proxy

User Manual and Installation Guide

Proxy Mobile Reader Nano Inline

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Last updated: April 27, 2020

Revision 3.2

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Introduction

The Proxy Mobile Reader Nano Inline is installed between a controller and an access control reader. When users present their credential (card, key fob, fingerprint, etc.) to the reader, the reader passes the Wiegand command to the controller. The access control system then grants or denies access to the secure location.

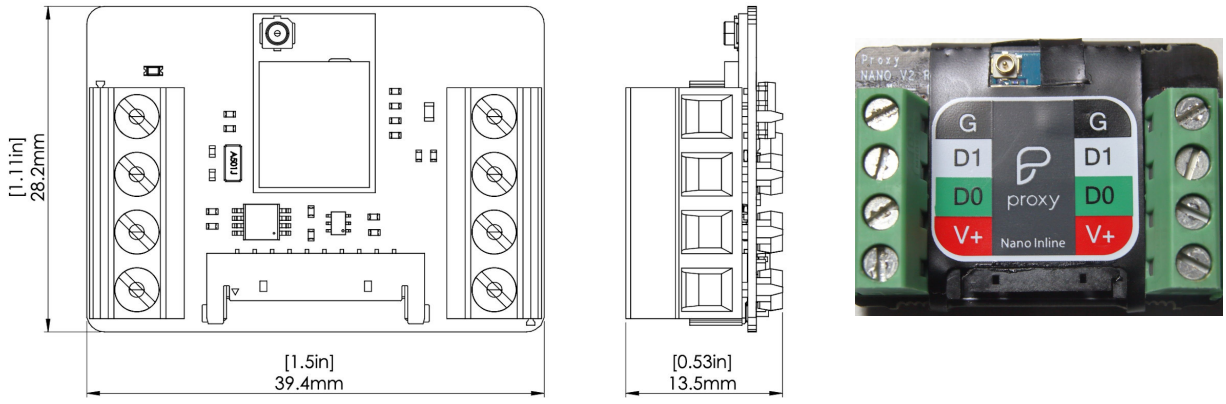
The Nano Inline is Bluetooth Low Energy (BLE) enabled. When the user presents their phone enabled with the Proxy ID app, the Nano receives an encrypted credential via BLE from the phone and then passes the credential to the Access Control System (ACS) via Wiegand. The access control system then grants or denies access to the secure location.

Mobile Reader Nano Inline

Functionality

Nano Inline is a physical access control mobile credential reader, intended to be installed in locations such as elevators and turnstiles. The reader is also capable of supporting pass through of physical card credentials when used in conjunction with a compatible physical card reader (not provided). The reader can interface with an access control system equipped with a Wiegand interface. The reader consists of the following main parts.

Dimensions



Product Details

Model Name:	Mobile Reader Nano Inline
Device Type:	Mobile Credential: Bluetooth Low Energy (BLE)
Type of Equipment:	Unsealed controller board Suitable for Indoor use only
Interface Type:	Screw Terminal Block (4 Position x 2)
Operating Voltage Range:	5V - 24V DC (12V recommended)
Current Draw:	30 mA @ 12V(Ble Transmitter Power Setting=7)
Power Consumption:	0.36W (Max)
Communication Protocol:	Wiegand, Bluetooth Low Energy (BLE)
Credential Type:	Bluetooth Low Energy (BLE): Any bit format (standard or custom) up to 120 bits
Transmission Technology:	Wiegand

Installation Details

Wiring methods shall be in accordance with the National Electrical Code (ANSI/NFPA70), all local codes, and the authorities having jurisdiction.

Parts List

- Proxy Reader Nano Inline Board – x1
- Double-Sided Mounting Tape – x1
- Antenna 15cm 2.4GHz – x1
- Antenna 30cm 2.4GHz – x1

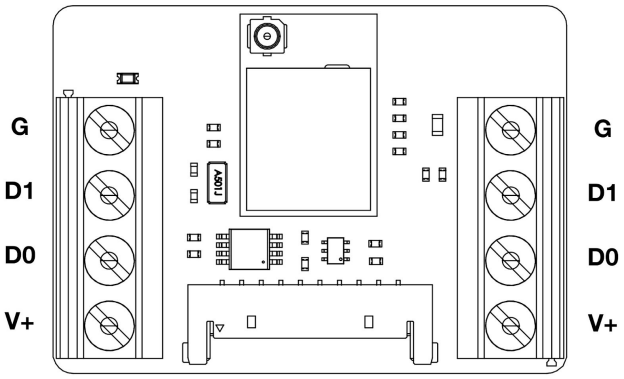
Reader Specifications

Model / Version(s)	Operating Voltage	Current Rating	Operating Temperature
Nano Inline	5V - 24V DC	30 mA @ 12V(Ble Transmitter Power Setting=7)	-35° to 66°C (-31° to 149°F) 5 to 95% RH (non-condensing)

Do not operate at a voltage above 24V DC as it will damage the hardware

Wiring Information

Mobile Reader Nano Inline



Input / Output	Colors
G (Ground)	
DI (Wiegand Data 1)	
D0 (Wiegand Data 0)	
V+ (DC+ Voltage)	

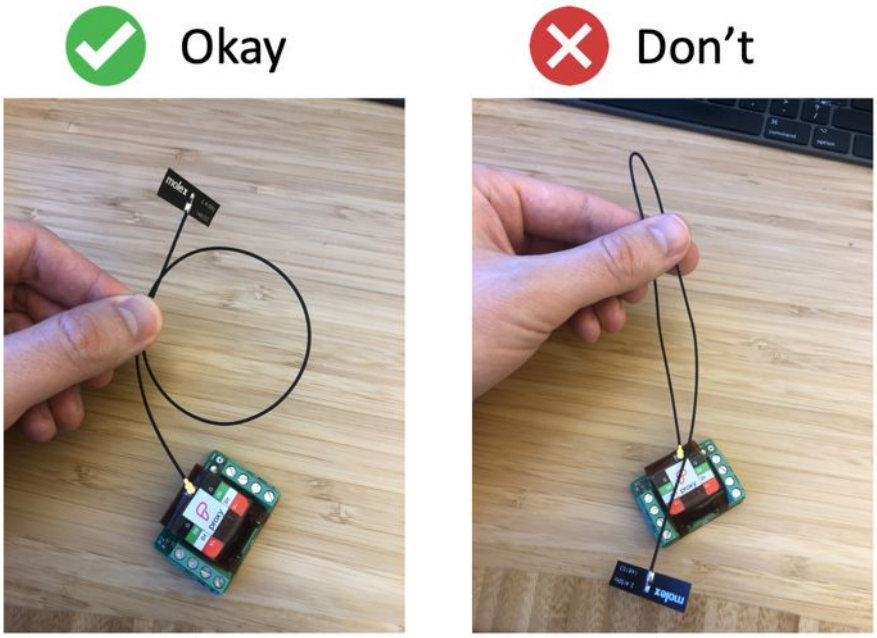
1. Connect the Power (V+/GND) and Wiegand (D0/DI) lines from the reader to the terminal block on one end of the Nano Inline.
2. Connect the Power (V+/GND) and Wiegand (D0/DI) lines from the controller to the terminal block on the other end of the Nano Inline.

Note: There is no required orientation of the board. The reader output must be connected to one end of the board and the controller input must be connected to the other.

External Antenna Information

Important:

Do not kink or bend the antenna cable during installation as this will permanently damage the cable. Instead, carefully loop any extra length of antenna cable.

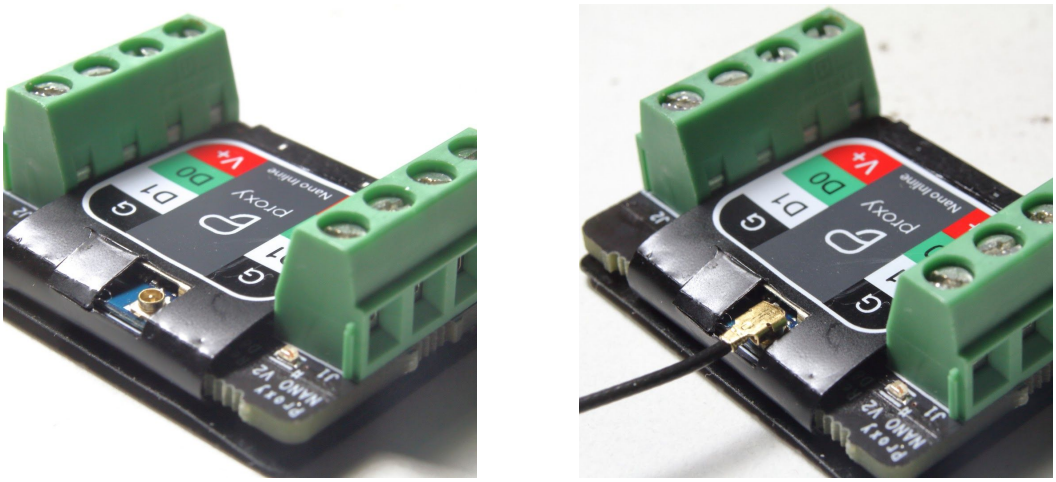


Antenna Installation

1. Open the enclosure and remove the reader assembly
2. Locate the existing reader's pigtail and identify the Power/GND and D0/DI wires. The Nano Inline will connect to these wires. Do not connect them at this time.
3. Locate sufficient space to mount the Nano Inline
    a. Identify a location next to the existing reader that allows both the existing physical card reader and the Nano Inline to fit into the turnstile cavity such that the Nano Inline antenna can reach to the faceplate. **The antenna will not work through metal, it should only be affixed to the inside of the plastic or glass faceplate (see image below).**
4. The Nano Inline comes with 30cm and 15cm length antenna cables. Select the shortest cable that will comfortably reach from where you plan to mount the Nano to the antenna mounting location on the interior of the turnstile faceplate.

5. Connect the antenna cable to the Nano Inline via the u.FL connector. It's important the connector goes in centered on the pin in the center. You will feel it click into place. If not, don't force the connector as this can break the pin.
6. You can throw away the antenna cable you didn't use or keep it as a spare.

Antenna Attachment for the Nano Inline



Antenna Placement for the Nano Inline

External Antenna Details

Antenna I:I46I53-0300

- Operating Range: 2400~2500MHz
- Antenna Type: Dipole
- Efficiency: >63%
- Bandwidth (VSWR: 2.0 max.) I40 MHz / SWR < 2.0
- Polarization: Linear
- Radiation: Omni directional
- Antenna Gain: 2.2dBi
- Impedance: 50 ohm
- Antenna: 34.9mm x 9mm / I.4" x 0.4"
- Weight: I.I74g

Antenna I:I46I53-0I50

- Operating Range: 2400~2500MHz
- Antenna Type: Dipole
- Efficiency: >72%
- Bandwidth (VSWR: 2.0 max.) I40 MHz / SWR < 2.0
- Polarization: Linear
- Radiation: Omni directional
- Antenna Gain: 2.8dBi
- Impedance: 50 ohm
- Antenna: 34.9mm x 9mm / I.4" x 0.4"
- Weight: 0.724g

Reader Installation Details

Install Videos

Proxy Nano Inline Installation on Vimeo

Install Steps

1. Open the enclosure and remove the reader assembly
2. Locate the wiring harness and identify the V+/GND and D0/DI wires
3. Connect the Nano to the existing wiring per the Wiring Instructions
4. Locate sufficient space to mount the Nano Inline
    a. Locate the mobile reader next to the existing reader in a space that allows both the existing physical card reader and the Nano Inline to fit into the turnstile cavity such that the Nano Inline antenna can reach to the faceplate.
5. Attach the antenna. Refer to Antenna Installation.
6. Secure the Nano module into the scanner assembly using the provided double sided mounting tape
7. Re-insert/secure the reader assembly into the enclosure.

Power Up and Testing

1. Connect to power
2. View the Nano name in the “Proxy ID” app as a New Device

3. Provision Nano — Refer to the Provisioning Guide to provision to your Proxy organization and sync to the local Access Control System

Recommended Infrastructure

1. All cabling and wiring shall be UL Listed or UL Recognized
2. All readers shall be powered by a UL Listed power-limited power supply, or power-limited output from a UL Listed control panel
3. Linear DC Power Supply [5—24VDC, 30 mA @ 12V(Ble Transmitter Power Setting=7)] Do not exceed 24V

The Nano Inline operates at very low current ratings. If operating with the need for more precise ratings of low current draw, please contact Proxy directly.

Voltage (V)	Peak Current (mA)
5	30
12	30
24	30

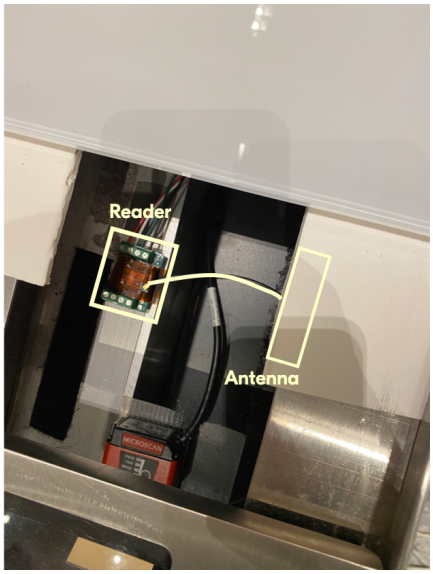
Installation in a Turnstile, Elevator Panel, or Other Enclosure

The optimal placement of the external antenna is against the glass pane where the current access control reader exists. These glass panes are typically designed to allow for radio signals to pass through with minimal interference, which is preferred for the Bluetooth Low Energy (BLE) signal from the Nano Inline for connection to the Proxy ID mobile app.

The recommended mode of operation of the Nano Inline is such that the phone must be placed within a few inches of the antenna in order to activate the mobile credential. For this reason, it is recommended that the Nano Inline external antenna is adhered to a location that is in close proximity to the place where users would also tap their RFID / access control cards.

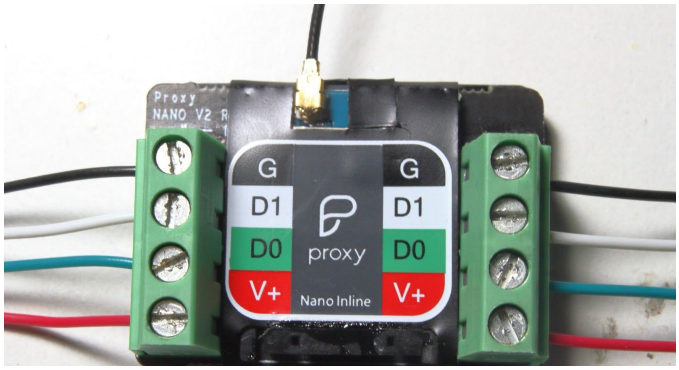
By following these guidelines, use of the Nano Inline will be more intuitive to users accessing with their mobile phones running the Proxy app.

Nano Inline Enclosed in Turnstile



Front/top faceplate enclosure removed from turnstile

Optimal antenna placement is against the glass on the interior of the faceplate (blue area)



Nano Inline Wiring

Certifications

FCC

<For MDBT50Q>

Tune up power table BLE

- Each product is programmed with the pre-defined RF parameters
- Each products RF power level is measured to ensure the power level does not exceed the target power level, in a fully calibrated setup
- These settings cannot be changed

Please find below the Maximum Transmit Power for production units:

Band / Mode	Average Output Power (dBm)	
	LE	BLE 5.0-2M
	GFSK	GFSK
Bluetooth	8	8

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

RF Exposure Information

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure.
This equipment should be installed and operated with a minimum distance of 20 cm between the radiator & your body.

Information to user

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.

Changes or modifications not expressly approved by Proxy, Inc. could void the user's authority to operate the equipment.

Approval External Antenna

Mfg	Part Number	Max Gain	Type	Size
Molex	146153-0300	2.4GHz/2.2dBi	Dipole – PCB	Cable Length:300mm
Molex	146153-0150	2.4GHz/2.8dBi	Dipole – PCB	Cable Length:150mm

IC

<For MDBT50Q-U>

Tune up power table BLE

- Each product is programmed with the pre-defined RF parameters
- Each products RF power level is measured to ensure the power level does not exceed the target power level, in a fully calibrated setup
- These settings cannot be changed

Please find below the Maximum Transmit Power for production units:

Band / Mode	Average Output Power (dBm)	
	LE	BLE 5.0-2M
	GFSK	GFSK
Bluetooth	8	8

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie 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, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

CAN ICES-3(B)/NMB-3(B)

This radio transmitter has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.
Antenna types:Dipole
Antenna gain (in dBi):2.8dBi/2.2dBi

Innovation, Sciences et Développement économique Canada a approuvé l'utilisation de ce transmetteur radio avec les types d'antenne énumérés ci-dessous, le gain maximal admissible étant indiqué. Les types d'antennes non inclus dans cette liste qui ont un gain supérieur au gain maximal indiqué pour tout type listé sont strictement interdits pour une utilisation avec cet appareil.
Types d'antennes:Dipole
Gain d'antenne (en dBi):2.8dBi/2.2dBi

RF Exposure Information
This device has been tested and meets applicable limits for Radio Frequency (RF) exposure.
This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Informations d'exposition RF
Cet appareil a été testé et répond aux limites applicables en matière d'exposition aux radiofréquences (RF).
Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

Approval External Antenna

Mfg	Part Number	Max Gain	Type	Size
Molex	146153-0300	2.4GHz/2.2dBi	Dipole – PCB	Cable Length:300mm
Molex	146153-0150	2.4GHz/2.8dBi	Dipole – PCB	Cable Length:150mm

Install Troubleshooting

Possible Symptoms	Likely issue	How to resolve
Reader		
LED is not illuminating on Nano	Power supply is disconnected or not supplying enough voltage	Either wiring at the reader or at the power supply has been disconnected. Double check both connections to bring the reader back online. Lack of power to the ACS system may also cause this- double-check the wiring connecting the reader to the panel.
	Antenna is not connected properly, or needs replacement	LED should illuminate when a valid mobile credential is presented. If the LED is not illuminating it could be caused by a disconnected or poorly seated or compromised antenna. Without a proper antenna connection the Nano will not be able to detect nearby mobile devices over BLE.
Issues Unlocking		
Reader does not acknowledge phone	Permissions issue	Be sure the user has been granted access through Proxy Mobile Access Manager. Users need to be added to the org, as well as relevant groups. All groups need to be associated with access points in order to allow ingress.
	Bluetooth issue	Be sure that Bluetooth is enabled on the mobile phone. If it is, toggle airplane mode to disconnect all existing Bluetooth connections & reconnect it for a strong connection.
Have to open app to get reader to unlock	Geo-fence/ locations issue	Be sure location services are always enabled if a user is terminating the app between uses. If a user prefers to keep location services turned off, they will need to open the app in order to unlock Proxy reader every time, unless they do not ever terminate the app.

Warranty

For warranty information, visit this link: https://www.proxy.com/legal