brandywine communications

FTSU-100D

Advanced Frequency/Time Distribution Amplifier

Features

- **Network Enabled Distribution Amplifier**
- **Frequency & Pulse Inputs/Outputs**
- **Low Phase Noise Reference Frequency Outputs**
- **Fault Alarm Output**
- **1U 19" rack mount**
- **Frequency Synthesizer Option**
- **Hitless switching of reference**
- **Programmable amplitude**
- **Propagation delay compensation**

The FTSU-100D is a high performance signal distribution amplifier designed for use with Brandywine high precision time and frequency sources.

The FTSU-100D is contained in a compact IU rack-mount chassis. The FTSU accepts two sets of inputs, comprising the reference frequency (typically10MHz) , 1PPS, and status from the source. The FTSU provides automatic changeover should one of the on-line source inputs fail. Manual source select override is available on the front panel, or from the Ethernet interface.

A variety of status indicators are located on the front panel for visual feedback, together with manual controls for source selection

The reference frequency outputs are generated from a low phase noise ovenized quartz oscillator (OCXO) that is phase-locked to the reference frequency input. In the event of reference input failure the phase-locked oscillator will continue to provide referenced frequency outputs with a stability of $3X10^{-9}$ over temperature. Changeover between references is smooth with no glitch on the output.

A 10/100 baseT Ethernet interface provides full control over the functionality of the system, including reference reflection, output amplitude (on a per channel basis), 1PPS propagation delay (on a per channel basis).

User control of the unit is via a built-in Web Browser with user-friendly graphical interface, or via SNMP for system applications.

Applications for the FTSU 100D include secure communications systems, satellite ground stations, digital television broadcasting and any system requiring highly reliable frequency, and pulse rate outputs.

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FTSU-100D Specifications

Frequency Inputs

Frequency	10 MHz, +/- 5PPM
Amplitude & Impedance	0.5-1Vrms. 1Vrms nominal, 50 Ohms
Isolation	Transformer coupled
Number of Inputs	2, QMA connectors

Pulse Inputs

1PPS	2
Amplitude	1-6 Vpp
Input Impedance	50 Ohms, nominal
Number of Inputs	2
Connector Type	QMA

Fault Inputs

Number of Inputs	2
Signal Type	TTL
Active Level	Link selectable for active high or low
Action	Forces on-line changeover when active

Reference Frequency Outputs

Frequency	Same as Input, 5MHz or 10MHz
Output Level	+8 to +15dBm, short-circuit proof
Number of Outputs	8
Connector Type	QMA
Stability, without input	$3X10^{-9}$, 0 to +60C
Harmonic Distortion	-30 dBc
Cross Talk	-80 dBc
Spurious	-80 dBc
Phase Noise	See Table 1

Synthesizer (option)

Number of Outputs	8
Frequencies	5 MHz, 10 MHz or 70 MHz
Output Characteristics	Same as for Reference Frequency
Number of Outputs	8
Output Characteristics	Same as for Reference Frequency

Network Interface

Interface Type	10/100 base T
Protocols	HTTP, SNMPV1, FTP, DHCP
Connector	RJ45

Console Port

Interface Type	RS232
Parameters	115200, N, 8, 1
Connector	DB9

Pulse Outputs

Number of outputs	8
Output Level	0 V to +2.5V into 50 Ohms 0-5 V open circuit
Pulse Width	20 microseconds
Protection	Short-circuit proof
Connector	QMA
Propagation Delay Comp.	0-1 sec. in 1ns steps

Status Output (Alarm)

Type	Dry relay form C contacts Ethernet
Alarm Function	Summary of all input/output alarms (relay) Individual input and output (Ethernet)

Table 1

SSB Phase Noise@10 MHz

1Hz	-90 dBc
10 Hz	-115 dBc
100 Hz	-140 dBc
1 kHz	-150 dBc
10 kHz	-155 dBc
100 kHz	-157 dBc

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