



ImproX

Multi-discipline Readers

MDR901-5-0-GB-XX

MDK901-5-0-GB-XX

Multi-discipline Readers

Product Specification Catalogue

The **ImproX Multi-discipline Readers** are compact and robust Passive Proximity Readers.

New technology allows the Multi-discipline Readers to read both 125 kHz and 13.56 MHz frequency Tags. These Readers fit seamlessly into new or existing applications allowing you to upgrade Tag technology without replacing existing Tags.

The design of the Multi-discipline Reader allows you to use them with a variety of Terminals and Controllers, within third-party or Impro Access Control Systems. When used with the IXP220 Controller, IXP20 Controller or the ImproX iTRT, these Readers use AES 128-bit Encryption with a Diffie Hellman key exchange thus ensuring secure communications on the Wiegand Bus.

You can use the Multi-discipline Readers in both indoor and protected outdoor environments.

The Multi-discipline Keypad Reader offers a 12-button Keypad allowing PIN-code entry. All models include a single tone, single volume Buzzer and a single tri-coloured Red, Green or Amber Status LED. You can control the functions of the Buzzer and Status LED to suit the needs of your application.

Key Features

- Communications distance of up to 150 m (164 yd) via the Wiegand Bus.
- Mark resistant ABS Plastic and 304 Stainless Steel housing.
- Suitable for OEM developments.
- Multiple Wiegand output formats (26-bit and 44-bit).
- A single tri-coloured Red, Green or Amber Status LED.
- When used with the IXP220 Controller, IXP20 Controller or ImproX iTRT the Multi-discipline Readers offer industry leading encryption on the Standard Wiegand Bus using AES 128-bit encryption with Diffie-Hellman key exchange.
- Supports both 125 kHz and 13.56 MHz Tag types.
- CSN Read capability from various Tag types: Slim Tags, Omega Tags, Impro Trinary Tags (1074 and 2074), Philips HITAG™ 1, Philips HITAG™ 2, HID Tags (H10301, H10302 and H10304), ISO 15693-2 iClass Tags, ISO 18092 FeliCa Tags and ISO 14443A MIFARE® Tags.

Key Features (Continued)

- A 4 kHz piezo-electric Buzzer.
- Model MDK901 offers a 12-button Keypad.
- An external Wiegand communications bus interface.
- Both models include an Optical Anti-tamper.
- Programmable facility code for use with PIN-code entry.
- Zero downtime upgrade when used with the IXP220 Controller, IXP20 Controller or the ImproX iTRT.
- Compatible with third-party systems using the Wiegand 44-bit output.
- Each receiver offers a Scanner Inhibit Input. When you connect the Scanner Inhibit Input to GROUND, the Multi-discipline Reader's scanner turns off and inhibits the keypad (Keypad Model MDK901 only) while connected. When you release the connection, the Multi-discipline Reader returns to normal operation.
- A conveniently placed link allows you to use the Reader in OEM applications using either 26-bit or 44-bit Wiegand Protocol.

Reading Range (Tag)

Tag Type	Typical Range (Minimum) (mm)	Typical Range (Minimum) (in)
Slim Tags	25 - 50	1 - 2
Omega Tags	25 - 50	1 - 2
Impro Trinary Tags	25 - 50	1 - 2
HID 125 kHz Tags	25 - 50	1 - 2
HID iCLASS Tags	25 - 50	1 - 2
Philips HITAG™ 1	25 - 50	1 - 2
Philips HITAG™ 2	25 - 50	1 - 2
FeliCa Credit Card Tags	25 - 50	1 - 2
MIFARE® Credit Card Tags	25 - 50	1 - 2

NOTE: *HID, FeliCa and MIFARE® are registered trademarks of HID Global Corporation (an ASSA ABLOY Group Brand), The Sony Corporation and Koninklijke Philips Electronics N.V. respectively.*

NOTE: *Mounting the Multi-discipline Reader on a metallic surface will reduce the Tag reading range slightly.*

Physical Specifications

Length	: 97 mm (3.8 in).
Width	: 45 mm (1.8 in).
Height	: 21 mm (0.8 in).
<i>Approximate Weight</i>	
MDR901	: 75.2 g (2.7 oz).
MDK901	: 76.8 g (2.7 oz).
Housing Material	: ABS Plastic.
Colour	: Black.
Face Plate Material	: 304 Stainless Steel.
Colour	: Brushed Stainless Steel.



Environmental Specifications

Operating Temperature	: -25°C to +60°C (-13°F to +140°F).
Storage Temperature	: -40°C to +80°C (-40°F to +176°F).
Humidity Range	: 0 to 95% relative humidity at +40°C (+104°F) non-condensing.

Approvals

CE Approval	: Approved.
FCC Approval	: Pending.
Dust & Splash Resistance	: Designed to work in an indoor or outdoor environment similar to IP54. The Multi-discipline Readers are, therefore, sealed (conformal coated) against water.
Drop Endurance	: 2 m (6.56 ft) drop (in packaging).

Electrical Specifications

Power

Input Voltage Rating	: 8 V DC to 14 V DC, polarity sensitive.	
Power Requirements	Current (mA)	Power (W)
Supply Voltage 12 V DC all indicators on	: 100	1.2
Permissible Input Supply Ripple Voltage (Max)	: 1 V _{pp} at 50 Hz.	
Power Input Protection	: Reverse polarity protection is provided on the Reader.	

Wiegand Bus

Electrical Interface	: '0' and '1' data streams.
Tag Information Data Format	: 44-bit Wiegand or 26-bit Wiegand.
Key Information Data Format	: 26-bit Wiegand, 8-bit Burst Mode.

Inputs

Quantity	: 4.
Type	: Dry Contact.
Function	: Operation of the Buzzer, LED and Scanner Inhibit.
Protection Range	: +15 V Continuous.

Other

Optical Anti-tamper	: Open Collector Output on Purple Line. GND reference on Grey Line.
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NOTE: In OEM applications, connect the Purple and Grey wires to a Dry Contact Input. On IXP20 (iTRT version) and IXP220 Systems (when connected direct to the Controller or via the ImproX iTRT), it is unnecessary to connect these lines as the Software handles the Anti-tamper.

Factory Defaults

Default Mode	: 44-bit Wiegand Mode.
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User Interfaces

Buzzer

Volume & Tone	: 4 kHz piezo-electric, single volume, single tone.
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Keypad (MDK900 Model)

Keys	: 12 Alphanumeric keys.
Keypad Durability	: Maximum 200 000 key presses.
Type	: 5 Digit codes in the range 00000 to 65535. 4 Digit codes in the range 0000# to 9999#.

Status Indicator

Status LED	: Tri-coloured Red, Green or Amber (Default) (externally visible).
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Related Information

For extra information relating to this product refer to the:

- ImproX Multi-discipline Readers Hardware Installation Manual (MDR300-0-0-GB-XX).

Ordering Information

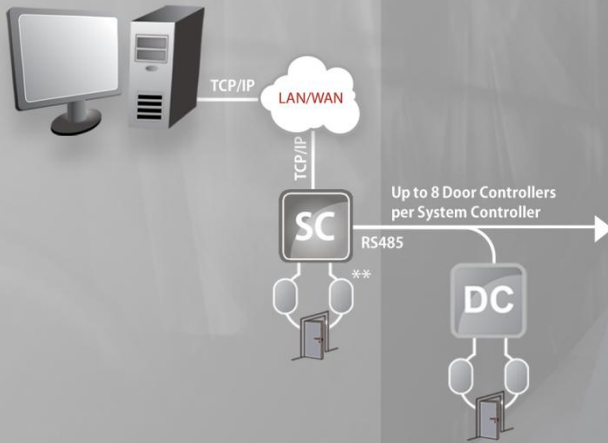
Order the ImproX Multi-discipline Readers using the following Part Numbers:

- MDR901-5-0-GB-XX: ImproX (MDR) Multi-discipline Reader.
- MDK901-5-0-GB-XX: ImproX (MDK) Multi-discipline Keypad Reader.

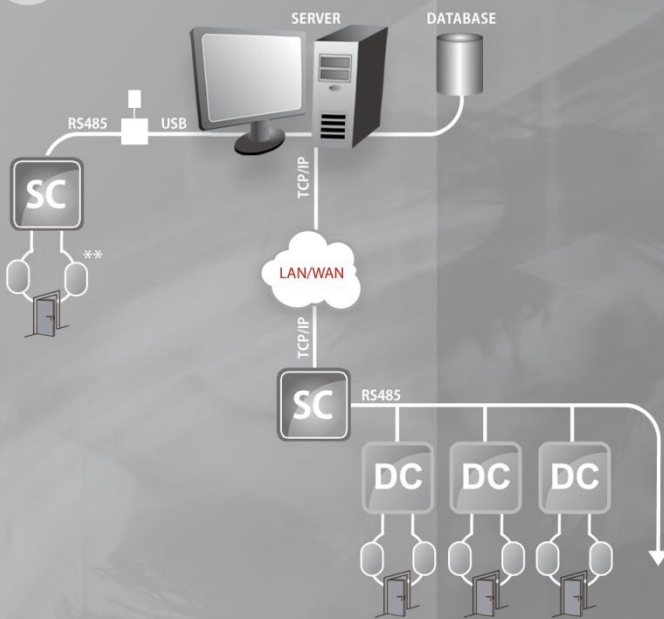
Warranty Details

This product conforms to our Warranty details on www.impro.net.

1 MULTI-DISCIPLINE READERS IN AN IXP20 SYSTEM*



2 MULTI-DISCIPLINE READERS IN AN IXP220 OR IMPRONET SYSTEM



KEY for diagram

- SC** SYSTEM Controllers - selection
The ImproX Multi-discipline Reader range can be used within the IXP20, IXP220 and Impronet Systems.
* This diagram shows the Web Interface IXP20 Controller (ISC920). The IXP20 is also available with a Touch Screen (ISC921). ISC921 does not require a PC connection.
** The following scenario applies to the IXP20 and IXP220 Controllers only.
- DC** DOOR Controllers - selection
In an IXP20 System, the ImproX Multi-discipline Readers are compatible with the following Door Controllers:
- ImproX (iTRT) Intelligent Twin Reader Terminal
In an IXP220 or Impronet System, the ImproX Multi-discipline Readers are compatible with the following Door Controllers:
- ImproX (MT) Multi-function Terminal
- ImproX (iTRT) Intelligent Twin Reader Terminal
- DOOR (MULTI-DISCIPLINE) Readers - selection
- ImproX (MDR) Multi-discipline Reader
- ImproX (MDK) Multi-discipline Keypad Reader
- TAG REGISTRATION Reader

Figure 1: Multi-discipline Reader Overview

This Product Specification Catalogue applies to the ImproX Multi-discipline Readers, MDR901-5-0-GB-10 and MDK901-5-0-GB-10.
(The last two digits of the Impro stock code point to the issue status of the document or product).

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