PTS PRECISION TEST SYSTEMS

DA101010-03 Crystal Reference Frequency Standard

General Description

The DA101010-03 is a 10 MHz frequency standard with built in distribution amplifier. The internal frequency reference is a high stability oven controlled crystal oscillator (OXCO). Other frequencies from 1 to 50 MHz are also available. The standard oscillator has an aging rate of 2 x 10^{-10} per day. The DA101010-03 can be used to synchronize up to twelve instruments to the OXCO reference. The sinewave outputs are very pure with harmonics 65 dB down and other spurious is >90 dB down. There is also an external frequency reference input. This could be connected to an even more stable oscillator such as a rubidium or caesium oscillator. The DA101010-03 detects this external input and automatically disconnects the internal oscillator and allows the external frequency reference to supply the sinewave / squarewave outputs. A tri-colour front panel LED shows whether the internal or external oscillator is being used, or whether there is an alarm.

Outputs

There are ten, 10 MHz, sinewave outputs. Each 10 MHz output is isolated from the OXCO and each other. Therefore the OXCO reference oscillator (or external frequency input) connected to the DA101010-03 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 10 MHz, 5 MHz, 2 MHz, 1 MHz, 100 kHz and 1 pps (one pulse per second). These outputs are ideal for instruments that do not use a 10 MHz timebase. A rear slave output can be connected to a second DA101010-03 (or more) to give up to twenty-four outputs (or more). See “Applications” below.

Applications

The DA101010-03 10 MHz frequency standard is ideal for use in calibration or standard laboratories, radio repair workshops, production facilities or telecommunication systems. By using the rear slave output, many DA101010-03's can be connected together to give multiple outputs

Miscellaneous Information

The DA101010-03 is a highly reliable unit with an MTBF of over 30 years. The DA101010-03 is housed in a fully screened 19” rack mount case and operates from a 115 VAC or 230 VAC supply or external 12 V DC. The DA101010-03 is CE marked for sale within the EEC and carries a three year limited warranty.

Options

The DA series can be modified upon special request to work at different frequencies than 10 MHz. Frequencies from 1 to 50 MHz can be accommodated.

Option 01 is an Alarm Relay that is activated should the 10 MHz outputs fail for any reason. Two changeover relay contacts can be used to raise an alarm. Two logic outputs also show the alarm status.

Option 02 is a redundancy option allowing two DA101010-03's to be operated in parallel giving a fully redundant output. A typical system consists of two Frequency Standards ("A" and "B"). The system would have ten redundant outputs. Normally the "A" unit will provide the 10 MHz output. In the event of a failure of the Frequency Standard ("A"), the "B" unit would automatically switch in and provide the 10 MHz output.

DA101010-03 SPECIFICATIONS

Specification Parameter	Specification	Comments
Internal OXCO		
Frequency	10.000000 MHz	50 Ω BNC Connector on rear panel
Stability	1 x 10^{-9} per day (2 x 10^{-10}) after 30 days	
Temperature Stability	1 x 10^{-8}	0 to 60 °C
Sinewave Outputs		
Output Waveform	Sinewave	50 Ω BNC Connector on rear panel
Output Frequency	10.000000 MHz	
Output VSWR	< 1.3: 1 @ 10 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
Phase Noise (10, 100, 10000 Hz)	-130, -140, 150	dBc/Hz @ 10,100,10000 Hz
OXCO to Output Isolation	> 100 dB	Typical
Squarewave Outputs		
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
Output 1 (Slave Output)		
Output Waveform / Frequency	Sinewave, 10 MHz @ > -5 dBm	50 Ω BNC Connector on rear panel
External Frequency Reference Input		
Frequency Input	10 MHz ± 250 kHz	
Impedance / VSWR @ 10 MHz	50 Ω / 1.15	
Input Level	+20 dBm to -20 dBm	Outputs remain flat to within ± 1 dB
General		
Power (AC)	115 VAC or 230 VAC ± 10%	30 Watts max
Power (DC)	12-13 VDC @ 1.3 Amps	
Size and weight	483 x 300 x 44 mm and 4.6 kg	Width x Depth x Height
Ambient Operating Temperature	-10°C to +60 °C	
Options		
Option 01	Dual changeover alarm relay contacts	Plus two 8V logic alarm outputs
Option 02	Redundancy	Requires two units
Option 04	Delete 5 sinewave and 1 squarewave output	Reduces cost of unit

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Full specifications available from www.ptsyst.com. Specifications and features subject to change without notice (120606)