

VTAP₀₀

User Guide - VTAP100 cloud capable reader - Power over Ethernet (PoE)

VTAP100-PRO-POE

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DOT ORIGIN

If you need help to set up or use your VTAP PRO reader, beyond what is contained in this User Guide, then please contact our support team.

Email: vtap-support@dotorigin.com

Download the latest documentation and firmware from <https://vtapnfc.com>

Telephone UK and Europe: +44 (0) 1428 685861

Telephone North America and Latin America: +1 (562) 262-9642

If you have any feedback on setting up or using your VTAP PRO reader or this documentation, then please contact our support team. The product is constantly being reviewed and improved and we value feedback about your experience.

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Dot Origin Ltd

Unit 7, Coopers Place Business Park, Combe Lane, Wormley

Godalming GU8 5SZ United Kingdom

+44 (0) 1428 685861

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Safety instructions



WARNING: INTENDED USE

The VTAP100-PRO-POE is a boxed product for end-users. Although the enclosure may be opened when the device is not connected, components mounted on the VTAP PCB are not user-serviceable.



WARNING: ESD PRECAUTIONS

If the enclosure is opened to access the PCB, we recommend careful handling of Electrostatic Sensitive Devices (ESDs) .



WARNING: POWER SUPPLY - VTAP100-PRO-POE

EMC emissions and immunity certifications are only valid when using the VTAP100-PRO-POE with the supplied cable, an RJ45 cable for power and network connection.



WARNING: POWER SUPPLY - VTAP100-PRO-EXPI I/O expansion board

If a VTAP100-PRO-EXPI I/O expansion board is being used to control mains voltages, the installation should be undertaken by a qualified electrician.

**WARNING: FCC COMPLIANCE**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.

**WARNING: ISED COMPLIANCE**

This device contains licence-exempt transmitter(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including any interference that may cause undesired operation of the device.

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.

L'émetteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement est conforme aux limites d'exposition aux rayonnements de la ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et un corps humain.

1 Using this guide

This guide is for first-time users of the VTAPI00-PRO-POE.



Figure 1-1 VTAPI00-PRO

It contains the information you need to install your VTAP PRO reader and start work with your VTAP Cloud configured device. The majority of VTAPI00-PRO-POE reader installation is about ensuring the reader is powered and connected over Ethernet to VTAP Cloud.

The VTAPI00-PRO-EXPI expansion I/O board is an option for VTAPI00 PRO readers to enable more complex actions to follow a pass read. The use of this optional board is also described in this guide.

Consult the VTAP Cloud User Guide if you need to know more about changing configuration using the online VTAP Cloud platform.

If you need help beyond what is contained in this guide please contact [**vtap-support@dotorigin.com**](mailto:vtap-support@dotorigin.com).

2 How a VTAP100-PRO-POE works

The VTAP100-PRO-POE is an NFC mobile wallet pass reader that offers an Ethernet connection to the Dot Origin VTAP Cloud. The VTAP100-PRO from Dot Origin is an enhanced, cloud-capable version of the popular VTAP100 desktop USB reader.

The VTAP100-PRO-POE reader is managed and communicates through the VTAP Cloud service, using an Ethernet connection and optionally some input/output features.

The VTAP100-PRO-POE is connected only to an **Ethernet network**. Whenever a pass is presented, data is sent to the VTAP Cloud management platform, which can optionally be linked to a third party platform such as a loyalty platform. Responses to each pass tap can be fed back to the user (or a local operator) via simple LED and beep signals, and/or switching an electrical device through the VTAP I/O. Configuration and management of the device is performed via a companion online platform, called the VTAP Cloud. Using this service, you can configure the various pass reading parameters (merchant IDs, private keys etc). You also control the application, which determines how the VTAP PRO reader behaves when a user taps their phone, and where the pass data should be sent.

Note: The VTAP PRO readers may be pre-configured to suit our various customers and partners, and provide demonstration units ready to test. In some cases, they are configured to work with our demonstration pass platform, OriginPass, and in other situations they are set up to use the customer's own passes and/or platform APIs.

This document describes how to set-up and use the different features of VTAP PRO reader in Cloud mode and using VTAP100 PRO I/O expansion box (VTAP100-PRO-EXPI) with a VTAP PRO reader.

3 Cloud mode

This section describes how to use the VTAPI00 PRO reader in Cloud mode.

In Cloud mode, VTAP PRO reader can connect to the VTAP Cloud Admin Platform over Internet, through Ethernet.

3.1 First time using VTAP PRO reader in Cloud mode

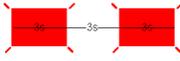
1. Power on the VTAPI00-PRO-POE by connecting the PoE cable.
2. You should see a steady red LED on the top of the VTAP PRO reader. This indicates that the device is booting up, which can take up to 10 seconds.

When boot up is complete you should see the LED flash red while the device establishes a network connection. A steady blue LED indicates you have a successful connection to the network and the Internet, and therefore to the Dot Origin cloud platform.

Note: The steady blue LED will flicker every 30s in response to a heartbeat signal, giving visual confirmation it is still in communication with the VTAP Cloud.

3.1.1 LED and buzzer default behaviour

The following signals are used to indicate certain situations during start up and normal operation of a VTAPI00-PRO reader in Cloud mode.

Signal		Meaning
	Steady red	System is booting (typically <10 seconds). If the LED remains steady red for longer than 5 minutes there is an error - contact vtap-support@dotorigin.com .
	Red flash every 1 sec	No network.
	Red slow flash	Ethernet network but no Internet (so not connected to Dot Origin cloud). After 5 minutes the unit will automatically reboot.
	Steady blue (or default colour set in application)	Connected to the Dot Origin cloud , available for you to manage through the VTAP Cloud platform. Note: The steady blue LED will flicker every 30s in response to a heartbeat signal, giving visual confirmation it is still in communication with the VTAP Cloud.
Any	LED and/or beep (as set in application)	Instant reaction to pass/card when presented
Any	LED and/or beep (as set in application)	Application response to pass/card data received and processed

Note: The steady blue LED will flicker every 30s in response to a heartbeat signal, giving visual confirmation it is still in communication with the VTAP Cloud. Always wait a few seconds to be sure whether the LED signal is flashing or steady.

3.2 Configure VTAP PRO reader

The VTAPI00 PRO reader will be configured through the VTAP Cloud platform to suit customer requirements, so that it can be used straight out of the box without the need to set any configuration.

Should you require a custom configuration for your VTAPI00 PRO reader please contact our support team at vtap-support@dotorigin.com.

3.2.1 Using the VTAP Cloud online platform

When you have a VTAP PRO reader which has a **steady blue LED**, it can be managed through the VTAP Cloud online management platform.

Your VTAP PRO reader will be associated with a login for a particular admin user, using details provided at time of purchase. When you log in as the admin user for your organisation you will be able to:

- View **readers** status information about your VTAP PRO reader
- Change the **configuration** of your VTAP PRO reader, setting the various pass reading parameters (merchant IDs, private keys etc).

- Change the **application** to be used by your VTAP PRO reader. This means selecting a script that will control actions following each pass read. This might include sending an instruction to the VTAP PRO reader to flash its LED or beep, or to send part of the received pass data over a USB keyboard interface. Dot Origin will provide or collaborate on public or private scripts to suit the intended application.
- Set up access for any other **users** within your organisation, who will need to view or make changes in the online management portal.
- If you have multiple VTAP PRO readers you can simplify management by grouping them into **fleets**, which share a common configuration and application.

When a reader is subsequently switched off, or loses Internet connection, it will remain available to manage in the online management portal. Changes will be made to its operation whenever the reader is next brought back online.

There is a separate VTAP Cloud User Guide describing this platform. If you need further help, contact vtap-support@dotorigin.com.

4 Using VTAP PRO I/O expansion board

The VTAPI00-PRO-EXP1 expansion extends the I/O (Input/Output) connectivity from the VTAP PRO to an external board.

4.1 Connect the I/O expansion board to a VTAP PRO reader

To open the case, follow the instructions in [Environment, mounting and branding](#).

CAUTION: We strongly recommend that power is disconnected before opening the VTAPI00 case.

Use the EXP cable supplied to make the connection between the VTAP PRO reader and the VTAPI00-PRO-EXP1 as shown in the diagram.

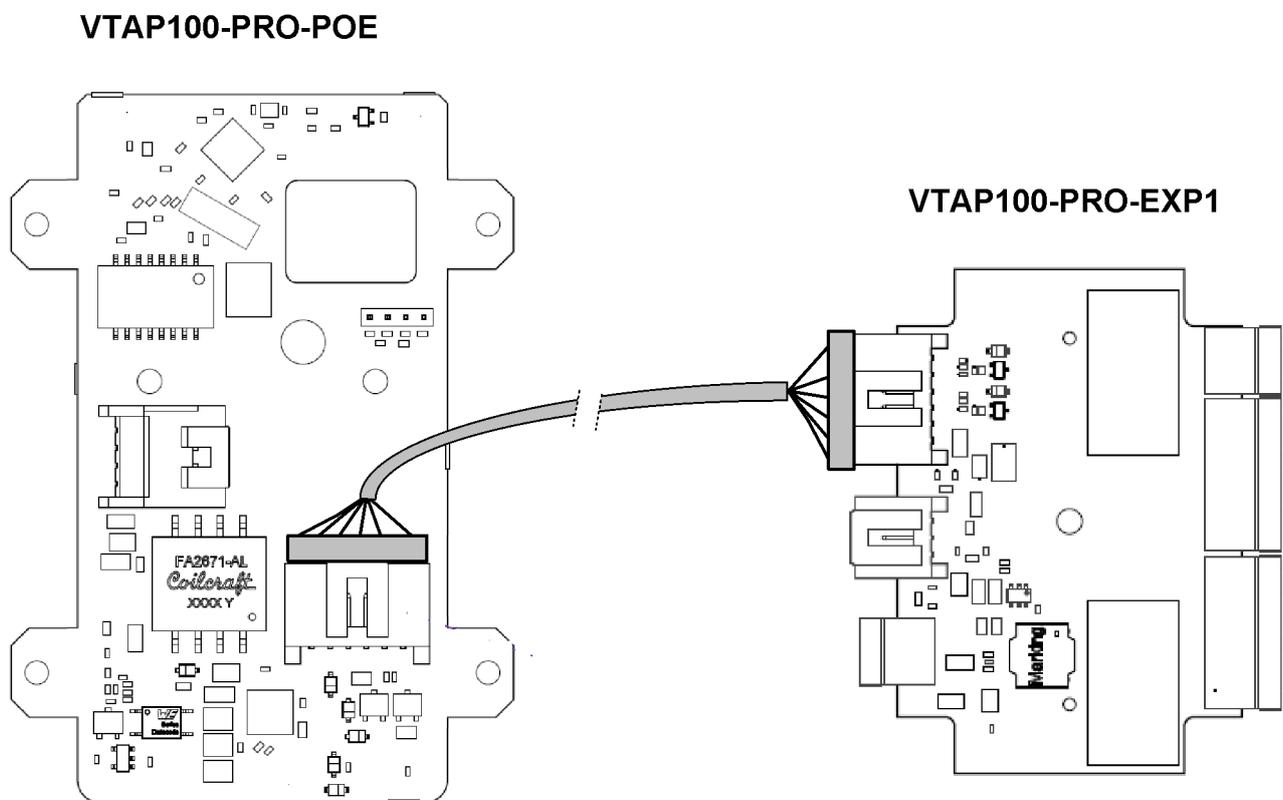


Figure 4-1 Connecting VTAP100-PRO-EXP1 expansion to the VTAP100-PRO-POE daughter board

The cable can be routed out through the hole in the back of the VTAP case, and pressed into a guide channel when the product is reassembled. To do this you may need to break or remove a sticker on the rear of the case.

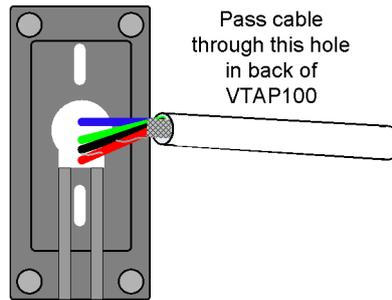


Figure 4-2 Where to pass a cable through the compact case

If you plan to fix the case to a surface, we recommend that you screw the back of the VTAP100 case to that surface before connecting the EXP cable.

The VTAP PRO I/O expansion board is only suitable for indoor use.

The VTAP100-PRO-EXPI supports the following I/O options:

- Input - Voltage type, +/- 30V DC
- Output 1 & 2 - Contact type, max 5A @ 50V AC
- Serial LED output - Neopixel protocol, 5V DC

When you tap your smartphone on a VTAP PRO reader, with a VTAP100-PRO-EXPI connected and connection to the VTAP Cloud, your mobile NFC pass will be read and data sent to the VTAP Cloud platform. (Remember that the data can only be read if your mobile NFC pass was issued in connection with the Merchant ID(s)/Collector ID(s) and ECC key(s) on the VTAP PRO.) Default values on the VTAP reader are associated with a demonstration pass, so that you can test the operation using factory settings before you begin customising any settings.

On receiving a valid pass payload, the VTAP Cloud platform will trigger any response application (or script) set for the reader. That script may be sent to the VTAP reader to trigger an LED pattern, a beep and a relay output. The VTAP PRO reader would action the beep, but any LED pattern or sequence and relay output will be passed on to the VTAP100-PRO-EXPI, which will then toggle the relay coil ON or OFF, following the script.

The VTAP100-PRO-EXPI is rated at 9-15V DC (typ 600mW) for power over the 2-pin power input.



Figure 4-3 Diagram showing I/O connectors on VTAP100-PRO-EXP1

4.2 Input

A switch (such as a Request to Exit button) can be connected across the DI and 0V input connections to trigger the input.

The voltage input will detect a change of state, where input voltage of <1V is 'input low' and input voltage of >4V is 'input high'.

This input can trigger a custom script, saved on VTAP Cloud platform, to perform tasks such as a beep, LED sequence, or output contact trigger.

CAUTION: Ensure that there is always a common ground between the VTAP100-PRO-EXP1 (via 0V pin on Input connector) and the connected equipment.

Use a 2-way 5mm pitch Euro style connector for the input connection.

4.3 Relays (Output 1 and 2)

Two Output relays can be used to switch loads up to 5A @ 50V AC. The contact arrangement is 1 Form C (CO).

The outputs can be set to: ON, OFF, timed ON/OFF, or delay ON/OFF. These options support a wide range of scenarios.

Both output connectors provide +12V and up to 1A to power the equipment connected. If the connected equipment requires a higher current, the power must be supplied by using a different wiring scheme.

Use 5-way 5mm pitch Euro style connectors for the output connections.

4.4 Serial LED output

The Serial LED Output can be configured to drive up to 255 serial LEDs. It uses the Neopixel protocol for driving serial LEDs.

The VTAP100-PRO-EXPI will supply +5V and up to 1.5A to power an LED strip or matrix. The power drawn by your chosen LEDs and the way you intend to use them, can restrict the number of serial LEDs that can be supported. The number of LEDs will be most restricted when each RGB LED is being run at full power (white) continuously. If the usage involves only red, blue or green, or if a pattern on a matrix will only use a subset of LEDs, then a larger number of LEDs can be supported.

Serial LEDs are typically specified in terms of the current drawn by a single Red, Green or Blue LED. Common LED current specifications are 5mA, 12mA and 20mA. Test results for the number of LEDs of each type that can be powered are given in the following table:

Max current per single Red, Green or Blue LED	5mA	12mA	20mA
Voltage	5V	5V	5V
Single LED max current drawn at full RGB brightness (white)	15mA	36mA	60mA
Max number of LEDs that can be powered at full RGB brightness (white) - 100% duty	73	30	18
Max number of single colour (Red, Green or Blue) LEDs that can be powered at full brightness - 100% duty	220	91	55
Text on black background - assumed 30% duty	243	100	60

Any theoretical maximum number of LEDs, using lower powered LEDs on a lighter duty cycle, would still be restricted by the 255 maximum number of LEDs that can be configured.

CAUTION: Ensure that there is always a common ground between the VTAP100-PRO-EXPI (via 0V pin on the Serial LED Output connector) and the connected equipment.

Use a 3-way Molex® Pico-Clasp™ connector for the Serial LED Output connection.

4.5 Control expansion board in Cloud mode

The input, relay and serial LED output settings for the VTAP PRO I/O expansion board are configured on VTAP PRO reader, through the VTAP Cloud platform, to suit customer's I/O application requirements. If you need changes to settings please contact our support team at vtap-support@dotorigin.com.

4.6 Use case for the I/O expansion board

An example scenario for using the VTAP100-PRO-EXPI with the VTAP PRO reader would be door or turnstile control in a supervised access control scenario. In this case the VTAP100-PRO-EXPI might be used to connect to a door lock. The VTAP100-PRO, on reading a valid pass or card, energises the relay coil on the VTAP100-PRO-EXPI to open the door.

5 Power

The VTAPI00-PRO-POE comes with an RJ45 cable, with a female RJ45 connector, for both power and network connection.

A micro USB cable could be connected to provide an alternative source of power during local configuration. (Refer to **USB wiring** for how to connect this.)

If the optional VTAPI00-PRO-EXP1 expansion board is used, the VTAPI00 PRO reader can be powered from the I/O board, using the 0.5m EXP cable provided. It does not matter whether the reader is already receiving power in another way. The I/O expansion board itself is powered through its 2 pin Molex connector, rated 9-15V DC (typ 600mW). (The VTAP reader cannot be used to power the expansion board.)

The connecting cable between the VTAP PRO I/O expansion board and VTAP PRO reader allows you to mount the VTAPI00 PRO reader and the I/O expansion board at a distance from each other, for instance with the VTAP PRO reader mounted on counter top and the I/O expansion board under the counter.

6 Optional USB wiring

The VTAP PRO readers come with cables fitted to suit their normal use. It is still possible to connect a micro USB cable as an option, by opening the case. You may want to do this during configuration, for instance if required to update firmware or configuration prior to connecting to VTAP Cloud over Ethernet.

To open the case follow the instructions in.

⚠ CAUTION: We strongly recommend that power is disconnected before opening the VTAP100 case.

The USB connector is accessed through a cutaway in the daughter board, so you do not need to separate the boards. Use any micro USB cable to make the connection between the VTAP PRO reader and a PC or USB power socket.

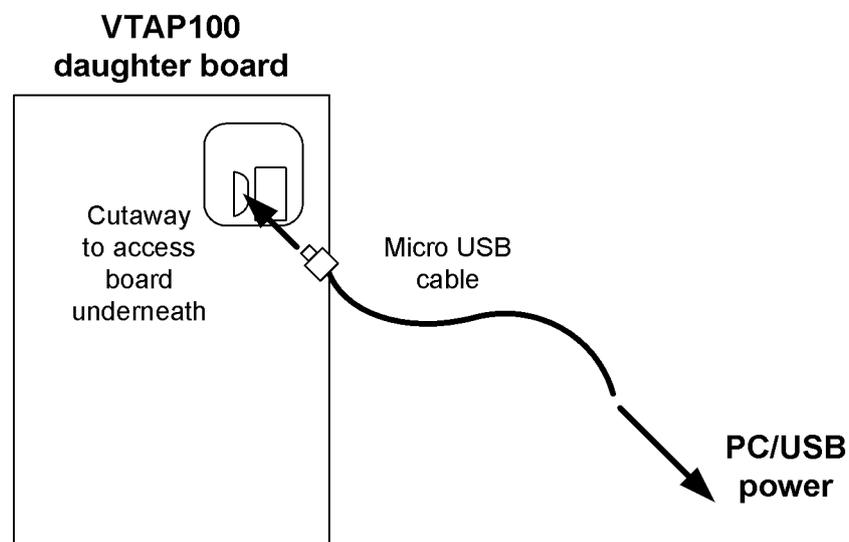


Figure 6-1 Micro USB connector accessed through cutaway in daughter board

The cable can be routed out through the hole in the back of the VTAP case, when the product is reassembled. The back label includes a circular pre-cut section that can be pushed out to allow the cable to be passed through.

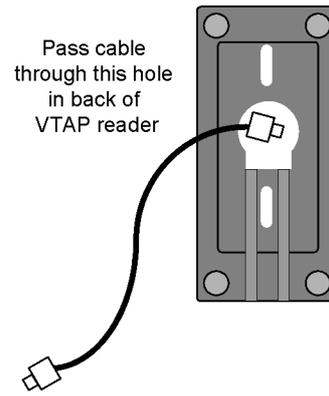


Figure 6-2 USB cable passing through hole in back of VTAP reader

7 Environment, mounting and branding

The VTAP reader must be stored and operated under the following conditions:

- Ambient temperature -25 to +70°C (-13 to 158°F)
- Humidity 0 to 95% RH non-condensing
- Pressure 86-106kPa

The VTAPI00-PRO requires connection of its captive USB cable to a standard 5V USB port or power adapter.

The VTAPI00-PRO is supplied in a compact case.



Figure 7-1 VTAPI00-PRO-POE-CC

VTAPI00-PRO readers are designed for indoor use. If a VTAPI00-PRO reader is installed in a location exposed to moisture, it should be in a wallmount (vertical) orientation with the lower screw cover label removed to ensure drainage.

The compact case separates into two pieces, which clip together around the PCB. After deciding where you will use your VTAP PRO reader, you may want to alter the assembly to suit the location.

You may have to remove a small label on the end of the VTAP reader, to uncover the screw that holds the pieces together. To do this in a way that will keep the label in good condition to reapply later, apply pressure directly down on the label and slide it gently towards the edge of the case.



Figure 7-2 Where to apply pressure to slide label off case

The case can be changed from an ergonomic desktop reader design to one suited for wall mounting, simply by rotating the PCB and the case front through 180°, keeping the LED and LED window aligned. Mount the PCB in the case, then engage the hooks at the LED window edge of the case to form a hinge, lower the cover and secure with a screw at the opposite end.

Wallmount assembly



Desktop assembly



Figure 7-3 Wallmount or desktop assembly

The cable can be routed directly out of the back of the reader, if preferred, to hide the wire completely from view or prevent access. The back label includes a circular pre-cut section that can be pushed out to allow the cable to be passed through.

The compact case has mounting holes, in case you want to fix the device in place. The case separates into two pieces, which clip together around the PCB. The following diagram shows the location of mounting holes in the compact case base plate:

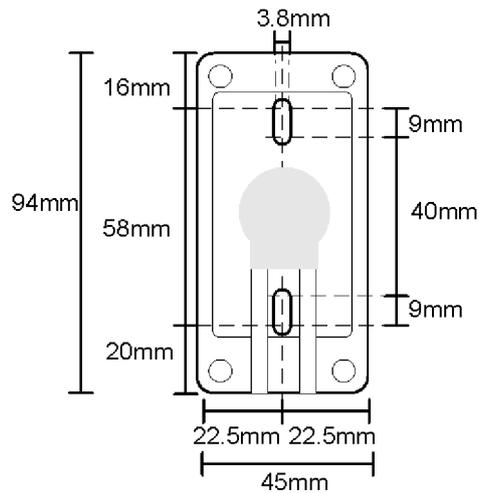


Figure 7-4 Mounting holes in the -CC compact case base plate

If you would like to brand your VTAP readers do contact vtap-support@dotorigin.com.

We can take your CMYK, vector format images and design and supply labels manufactured to high standards using an advanced production method, where the printing is protected by a thick layer of clear plastic, making them scratchproof, waterproof and UV-proof.

Apple guidelines require the standard contactless logo to be used, and so our standard label template includes this along with a design that highlights the location of the VTAP antenna, as that is the target location for a user to tap their phone.

The size of the label recess on a compact case (-CC) is 41mm x 57mm with 2mm radius rounded corners as shown below.

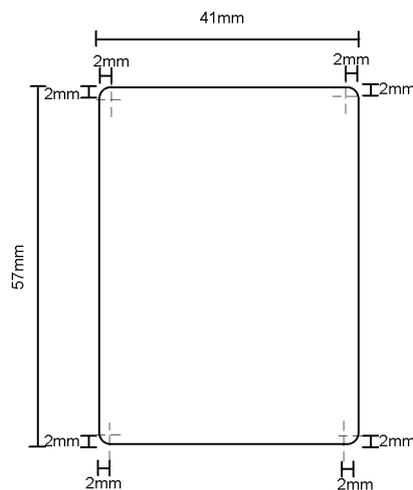


Figure 7-5 Dimensions of label recess in -CC compact case

The VTAPI00-PRO-EXPI has two mounting holes on its base plate for fixing.

The following diagram shows the location of mounting holes in the base plate of its case:

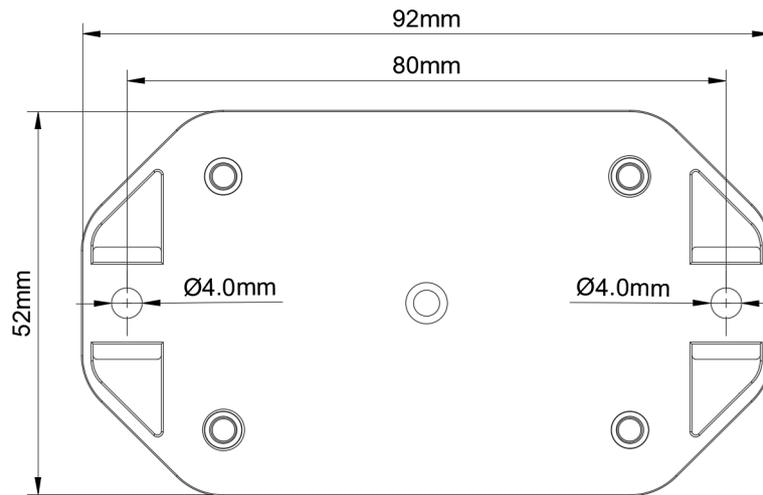


Figure 7-6 Dimension and location of mounting holes in VTAP100-PRO-EXP1 base plate

8 Disposal

For safety and sustainability, it is the responsibility of the integrator to ensure that when equipment containing a VTAP PRO reader reaches the end of its life, it is recycled in accordance with WEEE Regulations within the EU.



VTAP PRO reader (PCB and cables) should not be disposed of in general waste. If you wish to discard electrical and electronic equipment (EEE), please contact your supplier for further information.

