5087B

Wideband Distribution Amplifier

Front View

Features

- 12 channel wideband sine wave distribution
- 13 dBm to 22.5 dBm adjustable output power
- Accepts 3 dBm to 22.5 dBm inputs
- Input AGC maintains output level with varying input level
- High isolation/low cross-talk between outputs
- Low additive phase noise
- Front panel status indicators for health monitoring at a glance
- Ethernet port for remote control and monitoring
- Fault alarm output

Applications

- Standards lab – simultaneous calibration of multiple test equipment.
- Manufacturing and R&D – connecting all test equipment in a rack to the same frequency source.
- Intra-building distribution – distributing frequency standards from the cal lab to manufacturing and R&D.

The 5087B Wideband Distribution amplifier is an economical solution for distributing signals from various frequency standards such as Cesium, Rubidium, Quartz, or GPS instruments.

Frequency standards typically have few outputs, each of which drives one load over short distances. When you have many devices requiring frequency reference inputs, or you need to deliver the frequency standard output from one building to another, the 5087B is the right choice.

High output-to-output isolation and output-to-input isolation keeps the effects of accidents from propagating to other channels or upstream to the frequency standard. For example, if an output is accidentally shorted or someone connects an active signal to the output of the distribution amplifier, the effect is minimized on any other output.

Fault Monitoring

Front panel lights allow to check status of the amplifier at a glance. Indicators are provided for power, alarm, input, and all 12 outputs.

An alarm occurs whenever there is loss of input signal or loss of any of the 12 outputs. The alarm signal can be connected to audible or visible alarms, or logically ORed to other alarms.

Full remote control and monitoring of the amplifier can be done through the Ethernet port, including checking status and alarm conditions.

Rear View

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Specifications

Electrical

- Inputs
  - Number of inputs: 1
  - Frequency range: 1 MHz to 10 MHz
  - Signal type: Sine wave
  - Connector: Rear panel BNC (female)
- Shield is chassis (earth) ground
  - Amplitude: 0.3 Vrms to 3 Vrms automatic level control
  - Impedance: 50 Ω nominal
  - Input status[1]: Front panel indicator
  - Damage level: 24 dBm
  - VSWR: <1.5:1
- Frequency outputs[2] (into 50 Ω)
  - Number of outputs: 12
  - Frequency range: 1 MHz to 10 MHz
  - Signal type: Sine wave
  - Connector type: Rear panel BNC (female)
- Shield is chassis (earth) ground
  - Amplitude[3]: 1 Vrms to 3 Vrms adjustable
  - Impedance: 50 Ω nominal
  - Harmonics[4]: <–40 dBc
  - Spurious 10 Hz - 50 kHz: <–80 dBc
  - Channel status[5]: Front panel indicator
  - Single sideband additive phase noise (1 Hz bandwidth) 10 MHz carrier
  - Isolation[6]
  - Output to output: <–104 dBc (typical)
  - Output to input: <–100 dBc
  - VSWR: <1.5:1

Offset Frequency	Phase Noise (dBc/Hz)
1 Hz	–110
10 Hz	–123
100 Hz	–128
1 kHz	–144
10 kHz	–150

- Alarm port
  - Connector type: BNC
  - Normal state: TTL high
  - Alarm state: TTL low
  - Output configuration: Open-collector, 10k Ω pull-up to 5 Vdc
  - Alarm conditions: Loss of input signal, activation of input
  - Alarm, loss of any of 12 frequency outputs.
  - Status: Front panel LED
- Remote interface
  - Data communications: Ethernet (10 Base-T)
  - Connector type: RJ-45

Environmental

- Temperature
  - Operating: 0 °C to 50 °C
  - Non-operating: –62 °C to 75 °C
- Humidity
  - Operating: 95% non-condensing, 40 °C
- Altitude
  - Operating: 15,000 feet
- Shock: Meets IEC 60068-2-27 requirements
- Vibration: Meets IEC 60068-2-6 for sinusoidal vibration and IEC 60068-2-64 for random vibration requirements.
- EMC: Meets EN61326-1:2001 Electrical Requirements for Electrical Equipment for Measurement, Control and Laboratory use- Part 1: General Requirements EN 55011 Class A, Radiated Emissions.
- Safety: Meets EN61010-1:2001 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use- Part 1: General Requirements. UL/CSA Certified product

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Supplemental Characteristics

- Mechanical characteristics
  - Net weight: 6.2 kg
  - Shipping weight: 10 kg
- Dimensions
  - Height: 90 mm (2U rack)
  - Width: 450 mm (standard 19-inch rack)
  - Depth: 364 mm (excluding connectors)
- Power requirements
  - AC input[7]: 100 VAC-240 VAC; 50 to 60 Hz
- Warranty: 1 year

Notes:

1. Input status indicates if input amplitude drops below 0.3 Vrms. It does not indicate signal quality (frequency accuracy or stability) nor wave shape.

2. All outputs are always active. To reduce noise, connect a 50 Ω terminator (not supplied with unit) on unused outputs.

3. An ALC circuit on the input amplifier assures output amplitude consistent with desired setting in the range 1 Vrms to 3 Vrms, into 50 Ω.

4. Assumes harmonic distortion of <–50dBc of input signal.

5. Output channel status indicates if output drops below 0.3 Vrms (+2.6 dBm) at the output BNC connector, not at the end of the attached cable.

6. Output isolation is measured by injecting 900 Hz signal (0.5 Vpp about 20 µs wide) into an output port and measuring the associated phase noise spur at 900 Hz offset on adjacent output ports and input port.

7. Auto sensing AC mains supply. A power on LED is located on the front panel.

Ordering Information

Part Number 5087B-C001 — 5087B Wide Band Distribution Amplifier

Microsemi Corporate Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Fax: +1 (949) 215-4996
Email: sales.support@microsemi.com
www.microsemi.com

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