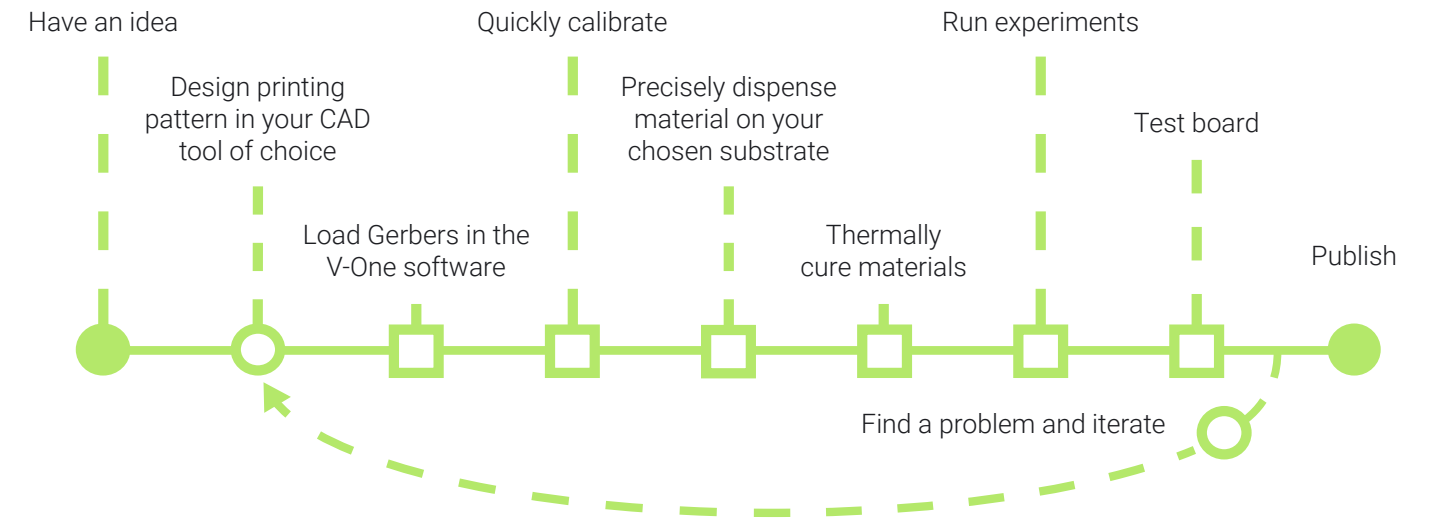BodyNet, an RFID ID card printed using the Voltera V-One on a sticker that bends and stretches with the skin of your wrist. Created by Postdoctoral scholars Simiao Niu and Naoji Matsuhisa in Zhenen Bao's research group at Stanford Unversity.

Experimentation with the Voltera V-One.

Have an idea

Design printing pattern in your CAD tool of choice

Load Gerbers in the V-One software

Quickly calibrate

Precisely dispense material on your chosen substrate

Thermally cure materials

Run experiments

Test board

Publish

Find a problem and iterate

The V-One supports groundbreaking research without blowing your budget.

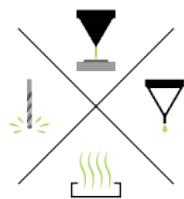The V-One is a platform for turning your "what-ifs" into reality.

The next decade will hold many breakthroughs in sensor technology, e-textiles, robotics, microfluidics, RFID, energy harvesting and so much more. Achieving these breakthroughs comes down to putting the right tools in the hands of the people that will make it happen. People like you.

Exploring these technologies requires a catalog of materials. The substrates that V-One users are using include FR4, FR1, PET, PI, TPU and different kinds of ceramics and paper. The materials they are experimenting with include conductive inks (metal particle, metal flake, graphene), solders,

adhesives, other screen printable materials.

Impactful research shouldn't be limited by access to multi-million dollar equipment. All you need is control over feature width and height, customizable curing profiles, ability to adjust print parameters and customizable G-code commands. The V-One offers this and more.

Your ability to create comes down to the tools you use. Choose the one that is simple, flexible and that gets out of your way.

Teams at leading institutions like Princeton, Stanford, Harvard, Oxford, NASA and Intel use the V-One for research.

All-in-one platform

Precision material dispensing, CNC drilling and a heated bed that allows for custom curing profiles up to 240°C, all on your benchtop.
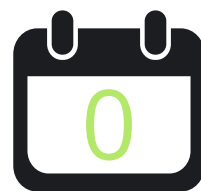
0-day lead time

Accelerate your research by prototyping and iterating faster. The V-One allows you to experiment with novel substrates and in-mold electronics easily.

Easy

Using the V-One is a breeze. From simple software with in-app video instructions to magnetic attachments, it's as easy to use as an iPad app.

# Accurate. Repeatable. Standardized. Collaborative.

Faster iterations means better research.

The "move fast and break things" attitude is not highly valued within academia. However, moving fast does have its benefits. If you spend less time creating your experiments you can fit more experiments within the same time. This allows you to increase certainty and repeatability.

In fact, having others reproduce your results is as easy as emailing your collaborators or colleagues at different institutions your design files and print parameters. Standardization and accuracy are key to repeatable results.

The input files, substrates, nozzles and cartridges are all common to the industry and widely available from reliable suppliers. The machine's precision x-y-z motion system provides accurate dispensing and feedback loops and the curing platform maintains consistent temperatures.

The V-One is now referenced in many technical publications acknowledging the value it provides to the scientific community. Search "Voltera V-One" on Google Scholar to read the citations yourself.
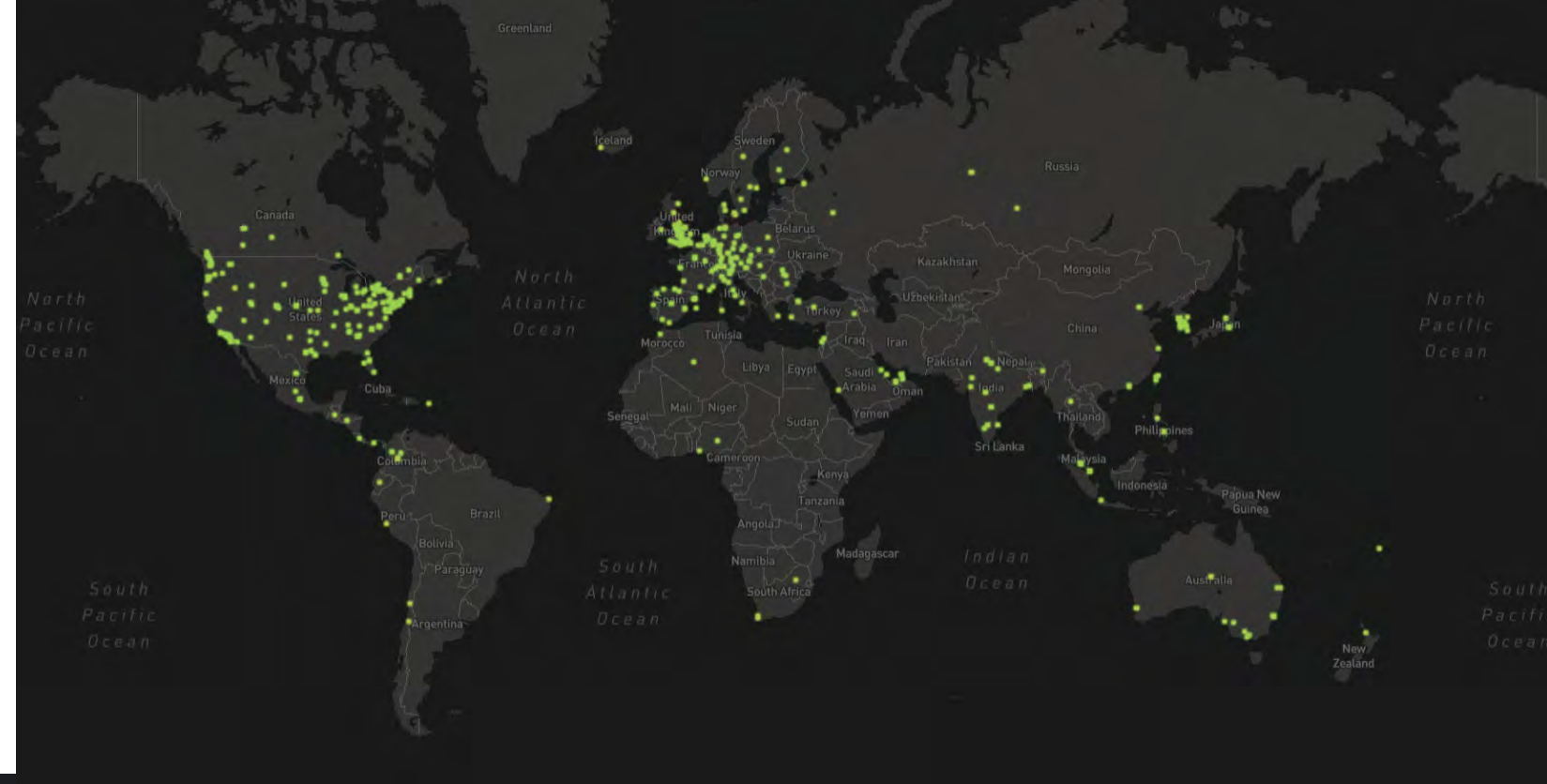
The V-One lets you use your own inks & substrates, and set the temperature profile to cure all sorts of materials up to 240°C.

One panel of a transparent 8x8x8 LED matrix. Traces printed and eventually solder paste dispensed by the Voltera V-One.

A global community of users.

Join the researchers, educators and engineers around the world innovating with the V-One.

"The V-One printer was used on several occasions and our research team was impressed by the printer's performance and printing accuracy. It was able to provide detailed prints of our designed PCBs, in addition to its ability to dispense solder paste and drill holes. Our research team was also impressed with the V-One software, which makes PCB printing a straightforward task. Additionally, the different choices of conductive ink, variable solder paste, different drill sizes and variable ink dispensing nozzle sizes make the V-One printer a highly flexible all-in-one PCB printing machine."
—**Dr. Cristiano Palego,** *Senior Lecturer in Microwave Instrumentation,* Bangor University

"Thanks so much... The V-One has really been a game changer for us. We are experimenting with concepts we never thought were possible before. This little machine has opened up a portal of possibilities in our research."
—**Voltera User,** Anonymous In-App Feedback

"We use the Voltera V-One to dispense various pastes for printed electronics onto a number of different substrates ranging from FR4 to 3D printed objects to carbon fiber composites. The V-One is one of the workhorses in our lab because of how easy it is to get started printing. A major advantage is the customer service, which has always been very responsive and helped us to quickly solve any problems."
—**Dr. Gerd Grau,** *Assistant Professor,* York University

"I want to take the opportunity to thank you guys for having such a great customer support service. Always fast, relevant and helpful answers!"
—**Voltera User,** Anonymous In-App Feedback

"Being a Hardware R&D group, your concept can really open new dimensions in how we prototype and check things out."
—**Voltera User,** Anonymous In-App Feedback

"I'm setting up our small spacecraft design lab with a strong focus on enabling our students to make every piece of the spacecraft in-house here, because a trap that a lot of these cube-sat projects fall into is that they end up having to buy a lot of the subsystems or hardware from outside vendors. I think it's not as rewarding, I don't think it's as pedagogically valuable, and it robs students the opportunity to learn the nuts and bolts of how every subsystem works."
—**Michael Galvin,** *Senior Technical Support Staff Department of Mechanical & Aerospace Engineering* Princeton University
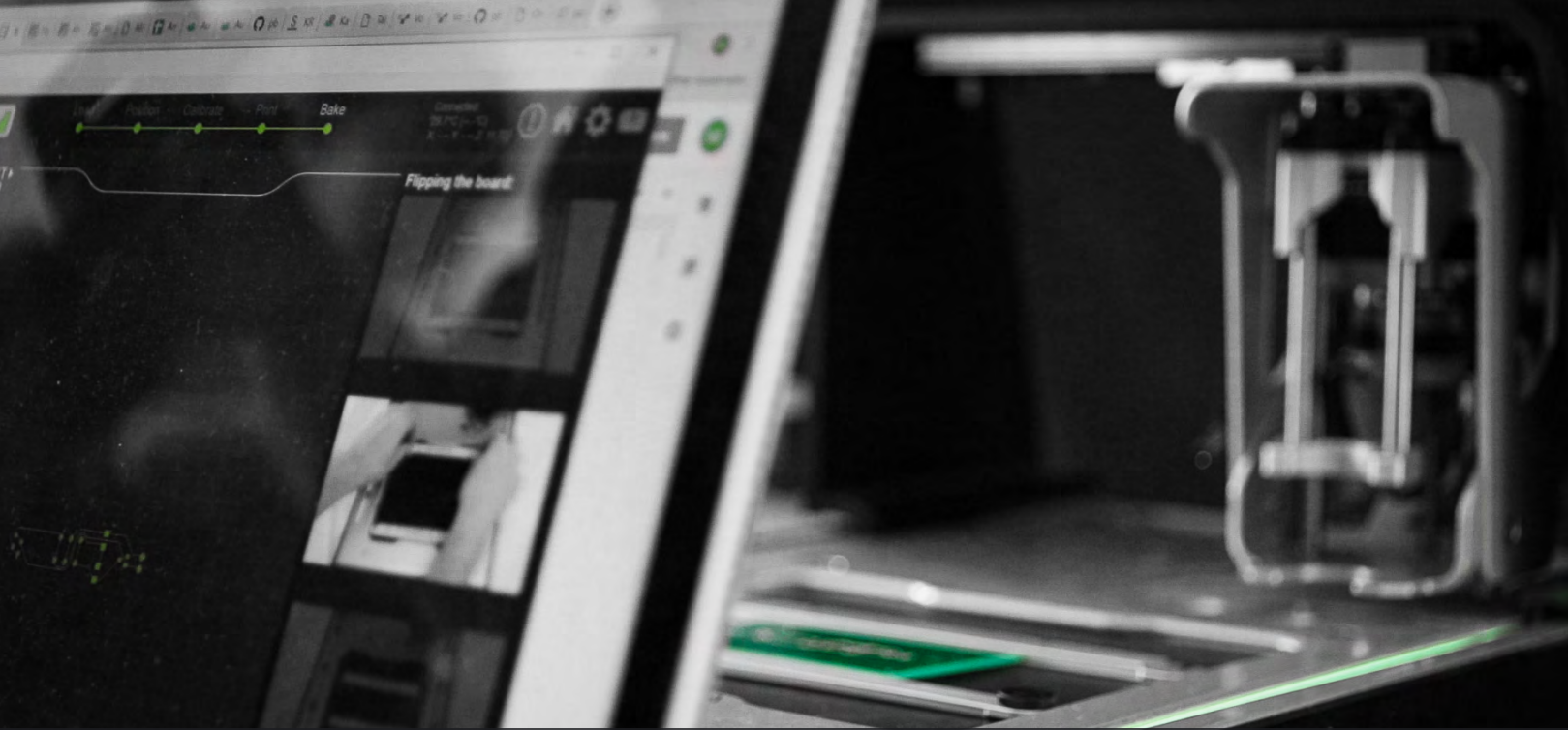
The V-One in use at the studio of Dr. Philip Beasley, an architect and professor at the University of Waterloo who uses the Voltera V-One to print lightweight circuit boards to power structures that move and respond to stimuli like living systems.
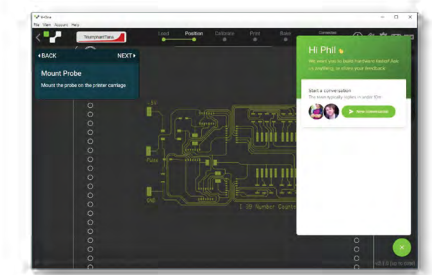

Simple and elegant design.
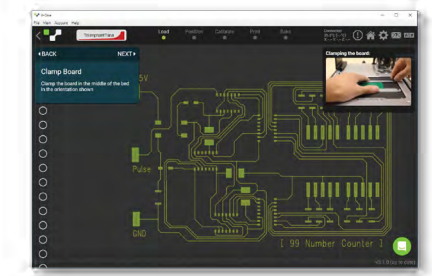
Step-by-step video instructions.

Smart alerts prevent printing issues.

In-app support chat.

Software that teaches every step of the way

Lab software that's as easy and intuitive as a smartphone app.

Sick of using software that was created in the days of dial-up internet and beepers? We are too.

Our software is simple and straightforward, with instructional videos to guide you every step of the way. Support chat is built right into the app, and a playlist of detailed support videos will make sure you never get stuck.

Our software is also completely free: no recurring licenses or big up-front payments required.

You can get started with electronics prototyping moments after your download the software from our website. Download it now for free and upload a few designs to see how easy it is to use.

In-app chat

The V-One was designed to be used by everyone. Even with no experience, you can sit down and print your first circuit in minutes.

Intuitive

Our software is part of what makes the V-One so intuitive. Follow our workflow and you'll go from a blank board to a finished circuit in an hour or two.

Free

Our goal is to help the world build hardware faster, and completely free software is a part of that. No upfront costs or recurring license fees required.

A precision dispensing system tailored for experimenting with screen printable materials on rigid, flexible or stretchable substrates.

Easy to purchase, set-up, learn, maintain and share

When we focus on more than just the features, your life becomes easier.

You have options when you're ready to purchase - speak with our application specialists, contact our resellers or buy directly from our online store. Not only is the V-One affordable enough that you can buy it online, but our consumables are available for you to restock at any time.
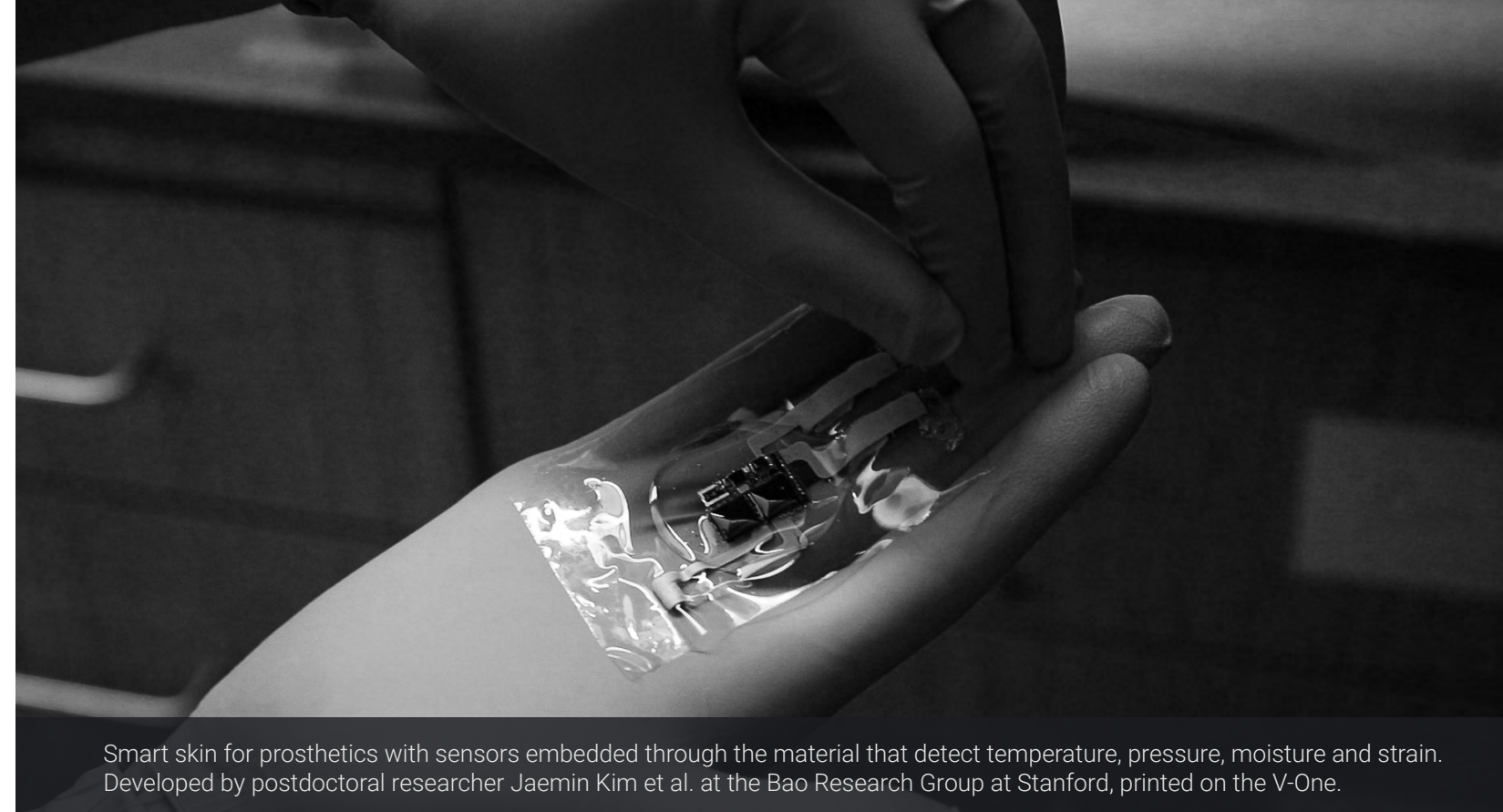
Once your order is processed, your printer will arrive within days and all you have to do is unbox it, plug it in and download the free software. Set-up doesn't require coordinating logistics between us and your plant ops team, no intrusive manufacturer installation and no clearing out floor space for massive new equipment.

When it comes time to start printing, the V-One's multilan-guage support and step-by-step videos make it easy for grad students from all over the world to learn how to use the machine.

Maintaining the V-One doesn't require entire manuals outlining how to perform a monthly full-day maintenance process. The machine is built to last, has minimal consumables and requires minimal cleaning to keep it in top working order.

The V-One can be used by one person or be shared by everyone in the lab. It is fast enough that you'll likely never have scheduling conflicts and small enough that it can be moved between benches if required.

Affordable technology

Custom materials

Open source friendly

Online help center

Flexible circuits printed on Kapton and PET by the Voltera V-One.
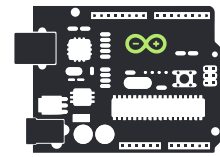
Smart skin for prosthetics with sensors embedded through the material that detect temperature, pressure, moisture and strain. Developed by postdoctoral researcher Jaemin Kim et al. at the Bao Research Group at Stanford, printed on the V-One.
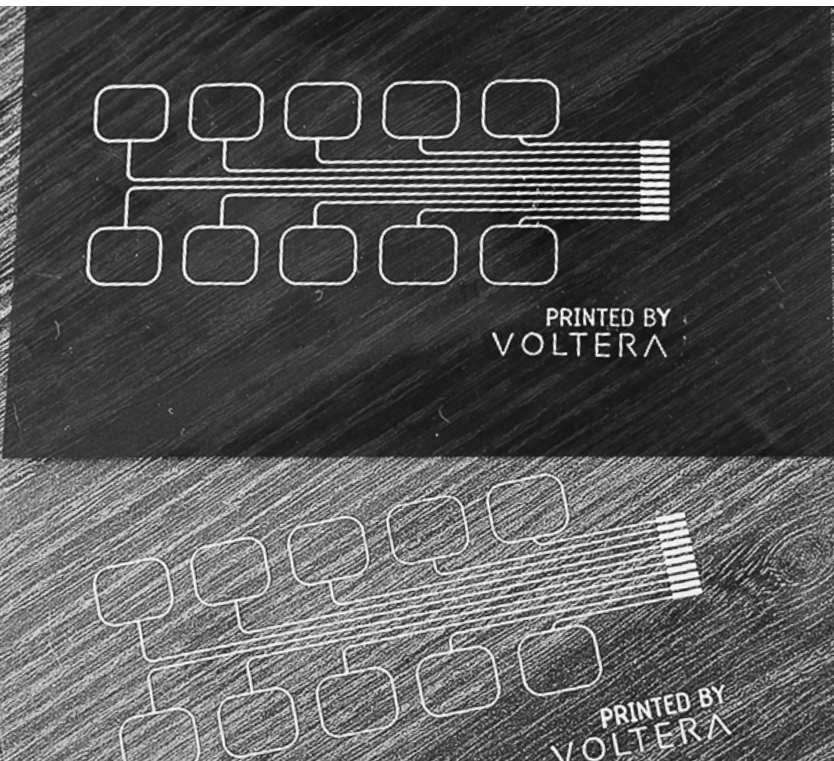
What's in the box?

10 2"x3" FR4 Substrates

6 3"x4" FR4 Substrates

10 2"x3" FR1 Substrates

6 3"x4" FR1 Substrates

1 Burnishing Pad

1 Drill Bit Set

1 Solder Wire

1 Drill

25 Disposable 230 Micron Nozzles

1 Voltera V-One

1 Probe with Cap

2 Dispensers with Caps

2 Substrate Clamps & 4 Thumbscrews

1 *Conductor 2* Cartridge

Solder Paste Cartridge

200 0.4mm rivets

200 1.0mm rivets

2 Rivet Tools

(Not pictured)   1 Sacrificial Layer   1 Hello World Starter Kit   1 Punk Console Starter Kit   1 Voltera Anti-Static Tweezers   1 Set of Safety Glasses

A flexible, stretchable heater printed on the Voltera V-One

The V-One Spec

PRINTING

|	METRIC	IMPERIAL
Minimum Trace Width	0.2mm	8mil
Minimum Passive Size	1005	0402
Minimum Pin-to-Pin Pitch	0.65mm	26mil
Resistivity	12mΩ/Sq @ 70um Height	12mΩ/Sq @ 3mil Height
Supplied Substrate Material	FR4	FR4
Maximum Board Thickness	3mm	0.125"

SOLDERING

	METRIC	IMPERIAL
Minimum Passive Size	1005	0402
Minimum Pin-to-Pin Pitch	0.5mm	20mil
Solder Paste Alloy	Sn42/Bi57.6/Ag0.4	Sn42/Bi57.6/Ag0.4
Solder Wire Alloy	SnBiAg1	SnBiAg1
Soldering Iron Temperature	180-200°C	355-390°F

FOOTPRINT AND PRINT BED

	METRIC	IMPERIAL
Dimensions (L × W × H)	390mm × 257mm × 207mm	15.4" × 10.1" × 8.2"
Weight	7kg	15.4lbs
Print Area	128mm × 116mm	5" × 4.5"
Max. Heated Bed Temperature	240°C	464°F

DRILLING

	METRIC	IMPERIAL
Spindle Speed (Max.)	13,000 RPM	13,000 RPM
Power	12V, 25W	12V, 25W
Runout (TIR)	0.076mm	0.003"
Shank Diameter	3.175mm	1/8"
Supplied Substrate Material	FR1	FR1
Bit Diameter (Max.)	2mm	0.078"
Bit Length (Max.)	38.1mm	1.5"

SOLDER COMPATIBILITY

	Sn42/Bi57.6/Ag0.4 Solder	Sn63/Pb37 Solder
Standard Ink	✓	✗
Flexible Ink	✓	✗
Copper PCBs	✓	✓
HASL PCBs	✗	✓

SOFTWARE REQUIREMENTS

Operating Systems	Windows 7, 8, 10 (64bit), OSX 10.11+
Compatible File Format	Gerber
Connection Type	Wired USB 2.0
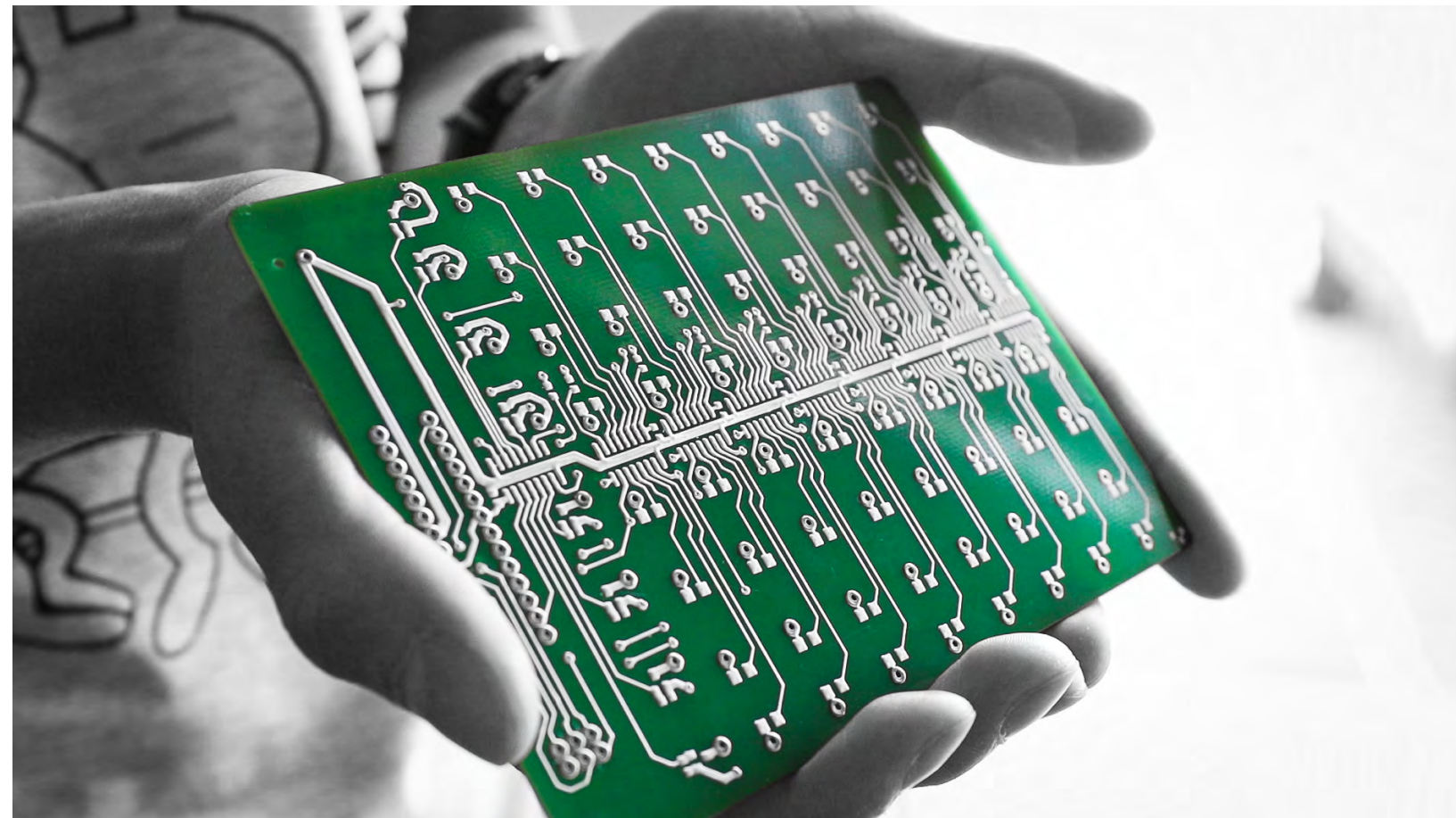
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