WARNING! This installation guide provide the basic wiring, programming and troubleshooting information required to install the Lun Security System. **Use this guide in conjunction with the *Lun-25. Reference Manual* and *Configurator Operating Manual* available online from ORTUS Group website at** www.ortus.io.

GSM Wireless Security and Fire Alarm Control Panel "Lun-25"

Installation Guide

ORTUS Group

Table of contents

1 Quick Setup

❶	Plan	Plan the installation including all alarm detection devices, zone expanders, keypads/readers and other required modules
❷	Mount	Decide on a location for the Control Panel and secure it to the wall using suitable mounting hardware
❸	Addressing modules	Addressing additional keypads/readers and zone expanders
❹	Wire	Complete all wiring including modules, keypads/readers, zones, siren and ground connection. Save module serial numbers on page 11
❺	Power	Connect the battery and power up the system. The battery must be connected.
❻	Program	Connect the Control Panel to notebook with the “Lun-Config” cable and use the “Configurator 11” software
❼	Enroll wireless detectors	Disconnect the Control Panel from notebook and restart it. Use the keypad or by Control Panel’s **RF** button. Radio receiver must be connected to Control Panel.
❽	Test	Test the system completely to ensure that all features and functions operate as programmed.

2 Compatible Devices

Keypads	**Lind-9M3**, **Lind-15**
TouchMemory Readers	**Lind-11TM** **Lind-7*** **Antivandal***
RFID cards / tags Reader	**Lind-EM**
Zone Expander	**AM-11**
Radio Receiver	**MCR-300** Visonic **L25-R433** ORTUS Group (for Visonic) **L25-Crow** ORTUS Group (for Crow) **L25-R433M** ORTUS Group (for Jablotron) **uartBridge** Ajax
Visonic wireless detectors	MCT-302N, MCT-234, MCT-501, NEXT MCW, NEXT K9-85 MCW, MCT-426.
Jablotron wireless detectors	JA-60N, JA-60V, JA-60P, JA-60B, JA-60G, RC-60, JA-63S, RC-11, RC-86K.
Crow wireless detectors	FW2-MAG-8F, FW2-RMT-8F, FW2-NEO-8F, FW2-SMK-8F, FW2-NEO-PIR-CRT N 8F.
Ajax wireless detectors	DoorProtect, LeaksProtect, MotionProtect Plus, GlassProtect, CombiProtect, Space Control, FireProtect Plus.

* – If this reader is used, the other keypads, readers and zone expanders **should not be connected.**

3 Safety Instructions for Service Persons

Warning: When using equipment connected to the telephone network, always follow the basic safety instructions provided with this product. Save these instructions for future reference. Inform the end-user of the safety precautions that must be observed when operating this equipment.

Before Installing The Equipment – Ensure package includes the following:

- Installation and user guides, including the SAFETY INSTRUCTIONS.

READ and SAVE these instructions!

- Follow ALL WARNINGS AND INSTRUCTIONS specified in this document and/or on the equipment.
- Lun-25 Control Panel.
- Additional Control Panel's spare parts and installing components.

Selecting a Suitable Location for the Alarm Controller

Use the following list as a guide to find a suitable location to install this equipment:

- Locate near a telephone socket and power outlet.
- Select a location free from vibration and shock.
- Place alarm controller on a flat, stable surface and follow the installation instructions.

Do NOT locate this product where people may walk on the secondary circuit cable(s).

Do NOT connect alarm controller to electrical the same circuit as large appliances.

Do NOT select a location that exposes your alarm controller to direct sunlight, excessive heat, moisture, vapors, chemicals or dust.

Do NOT install this equipment near water. (e.g., bath tub, kitchen/laundry sink, wet basement, near a swimming pool).

Do NOT install this equipment and accessories in areas where risk of explosion exists.

Do NOT connect this equipment to electrical outlets controlled by wall switches or automatic timers.

AVOID interference sources.

AVOID installing equipment near heaters, air conditioners, ventilators, and refrigerators.

AVOID locating equipment close to or on top of large metal objects (e. g., wall studs).

Safety Precautions Required During Installation

- Never install this equipment and/or telephone wiring during a lightning storm.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Position cables so that accidents can not occur. Connected cables must not be subject to excessive mechanical strain.
- Use only the power supply provided with this equipment. Use of unauthorized power supplies may cause damage.
- For direct plug-in versions, use the transformer supplied with the device.

WARNING: THIS EQUIPMENT HAS NO MAINS ON/OFF SWITCH. THE PLUG OF THE DIRECT PLUG-IN POWER SUPPLY IS INTENDED TO SERVE AS THE DISCONNECTING DEVICE IF THE EQUIPMENT MUST BE QUICKLY DISCONNECTED. IT IS IMPERATIVE THAT ACCESS TO THE MAINS PLUG AND ASSOCIATED MAINS SOCKET/OUTLET IS NEVER OBSTRUCTED.

IMPORTANT NOTE!

This alarm system must be installed and used within an environment that provides the pollution degree max 2 and over-voltages category 11 NON-HAZARDOUS LOCATIONS, indoor only. The equipment is direct plug-in (external transformer) and is designed to be installed, serviced and/or repaired by service personnel only; [service person is defined as an individual having the appropriate technical training and experience to recognize hazards associated with the installation and operation of this equipment and of measures to minimize the risks to themselves and others]. This equipment contains no user-serviceable parts. The wiring (cables) used for installation of the alarm system and accessories must be insulated with PVC, TFE, PTFE, FEP, Neoprene or Polyamide.

(a) The equipment enclosure must be secured to the building structure before operation.

(b) Internal wiring must be routed in a manner that prevents:

- Excessive strain or loosening of wire on terminal connections or damage of conductor insulation

(c) Disposal of used batteries must be made in accordance with local waste recovery and recycling regulations.

(d) Before servicing, disconnect the power and telephone connection.

(e) Do not route any wiring over circuit boards.

(f) The installer must ensure that a readily accessible disconnect device is incorporated into the building for permanently connected installations.

The power supply must be Class II, fail safe with double or reinforced insulation between the primary and secondary circuit/enclosure and be an approved type acceptable to the local authorities. All national wiring rules must be observed.

4 Installation

Mounting the Enclosure

Locate the panel in a dry area, preferably near an unswitched AC power source. Complete all wiring before applying AC or connecting the battery.

Terminal Descriptions

The following terminals are available on the Lun-25 Control Panel:

Table 1

Terminal	Description
L (Line), N (Neutral), PE (Power Ground)	AC power terminals. Connect the battery before connecting the AC. Do not connect the battery until all other wiring is complete.
AKB+, AKB–	Power terminals. Connect the battery before connecting the AC. Do not connect the battery until all other wiring is complete.
BEL	Bell/Siren power. Connect the positive side of any alarm warning device to 12F terminal, the negative side to BEL.
PM1, PM2	Programmable output terminals. Use to activate devices such as LEDs. (Every PM: 200mA, 15V)
Z1 to Z5, GND	Zone input terminals. Ideally, each zone should have one detector; however, multiple detection devices can be wired to the same zone.
TAN, GND	Interface lines to keypads, readers, zone expanders. NOTE: Total length is limited to: 150m – if Lind-11TM, Lind-15, Lind-9M3, Lind-EM or AM-11 is used 15m – if Lind-7 or Antivandal reader is used
12F, GND	Output +12V terminal. Use to power any compatible modules, detectors, LEDs, keypads, readers, etc. (350mA MAX). Connect the positive side of device to 12F, the negative side to GND.

TAN Bus Wiring

The 12F and GND terminals are used to provide power while TAN and GND are used for data transmissions.

This 4 terminals of the Control Panel must be connected to the terminals or wires of each module as described in table below:

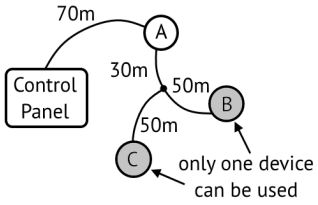
Table 2

Device / CP Terminal	Lind-15	Lind-9M3, Lind-11TM, Lind-EM, Lind-7	AM-11
12F	+12V	+12V	+12V
TAN	MON	BUS	TAN
GND	GND	GND	GND

The following conditions apply:

- Interface should be run with minimum 22 gauge quad, two pair twisted preferred.
- The modules can be home run to the panel, connected in series or can be T-tapped.
- Any module can be connected anywhere along the interface bus. Separate wire runs for keypads/readers and zone expanders are not necessary.
- No module can be more than 150m/15m (in wire length) from the panel as noted in terminal description table above.

NOTE: Do not use shielded wire for interface bus wiring.



Module (A) is wired correctly as it is within 150m of the panel, in wire distance. Module (B) is wired correctly as it is within 150m of the panel, in wire distance. Module (C) is wired correctly as it is within 150m of the panel, in wire distance. But ONLY ONE of (B) and (C) modules can be used, because the total wired length further than 150m from the panel.

Current Ratings

In order for the system to operate properly, the power output of the alarm controller and power supply modules cannot be exceeded. Use the data below to ensure that the available current is not exceeded.

Table 3

Output	Rating ($12V_{DC}$)
12F:	350mA. Subtract the listed rating for each keypad, expansion module and accessory connected to 12F or TAN bus. At least 10mA must be reserved for the TAN bus.

Control Panel

12F – 350mA available for devices connected to the 12F and PM terminals, and modules connected to TAN bus terminal. At least 10mA must be reserved for the TAN bus.

Control Panel Current Calculation Maximum (Standby and Alarm)

12F (350mA max. including PM1/PM2)	
TAN bus devices (see Table 2 below)	
Total (must not exceed 350mA)	

Table 4: TAN bus devices current calculation chart

Device	Current (mA)	x	Quantity	Total (mA)
Lind-15	190	x		
Lind-9M3	70	x		
Lind-11TM	70	x		
Lind-EM	20	x		
AM-11	3	x		
Total TAN bus current				

Zone Wiring

Power down the alarm controller and complete all zone wiring. Zones can be wired to supervise normally open devices (e. g., smoke detectors) or normally closed devices (e.g., door contacts). The Control Panel can be programmed as normally open or for SEOL/DEOL.

Observe the following guidelines when wiring zones:

- SEOL/DEOL installations recommended.
- Minimum 22 AWG wire, maximum 18 AWG.
- Do not use shielded wire.
- Do not exceed 100Ω wire resistance. Refer to the chart below:

Table 5: Burglary Zone Wiring Chart

Wire Gauge	Maximum Length to EOL Resistor (meters)
22	910
20	1490
19	1880
18	2370
Figures are based on maximum wiring resistance of 100Ω	

12F Power Wiring

This terminal provide 11.3-12.5V_{DC}/350mA of current (shared with PM outputs).

Connect the positive side of any device to the 12F terminal, the negative side to GND.

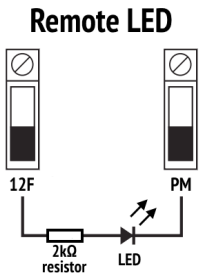
The 12F output is protected; if too much current is drawn from these terminals (wiring short) the output is temporarily shut off until the problem is corrected.

PM Wiring

PMs switch to ground when activated from the Control Panel. Connect the positive side of the device to the 12F terminal and the negative side to a PM terminal.

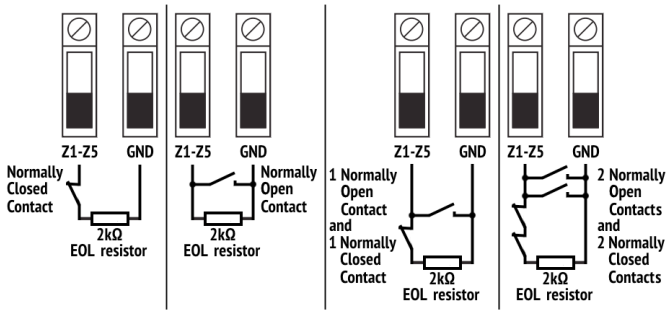
PM output sink up to 200mA current.

A relay is required for current levels greater than 50mA or 300mA. PM can also be used for 2-wire smoke detectors.



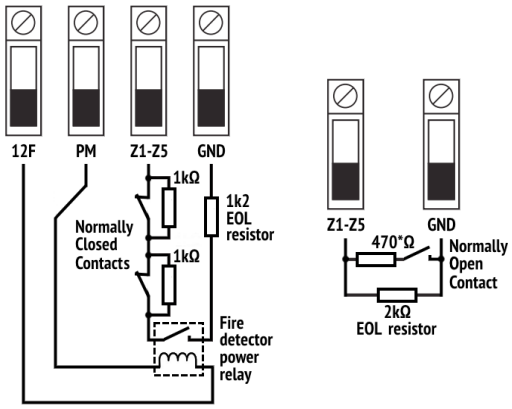
Single End-of-Line (SEOL) Resistor

When SEOL resistors are installed at the end of a zone loop, the Control Panel detects if the circuit is secure, open, or shorted.



Double End of Line (DEOL) Resistors for Fire Detectors

When double end-of—line (DEOL) resistors are installed at the end of a zone loop, the second resistor enables the panel to determine if the zone is in alarm, tampered or faulted.



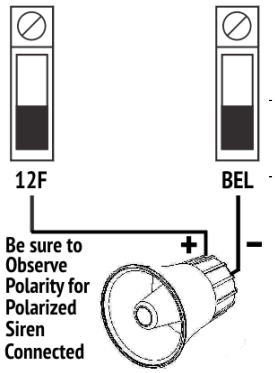
Note: * – The additional resistor value should be 820 Ohm to recognize the second detector in the loop.

Bell Wiring

These terminals supply 150mA of current at 10.4-12.5V_{DC} for installations.

Note: Steady and pulsed alarms are also supported.

The BEL output is supervised and power limited by 450mA PTC.



Connecting AC Power

Primary: 100-240VAC/50-60Hz/0.25A

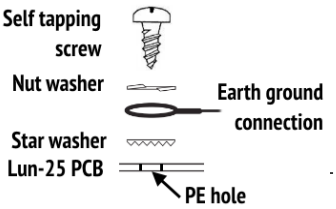
Secondary: 15VDC/0.67A

The Control Panel have built-in AC/DC power source.

The 3-wired 22AWG cable should be used.

Ground Wiring

Using an insulated green wire (minimum 22AWG), connect the power cable to Control Panel's PCB via hole marked as "PE".



NOTE: Wire and installation hardware not included.

Battery

A sealed, rechargeable, lead acid or gel type 12V 2.3Ah battery is required for power standby.

5 Addressing

All optional modules and devices must be preparing to work at one system before they will be connected to TAN bus.

The Control Panel provided up to 2 additional ICD (keypad or readers) and up to 4 zone expanders.

Every ICD should have the unique address in the range of 1 to 2.

Note: Lind-7 and **Antivandal** readers do not require addressing.

Lind-9M3 keypad addressing

1. Power up the keypad.
2. Press [#] + [1] keys.
3. Enter address 1 or 2 then confirm it by [✶] key.
4. Turn the keypad power off.

Lind-15 keypad addressing

1. Power up the keypad and wait until boot-up.
2. Press **SETTINGS** button.
3. Press the **Address MON** value icon.
4. Select the *new address* (1 or 2) in the drop-down list.
5. Turn the keypad power off.

Lind-11TM reader addressing

1. Power up the reader.
2. If the "running light" is displaying by **ZONE** LEDs, press and hold the **RESET** button while the indication stops. The **ZONE8** LED will flashes and other **ZONE1-7** LEDs will indicate the current reader address in binary code. The **ZONE1** LED corresponds to the least significant bit.
3. Pressing shortly the **RESET** button (to address up) or the **TROUBLE** button (to address down) you may set the new address (1 or 2). Then confirm it by the long pressing the **RESET** button. The 5 seconds buttons inactivity will return the reader to "running light" indication mode.
4. Turn the reader power off.

Lind-EM reader addressing

1. Remove the reader's face panel to its PCB access.
2. Set the new address (1 or 2) by the **ADDRESS** DIP switches in binary code. The "1" switch corresponds to the least significant bit.
3. Install the reader's face panel again.

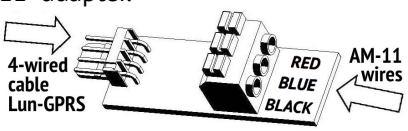
AM-11 module addressing

The additional equipment is needed:

1. 4-wired cable marked "Lun-GPRS…" or "Lun-SMS".
2. Adapter marked "Config-AM11".
3. Notebook with:
   - one free USB 2.0 port.
   - OS Windows 7/8/10.
   - "Configurator 11" software installed.

To addressing the AM-11 module:

1. Connect the 4-wired cable "Lun-GPRS…" to the notebook free USB 2.0 port.
2. Install the cable driver if required. You can download it online at www.ortus.io.
3. Connect the "Lun-GPRS" cable to the "Config-AM11" adapter.
4. Connect the AM-11 module wires – **red**, **blue** and **black** – to corresponding terminals on the "Config-AM11" adapter.



5. Start the "Configurator 11" software. Press the **AM11** button to open the address assigning utility.
6. Select the COM port corresponding to 4-wired cable connected. You can see it in the Windows **Device Manager** – **Ports**.
7. Press the red button [<>] to open port selected.
8. The button change the color to **green** when the port will be opened.
9. Select new address (1 to 4) in the drop-down list for AM-11 module connected then press **Record Address** button.
10. As the confirmation message is displayed, press [<>] button to close the COM port.
11. As the button changed the color to red disconnect the AM-11 module wires and close the utility.

6 Programming

The Control Panel should be programmed before using.

The next equipment is needed for programming:

1. 2-wired cable marked "Lun-Config".
2. Notebook with:
   - one free USB 2.0 port.
   - OS Windows 7/8/10.
   - "Configurator 11" software installed.

To configure the Control Panel:

1. Connect the 2-wired cable "Lun-Config" to the notebook free USB 2.0 port.
2. Install the cable driver if required. You can download it online at www.ortus.io.
3. Connect the "Lun-Config" cable to the Control Panel's **X2** "**CONFIG**" connector. The cable's white mark should be arranged to the **Δ** mark near PCB **CONFIG** connector.
4. Start the "Configurator 11" software then select **Configuration** – **Create** main menu item or press **+** button.
5. Select a **Lun-25** Control Panel type and confirm it by **Ready** button.
6. Select the **COM port** corresponding to cable connected. You can see it in the Windows **Device Manager** – **Ports**.
7. As the new configuration window opens, power up the Control Panel. If the Control Panel identified successfully, the green icon "Connected" will displayed at the status bar.
8. Then you can edit every configuration parameters as need to the Control Panel works correctly.
9. Save the configuration to the Control Panel's memory by **Ctrl+F12** shortcut.
10. Disconnect the "Lun-Config" cable from the Control Panel then it has been restarted automatically to apply the configuration.

The "Configurator 11" software and all configuration parameters are described in the ***Configurator Operating Manual*** available online from ORTUS Group website at www.ortus.io.

Note: If the Control Panel is already initially configured then the next time it can be configured remotely.

7 Enroll wireless detectors

Wireless detectors are enrolled via wireless receiver previously installed to the Control Panel housing and wired to main PCB.

You can enroll wireless detector by:

- Lind-15 ICD.
- Lind-9M3 ICD.
- RF key placed on the Control Panel's PCB.

Enrolling by Lind-15

1. Enter to group (partition) the wireless detectors will be enrolled to by touching the group number 1 or 2 on the ICD screen.

Note: This group should be activated and assigned to the keypad in the Control Panel configuration.

2. Make sure that the group is disarmed.
3. Press **Settings** button.
4. Press **Wireless zones** button then enter the ***installer code***. The new window will open. It contains a wireless zones table.
5. Select wireless zone number (at first column) by touching it:
   - To enrolling – select zone with free **SensorID** (at the second column) field.
   - To delete wireless sensor – select zone with filled **SensorID** field.
6. Press **Add** button to switch the wireless receiver to enrolling signal waiting. Then the wireless detector should generate the appropriate enrolling signal. System will wait an enrolling signal up to 30 seconds.
7. When the wireless detector is enrolled, the keypad sounds a "thrill" and the **SensorID** field will be filled. The wireless detector signal strength is displayed in the table's third column as 0...3. A higher number corresponds to a higher signal strength.
8. To delete the existing enrolled wireless detector press **Delete** button then the **SensorID** field will be free.
9. To exit press **Back** button.

Enrolling by Lind-9M3

1. Enter to group (partition) the wireless detectors will be enrolled to by press (*), ***group number***, (*)

Note: This group should be activated and assigned to the keypad in the Control Panel configuration.

2. Make sure that the group is disarmed.
3. Press (#)+(7), ***installer code*** to enter to enrolling mode. The **MODE 0** LED will lights. **ZONE 1...16** LEDs correspond to first 16 wireless zones in the group. If some **ZONE** LEDs are light – the wireless detectors is enrolled there. The flashing **ZONE** LEDs are displayed all zones in the current group where wireless detectors can be enrolled.
4. Enter the free wireless zone number for detector enroll (any from flashing ZONE LEDs) and confirm it by pressing (*).
5. Press (antenna) to switch the wireless receiver to enrolling signal waiting. Then the wireless detector should generate the appropriate enrolling signal. System will wait an enrolling signal up to 40 seconds.
6. When the wireless detector is enrolled, the keypad sounds a "thrill" and the appropriate **ZONE** LED lights continuously.
7. To check the wireless detector signal strength press (antenna). It is displayed by the lighted **ZONE 1...3** LEDs. A greater number of lighted zone LEDs corresponds to a higher signal level.
8. To delete the existing enrolled wireless detector press (antenna), then the appropriate **ZONE** LED will flashing as free.
9. To exit press (#). The **MODE 0** LED will turn off.

Enrolling by RF key (on Control Panel's PCB)

1. Open a Control Panel housing to the **RF** key access.
2. Be sure the Control Panel in the normal mode operation (no configuration cable connected) and group (partition) where the wireless sensors will be enrolled is disarmed.
3. Be sure the **HL5** LED (near the RF key) is blinking three times with subsequent pause ~1 second **OR** blinking once 3 seconds.
4. Switch to the enrolling mode by pressing **RF** key:
   - Fast **double** pressing – for the **group #1** (**HL5** LED blinking *once* with subsequent pause ~1 second).
   - Fast **triple** pressing – for the **group #2** (**HL5** LED blinking *twice* with subsequent pause ~1 second).

Note: If there is no free wireless zones for enrolling, the **HL5** LED lighting ~3 seconds with pause ~0,5 seconds.

5. Now you can do as follows by **RF** key:
   - **One short** pressing – to switch the wireless receiver to enrolling signal waiting. Then the wireless detector should generate the appropriate enrolling signal. System will wait an enrolling signal up to 30 seconds. New wireless detector will be enrolled to the first free wireless zone.
   - **One long** (~3 seconds) pressing – to delete <u>all</u> enrolled wireless detectors in this group.
   - **Fast double** pressing – to exit to normal operating mode.

Note: If the wireless detectors be enrolled by **RF** key (without any ICD), their signal strength can not be checked.

8 Troubleshooting

To view faults used Lind-15 or Lind-9M3 ICD.

View faults by Lind-15

Touch the yellow icon in the status bar at the bottom left of the ICD screen. The faults list will open.

View faults by Lind-9M3

If any fault present, the FAULT LED will lights.

Some faults displays without additional key pressing:

- Main AC power fault – by **POWER 220V** LED on.
- Battery absence/fault/discharge – by **BATTERY** LED on.
- Control Panel wired break – by **CP CONNECTION** LED on.
- CMS connection lost – by **CMS CONNECTION** LED on.

Press the  key. **ZONE** LEDs will displayed all existing faults:

ZONE 1 – **AC power** lost.
ZONE 2 – **Battery** absence/fault/discharge.
ZONE 4 – **Lind-11TM/Lind-EM** connection lost.
ZONE 5 – **AM-11** connection lost.
ZONE 6 – **Lind-9M3/Lind-15/Lind-27** connection lost.
ZONE 9 – **Arming disable** by CMS command.
ZONE 10 – **CMS connection** lost.
ZONE 11 – **Wireless receiver** connection lost.
ZONE 15 – **WiFi module** connection lost.
ZONE 16 – GPRS/GSM **signal jamming.**

Troubleshooting by faults:

Fault on Lind-15 ICD (ZONE on Lind-9M3)	Troubleshooting
Main power (ZONE 1) An AC power fault has been detected	Verify voltage measured across AC terminals is 120-240VAC. Replace fuse FU1 (1A) if required
Battery (ZONE 2) The panel detects that the battery is below the low battery threshold (less then 11.5VDC) or the battery is absent. **NOTE:** Fault condition will not clear until the battery voltage is 12.5VDC under load	**NOTE:** If battery is new allow about 3 hours to charge. Verify voltage measured across AC terminals is 120-240VAC. Replace fuse FU1 (1A) if required. Disconnect battery wire leads: Verify battery charging voltage measured across battery leads 13.70-13.80VDC. Replace fuse FU2 (1.5A) if required
CMS fault (ZONE 10) The connection to CMS was lost	Verify the SIM card installed, check the card balance and call to cellular provider if required. Verify the WiFi router and Internet connection Verify the CMS IP addresses, ports, phone numbers in the Control Panel configuration
GSM Jamming (ZONE 16) The Control Panel detects that the GSM/GPRS signal jamming	Verify the SIM card installed and call to cellular provider if required.
W/D receiver **Wi-Fi** **Lind-25/27** **Lind addr. *x*** **AM11 addr. *x*** **Lind TM/EM addr.*x*** **Keypad *x***	Verify connection to corresponding module. Verify the module bus address. Verify module settings in the Control Panel configuration. Replace module if required
Battery W/D *x*	Verify zone ***x*** operation. Replace wireless detector battery
Panel tamper **Tamper fault W/D *x*** **Tamper fault keypad *x*** **Tamper fault Lind TM/EM addr. *x***	Ensure the device cover is secure. Ensure device is correctly mounted for wall tamper operation. Trip, then restore the tamper. If tamper condition persists, replace correspondent device or wireless detector

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http://www.ortus.io

9 System Information

Zones Information

#	Label	Location	Group	Zone Type	Loop type
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					

ICD Information

#	ICD Type	Serial Number
1		
2		

Address Module Information

#	Serial Number
1	
2	
3	
4	

Wireless Devices

Zone #	Device type	Serial Number
Receiver		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

Installer – Defined Access Codes

Installer Code		
Group #1	Administrator Code	
	Fire Subsystem Code	
Group #2	Administrator Code	
	Fire Subsystem Code	