List of electronics

From RepRapWiki

This page has a list of all *active* reprap electronics. It is still a work in progress.

For a list of electronics that compares features, see the Comparison of Electronics page.

For a list of out-of-date electronics, see *Deprecated Electronics*.

Contents

Community based, tested and supported electronics

4pi

ELECTRONICS INFO	
Details	**Description**

Name : 4pi
Creator : Kliment
Status : active

ARM-based RepRap electronics

Features

- License=GPL
- Single board solution, +/- pix4 inches
- Based on Atmel SAM3U Cortex-M3 microcontroller
- A lot of features standard on board, including microSD card, digital current control.
- 5 Mosfets, 5 well-cooled stepper drivers (supports dual extrusion)
- High-speed USB interface

Compatible Firmware

- 4pi-Sprinter (https://github.com/kliment/4pi-firmware)

Where to Get Parts and/or Full Assemblies

See Web shop (https://0xfb.com/shop.html)

Documentation/Schematics & Misc. Notes

- Early documentation (http://wiki.arcol.hu/blog:4pi)
- Firmware (https://github.com/kliment/4pi-firmware)
- Eagle files (https://github.com/kliment/reup)

Generation 7 Electronics

ELECTRONICS INFO

Details

Name : Generation 7 Electronics
Creator : Traumflug
Status : active as of November, 2014

Description

Gen7 is designed with simplicity and replicability in mind. CPU and stepper drivers are on the same board.

The boards can be cut/milled, etched DIY or printed on a RepRap.

Features

- license=CC-BY-NC (http://creativecommons.org/licenses/by-nc/2.0/) (You are free: to Share and Remix. Under the following conditions: Attribution and Noncommercial)
- designed for replication
- ATmega based, ARM based variant in progress
- up to 1/32 microstepping (uses Pololus/StepSticks)
- 16 MHz or 20 MHz CPU clock

Compatible Firmware

- Teacup (recommended)
- FiveD (when running at 16 MHz)

- Sprinter
- Repetier
- Marlin

Where to Get Parts and/or Full Assemblies

See Gen7's "How to get it".

Documentation/Schematics & Misc. Notes

Details for building are on the Gen7 page. You can download the schematics which are developed using gEDA over at github. You can download them by typing:

```
git clone https://github.com/Traumflug/Generation_7_Electronics.git
```

Melzi

ELECTRONICS INFO

Details

Name : Melzi
Creator : Joem
Status : active

Description

Melzi is a low-cost all-in-one solution for Reprap and other CNC devices. It features an on board Sanguino clone using the ATMEGA644P or ATMEGA1284P. Its four axes are powered by Pololu pin compatible stepper drivers.

Features

- License=GPL V2
- On board Pololu stepper drivers
- ATmega based
- up to 1/16 microstepping

Compatible Firmware

- RepRapPro Marlin (https://github.com/reprappro/Marlin)

Where to Get Parts and/or Full Assemblies

- RepRapPro (http://www.emakershop.com/browse/listing?l=425)

Documentation/Schematics & Misc. Notes

Melzi (http://reprap.org/wiki/Melzi)

PiBot for Repetier Motherboard

ELECTRONICS INFO

Details

Description

Designed for Repetier and PiBot-box .

Name : PiBot for Repetier Motherboard
Creator : panxinlong7373
Status : active as of July, 2013

- It Offer an easy convert solution that to change your CNC machine into a 3D printer.
- Easy use for DIY enthusiast, convenience for secondary development.
- More extrude header and more types of machine support.
- Make it similar to computer host and you can easily handle it only plug few cables.

Features

- PiBot-Box development kit Supported. Offer a set of solution to your electronics. Easy use and transplant.
- IDC & HT-396 cold-pressed terminal,It means these anti-plug linker is very convenience,fast and reliable.
- build-in pins assignment silk in the Top Over layer. It more convenience to change or make your own assignment.
- Officially authorization to add the Repetier terms on the boards. Support all the function in the Repetier-Host and Repetier-Firmware.
- Compatible all of the pins in the Ardunio Mega 2560 and Arduino ADK
- It's flexible! Capability to supply motors and heaters with a different voltage.
- The heat bed with independent power source and Self-recovered safety. With two MOSFET parallel solution that can driver more powerful heat bed(optional function, you can use the soldered MOSFET only).
- It's affordable! PCBs are easy to buy or to manufacture PiBot, RepRap, CNC machine or to etch DIY.
- Heater driver with heat sink,compatible more powerful heated header.
- PiBot for Repetier Motherboard and PiBot TB6600 Stepper Driver are discrete solutions.
- CPU: ATmega2560, ATmega1280 (Atmel Corp.)
- 4x to 6x PiBot TB6600 Stepper Driver, exchangeable, up to 4.5A output and 45v input,adjustable microstepping. Using a IDC-24pin port, neat and dust-free finish.
- USB connector.
- Integrated hardware for a fan, three extruder, a heated bed, 4 temperature sensor, 6 PiBot Endstops.
- IDC-20pin expand port, include: SD cards, keys, dispaly LCD (lcd1602 or lcd2004),reset button.
- Extension Boards for additional extruder, temperature sensor, fans, I2C bus device.
- Extraction free pins use for whatever is desireable.
- Single Supply, use the LM317File:LM317 for PiBot.pdf 3-terminal adjustable regulater, 5v supply solution. So the input can up to 40v.
-

Compatible Firmware

- Repetier (recomand the newerest)
- PiBot for Repetier (recommended for beginners)
- Marlin (recommended for advanced users)

Where to Get Parts and/or Full Assemblies

see PiBot hardware (http://www.pibot.com) and how to DIY one PiBot for Repetier.

Documentation/Schematics & Misc. Notes

Details are on the [http://www.pibot.com

RAMPS

ELECTRONICS INFO

Details

Name : RAMPS
Creator : johnnyr
Status : active

Description

Arduino MEGA based modular RepRap electronics.

RAMPS has become the most popular, most used RepRap electronics from 2012 up until the present date (february 2015). It shares circuitry concepts (stepper driver, thermistor, heater MOSFETs, etc.) with many other electronics. Also note that the price of both the RAMPS board and the Arduino Mega 2560 as well as the Pololu drivers has been driven down by copycat manufacturers in China (warning: the quality of clone parts can vary a lot from manufacturer to manufacturer and even between lots from the same manufacturer).

Features

- License=GPL
- Built on stable Arduino Mega base
- Modular - easier to troubleshoot
- ATmega based
- up to 1/32 microstepping (using DRV8825 based driver boards)
- etch resist prepared up to v1.3, v1.4 is optimized for smd

Compatible Firmware

- Repetier-Firmware
- Marlin
- Sprinter
- Teacup

Where to Get Parts and/or Full Assemblies

See RAMPS "How to get it".

Documentation/Schematics & Misc. Notes

RAMPS

Sanguinololu

ELECTRONICS INFO

Details	Description
Name : Sanguinololu **Creator** : Joem **Status** : active	Sanguinololu is a low-cost all-in-one Pololu Electronics solution for Reprap and other CNC devices. It features an onboard Sanguino clone using the ATMEGA644P though a ATMEGA1284 is easily dropped in. Its four axes are powered by Pololu pin compatible stepper drivers.

Features

- License=GPL
- Pololu interchangable motor drivers
- ATmega based
- up to 1/16 microstepping

Compatible Firmware

- List of Firmware

Where to Get Parts and/or Full Assemblies

See Sanguinololu's "How to get it"

Documentation/Schematics & Misc. Notes

Sanguinololu (http://reprap.org/wiki/Sanguinololu)

Smoothieboard

ELECTRONICS INFO

Details	Description
Name : SmoothieBoard **Creator** : Arthur **Status** : active	ARM-based RepRap electronics

Features

- License=GPL
- Single board solution, 105x105mm
- Based on LPC1769 (120Mhz) Cortex-M3 microcontroller
- A lot of features standard on board, including microSD card, digital current control.
- 4 Mosfets, 4 well-cooled stepper drivers
- USB interface exposing serial and mass storage
- Design with focus on cost and connectors options
- Ethernet

Compatible Firmware

- Smoothie firmware

Where to Get Parts and/or Full Assemblies

See Getting a smoothieboard (http://smoothieware.org/getting-smoothieboard) .

Documentation/Schematics & Misc. Notes

- Smoothieboard on the Reprap wiki.
- http://smoothieware.org/ : documentation starting point page (flashing, configuring, using)
- http://smoothieware.org/smoothieboard
- Eagle files (https://github.com/arthurwolf/SmoothieBoard)
- Smoothie firmware on github (https://github.com/arthurwolf/Smoothie)
- "Hackaday: Smoothieboard, The Be-all, End-all CNC Controller" (http://hackaday.com/2013/09/30/smoothieboard-the-be-all-end-all-cnc-controller/)

Duet

ELECTRONICS INFO

Details	Description
Name : Duet **Creator** : Think3dPrint3d and RepRapPro **Status** : active	Arduino Due compatible ARM-based RepRap electronics

Features

- License=CERN OHW License 1.2 (http://www.ohwr.org/documents/294)
- Main board supports 4 axes (X,Y,Z,E) Duex4 expansion supports 4 more axes for 5 material printing
- Based on the SAM3X8E, the same Processor as in the Arduino Due
- On board SD 2.0 compliant uSD card slot (supports SDHC cards)
- Control via USB and or Ethernet from a web browser
- Excellent thermal properties on board (see thermal testing link below)
- Supports RepRap firmware features such as IR Z probe, axis compensation, digital current control and multi extruder mixing
- Fully Open Source and designed in KiCAD, Open Source EDA software

Compatible Firmware

- RepRap Firmware

Where to Get Parts and/or Full Assemblies

See RepRap Wiki, Duet Where to get it (http://reprap.org/wiki/Duet#Where_to_get_it) .

Documentation/Schematics & Misc. Notes

- Intro to the Duet (http://blog.think3dprint3d.com/2013/12/Duet-Arduino-Due-compatible-3DPrinter-controller.html)

- RepRap Firmware on Github (https://github.com/reprappro/RepRapFirmware/tree/duet)
- RepRapPro Ormerod commissioning documentation (https://reprappro.com/documentation/ormerod/commissioning/)
- Think3dPrint3d blog post on firmware compilation (http://blog.think3dprint3d.com/2014/03/Setting-up-Eclipse-for-Arduino-Due-and-Duet.html)
- KiCAD schematic, board layout and other design files (https://github.com/T3P3/Duet)
- Duet thermal testing results (http://blog.think3dprint3d.com/2013/12/duet-fet-psu-and-stepper-driver-testing.html)

Alligator Board

ELECTRONICS INFO

Details

Description

The new generation electronic for RepRap 3D printers

The Alligator Board is designed to be a complete and reliable solution as RepRap 3D printer electronic control board. The base module features everything you need to build a standard 3D printer, and with the customizable expansion piggy this is the most complete solution for complex 3D printer.

Name : Alligator Board
Creator : 3D Artists
Status : active

It is based on the 32 bit Cortex M3 ATSAM3X8EA-AU microcontroller (Arduino-Due-Compatible). This represents a big step towards greater computing power, compared to the existing solution based on 8 bit mcu. This product is well suited for any kind of 3D printer, and is the ideal solution for Delta models, requiring more complex computation.

Features

- License=CC-BY-NC-SA 4.0 (http://creativecommons.org/licenses/by-nc-sa/4.0/)

The professional design of every part takes care of the needs of the most exigent makers, ensuring best performances in your application.

Main Features:

- **CPU Cortex M3 Atmel ATSAM3X8EA-AU, Arduino-Due-Compatible**
- **High Current connector for power input, bed and hot-end heaters**

- Filtered Power Supply Input 12-24Vdc
- 4 Stepper Motor driver based on Texas Instrument DRV8825, running at 1/16 or 1/32 microcstep, up to 2.5A **firmware configurable current** - no trimmer
- 6 End-Stop input compatible with both mechanical and optical/magnetic solution
- High current Hot-End Heater driver output (High-Current connector)
- High current Bed Heater driver output (High-Current connector)
- 2 Precision analog input for RTD measaurement
- 2 External FAN output with PWM speed control

- External 32Mbit Flash memory, in addition to the 64Kbit EEPROM
- USB to Virtual COM port interface (micro USB connector)
- Native USB port (micro USB connector)
- **microSD** Slot
- 10/100 **Ethernet** Port with unique MAC address pre-programmed chip
- Expansion connector with 2 UART (firmware configurable also as GPIO)
- 26pin **Raspberry-PI** Compatible expansion connector
- 3 Generic PWM open drain output for general porpouse application (ex. RGB LED)
- Expansion connectors for user customizable piggy module

Compatible Firmware

- Repetier-Firmware
- Marlin

Where to Get Parts and/or Full Assemblies

See Official Page (http://www.3Dartists.org) .

Documentation/Schematics & Misc. Notes

- Alligator Board Alligator Board WiKi
- Official Page (http://www.3Dartists.org)
- 3D Artists Facebook Page (https://www.facebook.com/3Dartists.org)
- GitHub Project Repository (https://github.com/3dartists/AlligatorBoard)
- Marlin Firmware 32bit porting for Alligator Board (https://github.com/MagoKimbra/MarlinKimbra4due)
- Alligator Board Repetier Firmware on GitHub (https://github.com/3Dartists/Alligator-Repetier-Firmware)

SAV_MKI

ELECTRONICS INFO

Details

Name : SAV MKI
Creator : fm
Status : active

Description

The SAV MkI is an affordable all-in-one Pololu Electronics solution for 3D printer devices. This 3D printer board electronics has been designed using all the great contributions and feedback from the RepRap CloneWars group Proyecto_Clone_Wars in Spain.

It improves upon the previous production-grade electronics set by adding well dimensioned logic-level power MOSFETS, SD card support, on-board regulated 3.3V to connect to 3.3V level peripherals such us Bluetooth, as well as improving on USB link's reliability and reducing cost by eliminating the FTDI UART chip. The SAV MkI is a derivative of Teensylu and the Printrboard, an AT90USB1286 development board originally based on Sanguinololu. The Atmel AT90USB1286 MCU has an on-chip USB, removing the need for the FTDI UART (USB-to-

serial) IC. On-chip USB means that you will get faster firmware upload times, communications, g-code transfer and reduce the time file transfers take from the host to the on-board microSD card. The AT90USB connects at any baud rate regardless of firmware configuration, and operates virtually free of serial communication errors/pauses.

Features

- License=CC-BY-SA
- Hotend and heatbed well dimensioned FETs that can take up to 15A without heat-sinks.
- High speed native USB interface connectivity going up to 12Mbps so that there is no lag on your prints.
- 12V built-in fan controller for your layer fan or hot end cooling.
- Micro SD reader for autonomous printing.
- Bluetooth dongle (dongle not provided, tested with HC-05 and HC-06) interface adapted to its logic levels for wireless operation.
- Expansion bus to connect a keyboard and LCD. Checkout its LCD companion the SAV 3D LCD
- Support for 4 standard pololu compatible stepper motor drivers.
- Up to 1/32 stepping with DRV8825 driver
- CPU: AT90USB1286 (Atmel Corp.)
- Integrated hardware for a fan and 2 12V dedicated outputs.
- Expansion port for LCD module SAV 3D LCD

Compatible Firmware

- Marlin (recommend to download from the SAV MkI wiki page - SAV_MKI)

Where to Get Parts and/or Full Assemblies

See SAV MkI "Where to get one"

Documentation/Schematics & Misc. Notes

SAV MKI (http://reprap.org/wiki/SAV_MKI)

Replicape

ELECTRONICS INFO

Details

Name : Replicape
Creator : Elias Bakken
Status : active

Description

Replicape is a high end add on board for BeagleBone Black featuring 5 DRV8825 stepper motor controllers, 3 heater MosFets, 3 fans and 6 endstops.

Features

- License=CC-BY-SA

- High power DRV8825 stepper drivers with 1/32 microstepping
- Support for two extruders
- Up to 3 fans/LED strips/Solenoids
- 6 End stop inputs
- Dallas 1-wire connector for up to 10 temperature probes.
- On board 12 V and 5 V step down DC-DC converters.
- Ethernet, USB host/device, SPI, I2C, WiFi through dongle
- Programmable microstepping and current for the stepper motors.
- Dedicated 200 MHz on-chip CPU for stepper timings (PRU)
- PWM and MosFet drivers on all MosFets.
- 4 GB on board flash and MicroSD slot
- HDMI output for 4.3" capacitive touch screen Manga Screen
- CPU: ARM Cortex-A8 1 GHz

Compatible Firmware

- Redeem

Where to Get Parts and/or Full Assemblies

Available through the web shop: [http://www.thing-printer.com/product/replicape/

Documentation/Schematics & Misc. Notes

See the RepRap wiki Replicape (http://reprap.org/wiki/Replicape)

RAMPS derivatives

Megatronics

ELECTRONICS INFO

Details	**Description**
Name : Megatronics **Creator** : Brupje **Status** : active	Arduino compatible RepRap electronics

Features

- License=GPL
- Single board solution, +/- 12x12cm
- Powerful Atmega 2560 on board
- A lot of features standard on board, including SD card and thermocouple support
- Compatible with the standard Arduino software
- Cheaper solution, because it's one board
- Easily extendible with LCD and keypad!

Compatible Firmware

- Marlin

Where to Get Parts and/or Full Assemblies

See Megatronics "How to get it".

Documentation/Schematics & Misc. Notes

Megatronics_1.0

BAM&DICE

ELECTRONICS INFO

Details	Description
Name : BAM&DICE **Creator** : Domonoky **Status** : active	Arduino Mega compatible RepRap electronics

Features

- License=GPL /Cern OHL
- Size +- 6x10cm
- Arduino Mega shield
- Five extension slots for DICE stepper drivers or other extensions
- Compatible with the standard Arduino software
- Very powerful stepper drivers available. Up to 5A and 256x substepping depending on the choosen DICEs.
- Easily extendible with LCD, SD card and keypad!

Compatible Firmware

- Marlin

Where to Get Parts and/or Full Assemblies

See 2PrintBeta (http://www.2printbeta.de/Electronics/Controller/BAM-DICE-Arduino-STK-kit::328.html)

Documentation/Schematics & Misc. Notes

BAM&DICE

BAM&DICE-DUE

ELECTRONICS INFO

Details	Description

Name : BAM&DICE-DUE
Creator : Domonoky
Status : active

Arduino Due compatible RepRap electronics

Features

- License=GPL /Cern OHL
- Size +- 6x10cm
- Arduino Due shield - 84Mhz processing power
- Five extension slots for DICE stepper drivers or other extensions
- Compatible with the standard Arduino software
- Very powerful stepper drivers available. Up to 5A and 256x substepping depending on the choosen DICEs.
- Easily extendible with LCD, SD card and keypad!
- Wifi extension available

Compatible Firmware

- Marlin

Where to Get Parts and/or Full Assemblies

See 2PrintBeta (http://www.2printbeta.de/Electronics/Controller/BAM-DICE-DUE-kit::396.html)

Documentation/Schematics & Misc. Notes

BAM&DICE-DUE

Two other RAMPS derivatives exist :

- RUMBA
- Rambo

3Drag controller

ELECTRONICS INFO

Details **Description**

Name : 3drag controller
Creator : Boris Landoni
Status : active

Arduino compatible RepRap electronics

Features

- License=GPL
- Small design - board is 110mm x 65mm
- Powerful Atmega 2560 on board
- Up to 4 Pololu stepper driver boards (or Pololu compatible (http://store.open-

electronics.org/stepper_driver)) on-board (X,Y,Z,Extruder)
- FT232RL on-board for USB connectivity
- 2 input thermistor
- 3 N-MOSFETs for extruder, bed and fan
- Selectable 12v/5v voltage or mechanical endstop
- Extra pins available for expansion and development
- Comunication LED and driver LED
- All SMD components
- Compatible with the standard Arduino software
- Cheaper solution
- Easily extendible with LCD and keypad!

Compatible Firmware

- Marlin

Where to Get Parts and/or Full Assemblies

- open-electronics.org (http://store.open-electronics.org/3D/3D_electronics) .

Documentation/Schematics & Misc. Notes

- 3Drag controller
- 3drag

Commercial alternatives

R2C2 Electronics

ELECTRONICS INFO

Details	**Description**
Name : R2C2 **Creator** : bitBOX (http://www.3dprinting-r2c2.com/) **Status** : active as of January, 2012	R2C2 is FAST (ARM 32bits running at 100MHz!), is the new cutting edge technology that drives RepRap 3D printers at their maximum speed (http://www.3dprinting-r2c2.com/?q=content/r2c2-running-reprap-mendel-his-maximum-speed-725mms) !!! Please read more on the official web page: www.3DPrinting-R2C2.com (http://www.3dprinting-r2c2.com/?q=content/r2c2-documentation)

Features

- license=CC-BY-NC (http://creativecommons.org/licenses/by-nc/2.0/) (You are free: to Share and Remix. Under the following conditions: Attribution and Noncommercial)
- Just one board, a complete solution, to control your RepRap 3D printer (can also control any other 3D printer/laser/milling);
- Plug and print - you will receive it completed assembled, tested, with proper versions of software and manuals on MicroSD card. No need to search on the web for the correct versions!

- High speed printing (http://www.3dprinting-r2c2.com/?q=content/r2c2-running-reprap-mendel-his-maximum-speed-725mms) and quality due to the cutting edge technology 32 bits ARM microcontroller running at 100MHz with fast integrated USB controller;
- Heated Bed (http://reprap.org/wiki/Heated_Bed) support;
- MicroSD Card for stand alone printing (no need to be connected to a computer while printing) and to store board configurations in human readable text files.
- Buzzer to alert user of the different states of the 3D printing process, like end of machine heating, start and end of printing, etc;
- USB bootloader working as a USB Mass Storage device (works on Linux, Windows and MAC OS) - you will just need to copy/paste new firmwares to board as if is a USB pen flash;
- Expansion header to support other functionalities like a second extruder for support material, support a laser to engrave/cut paper, wood, ABS, PLA, etc} (http://wiki.makerbot.com/forum/t-283490) ;
- 24/12 volts power input. At 24 volts power losses on cables are lower providing faster heating making it quicker to start printing;
- All the firmware were developed with OpenSource development tools: ARM GCC, ARM GDB, OpenOCD JTAG Programmer/Debugger and Eclipse. We intend to continue developing firmware and expansion modules, for adding new features. We envision the R2C2 to became the "Arduino" of the RepRap world.
- Open Source: R2C2 source files of PCB, schematic and firmware are available on R2C2 Github account and so every user can take advantage and improve/adapt/hack R2C2 for his own purposes.

Compatible Firmware

R2C2 firmware is a mix of the famous GRBL and TeaCup firmwares. Latest stable firmware binary file can be download here (https://github.com/bitboxelectronics/R2C2_Firmware/tree/master/stable_bins) and is ready to flash using R2C2 USB bootloader.

R2C2 firmware sources are on R2C2 Firmware Github (https://github.com/bitboxelectronics/R2C2_Firmware) .

Where to Get Parts and/or Full Assemblies

The quick and easy to install R2C2 complete electronics kit for RepRap 3D Printers can be found here (http://shop.3dprinting-r2c2.com/) .

Documentation/Schematics & Misc. Notes

R2C2 Electronics documentation, support and shop on official site: www.3DPrinting-R2C2.com (http://www.3dprinting-r2c2.com/?q=content/r2c2-documentation)

- Please go to Development page (http://www.3dprinting-r2c2.com/?q=content/development) to know how to get the source files. (The link given there to the firmware sources is broken, try the next higher directory at https://github.com/bitboxelectronics/)

CN Controls

ELECTRONICS INFO

Details	Description

Name : CN Controls
Creator : MaukCC (http://www.cartesio3d.com/)
Status : active as of November, 2013

Arduino MEGA and Due shield for cnc machines

User interface with graphic LCD, encoder and hardware buttons

Toolcontrollers

Features

The CN Controls is a general mainboard for all types of CNC machines.

It is a Arduino MEGA and Due compatible shield, powered over 24VDC

The only active components are 5 FET`s, and a normal SD reader (none of that pesky microSD)

- 2 FET`s for 1 switching 24V/10A output (heatbed)
- 3 FET`s for 3 seperate 24V/2A PWM outputs

All other outputs go over flatcables minimizing assembly time :

- 4 tool outputs (extruders/mills/engravers/pick&place/.....)
- 1 XYZ motor output (for drivers see: stepperdriver (http://mauk.cc/webshop/electronics/stepper-driver/STK672-080-stepper-driver-high-power))
- 1 XYZ homing input
- 1 User Interface (http://mauk.cc/webshop/electronics/UI-user-interface/user-interface) output
- 1 miscellaneous in/output (I2C/serial/heatbedtemp/ambienttemp/pause/Z-home)

All tools are locally controlled by our toolcontrollers (http://mauk.cc/webshop/electronics/tool-controller)

The tool "enable, direction and step" outputs can be switched to parrallel to accomodate mass production printing.

Compatible Firmware

The firmware for CN Controls is Marlin.

Where to Get Parts and/or Full Assemblies

You can get the CN Controls at: MaukCC (http://www.cartesio3d.com)

Documentation/Schematics & Misc. Notes

All documentation, support is at: MaukCC (http://www.cartesio3d.com)

Generation 6

ELECTRONICS INFO

Details	Description
Name : Generation 6 **Creator** : Camiel **Status** : stale as of Oct 2010(?) but still for sale	Gen6 electronics do not appear to be related to the original GenX designs other than by name. This is a single-board surface-mount design with the CPU and driver chips on the same board.

Features

- license=?? ("open souced" obscured 4 layer board, unfeasible to make yourself)
- It has a standard USB connection (USB A>B cable needed)
- It uses micro-stepping (1/8) for quieter operation.
- It is cheaper than for example Makerbot's version of the RepRap Generation 3 electronics.
- It uses small standard Molex connectors for motors, heater, and optos.
- The pcb of the optos are integrated, so you only need the optos on cables with 5way Molex connectors

Compatible Firmware

- Marlin
- A modified version of FiveD
- Sprinter

Where to Get Parts and/or Full Assemblies

Buy from http://www.3dacessorieshub.com/, http://www.reprap-usa.com/, http://www.makemendel.com and http://www.mendel-parts.com although mendel-parts.com looks like they've been out of stock since June 2011.

Documentation/Schematics & Misc. Notes

This seems to be almost a proprietary board. If there is active development going on with these electronics I can't find it. All development seems to have stopped back in October 2010.

Documentation is on the Generation 6 Electronics page. The only schematics available appear to be in zip files here.

Here are some links to zip files containing modified firmwares:

- FiveD.
- Marlin (reprap-usa.com) (http://www.reprap-usa.com/download/Marlin093_RepRapUSA.zip) .
- Sprinter (reprap-usa.com) (http://www.reprap-usa.com/download/SprinterGen6.zip)

There does not appear to be a source code repository for schematics or firmware anywhere.

Because the board uses Texas Instruments DRV8811 (http://www.ti.com/product/drv8811) driver chips instead of the more common Allegro A4983 (http://www.allegromicro.com/en/Products/Part_Numbers/4983/) -based (a.k.a. Pololu) drivers, you have to use modified versions of the more popular firmwares. That fact, in combination with the poor availability of source, does not bode well for DIY users.

Generation 4

ELECTRONICS INFO

Details	Description
Name : Generation 4 **Creator** : Makerbot **Status** : active	These electronics are used for the Makerbot. They consist of an Arduino Mega shield (aka the "motherboard") and a few other boards for the stepper drivers.

Features

- License=??
- Supports up to five stepper drivers (XYZ + A/B)
- Connect over USB
- Optional LCD interface support
- Full endstop support
- High current mosfets to drive heated build platform and extruder heater
- Thermocouple support for accurate temperature sensing
- XY Positioning resolution of 0.02mm (20 microns or 0.0008")
- XY Maximum Feedrate of up to 5000mm/minute (roughly 200 IPM)
- Z Positioning resolution of 0.005mm (5 microns / or 0.0002")
- Z Positioning Feedrate of up to 1000mm/minutes (roughly 40 IPM)

Compatible Firmware

- not sure about this yet

Where to Get Parts and/or Full Assemblies

For sale on Makerbot website at http://store.makerbot.com/electronics/assembled-electronics.html

Documentation/Schematics & Misc. Notes

BIG NOTE: The days for the links below are numbered. Makerbot will probably take them down soon because they have gone proprietary. I have no idea how the designs below were licensed but if they were licensed using a GPL-like licence, they'll have to provide links to changes somewhere.

Gen4 electronics consists of at least 5 separate circuit boards: the arduino shield (motherboard), 3 stepper boards and 1 extruder board. For detailed information and source code see the following links:

- motherboard v2.4 (http://wiki.makerbot.com/thingomatic-doc:makerbot-motherboard-2-4) or Makerbot Motherboard 2.4
- extruder controller v3.6 (http://wiki.makerbot.com/thingomatic-doc:extruder-controller-3-6) or Extruder controller v3.6
- stepper driver v3.3 (http://wiki.makerbot.com/thingomatic-doc:stepper-driver-3-3) or Stepper driver v3.3
- mechanical endstop v1.2 (http://wiki.makerbot.com/thingomatic-doc:mechanical-endstop-1-2) or Mechanical endstop v1.2

Further reading

If you have some knowledge of electronics and want to help us make better electronics, check out the ideas at Vaporware Electronics, FuturePlans, FutureToolIdeas, FirmwareWishList, Alternative Electronics, ideas to place

Categories: Electronics | Electronics development | RepRap machines | How to make Mendel

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