Wyreless Access ™ Pre-Production System **6-20-01**
Setup and Operating Procedures

1. Introduction

This manual has been designed to help you understand the operation of your Wyreless Access ™ Pre-Production System. Please familiarize yourself with the system and its parts before operating. The system includes one Door Control Module Interface (DCMI), one mounted Integrated Reader Lock (IRL) and one Accessory Kit.
The information provided is preliminary and will change. This system is a pre-production system. It is not intended to be a full-feature system. Please see section **21**, ***Pre-Production System Limitations*** for a more complete description of its limitations.
For questions not answered by this manual regarding the setup and operation of the Wyreless Access Pre-Production System, please contact

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2. FCC Compliance

This device is designed to comply with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment will be tested to comply with the limits for a Class B digital device and a Class B intentional radiator, pursuant to Part 15 of the FCC Rules.

Warning

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device has not been authorized by the FCC Rules. This device is not, and may not be, offered for sale or lease or sold or leased until authorization is obtained.

3. Warnings

- RF exposure – To comply with FCC RF exposure requirements for portable transmitting devices this transmitter should only be used or installed at locations where there is at least a 20 cm separation between the antenna and all persons.
- Use only the Battery Pack specified in this instruction manual.
- Do not subject Battery Pack to fire or high temperatures.
- Do not attempt to recharge, short or disassemble Battery Pack.
- Follow local regulations for battery disposal.
- Immediately remove the batteries and discontinue use if:
  - The product is impacted after which the interior is exposed,
  - The product emits a strange smell, heat or smoke.

Do not disassemble. If unit stops working or disassembly is needed, contact Recognition Source at 630-762-4450 for instructions.

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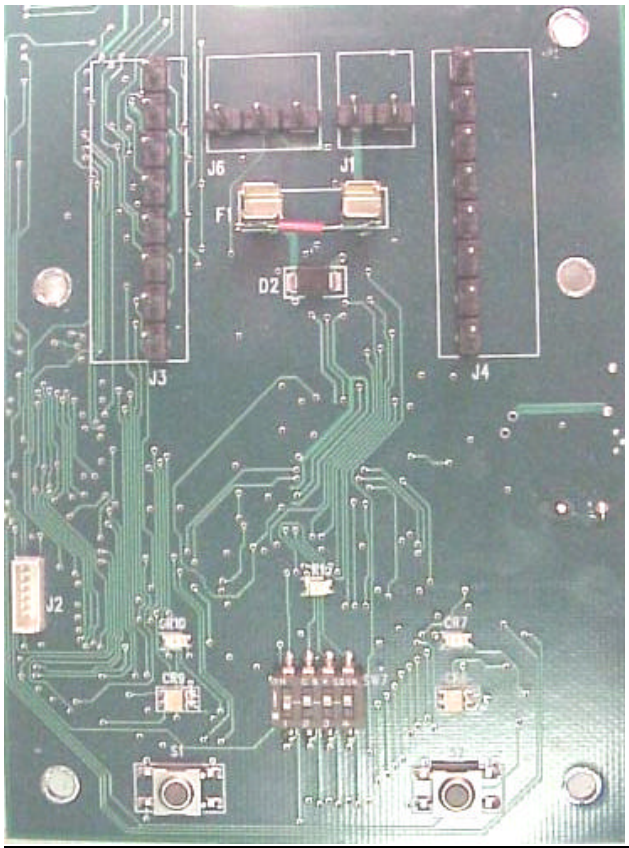


4. General Description

Wyreless Access ™ is a wireless access control peripheral system. Simply, it allows a panel to control a remote door without any wiring from the panel to the door or any wiring at or around the door. The system consists of two components: a Door Control Module Interface (DCMI) and an Integrated Reader Lock (IRL). It communicates using 900 MHz RF Spread Spectrum Technology. An Accessory Kit is also provided.

4.1 Components of the Wyreless Access System

4.1.1 Door Control Module Interface (DCMI)

The DCMI includes (1) an RF receiver and transmitter (transceiver) to communicate with an IRL and (2) an interface to an access control panel. The DCMI will interface with any access panel using either Magstripe (clock & data) or Wiegand (data1/data 0) compatible inputs.

One DCMI is capable of controlling two IRLs. A Door Control Module Interface–Expanded (DCMIE), capable of controlling four IRLs, is also available.

4.1.2 Integrated Reader Lock (IRL)

The IRL includes 7 components: an electrical lock plus reader, power supply, optional door position contacts and Request-to-Exit sensor. It also includes an RF receiver and transmitter (transceiver). The IRL mounts on a standard cylindrical-cut door (IRLs for mortise-cut doors will be available soon).

4.1.3 Accessory Kit

The Accessory Kit contains a portable doorjamb with the IRL mounted on it. This will not be provided in the production version.

The Kit also includes two battery packs of four AA alkaline batteries and one connector each. A single battery pack of eight AA alkaline batteries and one connector will be provided in production versions. A Battery Override Cable, 9VBOC, will also be supplied.

4.2 Operating Options

The pre-production system operates in two ways: Stand-Alone Operation or Panel-Connected Operation.

4.2.1 Stand-Alone Operation

Stand-Alone involves only the IRL and DCMI. In Stand-Alone, the IRL transmits a Request-to-Unlock after a card swipe. The DCMI receives this request then transmits back an unlock command. This mode is intended for evaluating basic communications performance levels.

4.2.2 Panel-Connected Operation

Panel Connected Operation requires connection to an access control panel with Magstripe (clock & data) or Wiegand (data1-data0) protocol.

After a card swipe, the IRL transmits a Request-to-Unlock. The DCMI receives this request and communicates it to the panel via wires. When the panel responds with an unlock command, the DCMI receives the command via wires and transmits it to the IRL via RF.

4.3 Card Swipe

Pre-production units have Magstripe readers. Wiegand & Prox readers will be available. Manual Card Swipe is required for either Stand-Alone or Panel-Connected Operation. The user must swipe a card to begin a transmission. Only when a card has been swiped will the IRL transmit a Request-to-Unlock. In Stand Alone mode, a mag stripe card with Track 2 data will be needed to transmit a valid Request-to-Unlock. In Panel-Connected mode, a valid card must be used to result in a valid Request-to-Unlock, like normal.

5. DCMI Part Names

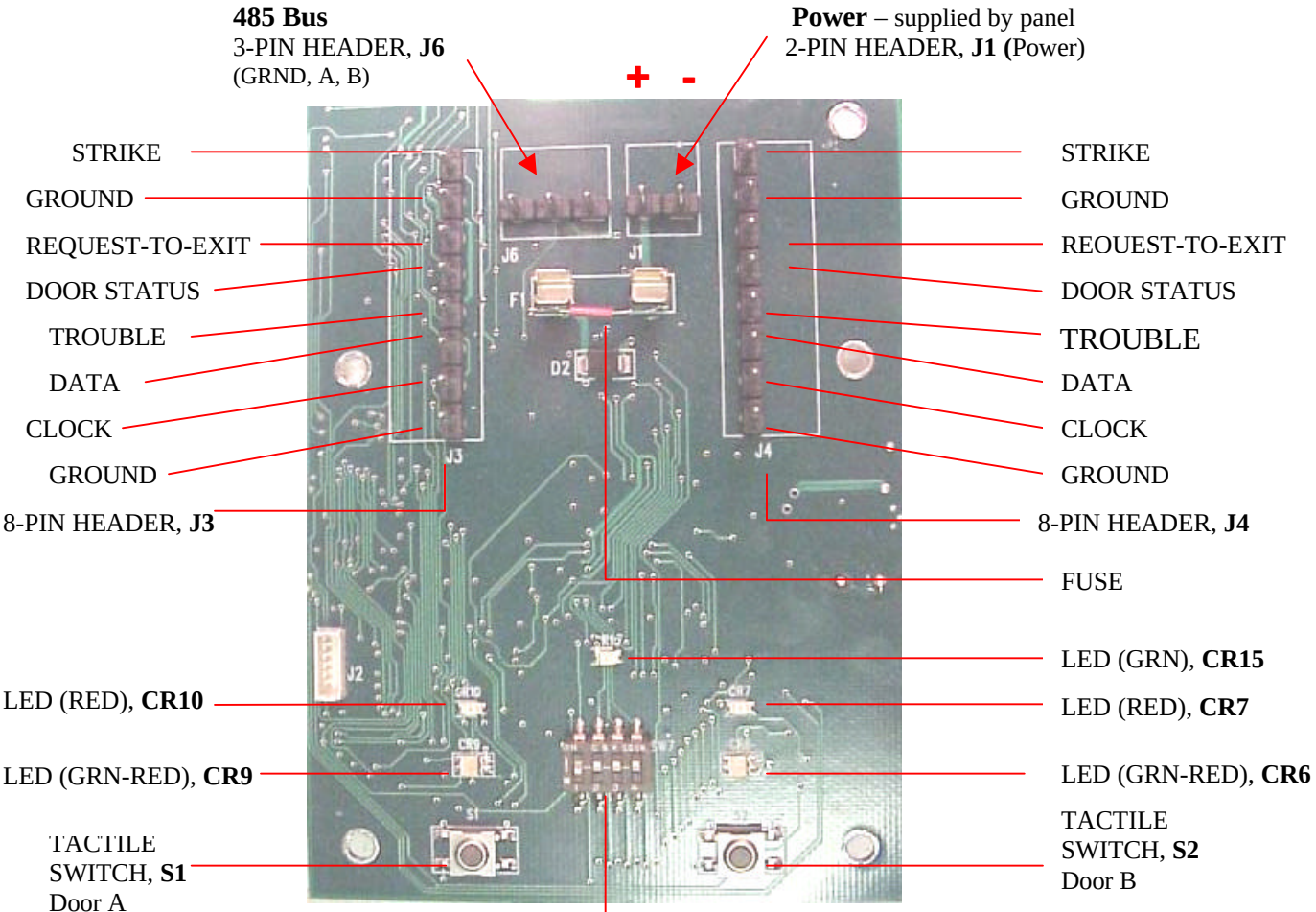


Figure 1- DCMI Printed Circuit Board (PCB)

6. DCMI PCB Functional Components

As previously stated, the DCMI is capable of controlling two IRLs. The components on the left side of the DCMI PCB will be designated for IRL A while components on the right will be designated for IRL B.

The following text describes the functions of the PCB components - Figure 1.

Note – All headers (male terminal pin strips) will have terminal blocks attached.

6.1 8-Pin Headers

There are two 8-pin headers, one for each door. The left 8-pin header is marked J3, and the right, J4. (J3 applies to IRL A; J4 applies to IRL B.)

The 8-pin header provides either 1) the connections to a panel for Panel Operation or 2) the two pins (noted as Strike and Ground) needed to be connected together in order for the DCMI to function in Stand-Alone Operation. Figure 1 notes the function of each pin on the 8-pin header.

6.2 Tactile Switches

Two tactile switches (S1 and S2) are located on the DCMI PCB. Again, the tactile switch on the left (S1) applies to IRL A, and the tactile switch on the right (S2) applies to IRL B.

The tactile switch is used to put the DCMI into Link Mode.

When the DCMI is in Link Mode, it is in receive mode, waiting for the first link request transmission from an IRL in order to link the IRL and DCMI so that the system can be operated. The switch can also be used to take the DCMI out of Link Mode. More detailed information on Link Mode follows in section **14**, *Link Mode*.

6.3 2-Pin Header

One 2-pin header (J1) is located to the left of the 8-pin header (J4). The 2-pin header is always the connection to the panel power in either the Stand-Alone Mode or the Panel-Connected Mode. Plus is left pin, negative is right pin.

6.4 3-Pin Header

One 3-pin header (J6) is located to the right of the 8-pin header (J3). This is for a future RS 485 interface to a control panel and for local troubleshooting and configuration. The left pin is ground, the center pin is A, and the right pin is B.

6.5 4-Switch Dipswitch

There is one 4-pole dipswitch (SW7). The dipswitch determines the RF channel to be used. As there is only one dipswitch, doors A and B will communicate on the same RF channel.

6.6 LEDs

The following describes the seven LEDs and the messages they convey.

6.6.1 Green LED, CR15, when blinking, indicates the microprocessor is running and power is on.
Note: If the power is off, CR15 may still be blinking but the microprocessor is not running.

6.6.2 Red LEDs, CR10 and CR7, indicate Trouble at its respective IRL such as Low Battery, Tamper, No Communication.

6.6.3 CR9 and CR6 are dual green and red LEDs. Each indicates either Link Mode or Standby Mode for its respective IRL. When in Link Mode, the green and red LEDs flash alternately. When in Standby Mode, the green LEDs illuminate continuously.

6.6.4 Green and red LEDs, CR9 and CR6, also indicate RF communication. The red LED will flash once per sent transmission. The green LED flashes once per received transmission**. See Section 18, Understanding the IRL's LED Indicators and Internal Sounder.**

7. IRL Part Names

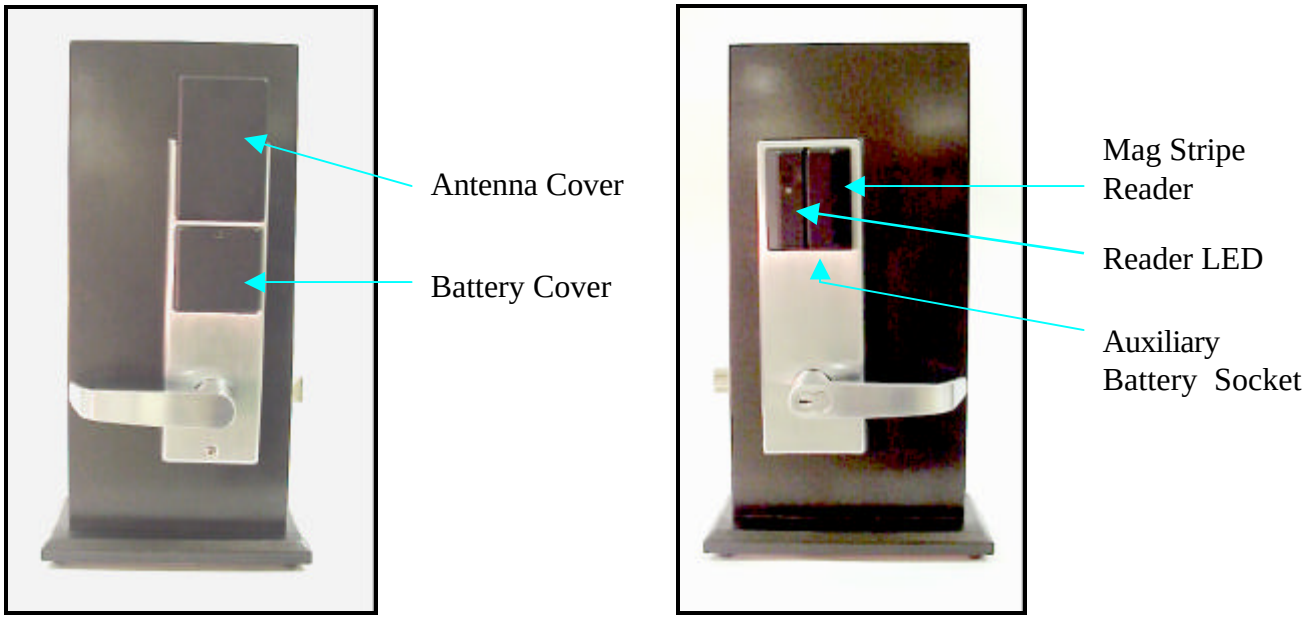


Figure 2

8. IRL Functional Components –

The Antenna Cover, Battery Cover, Reader, Reader LED and Auxiliary Battery Socket are shown in Figure 2.

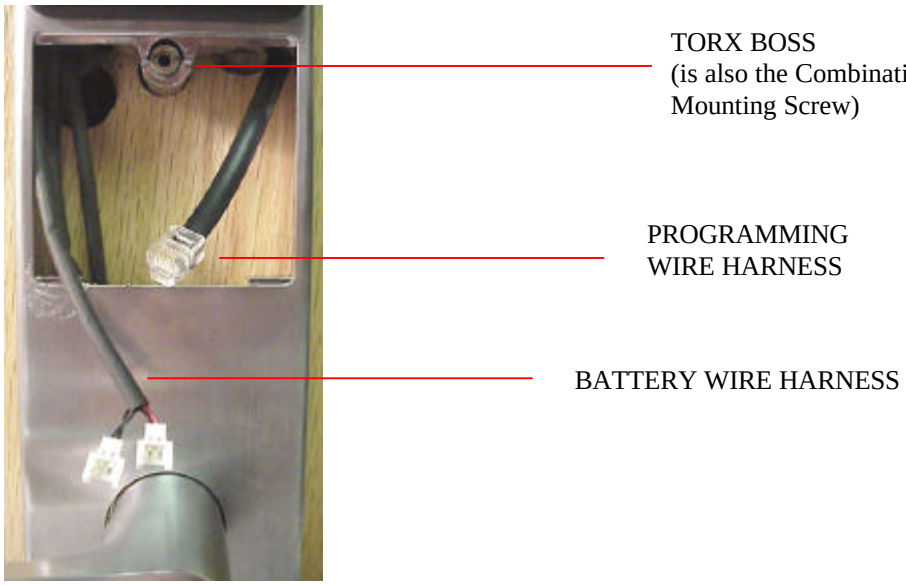


Figure 3

The following describes various other components that make up the IRL - Figure 3

8.1 Torx Boss

A Torx screw secures the Battery Cover. It fits into the top center of the battery cover and screws into the Torx boss.
Note: This requires a Torx security screwdriver (size T9).

8.2 Battery Wire Harness

The Battery Wire Harness is located in the battery compartment. It is the wire harness that has two, 2-position connectors at the end. These connectors connect to the Battery Packs that supply power to the IRL.

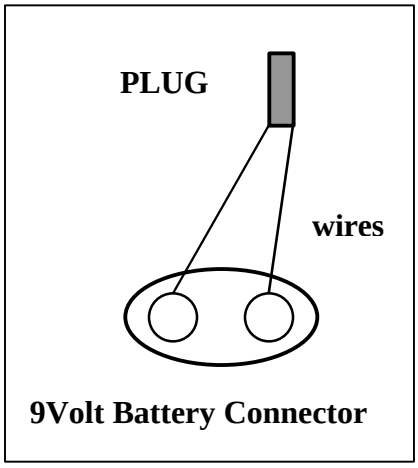
8.3 Programming Wire Harness

The Programming Wire Harness is located in the battery compartment. It is the wire harness with the RJ11 (6 pin, 6 wire) connector.

The Programming Wire Harness connects the IRL PCB through any programming module to any computer via the serial data port. When the Programming Wire Harness is connected, new software versions can be loaded into the flash memory. Instructions will be provided when needed.

9. Accessory Kit Part Names

Battery Pack



Battery Override Cable (9VBOC)

Figure 4

10. Accessory Kit

The Accessory Kit (Figure 4) is provided for the convenience of the user. The following are the components provided and descriptions of their function.

10.1 Battery Pack

The two battery packs with two connectors is the power supply for the IRL. They connect to the Battery Wire Harness located in the IRL battery compartment. The connectors are polarized.

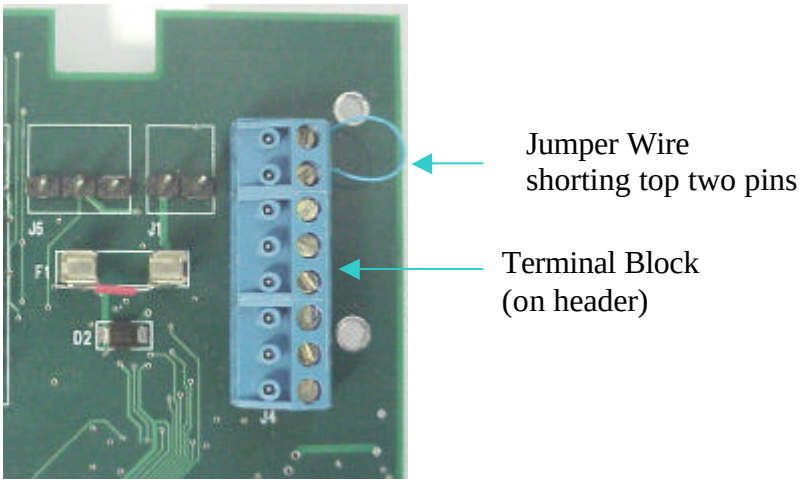
10.2 Battery Override Cable

A Battery Override Cable, 9VBOC, is needed to plug a standard 9.0V battery, 522 or equal, into the jack under the reader if the internal IRL battery goes dead. This cable is available from Recognition Source but is not part of this Accessory Kit. Call 630-762-4450 if one is needed.

11. DCMI Setup for Stand-Alone Mode

11.1 Stand-Alone Mode, DCMI Simulates a Panel

So that the system can be tested and evaluated without a panel, the presence of a panel must be simulated. Wiring a jumper between the Strike and Ground (top two) pins of each 8 position terminal block (on headers J3 & J4) on the DCMI PCB will simulate a panel. See Figure 5.



Proper jumper wiring of J4 for simulating a panel, J3 is the mirror image.

Figure 5

11.2 Power to the DCMI in Stand-Alone Mode

11.2.1 Locate the 2-pin header (J1) (to the left of the 8-pin header, J4).

11.2.2 Plug the 2-position terminal block, header (J1) as shown. See Figure 6.

CAUTION: The voltage polarity cannot be reversed w/o damage to the unit.

11.2.3 Connect the panel 12 VDC supply to J1.

11.2.4 The microprocessor LED (CR15) will blink green and the Link Mode/Standby LEDs (CR9 & CR6) will illuminate solid green.

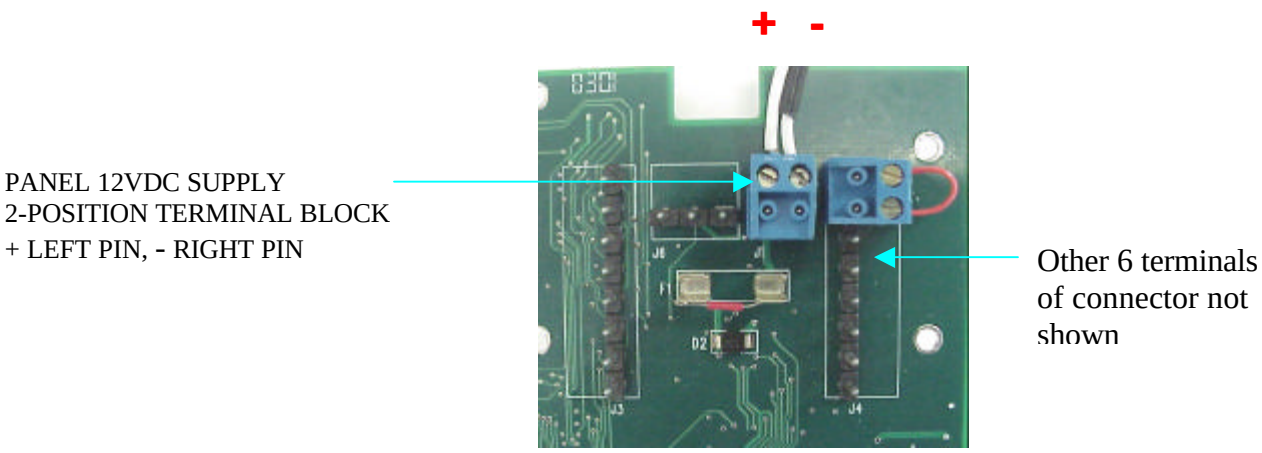


Figure 6

Proceed to Section 13, RF Channel Selection, and go on. When done with the Stand-Alone Mode return here to start the Panel-Connected Mode.

12. DCMI Setup for Panel-Connected Mode

12.1 Panel-Connected Mode, DCMI Wired to a Panel

Power is connected to the same two terminals of J1. Power to be supplied from a power source in the panel. A power source from the panel must be 12.0 VDC nominal at 250 ma. minimum.

The 8-position terminal block (Fig.5) provides the signal connections to the panel. One is on J3 & one on J4. The chart below indicates the names and/or functions of each pin. For connection instructions for a specific panel, call 630-762-4450.

Note: Shielded cable must be used when wiring a DCMI to a panel.

J3, J4	Name/function
•	Strike
•	Ground
•	Request-to-Exit
•	Door Status
•	Trouble
•	Data 1- Data 0
•	Clock & Data
•	Ground

Warning! Because each panel is different, always check the panel's instruction manual for appropriate interface wiring.

13. RF Channel Selection

The procedure to select and/or change the RF Channel is the same for both Stand-Alone and Panel-Connected Modes.

13.1 Communications Overview

The Wyreless Access system communicates on one of 15 RF Channels. Channels range between 902 and 928 MHz, separated by about 2 MHz.

The system is shipped with the default RF Channel 8 pre-selected but not linked. Once linked, the system will operate indefinitely on that channel. **It is not necessary to change the RF Channel.** However, for evaluation purposes, any or all of the 15 channels in the system may be tested.

13.2 How to Set to an RF Channel

Note that there are four switches on the Dipswitch (SW7), numbered 1-4, left to right. See chart below and Figure 7. Numbers are indicated on the Dipswitch below the corresponding switch. The left switch (1) has a binary value of eight; the next switch (2) has a binary value of four; the third switch (3) has a value of two; the fourth switch (4) has a value of one. The RF Channel then becomes the sum of the values of the various switches in the down position. (If the switch is in the up position, its value is zero. If the switch is down, its value corresponds with its binary value.)

VALUE	**0**	**0**	**0**	**0**	**UP**
VALUE	**8**	**4**	**2**	**1**	**DOWN**
SWITCH	**1**	**2**	**3**	**4**	

For example, if RF Channel 8 is selected, the position of switch 1 is down; the position of switch 2 is up; 3 is up; 4 is up.

Note: The configurations for Channels 0 and 1 will both select Channel 1.

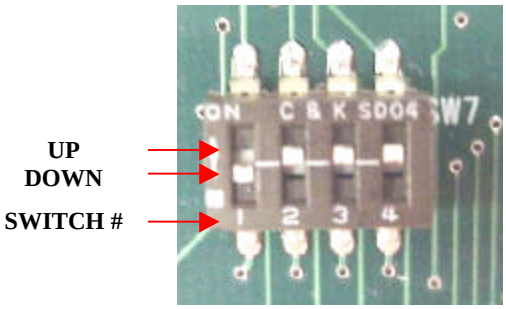


Figure 7

Using an object with a fine point (a ballpoint pen or similar is adequate) set the positions of the four switches for the desired RF Channel.

When the DCMI has power and the RF Channel has been set, the DCMI is ready to enter Link Mode.

14. Link Mode

14.1 Linking

Linking is the process that ties a DCMI to an IRL by assigning a unique address to the pair.

14.2 Link Process

Link Mode allows an IRL and a DCMI to link. When in Link Mode, the DCMI is in its receive mode awaiting a link request from an IRL. The IRL initiates linking by sending this first link request when the IRL Battery Pack is connected. When a DCMI in the Link Mode receives a link request, the DCMI automatically assigns an address randomly to itself and transmits it to the IRL. When the two have the same address they are then linked together. Since this address is unique to both components, other IRLs and DCMIs are prevented from communicating with them.

Once the DCMI and the IRL are linked, The DCMI and the IRL then can communicate using the assigned address.

14.3 How to put the DCMI into Link Mode

14.3.1 Verify that the DCMI is powered (CR 9 and CR6 are lit solid green) and that the microprocessor is running (CR15 LED is blinking green).

14.3.2 Once the RF Channel has been set (Section 13.2), press the Tactile Switch (S1 for IRL A or S2 for IRL B).

14.3.3 The corresponding LEDs (CR9 for S1; CR6 for S2) will alternately flash red and green. The DCMI is now in Link Mode.

The DCMI remains in Link Mode until it receives a link request from an IRL or for thirty minutes, whichever comes first.

To abort Link Mode and return the DCMI to Standby, press the same switch. Standby is indicated when the corresponding LED (CR9 or CR6) blinks green.

When the DCMI is powered, the RF Channel is selected, and the DCMI is in Link Mode, the system is ready for the IRL to initiate linking.

15. IRL Linking to the DCMI via Battery Connection

15.1 Overview

When the battery pack is connected, the IRL will attempt up to three transmissions to link properly. This process is made apparent by a series of beeps and LED flashes from the IRL. See Section 18.

15.2 Connect the IRL Battery Pack to Initiate Linking to the DCMI

15.2.1 Verify the DCMI is in Link Mode (LED CR9 or CR6 flashes, alternating red and green).

15.2.2 On the IRL, make sure the Battery Wire Harness is accessible in the Battery Compartment. The Battery Wire Harness has two, 2-position connectors at the end. (See Figure 3.)

15.2.3 Connect the two connectors on the Battery Wire Harness to the two connectors on the Battery Pack as shown in Fig. 8.

15.2.4 The IRL is now powered.

15.2.5 Once powered, the IRL initiates linking by transmitting a link request.

15.2.6 When linking is completed successfully, CR9or CR6 turns solid green.

15.2.7 The Battery Cover can be closed and secured with the Torx screw. (See Figure 9.)

Figure 8

Figure 9

16. When and How to Change the RF Channel

The RF Channel may be changed for evaluation purposes or if the system encounters interfering transmissions. When the system encounters interference (most noticeably when the system attempts to link and cannot or Requests-to-Enter fail), the RF Channel should be changed to alleviate this condition.

To change the RF Channel after the system is linked, the IRL battery must be disconnected. Then the positions of the switches on the DCMI dipswitch (SW7) should be changed to the new desired channel. Push the Link Mode Switch on the DCMI. After reconnecting the battery pack, the IRL should be re-linked to the DCMI on the new channel.

If the IRL and the DCMI do not re-link on the new frequency, the IRL will revert to the RF Channel it was set at prior to disconnecting the Battery Pack.

17. Understanding the DCMI's LED Indicators

Seven LED's are on the PCB. They are CR15 Green, CR7 and CR10 Red, CR6 and CR9 both Green and Red.

Action	DCMI LED Indication		
	CR15 Grn	**CR7, 10 Red**	**CR6, 9 Grn-Red**
Normal, Micro P running, Power applied	Blinking	Off	Constant GRN
Micro P not running, Power may be on or off	Off	Off	Constant GRN
Trouble signal: Low Battery No Communication Tamper, reader door Tamper, DCMI door	Blinking	 one blink, pause two blinks, pause three blinks, pause four blinks, pause	Constant GRN
Link Mode	Blinking	Off	Alternately flash GRN/RED

Transmitting a message	Blinking	Off	1 RED flash per transmission
Receiving a message	Blinking	Off	Blinks Off momentarily

18. Understanding the IRL's LED Indicators and Internal Sounder

The IRL LED is on the front of the Magstripe and Wiegand Reader housings (See Figure 2) or on the top of the PROX housing.

18.1 Every time the battery packs are connected to the IRL, the IRL's LED and sounder indicate that it is powered. The red LED flashes once, followed by multiple green LED flashes (four on the pre-production units) signifying the software version and one red LED flash signifying the lock motor has been driven to the locked position. This is accompanied by a beep.

18.2 When the IRL sends its first transmission (Link request), the LEDs indicate this as well. The green LED flashes once followed by one red LED flash. The LEDs flash in this sequence three times or until a link to a DCMI is established whichever comes first.

18.3 When the IRL links successfully to a DCMI, the IRL indicates the RF Channel on which it is linked. The green LED flashes and the Internal Sounder beeps according to the RF Channel number. For example, if linking has been successful on RF Channel 8, the green LED flashes and the Internal Sounder beeps eight times.

18.4 If, after 3 transmissions, the IRL does not link to a DCMI, the red LED flashes twice accompanied by a single long beep. The IRL reverts to its previous channel and address before the power was disconnected.

See chart below for "card swiped & read", "swiped and not read", "door unlock/relock" and "access denied" signals.

The following chart outlines the IRL LEDs and Internal Sounder indications.

	Action	LED Indication	IRL Sounder Indication
1	IRL is powered	1 Red LED flash; 4 Green LED flashes; 1 Red LED flash	No beep No beep 1 beep
2	IRL sends a link request (up to 3 transmissions, until it is linked)	1 Green LED flash; 1 Red LED flash each of 3 transmissions	No beep

3	IRL linked successfully and announces the RF Channel on which it is linked	Green LED flashes (number equal to the RF Channel)	Beeps (number equal to the RF Channel)
4	IRL not linked successfully	2 Red LED flashes	1 long beep
5	Card swipe, not read	None	None
	Card swiped and read	None	1 beep
	Followed by:		
	No communications	1 Red flash	None
	Door unlock	1 GRN flash	None
	Access denied	2 RED flashes	1 beep
	Door relocks	1 RED flash	1 beep

Mag stripe, Wiegand and Prox readers will use the same LED/beep indicators.

19. Operating the Wyreless Access System

19.1 Overview

Once the IRL and the DCMI are linked, the Wireless Access system is ready to be operated. A card swipe is required to operate the system. When a card is swiped the IRL transmits a Request-to-Unlock.

A valid card must be used for a successful Request-to-Unlock. In Stand-Alone Operation, a valid card is any magnetic stripe card with Track 2 data (ATM cards, credit cards, etc.). In Panel-Connected Operation, a valid card is a mag stripe card that has been validated by the access control panel.

In Stand-Alone Operation, the DCMI receives this transmitted request and will validate the card. Once validated, the DCMI will transmit a signal to the IRL to unlock. The IRL will unlock and then relock.

In Panel-Connected Operation, the DCMI receives the transmitted Request-to-Unlock from the IRL and then forwards the request to the control panel. If the card used is validated, the control panel will signal back to the DCMI a command to unlock. The DCMI then transmits the unlock command to the IRL. The IRL will unlock and then re-lock.

19.2 Card Swiping

NOTE: One aspect of the Wyreless Access Pre-Production System that will change in production units is the Magstripe reader. The Magstripe reader head was inadvertently placed on the wrong side of the Magstripe reader.

Cards need to be swiped in reverse. Normally, the front of the card would face the left side (Figure 10) and the magnetic stripe would be read on the right. But on this unit, cards should be swiped with the front of the card facing the right and the magnetic stripe facing the left. (Figure 11.)

The reader head will be correctly oriented in the production version.

Insert the card with the magnetic stripe on the left (Figure 11) and then slide it down **keeping the back edge of the card firmly against the back of the reader's slot throughout the entire swipe**.

Figure 10

Figure 11

Mag stripe Card must be swiped in this orientation

19.3 Indications of a Successful Card Swipe

Whenever a card is swiped and at least 8 bits of information are read from the card, a beep is sounded and the IRL transmits a Request to unlock.

A successful card swipe does not always result in an unlock. More than 8 bits are needed for a valid unlock request. So all required bits must be read. A beep may be given because 8 bits are read, but more bits are needed for an unlock.
If an invalid card is swiped correctly, the system will relay the information but the door will remain locked.

19.4 Indication of an Unsuccessful Card Swipe

The best indication of an unsuccessful card swipe is when the IRL Internal Sounder does not beep after a card swipe. Most likely, the card was cocked or not swiped with its back edge against the reader slot back for the entire swipe. It should be swiped again.

19.5 Indications of a Successful Request-to-Unlock (Card Swipe)

The indication of a successful Request-to-Unlock is when the IRL unlocks.

Approximately one second after a valid card swipe, the IRL green LED will flash once and the IRL will unlock.

[Requests to unlock are .sent 3 times The DCMI LED, CR6 or CR9, indicates when it is receiving the Request to unlock from the IRL by turning off momentarily (looks like a flicker). The DCMI will transmit an acknowledgement to the IRL that it received the transmission and sends the data to the panel. After that the IRL re-queries up to 5 times to inquire if there is a response from the panel to unlock the door. Once the DCMI receives a response from the panel it transmits it back to the IRL in response to one of the IRL re-queries. The DCMI LED will flash red once for every time it sends a response to the IRL then reverts to solid green. The IRL transmits its request up to three times or until it is validated by the panel.]

Relock

Relock time is configurable from 1 to 255 seconds. After the preset time has elapsed, the IRL relocks and the red LED will flash once and the Internal Sounder will beep once.

19.6 Indications of an Unsuccessful Request-to-Unlock (Card Swipe)

The best indication of an unsuccessful Request-to-Unlock is when the IRL remains locked. However, the IRL LED and Internal Sounder also indicates an unsuccessful Request-to-Unlock. After an invalid card swipe (unsuccessful Request-to-Unlock), the IRL red LED flashes twice and the Internal Sounder beeps once. The IRL remains locked.

In Panel-Connected Operation, after an unsuccessful Request-to-Unlock, the panel should indicate one of two reasons why the request was unsuccessful. One is a Denied Request where the card used was a recognized card but without the authority to unlock the specific door or without the authority to unlock the specific door at that specific time. The other is an Unrecognized Card where the card used was an invalid and unrecognizable card (i.e., not part of the system).

20. Other Software Features

- Senses and reports door position to the panel.
- Periodically reports to panel for “Housekeeping” updates – ¼, ½, 1, 2, 5 or 15 minutes intervals, configurable. Battery life is a function of this time period and number of card swipes. Request-to-Exit.

Battery Life Table

Years					
4	10 min.				
3	5 min.	10 min.			
2		2 min.	5 min.	5 min.	15 min.
1			¾ min.		1.0 min.
0	0	10,000	20,000	30,000	40,000	50,000

21. Pre-Production System Limitations

The pre-production system of Engineering Pilot Run units provides an early assessment of performance capabilities. The following is an outline of limitations of the pre-production system. These will be available in production.

- **FCC –** Does not have FCC approval.
- **UL –** Does not have UL approval.
- **Shock and Vibration –** Shock and vibration tests have not been completed.
- **Link Mode Attenuated by 3dB –** Feature has not been implemented.
- **Low Battery Indication at the Panel –** Feature has not been implemented.
- **Internal Cache Memory –** Feature is not implemented.
- **IRL Reader Tamper Switch –** Feature has not been implemented.
- **DCMI Tamper Switch –** Feature has not been implemented.
- **RS 485 Communication Protocol to the Panel –** Scheduled for Release 2.

22. Care and Usage

- Always operate the Wyreless Access Pre-Production System within instructions and specifications described in this manual.
- Keep the DCMI door and IRL battery compartment closed when in use.
- Do not use the system outdoors.
- Do not paint any part, especially the DCMI antenna or IRL Antenna Cover.

23. Specifications:

23.1 Both Components

23.1.1	Temperature	-10C to +60C
23.1.2	Humidity	20% RH to 95% RH, non-condensing

23.2 IRL

23.2.1	Voltage	4.75 – 13.2 VDC
23.2.2	Slam	10,000 cycles, 20 to 30 G per ANSI/BHMA A156.25, section 6.3.5.1
23.2.3	Door Slam	10 cycles, 1000G minimum.

23.3 DCMI

23.3.1	Voltage	12VDC +10%, - 15%
23.3.2	Current	250 ma rms max.

24. Troubleshooting

The following chart outlines several symptoms and their common fix. If, after going through these instructions, the system is still experiencing difficulties, do not attempt to fix. Contact Eric Gonzales at 630-762-4462 or Larry Brooks at 630-762-4471.

	Symptom	Cause	Action
DCMI Symptoms	The LED CR15 is not blinking and CR9 & CR6 do not illuminate solid green when power is supplied to the DCMI.	Power has not been supplied correctly or the microprocessor is not functioning.	Check the polarity of the panel supply. If wrong the fuse must be replaced. Replace with a 3/8 A, 250V, 2AG, fast acting fuse.
	The polarity of the panel power supply is correct and the symptom persists.	See above.	Check the voltage. The voltage must be between 5.0 and 12.0 VDC. Do not exceed 13.2 volts.
	The voltage is at or fewer than 13.2 volts and the symptom persists.	See above.	Contact Eric Gonzales at 630-762-4462 or Larry Brooks at 630-762-4471.
IRL Symptoms	The IRL LEDs do not flash and the Internal Sounder does not beep when power is applied to the IRL.	The battery pack is not supplying power to the IRL.	Check that the battery pack is new and has been connected properly.
	The battery pack is good and has been connected properly and the symptom persists.	See above.	Contact Eric Gonzales at 630-762-4462 or Larry Brooks at 630-762-4471.
	The IRL LEDS do not flash and the Internal Sounder does not beep to announce the RF Channel when attempting to link.	The system is not linking properly.	Check that the DCMI is properly in Link Mode before power is supplied to the IRL.
	The DCMI is properly in Link Mode and the symptom persists.	See above.	Contact Eric Gonzales at 630-762-4462 or Larry Brooks at 630-762-4471.
	The IRL does not unlock after a card swipe.	The IRL and the DCMI are not communicating properly.	
	A valid card is used and the symptom persists.	See above.	If in Stand-Alone Operation, check that the terminal block has been attached properly. If in Panel-Connected Operation, check that the wiring to the panel is correct.
	The card is valid and the terminal block is attached properly or panel connection is correct and the symptom persists.	See above.	Contact Eric Gonzales at 630-762-4462 or Larry Brooks at 630-762-4471.

25. Other Installation Requirements

The DCMI must be installed by qualified professional or contractors in accordance with FCC Part 15.203 indicated below.

Code of Federal Regulations
Title 47 – Telecommunications
Part 15.203 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sec. 15.211, Sec. 15.213, Sec. 15.217, Sec. 15.219, or Sec. 15.221.

Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Sec. 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.