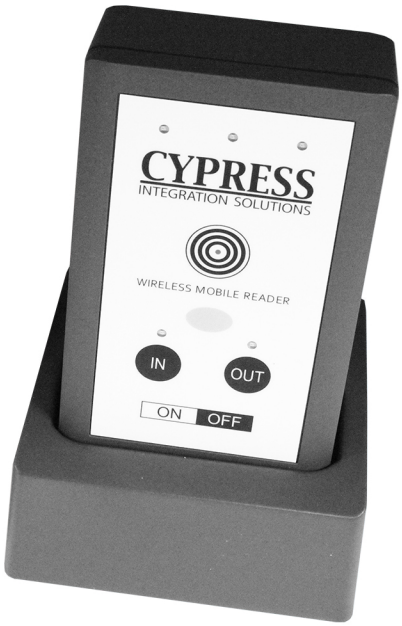
CYPRESS
INTEGRATION SOLUTIONS

WMR-3000 SYSTEM

Wireless Mobile Reader

Operations Manual



MADE IN USA

RoHS

FC

WMR-3000-V1_MAN_0815

System Overview

The Cypress AACTivate Mobile Reader is a robust handheld wireless live credential reader, which securely verifies current credentials in real time, and controls doors and gates. Designed for Transportation and Cargo Facilities, Petrochemical, Manufacturing, Military, Facilities, Healthcare and Educational Campuses.

Physical Specifications

Handheld Reader - 6.81" x 3.63" x 1.58" - 0.85 lbs
Charging Dock - 4.758" x 4.1" x 2.2" - 0.35 lbs
Base Unit - 9.25" x 7.0" x 2.25" - 1.2 lbs

Environmental Specifications

- Temperature Range -17 to 54 C
- Base unit Nema 4 rated with UV protection

Electrical Specifications

Central Base Unit
- Supply Voltage 8-16Vdc Current 300mA

Handheld Mobile Unit
- Internal LiPo Battery pack 7.4 V 3800 mAh Rechargeable (non-field serviceable)

Charging Dock
- Smartcharger for NiMh battery pack 120 VAC wall plug

Radio Specifications:

Frequency	2.4 GHz ISM band
Type	Direct Sequence Spread Spectrum
Transmit Power	15 dBm
Receive Sensitivity	-103 dBm
Security encryption	AES encryption upon request (export restrictions apply)

Card Technologies - Ordering Information

Single Reader Configuration
Includes base unit, holster, charger and lanyard

WMR-3121	Farpointe Prox - HID Prox - AWID prox (125 kHz)
WMR-3161	MIFARE Classic®, MIFARE DESFire® 0.6, MIFARE DESFire® EV1, HID: iCLASS® CSN (13.56 MHz), HID Prox (125 kHz)

2-**Reader Configuration**
Includes base unit with Wiegand port expander, (2) holsters, (2) chargers and (2) lanyards

WMR-3221	Farpointe Prox - HID Prox - AWID prox (125 kHz)
WMR-3261	MIFARE Classic®, MIFARE DESFire® 0.6, MIFARE DESFire® EV1, HID: iCLASS® CSN (13.56 MHz), HID Prox (125 kHz)

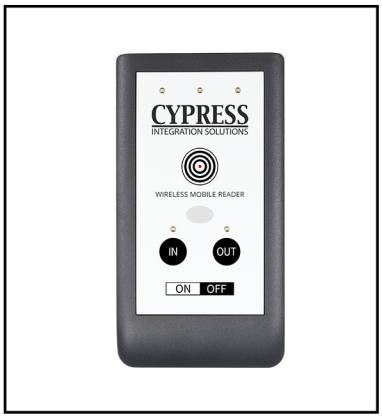
Other technologies available upon request

Typical wireless range:
- Indoor - Up to 150 feet
- Outdoor - Up to 500 feet (Distances given are typical line of sight. Actual distance will vary depending upon terrain, RF environment, building materials, and height of antenna).

Range may be expanded and obstacles avoided using the Cypress RPT-565X repeaters.

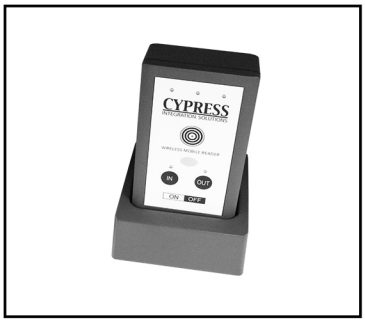
Unpack Units

WMR-7311 Base unit
shown with optional lock



WMR-7XXX Mobile Unit

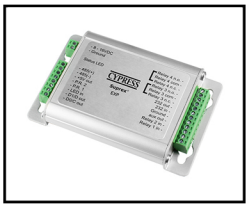
RPT-5651
Optional Repeater



Charging Dock
WMR-DOCK-G

SmartCharger
WMR-RCHL

WMR-PRCX
Programming cards
(if required)



Wiegand Expansion
EXP-1000

Remove cover from Central unit and check interior for any shipping damage.
Remove any packing material if present.

Before installing the units in the field they should be assembled and tested at a convenient “Bench top” location. This will make it easier to verify / change settings and check operation when both units are visible at the same time.

It is also a chance to become familiar with the system if this is the first time using the Suprex system. It is much more difficult to configure and test the units when they are several hundred feet apart.

The units as shipped are configured as a matched pair/set and are ready to power-up and operate.

The Central unit needs to have a suitable regulated 12V DC power supply installed.

System Description

The Wireless Mobile Reader is the newest member of the Suprex family of products.

The WMR products are based on the Suprex SPX-5600 series of products and they support a wide range of additional features:

Additional features:

-- AES Encryption for secure communications upon request
-- No channel selection is required as the units are preconfigured at the factory.
-- Diagnostic indicator on Central unit for determining operational status of the unit
-- Repeaters for challenging installations for additional distance and line-of sight

Initial setup and configuration.

The Wireless WMR system operates as a matched pair of units that share the same communication channel. Each pair is configured at the factory to operate without the need to set channels.

Each pair communicates using an intelligent addressing algorithm. This allows multiple pairs of units to operate in the same environment without interfering with each other.

Up to 8 units can operate in the same area without factory modifications

Unit channel selection is made at the factory and no field settings are necessary.

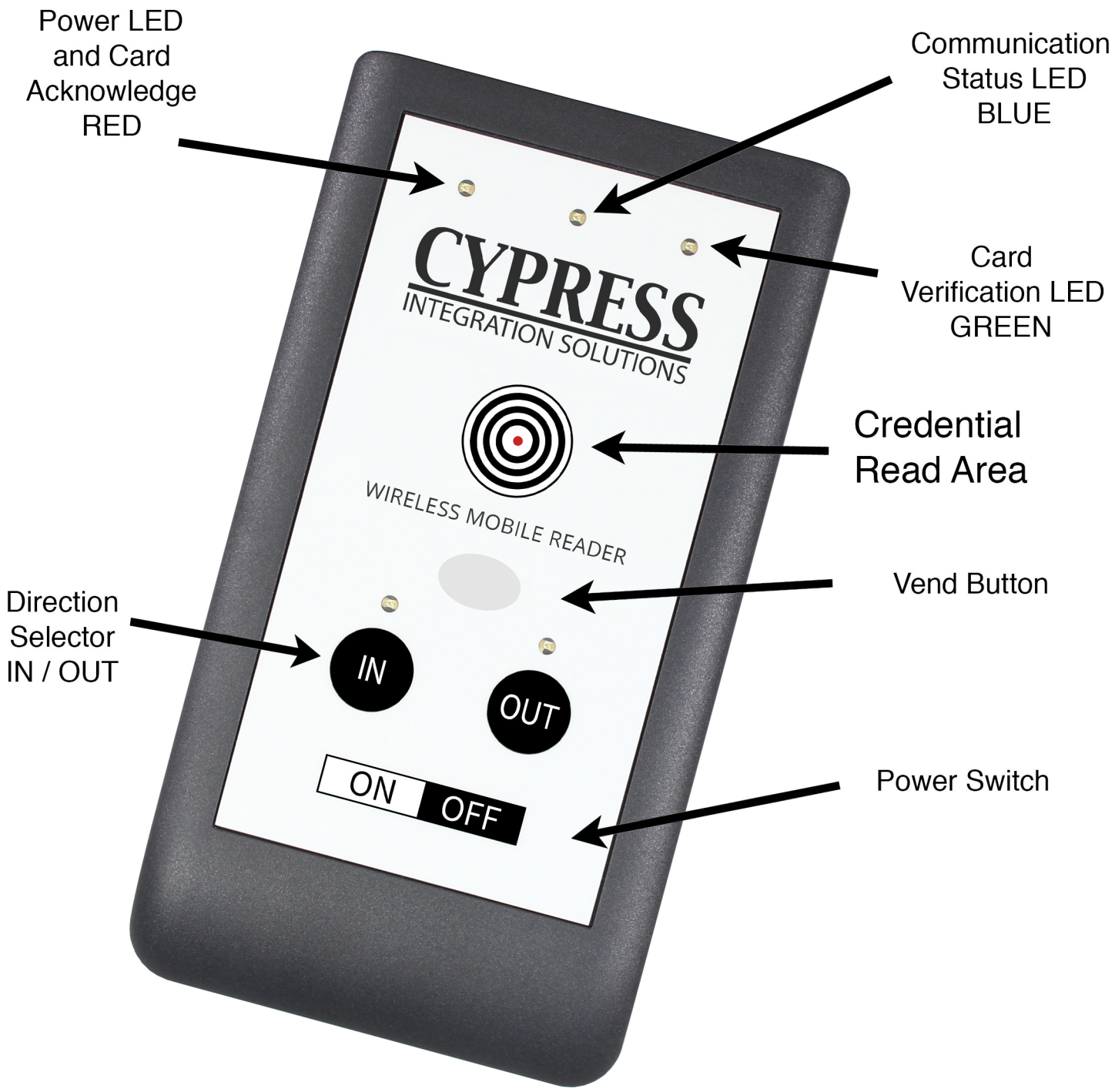
Initial Setup:

This manual will cover the basic installation procedure for a typical Suprex WMR system.

The first step will be to configure and test the units at a bench top location where both the Central and Remote units are close together. This will allow the setup and configuration process to occur with both sides of the operation in view.

Setup is modified minimally when using EXP-1000 units. Please make note.

See the Address programming Addendum when using multiple Handheld Readers with EXP-1000 wiegand expansion units


Power LED
and Card
Acknowledge
RED
Communication
Status LED
BLUE
CYPRESS
INTEGRATION SOLUTIONS
Card
Verification LED
GREEN
Credential
Read Area
WIRELESS MOBILE READER
Vend Button
Direction
Selector
IN / OUT
IN
OUT
ON
OFF
Power Switch

Battery Guidelines and Warnings

Use specific Lithium Polymer/Li-ion charger only. Do not use a NiMH or NiCd charger- Failure to do so may a cause fire, which may result in personal injury and property damage.

Never charge batteries unattended. When charging LiPo/Li-ion batteries you should always remain in constant observation to monitor the charging process and react to potential problems that may occur.

Some LiPo/Li-ion chargers on the market may have technical deficiencies that may cause it to charge the LiPo/Li-ion batteries incorrectly or at an improper rate. It is your responsibility solely to assure the charger you purchased works properly. Always monitor charging process to assure batteries are being charged properly. Failure to do so may result in fire.

If at any time you witness a battery starting to balloon, swell up, smoke or hot, discontinue charging process immediately, disconnect the battery and observe it in a safe place for approximately 15 minutes.This may cause the battery to leak, and the reaction with air may cause the chemicals to ignite, resulting in fire.
Since delayed chemical reaction can occur, it is best to observe the battery as a safety precaution.observation should occur in a safe area outside of any building or vehicle and away from any combustible material.

Operation:

The Handheld Remote reader unit will read a Wiegand RF proximity badges. The badge data is sent through a radio link to a Central panel interface module that generates Wiegand data for a connected access control panel.

An access control panel determines whether the badge is valid or invalid. When valid badge data is presented, the panel will trigger either an LED, Strike Relay output, or both, depending upon the type of panel. Any low (Ground) connection on the Central LED input will change the state of the Remote status LED from Red to Green. The Central unit LED input is connected to the panel output and the status of this panel output is what is displayed by the Remote status LED. The panel also determines the amount of time the LED remains Green for valid badges.

A Central unit diagnostic LED will alternate Red and Green when the units are not communicating. This may be happen when the Central unit powers up without the Remote unit having power. Once both units are powered up, the Central Unit diagnostic LED should enter a flashing green on and off mode. This should occur within 30 seconds of both units having power applied.

The Remote unit Communication LED should also be flashing rapidly when the units are communicating.

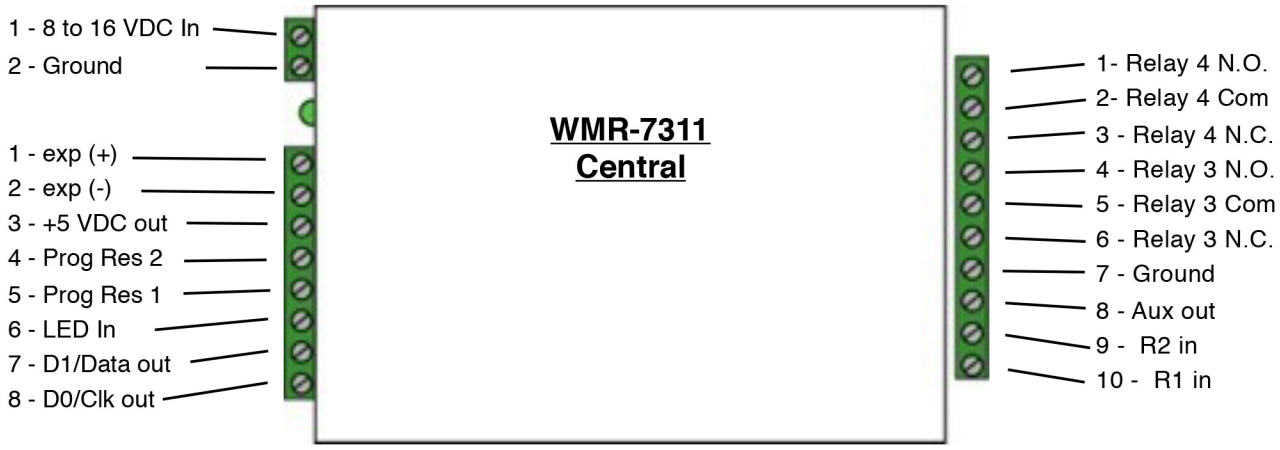
User operation:
When successfully linked to the WMR-7311 base unit, The WMR handheld unit should have the communication LED flashing **BLUE** 3 times per second, and the Power LED **(RED)** during idle operation.

When a badge is presented the WMR handheld unit will beep to indicate that the badge was read (sensed). Additionally the Power LED will flash off (**RED**).

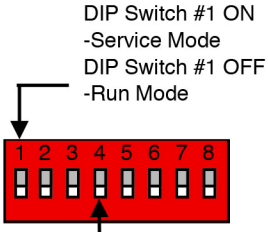
The Status LED will remain **Red** for invalid badges, and will change to **Green** for valid badges and valid badge verification includes a vibrate feature.

After an amount of time determined by the panel, the Status LED will return to a **Red** state.

External connections and DIP Switch Settings



Central Unit Settings

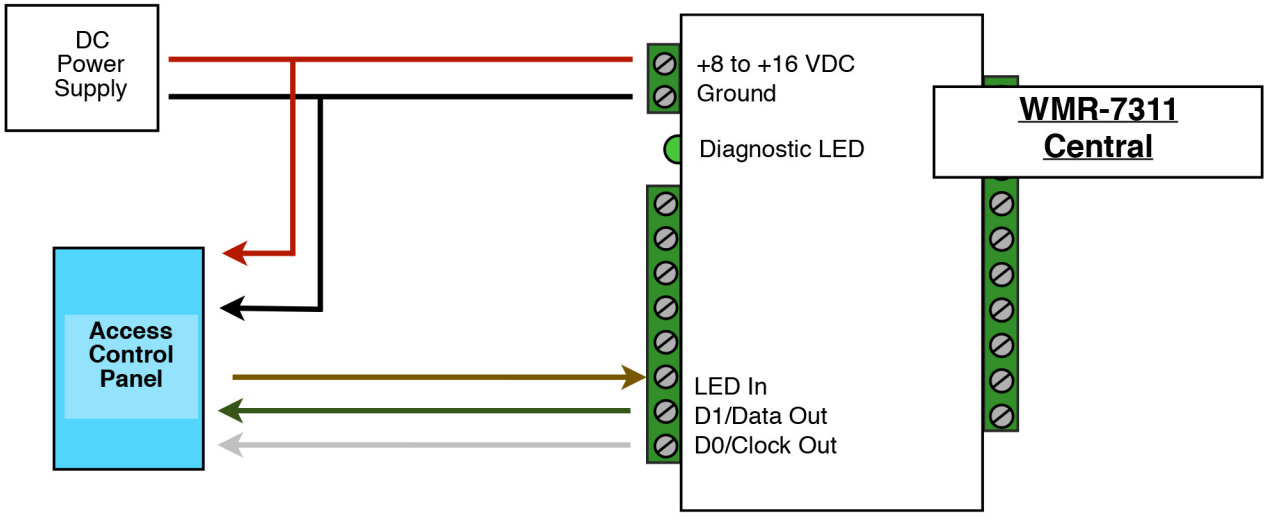


Dip switch #4 is ON
-Disable Pullup resistors

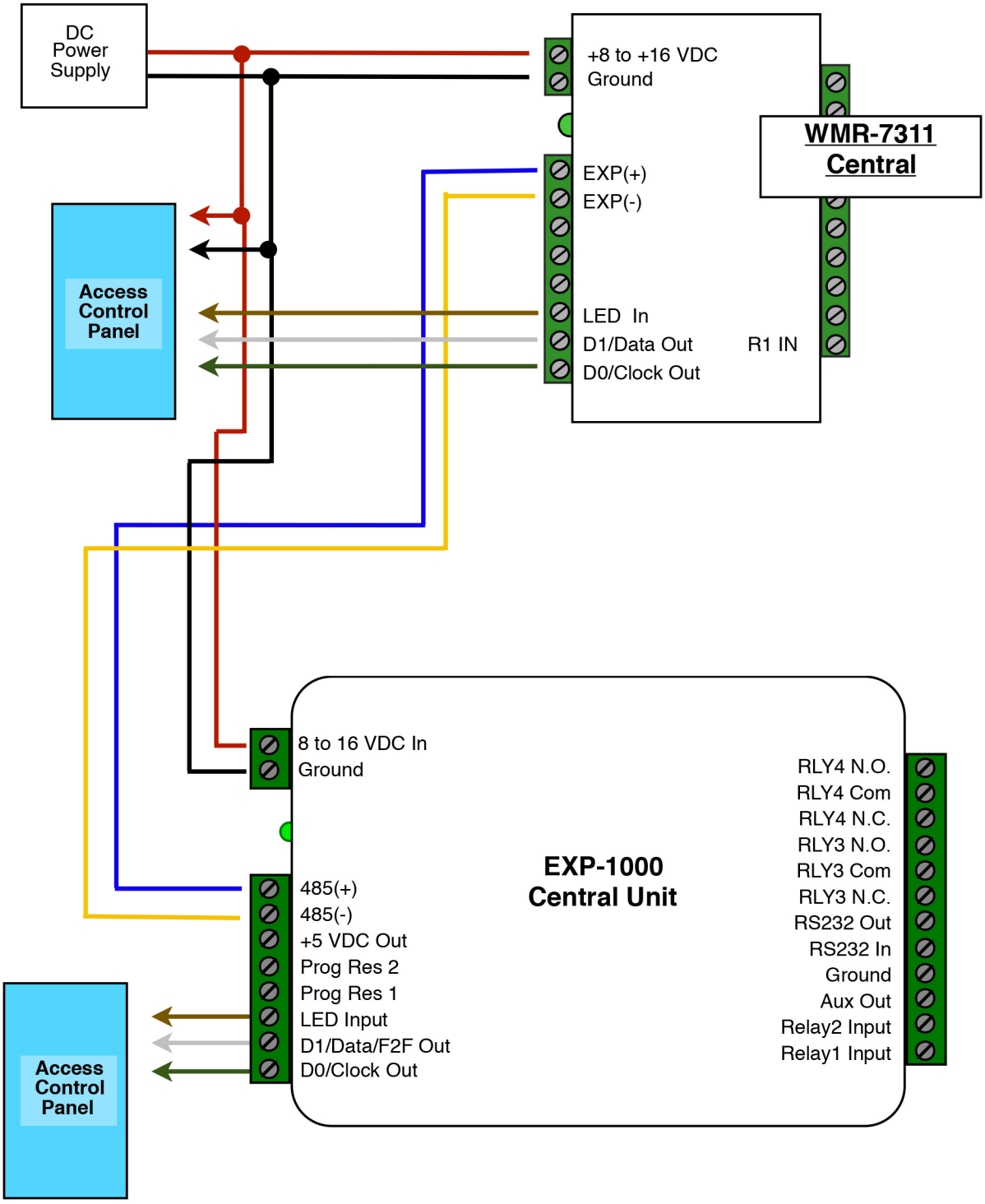
Dip switch #4 is OFF
-Enable Pullup resistors

	Switch 6 7 8
Wiegand	O O O
Wiegand / No Filter	O O X

WMR-7311 Central Quick Reference



Cypress WMR-3000 - Wiegand Expansion Module
Panel "Central" interface



Cypress WMR-3000 -
Wiegand Expansion Module Setup

WMR-7311 units are shipped in the factory default condition. Factory default units will be setup to function as WMR-7311 units - No EXP. Only communications between the WMR-7XXX handheld and the WMR-7311 central unit will be active.

After connecting the Expansion modules into the system as indicated in this wiring diagram, it will be necessary to perform a short configuration process before using EXP-1000 Expansion modules with the WMR-2000 system. This process determines how the WMR-7311 will utilize expansion modules, and if so, how many will be used with the system. Each WMR-7311 can support up to 2 expansion modules.

WMR-7311 - Setup process:

1. With power off, set the DIP switch on the WMR-7311 unit according to the table below.

2. Apply power.
   The Diagnostic LED should display a steady Green indication.

3. Remove power
   Set DIP switch #1 OFF. Any other DIP switches can now be set as required (Reader family/ Pullup resistors). The Central unit is now configured. Apply power.

EXP-1000 - Setup process:

1. With power off, set the DIP switch on the EXP-1000 according to the table below.

2. Apply power. LED will display a steady red indication. Once the corresponding WMR-7XXX handheld is powered on and in range the LED will consistently flash green and the Blue LED on the corresponding handheld will flash to indicate successful communications.

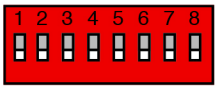
Operation with Expansion Modules:

1. The Diagnostic LED on the WMR-7311 unit will indicate the status with the main handheld device only.

2. The Diagnostic LED on the EXP-1000 unit will indicate the status of the corresponding handheld device.

3. The Alarm relay (RLY3) on the corresponding Central unit will deactivate (indicate alarm condition) when the communication fails between the Gateway units or ANY of the the Remote or Central Expansion units.

WMR-7311 Central Unit Configuration Mode Settings



1 = ON

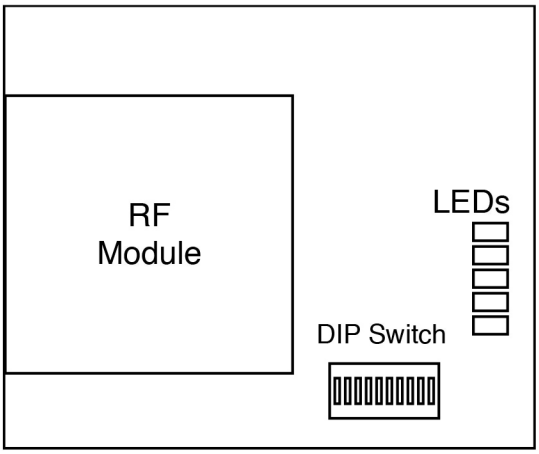
0 = OFF

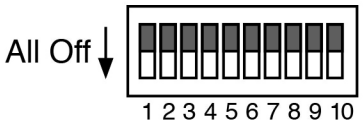
	Switch 1 2 3 4 5 6 7 8
Gateway only - No EXP	1 1 1 1 0 0 0 0
1 EXP Pair used	1 1 1 1 0 0 0 1
2 EXP Pair used	1 1 1 1 0 0 1 0

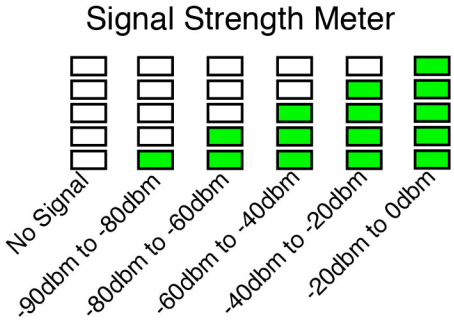
EXP-1000 Central Unit Configuration Mode Settings

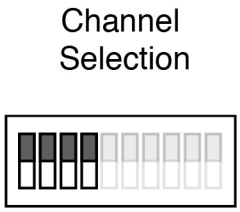
	Switch 1 2 3 4 5 6 7 8
Address 1	0 1 0 0 0 0 0 1
Address 2	0 1 0 0 0 0 1 0

WMR-7311 Central Unit Diagnostics and programming









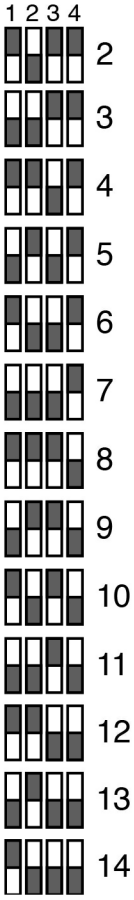


Fig 1

Fig 2

Fig 3

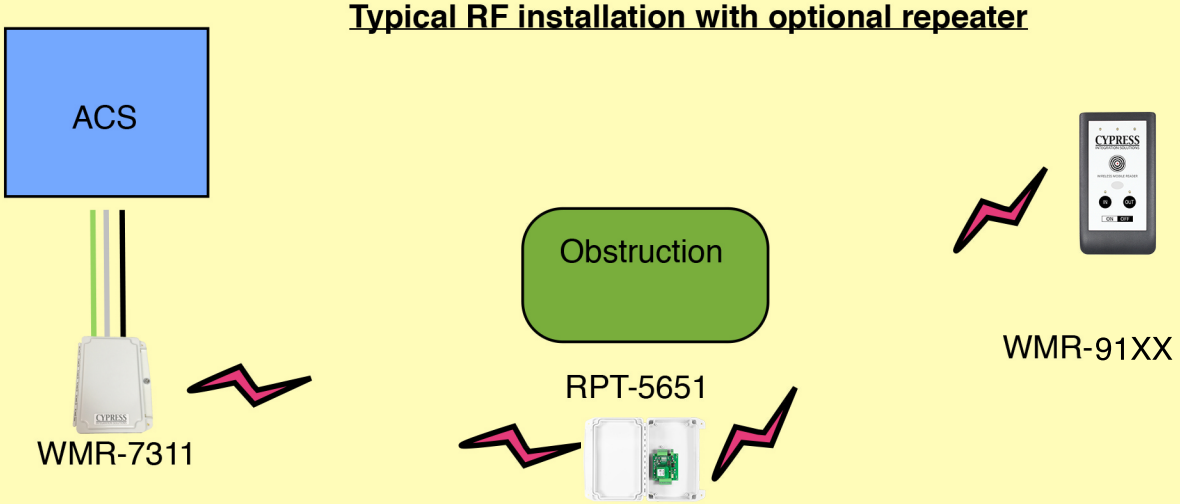
WMR-7311 and EXP-1000 Cable Recommendations

RS-485 connection (WMR-7211 to EXP-1000)
PVC - Belden 9744 - 22 AWG 2 twisted pair, 4,000 feet max.
Plenum - Belden 82741 - 22 AWG 2 twisted pair, 4,000 feet max.

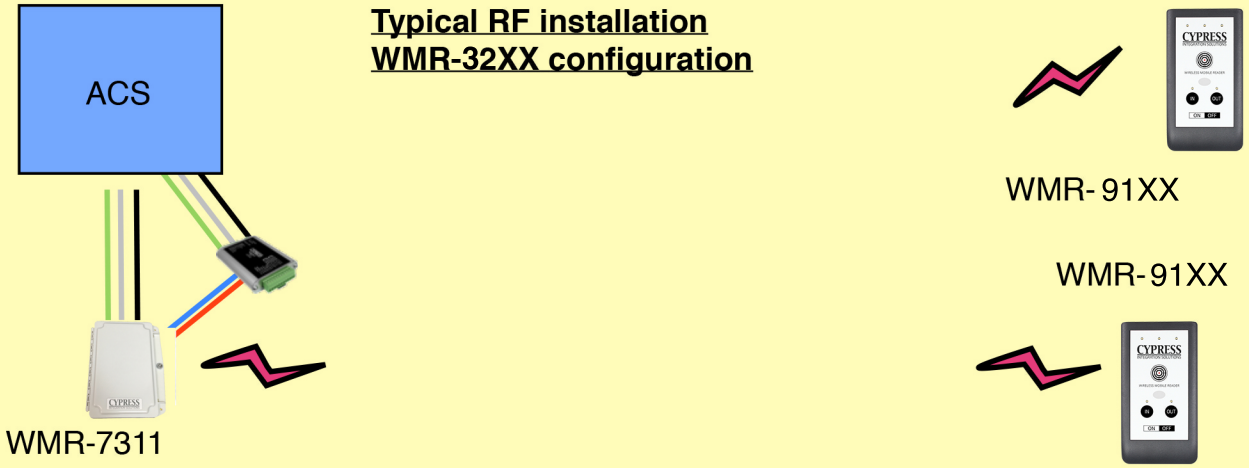
Wiegand and LED
PVC - Belden 9873 - 20 AWG 3 pair shielded, 500 feet max.
Plenum - Belden 83606 or 85164 - 20 AWG 3 pair shielded, 500 feet max.

Power (local)
PVC - Belden 8461 - 18 AWG 1 pair, 25 feet max.
Plenum - Belden 82740 - 18 AWG 1 pair, 25 feet max.

Typical RF installation with optional repeater



Typical RF installation
WMR-32XX configuration



WMR Channel and Address Programming

Rev 6.0 WMR handheld units will provide for field selection of Channel (2 - 14) and Network address (0 - 3) using programming cards.

All WMR handheld kit solutions are shipped preconfigured for use with their respective central or panel interface units.

On multiple handheld solutions, one WMR handheld is designated as "Out" and has the polling address of 0 (zero). Another is labelled as "In" with address 1. And the third handheld is set up as a spare unit with a polling address of 2 (not in the central unit's polling sequence).
On single handheld solutions, the WMR handheld is programmed with address 0.

Addresses are typically configured that address 0 is matched with the WMR-7211 central unit and addresses 1 and 2 are matched to corresponding EXP-1000 units if applicable.

The address programming cards (PART No. WMR-PRC2) are labeled Address 0, 1, and 2.

Change the spare unit to take over for the outbound handheld reader:
1. Turn the spare handheld on by pressing the power button momentarily
2. Observe the Red Led is on solid.
3. Present the Programming Card labelled Address 0
4. Observe the Red Led wink for 1/2 second indicating the card was read (there is also an audible beep)
5. The Blue Led should start blinking every second indicating that it is communicating with the Central Unit
6. The Handheld is now ready to be used as the OutBound Handheld Reader

Change the spare unit to take over for the inbound handheld reader:
1. Turn the spare handheld on by pressing the power button momentarily
2. Observe the Red Led is on solid.
3. Present the Programming Card labelled Address 1
4. Observe the Red Led wink for 1/2 second indicating the card was read (there is also an audible beep)
5. The Blue Led should start blinking every second indicating that it is communicating with the Central Unit
6. The Handheld is now ready to be used as the InBound Handheld Reader

Take a handheld out of service (optional use as third reader with EXP-1000):
1. Turn the spare handheld on by pressing the power button momentarily
2. Observe the Red Led is on solid. If not, the batteries may need to be replaced or charged.
3. Present the Programming “RESET” Card labelled Address 2
4. Observe the Red Led wink for 1/2 second indicating the card was read (there is also an audible beep)
5. The Blue Led should stop blinking and remain solid (or stay off) indicating it is no longer in contact with the Central Unit
6. The Handheld is no longer being polled by the central and will not interfere with normal use of the other 2 units

The channel programming cards (PART No. WMR-PRC2) are labeled Channel 2 - 14

Handheld wireless networks are separated by using separate channels. Units are shipped preconfigured to communicate with their base station on one specific channel.

In order to use multiple independent Handheld wireless networks in the same vicinity, one must simply use the channel programming cards in conjunction with the dip switches on the corresponding base station to change the networks channel, as detailed below.

Change the channel of the Base Station:

1. Remove power from the Base Station
2. Using the diagram on page 9 of this document as a reference, modify the dip switches of the Base Station according to the channel you wish to use
3. Apply power to the Base Station
4. Observe that the Base Station no longer communicates with the Handhelds

Change the channel of each Handheld:

1. Turn the Handheld on by pressing the power button momentarily
2. Observe that it is not communicating to the Base Station
3. Present the desired channel programming card
4. Observe the Red Led wink for 1/2 second indicating the card was read (there is also an audible beep)
5. The Blue Led should start blinking every second indicating that it is communicating with the Base Station
6. Repeat for every Handheld unit for which you wish to change the channel

Card Programming - Troubleshooting

For all steps indicated above, the following error conditions may occur.

Step 2 - If the Red LED does not illuminate, the batteries may need to be replaced or charged.
Step 4 - If you do not see the Red LED wink out for 1/2 second, present the badge again.
- If the Red LED still does not indicate a badge read has occurred, then there may be a problem with the reader.
- When trying multiple times, make sure the badge is well away (greater than 1 foot) from the handheld before presenting the badge again.
- Allow the unit to power off (1 minute) and try again.
Step 5 - If the Blue LED does not start blinking within 10 seconds after presenting the In or Out programming card, make sure the Central Unit is powered on and is within communication range. After presenting the "Out of Service" card (Address 2), the Blue LED should stop blinking within 10 seconds. If it continues to blink, the Central Unit may not be configured properly.

Address program cards will be used for programming IN and OUT readers.

Sample Channel card

Sample Address cards

Additionally the New WMR base units will offer field programing using dip switches. Signal strength metering will also be available to assist with hardware placement during installation.

See additional documentation.