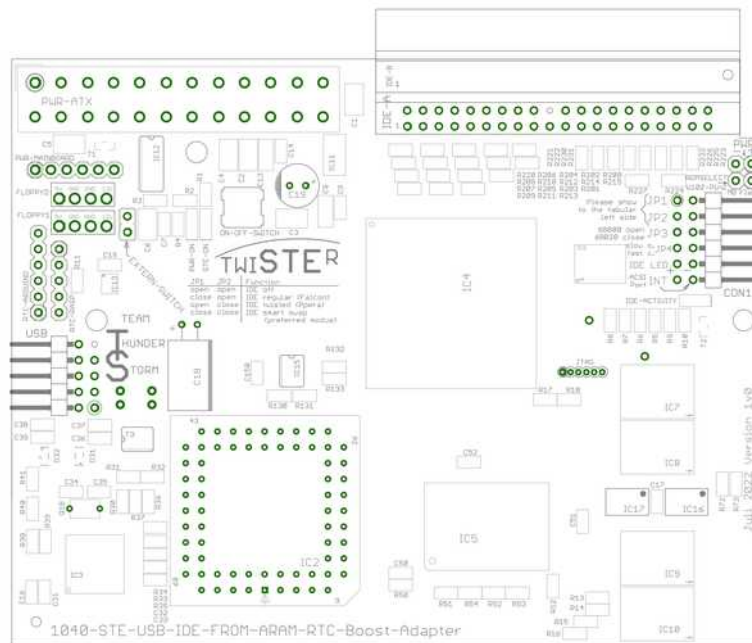# TWISTER

Thunderstorm team
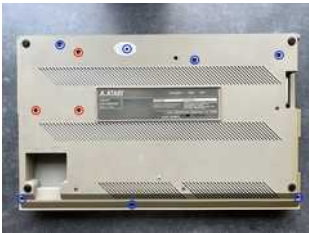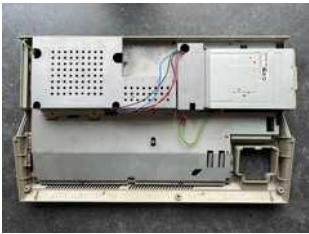
first draft: April 2022
Version: 7. Oktober 2022

This document is a short instruction for the TWISTER.
The complete instruction you'll find in the german full instruction.

1   Instruction

1.1   Tables

	checklist computer modifications	
No.	picture	to do
1		Loosen all screws on the back of the computer.
2		Turn the computer around and pull out the keyboard connector.
3		Again loosen all visible screws and the metal sheets. Also remove the floppy drive and put it aside. Please be careful with the cables!
4		Loosen the two screws of the power supply.
5		Pull the metal shield together with the mainboard out of the bottom shell of housing. Put the lower case aside.
6		Loosen the screw on the back of the power supply and pull the plug from the power supply towards the mainboard. Then remove the top metal shield.
7		Remove small parts, screws, dirt. etc. from the mainboard.

checklist computer modifications

No.	picture	to do
8		Perform Blitter patch and convert jumpers W102, W103 and W104 to real jumpers.
9		Make optional changes – as required – to the mainboard.
10		Install the mainboard back into the bottom shell of housing and make a functional test of your computer.
11		Remove the original 68000 processor out of his socket on the mainboard and put it into the socket on the TWISTER . Please pay attention to the correct orientation. Please get a look to the marking for pin 1.
12		Solder the signal /INT to R421. Stick it to the correct pin at CON1.
13		Connect Pico ATX module, Real time clock module, storage medium (harddisk, CF module, DOM, . . .) and also the USB bracket. Likewise, leave the jumpers to the backside of housing.
14		Start in mode **68000er with 8 MHz** and check your computer. Everything should work fine. If not, try to find out, what is happened.
15		Build and connect the keyboard back into the case. Close the cover. The works are finished.

IDE interface settings

jumper 1	jumper 2	function
open	open	IDE interface OFF
close	open	regular mode (Falcon mode)
open	close	twisted mode (PPera mode)
close	close	smart-swap mode (preferred mode)

checklist IDE

1   Determine yourself, which sort of storage medium you want to use (mechanical harddisk, IDE DOM or CF card reader, . . .).

2   Think about how best to integrate your storage medium into the computer (cable, space, distances, ...).

3   Verify that the signal /INT is connected and routed to the TWISTER .

4   If necessary, jumper the storage medium (master/slave), connect the power supply, etc. .

5   Choose the IDE mode (Falcon mode, PPera mode or smart-swap mode). Set the jumper in correct order.

6   Choose your harddisk driver (software) and initalize your medium.

processor settings

jumper 3	jumper 4	function
open	open	68000 with 8 MHz
open	close	68000 with 16 MHz
close	open	68020 with 8 MHz
close	close	68020 with 24 MHz

checklist processor

1   There are no special things to consider. Set the processor and the clock frequency in right order via jumpers, switch the computer on and get started.

checklist mainboard ROM

Sort of MB ROM	jumper W102	function
1M-Bit chips	2-3	mainboard ROM is active
1M-Bit chips	1-2	computer doesn't start
EPROMs	1-2	mainboard ROM is active
EPROMs	pin 2 tied to ground	mainboard ROM is active
EPROMs	pin 2 tied to 5 Volt	flash ROM is active

checklist flash ROM

1 If you want to use the flash ROM and you have the 28-pin 1 MBit chips on the mainboard, yo have to remove them. If the 1 MBit chips are present on the mainboard the flash ROM cannot be activated!

2 If you want to use the flash ROM and you have the 32-pin EPROMs on the mainboard, the middle pin 2 of jumper W102 on the mainboard must be connected to 5 Volts. For this purpose, the TWISTER has a connector at the top right of the circuit board.

checklist RTC clock

1 With the arduino clock module, the resistor between Dallas chip and bare pin strip must be removed. It is a 200 Ohm resistor used to charge the battery. Since a battery is usually used, the battery would otherwise leak sooner or later.

2 The program RTC_TIME.PRG should be located into the auto folder of storage medium. The clock will be automatically install correctly into the system.

3 EmuTOS already includes all the necessary drivers for the clock module. If the programm RTC_TIME.PRG is still in the auto folder, this will not cause any issues.

checklist USB

1 The USB bracket is connected.

2 The programs USB.PRG, the individual medium driver and at least the program BLITZ_ST.PRG are established in right order into the auto folder.

3 You should read and understand the additional instruction for the USB driver programs.

4 The USB device is plugged to the bracket and ready to use.

power supply connector at the mainboard					
leftside					rightside
red	red	black	black	black	blue
5 volt	5 Volt	ground	ground	ground	12 Volt

Atari uses blue cables for 12 volts. Otherwise yellow cables for 12 volts are common.

checklist power supply

alternative operation of ..

original PSU		ATX PSU
The original PSU is used and at the right place onto mainboard. The cable from the PSU is connected to the mainboard in right order.	1	ATX PSU is plugged at the TWISTER *and* the power cable from the TWISTER back to the mainboard is also plugged in right order.
The ATX PSU **doesn't** exist.	2	The origin PSU **doesn't** exist.
The power cable from TWISTER to the mainboard plug **doesn't** exist.	3	The power cable from TWISTER to the mainboard plug **does** exist.
The original PSU is connected with the IEC connector and gets power out of the power outlet.	4	The ATX PSU via external transformator (black case, outside of the computer) is connected with the power outlet.
No visual feedback for voltage is present.	5	The green LED at the TWISTER lights up.
Turning the large switch at the backside will start your computer.	6	Pushing the little button at the TWISTER will start your computer. The red LED will give you additionally information, that your computer is on.