

## Mobile pass NFC reader module

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.

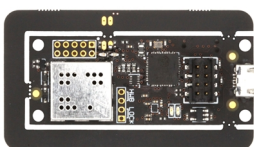
It is possible to remove the built-in antenna and connect an alternate external antenna, if required, although this may require further certification. Due to its reduced footprint the VTAP50 does not support other expansion options, unlike the VTAP100.

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 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 14443A/B, ISO 15693 and ISO 18092   |
| Antenna(s)   | Integrated 26mm x 49mm (1.02in x 1.97in) rectangular antenna (removable)  |
| Read range   | Typically 25mm (1in) depending on environment and phone/card/tag antenna  |
| Mobile wallet compatibility                            | Apple Wallet NFC pass (VAS for loyalty/membership/ticketing plus ECP2.0 for Apple Access)<br>Google Wallet NFC pass (Smart Tap, extensible, including generic private passes)<br>Pass auto-selection, including Apple ECP1, ECP2 and Express Mode compliance; Mobile device type detection and inclusion; Multiple simultaneous pass IDs; ECC key auto-select; Apple enrolment URL and Google STUID capture, where supported. |
| Card/tag compatibility                                 | MIFARE Ultralight, MIFARE Classic, MIFARE DESFire,ICODE, NFC Forum Types 2,4,5; UID/CSN reading as standard on all card types; Secure data reading on MIFARE Classic and MIFARE DESFire; NDEF record reading on Type 2 & 4 (Ultralight/NTAG and DESFire/HCE)  |
| Other NFC modes  | Dynamic tag emulation (text, URI, raw data) with smart write-back   |
| Pass IDs   | 6 x Apple merchant IDs and 6 x Google collector IDs, if supported   |
| Encryption key slots                                   | 6 x ECC key slots (for Apple & Google merchant IDs); 6 x Application key slots (DES or AES)   |
| USB/Serial interfaces                                  |   |
| USB device types (can enable/disable as required)      | USB Mass storage (for easy configuration, key loading & firmware updates)<br>Human interface device (standard barcode reader/keyboard emulation)<br>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)<br>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 and on-board serial LEDs. Optional external RGB or serial LED(s) via connector.<br>Configurable default LED colour/animation + 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<br>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

DOT ORIGIN