# **Product User Manual**

# IdeaWerk<sup>TM</sup> 3D Printer WT150



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# 1. Unpack and checking

# 1.1 Check the Machine

1) Open the packing carton box, unwrap the EPE covering, remove the machine and accessories from the box.

2) Overall observe the machine to make sure there is no serious damage. If any problem, please contact with the after sale service staff in time.



(Pic 1.1-01)

# 1.2 Check the Accessories

All of the following accessories are consisted in the box together with the machine.









Teflon tube filament guide Filament passing-through assistant

Cut pliers



Tweezers



Allen wrench



Clips



Power adapter and power cord



USB Cable



Build plate









Spool holder

SD card (Pic 1.2-01)

Acupuncture Needle

# 2. Brief Introduction

# 2.1 Precautions and Safety

- Place the machine in dry environment when operating.
- To avoid blocking the nozzle, do not heat up the extruder before feeding the material
- Machine should be away from fire or water.
- Use the machine in a ventilated environment, so that to avoid smelling.
- Do not touch or remove the power cord or data line when operating.
- Never touch the extruder or build bed by any parts of your body or anything which is easy on fire when machine is operating, for they are very hot to harm



your skin or cause fire.

• Gloves are required when removing the printed part to avoid harm of cutting, scratching or burning.

# 2.2 Appearance and Structure







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Note: the direction of the clip must be parallel to the X axis

(Pic 2.2-02)



(Pic 2.2-03)



(Pic 2.2-04)

# **2.3 Technical Specifications**

Dimensions: 298mm  $\times$  221mm  $\times$  403mm

Printing Dimensions:  $150mm \times 150mm \times 140mm$ 

Layer Thickness: 0.18~0.3mm

Speed: 30 – 150cm<sup>3</sup>/h

Net Weight: 7.5kg

Material: PLA

Materials Printing Temperature: PLA 220 - 230°C

Power: Input: AC 100-240V, 1.6A, 47-63Hz; Output: 12V/DC, 5.3A

Maximum Operating Power: 63.6W

Input Format: STL/X3G/GCODE

Operating Systems: Windows XP/Vista/Win7/Win8/Mac OS (Lowest version: OS

x10.8.5 Latest version: OS x10.9.0)

Operating Software: ReplicatorG-0040(optimized by Weistek1.0)

Environment Temperature: 5°C~35°C

Relative Humidity: 30%~90%

When using the Mac OS computer system:

1. When firstly connect with Mac OS, internet should be connected.

2. Use the specific installation software (ReplicatrG.app) when operate on Mac OS.



# 3. Software Installation

#### 3.1 Software Installation

1) Copy the software from the disc before connecting the machine with your computer. Decompress the file.



(Pic3.1-01)

2) Refer to the power and USB interfaces in the picture 3.1-02. Choosing "install from a list or specific location (advanced)(S)" when the following interface pops up after finishing connecting USB cable. Then, click "next" to continue.



(Pic 3.1-02)



3>Select "Include this location in the search" in the below pop-up window, then clicking "Browse"

H	ardware Update Vizard
	Please choose your search and installation options.
	Search for the best driver in these locations.
	Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Check this out	Search removable media (floppy, CD-ROM)
	Include this location in the search:
	C:\WTDriver\drivers Srowse
	O Don't search. I will choose the driver to install.
	Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
_	<pre>&lt; Back Next &gt; Cancel</pre>

(Pic 3.1-03)

4> Select a folder for WAY in the pop-up window Browse For Folder, and find "drivers" folder, then clicking [OK]. Then, click [Next] in the window of Hardware Update Wizard.

🕑 Desktop		
🗄 🛄 My Doc	uments	
🖃 🧕 My Com	puter	
🖃 💒 Win	dows (C:)	
± 🧰	AMD	
± 🧰	Documents and Settings	
± 🧰	Intel	
± 🧰	Keil	
± 🛄	frogram files	
± 🛄	rytnon21	
	ILMI WINDOWS	
	WTDViver	
Land	- am d64	
	Arduino Mega 2560 usbser Driver	
	FTDI USB Drivers	
	i 386	
	H 🫅 Static	
	🛅 UltraPortWin	
🛨 🧰 Pro	grame (D:)	
🗄 🧫 Inf	ormation (E:)	
🛨 🧰 Too	ls (F:)	
🖽 🥝 GRM	CENVOL_CN_DVD (G:)	
🖽 🌏 dvd	Drive (H:)	
🖽 🦳 Sha	red Documents	

(Pic 3.1-04)

#### 3. Software Installation

5> Click [next] when the following interface pops up.

rdware Update Vizard Please wait while the wizard installs the	software	E Contraction of the second seco
USB Serial Port		
ftcserco.dll		

(Pic 3.1-05)

6>waiting till the below window pops up, then clicking [Finish]. Until now a serials of ports were installed successfully



(Pic 3.1-06)

# 3.2 Port Confirmation

After finishing drives installation, please use the below methods to confirm whether it is successful or not

1> right click [Computer], choose [Manage], and then choose [Device Manager]



(Pic 3.2-01)

2> Select "Ports (COM&LPT)" in the below pop-up window, If no ? or ! ahead of "USB Serial Port" shows the USB Serial Port Drive is installed successfully.



**WEISTEK** 

(Pic 3.2-02)



(Pic 3.2-03)

#### 3.3 Python installation

Install Python software after finishing driver installation. The installation steps are as following:



1>Double-click software Bython\_2.7.2.msi , click [next] in the following windows.



( Pic 3.3-01 )

2> Disk C is the default destination. Don't change anything, just click [next] as following:

	Select Destination Dire	ectory
2	Please select a directory for t	the Python 2.7.2 files.
outhon		
9	2 P	

(Pic 3.3-02)

3> Click [next] in the following windows.



(Pic 3.3-03)

4> Click [finish] to complete Python installation.

Install Python 2.7.2	
Please wait while the Ir	nstaller installs Python 2.7.2. This may take
several minutes.	
Status:	

(Pic 3.3-04)



(Pic 3.3-05)

# 4. Preparations before printing

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Before start to print the SD card should insert in the 3D printer, or software will not able to connect the printer.

#### 4.1 Platform Calibration and measuring Z height

The plate should be calibrated before printing. Make sure the plate to be flat and level, and appropriate distance to the extruder.

4.1.1 Place the platform at the bottom of Z axis. Start [Machine Setting], choose the correct serial port and connect the printer.



(Pic 4.1-01)

🦂 MachineSetti	ng 🛛 🔀
Serial port Serial port: COM Res Cor	M94 Target temperature: 220 fresh Z height: 142.78
Z position: 0.00	Roughly measure Stop Accurately measure 0.5
2 posición. 0.00	Meter Z
	Apply Cancel

(Pic 4.1-02)





(Pic 4.1-03)

4.1.3Click [Roughly measure], the platform will go up and measure the height of Z axis automatically and stop at the height of 138mm.

🤻 LachineS	etting 💈
Serial port Serial port:	COM94 V Target temperature: 220 Refresh Connect Z height: 142.78
	Roughly measure Stop Accurately measure 0.5
Z position: 0.	Meter Z
	Apply Cancel

(Pic 4.1-04)







4.1.4 Select accurately measure step distance on the right of the [Accurately measure] button, then click [Accurately measure] to move the platform step by step, till only 0.3mm between the platform and the extruder.

🦂 🛯 achineS	etting		
Serial port Serial port:	COM94 V Refresh Connect	Target temper Z height:	ature: 220
7 position: 0	Ron	nghly measure	Stop 0.1
		Meter Z	
	( Ar	ply (	Cancel

(Pic 4.1-06)







**Tip**: How to estimate the distance: put a card between the extruder and the platform, while no more distance's left, make sure the card can slice between extruder and platform smoothly without any damage.



(Pic 4.1-08)

4.1.5 Now you can check if the platform is flat or not. Move the platform forward and backward, to check the distances. Also, move the extruder to the left and right, to check the distance.







Use the wrench to fasten or loosen the screws beneath the platform to adjust the platform if somewhere distance is not around 0.3mm.



(Pic 4.1-10)





4.1.6 After adjusting the platform, click [Meter Z], platform will go down again and stop when it touches the Limit Switch. This process is measuring the Z height. New data will be shown on the program.

Serial port Serial port: C	COM94 V Target temperature: 220
	Refresh Connect Z height: 142.78
	Roughly measure Stop
Z position: 0.00	
	Meter Z

(Pic 4.1-12)

**Note:** It is not necessary to measure Z height each time before printing. The program will memorize the data for your next printing. It is suggested to adjust the platform every 3-4 months after using.

4.1.7 Click [Apply] and exit the program.



#### 4.2 Select temperature

4.2.1 Open the tool showed below.



4.2.2 How to select temperature: Extruder target temperature, 220~230°C.

🔒 MachineSe	tting			×	
Serial port					Target temperature
Serial port:	COM16 -	Target temper	ature: 220		
	Refresh Connect	] Z height:	142.20	)	
		Roughly measure	Stop		
	A	ccurately measure	0.5	•	
Z position: 0.0	00				
		Meter Z			
		Apply	Cancel		

(Pic 4.2-02)

4.2.3 Click [Apply] and exit the program.

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Serial port: COM1 6  Refresh Connect  Connect  Target temperature: 220  Z height: 142.92  Roughly measure  Accurately measure  0.1  Z position: 142.92  Meter 7	
Refresh       Z height:       142.92         Roughly measure       Stop         Accurately measure       0.1         Z position:       142.92	
Connect Z height: 142.92 Roughly measure Stop Accurately measure 0.1  Z position: 142.92	
Roughly measure     Stop       Accurately measure     0.1       Z position:     142.92	
Z position: 142.92	
Accurately measure 0.1   Z position: 142.92	
Z position: 142.92	
Motor 7	
I Microi Z	
Click	Apply
Click	: Ap

(Pic 4.2-03)



# 5. Introduction of main functions

#### 5.1 Introduction of main functions

#### 5.1.1 Software interface

Please choose [Skeinforge] before printing, as picture shows.

A The Repl	icator - ReplicatorG - 0040(optim Code Machine Thingiverse He	iized by Weistek Ip	1.0)
<b>-</b> 20 [	Estimate Simulate	Ctrl+E Ctrl+L	) R R
Machine 20mm_Cal	Build Pause	Ctrl+B Ctrl+E	
	Stop GCode Generator Edit Slicing Profiles	Ctrl+Period	Skeinforge (50)
ſ	Swap Toolhead in .gcode Merge .stl for DualExtrusion	Ctrl+D	

(Pic 5.1-01)

Then choose Machine Type [Replicator 2] before printing, as picture shows.



(Pic 5.1-02)



Six main function bottoms: File, Edit, GCode, Machine, Thingiverse, Help



(Pic 5.1-03)

5.1.2 When user firstly starts the software, the software will show a blank area without any model like below picture shows.



(Pic 5.1-04)



5.1.3 Click [file], choose [Open] to open an STL file of the model. The model will show up on the center of the interface.

New	Ctrl+N	00 100 100	7	
Open	Ctrl+O		7	
Save	Ctrl+S			Replicator 2 on
Save As	Ctrl+Shift+S			PLA Extruder: 1
Recent	•			
Examples				
Scripts	۲			
Preferences	Ctrl+Comma			
Reset all preferer	nces			
Quit	Ctrl+Q			



5.1.4 If your model does not show correctly on the virtual plate, use the bottoms on the right side of the interface to edit the model.



(Pic 5.1-06)



5.1.5 When the interface turns green and shows like the picture below, that means the software has connected to the right serial port.

A The Replicator - ReplicatorG - 0040(optimized by Weistek 1.0)	
File Edit GCode Machine Thingiverse Help	
Machine The Replicator ready	Replicator 2 on COM16
	PLA Extruder: 26.0°C



5.1.6 After editing the model, click [Generate Gcode]. Wait a few minutes till the Gcode is finished.



(Pic 5.1-08)



How to deal with this problem: Choose [Defaults], then [Load Parameter]. After this step, the parameters will be correct as default.

🛕 Generate GCode 🛛 💌	🛕 Generate GCode
Slicing Profile: IdeaWerk 🗸	Slicing Profile: IdeaWerk
☑ Use Raft/Support	☑ Use Raft/Support
Use support material None 💌	Use support material None
Use Print-O-Matic (stepper extruders only)	☑ Use Print-O-Matic (stepper extruders only)
Settings Plastic Extruder Defaults	Settings Plastic Extruder Defaults
Load Parameter	Object infill (%) 10 Parameter
	Layer Height (mm) 0.20 settings
	Number of shells: 1
	Feedrate (mm/s) 60
	Travel Feedrate 80
Generate Gcode Cancel	Generate Gcode Cancel

(Pic 5.1-09)

5.1.7 Please operate some more times to get skills of printing.

🛕 Generate GCode 📃 🗾	🛕 Generate GCode 📃 🛋
Slicing Profile: IdeaWerk	Slicing Profile: IdeaWerk
Use Raft/Support	☑ Use Raft/Support
Use support material None	Use support material None
Use Print-O-Matic (stepper extruders only)	Use Print-O-Matic Exterior support ly)
Settings Plastic Extruder Defaults	Settings Plastic Elevence
Load Parameter	Load Parameter
Generate Gcode Cancel	Generate Gcode Cancel

🔺 Generate GCod	e 💌
Slicing Profile: IdeaW	erk 🔶 🖌 🖌
Use Raft/Support	
Use support material	
Use Print-O-Matic	(stepper extruders only)
Setungs Plastic E	xtruder   Defaults
Object infill (%)	10 — C
Layer Height (mm)	0.20 — D
Number of shells:	1E
Feedrate (mm/s)	60
Travel Feedrate	80
	× 1
Generat	e Gcode Cancel

(Pic 5.1-10)

Setting Parameters Description

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A: Choose slicing profile: IdeaWerk.

B: If your model contains vacant part, you need to select support.

None: None support

Exterior support: select to generate GCode with exterior support

Full support: select to generate GCode with full support

C: Infill percentage. If you want to print the model as a complete solid one, best selection will be 95%. As your wish, you can select smaller percentage to save time and material.

D: Layer Height should be 0.15mm-0.3mm. It decides smoothness of model surface and printing speed. Thinner layer makes the surface smoother, and estimated time will be longer.

E: Number of shells should be  $\geq 1$ . Usually between 1 and 3.



F: Feed rate should be 30-80mm/s. Best selection is 60mm/s.

G: Travel feed rate should be 60-150mm/s. Best selection is 80mm/s.

5.1.8 Confirm the settings and generate Gcode. Click  $\ \lceil \, OK \, \rfloor \,$  to continue.

A The Replicator - ReplicatorG - 0040(optimized by Weistek 1.0)	
File Edit GCode Machine Thingiverse Help	
Machine The Replicator ready	Replicator 2 on COM15
	PLA Extruder: 21.0°C
30-30 model gcode	
	Preview
🔏 Generate GCode	Default XY
Slicing Profile: IdeaWerk	XZ YZ
Acceleration Warning	
You are now slicing with accelerated build speeds. Do not print files generated at these speeds unless you have acceleration turn Building high speed files with acceleration turned off can harm your Makerbo You can turn acceleration on in the Onboard Preferences menu or via your M To disable this message, uncheck 'Display Accelerated Speed Warning' in File 施定	ned on. ot. lakerbot's onboard menus e->Preferences
	View
	Move
Generate Gcode Cancel	Rotate
	Mirror
	Scale
	Generate GCode

(Pic 5.1-11)

5.1.9 Wait several minutes till generation finished.



A The Replicator - ReplicatorG - 0040(optimized by Weistek 1.0)	
File Edit GCode Machine Thingiverse Help	
Machine The Replicator ready	Replicator 2 on COM16
	PLA Extruder: 24.0°C
20mm_Calibration_Box model gcode	
	Preview
	Default XY
	XZ YZ
Generating toolpath for 20mm_Calibration_Box	
Generating toolpath for 20mm_Calibration_Box	
Generator: Skeinforge (50)	
Inset (layer 21 of 61)	
Total progress:	
Cancel	
	ouse wheel to zoom
	View
	Move
	Rotate
	Mirror
	Scale
	Generate GCode
Infill Solidity (ratio): : 0.1 }	*
[11:18:45] OVERRIDE fill.csv Extra Shells on Sparse Layer (layers): 1.0	(lavers).'. '1 0' 'Evtra
Shells on Sparse Layer (layers): ': '1.0', 'Infill Solidity (ratio):': '0.1'}	(14)815/1.U, EXCE

(Pic 5.1-12)

5.1.10 Click to start building. Click [Proceed anyway] to continue.



(Pic 5.1-13)



If GCode warning is shown, **please ignore it**. Do not cancel and choose "Proceed any way".

other than the one it's intended for (i.e.	running dual headed GCode on a sin	igle headed machine).	amachine
lick on a message to see the last place	it occurred.		
Homing in the wrong direction for select	ed machine: 'G161 Y X F2500 (Home	X axis maximum; go until reaching t	ne end stop
Homing in the wrong direction for select	ed machine: 'G161 Y X F2500'		
Homing in the wrong direction for select	ed machine: 'G162 Z F450 '		
You're moving too fast! G1 X-0.0 Y-37.8	3 Z2.9 F9000.0 turns at least one as	xis faster than it's max speed.	
You're moving too fast! G1X-0.0 Y-37.9	210.1 F9000.0 turns at least one at	xis faster than it's max speed.	
You're moving too fast! G1X-0.0 Y-37.9	5 Z3.3 F9000.0 turns at least one as	xis faster than it's max speed.	
You're moving too fast! G1X-0.0 Y-38.1	1 79 3 E9000 0 turns at least one as	vis faster than it's may speed.	
You're moving too fast! G1 X-0.0 Y-38.1	6 74.1 E9000.0 turns at least one at	xis faster than it's max speed.	
You're moving too fast! G1 X-0.0 Y-38.2 And 8903 more	2 Z8.9 F9000.0 turns at least one as	xis faster than it's max speed.	

(Pic 5.1-14)

5.1.11 Click  $\lceil \text{Yes} \rfloor$  to continue.



(Pic 5.1-15)



#### 5.1.12 Model is printing.



(Pic 5.1-16)

**Warning:** Do not cut down power during printing process, or the printing plate will drop down without any tip.

5.1.13 Printing plate will drop down slowly when printing finishes. **Caution** not to pinch your hands.

Remove the model from the plate with the shovel. Remember to wear your gloves.



(Pic 5.1-17)

# 6. Forward and reverse the filament

# 6.1 How to feed material

6.1.1 To avoid material stuck inside the extruder, please make sure the filament is fed through the center of the hole.



(Pic 6.1-01)



6.1.2 First step, put the filament free end through the holder guide, and feed the filament through the guiding tube. Second, push the free end into the extruder feeding hole.

6.1.3 Select Extruder Target Temperature at 220°C. Heat up extruder. After heating up, click  $\lceil$  Forward  $\rfloor$  until the material string comes out from the nozzle. Click  $\lceil$  Stop  $\rfloor$  when finish this step.



(Pic 6.1-02)

The filament free end must be cut to be flat.



Feed the materials end to end.



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(Pic 6.1-04)

Sund	
log Controls	Extruder Motor Control Motor Speed (RPM) Extrude duration Motor Control Extruder Temperature Controls PLA Extruder Target (°C) 220 PLA Extruder Current (°C) 221 Temperature Chart 300 150 100

(Pic 6.1-05)

#### 6.2 How to reverse material

To reverse material, the extruder should be heated up first. Then click  $\lceil Reverse \rfloor$  until the filament is totally reversed from the extruder. Click  $\lceil Stop \rfloor$  to finish this step.

		7. Build from SD card and c	ontrol
Control Panel			
ming			
og Controls	Jog Mode	Extruder Motor Control Motor Speed (RPM) 8	Reverse
	Continuous Jog	Extrude duration 300s -	
e 🕅 🔛 🚔 🕻	TOP X 0 Center X	Motor Control reverse stop forward	rd
	Y 0 Center Y		iu .
X- X+	Z U Center Z	Extruder Temperature Controls	
	Make current position zero	PLA Extruder Target (°C) 220 PLA Extruder Current (°C) 221	
/ Speed	2792 mm/mi	n. Temperature Chart	
Speed (	741 mm/mi	n. 250 -	
		200	
		150	
		100	
epper Motor Controls		50 -	
Enable			

(Pic 6.2-01)

# 7. Build from SD card and control

# 7.1 Build from SD card

After generating Gcode of the model, click bottom to create an .x3g file. Save the .x3g file in your SD card.

Note: 1. SD card capacity should be no larger than 2D.

2. .x3g file name should be made up from English or Arabic number only.



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(Pic 7.1-02)

#### 7.2 Operation on control screen

Control should be done on the screen when building from SD card.

7.2.1 Click anywhere on the screen to start operating.





(Pic 7.2-01)

7.2.2 Scan the file as the guide shows.



(Pic 7.2-02)

7.2.3 Click on the name of the file to start building.



(Pic 7.2-03)

7.2.4 The picture (Pic 7.1-04) shows the condition of the machine when building. Click Light to switch on the light inside the machine box, in order to observe the printing process more clearly.

WeisTek IdeaWerk	
Me	File : box.x3g
tchi	Setting Tem.: 220 C
ne c	Extruder Tem.: 220 C
ondi	Finish (%) : 20%
tion	Stop

(Pic 7.2-04)



7.2.5 Click Stop to end the process of building if needed.



(Pic 7.2-05)

7.2.6 Error alert shows up if anything wrong when building.



(Pic 7.2-06)



# 8. How to fix common problem

#### 8.1 Resolution of filament feeding unsmooth

What is unsmooth: During printing, the extruder can't extrude filament or extrude intermittently, at this situation,

1: Check the extruder temperature if is too low or not, increase 5-10°C each time to see if the problem is solved or not. See Pic8.1- 01

2: Check the gear of the extruder, if there are a lot of filament waste pellet, just clean it and then print again to see if situation get better or not.



(Pic 8.1-01)

### 8.2 Resolution of nozzle blocking

If the extruder is still not able to work, then you have to check if the nozzle of the extruder is blocked or not. This is always due to wrong operation of machine and use wrong filament or wrong operation of joining the filament.

Solutions:

Heat the extruder temperature to appropriate temperature (only for PLA. PLA: 220°C-230°C).

Click Reverse, if needed, at the same time have to pull back the filament with hand (some time the filament was bite a breach by the gear, the gear can't touch the filament, need to pull the filament to the gear so the reverse will work)

2) Change a new filament, the temperature of extruder can be selected a little high(around 250°C).

3) Then Start to extrude, use your needle (or any of your needle like tools) insert into the hole of nozzle, dredge up and down, at the same time, press the filament which is extruding. Keep doing this until the filament comes out from the nozzle.



(Pic 8.2-01)

# Acknowledgements

Thanks for using IdeaWerk<sup>TM</sup> 3D printer and thanks for your supports for Weistek.

For after sale service please contact with your retailer.