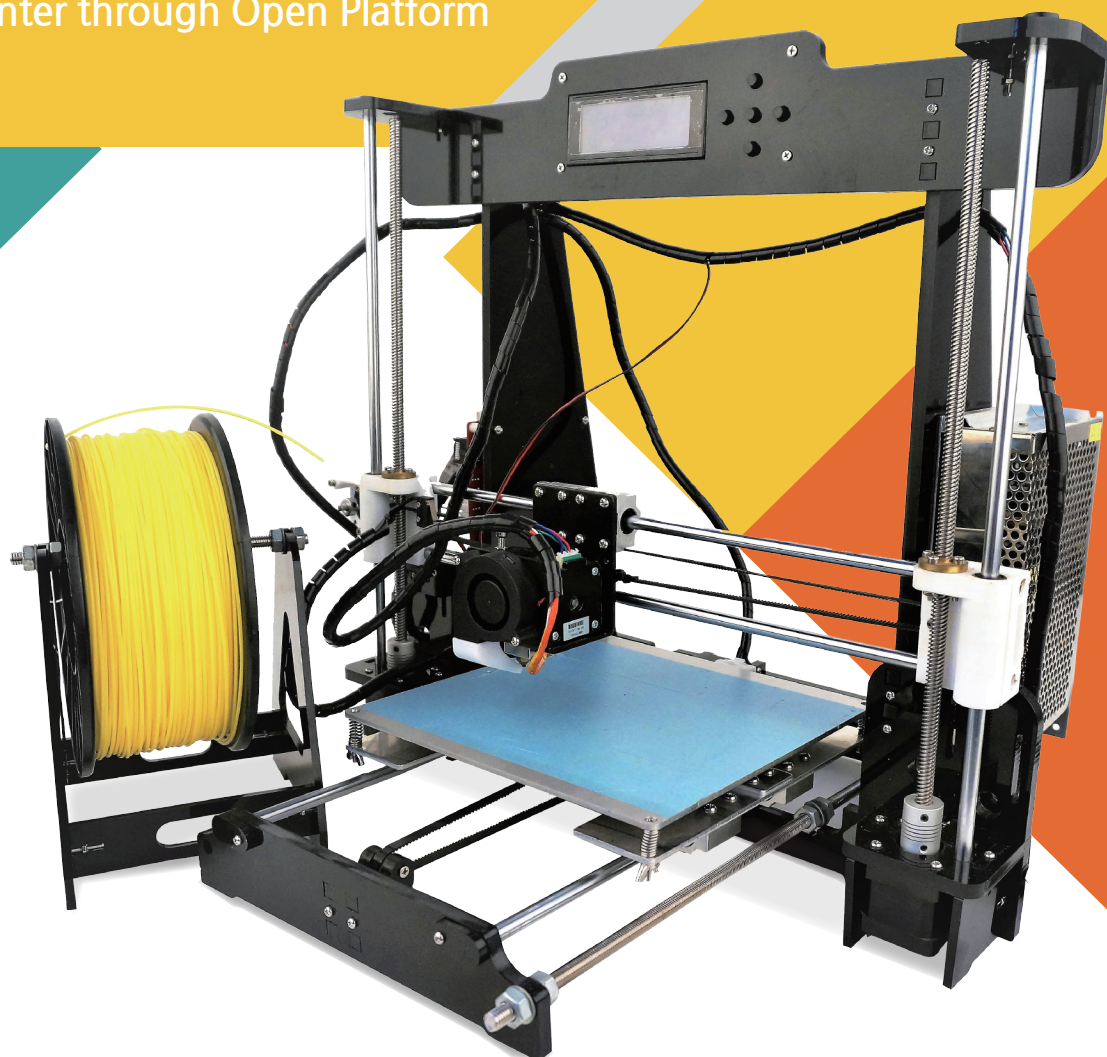


3D Printer

with Arduino Application

Create and Control
3D Printer through Open Platform



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Product specifications and appearance of this catalog are subject to change without notice for quality improvement.

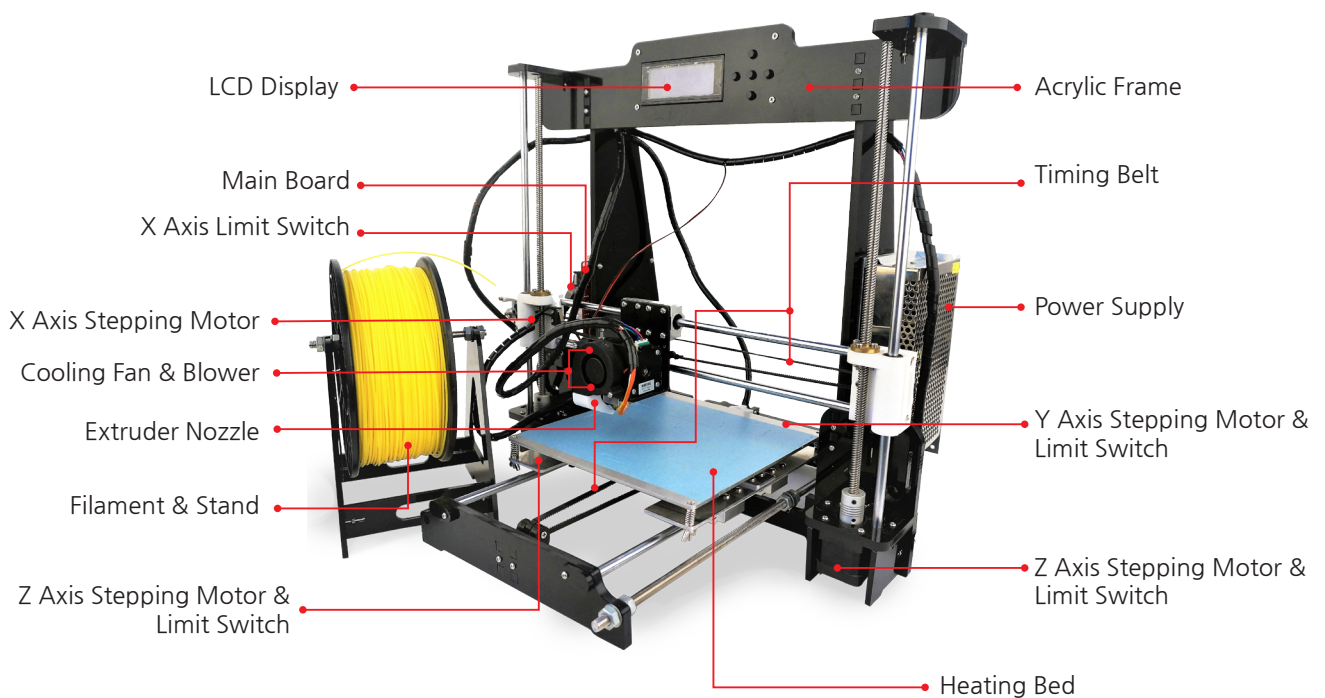
V2.0.1

3D Printer

with Arduino Application

This product is an FDM type 3D printer that is composed of prefabricated parts. It completes in the order of hardware assembly and software (Firmware) upload. Arduino is used for its Controller, and you can learn the control theory through the practical examples to upload the firmware directly and to operate the hardware connected to the Controller. You are also able to understand the concept of CNC program by using G Code used in CNC, and by knowing the flow of data between each block in firmware. Besides, you can learn how to implement 3D objects by using CAD and CAM programs as software for 3D printing.

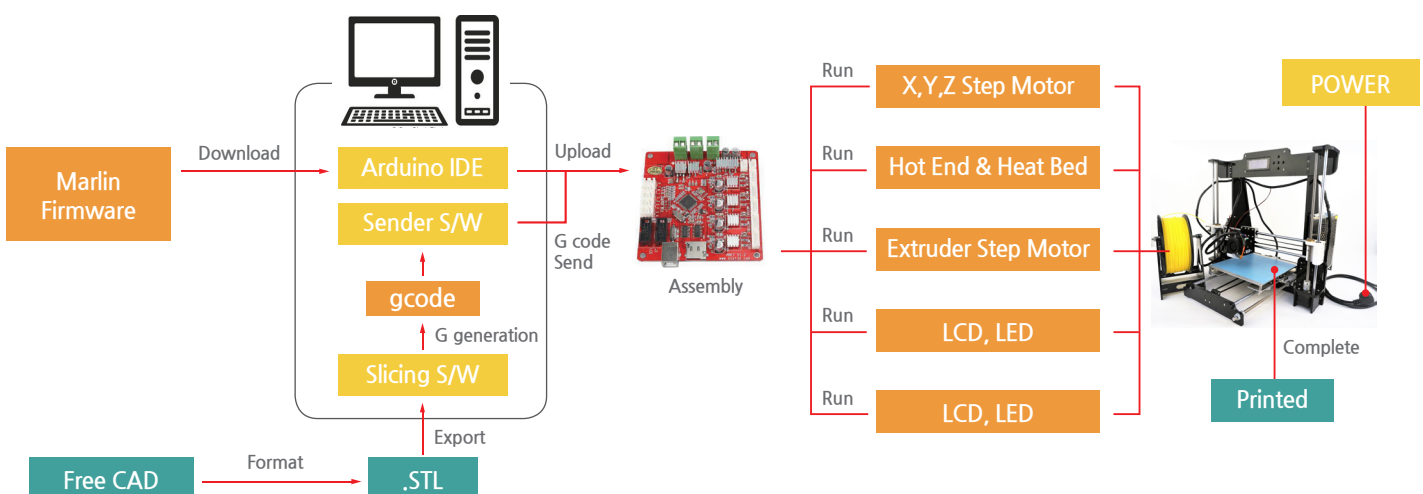
Product Configuration and Name of Each Part



Product Features

- 3D Printer Operation Using Open Source Platform
- Learn about 3D printer configuration by assembling each part
- High precision stainless steel rail rods, gears, bearings and connectors for smooth printing
- Supports various 3D printing filaments
- Open Source Software to control 3D printer on PC Windows or Mac OS
- Able to print using Micro SD Card without connecting PC
- Mendelian type open-source 3D printer using molten resin extrusion lamination molding (FDM / FFF / PJP)
- Control the sensors and step motors connected to 3D printer using the mainboard with Arduino-based microcontroller, motor driver, and various connectors.
- NEMA 17 stepping motor allows precise control in accordance with resolution
- NTC Thermistor sensor detects temperature of Heat Bed or Extruder
- CNC Code (G Code) conversion & transmission & analysis using Open-source software & tools

Block Diagram



Technology

1 CAD Software : FreeCAD



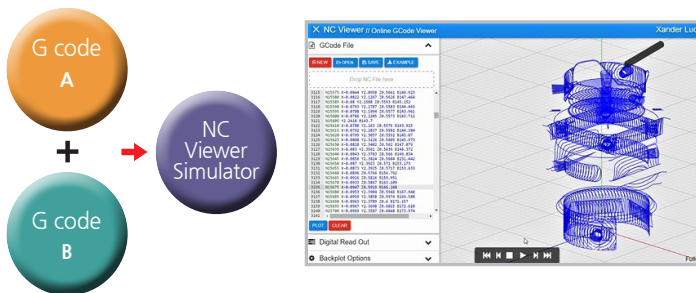
FreeCAD is an open-source program for modeling 3D design

2 CAM Software : Slicer P/G : Ultimaker CURA



Cross Platform,
Open Source Software

3 G code

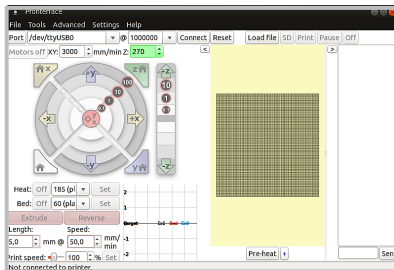


► A programming language used in most of numerical control applications, mainly used in computer-aided manufacturing through automatic control machine tools

► NC Viewer

As an online G code viewer, it is the most suitable G code editor for checking CNC and 3D printer files.

4 CAM Software : G code Sender P/G : Pronterface



Program that sends G code to Microcontroller of 3D printer

Textbook

Chapter1. What is 3D Printer?

1. 3D Printing
2. History of 3D Printer
3. Features of 3D Printer
4. Classifications of 3D Printer
5. Type of 3D Printers

Chapter2. Structure of 3D Printer

1. Hardware
2. Software

Chapter3. 3D Print

1. Modelling P/G : FreeCAD
2. G code Generator : Ultimaker CURA
3. G code Sender : Pronterface

Chapter4. Equipment for Practice

1. Introduction
2. Structure
3. Introduction to Upgrade Parts
4. Assembly 3D Printer
5. Auto Leveling Guide
6. CURA & G-code Setting

Chapter5. Appendix : Practical Examples

1. Stepper Motor Control Using Arduino
2. Temperature Sensor Control Using Arduino
3. G Code Sending Using Pronterface
4. 3D Printer Operation

Product Configuration

Category	Specification	Category	Specification
Size	510 X 400 X 415mm	Material Diameter	1.75mm
Weight	8.5kg	Operating Temperature	10 ~ 30°C
Printing Scope	220 X 220 X 240mm	Supported File Format	G code, OBJ, STL
Printing Speed	100mm/s	Supply Voltage	12V 16.6A (200W)
X-axis, Y-axis accuracy	0.012mm	Operating System	Windows XP/ 7/ 8/ 10, Mac, Linux
Z-axis positioning accuracy	0.004mm		

Hardware Specification

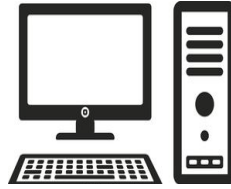
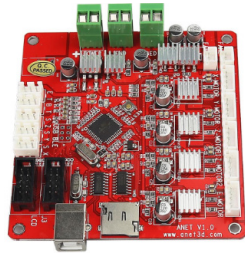
Category	Specification
LCD Display	20 X 4 Text LCD
Switch	Axis Limit Switch 3EA
Stepping Motor	NEMA 17 Stepping Motor
Extruder	- Working voltage : 12V default 12V - Axis speed : 40mm/s - Sensor : NTC Thermistor Sensor (NTC 3950)
Heating Bed	Power Input : 12V
Timing Belt	Type : 2GT
Power Supply	- Output voltage : DC 12V / 20A - Input voltage : AC 110V - 220V - Rated power : 250W
Air Blower	- Rated voltage : DC 24V - Rated current : 0.17A - Number of revolution : about 7500 RPM - Noise : 25dB
Cooling Fan	- Operation Voltage : DC10.8-13.2 - Consuming Power : 1.2W (1.44 Max.)
Frame	Acrylic Frame
Mainboard (Micro Controller)	- 12V power supply input, with USB connection - Voltage input : 12V

Software Specification

Category	Specification
Firmware	- Open Source Firmware - Supports control sources for various hardware (electronic) of 3D printer - Available to upload from Arduino IDE (Development Environment)
Slicer Program	- OS : Windows, Mac, Linux - Cross-platform, open source software, available completely free of charge - Out-of-the-box support for STL, OBJ, X3D, and 3MF file formats - G-code Generator
Host Software	- A fully-featured GUI host - Open source software - Control computers with dialog boxes, shred objects directly on hosts, print objects, upload them to SD cards, and run SD printing - G-code injection at beginning of layer and edition of entire G-code

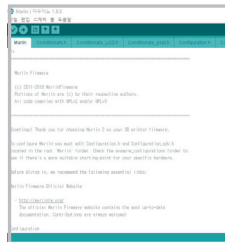
How to Use

01



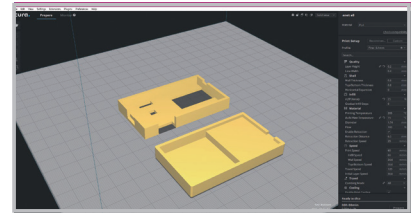
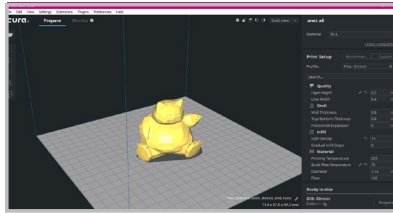
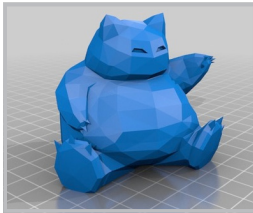
Connect USB Cable and supply power

02



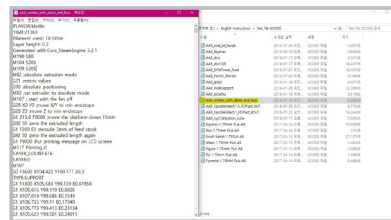
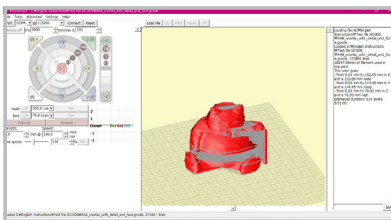
Upload Marlin firmware to mainboard

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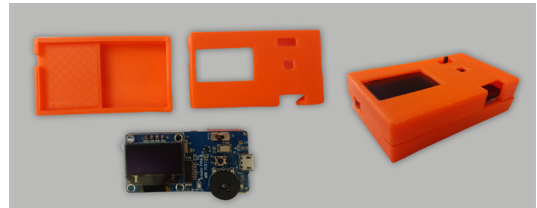
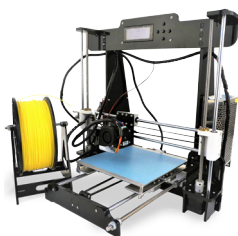
Create G code from STM format file through CURA (Slicer program)

04



Transmit G code data to Pronterface (G code sender)

05



Transmit G code data to 3D printer through Pronterface and print it