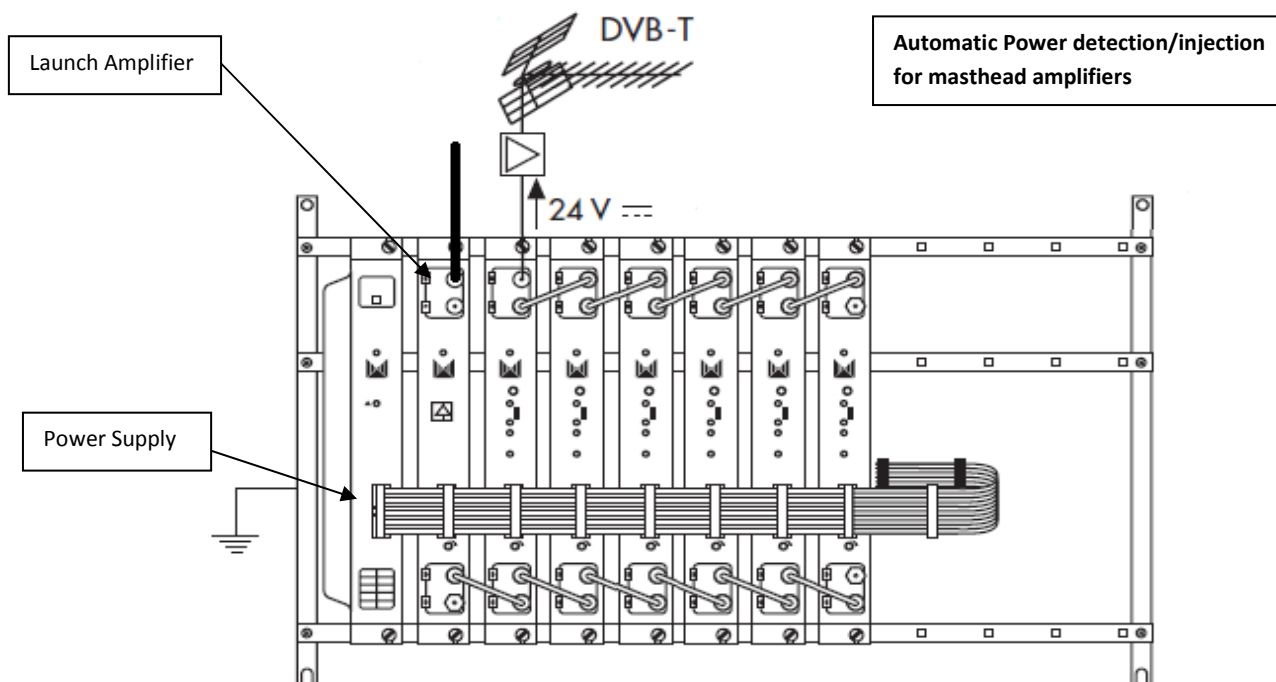


## Technote 4: Setting up TO-559 Stereo Transmodulators

The equipment converts DVB-T digital TV programs into terrestrial band, analogue TV channels. Stereo Trans-modulators comprise SAW filtering for maximum harmonic reduction and true VSB response for adjacent channel operation.



**IMPORTANT:** Layout of the modules must be as shown above. Power Supply (FA-310/312) must be located on the far left hand side and launch amplifier (PA-720) must be the next module in the chain. Please look at the above picture.

## **AIM PROGRAMMER TO IR SENSOR LOCATED ON EACH MODULE WHEN PROGRAMMING**

### Programming of Modules

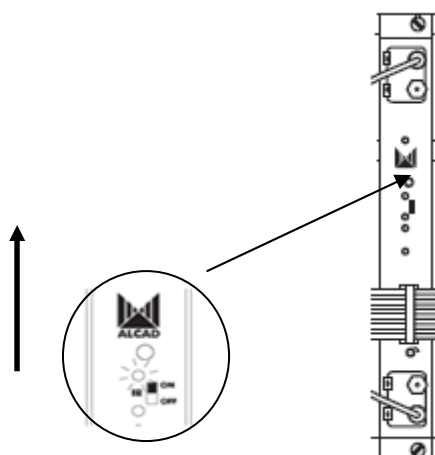
Ensure the following prior to programming:

- It is necessary to connect all the modules to the support frame SP-226 (code 9120130) 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.

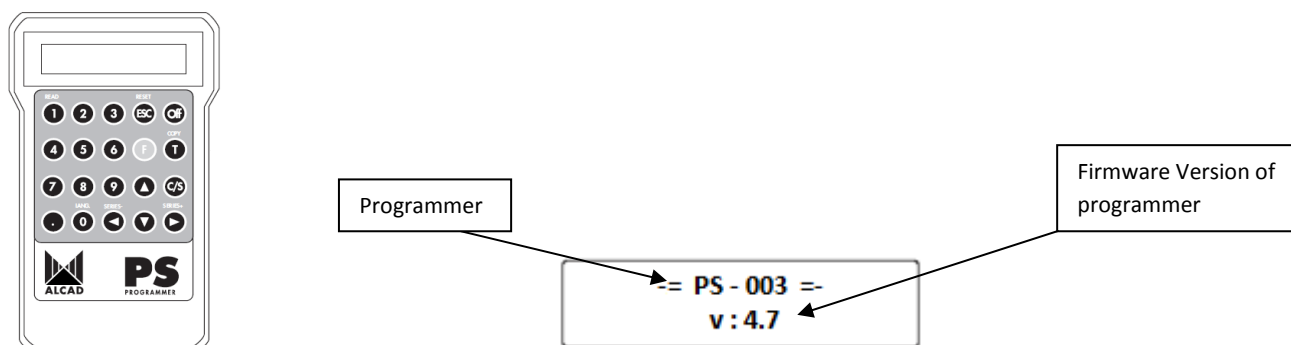




## 1.0 Programming the Transmodulator

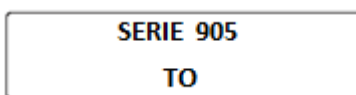
To program the Transmodulator (TO-series), place the programming switch in the ON (upward) position which can be seen from picture below. When you turn the switch in the “ON” position the programming indicator will light up. While the programming indicator remains lit, the channel processor is ready to receive data from the PS programmer. When the modulator has been programmed, programming mode should be deactivated by placing the switch in the OFF position. The programming indicator light will go out.




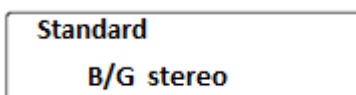
To start programming the equipment, Press any button on the PS-003 programmer to turn on the programmer. The following screenshot below will appear.



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





Press the down arrow  and you will then see “**Standard B/G stereo**” on the programmer screen. This can be seen below





This is the Analog TV standard for Australia PAL B/G. Press  the down arrow once so that you can see the screen shot as below **“Output frequency”**.



**Output frequency**  
583.25 MHz



Increase/decrease the values using the arrows   or use the numeric keypad to enter the frequency output that is desired. Ensure if you enter the value using the numeric keypad you use the decimal point. The Australian Analogue/Digital frequency table can be seen on the next page.

**NB. The TO-series allows you to set the output frequency across the Australian terrestrial frequency spectrum(45-860 MHz)as they are fully agile.**

Once you have the desired Analog output frequency press transmit  and you will see the IR LED on the module you are programming flash. This indicates it is receiving the settings from the programmer. Now press down arrow  to get to the next screen below **“Input frequency”**. This is the digital input frequency.

**Input Frequency**  
177.50 MHz

Increase/decrease the values using the arrows   or use the numeric keypad to enter the digital input frequency that is desired. Ensure if you enter the value using the numeric keypad you use the decimal point. The Australian Analogue/Digital frequency table can be seen on the next page

Once you have the entered the desired input centre frequency press transmit  and you will see the 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.

**Input Offset**  
Auto (- - /-)



# 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            |        |

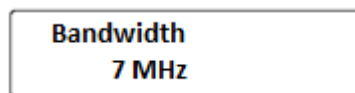


Please note offsets are required on some channels. **e.g. Broadcaster Nine Metro requires 191.625 MHz therefore set offset to + 1/6.** For offset values look at table below to give you the decimal Australian offsets.





Use the left and right arrows   to change to the offset required.

| Fraction Offset | Decimal Offsets |
|-----------------|-----------------|
| + 1 / 6         | +0.125          |
| + 2 / 6         | +0.375          |
| + 3 / 6         | +0.50           |
| - 1 / 6         | - 0.125         |
| - 2 / 6         | - 0.375         |
| - 3 / 6         | - 0.50          |
| (- -/-)         | 0               |



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



**NB. Bandwidth setting for Australia MUST ALWAYS be set to 7MHz.**

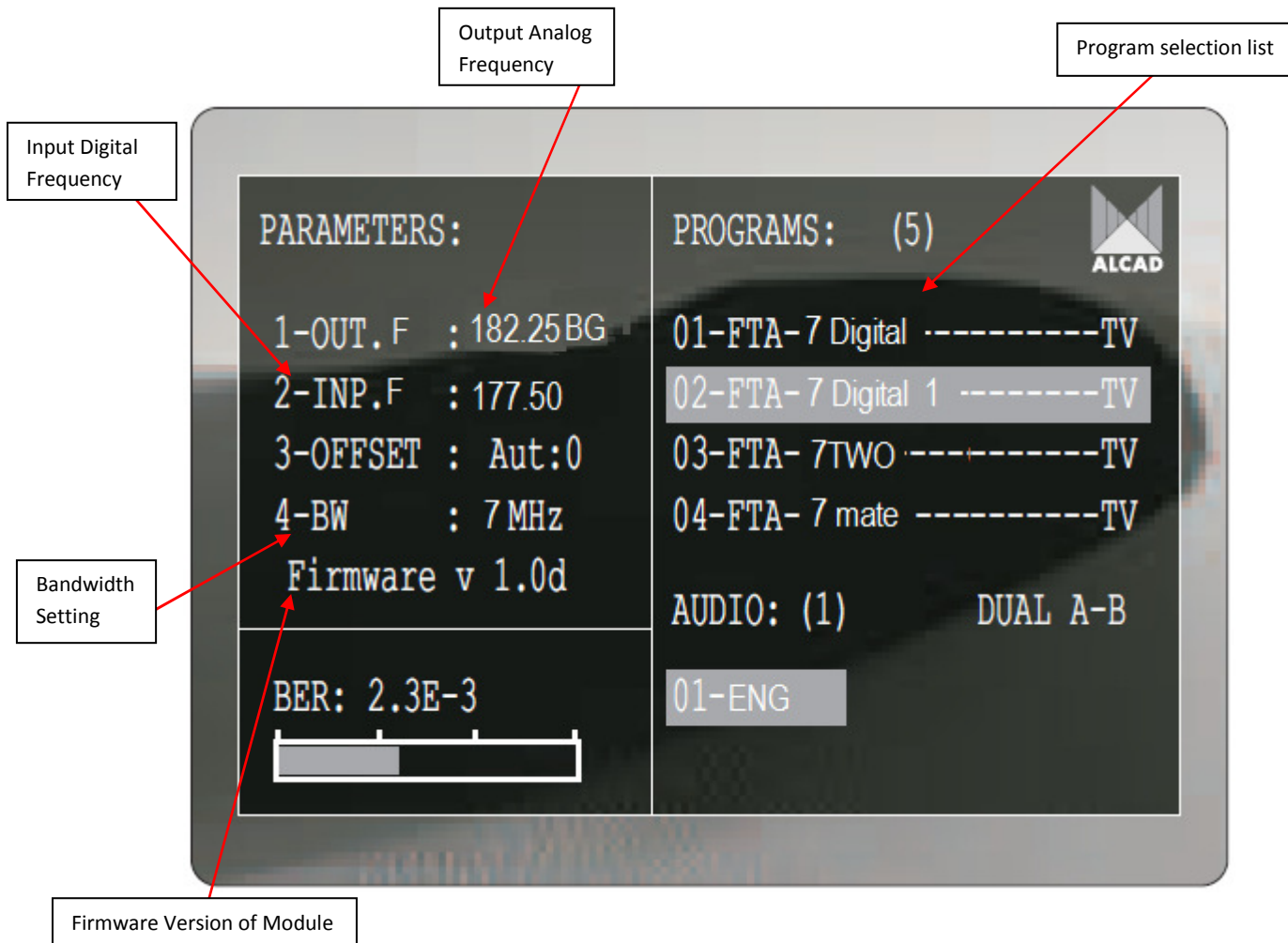
Change by using the left/right   arrows to 7MHz and then press transmit . Then press the down arrow . You will be taken to the **“Program List selection”** screen which enables you to program you wish transmodulate







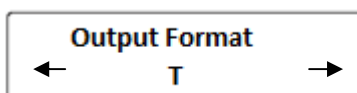
By selecting Programs List on the PS Programmer, using left  and  right arrows, you will be able to move through the program list shown on the on screen display (OSD). This way, the program shaded is selected, the shadowed program will be the selected one and it could be watched behind the OSD menu. You must be tuned into the output channel via the spectrum analyser or a TV monitor.




**NB. The handheld programmer PS-003 does not show the program pick list.**

Below is a snapshot of what the “On Screen Display” will look like.

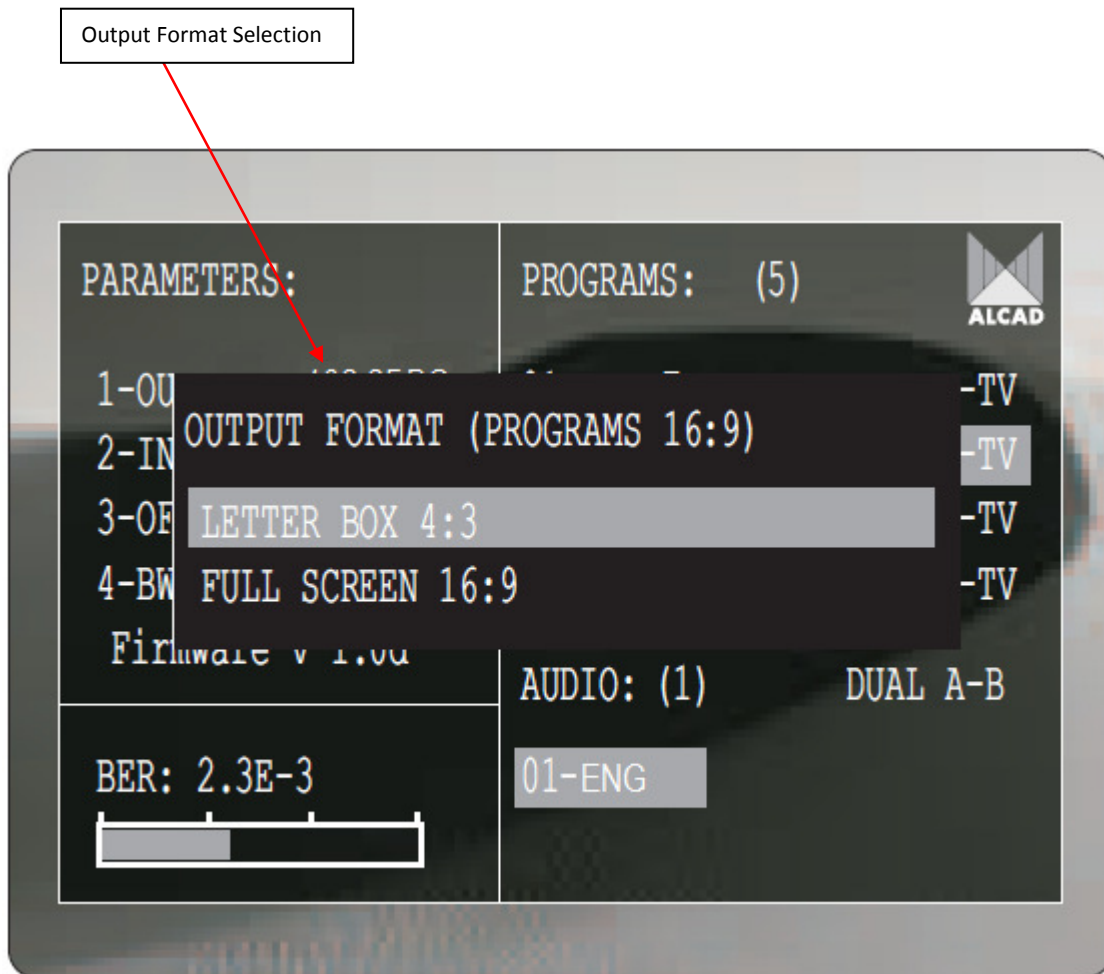




Use the left/right arrows   to move through the program list of displayed above. Once you have the desired program selected press the down  arrow twice until you see the “**Output Format**” screen then press transmit  button. This enables you to select the output format size such as letterbox 4:3 or full screen 16:9.





Then press transmit  button and the OSD will bring up a selection box with the options to select from. Use the left/right arrows   to move through the output format list of displayed on the next page.

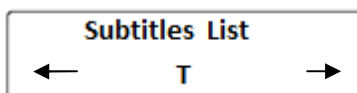
**WARNING:** This submenu is only effective when the program selected is in the 16:9 format.



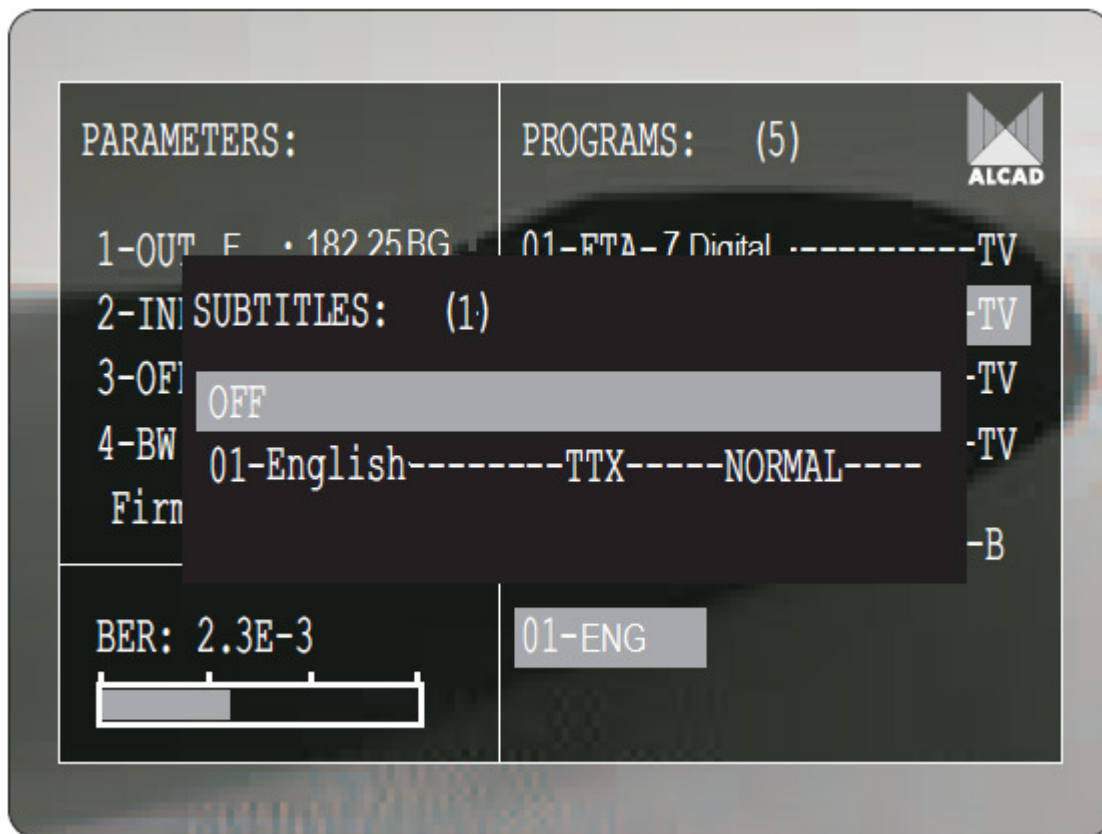
Once you have the desired audio output format press transmit  to ensure setting is sent to module, then press the down arrow  to go to the next screen below.








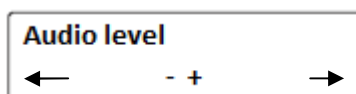
The ” **Invert Dual** ” feature allows you to switch between the audio carriers from A-B to B-A. This inversion will be displayed in the OSD menu. On a mono TV, the audio carrier, will be B instead of A. By pressing  enables the switch. Press the down arrow  to go to the next screen below




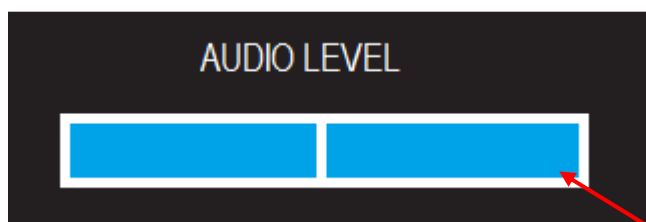




By selecting Subtitles list in the PS programmer and press the transmit  button: on the OSD, the subtitles submenu will appear. Use the left/right buttons   to move through the list of subtitles displayed. Press the transmit  button once more to close the subtitles menu. Press the down arrow  to go to the next screen below




The “**Audio level**” screen enables manipulation of the Audio Sub-carrier from the transmodulator. Use the left/right buttons   to set the audio level. You will see a bar indicator (Audio Level) on the OSD.

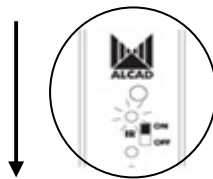


Sliding Bar Indicator



Once you have the desired audio level set press transmit  to ensure setting is sent to module.

The transmodulator has now been programmed; programming mode should be deactivated by placing the switch in the OFF position. The programming indicator light will go out.



Ensure to set power level of each module using the Phillips head variable gain controller.

