PTS PRECISION TEST SYSTEMS

DA101530 10/ 15 MHz Distribution Amplifier

General Description

The DA101530 can be used to synchronize up to thirty instruments to a frequency reference input. The reference input frequency is 10 MHz and the output frequency is 15 MHz. The output frequency is exactly 1.5 times the input frequency. The DA101530 incorporates AGC (automatic gain control) so that a 10 MHz input can be varied from -5 dBm to +20 dBm without the outputs changing by more than 0.2 dB. The pure sinewave output (harmonics are 60 dB down) enables the DA101530 to work in the most demanding applications.

Outputs

There are twenty five 15 MHz, sinewave outputs and five squarewave outputs. Each 15 MHz output is isolated from the input and each other. Reverse isolation is > 120 dB. Channel to channel isolation is > 40 dB between any BNC, but > 70 dB between designated sets of five BNC's. Therefore the reference oscillator connected to the DA101530 input is protected against load variations, short circuits etc. that may be applied to the outputs. The five additional squarewave outputs can be independently switched in frequency from 10 MHz, 5 MHz, 2 MHz, 1 MHz, 100 kHz and 1 pps. These outputs are ideal for instruments that do not use a 10 or 15 MHz timebase. A rear slave output can be connected to a second DA101530 (or more) to give up to sixty outputs (or more). See "Applications" below.

Applications

The DA101530 10/15 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 DA101530's can be connected together to give multiple outputs

Miscellaneous Information

The DA series are highly reliable units with an MTBF of over 30 years. The DA101530 is housed in a fully screened 19" rack mount 2U high case and operates from a 115 VAC or 230 VAC supply. The DA101530 is CE marked.

Options

The DA series can be modified upon special request to work at different frequencies than 10 or 15 MHz. For example the DA151530 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 10 MHz input signal is present. Two changeover relay contacts can be used to raise an alarm should the input signal or power be lost. Two logic outputs also show the alarm status.

Option 02 is a redundancy option allowing two DA101530's to be operated in parallel giving a fully redundant output. Normally one unit is enabled. Should that unit fail; the second unit will be switched in to provide a continuous output.

Option 03 is an internal 10 MHz OXCO oscillator. In the event that the external 10 MHz input is lost, the internal 10 MHz oscillator is immediately switched in without loss of output. The internal OXCO has an aging of 1 x 10E-9 per day.

Option 05 converts some of the outputs to 5 MHz, while keeping the remaining outputs at 10 MHz. So one 10 MHz input will give both 5 MHz and 15 MHz outputs. No phase lock loops are used, so no jitter is added by the conversion from 10 to 5 MHz.

Option 06 adds a second 10 MHz input. This input is used as a backup to the first 10 MHz input. If the first 10 MHz input fails or is removed, the second 10 MHz input will immediately be used as the reference for all the outputs.

Options 7, 8 and 9 provide separate inputs operating at 5 MHz, 1 MHz and 100 kHz respectively. Each input has its own set of five outputs plus one squarewave output.

DA101530 SPECIFICATIONS

Specification Parameter	Specification	Comments
Input		
Frequency	10.000000 MHz	50 Ω BNC Connector on rear panel
Bandwidth (-3 dB)	25 kHz	
Impedance	50 Ω	
Input VSWR	< 1.13 : 1 @ 10 MHz	Input level -30 to +10 dBm
Input Level	+20 dBm to -5 dBm	Output Changes by < 0.2 dB
Sinewave Outputs (25 in all)		
Output Waveform	Sinewave	50 Ω BNC Connector on rear panel
Output Frequency	15 MHz (Exactly 1.5 times the input frequency	Subject to the DA101530's jitter spec
Output VSWR	< 2.0 : 1 @ 15 MHz	
Output level	From 0 dBm to > +13 dBm	Each output internal adjustable
Harmonic Distortion at 10 MHz	-65 dBc	Output set to +10 dBm
Jitter (1 second, Allan Deviation)	< 2 ps rms	
Output to Input Isolation	> 120 dB	Typical
Channel to Channel Isolation	> 40 dB	> 43 dB typical
Group of 5 BNC's channel isolation	> 70 dB	Measured between groups of 5 BNC
Squarewave Outputs (5 in all)		
Output Waveform	Squarewave	50 Ω BNC Connector on rear panel
Level	0 - 5V (open circuit) 0 - 2.7 V (50 Ω)	TTL Compatible
Frequency	10, 5, 2, 1, 0.1 MHz, and 1 pps	1 pps = 1 pulse per second (1 Hz)
Risetime	< 30 ns	At 1 MHz
Slave Output		
Output Waveform	10 MHz Sinewave @ > -5 dBm	50 Ω BNC Connector on rear panel
Phase Noise (Typical)		
At 10 Hz / 100 Hz Offsets	-127 dBc/Hz / -134 dBc/Hz	Measurement uncertainty ± 4 dB
General		
Power (AC)	115 VAC or 230 VAC ± 10%	
Size and weight	483 x 300 x 88 mm	Width x Depth x Height
Ambient Operating Temperature	-10°C to +50 °C	
Options		
Option 01	Dual changeover alarm relay contacts	Plus two 8V logic alarm outputs
Option 02	Redundancy	Requires two units

Option 03	Internal Backup 10 MHz oscillator	Activated if input signal/power is lost
Option 04	External 12 V DC supply input	
Option 06	Second “Back-Up” 10 MHz input	Switched in if 1st input is lost
Option 07	5 MHz input with 5 x sinewave outputs	Plus 1 x squarewave output
Option 08	1 MHz input with 5 x sinewave outputs	Plus 1 x squarewave output
Option 09	100 kHz input with 5 x sinewave outputs	Plus 1 x squarewave output

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Full specifications available from www.ptsyst.com. Specifications and features subject to change without notice (290311)