

# AVGAD MADE EASY!

Read this document before reading anything else!

Model 2008 Version 3.0 Jaycar LA-5511, Specific detail is for 2008.

(but applies to 868, 2004, 2055D, and 2008Dub in principal)

*This booklet focuses on what a Av-Gad alarm panel does, how to connect the panel circuit card to operate as a basic alarm system and the first steps to get it going*

## 1/ What does the alarm card do?

The alarm panel has 8 sensor zone inputs (5, and 8 on other models). A 8 zone extender card can be used on some models to give 13 or 16 zones.

These zones, when “tripped”, can cause the siren outputs and controlled output circuits to activate, and a dialer to interact with the phone line.

How these outputs and dialer react to the zone sensor signals is “mapped” by the programming in the card chip set.

**The panel as first supplied, has a “default” program already set for average use.**

You may change this program as indicated later if necessary.

The panel can be used with this default program straight away.

The default program settings are shown in table form in the installation handbook.

In an installation, the zone inputs are connected to normally closed circuit sensors such as PIR or magnetic switch and the panel outputs are connected to sirens, lights or other devices.

The dialer may be set to phone out on an “alarm” and the panel may be programmed to accept calls from a phone or private computer to check and change the status of the alarm.

The card retains a memory of events that have occurred, such as loss of power, zone triggered, alarm armed and disarmed and so on.

The panel is also pre-programmed with industry standard languages such as “Ademco” so it can talk to a security base station that uses the same language.

Note, these computer abilities and back to base functions, **do not have to be used**, only if and when required.

## 2/ What do you want the alarm to do?

In a simple home installation you may have door and window switches, motion sensors (PIR’s) to connect as INPUTS to the panel. You can have some sirens, a flashing light and the phone line to connect as OUTPUTS.

You will expect to arm the system with a code, have a delay exit time and leave the house. On re entering the house you expect an entry time to get to the keypad to disarm the system.

If an intruder breaks into the house, you expect the alarm to respond to the room or door sensors, sound the sirens, and flash the light and dial out the alarm to the nominated number.

**The alarm can do much more than this basic operation, but this article will be limited to discussing the basics.**

If buying a “Deal” kit (such as LA-5486) , Jaycar gives you all the main electrical items to set up a system. You may prefer to buy a bare panel (such as LA-5511) and use your own existing sensors and sirens.

**The main items in such a “Deal” may be:**

- 1/ Panel box with alarm card
- 2/ Keypad
- 3/ Motion sensors (pir’s)
- 4/ Door switches
- 5/ Sirens
- 6/ Strobe light
- 7/ Cable.
- 8/ Battery

You have to supply the sweat, the tools; small items like screws, tape, and clips and clean up afterwards

### 3/ Some hints on a home installation.

#### 3a/ Placing.

Before drilling holes in walls have a think about where the keypad and alarm panel will live.

Put the keypad near the entry door handy to arm and disarm within the set times.

Put the alarm panel in an easy to get to place (for you to wire up and check out), but hard to find (for the bad guys to trash it). Please note that electronic panels prefer the same environment conditions as humans, they don't like getting hot!

Do not mount the panel in an adverse place ( hot and hard to get to install) such as the under roof space, unless this is well ventilated.

Think about where you can put the motion sensors to cover hallways and rooms and which areas (zones) can have a **timed entry and exit** and which zones you want **instant** alarm response.

Place your wiring runs up into the ceiling or wall cavities or run the wiring in conduit or in the skirting board cavities, the method depending on how the building is constructed.

Don't run the zone or keypad wires alongside any power cables for any great distance for fear of interference or false alarms.

If you have 6-core cable but might be using only 2 or 4 of the cores don't cut the spare ends off! Tuck them into the pir or switch space; you may need them later when you change the system!

#### 3b/ Power.

The alarm panel needs a supply of power. The low voltage plug pack can be placed in a 240-volt outlet convenient and the 16-volt supply then cabled to the alarm.

The plug pack Jaycar supply is a three-wire earth lead type. The earth wire **MUST** by regulation be connected to the panel earth point for safety. This can then take the place of the earth wire link to water pipe that Avgad mentions in the installation handbook.

**In a proven lightning prone area, a direct separate wire to an earth pipe is recommended. Consult your local electrician about earthing rules in your area.**

#### 3c/ PIR Sensors

When placing pir's please don't mount them upside down! They "see" downwards and scan from side to side out the little window and are not much use staring only at the ceiling cracks.

Pir's and door switches are connected with cables and you wind up with a bunch of these back at the panel. Put tags on the cable ends as you feed them into the box, so you know which is which. You may decide to use pir's only and forget using door/window switches, that's fine.

The alarm does not care, so long as the loop presented to the zone terminal is closed circuit when "safe" and opens when "tripped". You may elect to wire back to the panel only the "alarm" contact and not use the tamper contact, or you may wire all tamper contacts in a loop to a separate zone programmed as a "24 hour" alarm. That is fine as well.

For simplest connection **DON'T** use resistors and just connect four wires, two for power and two for the alarm contacts. Resistors may be used later when you understand why, or if they are needed. Simple 4 wire connection will suit the default program configuration.

Eye-spy PIR sensor units may have built in resistors that are pin selected. You may set these for both alarm contact and tamper contact separate, with the resistor switches set to "OFF," **or**, "two pole" alarm and tamper combined with resistor switches set to "on" ( reprogram panel to suit!).

You may use your own non – resistor PIR sensors and may connect these with no resistors, or, you can use the spare resistors supplied with the panel if you prefer and work end of line or double pole mode to combine the alarm and tamper contacts.

#### 3d/ When using End Of Line resistors.

The essential thing to understand is that the alarm panel when received is set for the input zones to have closed loops and, **NO** end of line resistors. **Do not fit them at first!**

The program can be changed once you are sure of what you are doing, particularly if double pole or dual zone options are selected.

When EOL's are introduced, or double pole wiring, **you have to tell the alarm panel to change its program** for those zones. If you do not, it may not arm, the alarm sounder in the keypad will run continually and the alarm panel generally will not work properly.

Set program line **029 OFF** in a zone where **any** resistor is used. Set program line **030 ON** in a zone where “**double pole**” mode is used. **Note: Dublo** models such as 2008Dub are a bit different in the way lines 140, 141 etc handles EOL, *see further on in section 5.*

You can have several pir’s and switches looped to one zone input. The alarm does not care; all it cares about is seeing a closed loop, or, the correct end of line resistances where this is used.

All you have to do is know is what sensors are connected to which zone, so that an alarm or log file report can make sense.

### 3e/ Zone Modes (how the panel reacts).

Note that the default program sets Zone 1 as a full entry delay, exit delay (front door), Zone 2 as an exit delay but no entry delay (secondary exit).

Zones 3, 4, 5,6,7,and 8 are “instant”.

Your main entry point should use a full exit and entry time out zone.

See program line 021 and 022 (104,108 Dublo) for setting delay type and 060 and 061 for the time value.

Any zone which may be affected by your departure should at least have an exit delay mode.

See program line 023 (112 Dublo) for “side door” (follower) mode.

Study the “zone features” and “system features” in the Avgad handbook to see the type of zone and possibilities or operation that **you can program** in or out.

### 4/ How do I connect the alarm for basic operation?

While the Avgad alarm panel is a very complex device it can be installed in a home by following some simple steps. The card may be used in a complex way but it only needs a basic method of connection and this minimal approach is all that is needed in a lot of home installations.

There are some connections **that must** be made to operate the alarm, and then the rest that **may be** made depending on what you want to do.

#### 4a/ The essential connections that must be made are:

1/ the **keypad**, four wires between the keypad and the card, two power and two data. These are battery plus “+V”, battery minus “-V”, terminal “YE” and terminal “OR”.

2/ the **zone terminals**, 8 wires, (1,2,3,4,5, 6,7,8) looped to battery –, “-V”

3/ the **AC supply**, two wires, nominal 16v from the approved wall plug pack supplied, to the terminals “AC 16V”, connect either way around. Connect the third earth wire to the earth terminal.

4/ the **standby battery**, two wires, the red (positive) and black (negative)flying leads.

That is it!. With these connections made and power applied, the system is functional and will respond to keypad commands for arm and disarm, and can be pre instal tested and programmed.

#### 4b/ The connections that may be made are:

5/ outputs to **sirens, bells (12 volt devices).**

6/ output to **phone** line.

7/ outputs to **sound cards, flashing lights, relay devices.**

8/ connection or remote arm/disarm **key or wireless** control

9/ **tamper** loops

10/ additional **keypads**

### 5/ What to do when first powering up.

**Complete the connection of the keypad and low voltage supply (items 1/, 2/, 3/, in section 4a/ above), loop all the zone terminals to v- with temporary wires.**

**Power up the system by switching on the ac power.**

The system will boot up, LED keypads will show a succession of symbols and the **green “status”** light should settle. LCD Pro keypads will show text.

The LED keypad may then show an “L” (no battery) and “h” (set my time). LCD keypads will show “system disarmed”, “set panel time” and “low battery”. Ignore this and enter the default code 1,2,3,4. The system should arm with **the red armed** light steady. Try breaking some zone loops to test trip the system. Zones 1 and 2 will not respond UNTIL the EXIT time has elapsed.

Other zones will trip the panel immediately. The keypad will respond with beeping noises, reset the trip by entering 1234. The keypad will indicate the number of the zone tested.

If all is well connect the battery (**item 4/**) making very sure that red is on the positive battery terminals and black the negative. The metal heatsink on the card may get warm as charging commences.

#### **Power down the system, AC and DC.**

Next step is to connect the zone sensor wires (remove the temporary loops) and the 12v supply to the sensors. Power the system up again. Assuming you have no end of line resistors and nobody is triggering a sensor you should be able to achieve a steady status light and then arm and disarm the system. If you cannot get a steady status, or the system refuses to arm, the LED or LCD may indicate the zone(s) that are involved. Try a long press of key 3 to report on any troubled zones.

Either you have done something wrong (try again), or, you have got a dud wire connection (fix your dodgy wiring) or, the program is not set to default (reset to default by using the Installer Programmer), or, heaven forbid! the panel is faulty (very, very, unlikely).

If the keypad is dead and the fuse at the bottom of the card is blown (or electronic fuse hot), you have a short in your 12-volt wiring. Fix the your wiring problem, replace the fuse and power up again. Achieve a steady status light and confirm the ability to arm and disarm.

*Where any “end of lines resistors” are used, program 029 ‘off’ (140 ‘on’ Dublo) for those zones. If double EOL “two pole” are used, program 030 ‘on’ (144 ‘on’ Dublo) for those zones.*

#### **Power the system down, AC and DC.**

Finally connect up:

1/ your **strobe light**, strobe positive to a 12 volt positive source, strobe negative to the SLO terminal. Include in the wire from the SLO terminal a line fuse of 1 amp to protect the panel from short circuit of the wires or strobe. (**Program 039 (Dublo 180/181) ‘on’ for all zones**).

2/ **your sirens and screamers**. Bell units will run from the default program, connect to the panel with **plus wire to “SIR”** terminals and **minus wire to the center “common”** terminal. Loudspeaker sirens and most piezo screamers will operate from the *alternate programmable option “siren”* modulated output. Check **program line 036** (Dublo 168/169) has zones entered and **program line 072 (1) is turned on for “bell”, or off for speaker/piezo sirens**. *If your panel then operates strangely, wont trip on zones or the keypad stops functioning upon connecting sirens, try powering the plus leads of the sirens from battery plus instead of SIR1 and SIR2. The negative sirens leads can be left on the SIR negative terminal.*

3/ your **phone** line if needed, there are several ways to connect depending on the mode of communication used. Simplest method is to piggy back across the exchange line for dial out only. See my “workshop notes” for endless detail about phones, software and remote contact.

4/ Lastly, you can change the user code from the default 1234 to something else, possibly set up several user codes. The keypad allows you to operate the alarm and test the system in different ways with the in-built led and audible sounder providing further information. See my workshop notes or the handbook supplied for more detail on how to do that.

#### **Hint: to enter Programming mode,**

With system disarmed, hold down key 8 for a long press, let go and enter 1,9,9,4. Keypad should then show a “P” (text with **PRO 707** keypad). To look at an address line 8 bit register, just enter the line number E.G. 020 (**100 Dublo**). The panel will then display in sequence what is turned “on” in that line, like 1,2,3,4,5,6,7,8. If the response is just a “-“ the line is empty.

To change a line content, **OVERWRITE** what you require. Example, if you wanted to omit zones 4 and 6 from being “in use”, while in the “P” mode, enter 020 (**100 Dublo**) and then overwrite immediately 1,2,3,5 7,8( **and # for PRO707**). The keypad will respond with a “U” for update (or display changes **PRO707**). Recheck line 020 (**100 Dublo**) to see the change really took place. Use a long press of key 9 to exit program mode (or **999# PRO**).

#### **6/ Testing of systems.**

**Zone testing;** This is the “walk through” mode.

Hold down button “7” **but only 15 seconds after disarming**. An “F” will be displayed on keypad (or “**fault find**” mode PRO707). User code to get out.

Open and close each zone, keypad will beep once on opening and three times on closing.

**Siren test**, hold down button “1”. Sirens will give a short scream.

**Display zone status**, hold down button “3”, keypad will display troubled zones.

**Dialler test**, To show “follow me” number, hold down button “6”.

Dial out all numbers, hold down “6”, then hold down “7”.

**Strobe and Communicator test**, press the \* button and # button together, note this is also the “PANIC” alarm mode and your base station (if used) will be notified by the panel dialling out!

**Battery test**, turn off the AC power, LEDS should blink on keypad.

Do a siren test and do system arm and disarm. If the “L” shows immediately on the keypad suspect the battery condition.

Measure the battery voltage. With AC power applied voltage should be range 13.5 to 14.0 volt. With AC power off battery should hold above 12.0 volt during testing.

**Chime**, if energised at 028 (**136 Dublo**). When a zone is broken, the keypad will chime a number of times as set at 068.

You can set features in programming to give **system prompts**:

070-1 siren beep on arming

070-2 keypad beeps on disarming

070-3 keypad beep on entry

070-4 keypad beep on button press

071-3 keypad beeps on exit

071-4 show troubled zone

073-1 show troubled zones at disarm

## **7/ Where do I find more information?**

For concise information, keypad-operating instructions, connection diagrams and programming tables refer to the Avgad easyloader ‘Installation and Operation manual’ and Operators Handbook. Note there are panel software level Versions ranging from 2.09 through 3.00, Series 3 versions, PRO versions, Dublo versions, so ensure the handbook you are looking at matches the panel you are looking at. Hint: panel ID is on the shield can over the processor chips in the center of the circuit board, or on a sticker on the pcb.

As the alarm panel is a complex device there are plenty of ways of getting into trouble and the dual mode keypad with its hold down button operation to access operating modes can sometimes take a bit of getting used to for a first time operator.

**For more hints, advice, and FAQ’s** on what to do when it all goes pear shape, refer to my excellent workshop notes “Avgad workshop hints” which are updated continually. These are available from Jaycar shops, or the *Jaycar web site (primer button)*, or, contact the writer by E-mail or phone.

## **8/ Phone dial in DTMF (where fitted!)**

The panel can be contacted by mobile or land line phone and commands issued by using the number buttons and the # button.

Briefly, the panel can be armed and disarmed, when normal or tripped, can stop a dial out of alarm and can cause an output to toggle for remote control.

A dial in will cause the panel to pick up the line and issue a “hullo” set of tones.

If a valid code number is sent finished with an #, the panel will lock into DTMF mode.

If no code is heard the panel will assume a modem is calling and lock into modem mode.

Once the desired transactions are completed the panel can be “kissed off” and a “goodbye” set of tones will be heard.

Consult the handbook for which number commands will cause which action.

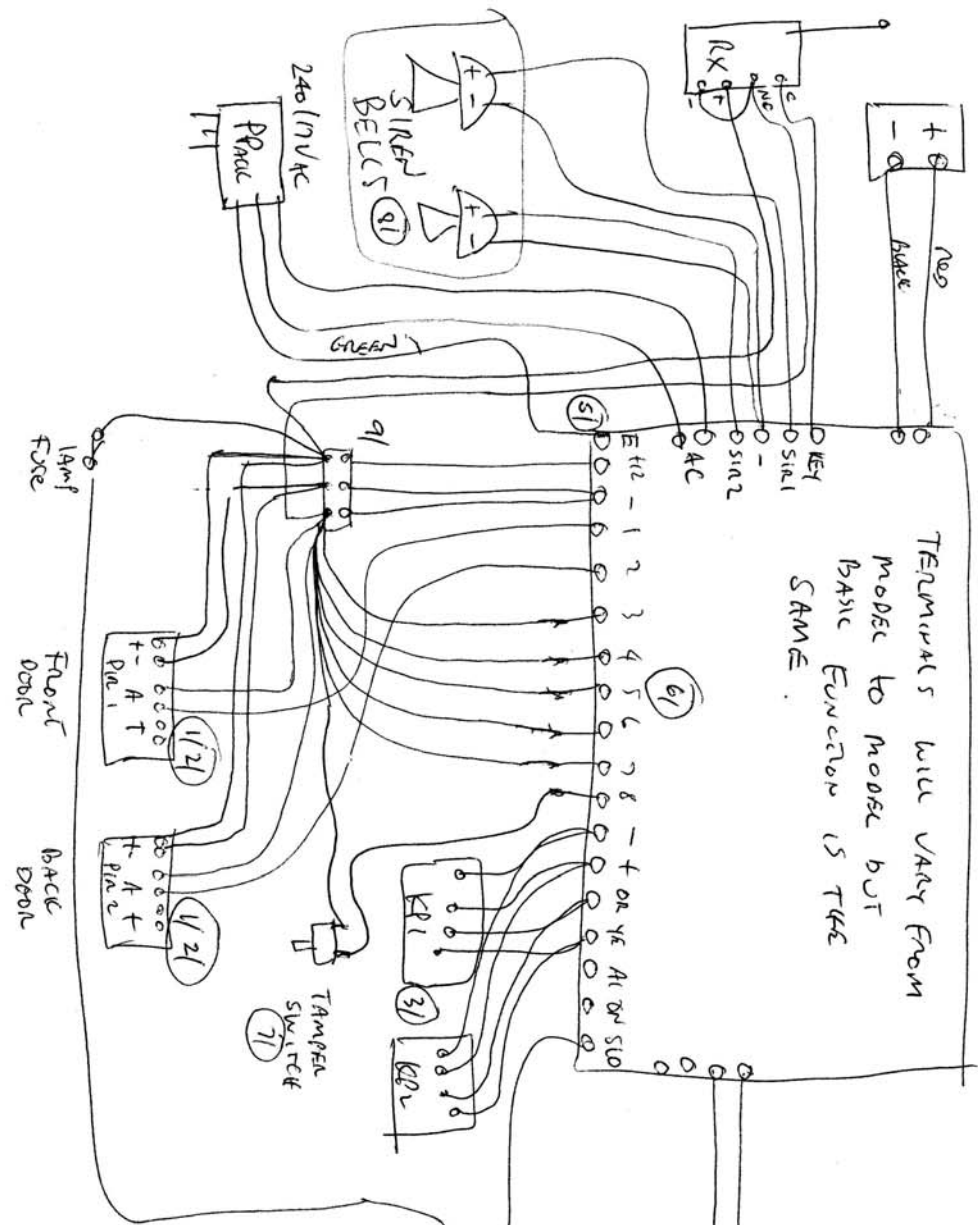
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12V BATTERY

GENERAL AVCAM CONNECTION DIAGRAM  
868 | 2008 | 2004  
How to connect stuff up



TERMINALS WILL VARY FROM  
MODEL TO MODEL BUT  
BASIC FUNCTION IS THE  
SAME.

- NOTES: 1 NO END OF LINE RESISTORS  
2 SET PINS TO NEGATIVE  
3/ TWO KEYPADS SHOWS  
4/ SIMPLE PIRBY BATT MODE  
5/ EARTH CONNECTION  
6/ ADD OTHER SENSORS  
AS REQUIRED!

EXAMPLE  
SDVOUR DC  
7/ IF USED  
8/ BELL = 12VDC!  
9/ HM 3194 STRAP

READ "AVCAM MADE EASY"  
"AVCAM HINTS"  
ON THE JAYCAR WEBSITE UNDER  
THE 'PILIMENTS' LINK

JAYCAR	13-01-07
MUDMAP AVCAM	A4
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