

## Wiegand Module (WM)



### SPECIFICATIONS

#### Working Environment

Plastic Housing (HMW700)	Designed to work in an indoor (dry) environment similar to IP20. The Module is not sealed against water.
PCB Card for IPS / 19" Rack (HMW701)	Designed to work in an indoor (dry) environment similar to IP20. The Card is not sealed against water.

#### Power Specifications

Input Voltage	12 V DC to 15 V DC, polarity protected.	
Power Requirements	Current (mA)	Power (W)
12 V DC with no Readers connected and relays off	37	0.44
12 V DC with both relays activated and maximum reader load	503	6

#### Reader Options

Power Output	12 V DC and 5 V DC (selectable) at maximum 200 mA.
Modes Supported	Tag + PIN-code or Reason Code.
Baud Rate	9 600.
Data Format	8 data bits, no parity, 1 stop bit.

#### Relays

Relay Output	2 Relays, Form C, each with NO, COM and NC contacts.
Relay Contact Ratings	10 A at 28 V DC, 5 A at 220 V AC, 10 A at 120 V AC.
Operations	100 000 Minimum.

#### Digital Inputs

Type	2 Dry-contact inputs with End-of-line (EOL) Sensing and 2 Dry-contact inputs without End-of-line (EOL) Sensing.
Detection Resistance	< 2 kOhm.
Protection Range	+15 V continuous.

#### LED Status and Diagnostic Indicators

Status LED (RED)	
Supply Voltage Status	Off when supply voltage is too high, or too low
Upgrade Mode	Flashing at a steady rate during upgrade
Communications Failure	Two brief flashes, repeating
Data LED (GREEN)	Flashing Green during communication
Digital Inputs (1-4)	Continuous Green on detected contact closure
Relays (1 and 2)	Continuous Red on activation of the Relay

#### Wiegand or Multi-Discipline Reader Distance

CAUTION: When implementing the 150 m (164 yd) cable distances with Impro Wiegand Readers use the 12 V power output option.

For maximum, data communications distance, install the Readers no further than 150 m (164 yd) from the Terminal. The cable individual conductor cross-sectional area should not be less than 0.2 mm<sup>2</sup>.

#### Distance between Reader Units

To avoid mutual interference, install the Readers at least 500 mm (20 in) apart. (The same rule applies between readers on opposite sides of the same wall.)

#### Distance between the WM and its Multi-mode Remote

The maximum cable distance between the Impro WM and its Multi-mode Remote MUST NOT exceed 10 m (33 ft). Achieve this by using good quality screened, twisted pair cable.

#### Distance between Reader Units

To avoid mutual interference, install the Readers at least 500 mm (20 in) apart. (The same rule applies between readers on opposite sides of the same wall.)

#### EARTH Connection

Connect the Impro WM ("ETH" Terminal) to a good EARTH point. Mains EARTH can be used, but electrical noise may exist.

#### Arc Suppression

Snubber devices are recommended for EMF Fly back Arc Suppression when driving an inductive load with the Relay,

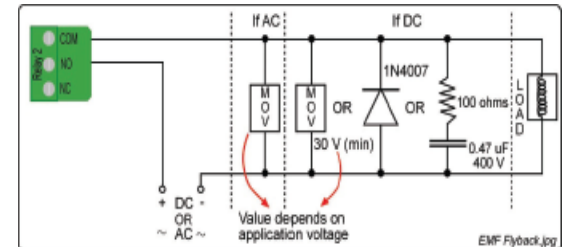


Figure 2: EMF Flyback and Arc Suppression











#### DIP-switch Settings

*NOTE: Whenever the DIP-switch settings are modified reset the Impro WM to acknowledge the new settings by disconnecting and reconnecting the power supply to the WM.*

#### Reader 1 Select and Reader 2 Select DIP-switch Settings

Each of the Reader Ports has a 4-way DIP-switch to select the function of that Port.

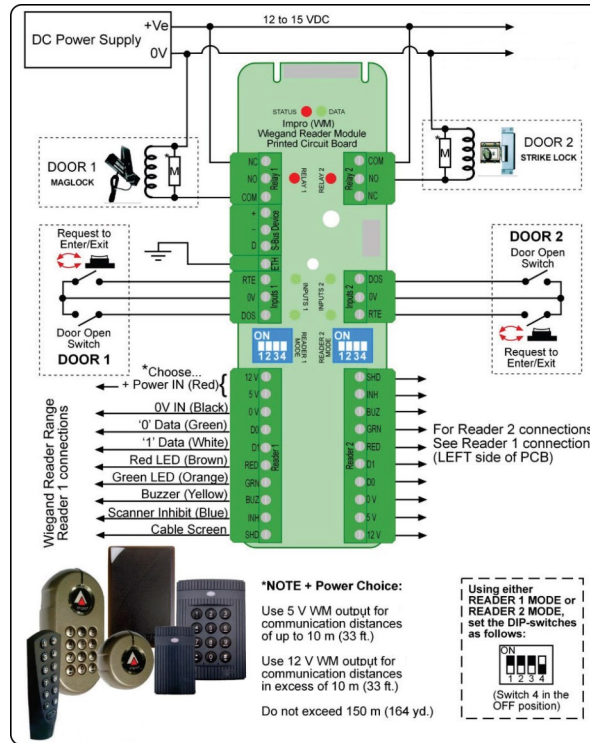
## DIP-Switch Settings

DIP-switch Position	Binary	Connections
 DIP-switch 0 shows all the switches in the ON position	0000	Advanced Wiegand Reader (Impro Multi-discipline Readers). Full Tag codes and types.
 DIP-switch 1 shows switches 2, 3 and 4 in the ON position	1000	No Remote attached, the Channel is used for Relay and Digital Inputs only.
	0100	Impro Remote (including the Impro Multi-mode Remote).
	1100	Impro RF 4-Channel Receiver or Impro (IR) Infrared Receiver.
	1110	Wiegand 26-bit, 44-bit, 40-bit, 37-bit and Tag + PIN- code or Reason Code Mode.
	0001	Wiegand open format.
	1001	LEGACY UHF Receiver Support If the UHF Receiver is connected, then Button 1 of the Quad Transmitter reports.
	1010	LEGACY UHF Receiver Support If the UHF Receiver is connected, then Button 2 of the Quad Transmitter reports.
	1101	LEGACY UHF Receiver Support If the UHF Receiver is connected, then Button 3 of the Quad Transmitter reports.
	0011	LEGACY UHF Receiver Support If the UHF Receiver is connected, then Button 4 of the Quad Transmitter reports.

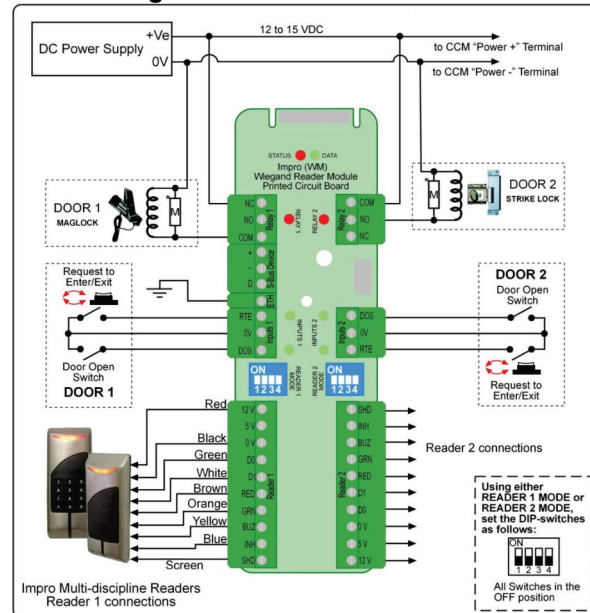
## Wiegand Modes

Mode	Terminal Action
Tag Only	Treats all codes received as tag codes.
Tag + PIN	Treats the first Wiegand code received as the tag code, and the second Wiegand code received as the PIN-code.
Tag + Reason	Treats the first Wiegand code received as the tag code, and the second Wiegand code received as the Reason Code.
Tag + PIN + Reason	Treats the first Wiegand code received as the tag code. The second and third Wiegand codes received are treated as the PIN-code and Reason Code respectively.

## Connecting to Wiegand



## Connecting to Multi



## Wiegand Mode Rules

- Enter PIN-codes or Reason Codes on the Reader within 10 seconds otherwise the tag code is discarded.
- The System allows 10 seconds each for the entry of the PIN-code and the Reason Code in Tag + PIN + Reason Mode.
- If the Impro WM expects a PIN-code and receives a number greater than 65535, then the WM assumes the number to be a tag code. The WM discards the previously read Tag for the current one and the WM will still expect a PIN-code.
- If the Impro WM expects a Reason Code and receives a number greater than 65535, then the WM assumes the number to be a tag code. The WM discards the previously read Tag for the current one and the WM will still expect a PIN-code or Reason Code, depending on the mode.
- If the WM expects a Reason code and instead receives a number in the range 100 to 65535, the WM assumes this is an error. The WM discards the entire transaction, entering a new tag code starts the process again.
- If using PIN-codes and Reason Codes set the Impro WM switches

## Power-on Self-test

The Power-on Self-test tests the RAM and Flash Checksums. If any parameter in the Module Self-test fails, the connected Readers will emit a continuous beep for 2 seconds before the 2 short start-up beeps.

When the Terminal passes the Self-test, any Readers attached will emit two short beeps, each 200 ms in duration, separated by a 200 ms inter-beep pause.

## WM Address Information

Each WM is allocated two unique Fixed Addresses at the factory. These addresses are stored in the WM's memory.

For a copy of the full WM Installation manual, please visit [www.pmtronics.com](http://www.pmtronics.com) or call

PM Tronics support: 727-786-1900

## Make the Intelligent Choice

For more information about PM Tronics Security products, to see demonstrations, or to discuss your company's needs contact the PMT team at 727-786-1900.