



# DA050510: 5 MHz Distribution Amplifier



## Key Features

- 5 MHz Main Input
- AGC Level Controlled
- 10 sinewave outputs plus a slave
- 2 squarewave outputs
- High channel isolation
- Low Phase Noise
- Optional second 5 MHz “Back-up” input
- Optional internal 5 MHz back-up oscillator
- Above two options automatically switched in
- Optional Alarm Relay, enabled on alarm condition
- Optional Redundancy (two units with automatic switchover)
- Available in other frequencies from 1 to 100 MHz.

## General Description

The DA050510 can be used to synchronize up to thirteen instruments (ten sinewave, two squarewave and one slave output) to a frequency reference input. The reference input frequency is 5 MHz and the output frequency is exactly the same as the input. The DA050510 incorporates AGC (automatic gain control) so that a 5 MHz input can be varied from -10 dBm to +20 dBm without the outputs changing by more than 0.4 dB. Inputs as low as -30 dBm still produce a useable output. The pure sinewave output (harmonics are typically 70 dB down) enables the DA050510 to work in the most demanding applications.

## Outputs

There are ten x 5 MHz, sinewave outputs. Each 5 MHz output is isolated from the input and each other. Therefore the reference oscillator connected to the DA050510 input is protected against load variations, short circuits etc. that may be applied to the outputs. Two additional squarewave outputs can be switched in frequency from 5 MHz, 2.5 MHz, 1 MHz, 0.5 MHz, 100 kHz and 1 pps. These outputs are ideal for instruments that do not use a 5 MHz timebase. A rear slave output can be connected to a second DA050510 (or more) to give additional outputs. See “Applications” below.

There is also a TTL alarm output. This TTL signal will show when a valid input signal is present.

## **Applications**

The DA050510 5 MHz Distribution Amplifier is ideal for use in calibration or standard laboratories, radio repair workshops or production facilities. By using the rear slave output, many DA050510's can be connected together to give multiple outputs. Over 1000 outputs can be derived from one reference input.

## **Miscellaneous Information**

The DA050510 is a highly reliable unit with an MTBF of over 60 years. The DA050510 is housed in a fully screened 19" rack mount case and operates from a 100 - 240 VAC supply (usable 90 – 260 VAC) or external 12 V DC. The DA050510 is CE marked for sale within the EEC.

## **Options**

Various options for the DA050510 are shown below. Note that not all options can be fitted at the same time. Consult Precision Test Systems for more details.

The DA series can be modified upon special request to work at different frequencies than 5 MHz. For example the DA151510 accepts a 15 MHz input and has 15 MHz outputs. Other frequencies to 100 MHz can also be accommodated.

Option 01 is an Alarm Relay that is activated when the 5 MHz input signal is present. Two changeover relay contacts can be used to raise an alarm should the input signal or power be lost. A TTL alarm output is provided as standard.

Option 02 is a redundancy option allowing two DA050510's to be operated together giving a fully redundant output. If one unit fails, the outputs will be sourced from the second unit. The option includes a second DA050510.

Option 03 is an internal 5 MHz back up oscillator. Should the input 5 MHz fail, the internal oscillator switches in.

Option 05 deletes five outputs and one squarewave output. So this is a negative option that reduces the price.

Option 06 adds a second 5 MHz "back-up" input. Normally the first input is used as the reference for all the outputs. If this first input fails, the second "back-up" input is automatically switched in and used as the reference.

Other models in the series include:

|              |   |
|--------------|---|
| DA051010:    | 5 MHz input with 10 x 10 MHz outputs and 2 x squarewave outputs                       |
| DA051010     | 5 MHz input with 10 x 10MHz outputs and 2 x squarewave outputs                        |
| DA050510:    | 5 MHz input with 10 x 5 MHz outputs and 2 x squarewave outputs                        |
| DA050510-04: | 5 MHz input with 5 x 5 MHz outputs and 5 x 5 MHz outputs, plus 2 x squarewave outputs |
| DA101010:    | 10 MHz input with 10 x 10 MHz outputs and 2 x squarewave outputs                      |
| DA101030     | 5 MHz input with 25 sinewave outputs and 5 x squarewave outputs                       |
| DA101530     | 5 MHz input with 25 x 15 MHz outputs and 5 x squarewave outputs                       |
| DA1-100-10   | 1 MHz to 100 MHz wideband input. Up to 15 outputs, same frequency as the input        |

## **Special Modification**

The DA050510 can be modified to customer's specific requirements. If the customer requires a feature not already mentioned in this brochure, then the customer should consult Precision Test Systems to see whether that feature can be added for a nominal charge. Many of the existing options started out as customers specific requests. These "specials" have now become standard options.

## DA050510 SPECIFICATIONS

| Specification Parameter   | Specification  | Comments   |
|---|--|--|
| <b>Input</b>  |  |  |
| Frequency   | 5.000000 MHz   | 50 Ω BNC Connector on rear panel   |
| Bandwidth (-3 dB)   | 250 kHz  |  |
| Input Impedance / VSWR  | 50 Ω / < 1.15 @ 5 MHz (0 dBm input)  | < 1.30 @ 5 MHz for option 03   |
| Input Level   | +20 dBm to -10 dBm   | Output Changes by < 0.4 dB   |
| <b>Sinewave Outputs (10)</b>  |  |  |
| Output Waveform   | Sinewave   | 50 Ω BNC Connector on rear panel   |
| Number of Outputs   | Ten  | Options for 5 or 15 outputs available  |
| Output Frequency  | Exactly the same as the input frequency  | Subject to the DA050510's jitter spec  |
| Output VSWR   | < 1.5: 1 @ 5 MHz   |  |
| Output level  | From 0 dBm to > +13 dBm<br>Factory default setting is +10 dBm  | Each output factory adjustable. Specify output level when ordering   |
| Harmonic Distortion at 5 MHz  | -65 dBc (typically -70 dBc)  | Output set to +10 dBm  |
| Jitter (1 second, Allan Deviation)  | < 2 ps rms   |  |
| Channel to channel isolation  | > 40 dB  | Typical 45 dB to 60 dB   |
| Input to Output Isolation   | > 85 dB  | Typical 86 dB to 105 dB  |
| <b>Squarewave Outputs (2)</b>   |  |  |
| Output Waveform   | Squarewave   | 50 Ω BNC Connector on rear panel   |
| Level   | 0 - 5V (open circuit) 0 - 2.7 V (50 Ω)   | TTL Compatible   |
| Frequency   | 5, 2.5, 1, 0.5, 0.1 MHz, and 1 pps   | 1 pps = 1 pulse per second (1 Hz)  |
| Risetime  | < 50 ns  | At 1 MHz   |
| <b>Slave Output (1)</b>   |  |  |
| Output Waveform   | Sinewave @ > -5 dBm  | 50 Ω BNC Connector on rear panel   |
| <b>Phase Noise (Typical)</b>  |  |  |
| At 1/10 / 100 /1k/ 10k / 100k Hz Offsets  | -95 / -120 / -139 / -141 / 145 / -148  | Lower phase noise option available   |
| <b>General</b>  |  |  |
| Power (AC)  | 100 - 240 VAC  | 50 Watts max   |
| Power (DC)  | 11-13 VDC @ 1.4 Amps   | 1.6Amps with option 03   |
| Size and weight   | 483 x 300 x 44 mm and 4.6 kg   | Width x Depth x Height   |
| Ambient Operating Temperature   | -10°C to +50 °C  |  |
| <b>Options</b>  |  |  |
| Option 01   | Dual changeover alarm relay contacts   | Plus two 8V logic alarm outputs  |
| Option 02   | Redundancy   | Requires two units   |
| Option 03   | Internal Backup 5 MHz oscillator   | Activated if input signal/power is lost  |
| Option 06   | Second "back-up" 5 MHz input   | Automatically switched in  |
| <b>Precision Test System Contact Details</b>  |  |  |
| Precision Test Systems LTD<br>The Studio, Whitehouse Farm<br>New Hall Lane, Mundon<br>Maldon, Essex, CM9 6PJ, UK<br>Tel: +44 (0) 870 368 9608<br>Fax: +44 (0) 1245 330030<br>Email: uksales@ptsyst.com<br>Web: www.ptsyst.com | Precision Test Systems cc<br>Randburg<br>Gauteng<br>South Africa<br>Fax: 08651 58198<br>Email: sasales@ptsyst.com<br>Web: www.ptsyst.com | Precision Test Systems<br>14781 Memorial Drive, Suite # 981<br>Houston<br>Texas, 77079, USA<br>Tel: 1 888 876 4804<br>Fax: 1 832 201 6564<br>Email: usasales@ptsyst.com<br>Web: www.ptsyst.com |

Full specifications available from [www.ptsyst.com](http://www.ptsyst.com). Specifications and features subject to change without notice (220812)