AY-G/H6xx0

Open to Secure (O2S) Readers

Installation and User Manual

Models:

AY-G6270/G6280
AY-H6270/H6280

AY-G6370/G6380
AY-H6370/H6380

AY-H6270/H6280

AY-G6270/G6280

AY-G6370/G6380

AY-H6370/H6380

O2S™ OPEN TO SECURE

ROSSLARE SECURITY PRODUCTS

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Notice and Disclaimer

This manual's sole purpose is to assist installers and/or users in the safe and efficient installation and usage of the system and/or product, and/or software described herein.

BEFORE ATTEMPTING TO INSTALL AND/OR USE THE SYSTEM, THE INSTALLER AND THE USER MUST READ THIS MANUAL AND BECOME FAMILIAR WITH ALL SAFETY REQUIREMENTS AND OPERATING PROCEDURES.

- The system must not be used for purposes other than those for which it was designed.
- The use of the software associated with the system and/or product, if applicable, is subject to the terms of the license provided as part of the purchase documents.
- ROSSLARE exclusive warranty and liability is limited to the warranty and liability statement provided in an appendix at the end of this document.
- This manual describes the maximum configuration of the system with the maximum number of functions, including future options. Therefore, not all functions described in this manual may be available in the specific system and/or product configuration you purchased.
- Incorrect operation or installation, or failure of the user to effectively maintain the system, relieves the manufacturer (and seller) from all or any responsibility for consequent noncompliance, damage, or injury.
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- All graphics in this manual are for reference only, some deviation between the image(s) and the actual product may occur.
- All wiring diagrams are intended for reference only, the photograph or graphic of the PCB(s) are intended for clearer illustration and understanding of the product and may differ from the actual PCB(s).

1. Introduction

The Open to Secure (O2S) family of readers are multi-format contactless smart card readers for use in access control system solutions.

The AY-x6x70 readers support reading O2S ID data and the CSN from MIFARE Plus® and MIFARE® Classic credentials.

The AY-x6x80 readers support reading O2S ID Data and the CSN from MIFARE® DESFire® EV1 and MIFARE Classic credentials.

O2S ID data is stored in the secure memory of the MIFARE credential. O2S ID data is AES 128-bit encrypted during transmission to the reader for MIFARE Plus and DESFire EV1 credentials.

1.1 Key Features

- Contactless smart card reader (13.56 MHz)
- Meets ISO14443 Type A Standard
- AES 128-bit encryption during transmission (MIFARE Plus and MIFARE DESFire EV1)
- Reads O2S ID data from O2S credentials
- Reads CSN of non-O2S credentials
- Output formats:
  - Wiegand (outputs per format on the card)
  - OSDP via RS-485 (selected models)
- RGB multi-color light indicator
- Blue backlit tact switch keypad
- Fully-potted construction for indoor and outdoor use
- Optical back tamper sensor with OC output
- Two LED control inputs
- Buzzer control input
- Hold feature (not in standard configuration)

- Pigtail or terminal block connectivity
- Comes with mounting template for easier installation
- Comes with an installation kit that includes a security Trox screw and a security Torx screw tool.

1.2 Box Content

Before beginning, verify that all of the following is in the box. If anything is missing, please report the discrepancy to your nearest Rosslare office.

- One O2S reader
- Installation kit – Includes two wall plugs, two mounting screws, security Torx screw, and security Torx screw tool
- Installation and operating instructions

2. Technical Specifications

Electrical Characteristics	AY-G H6xx0
Power Supply Type	Linear type (recommended)
Operating Voltage Range	6 to 16 VDC
Current @ 12 V	Standby: 85 mA Maximum: 110 mA
Read Range for G Models*	MIFARE Classic: 40 to 45 mm (1.5 to 1.8 in.) MIFARE Plus: 25 mm (1 in.) MIFARE DESFire EV1: 25 mm (1 in.)
Read Range for H Models*	MIFARE Classic: 40 to 45 mm (1.5 to 1.8 in.) MIFARE Plus: 30 mm (1.2 in.) MIFARE DESFire EV1: 30 mm (1.2 in.)
LED Control Input 1**	Green LED control, TTL
LED Control Input 2**	Red LED control, TTL
Auxiliary Input**	Buzzer control, TTL
Auxiliary Output**	Tamper output (open collector, active low, max. sink current 30 mA)
Maximum Cable Distance to Controller	Wiegand: 150 m (500 ft) with 18-AWG cable OSDP (RS-485): 1200 m (4,000 ft) with 2x2 18-AWG twisted shielded cable
Environmental Characteristics	
Operating Temp. Range	-31°C to 63°C (-24°F to 145°F)
Operating Humidity Range	0 to 95% (non-condensing)
Outdoor Usage	Weather-resistant, meets IP65, epoxy-potted, suitable for indoor and outdoor use

* Measured using Rosslare O2S ISO cards. Range also depends on electrical environment and proximity to metal.

** Standard configuration. Custom configurations are available.

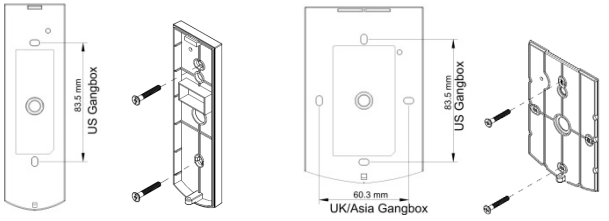
Physical Characteristics	
Dimensions of Pigtail Models (H x W x D)	AY-G6xx0: 145.3 x 42.0 x 23.0 mm (5.7 x 1.7 x 0.9 in.)
	AY-H6xx0: 120.0 x 80.0 x 23.0 mm (4.7 x 3.2 x 0.9 in.)
Dimensions of Terminal Block and OSDP Models (H x W x D)	AY-G6xx0: 145.3 x 42.0 x 31.0 mm (5.7 x 1.7 x 1.2 in.)
	AY-H6xx0: 120.0 x 80.0 x 31.0 mm (4.7 x 3.2 x 1.2 in.)
Weight	AY-G6xx0: 155 g (5.5 oz)
	AY-H6xx0: 217.0 g (7.7 oz)

3. Mounting

To mount the units:

1. Determine an approximate location for the reader.
2. Peel off the back of the self-adhesive mounting label template and place it at the required mounting location.
3. Using the template as a guide, drill two holes (sizes indicated on the template) used for mounting the back plate onto the surface (Figure 1).

Figure 1: Mounting



AY-GXXXX **AY-HXXXX**

4. Insert a suitable wall plug into each screw hole.
5. Drill a 10-mm (7/16") hole for the cable.
6. Screw the back plate onto the wall.
7. Connect the reader to the controller (see Chapter 4). A linear type power supply is recommended.
8. Attach the reader to the back plate and secure the reader to the back plate with the provided security screw and tools.

4. Wiring Instructions

The units are supplied with a 10-conductor 18" (46 cm) pigtail or with 10 terminal blocks.

To connect a pigtail reader to the controller:

1. Prepare the reader cable by cutting its jacket back 3.2 cm (1¼") and strip the insulation from the wires 1.3 cm (½").
2. Prepare the controller cable by cutting its jacket back 3.2 cm (1¼") and strip the insulation from the wires 1.3 cm (½").
3. Splice the reader's pigtail wires to the corresponding controller wires (as indicated in Table 1) and cover each joint with insulating tape.

Table 1: Wiring

Terminals	Wire Color	Output
1	Red	VIN 6 ~ 16 VDC
2	Black	Shield/Ground
3	Green	Data 0 / Data
4	White	Data 1 / Clock
5	Purple	Tamper Output
6	Orange	Green LED CTL
7	Brown	Red LED CTL
8	Yellow	Buzzer CTL
9	Blue	OSDP* / RS-485-A
10	Gray	OSDP* / RS-485-B

*OSDP (selected models)

4. Trim and cover all unused conductors.

Note

- The individual wires from the reader are color coded according the Wiegand standard.
- When using a separate power supply for the reader, this supply and that of the controller must have a common ground.
- The reader's cable shield wire should be preferably attached to an earth ground, or a signal ground connection at the panel, or power supply end of the cable. This configuration is best for shielding the reader cable from external interference.

To connect a terminal block reader to the controller:

1. Prepare the controller cable by cutting its jacket back 5 cm (2") and strip the insulation from the wires 1.3 cm (½").
2. Connect the controller cable to the terminals (see Table 1).

5. Reader Operation

Once the reader is wired to a power supply and to the controller, you should test the reader.

To test the reader:

1. Power up the reader.

   The beeper sounds three times and the LED turns red, blue, and green, to indicate that the reader is working properly. The LED returns to its Standby mode (red for the AY-x6x70 series and blue for the AY-x6x80 series).

2. Present the appropriate type of proximity card to the reader or enter a valid keypad entry.

   The reader emits a beep (0.5 seconds). The LED changes momentarily to green and then returns to its Standby mode (red for the AY-x6x70 series and blue for the AY-x6x80 series).

   The reader transmits the card's data or the keypad entry to the controller for validation.

6. Proximity Operation

6.1 Supported Credential Technologies

O2S readers support reading from the secure memory of the following credential technologies:

- AY-H6x80 and AY-G6x80
  - MIFARE DESFire EV1 (2K, 4K, 8K)
  - MIFARE Classic (1K, 4K)
- AY-H6x70 and AY-G6x70
  - MIFARE Plus X (2K, 4K)
  - MIFARE Plus S (2K, 4K)
  - MIFARE Classic (1K, 4K)

6.2 Wiegand Output

For O2S credentials, the reader outputs the ID data stored in the secure memory (sector/file) of the credential. The ID data defines the output as Wiegand and also determines the bit length of the output. For example, when reading an O2S 26A format credential, the reader outputs a Wiegand 26-Bit ID.

For non-O2S credentials, the reader outputs the CSN of the credential as a Wiegand 32-Bit ID.

7. Keypad Operation Instructions

This chapter is relevant to models AY-G63x0 and AY-H63x0.

7.1 Programming Menu

Some but not all of the reader options can be programmed using the unit's keypad driven Programming Menu System. During the unit's manufacturing process, certain codes and settings are pre-programmed. These settings are called the default factory settings.

Table 2 shows the names of all the menus.

Default factory settings are marked by *.

Table 2: Reader Programming Menu

Menu	Description	Default
1	**Selecting Keypad Transmission Format**	
	1 – Single Key, Wiegand 6-Bit (Rosslare Format)	*
	2 – Single Key, Wiegand 6-Bit with Nibble + Parity Bits	
	3 – Single Key, Wiegand 8-Bit, Nibbles Complemented	
	4 – 4 Keys Binary + Facility code, Wiegand 26-Bit	
	5 – 1 to 5 Keys + Facility code, Wiegand 26-Bit	
	6 – 6 Keys Binary-Coded Decimal (BCD) and Parity Bits, Wiegand 26-Bit	
	8 – 1 to 8 Keys BCD, Clock & Data	
	9 – Single key, Wiegand 4-Bit	
3	**Changing the Programming code**	1234
4	**Changing the Facility code**	0
6	**Setting the Backlight**	
	Always off	
	Always on	*
	10 sec. backlight after key press otherwise off	
	10 sec. backlight after key press otherwise dimmed	
0	**Return to Factory Default Settings**	

7.2 Entering Programming Mode

To reach the Programming Menu System, the unit must first be placed into Programming mode.

To enter Programming mode:

1. Press **#** four times.

   The yellow LED blinks.

2. Enter your Programming code.

   If the Programming code is valid, and the unit is in Programming mode and the yellow LED is lit.

- The factory 4-digit Programming code is 1234.
- If a Programming code is not entered within 30 seconds, the unit returns to Standby mode.

7.3 Exiting Programming Mode

To exit Programming mode:

1. Press **#**.

   You hear a buzzing beep. This indicates that the unit has returned to Standby mode.

   Wrong entries may reset the reader back to Standby mode. While in Programming mode, if no key is pressed for 30 seconds, the unit exits Programming mode and returns to Standby mode.

7.4 Selecting Keypad Transmission Format

The units have 8 different keypad transmission formats from which to select.

To select the keypad transmission format:

1. Enter Programming mode.
2. Press **1** to enter Menu 1.

   The green LED blinks.

3. Enter the appropriate option number for the keypad transmission format that you wish to select (see Table 3).

   If an incorrect option number is entered, the reader returns to Standby mode and the keypad transmission format remains unchanged.

   The system returns to Standby mode.

   - You hear three beeps and the green LED blinks.

Note

- Only one keypad transmission format can be active at any one time.
- When using the keypad transmission format "1 to 8 keys BCD, Clock & Data" (Option 8) an additional input is required to specify the number of keys in the PIN code.

7.5 Keypad Transmission Format Option Number

See Table 3 to determine the Option Number for the Keypad Transmission Format you wish to select.

Table 3: Keypad Transmission Format

Keypad Transmission Format	Option Number
Single Key, Wiegand 6-Bit (Rosslare Format)	1*
Single Key, Wiegand 6-Bit with Nibble + Parity Bits	2
Single Key, Wiegand 8-Bit, Nibbles Complemented	3
4 Keys Binary + Facility code, Wiegand 26-Bit	4
1 to 5 Keys + Facility code, Wiegand 26-Bit	5
6 Keys BCD and Parity Bits, Wiegand 26-Bit	6
1 to 8 Keys BCD, Clock & Data Single Key	8
Single Key, Wiegand 4-Bit	9

Note

Reader settings are affected by keypad programming settings. Settings are preset by the last keypad operation.

More information on each of the different keypad transmission formats is available in the following subsections.

7.5.1 Option 1: Single Key, Wiegand 6-Bit (Rosslare Format)

Each key press immediately sends 4 bits with 2 parity bits added – even parity for the first 3 bits and odd parity for the last 3 bits.

0 = 1 1010 0 = "A" in Hexadecimal	6 = 1 0110 0
1 = 0 0001 0	7 = 1 0111 1
2 = 0 0010 0	8 = 1 1000 1
3 = 0 0011 1	9 = 1 1001 0
4 = 1 0100 1	* = 1 1011 1 = "B" in Hexadecimal
5 = 1 0101 0	# = 0 1100 1 = "C" in Hexadecimal

7.5.2 Option 2: Single Key, Wiegand 6-Bit Nibble and Parities

Each key press immediately sends 4 bits with 2 parity bits added – even parity for the first 3 bits and odd parity for the last 3 bits.

0 = 0 0000 1	6 = 1 0110 0
1 = 0 0001 0	7 = 1 0111 1
2 = 0 0010 0	8 = 1 1000 1
3 = 0 0011 1	9 = 1 1001 0
4 = 1 0100 1	* = 1 1010 0 = "A" in Hexadecimal
5 = 1 0101 0	# = 1 1011 1 = "B" in Hexadecimal

7.5.3 Option 3: Single Key, Wiegand 8-Bit Nibbles Complemented

This options inverts the most significant bits in the message leaving the least 4 significant bits as BCD representation of the key. The host system receives an 8-bit message.

0 = 11110000	6 = 10010110
1 = 11100001	7 = 10000111
2 = 11010010	8 = 01111000
3 = 11000011	9 = 01101001
4 = 10110100	* = 01011010 = "A" in Hexadecimal
5 = 10100101	# = 01001011 = "B" in Hexadecimal

7.5.4 Option 4: 4 Keys Binary + Facility Code, Wiegand 26-Bit

This option buffers 4 keys and outputs keypad data with a 3-digit Facility code like a standard 26-bit card output.

The Facility code is set in Programming Menu 4 and can be in the range 000 to 255. The factory default setting for the Facility code is 000 (see Section 7.7 for more information).

The keypad PIN code is 4 digits in length and can range between 0000 and 9999. On the fourth key press of the 4-digit PIN code, the data is sent across the Wiegand Data lines as binary data in the same format as a 26-bit card.

If ***** or **#** are pressed during PIN code entry, the keypad clears the PIN code entry buffer, generates a beep, and is ready to receive a new 4-digit keypad PIN code.

If the entry of the 4-digit keypad PIN code is disrupted and no number key is pressed within 5 seconds, the keypad clears the PIN code entry buffer, generates a beep, and is ready to receive a new 4-digit keypad PIN code:

(EP) FFFF FFFF AAAA AAAA AAAA AAAA (OP)

Where:

EP = Even parity for first 12 bits

OP = Odd parity for last 12 bits

F = 8-Bit Facility code

A = 16-Bit code generated from keyboard

7.5.5 Option 5: 1 to 5 Keys + Facility Code, Wiegand 26-Bit

Option 5 buffers up to 5 keys and outputs keypad data with a Facility code like a 26-bit card output.

The Facility code is set in Programming Menu 4 and can be in the range 000 to 255. The factory default setting for the Facility code is 000 (see Section 7.7 for more information). The keypad PIN code can be one to five digits in length and can range between 1 and 65,535.

When entering a keypad PIN code that is less than 5 digits in length, **#** must be pressed to signify the end of PIN code entry. For keypad PIN codes that are 5 digits in length, on the fifth key press of the 5-digit PIN code, the data is sent across the Wiegand Data lines as binary data in the same format as a 26-bit card.

If ***** is pressed during PIN code entry or a PIN code greater than 65,535 is entered, the keypad clears the PIN code entry buffer, generates a beep and is ready to receive a new 5-digit keypad PIN code.

If the entry of the 1- to 5-digit keypad PIN code is disrupted and a number key or **#** is not pressed within 5 seconds, the keypad clears the PIN code entry buffer, generates a medium length beep, and is ready to receive a new 1- to 5-digit keypad PIN code:

(EP) FFFF FFFF AAAA AAAA AAAA AAAA (OP)

Where:

EP = Even parity for first 12 bits

OP = Odd parity for last 12 bits

F = 8-Bit Facility code

A = 16-Bit code generated from keyboard

7.5.6 Option 6: 6 Keys BCD and Parity Bits, Wiegand 26-Bit

This option sends buffer of 6 keys, adds parity, and sends a 26-bit BCD message. Each key is a four bit equivalent of the decimal number.

The keypad PIN code must be 6 key presses in length. On the sixth key press of the 6-digit PIN code, the data is sent across the Wiegand Data lines as a BCD message.

If the entry of the 6-digit keypad PIN code is disrupted and a number key or **#** is not pressed within 5 seconds, the keypad clears the PIN code entry buffer, generates a medium length beep, and is ready to receive a new 6-digit keypad PIN code:

(EP) AAAA BBBB CCCC DDDD EEEE FFFF (OP)

Where:

EP = Even parity for first 12 bits

OP = Odd parity for last 12 bits

A = The first key entered
B = Second key entered
C = Third key entered
D = Fourth key entered
E = Fifth key entered
F = Sixth key entered

7.5.7 Option 8: 1 to 8 Keys BCD, Clock & Data

Option 8 buffers up to 8 keys and outputs keypad data without a Facility code like standard Clock and Data card output.

The keypad PIN code can be one to eight digits in length. The PIN code length is selected while programming the reader for Option 8. The reader transmits the data when it receives the last key press of the PIN code. The data is sent across the two data output lines as binary data in Clock & Data format.

If ***** or **#** is pressed during PIN code entry, the keypad clears the PIN code entry buffer, generates a beep, and is ready to receive a new keypad PIN code.

If the entry of the keypad PIN code is disrupted and a number key or **#** is not pressed within 5 seconds, the keypad clears the PIN code entry buffer, generates a medium length beep, and is ready to receive a new keypad PIN code.

When using the keypad transmission format "1 to 8 keys BCD, Clock & Data" (Option 8), an additional input is required to specify the number of keys in the PIN code.

7.5.8 Option 9: Single Key, Wiegand 4-Bit

With this option, each key press immediately sends 4 bits of data, with no parity bits added.

0 = 0000	6 = 0110
1 = 0001	7 = 0111
2 = 0010	8 = 1000
3 = 0011	9 = 1001
4 = 0100	*= 1010 ="A" in Hexadecimal
5 = 0101	#=1011 ="B" in Hexadecimal

7.6 Changing the Programming Code

To change the Programming code:

1. Enter Programming mode.
2. Press **3** to enter Menu 3.

   The green LED blinks.
3. Enter the new 4-digit code you wish to set as the Programming code.

   The system returns to Standby mode.
   - You hear three beeps and the green LED blinks.

- The Programming code cannot be erased; the code 0000 is invalid and does not erase the Programming code.
- The factory default 4-digit Programming code is 1234.

7.7 Changing the Facility Code

To change the Facility code:

1. Enter Programming mode.
2. Press **4** to enter Menu 4.

   The green LED blinks.
3. Enter the new 3-digit code you wish to set as the Facility code.

The system returns to Standby mode.

- You hear three beeps and the green LED blinks

- The Facility code can be in the range of 000 to 255.
- The default Facility code is 0.

7.8 Setting the Backlight Behavior

To set the backlight behavior:

1. Enter Programming mode.
2. Press **6** to enter Menu 6.

   The green LED blinks.
3. Enter one of the following codes:
   - **0** – Always off
   - **1** – Always on
   - **2** – Backlight is off, activates for 10 seconds when a key is pressed (Mode LED also goes on), after which it dims until off (Mode LED also goes off)
   - **3** – Backlight is dimmed, activates for 10 seconds when a key is pressed (Mode LED also goes on), after which it returns to a dimmed level

   The system returns to Standby mode.
   - You hear three beeps and the green LED blinks

7.9 Return to Factory Default Settings

You must be very careful before using this command! This erases the entire memory and returns all codes to their factory default setting.

To return to factory default settings:

1. Enter Programming mode.
2. Press **0** to enter Menu 0.

   The white LED blinks.
3. Enter your Programming code.

   If the Programming code is valid, all memory is erased, you hear three beeps and the controller returns to Standby mode.

   If the Programming code is invalid, you hear a long beep and the controller returns to Standby mode without erasing the memory of the controller.

7.10 Replacing a lost Programming Code

In the event that the Programming code is forgotten, the unit may be reprogrammed in the field using the following instructions:

1. Remove power from the reader.
2. Activate tamper by removing the reader from the wall or removing the reader's case.
3. Apply power to the reader.
4. You now have 10 seconds to enter Programming mode using the factory default Programming code **1234**.

8. OSDP Operation

Rosslare O2S readers that support OSDP operation are compatible with most OSDP commands. The reader address is set using DIP switches on the back of the reader.

The DIP switch settings are as follows:

DIP Switch 1

This switch is used to select the reader output (Wiegand or OSDP):

- Off = Wiegand
- On = OSDP

DIP Switch 2

This switch is used to determine what cards are read:

- Off = O2S cards and CSN of non-O2S cards
- On = O2S only

DIP Switch 3

This switch is reserved for future use.

DIP Switches 4 to 8

These switches set the address of the reader for OSDP protocol.

DIP Switch 4 is MSB and DIP Switch 8 is LSB. The address is the DIP switch state +1.

Examples:

- All the DIP switches in Off position, state is = 0 => address = 1
- All the DIP switches in On position, state is = 0x1F => address = 0x20 = 32
- DIP switches 4, 6, 8 in On position and 5, 7 in Off position, state is = 0x15 => address = 0x16 = 22

A. Wiegand Output Formats

The AY-G/H6xx0 can read all Rosslare O2S cards/tags and outputs card ID data in Wiegand format according to the number of bits stored in the secured memory area on the card. The readers support any O2S card from 26-bit to 128-bit.

For more details on supported formats and custom formats, contact your Rosslare Sales representative.

The following subsections show examples for two of the supported O2S formats:

- Wiegand 26-Bit (26A)
- Wiegand 38-Bit (38A)

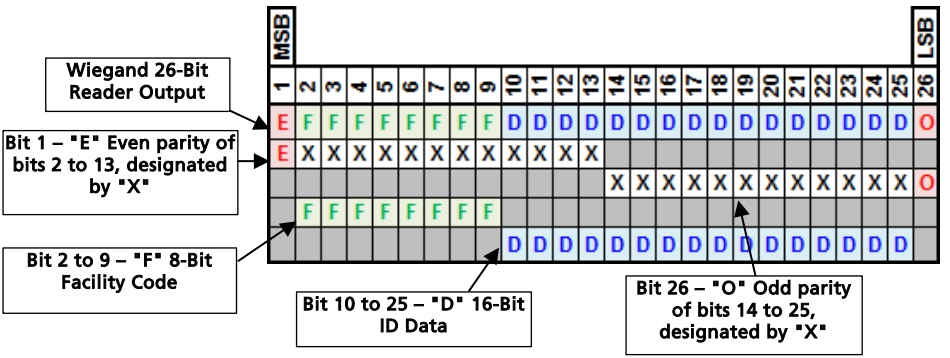
Table 4 is a key to the tables appearing in the subsections below.

Table 4: Bit Description Table

D	Card Number
F	Facility Code
S	Issue Number
E	Even Parity Bit
O	Odd Parity Bit

A.1 Rules for Wiegand 26-Bit (26A)

Field	ID Data	Facility Code	Parity Bits
# of Bits	16	8	2
Range	65,535	255	N/A

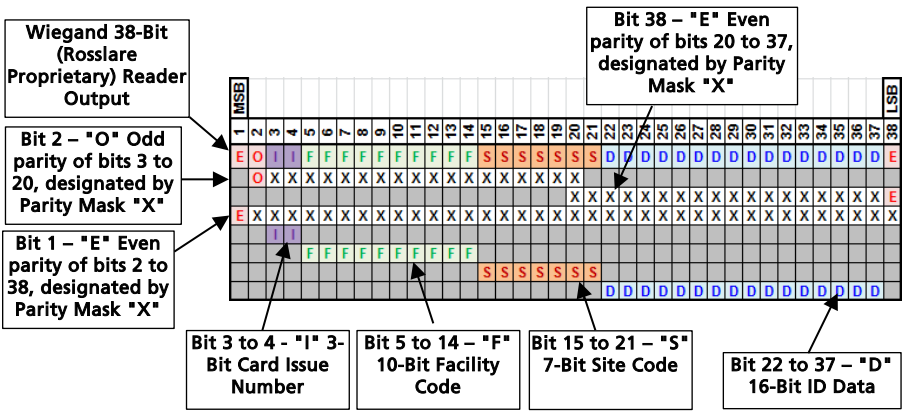


Example: FC=59, ID=21,003

BIN	0	0	0	1	1	1	0	1	1	0	1	0	1	0	0	1	0	0	0	0	0	1	0	1	1	1
HEX		3			B			5			2			0			B									
DEC		59								21,003																

A.2 Wiegand 38-Bit (38A)

Field	ID Data	Facility Code	Site Code	Issue Number	Parity Bits
# of Bits	16	10	7	2	3
Range	65,535	1,023	127	3	N/A



Example: ISSUE No=0, FC=905, Site Code=103, ID=9,029

BIN	0	0	0	0	1	1	1	0	0	0	1	0	0	1	1	1	0	0	1	1	1	0	0	1	0	0	0	1	1	0	1	0	0	0	1	0	1	0
HEX			0		3			8			9			6			7			2			3			4			5									
DEC			0		905									103						9,029																		

B. Limited Warranty

The full ROSSLARE Limited Warranty Statement is available in the Quick Links section on the ROSSLARE website at www.rosslaresecurity.com.

Rosslare considers any use of this product as agreement to the Warranty Terms even if you do not review them.

FCC NOTE：
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.
THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS OR CHANGE TO THIS EQUIPMENT. SUCH MODIFICATIONS OR CHANGE COULD VOID THE USER ' S AUTHORITY TO OPERATE THE EQUIPMENT.

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