# HID M1 Transparent Gateway

The HID M1 Transparent Gateway ensures compliance with strict regulatory standards, such as ANSSI CSPN, while offering seamless integration, superior performance, and exceptional scalability for high-security environments. It enables key sovereignty, granting exclusive control over access and management policies. Supporting DESFire EV1/EV2/EV3 credentials, the solution includes a Main Node, Key Module, IO Modules, and transparent HID Signo readers.

The HID M1 Transparent Gateway redefines physical access control by moving all cryptographic operations and key storage from vulnerable perimeter devices to a secured area. This innovative transparent architecture eliminates the risk of key extraction attacks by ensuring that sensitive credential data never resides on the unsecured side of the door. It allows doors to be upgraded incrementally, without a full rip and replace. With seamless compatibility to existing OSDP v2 controllers, the HID M1 integrates effortlessly into existing PACS infrastructures while delivering enterprise-grade security.

## SECURITY FEATURES

The HID M1 Transparent Gateway delivers best-in-class security architecture designed to exceed industry standards and outperform conventional access control solutions.

- **Transparent Architecture:** eliminates cryptographic operations at the reader level, ensuring sensitive keys and authentication processes remain in a physically secured area to reduce attack surfaces

- **Sovereign Key Management:** supports AES-128 custom DESFire EV1/EV2/EV3 credentials with keys fully controlled by the end user organization for complete sovereignty and compliance with high-security mandates

- **Secure Communication Channels**

  o **Main Node <-> IO Modules:** communication over Ethernet secured with TLS 1.3 ensures confidentiality, integrity, and forward secrecy for all cryptographic operations and configuration data

  o **IO Modules <-> Readers:** encrypted RS-485 using an HID protocol based on TLS 1.3 adapted for serial communication provides mutual authentication and message integrity between readers and IO Modules for enterprise-grade encryption over legacy wiring

  o **IO Modules <-> Existing Controller:** OSDP v2 Secure Channel implements encrypted RS-485 communication between IO Modules and PACS controllers, meeting EN and international standards for secure device connectivity

- **Cryptographic Pairing:** secure pairing between Main Node, Key Module, IO Modules, and readers prevents unauthorized device substitution and man-in-the-middle attacks

- **Tamper Detection and Secure Boot:** ensures firmware integrity and prevents malicious code injection

- **Firmware Integrity and Update Control:** digitally signed firmware updates are verified before installation, reducing risk of compromise during maintenance

- **Compliance and Certification:** ANSSI CSPN conformity validated through cryptographic analysis and penetration testing provides a trusted solution for government and critical infrastructure environments

- **Future-Proof Security:** modular design supports evolving encryption standards and emerging technologies, ensuring long-term protection without costly hardware replacements

## HOW IT WORKS

The Main Node contains the Key Module, which stores, manages, and processes cryptographic keys used to decrypt credentials. Communications are secured from the credential all the way to the Key Module's CC EAL5+ certified secure access modules. This architecture ensures a highly secure system, fully compliant with the most stringent physical security standards.

Upgrade existing Physical Access Control Systems to be compliant with ANSSI CSPN using the HID M1 Transparent Gateway

- Connects to existing controllers via RS485 and OSDP

- 1 Main Node supports up to 8 transparent Signo readers, via 4 IO Modules

- Main Node connects to IO Modules via ethernet

- IO Modules connect to transparent Signo readers via RS485 and a custom HID protocol

## KEY BENEFITS

- **Transparent Signo Readers —** The reader contains no sensitive material and acts solely as a passthrough. All data is encrypted from the credential to the Key Module.

- **Enhanced Cybersecurity —** Secure access modules and data-at-rest encryption provide a layered approach to protect facilities and sensitive data.

- **No Disruption —** Continue using existing DESFire cards without rebadging or reconfiguration.

- **Key Sovereignty —** Exclusive control over which encryption keys are used.

**HID**

## Main Node (M1-1100)

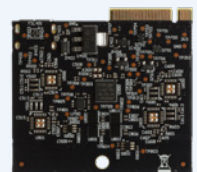| | |
|---|---|
| **Mounting** | Direct, Din Rail or M1 to Mercury Bracket |
| **Primary power** | 12V to 24V DC (± 10%) |
| **Max input current** | 2A @ 12V or 1A @ 24V (24W max) |
| **USB ports** | USB 2.0 Type A (internal), 500mA @ 5V (± 10%) - temporary connection only<br>USB 3.0 Type A (external), 1A @ 5V (± 10%) - temporary connection only |
| **Inputs** | Cabinet tamper (0V to 3.3V)<br>Battery failure (0V to 3.3V)<br>AC failure (0V to 3.3V)<br>Cable lengths must be <=98 feet (30 m) |
| **Outputs** | None |
| **Ethernet host requirements** | 10BASE-T/100BASE-TX/1000BASE-T (Gbit) |
| **CABLE REQUIREMENTS** | |
| **Power** | 1 twisted pair, 18 AWG<br>(when using local 12V DC power supply) |
| **Ethernet** | CAT-5 minimum (shielded)<br>Ethernet 0: Cable length must be <=98 feet (30 m)<br>Ethernet 1: Cable length can be <=98 feet (30 m) |
| **Alarm input** | 1 twisted pair per input, 30Ω maximum<br>(not evaluated by UL) |
| **Outputs** | As required for the load |
| **ENVIRONMENTAL** | |
| **Storage temperature** | -67º F to 185º F (-55º C to 85º C) |
| **Operating temperature** | 32º F to 158º F (0º C to 70º C) |
| **Humidity** | 5% to 95% Relative humidity, Non-Condensing (RHNC) |
| **MECHANICAL** | |
| **Dimensions** | 4.85 inches (123.3mm) W x 6.47 inches (164.4mm) L x 1.75 inches (44.4mm) H |
| **Weight** | 13.5 oz. (383 g) |

## Key Module (M1-1001)

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|---|---|
| **Mounting** | The Key Module (M1-1001) is installed inside the Main Node (M1-1100) |
| **Primary power** | Powered by Main Node (M1-1100) |
| **USB port** | USB-C, 500mA @ 5V (± 10%) |
| **ENVIRONMENTAL** | |
| **Storage temperature** | -67º F to 185º F (-55º C to 85º C) |
| **Operating temperature** | 32º F to 158º F (0º C to 70º C) |
| **Humidity** | 5% to 95% Relative humidity, Non-Condensing (RHNC) |

For Signo reader specifications, refer to the HID Signo Readers Datasheet:

**https://www.hidglobal.com/documents/hid-signo-readers-datasheet**

## IO Module (M1-1002)

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|---|---|
| **Mounting** | Direct, Din Rail or M1 to Mercury Bracket |
| **Primary power** | 12V to 24V DC (± 10%) |
| **Maximum input current** | 1.6A @ 12V and 0.8A @ 24V (19.2W max) |
| **USB port** | USB 2.0 Type A, 500mA @ 5V (± 10%) - temporary connection only |
| **Relays** | 5A @ 30V DC - Relays 1, 2,and 3 not evaluated by UL (Gateway Mode) |
| **Inputs** | Two transparent HID Signo readers (-7V to 12V) - 12V DC, 280 mA wiring must be shielded<br>Cabinet tamper (0V to 3.3V) - Cable length must be <=98 feet (30 m)<br>Battery failure (0V to 3.3V) - Cable length must be <=98 feet (30 m)<br>AC failure (0V to 3.3V) - Cable length must be <=98 feet (30 m)<br>Request to Exit (REX) (0V to 3.3V) REX: Not evaluated by UL<br>Door Position Sensor (DPS) (0V to 3.3V) DPS: Not evaluated by UL |
| **Outputs** | Controller 1 and 2 output reader PACS data to the upstream controller. Cable lengths must be <=98 feet (30 m). |
| **Ethernet host requirements** | 10BASE-T/100BASE-TX |
| **CABLE REQUIREMENTS** | |
| **Power** | 1 twisted pair, 16 to 18 AWG |
| **Ethernet** | CAT-5 minimum (shielded) - Cable length can be => 98 feet (30 m) |
| **Reader data (TTL)** | 6-conductor, 18 WAG, 500 feet (152 m) maximum per reader (not evaluated by UL) |
| **Reader data (RS-485)** | 1 twisted pair, shielded. 24 AWG, 120Ω impedance, 2000 feet (610 m) maximum per reader (not evaluated by UL) |
| **Alarm input** | 1 twisted pair per input, 30Ω maximum (not evaluated by UL) |
| **Outputs** | As required for load |
| **ENVIRONMENTAL** | |
| **Storage temperature** | -67º F to 185º F (-55º C to 85º C) |
| **Operating temperature** | 32º F to 158º F (0º C to 70º C) |
| **Humidity** | 5% to 95% Relative humidity, Non-Condensing (RHNC) |
| **MECHANICAL** | |
| **Dimensions** | 5.53 inches (115 mm) W x 5.51 inches (140 mm) L x 1.04 inches (26.3 mm) H |
| **Weight** | 365 g, 12.87 oz |



Main Node



Key Module



IO Module



Transparent HID Signo Reader



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