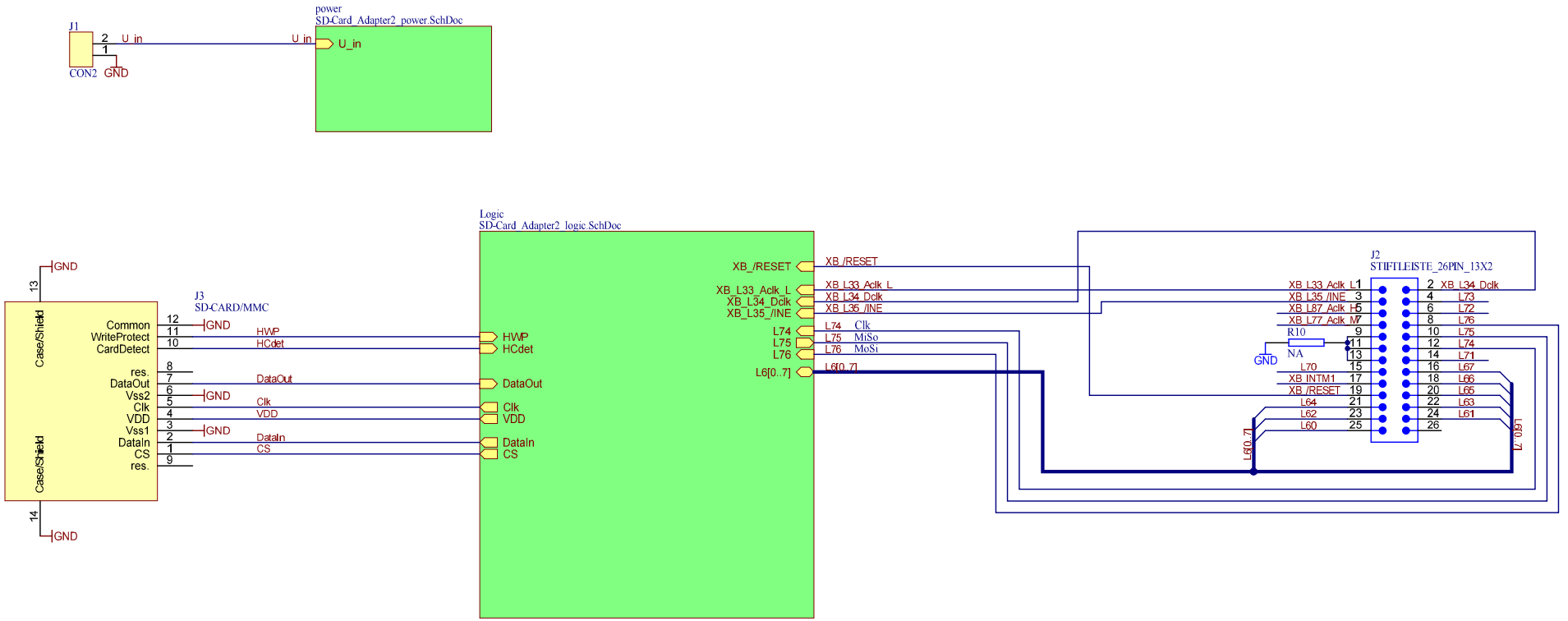
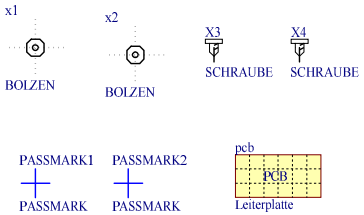
7 Documentation History

Version of Documentation	*Version of Product*	*Description / Changes*
V001	V1.0	preliminary version
V002	V1.0	Add drawings
V003	V1.0	Final version
V004	V1.1	Correct schematics
V005	V1.1	Add description

main





Assembly
Ass

Wilke Technology	Project:	SD-Card Adapter2		
Project No.:	PCB No.: PCB07.0100.V1.1	B1_0	Sheet	1 of 3
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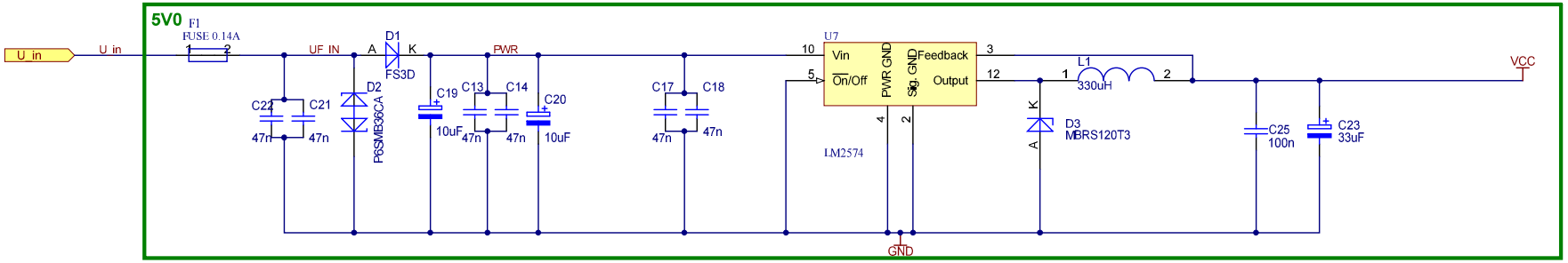
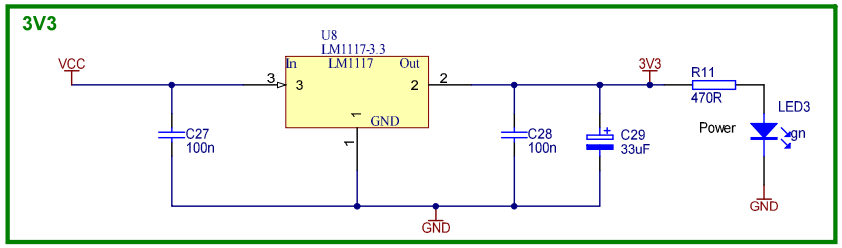
Date:	Revision:	Designer:	Release of PCB for Prototype pilot series series	Changes documentated in:
02.Jan.2007	V1.0	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc
17.Sep.2007	V1.1	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc

power





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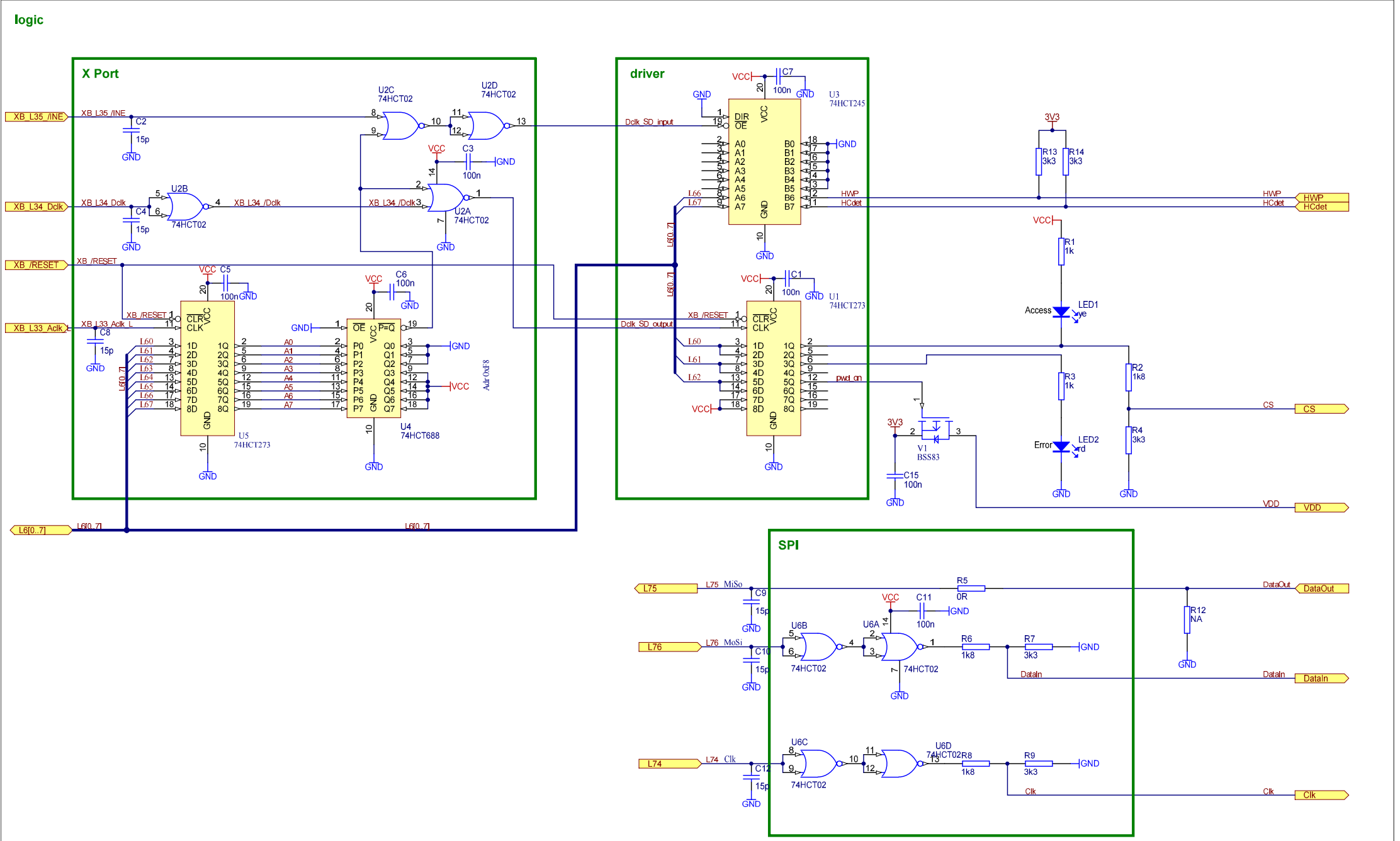
Date:	Revision:	Designer:	Release of PCB for Prototype pilot series series	Changes documentated in:
02.Jan.2007	V1.0	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc
17.Sep.2007	V1.1	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc



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Date:	Revision:	Designer:	Release of PCB for Prototype pilot series series	Changes documentated in:
02.Jan.2007	V1.0	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc
17.Sep.2007	V1.1	M.Dicke		P:\SD-Card_Adapter2\PCB\History_SD-Card_Adapter2.doc