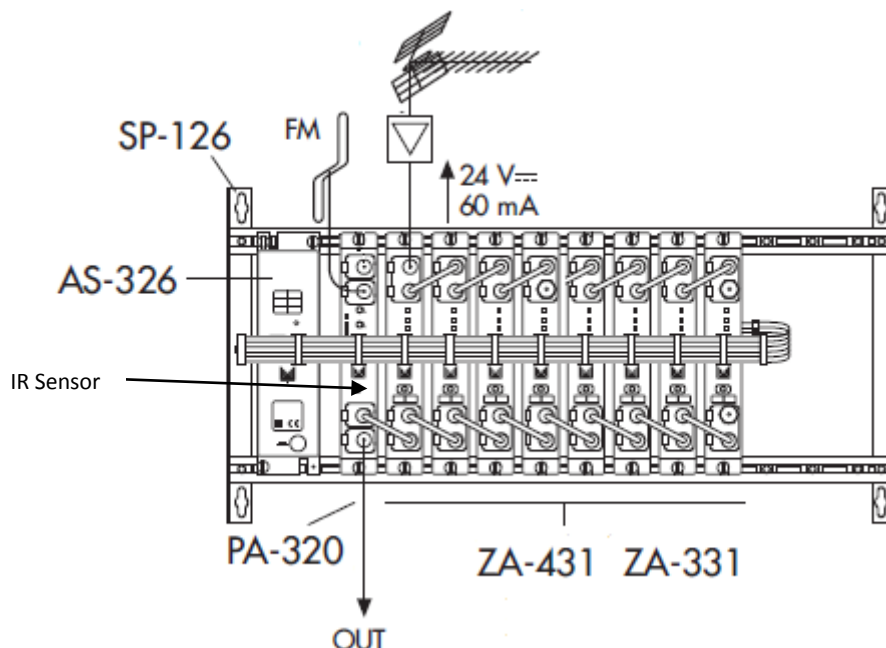


## Technote 1: Setting up ZA- 431/331 processor modules



The ZA-331 and ZA-431 are modular programmable processors for terrestrial digital, DAB+ and analogue TV. Each processor module, ZA-431 (UHF) or ZA-331(VHF), consists of a super selective mono channel filter (FOS).



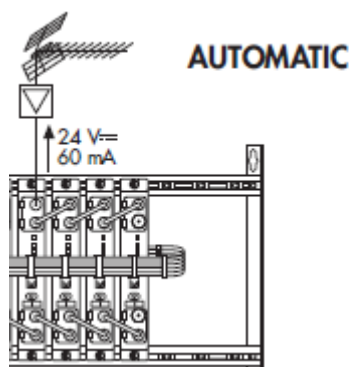
**IMPORTANT:** Layout of the modules must be as shown above. Power Supply (AS-326) must be located on the far left hand side and launch amplifier (PA-320) must be the next module in the chain. Please look at the above picture.

### Programming of Modules

Ensure the following prior to programming:

- It is necessary to connect all the modules to the support frame SP-126 (code 9050100) for the system to function.
- It is also recommended that you make the earth connection to the building using a cable with a section of at least 4 mm.
- Ensure that you have the Alcad programmer PS-003 with **firmware version 4.7** or later.
- Power supply/control cable must be plugged into each module. **DO NOT ADD OR REMOVE** modules without disconnecting mains supply power from wall outlet. Always disconnect the equipment, and then reconnect it to the mains supply so that the amplifier recognises the new module. Failure to do so can cause equipment to fail.

The ZA-431 and ZA-331 processors can feed preamplifiers via the input. Connect the output of the preamplifier to the input of the ZA that will pass up to 24VDC 60mA automatically.

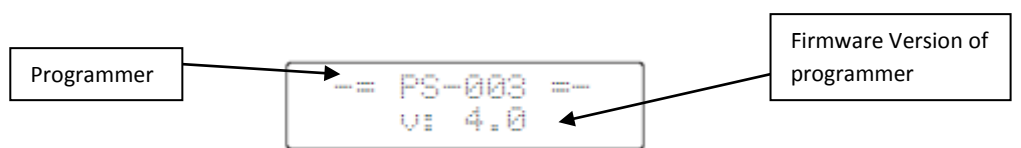




If an antenna without preamplifier is connected, the ZA module will detect there is no preamplifier and will automatically deactivate the power supply.

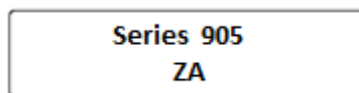
## 1.0 SENDING DATA TO THE PA AMPLIFIER

### 1.1 Programming of processor


To start programming the equipment, press any button on the PS-003 programmer to turn on the programmer. The following screenshot below will appear.

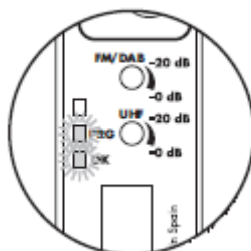
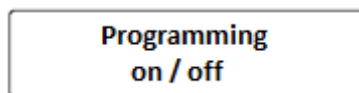


You must then select the model you are trying to program. Scroll left  or right  using the arrows until you get screenshot below



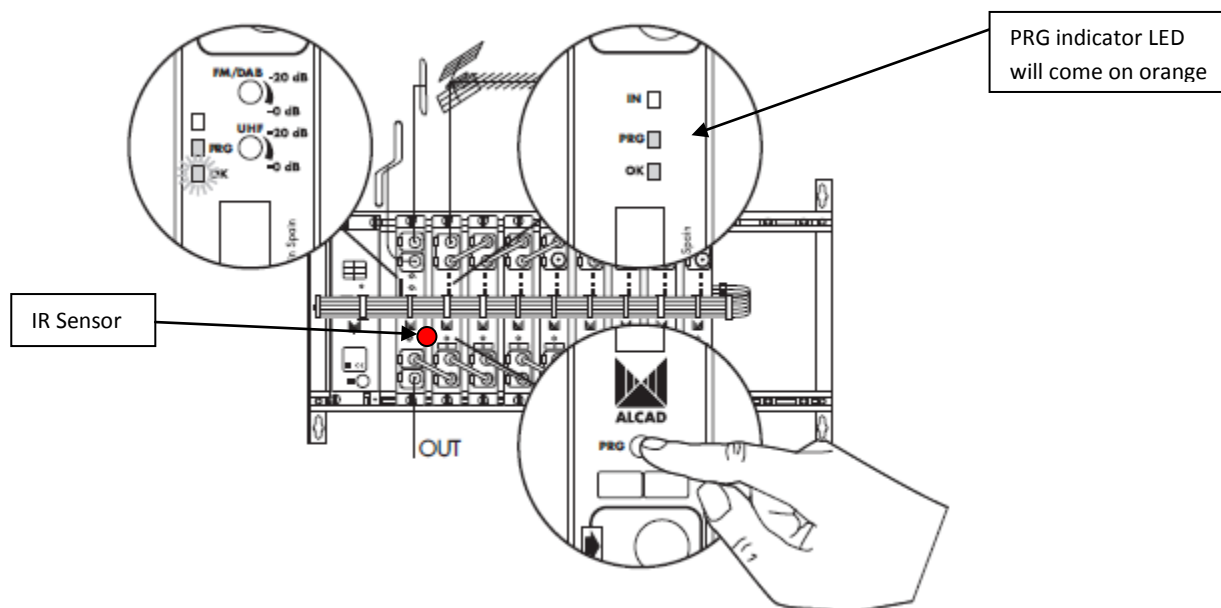
You will then need to press arrow down  and you will then see the screen “

Programming on/off “ in the programmer. Press .

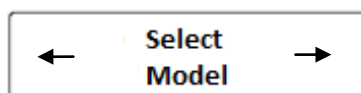


Then wait until the PRG indicator starts blinking. This indicates that the equipment is waiting to receive data and has become active before beginning to program each module. Then press the red PRG on the processor that can be seen below.

## CAUTION: AIM PROGRAMMER TO IR SENSOR LOCATED ON PA-320



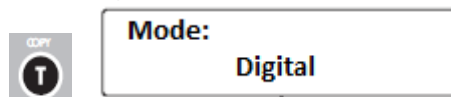
This will activate the processor to be programmed. Press arrow down on programmer to get the following screenshot.



Press arrows to select your processor either ZA-331 or ZA-431 then press arrow down

You should see the screen below which gives you the option Analogue or Digital. Select

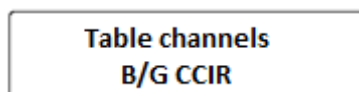
Digital and press transmit button



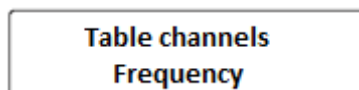
You will then see the screen.




down 5 times to scroll down until you see the screenshot shown below.



Using the arrow  navigate to the screen below "Table channel frequency".



Then press the down arrow  4 times until you see the screen below which requires you to enter the centre frequency of the carrier you are processing without the offset.

You increase/decrease the values using the arrows





The Australian Analogue/Digital frequency table can be seen on the next page.

# AUSTRALIAN DIGITAL/ANALOGUE FREQUENCY TABLE

Band	Channel	Aust. Ch.	Picture carrier MHz	Digital Freq. MHz	Sound carrier MHz
I		0	46.25		51.75
		1	57.25		62.75
		2	64.25		69.75
Low S-Band (SI)	S2		112.25		117.75
	S3		119.25		124.75
	S4		126.25		131.75
	S5		133.25		138.75
	S6		140.25		145.75
	S7		147.25		152.75
	S8		154.25		159.75
	S9		161.25		166.75
	S10		168.25		173.75
III		6	175.25	177.5	180.75
		7	182.25	184.5	187.75
		8	189.25	191.5	194.75
		9	196.25	198.5	201.75
		9a	197.25	205.5	202.75
		10	209.25	212.5	214.75
		11	216.25	219.5	221.75
		12	223.25	226.5	228.75
High S-Band (SI-1)	S11		231.25		236.75
	S12		238.25		243.75
	S13		245.25		250.75
	S14		252.25		257.75
	S15		259.25		264.75
	S16		266.25		271.75
	S17		273.25		278.75
	S18		280.25		285.75
	S19		287.25		292.75
	S20		294.25		299.75
Hyperband (SII)	S21		303.25		308.75
	S22		310.25		315.75
	S23		317.25		322.75
	S24		324.25		329.75
	S25		331.25		336.75
	S26		338.25		343.75
	S27		345.25		350.75
	S28		352.25		357.75
	S29		359.25		364.75
	S30		366.25		371.75
	S31		373.25		378.75
	S32		380.25		385.75
	S33		387.25		392.75
	S34		394.25		399.75
	S35		401.25		406.75
	S36		408.25		413.75
	S37		415.25		420.75
	S38		422.25		427.75
	S39		429.25		434.75
	S40		436.25		441.75
	S41		443.25		448.75

Band	Channel	Aust. Ch.	Picture carrier MHz	Digital Freq. MHz	Sound carrier MHz
UHF	E 21		471.25		476.75
	E 22		479.25		484.75
	E 23		487.25		492.75
	E 24		495.25		500.75
	E 25		503.25		508.75
	E 26		511.25		516.75
	E 27		519.25		524.75
		28	527.25	529.5	532.75
		29	534.25	536.5	539.75
		30	541.25	543.5	546.75
		31	548.25	550.5	553.75
		32	555.25	557.5	560.75
		33	562.25	564.5	567.75
		34	569.25	571.5	574.75
		35	576.25	578.5	581.75
		36	583.25	585.5	588.75
		37	590.25	592.5	595.75
		38	597.25	599.5	602.75
		39	604.25	606.5	609.75
		40	611.25	613.5	616.75
		41	618.25	620.5	623.75
		42	625.25	627.5	630.75
		43	632.25	634.5	637.75
		44	639.25	641.5	644.75
		45	646.25	648.5	651.75
		46	653.25	655.5	658.75
		47	660.25	662.5	665.75
		48	667.25	669.5	672.75
		49	674.25	676.5	679.75
		50	681.25	683.5	686.75
		51	688.25	690.5	693.75
		52	695.25	697.5	700.75
		53	702.25	704.5	707.75
		54	709.25	711.5	714.75
		55	716.25	718.5	721.75
		56	723.25	725.5	728.75
		57	730.25	732.5	735.75
		58	737.25	739.5	742.75
		59	744.25	746.5	749.75
		60	751.25	753.5	756.75
		61	758.25	760.5	763.75
		62	765.25	767.5	770.75
		63	772.25	774.5	777.75
		64	779.25	781.5	784.75
		65	786.25	788.5	791.75
		66	793.25	795.5	798.75
		67	800.25	802.5	805.75
		68	807.25	809.5	812.75
		69	814.25	816.5	819.75

Once you have the desired centre frequency press transmit  and you will see the PRG LED on the processor you are programming flash twice. This indicates it is receiving the settings from the programmer. Now press down arrow  to get to the next screen below.



**Bandwidth**  
7 MHz

**Bandwidth setting for Australia MUST ALWAYS be set to 7MHz.** If setting is set to 8MHz change to 7MHz and then press transmit . Then press down arrow  to get to the next screen below




**Offset**  
+ 1 / 6 MHz

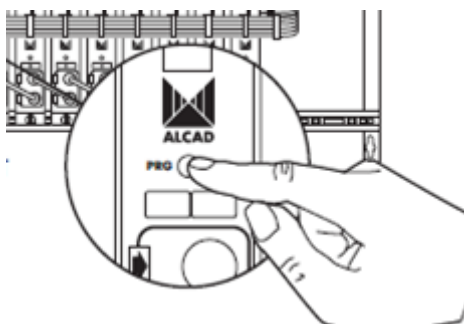
Please note offsets are required on some channels. e.g. Broadcaster Nine Metro requires 191.625 MHz so would set offset to + 1/6.  
For offset values look at table below to give you the decimal Australian offsets.

Fraction Offset	Decimal Offsets
+ 1 / 6	+0.125
+ 2 / 6	+0.250
+ 3 / 6	+0.375
- 1 / 6	- 0.125
- 2 / 6	- 0.250
- 3 / 6	- 0.375

Press transmit  to send the information then press down arrow  to get to the next screen below

**Adjust Levels**  
dB

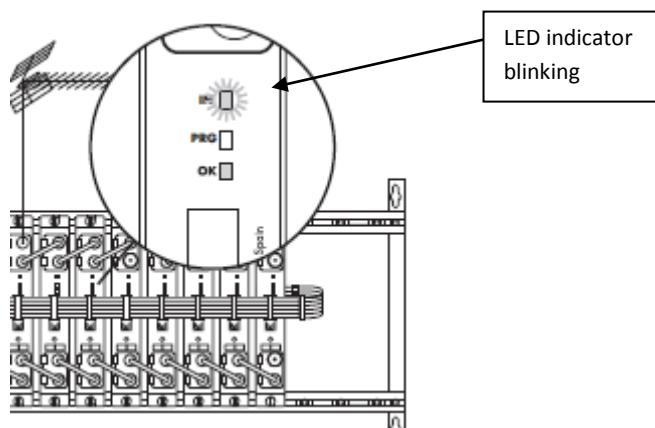
This is the manual adjustment of the power output and is possible in steps of **0.5, 1, 2 or 3 dB**. Use the  arrow  buttons to select desired level offset. Press transmit  to send the information. You will then need to press the PRG button on the processor to exit, as you have successfully programmed the processor.




## 2.0 Auto-Adjustment Feature for power levels

**IMPORTANT:** For this feature to work correctly INPUT power to all processors must be within 70dB $\mu$ V to 50dB $\mu$ V for DVB-T (Digital transmission) and 80dB $\mu$ V to 60dB $\mu$ V for Analogue.

If any of the channel powers within the headend exceeds the range of 70dB $\mu$ V to 50dB $\mu$ V for DVB-T and 80dB $\mu$ V to 60dB $\mu$ V for Analogue, input level indicator of the ZA module will continue to blink. The feature will not auto balance.



To perform an equalisation of all the processors, select “Automatic level adjust” in the programmer and press  transmit. The digital channels will be adjusted 10 dB below the analogue channels. Once the auto- adjustment feature has finished, the equipment will switch off all the “IN” LED indicators. This feature takes approximately 6 minutes to complete.