

## Mobile pass NFC reader

A compact contactless reader that interacts with mobile phones as well as popular RFID cards and tags. VTAP50 is a streamlined version of the VTAP100 from Dot Origin, for integrators. It retrieves NFC wallet passes from iPhone and Android devices, using a simple tap, then decrypts and transfers that pass data to the host system.

Pass users only need the Apple or Google Wallet app. The VTAP50 is fully certified by both Apple and Google for VAS and Smart Tap protocols.



### Quick deployment

The VTAP50 has been designed specifically for mobile pass applications. It includes features such as automatic pass selection, even when the screen is off (on iOS). It can also read popular contactless NFC and RFID cards and tags, to support mixed use applications and easy migration away from plastic. It can emulate a barcode/QR code scanner and can be configured to selectively extract and send on pass data, in formats already in use. The VTAP50 can be easily retrofitted to existing systems, or quickly integrated into new platforms, for a smooth transition to an Apple and Google digital wallet card experience.

### Easy management

Configuration of VTAP50 operating parameters is done over its USB host interface supporting USB mass storage and virtual serial. The file-based approach is platform independent and requires no drivers or dedicated software. For serial file transfers, the ZModem protocol is used with active (send on tap) and passive (command/response) interface options. Flexible and intuitive settings can be edited manually or by software, and real-time commands can be sent. They include support for multiple pass profiles and private keys.

### Strong security

The VTAP50 has been designed with security in mind and will protect the merchant private keys needed to decrypt pass data. So it is not possible to read back the keys once loaded, although they can be updated easily, in standard file formats. The device firmware can also be updated as an encrypted file.

Password protection of all configuration data is available, with reset to factory defaults if needed, clearing all sensitive data. MIFARE secure sector reading is also implemented to support migration from legacy systems.

### Flexible form factor

The VTAP50-OEM pre-certified reader board is ready for you to integrate into your own housing and system. Mount it using holes on the body of the board and use a choice of connectors to connect via either USB or serial (RS-232 or TTL) interfaces. The board comes fully certified for UKCA, CE, FCC and ISCED.

It is possible to remove the built-in antenna and connect an alternate external antenna, if required, although this may require further certification. Due to its reduced footprint the VTAP50 does not support other expansion options, unlike the VTAP100.

Learn more on the VTAP website at <https://vtapnfc.com>.

# VTAP50-OEM SPECIFICATION

For information on pricing and availability email [vtap-sales@dotorigin.com](mailto:vtap-sales@dotorigin.com)

## Physical characteristics

Dimensions	32mm x 58mm (1.26in x 2.28in) with integrated 26mm x 50mm (1.02in x 1.97in) rectangular antenna; Optional smaller size 20mm x 52mm (0.79in x 2.05in) when using an external antenna
Power supply	5V DC (typ. 110mA, max 150mA)
Mounting options	4 x integrated mounting holes
Weight	6g (0.21oz)
Operating Temperature	-25 to +70°C (-13 to 158°F)
Operating Humidity	0 to 95% RH non-condensing

## NFC interface

Frequency/standards	13.56MHz, ISO 14443 and ISO 18092
Mobile pass compatibility	Apple Wallet NFC passes (VAS protocol – classed as a VAS-only device) Google Wallet NFC passes (Smart Tap protocol) Pass auto-selection, including full Apple ECP compliance for iOS wake-up; Selective field extraction & decryption of pass data; Mobile device type detection and inclusion; Multiple simultaneous pass IDs, enrolment URL and STUID capture, where supported on mobile OS
Card/tag compatibility	MIFARE Ultralight, Classic, DESFire, NFC Types 2,4,5 UID/CSN reading as standard on all card types Secure data reading on MIFARE Classic as standard, others on request NFC tag reading on Type 2 & 4 (Ultralight/NTAG and DESFire/HCE)
Read range	Typically 25mm (1in) depending on environment and phone/card/tag antenna
Pass IDs	Up to 6 x Apple merchant IDs and 6 x Google collector IDs
ECC key slots	6 total (shared between Apple & Google merchant IDs)

## USB/Serial interfaces

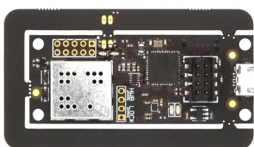
USB device types (can enable/disable as required)	USB Mass storage (for easy configuration, key loading & firmware updates) Human interface device (standard barcode reader/keyboard emulation) USB Virtual COM port (includes active, passive and file transfer modes)
Serial interface	Physical RS-232 serial port (includes active, passive and file transfer modes)
Connectors	Micro USB socket and 8-pin captive cable connector for USB and RS-232 (2mm pitch) Optional FFC connector for USB and RS-232 TTL on 12 pin expansion header
Operating system support	Full support on Windows, Linux, OSX; support for keyboard emulation and virtual COM device types on Android; most embedded and other operating systems support keyboard emulation as a minimum

## Other features

Operator feedback	Buzzer + optional external RGB or serial LED(s) via connector and on-board RGB LEDs (configurable default colour + automatic card and pass read beep/flash)
Field configurable	Yes, using configuration files, and with password and hardware-based lock
Field upgradeable	Yes, using encrypted firmware file and secure bootloader, and factory reset feature
External antenna	Optional via connector (requires re-tuning/certification)
Encryption algorithms	ECDH, NIST P-256, ECDSA, HMAC SHA-256, AES-128 CTR, AES-256 GCM ANSI-X9.63-KDF & HKDF according to RFC5869 using HMAC-SHA256

## Compliance/Certification

Apple VAS, Google Smart Tap, UKCA, CE, FCC, ISED, RoHS  
24-month limited hardware warranty



2D and 3D drawings on request