VTAP

DATASHEET
VTAP100-OEM

VTAP100 certified NFC reader board

Embedded reader board - USB & Serial

Universal contactless NFC reader board with integrated antenna, designed for quick integration and easy certification in any mobile wallet application scenario.

USB and RS-232 serial interfaces, with secure embedded management and firmware update capabilities.

Supports a wide range of cards, tags and secure NFC credentials, including Apple Wallet, Google Wallet, MIFARE® and NFC tag types.

Key features and benefits

- Fully certified by Apple and Google for VAS and Smart Tap. Tested and qualified for ECP2 access control - boards generally require certification in final enclosure to meet Apple requirements.
- 5V powered, USB and serial interfaces via multiple connector options
- MIFARE & NFC tag support including UID, MIFARE sector, secure DESFire, Ultralight AES, NDEF, HCE and MIFARE2Go
- Configuration, keys and firmware updates managed locally over USB or serial
- Powerful real and virtual COM interface with multiple protocols including secure OSDP over serial
- Secure on-board decryption of many pass types and storage of multiple ECC and AES keys
- Support for external serial barcode scanner input
- Additional NFC tag emulation and GymKit handoff modes
- Additional I/O pins and features available

Why choose VTAP technology?

VTAP technology is available with a wide range of form-factors and interfaces, offering unrivalled capabilities and features.

VTAP readers support all types of NFC mobile wallet passes and credentials, with extended support for many common RFID/NFC cards and tags.

It is easy to integrate a VTAP reader into any system — platform independent, with no SDK required. And it is simple to configure, deploy, use and update any VTAP reader in the field. Connectivity options include a wide range of host interfaces and protocols.

The VTAP Cloud option adds remote configuration and a unique 'taps to apps' gateway on selected models.

All models are certified for Apple VAS, Google Smart Tap and Apple ECP2/Access Control.

Why choose Dot Origin?

Dot Origin is a trusted partner of Apple and Google, licensed and certified to deliver NFC reader hardware that supports their Wallet programs

We are also long-established partners of NXP, which enables us to support many RFID and NFC technologies such as MIFARE DESFire, NTAG and MIFARE2Go.

We have an extensive partner ecosystem of NFC Wallet card and pass providers, cloud application providers, resellers, installers and distributors.

We offer comprehensive service and support including dedicated consulting and engineering services.

Our VTAP products are engineered in the UK and available in many form-factors as finished products or embedded modules.

Learn more about the VTAP advantage and VTAP readers at **https://vtapnfc.com**.

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VTAP100 certified NFC reader board specification

Physical characteristics	VTAP100-OEM: Embedded reader board - USB and serial
Dimensions	41mm x 79mm (1.61in x 3.11in), with integrated 40mm (1.57in) square antenna
Mounting options	4 x removable mounting holes/lugs
Form factor	
Power supply	5V DC (typ. 110mA, max 150mA)
Weight	6g (0.21oz)
Operating conditions	-25 to +70°C (-13 to 158°F); 0 to 95% RH non-condensing; optional conformal coating available
NFC interface	
Frequency/standards	13.56MHz, ISO 14443A/B, ISO 15693 and ISO 18092
Antenna	Integrated 40mm (1.57in) square antenna
Read range	Typically 50mm (2in) depending on environment and phone/card/tag
Mobile wallet compatibility & features	Apple Wallet NFC cards (VAS for loyalty/membership/tickets, ECP2 DESFire for Access/ID); Google Wallet NFC cards (Smart Tap, including extensions, MIFARE2Go DESFire); Card auto-selection with VAS, ECP2, Smart Tap and DESFire; Express Mode & CDCVM with ECP2; Mobile device type detection; ECC key auto-selection and reporting; Multiple pass type IDs, Apple enrolment URL and Google STUID capture where supported.
Card/tag compatibility & data reading capability	UID/CSN reading from all supported card/tag types – including NFC Type 1 (Topaz), Type 2 (MIFARE Ultralight & NTAG), Type 3 (FeliCa), Type 4 (DESFire, T=CL & HCE), Type 5 (ICODE) & MIFARE Classic; NDEF records from NFC Type 2, 3 & 4; Block data from MIFARE Classic, Ultralight/NTAG (NFC Type 2) & ICODE (NFC Type 5); Secure data reading from MIFARE Classic, MIFARE DESFire, MIFARE Ultralight AES.
Other NFC modes	Dynamic NFC format NDEF card/tag emulation with smart write-back; GymKit handoff
Pass IDs	6 x Apple merchant IDs and 6 x Google collector IDs
Encryption key slots	6 x ECC key slots (for Apple & Google ID keys); 9 x Application key slots (for MIFARE Classic, DESFire, Ultralight AES and/or OSDP secure channel)
Encryption algorithms	NIST P-256 modes ECDH and ECDSA, HMAC SHA-256, AES-128 and AES-256 in CTR, GCM, CMAC and CBC modes, ANSI-X9.63-KDF & HKDF according to RFC5869 using HMAC-SHA256, key derivation following NXP AN 10922
USB interface	
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 (for configuration, file transfer and command interface, including OSDP over USB COM)
Connectors	Micro USB socket and 8-pin captive cable connector for USB and RS-232 (2mm pitch)
Operating system support	Windows, Linux, MacOS full support for keyboard emulation, virtual COM device and mass storage; Android support for keyboard emulation, virtual COM device; iPhone and iPad support
Serial interface	
Serial interface types	RS232 plus secondary 3v3 serial on expansion connector
Serial connectors	8-pin captive cable connector, optional 14-pin expansion connector, both 2mm pitch
Serial mode features	External barcode scanner input, VTAP command and OSDP modes, including support for secure configuration, encryption key & firmware updates. Secondary 3v3 serial interface is suitable for comms with embedded systems such as Raspberry Pi
Other features	
Operator feedback	Buzzer and LED provide device status and tap transaction feedback from reader and/or connected device/application, with customised colours and buzzer frequency and sequences
Reader management	USB/serial interface using configuration text files that can be locked and encrypted firmware file for field upgrades
Compliance/Certification	
Apple VAS, Apple ECP2/Access, Google Smart Tap, UKCA, CE, FCC, ISED, RoHS; Will require certification tests in final enclosure to meet Apple ECP2 requirements, according to your use.	

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