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┌ 1.0 Overview ─

The EW Extension Unit is designed for the modular expansion of an O2LA installation via the RS485 communication bus. Each EW unit supports two Wiegand 26-bit readers and two exit button inputs. It has two outputs for controlling two doors. Since it supports Wiegand-26 readers, it provides installers with total flexibility in planning installations. Three additional outputs are provided that can be utilised for different applications such as a siren, an auto-dialer, a flash, etc. In emergencies such as disrupted RS485 functioning or O2LA system failure, access can be given for up to 10 codes/cards.

─ 1.1 Features

- Metal housing.
- RS485 connection to O2LA.
- 5 inputs (2 request-to-exit, 2 door-monitoring contacts, 1 free input).
- 5 outputs: 2 relays of 10A & 1 relay of 2A (Contact Voltage: 24V DC/120V AC).
2 transistors (250mA, Open collector).
- Sirens, auto-dialer, flash, etc can be connected.
- Tamper protection against sabotage/theft i.e. removal of the cover or the entire unit.

─ 1.2 Electrical Specifications

Input Voltage : 12-15 V DC(Regulated)
Current Consumption : 60mA (Standby), 150mA (Maximum)
Inputs : 2 request-to-exit (NO)
2 door-monitoring contacts (NC)
1 Free input

 **Note:** The EW has resettable fuse, which will protect the EW when AC voltage 12/24VAC is connected.

Outputs:

Ouput1	RELAY	10A
Ouput2	RELAY	10A
Ouput3	RELAY	2A (directly connected to the free input)
Ouput4	TRANSISTOR	250mA, Open Collector
Ouput5	TRANSISTOR	250mA, Open Collector

Default setting: Output1, Output2, Output3 & Output4 are Pulse mode set for 1second.

Transistor outputs will be triggered as per the following table of events:

Transistor	ON	OFF
T4	"Tamper" event "Forced Door" event "Door open too long" event outside Time Zone 02	Depends on the output time set by the user (Pulse or Latch). In Pulse mode, output is switched to OFF after a certain time. In both Pulse and Latch mode it can be set to OFF by entering the master code in O2LA (offline) or by using the "Disable Alarm" tab on the Main Menu in the PRO software (online)
T5	"Door open too long" within Time Zone 02	When a "door closed" event occurs

Fuse : 500mA resetable Fuse
 Indicators : Red LED indicates the power supply.
 Green LED indicates the status of relays 1 and 2.
 Yellow LED flickers indicating proper RS485 bus connection

1.3 Mechanical Specifications

Dimensions (mm) : 180 (L) x 129 (W) x 53 (H)
 Housing : White Painted metal
 IP Factor : IP31 (International Protection rating)

1.4 General information

Door monitoring contact: The two inputs door contact 1 (DP1) and door contact 2 (DP2), can be connected to magnetic door contact sensors to detect "forced door" and "door opened too long" conditions. These inputs will trigger transistor outputs T4 and T5 as explained above.

Request-to-Exit button: Allows the connection of push buttons (exit buttons) for opening a door from inside. Two inputs (PB1 and PB2) can be connected to two push buttons. When either button is pressed, the corresponding door is opened. PB1 → Relay 1, PB2 → Relay 2.

Tamper: Extensive care is taken in protecting the system against sabotage/theft/man handling. In case of such an event the system triggers transistor output T4.

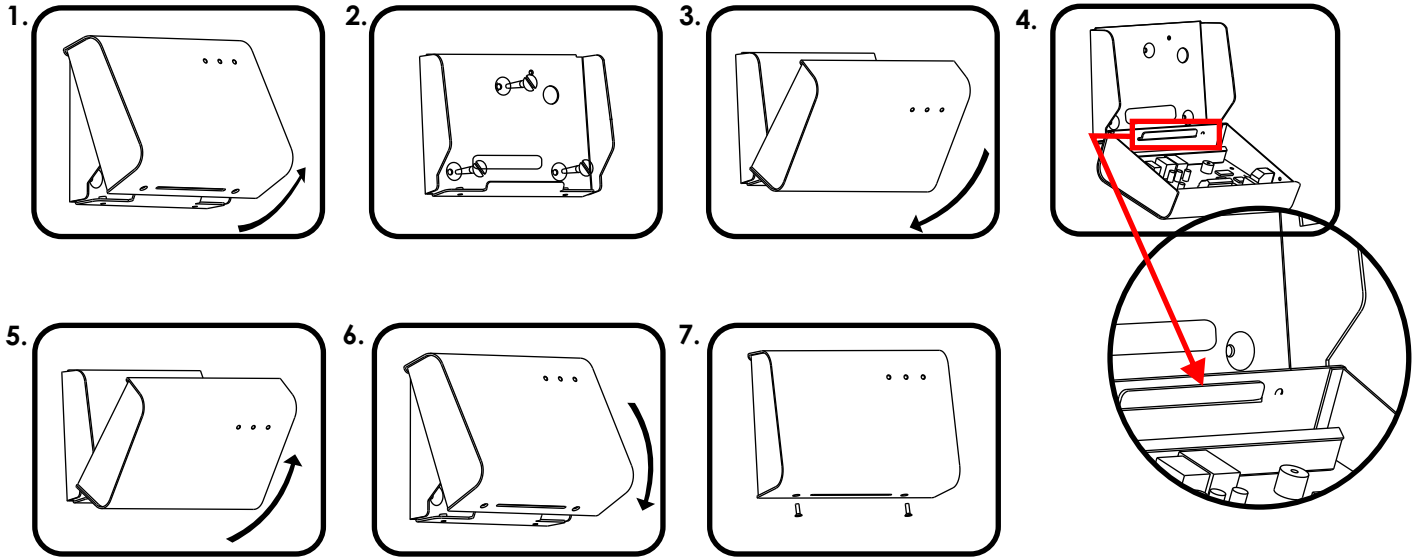
Free Input: The EW unit has provision for an additional input that can be used to integrate other security devices like smoke detectors, movement detectors, etc. This input directly triggers the free output (output 3), which can be connected to an auto-dialer, siren, flash, etc.

 **Master Reset:** A push button is provided on the PCB front panel to reset the micro controller and to restore the default settings. (See figure in Section 4.1)

Note: Door open too long will enable after 15 seconds.

┌ 2.0 Mounting Installation ─

1. Identify a suitable flat surface for wall mounting.
2. Remove the front cover.
3. Using the base as a template, mark the mounting screw hole positions and drill three holes using a 6 mm bit.
4. Fix the base housing to the wall using the 6 mm diameter wall plugs and three wall-fixing screws (4 x 30 CSK Philips) provided.
5. Route the cables through the hole in the base housing.
6. To aid hands-free wiring to the PCB terminals hook the angled bend of the front cover to the base.
7. Ensure that the wiring of the EW PCB is carried out as per wiring instructions given in *Section 3*
8. Unhook the top-cover and align correctly to the housing.
9. Close and fix the top cover with the two M3x8 mm security screws using the security screwdriver provided.



┆ 3.0 View of Terminal Blocks ┆

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
NC	C	NO	NC	C	NO	NC	C	NO	Power Input		LED 1&2 (+)	LED2(-)	LED1(-)	D1	D0	12V DC (+)	GND	D1	D0	LED2(-)	LED1(-)	DP2	DP1	GND	PB2	PB1	Free Input	T4 250mA	T5 250mA	GND	B	A	
Relay (2A) O/P2		Relay (10A) O/P1		Relay (10A) O/P3		+		-		R1	Reader (R2)				Reader (R1)				Door Contacts		Exits		Dry Contacts		O/P 4	O/P 5	RS485						
12V DC																																	

┆ 4.0 Connection with O2LA ┆

The EW unit is to be connected to the O2LA controller via the RS485 bus; once connected the EW Yellow LED will flicker to indicate proper bus communication.

1. Open the housing and ensure that the wiring is correctly done and the unit is connected to the RS485 bus.
2. Assign the peripheral number or address to the EW using the dipswitch (**refer to Section 5**)
3. Close the housing.
4. Power up the EW unit.
5. Once O2LA has identified the EW unit, the yellow LED starts to flicker indicating proper communication.
6. If the EW Yellow LED does not flicker within 60 seconds, re-check the wiring.

⚠ Caution: If two EW's units are allocated the same address O2LA will malfunction.

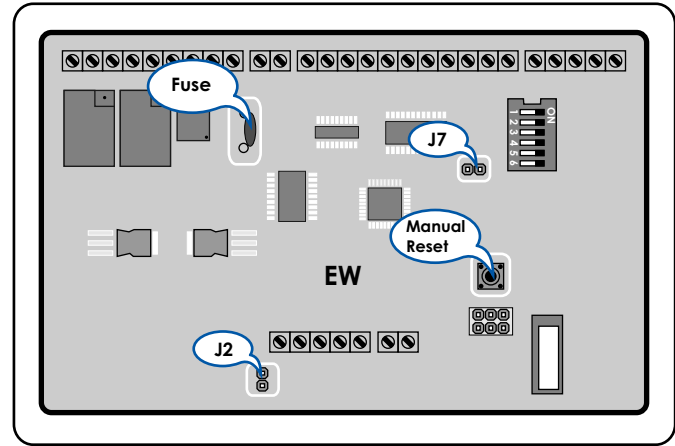
4.1 Jumper Settings

The **EW** has two jumpers that need to be set for customization And proper communication.

Jumper J2: Is normally open. When closed, an on-board resistor of value 120 ohm will be connected across the RS485 Bus as a Termination Resistor (**Refer to Section 4.3**).

Jumper J7: Is to be closed when two readers are connected to the same door as the IN (Reader 1) and the OUT (Reader 2) during Anti-Pass back mode. In this case, Door Sensor 2 (DP2) input must be Grounded and Door Sensor 1 (DP1) only is to be used for door monitoring (**See also caution given below**).

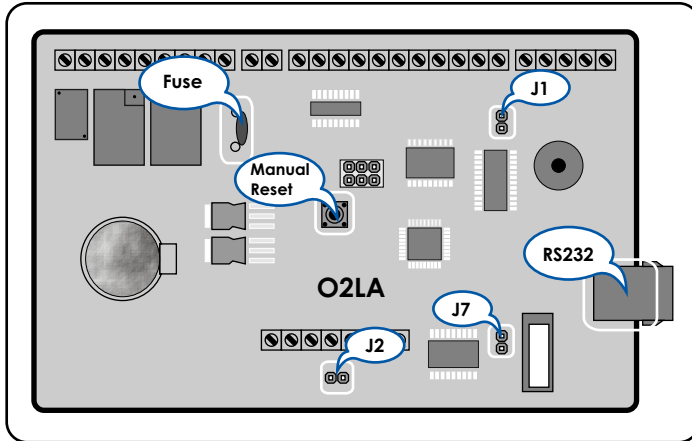
If may be noted that one Jumper is required to be Set in the O2LA controller.



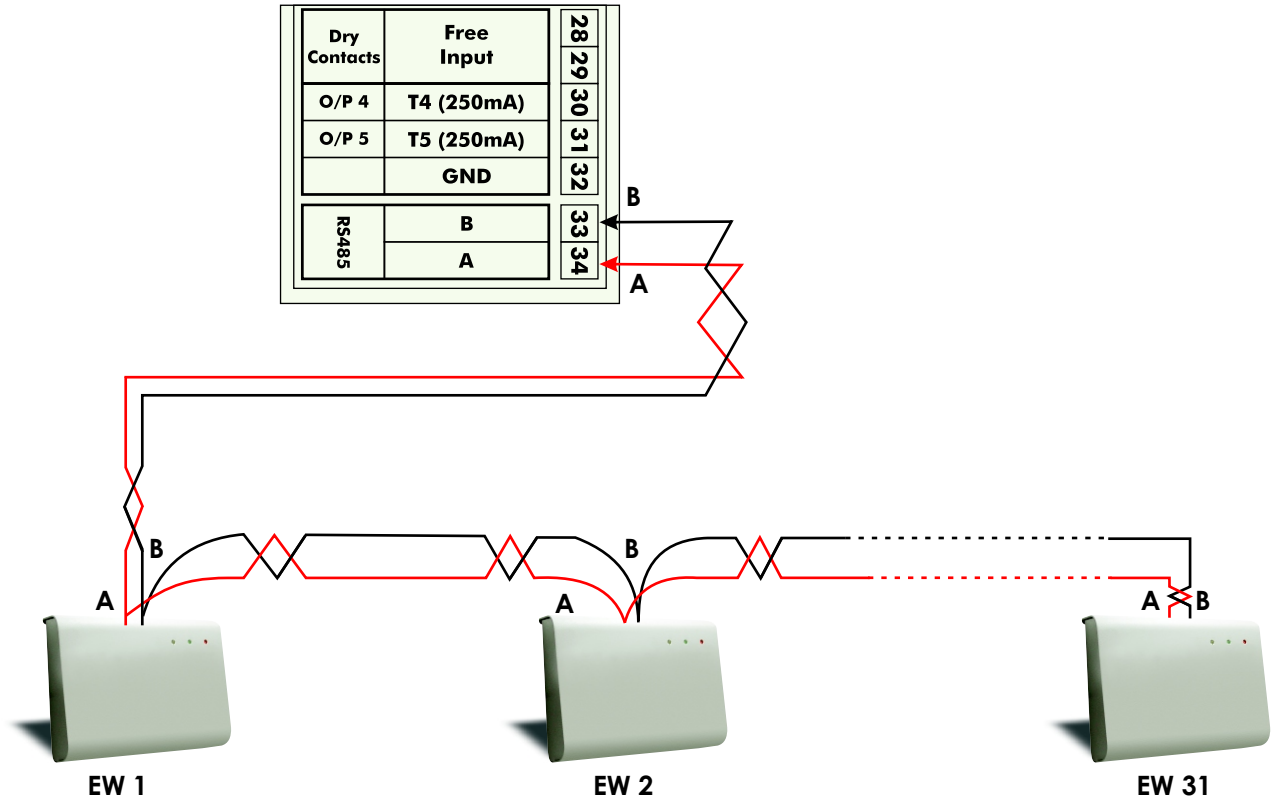
Jumper J2: Is normally open. When closed, an on-board resistor of value 120 ohm will be connected across the RS485 Bus as a Termination Resistor (**Refer to Section 4.3**).

Note: The Jumpers on both end devices i.e. the O2LA and the EW in the network are to be properly set.

Caution: Jumper J7 must be shorted when the EW is Used in APB mode.



4.2 RS485 Network



4.3 Termination Resistor

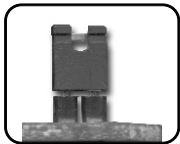
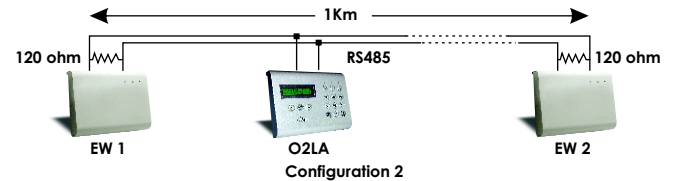
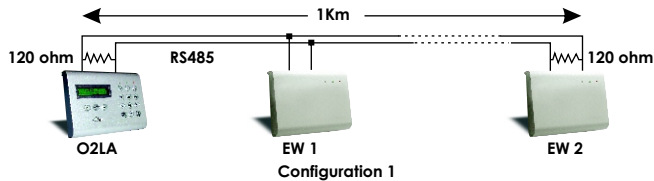
For optimum performance and better communication between the end devices an appropriate value of resistors is used at both ends of the RS 485 bus. The length and other parameters of the RS485 line determine the value of the resistor to be used. O2LA and EW have on-board resistors as well as provision for attaching external resistors.

Note: Termination resistors are to be used at both extremities of the RS485 line only in case of poor communication in networking mode.

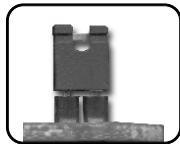
The on-board resistors, available in the O2LA and EW, have a value of 120 ohms. These on-board resistors can be connected to the line by closing the J2 Jumpers in both the O2LA and the EW units.

In case the on-board 120-ohm resistor does not improve communication, a resistor of a different value can be tried. Each of the O2LA and EW Installation packets contain two resistors of 1,000 and 470ohms. After making sure that the 120-ohm resistor is not connected to the line (J2 Jumpers in both O2LA and EW units are open), one of these resistors can be connected across terminals 33 and 34, i.e. terminals A & B of the RS485 bus (**See the Figure below**). The 1,000 ohm resistor is to be used for cable lengths of around 100 meters and the 470 ohms for cable lengths of around 500 meters.

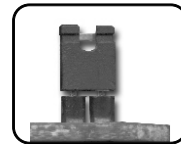
Termination Resistors connection in different configurations:



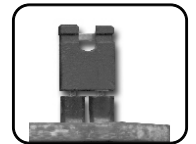
Jumper J2 Closed



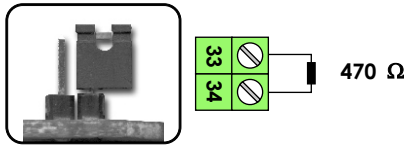
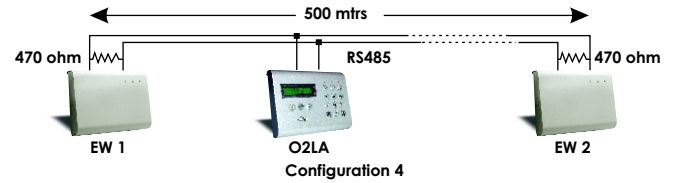
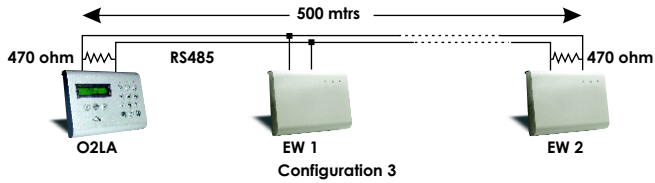
Jumper J2 Closed



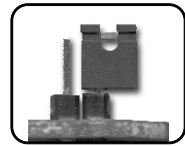
Jumper J2 Closed



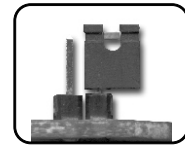
Jumper J2 Closed



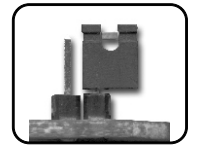
Jumper J2 Opened



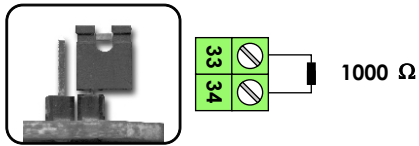
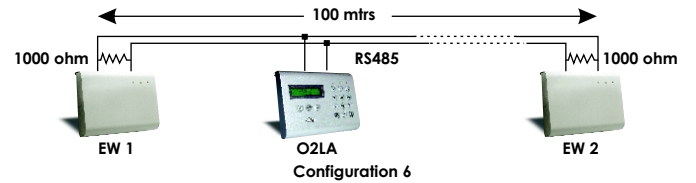
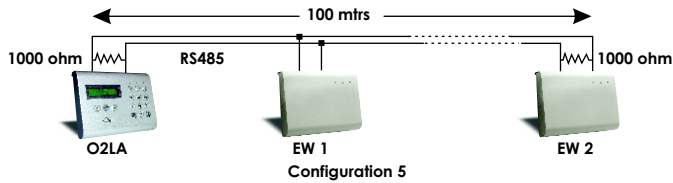
Jumper J2 Opened



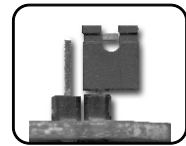
Jumper J2 Opened



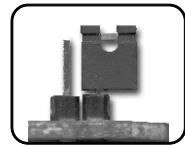
Jumper J2 Opened



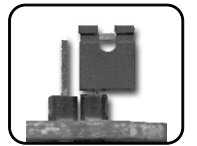
Jumper J2 Opened



Jumper J2 Opened



Jumper J2 Opened



Jumper J2 Opened

┆ 5.0 Installation Tips ┆

- Complete the wiring of EW with Reader, Locks, Exit Switch etc.
- Establish RS 485 network between O2LA and EW (**refer page 7**).
- Show the programmed card (Users 000 to 979 only for the first time) in front of the reader and check for the relay operation.
- Press Exit Switch and Check for the Relay operation.

┆ 6.0 Assigning Peripheral Numbers or Addresses ┆

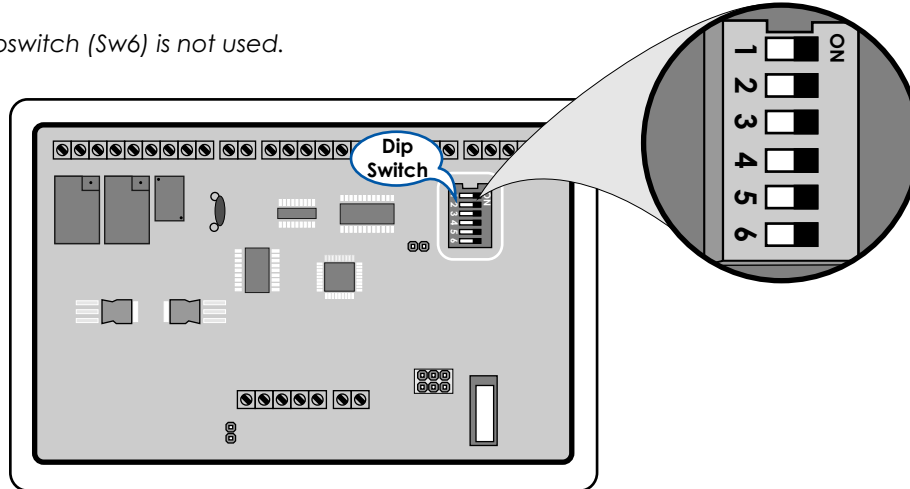
In order to be recognized by O2LA, each EW unit has an assigned number or "address". Peripheral numbers or addresses are assigned using dipswitches on the PCB. There is a set of 6 dipswitches in each EW, and the sixth dipswitch must always be in the OFF position.

Each dipswitch can assume one of two positions. In the figure below, in position one the switch is ON or Logic 1, In the other positions the switch is OFF or Logic 0. By positioning the switches to either ON or OFF each combination will allocate a number between 1 and 31 (31 is the maximum number of EW units that can be connected to one O2LA configuration).

The Logic Table below illustrates how the switches represent the assigned EW peripheral numbers from 1-31.

Switch ON = 1 **Note:** Dipswitch (Sw6) is not used.

Switch OFF = 0



EW No	Sw1	Sw2	Sw3	Sw4	Sw5	Sw6
01	1	0	0	0	0	0
02	0	1	0	0	0	0
03	1	1	0	0	0	0
04	0	0	1	0	0	0
05	1	0	1	0	0	0
06	0	1	1	0	0	0
07	1	1	1	0	0	0
08	0	0	0	1	0	0
09	1	0	0	1	0	0
10	0	1	0	1	0	0
11	1	1	0	1	0	0
12	0	0	1	1	0	0
13	1	0	1	1	0	0
14	0	1	1	1	0	0
15	1	1	1	1	0	0
16	0	0	0	0	1	0
17	1	0	0	0	1	0
18	0	1	0	0	1	0
19	1	1	0	0	1	0
20	0	0	1	0	1	0


EW No	Sw1	Sw2	Sw3	Sw4	Sw5	Sw6
21	1	0	1	0	1	0
22	0	1	1	0	1	0
23	1	1	0	0	1	0
24	0	0	0	1	1	0
25	1	0	0	1	1	0
26	0	1	1	1	1	0
27	1	1	1	1	1	0
28	0	0	1	1	1	0
29	1	0	0	1	1	0
30	0	1	0	1	1	0
31	1	1	0	1	1	0

 **Note:** 1. For programming purposes the number and location of each EW should be noted.

2. O2LA automatically identifies EW units connected to the RS485 network, through their addresses. After an EW unit is deleted it will take 2 - 3 minutes for O2LA to register it in memory.


┆ 7.0 Programming Tips ┆

- Set the dipswitch address of the EW (**refer Page 10**).
- Wait for a minute, polling time for RS485 communication.
- Check for YELLOW LED flickering, for correct communication.
- Assign outputs, Refer setup menu in O2LA manual.

 **Note:** Default value of Output 1, Output 2 is 1second (**refer page 2**)

┌ 8.0 Electrical Environment ─

Do not install the unit near electrical generators and motors, power lines or television receivers, etc. or any appliance that emits strong electrical / magnetic fields or radio frequency radiation, all of which can adversely affect system communications.

 **Caution:** *Electrical & magnetic disturbances can also affect the functionality of the system through cables installed in direct proximity. The system should be wired (cabled) correctly, observing normal precautions, to avoid such disturbances.*

 **Note:** *The EW has a 500 mA resetable fuse on the PCB, which will protect the circuit if a wrong voltage is applied. The fuse will blow immediately if (a) beyond rated voltage (12 - 15 VDC) is applied (b) if an AC voltage is applied.*

 **Tip:** *Two spare fuses are provided in the installation hardware kit.*

┌ 9.0 Earthing ─

Several layers of protection are provided against transient voltages from static discharge, lightning and power supply spikes. For protection to be fully effective, earthing of the housing should be done properly.

Use 16 AWG or heavier cable and keep the cable length as short as possible.

┌ 10.0 Extreme Case of System Usage ─

Under normal conditions of usage, the time taken for the system to authenticate a card and release the door will be well under 1 second. However, in the extreme case when an O2LA system has 64 doors connected through the RS485 network, and cards are presented at all 64 readers simultaneously, there will be a maximum delay of up to 3 seconds. Time taken for polling each reader will account for the delay.

┌ 11.0 Trouble Shooting ─

- RS 485 is not communicating
- Check for Dipswitch address of all the EW's. Two EW's should not have the same address.
- Check for wiring, it should be in Daisy chain style.
- Put termination Resistor.
- Examine the cable routing, avoid high voltage lines.
- Use shielded cable & ground the shield at both ends of Rs485.

Warranty

Limited Warranty

Sy Tech Engineering Pvt. Ltd., manufacturer of XPR brand of products, hereafter called XPR, warrants its products to be free from defects in material and workmanship, according to the following terms and conditions:

1. The limited warranty provided for the Product shall be for 24 months (except for batteries and the housing) beginning from the date of shipment.
2. During the limited warranty period, XPR or its authorised service network will repair or replace, at XPR's option, any Defective product or parts thereof with new or refurbished replacement items, and return the Product to the Customer in working condition.
3. Any repaired or replaced Product will be warranted for the balance of the original warranty period.
4. The Customer must provide this warranty card along with the product, when dispatching to XPR.
5. Transportation, insurance, delivery and handling charges incurred in the transport of the Product to and from XPR or its authorised service center will be borne by the Customer.
6. Any expenses incurred relating to uninstalling or reinstalling the Product are not covered under this Limited Warranty.
7. The warranty ceases to exist if any of the following conditions are applicable:
 - (a) The Product has been subject to any of the following: abnormal use, abnormal condition, improper storage, exposure to excessive moisture, dampness, temperature or other such environmental conditions, unauthorised modifications, connections or repair including but not limited to use of unauthorised parts, misuse, neglect, Abuse, sabotage tampering, accident, alteration, improper installation, Acts of God or other acts which are beyond reasonable control of XPR.
 - (b) The Product is presented for repair after the applicable limited warranty period. In this case XPR's normal service policies shall apply and the Customer will be charged accordingly.
 - (c) The Product serial number or the accessory date code has been removed, defaced or altered.
 - (d) The defect or damage was caused by defective function of other Products used with or connected to an Accessory unfit for use with XPR or used in other than its intended use.
 - (e) The Customer will be billed for any parts or labor charges not covered by this limited warranty.

Limitation of Liability and Exclusion of implied Warrants.

Unless considered enforceable or unlawful under applicable law:

- a) XPR NEITHER ASSUMES NOR AUTHORISES ANY PERSON OR ENTITY TO ASSUME ON XPR'S BEHALF ANY OTHER OBLIGATION OR LIABILITY BEYOND THAT WHICH IS EXPRESSLY PROVIDED FOR IN THIS LIMITED WARRANTY.
- b) XPR'S LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AT XPR'S OPTION. XPR SHALL NOT BE LIABLE FOR DAMAGE TO OTHER PRODUCTS CAUSED BY ANY DEFECTS IN XPR PRODUCTS, DAMAGES ARISING OUT OF LOSS OF USE, LOSS OF REVENUE OR PROFITS, OR ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE.

All warranty information, product features and specifications are subject to change without prior notice.

Product:

Version:

Product Serial Number:

Date of Dispatch:

Warranty validity: