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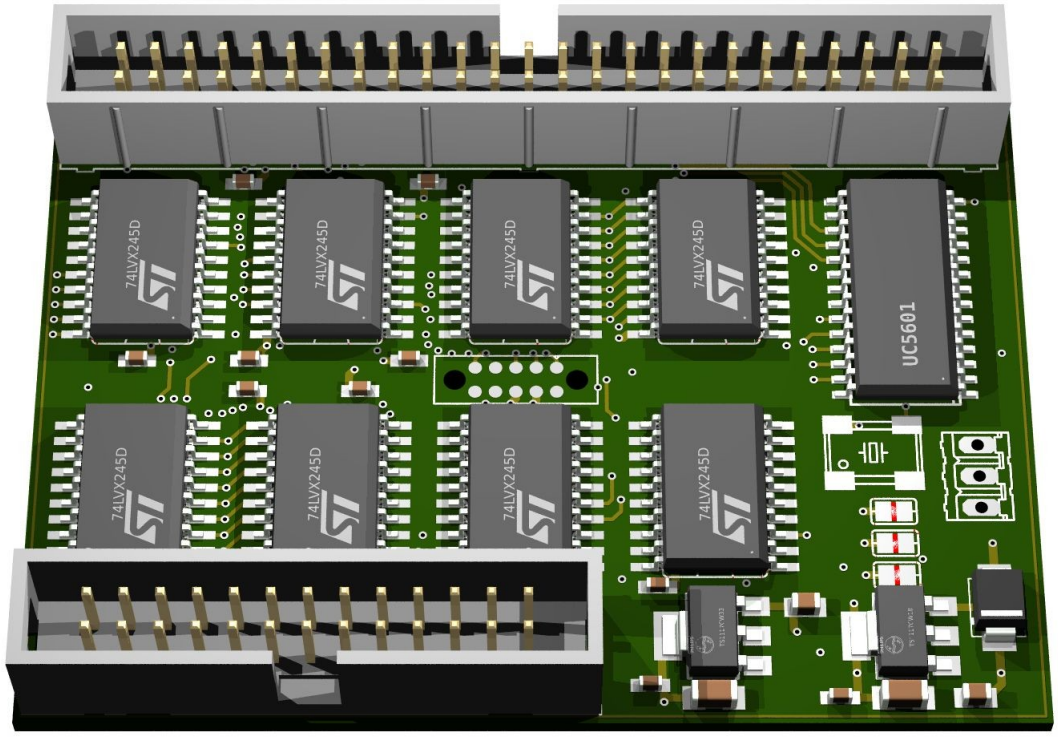
Suska ACSI-SCSI Adapter



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Subject to change without notice.

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Introduction

The Suska ACSI-SCSI adapter allows the operation of up to 7 Devices with parallel, non differential SCSI interface at the ACSI bus of Atari ST computers. The adapter supports bus parity and initiator identification. Thus, it is possible to connect SCSI-Components which meet the SCSI-1, SCSI-2 or SCSI-3 standard. Using appropriate hard disk drivers like the HDDRIVER in an actual version, furthermore it is possible to use SCSI commands of all SCSI command classes. This large command extension, which distinguishes the adapter from a simple ACSI interface, allows for example the use of big hard disc drives or removable media devices without any problem (if there is a driver software for the devices).
The hardware of the Suska ACSI-SCSI adapter is designed in a way, that the protocol translation is done in a modern CPLD (**C**omplex **P**rogrammable **L**ogic **D**evice) and the level shifting between the nowadays often used 3,3V technique and the 5V levels of the ST computers and the SCSI devices is realized using line drivers. the digital design is modelled synchronously and therefore robust against noise on the signals. The power supply for the CPLD and the clock source is located on the ACSI-SCSI adapter which only requires a single operating voltage of +5V.

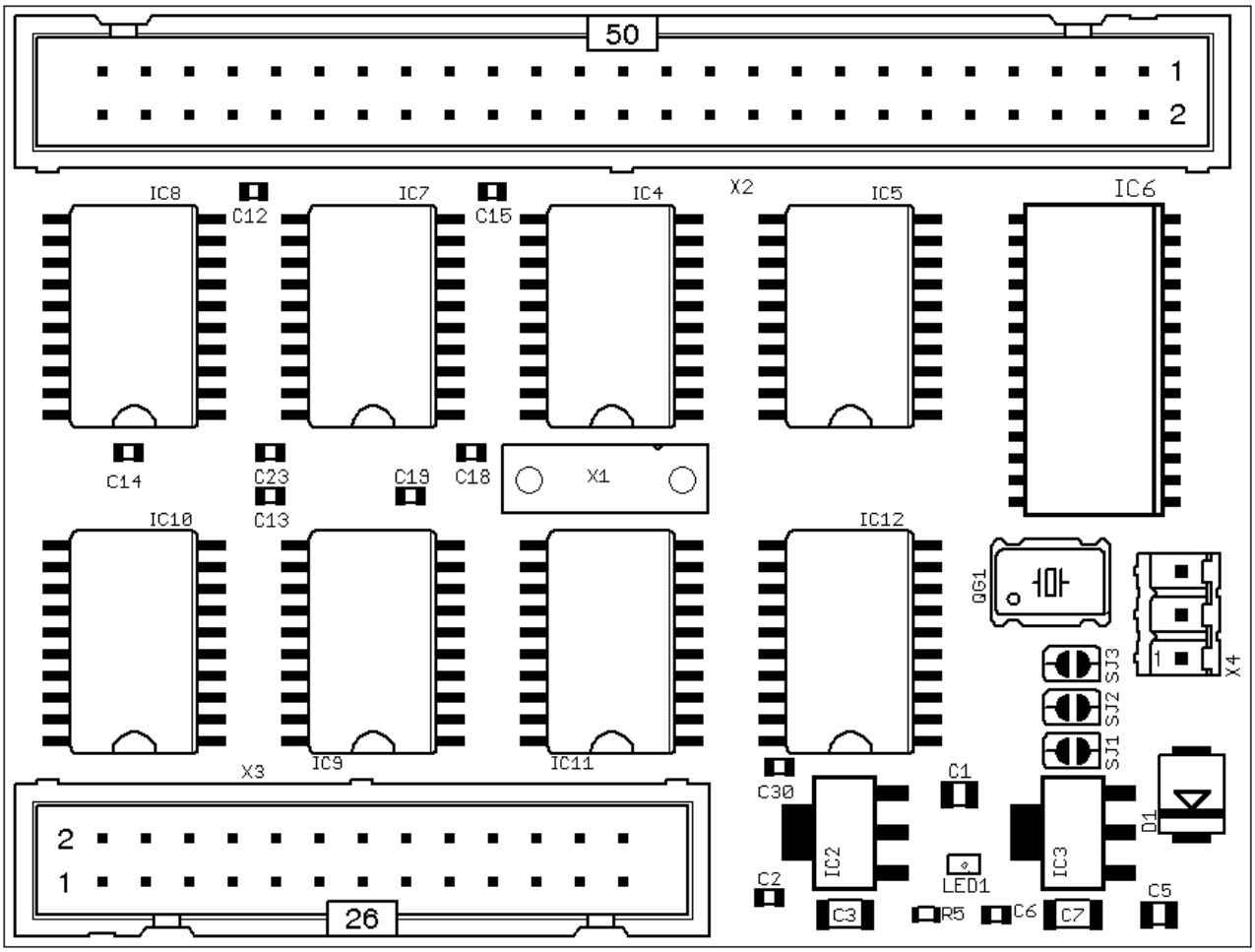

Figure 1: Top View of the ACSI-SCSI Adapter

Operation Preparations

The ACSI-SCSI adapter is connected via two connector for the buses and optional via a third power supply connector.

Installation of the ACSI Connector

On the ACSI side there is required a 26 pos. female header to connect the adapter with the ST series computers. In the annex there is a table with the pin description of this connector. It is arranged in a way, that a 19 pos. crimp technique D-SUB connector can be mounted, if the pin positions number 1 to 19 of the 26 pos. header are used and the pin positions 20 through 26 are left open or used in connection with the power supply (look ahead for more information). For internal use of the adapter within the ST computers it is required, that the ACSI cable is on the one hand mounted to a 26 pos. female header and on the other hand wired correctly to the respective main board. At this point, it is not possible to give a universal information how to connect the ACSI cable because there are too many different ST machine type and main board revisions. It is recommended to involve an expert in case of any doubts. If the adapter is used internally, it is furthermore recommended to use the computer power supply for the operation of the ACSI-SCSI adapter.

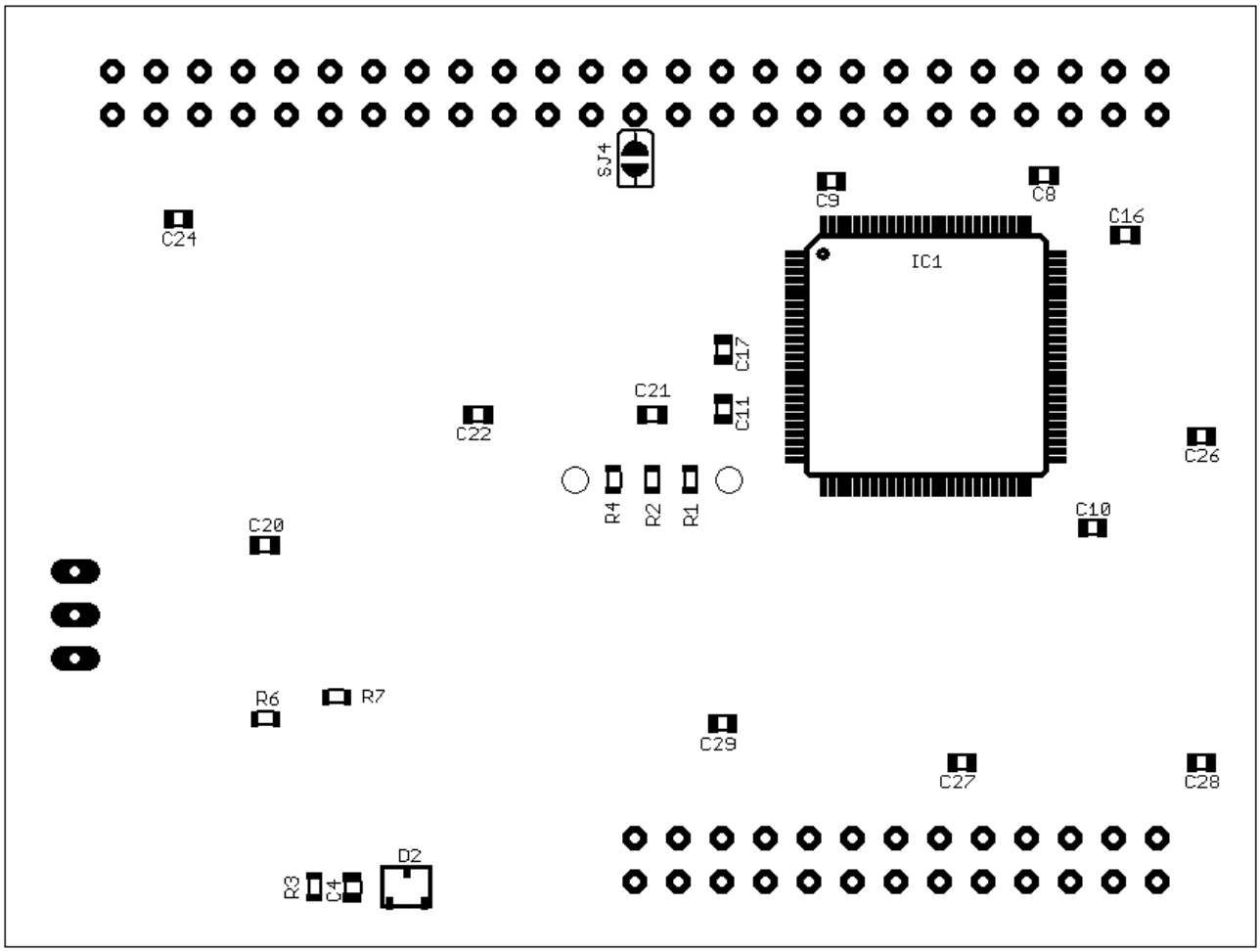

Figure 2: Bottom View of the ACSI-SCSI Adapter with partial Mounting of Components.

Installation of the SCSI Connector

The connection of the SCSI devices with the ACSI-SCSI adapter is accomplished by using a standard 50 pos. flatband cable with female headers at each side. The pin description of this connector is described in the annex.

Power Supply

The power supply for the adapter can be realized in one of the three following ways:

1. The 26 pos. ACSI header X3 carries out 4 dedicated pins for the +5V power supply connection; positions 23 through 26. Additionally The pins 20, 21 and 21 are connected to the adapter's ground.
2. There is a dedicated power supply header X4 with the following pin description: pins 1 and 3 = +5V, Pin 2 = 0V. See also Figure 1.
3. By the TermPower line of the SCSI connector. Using this possibility it is required, that the SCSI device is configured in a way, that the terminator power is driven by this device. To use this feature it is also required, that the jumper SJ4 a the bottom side of the printed circuit board is closed, see Figure 2.

Important: it is not allowed to drive the power supply for the ACSI-SCSI adapter by two or more sources. Otherwise a proper operation is not guaranteed or there may result a damage to the hardware!

The LED mounted on the top of the printed circuit board indicates a correct powering of the adapter.

Configuration of the Initiator Identification Number

On the top side of the printed circuit board there are three configuration jumpers SJ1 through SJ3 (see Figure 1). Closing one ore more jumpers will result in different initiator IDs as described in the following table. The default setting for the jumpers ar all open which means ID7.

SJ3	**SJ2**	**SJ1**	**ID**	**SJ3**	**SJ2**	**SJ1**	**ID**
Open	Open	Open	**7**	Closed	Open	Open	**3**
Open	Open	Closed	**6**	Closed	Open	Closed	**2**
Open	Closed	Open	**5**	Closed	Closed	Open	**1**
Open	Closed	Closed	**4**	Closed	Closed	Closed	**0**

Bus Termination

A correct bus termination is the first requirement for a proper operation. The Suska ACSI-SCSI adapter features an optional active bus termination device, a UC5601 from Texas Instruments in a 28 pos. SO package. This integrated circuit is intended to terminate the SCSI bus correctly. Further possibilities for bus termination are using external terminators. Please be aware, that in case of using more than one SCSI device on the bus, only the last device at the end of the cable may be terminated. All others should be configured with inactive terminators. There could be successfully tested the configuration of the ACSI-SCSI adapter with only one SCSI device and a short cable terminated only by the device.

Annex

Pin Description of the 26 pos. ACSI Connector

Pin No.	Function
1	ACSI Data Bus Bit D0
2	GND
3	ACSI Data Bus Bit D1
4	ACSI-RESETn
5	ACSI Data Bus Bit D2
6	GND
7	ACSI Data Bus Bit D3
8	ACSI-HDACKn
9	ACSI Data Bus Bit D4
10	GND
11	ACSI Data Bus Bit D5
12	ACSI-CA1
13	ACSI Data Bus Bit D6
14	GND
15	ACSI Data Bus Bit D7
16	ACSI-CR/Wn
17	ACSI-HDCSn
18	ACSI-HDRQn
19	ACSI-HDINTn
20	GND
21	GND
22	GND
23	+5V
24	+5V
25	+5V
26	+5V

Pin Description of the 19 pos. ST Type ACSI Connector

Pin No.	**Function**
1	ACSI Data Bus Bit D0
2	ACSI Data Bus Bit D1
3	ACSI Data Bus Bit D2
4	ACSI Data Bus Bit D3
5	ACSI Data Bus Bit D4
6	ACSI Data Bus Bit D5
7	ACSI Data Bus Bit D6
8	ACSI Data Bus Bit D7
9	ACSI-HDCSn
10	ACSI-HDINTn
11	GND
12	ACSI-RESETn
13	GND
14	ACSI-HDACKn
15	GND
16	ACSI-CA1
17	GND
18	ACSI-CR/Wn
19	ACSI-HDRQn

Note: The pin numbers are normally marked on the D-SUB type connectors. Otherwise be careful using the correct numbering. In comparision to the pin headers' numbering, the pins are not arranged alternating; the correct numbering is row by row.

Pin Description of the 50 pos. SCSI Connector

Pin No.	**Function**	**Pin No.**	**Function**
2	/SCSI-D0	1	GND
4	/SCSI-D1	3	GND
6	/SCSI-D2	5	GND
8	/SCSI-D3	7	GND
10	/SCSI-D4	9	GND
12	/SCSI-D5	11	GND
14	/SCSI-D6	13	GND
16	/SCSI-D7	15	GND
18	/SCSI-PARITY	17	GND
20	GND	19	GND
22	GND	21	GND
24	GND	23	GND
26	TermPower	25	-
28	GND	27	GND
30	GND	29	GND
32	/ATN	31	GND
34	-	33	GND
36	/BSY	35	GND
38	/ACK	37	GND
40	/RESET	39	GND
42	/MSG	41	GND
44	/SEL	43	GND
46	/C_D	45	GND
48	/REQ	47	GND
50	/I_O	49	GND

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