Microsemi
Power Matters.™

DATASHEET

Multi-Channel Measurement System (MMS)

Flexibility, Reliability, and Precision

MMS 4-Channel Configuration

MMS 28-Channel Configuration

Key Benefits

- Flexibility: Can Measure Up to 28 RF Signal Inputs in a Single Chassis
- Multiple Frequency Inputs: Handles Up to Three Different Frequencies, with Eight Inputs Each
- High Resolution: Less than 100 Femtoseconds
- Low Noise Performance: Less than 1E-12 Allan Deviation at 5 MHz (1 second)
- Standard 19-inch Rack Mount Chassis
- Easily Expandable by Incorporating More Modules
- Reliable: Network-based Fault Reporting and Dual Cooling Fans
- Graphical Interface Available via Ethernet Connection to PC
- Network Based Phase Data Output
- Optional SQL Database Integrated with Stable 32

Overview

Microsemi's Multi-Channel Measurement System (MMS) is a flexible, multi-channel system that is ideal for a full production environment. This advanced instrument offers customers a cost effective way to measure the phase difference between multiple continuous wave RF signals, enabling expansion from a base configuration of 4-signal inputs to a full 28 signals in a single chassis. Chassis can be added to increase signal measurement capacity. The MMS samples all inputs once every second and computes the phase difference relative to the 32 MHz internal oscillator. The system can also be configured to measure as many as three different frequencies simultaneously, with a frequency range of 1 to 13 MHz.

Expansion is made easy by the fact that the base system is designed for mounting in a 19-inch rack. Customers can increase the number of additional inputs simply by adding more standard modules, with four inputs available per module. The modular nature of the Multi-Channel Measurement System makes the product ideal for a broad range of customer needs, and the ability to add modules as production demands increase streamlines the resulting ramp-up.

Database Management System

The powerful relational database management system from Microsemi augments the Multi-Channel Measurement System's capabilities by enabling storage of as many as three years of one-second data, and through an ODBC/SQL interface, helps retrieve data rapidly.

Operation

MMS is a multiple mixer measurement system. This instrument measures the phase difference between an RF signal from the clock under test and a reference RF signal that is common to all measurement channels on a four-channel measurement module. An internal numerically controlled oscillator provides the reference RF signal. Phase differences are measured directly rather than by using time differences because the phase measurements do not require knowledge of absolute frequency. The measured phase differences are then converted to nominal time differences, dividing the phase difference by a user-supplied scale factor.

Multi-Channel Measurement System (MMS)

Specifications

Performance

- Allan Deviation (1s): $< 1.0 \times 10^{-12}$ at 5 MHz
  $< 5.0 \times 10^{-13}$ at 10 MHz

Electrical

- Frequency Range: 1-13 MHz
- Input Signal Level: 3 dBm - 17 dBm
- Input Impedance: 50 Ω
- Input Connectors: SMA
- Pentium 233 Computer Card: 64 MB Flash
  4 MB RAM
  SVGA Adapter
  PS/2 Mouse Port
  PS/2 Keyboard Connector
  2 Serial Ports (RS-232)
  1 Ethernet Port
- Power Requirements: Input Voltage: 100 to 240 VAC ± 10%
  Input Frequency: 50/60 Hz
- Power Consumption: 160 W Maximum
- Connector Type: IEC Plug

Physical

- Weight: 40 kg (88 lbs.)
- Dimensions: 43.2 cm x 17.8 cm x 60.9 cm
  (17 inches x 7 inches x 24 inches)

Ordering Information (Single Frequency)

- 4 Channel Measurement System: TSC 12030-110
- 8 Channel Measurement System: TSC 12030-120
- 12 Channel Measurement System: TSC 12030-130
- 16 Channel Measurement System: TSC 12030-140
- 20 Channel Measurement System: TSC 12030-151
- 24 Channel Measurement System: TSC 12030-161
- Measurement Database: TSC 4077-02

Contact factory for dual frequency configurations.

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