



SED-902
Remote & Master
Wireless Wiegand / Cardax System
& I/O
Jan 2019

**WARNING: PLEASE READ
INSTALLATION INSTRUCTIONS
FIRST**

PRODUCT WARRANTY

This product is covered by a 12 month, back to base warranty from date of purchase, and proof of purchase should be supplied. The warranty does not cover damage that has resulted in the improper installation or improper use of this product. The warranty does not cover lightning damage, product misuse, electrical surges or acts of God.

LIMITATION OF LIABILITY

Sec Eng Systems Pty Ltd does not accept any liability for the loss or damage to property or persons in relation to goods supplied. This disclaimer is only limited to the warranty of the goods supplied and the intended use.

NOTE: THIS MANUAL IS SUBJECT TO COPYRIGHT

PLEASE READ FIRST

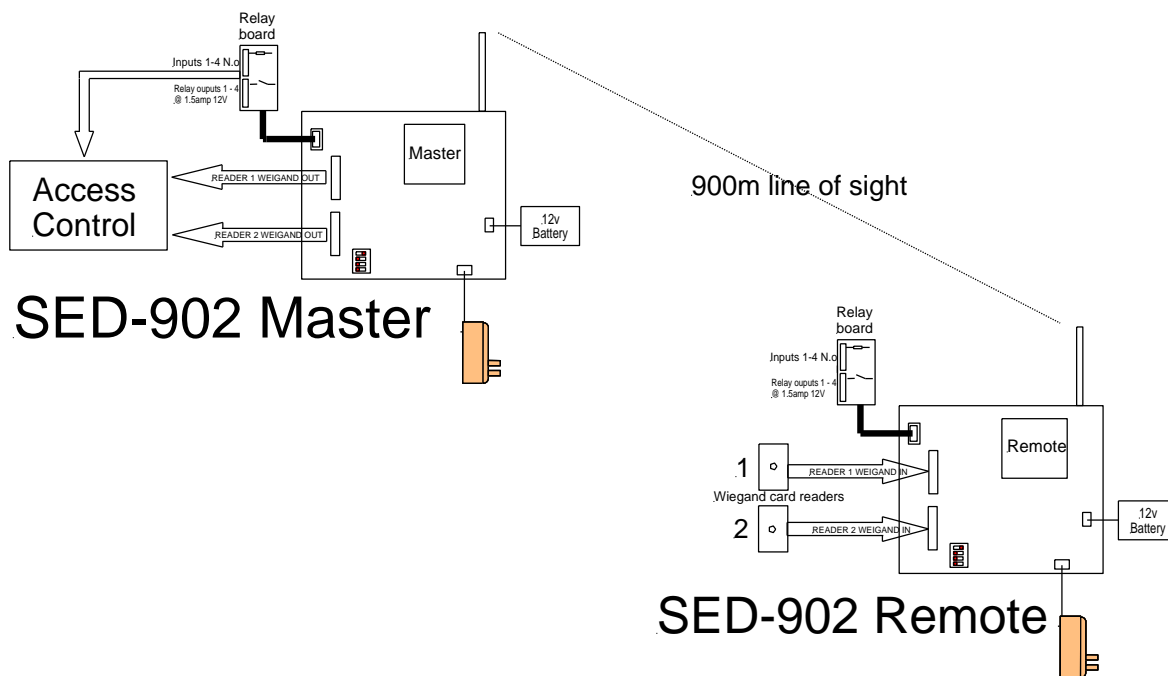
Do's and Don'ts of installing the SED-902 System

- 1. Always install the supplied SED-902 antennas outside.**
- 2. The antennas must be installed at least 3 metres away from any other antenna or transmitting device.**
- 3. If installing multiple SED-902 systems in one location, call Sec.Eng Systems for assistance on how to best configure.**
- 4. The SED-902 system supplied is ready to use out of the box - No programming required.**

Failing to follow the installation instruction may void the warranty of the system.

INTRODUCTION

The SED-902 wireless Wiegand / Cardax system is a combination of 2 devices - **SED-902 Master** and **SED-902 Remote**. This allows Wiegand / Cardax card and control information to pass over a 915 MHz low power link



The SED-902 series will accept only card information such as a Wiegand data stream from 23 to 80 bits and Cardax Mifare / 125 data.

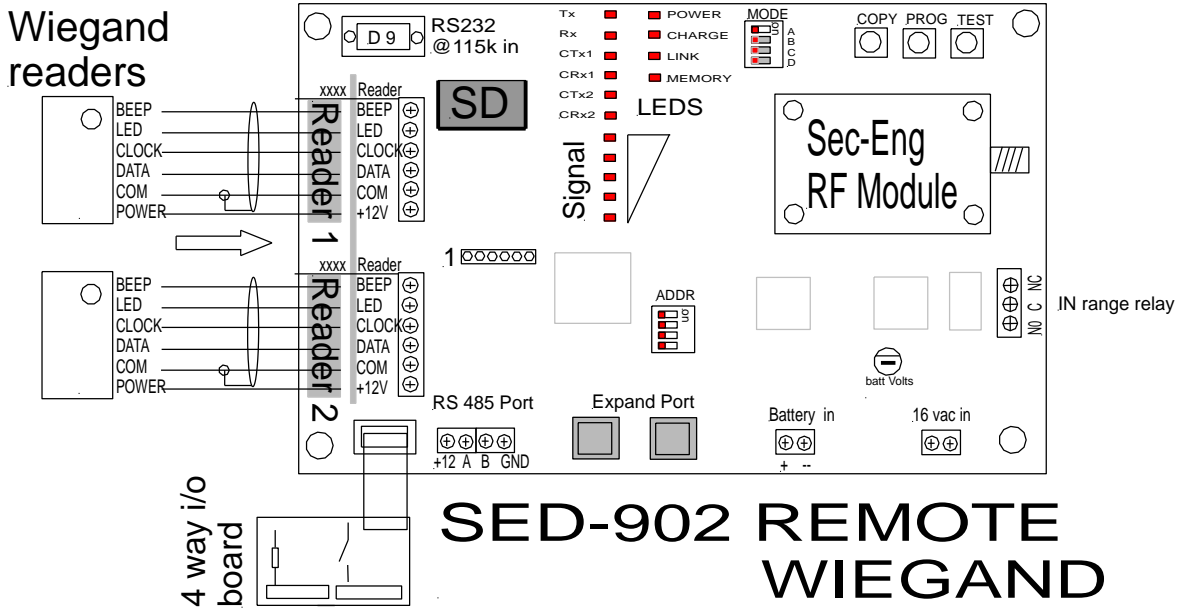
This will be processed and passed over the 915 MHz link. As well as the transposition of the 4 x normally open inputs crossed over to the 4 x dry relay contacts on the remote, and vice versa.

This can be used for separate control of devices, and works as, Input to follow Output.

NOTE: YOU MUST ALWAYS WIRE ALL CABLES SHOWN FROM THE SED-902 TO THE ACCESS CONTROL SYSTEM - FAILURE TO DO SO, WILL RESULT IN THE WIRELESS UNIT NOT WORKING CORRECTLY.

SED-902 MASTER Board Layout & Connections

Note: The SED-902 has dual markings for MASTER & REMOTE



SED-902 REMOTE CONNECTION

DIP SWITCHES

NOTE: Mode switch sets Master or Remote and Wiegand or Cardax

- 1 A off = Remote
- 2 B off = Wiegand
- 3 C off = not used
- 4 D off = on for programing via Serial 8n115k

NOTE: Address switch used for expanders

READER 1 Connections

- BEEP= card reader YELLOW
- LED = card reader LED BROWN
- CLOCK= card reader CLOCK / D0 WHITE
- DATA = card reader DATA / D1 GREEN
- COM= card reader GND or COMMON
- +12V= DC power for card reader RED

READER 2 Connections

- BEEP= card reader YELLOW
- LED = card reader LED BROWN
- CLOCK= card reader CLOCK / D0 WHITE
- DATA = card reader DATA / D1 GREEN
- COM= card reader GND or COMMON
- +12V= DC power for card reader RED

- Battery in = 12v back battery 7 amp hr
- 16v AC in plug pack where required
- RS 485 Port not used

Fault relay

Used for RF signal link when in Range

DB 9 Serial

for PC configuration 8,n,1 @115k

RJ 45 EXPANDER Port

Used to link boards via RJ 12 jumper cable

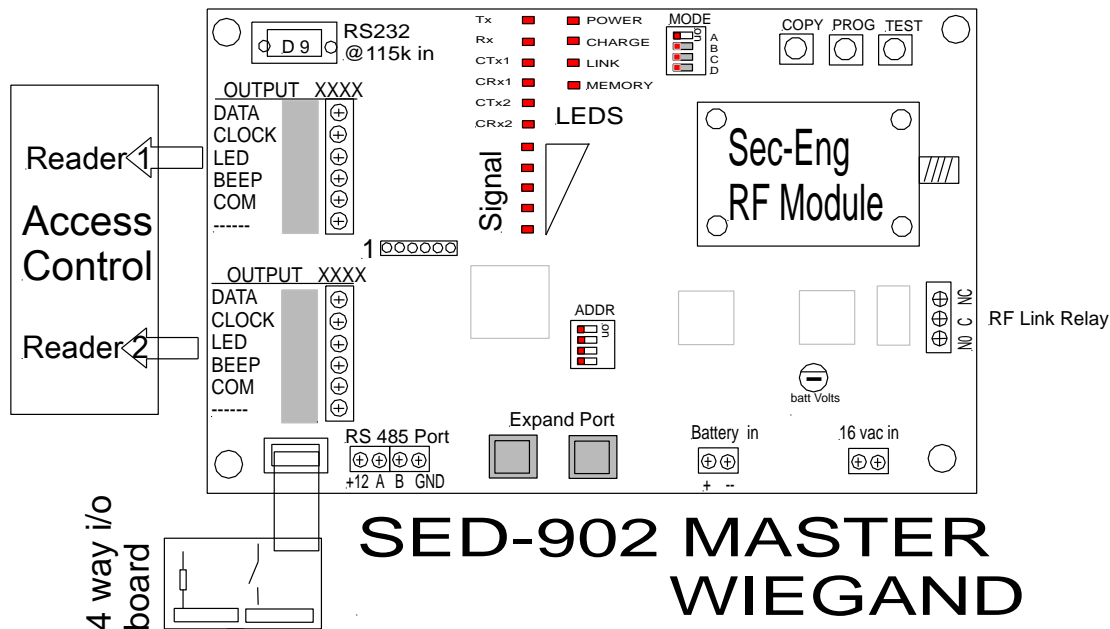
Relay Board Operation

The Relay System is simple - inputs on the Relay board follow outputs

Example: If you trigger Input 1 on either Relay board, it will then trigger Relay 1 on the opposite board

SED-902 MASTER Board Layout & Connections

Note: The SED-902 has dual markings for MASTER & REMOTE



SED-902 MASTER WIEGAND

SED-902 MASTER CONNECTION

DIP SWITCHES

NOTE: Mode switch sets Master or Remote and Wiegand or Cardax

- 1 A off = Remote**
- 2 B off = Wiegand**
- 3 C off = not used**
- 4 D off = on for programming via Serial 8-n-115k**

NOTE: Address switch used for expanders

- **Battery in** = 12v back battery 7 AHr
- **16v AC in** = plug pack where required
- **RS485 Port** not used

ACCESS CONTROL 1 Connections

- DATA = DATA / D1 GREEN
- CLOCK= CLOCK / D0 WHITE
- LED = LED BROWN
- BEEP= YELLOW
- COM= GND or COMMON
- +12V= DO NOT WIRE

ACCESS CONTROL 2 Connections

- DATA = DATA / D1 GREEN
- CLOCK= CLOCK / D0 WHITE
- LED = LED BROWN
- BEEP= YELLOW
- COM= GND or COMMON
- +12V= DO NOT WIRE

RF Link Relay

Used for RF signal link when in range

DB 9 Serial

for PC configuration 8,n,1 @115k

RJ11 EXPANDER Port

Used to link boards via RJ11 jumper cable

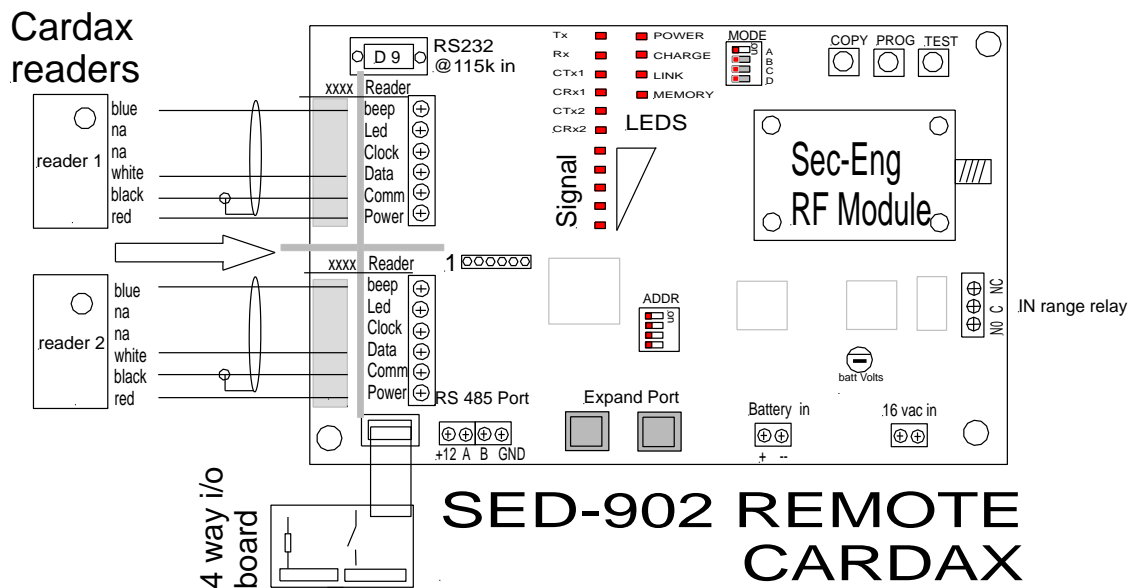
Relay Board Operation

The Relay System is simple - inputs on the Relay board follow outputs

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SED-902 MASTER Board Layout & Connections

Note: The SED-902 has dual markings for MASTER & REMOTE



SED-902 REMOTE CONNECTION

DIP SWITCHES

NOTE: Mode switch sets Master or Remote and Wiegand or Cardax

1 A off = Remote

2 B off = Wiegand

3 C off = not used

4 D off = Programming via Serial 8n115k

NOTE: Address switch used for expanders

•Battery in = 12v back battery 7 amp hr

•16v AC in plug pack where required

•RS 485 Port not used

Fault relay

Used for RF signal link when in Range

Cardax READER 1 Connections

- BEEP= Cardax BLUE
- LED = N/A
- CLOCK= N/A
- DATA = Cardax white
- COM= card reader GND or COMMON
- +12V= DC power for card reader RED

DB 9 Serial

for PC configuration 8,n,1 @115k

RJ 45 EXPANDER Port

Used to link boards via RJ 12 jumper cable

Cardax READER 2 Connections

- BEEP= Cardax BLUE
- LED = N/A
- CLOCK= N/A
- DATA = Cardax white
- COM= card reader GND or COMMON
- +12V= DC power for card reader RED

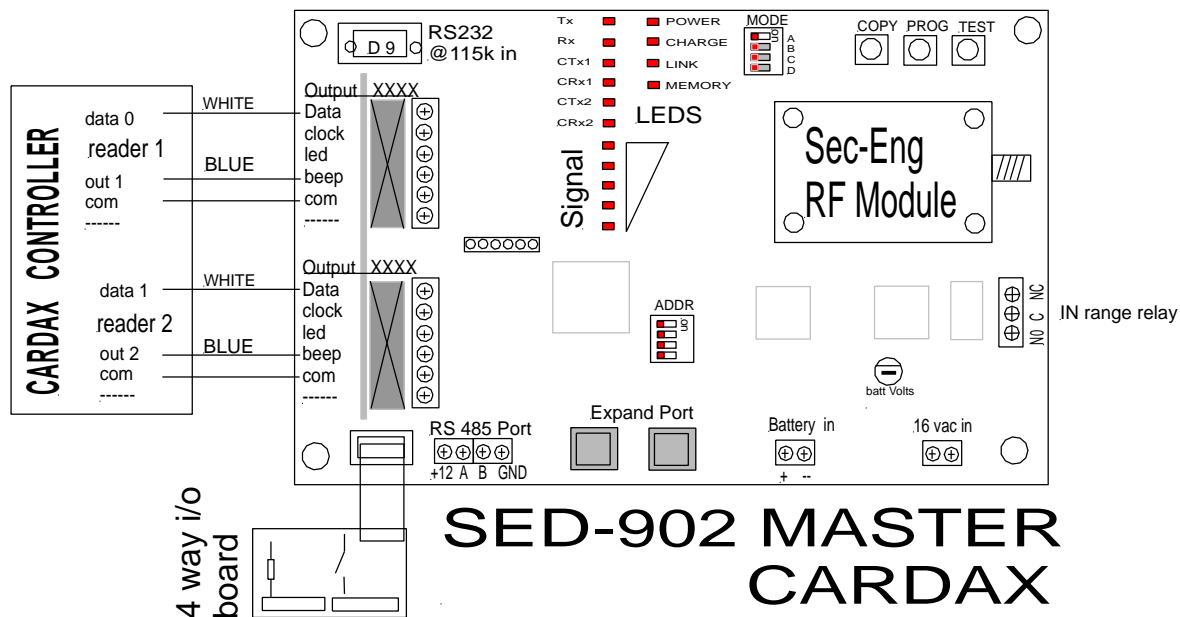
Relay Board Operation

The Relay System is simple - inputs on the Relay board follow outputs

Example: If you trigger Input 1 on either Relay board, it will then trigger Relay 1 on the opposite board

SED-902 MASTER Board Layout & Connections

Note: The SED-902 has dual markings for MASTER & REMOTE



SED-902 MASTER CARDAX

SED-902 MASTER CONNECTION

DIP SWITCHES

NOTE: Mode switch sets Master or Remote and Wiegand or Cardax

- 1 A off = Remote
- 2 B off = Wiegand
- 3 C off = not used
- 4 D off = on for programming via Serial 8n115k

NOTE: Address switch used for expanders

- Battery in = 12v back battery 7 amp hr
- 16v AC in plug pack where required
- RS 485 Port not used

Fault relay

Used for RF signal link when in Range

ACCESS CONTROL 1 Connections

- DATA = DATA 0 on Cardax (White)
- CLOCK= N/A
- LED = N/A
- BEEP= OUT 1 on Cardax (Blue)
- COM= GND or COMMON
- +12V= DO NOT WIRE

DB 9 Serial

for PC configuration 8,n,1 @115k

RJ 45 EXPANDER Port

Used to link boards via RJ 12 jumper cable

ACCESS CONTROL 2 Connections

- DATA = DATA 1 on Cardax (White)
- CLOCK= N/A
- LED = N/A
- BEEP= OUT 2 on Cardax (Blue)
- COM= GND or COMMON
- +12V= DO NOT WIRE

Relay Board Operation

The Relay System is simple - inputs on the Relay board follow outputs

Example: If you trigger Input 1 on either Relay board, it will then trigger Relay 1 on the opposite board

LED'S

Power LED = power on

Charge LED indicates battery charging (if fitted)

Link LED indicates that it can see RF link

Memory LED indicated SD card fitted

TX = packet being transmitted

RX= packet being received

CTX1= reader 1 transmitting data

CRX1= reader 1 receiving data

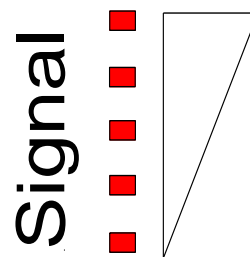
CTX2= reader 2 transmitting data

CRX2= reader 2 receiving data

Signal LED's = 1-5 lowest to highest

- TX ■ ■ Power
- RX ■ ■ Charging
- CTX1 ■ ■ Link
- CRX1 ■ ■ Memory
- CTX2 ■
- CRX2 ■

LEDS



MODE SWITCH / TOP OF BOARD

NOTE: Mode switch sets if the unit is a Master or Remote

Switch 1 = ON - 902 Master
 = OFF - 902 Remote

Switch 2 = OFF - Wiegand
 ON - Cardax

Switch 3 = not used

Switch 4 = ON - Program mode via serial port @115k 8n1
 = OFF - GPS port data mode where fitted output 9600@8n1

ADDRESS SWITCH

See page 7 for expander setup

PUSH BUTTON SWITCHES

COPY not used

PROG used to program

TEST N/A

TO DEFAULT

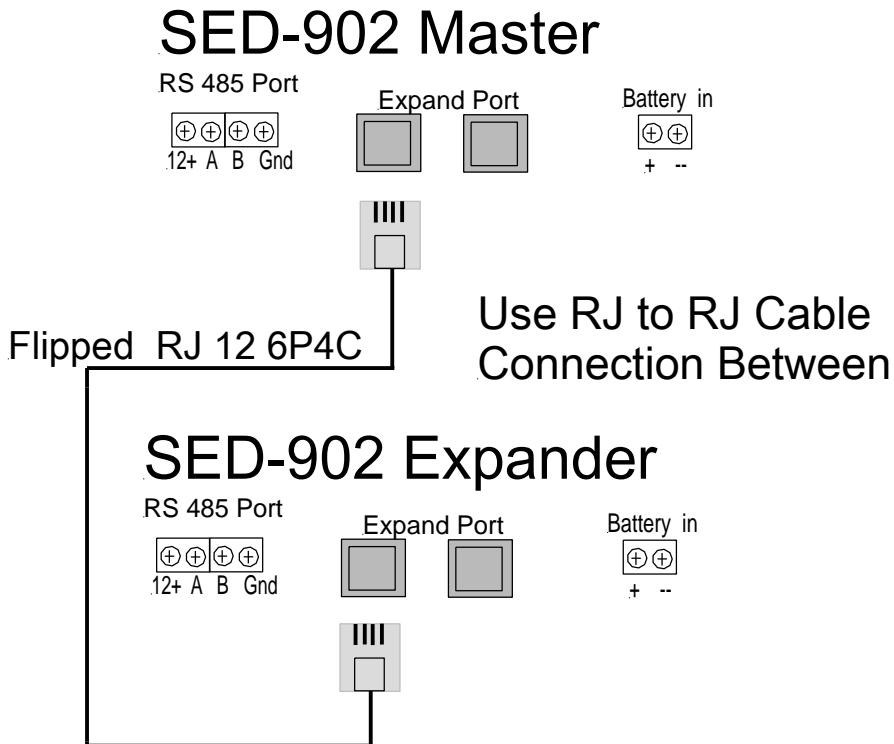
(HOLD ALL 3 BUTTONS DOWN TOGETHER FOR 5 SECONDS)

The SED-902 system can support expanders please read Setup

1/ Ensure you set the **mode** switch on the SED-902 on your expander

2/ Set the address switch according to the number of expanders you have hanging off each SED-902 Remote or SED-902 Master see below

NOTE : POWER RESET IF YOU CHANGE OR SET DIP SWITCHES



Expander dip switch Address settings									
ADDR switch	1	2	3	4		1	2	3	4
Expander 1	ON				Expander 11	ON	ON		ON
Expander 2		ON			Expander 12			ON	ON
Expander 3	ON	ON			Expander 13	ON		ON	ON
Expander 4			ON		Expander 14		ON	ON	ON
Expander 5	ON		ON		Expander 15	ON	ON	ON	ON
Expander 6		ON	ON						
Expander 7	ON	ON	ON						
Expander 8				ON					
Expander 9	ON			ON					
Expander 10		ON		ON					

The Sed 902 Master & Remote Expanders

To enrol a board for self learning

1/ Ensure they are all wired and configured and set up also check dip switches

2/ On the (Master Expander) board the press the Copy & Prog buttons until the signal leds begin to flash. The unit is now in self learning and is waiting to link with a remote.

3/ Press and hold the Copy & Prog buttons on your remote expander until its Signal led's begin to flash The unit is now in self learning and is waiting to link with a Master.

Both the Master expander board and the Remote expander board should now communicate and link with one another. **If not repeat the process.**

AC Power in

16V AC 1.5A

Battery in

12V Backup battery 7 AH gel cell (do not wire 12V DC into this)

RS485 Port (not used for comms)**RF Link Relay**

Relay is active when the Master and Remote units are within range and linked

DB 9 Serial

For PC configuration 8,N,1 @115k

RJ11 EXPANDER Port

Used to link boards via RJ11 jumper cable

External Antenna Supplied

It is recommended that the external Antennas are mounted outside with clear line of sight between the two ends.

The Antenna should be mounted as high as possible and free of metal obstruction. By doing this, it will ensure the best possible operational range.

12V DC Operation

The Master and Remote boards can be power by a regulated 12V DC supply. Wire the 12V rail into the RS485 +12V and GND (COM) terminals.

Do not use the battery input as its only for a GEL CELL BATTERY

1 Before connecting any card readers to the SED-902 ensure they currently work on or have been operating on the Access Control System
(do a test on the current access control port first with a known reader)

2 Set the SED-902 Remote and the SED-902 Master up, side by side
Eg. A minimum of 4m apart and connect the plug pack and stubby test antennas.
Connect either battery or plug pack to power
On the SED-902 Master - the signal light should be ON
On the SED-902 Remote - the signal light should be ON
This means that the link is established and functioning
Test an alarm input on the SED-902 Master Relay Board, this should trigger a relay on the SED-902 Remote.

3 Wiring the SED-902 MASTER

Please note: The Wiring on the SED-902 Master requires wiring to be completed according to the legend, marked OUTPUT and wire according to this connection guide

Output	XXXX
Data	⊕
Clock	⊕
LED	⊕
Beep	⊕
Comm	⊕
-----	⊕

4 Wiring the SED-902 REMOTE

Please note: The wiring on the SED-902 REMOTE requires wiring to be completed according to the legend, marked READER, and wire according to this connection guide

XXXX	Reader
	Beep ⊕
	LED ⊕
	Clock ⊕
	Data ⊕
	Comm ⊕
	Power ⊕

5 Connect a reader to the Remote and wire the reader output from the Master to an Access Control input. Simply badge a known working card and the reader should work as if it had been hard wired to the Access Control unit.

TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	
Type	Semtech LoRa
Frequency Operational	916MHz - 927MHz
Transmit Power	100mW
Security Encryption	By Request
Operational Range	500 metres (Line of sight)
ACCESS PROTOCOL SUPPORTED	
Wiegand	240bit (up to)
Gallagher/Cardax	G BUS (H BUS not supported)
SED-902 HANDHELD	
Battery	14V 2.34Ah Lilon
Charge Time	3 Hours
Standby Time	20 Hours
Charger Input	110V-240VAC
Charger Output	24V DC 2.5A
Reader Power	8V DC
Antenna Type	Internal – PCB
IP Rating	IP 61
Dimensions	197 x 66 x 43mm (Plastic Housing)
SED-902 MASTER	
Power Pack Input	230V-240VAC
Power Pack Output	16V AC 1.5A
External Power Supply	12V or 24V DC 2.5A
Backup Battery	12V 7Ahr gel cell (Not included)
Antenna Connection	TNC Female
Antenna Type	External 3dB Omni (High Gain Optional)
Dimensions	235 x 250 x 80mm(Metal Cabinet)
SED-902 EXPANDER	
Power Input	Supplied by Master via RS485 link
Antenna connection	Not applicable
Dimensions	235 x 250 x 80mm (Metal Cabinet)
CERTIFICATION	
FCC (FCC Identifier 2ASK9-MX001W4814) MAY 2019 USA	

FCC IDENTIFIER: 2ASK9-MX001W4814
Name of Grantee: Sec-Eng Systems Pty Ltd.
Equipment Class: Digital Transmission System
Notes: Sed Lawra-R1
Modular Type: Single Modular



NOTE: Both the 915 MHz radio units require line of sight signal, they will work through buildings, however, this may effect signal coverage. Position the Remote at the location where you require to install it and do a field test to ensure you have a steady signal light

6

If all tests worked ok, proceed to install into desired outdoor environment - ensure you install the High Gain Antennas supplied, this will ensure constant cover.

FOR TECHNICAL SUPPORT

Phone 02-9524 9952

Mon – Fri 8.30AM to 5.00PM AEST

WWW.SECENG.COM.AU

Sydney, Australia