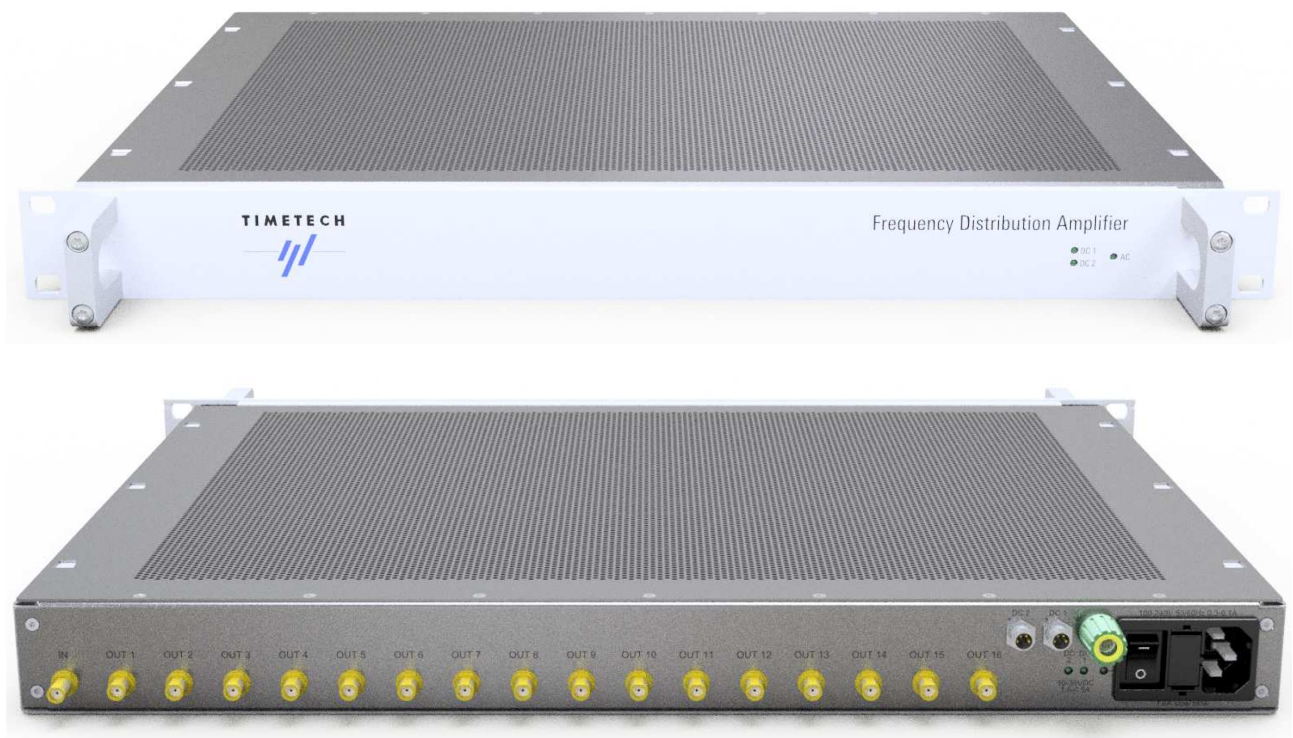


Frequency Distribution Amplifier

High Performance
5 to 100 MHz 1 Input, 16 Outputs

Issue 4

Part No: 10273



Frequency Distribution Amplifier

Part No: 10273, Issue 2

High Performance, 5 to 100 MHz, 1 Input, 16 Outputs



Key features:

- Compact design (1HU), rack mount
- Low phase noise
- Very high output – output and reverse isolation
- Excellent input and output match to 50 Ω
- Best suited for high performance frequency references
- Useable from 100 kHz to 200 MHz
- 1 x AC and 2 x DC inputs, automatic switch-over

The Frequency Distribution Amplifier is a 1HU rack mount unit. The unit allows a cost and space efficient way to distribute reference frequencies throughout a system without loss or degradation. The standard product gain is 0 dB. Different gain is available on customer request.

The Distribution Amplifier is optimized for very low phase noise, very good input and output match to 50 Ω , and for excellent isolation between the output to output path and output to input path.

The Distribution Amplifier provides a very high stability of signal delay, so that it can be used with high precision frequency sources, such as caesium clocks or masers.

Frequency Distribution Amplifier



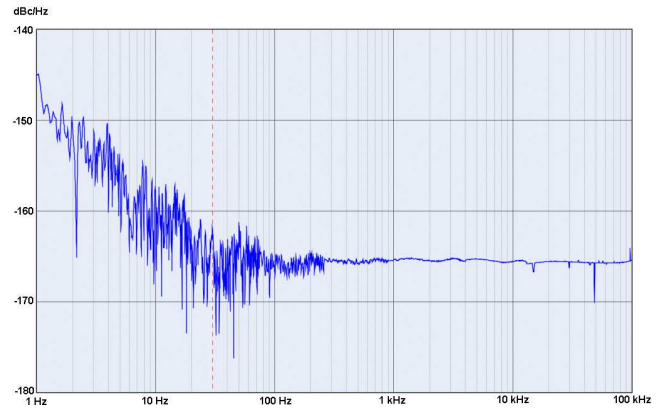
Part No: 10273, Issue 2

High Performance, 5 to 100 MHz, 1 Input, 16 Outputs

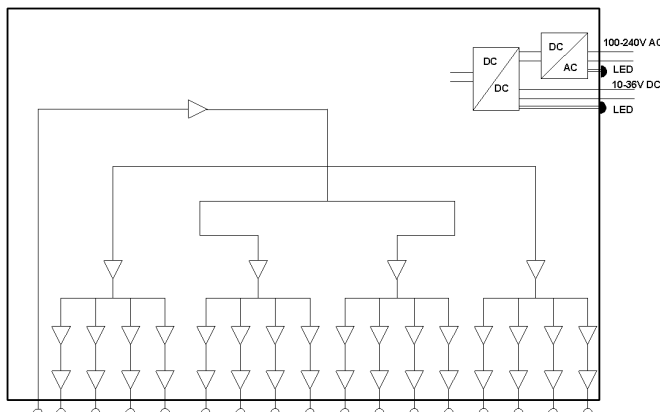
The Distribution Amplifier is designed to minimise phase noise and shows the following performance, measured under laboratory environment, temperature +15 .. +30°C, controlled to 1 K pp with maximum slopes of 0.5 K/h:

Freq. Offset [Hz]	Phase Noise [dBc/Hz]		
	5 MHz	10 MHz	100 MHz
1	-154	-148	-131
10	-165	-160	-140
100	-166	-165	-150
1000	-166	-166	-153
10000	-166	-166	-153

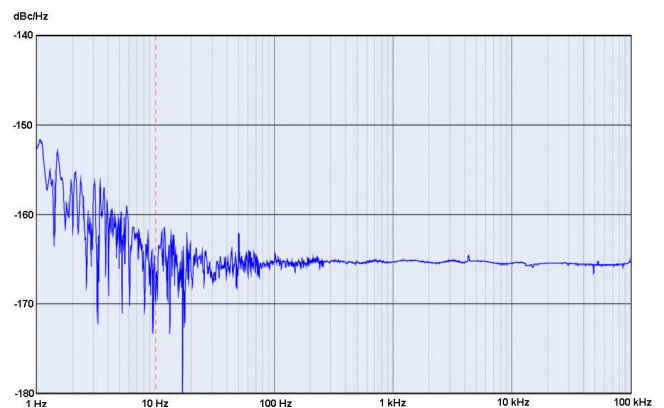
Phase noise specifications single unit



Typical phase noise at 10 MHz, +13 dBm, offset 1 Hz to 100 kHz
(Two identical instruments measured against each other, subtract 3 dB for single unit)



Block diagram of the Frequency Distribution Amplifier

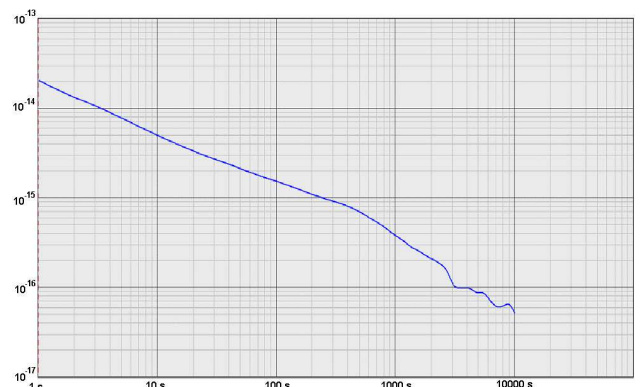


Phase noise at 5 MHz, +13 dBm, offset 1 Hz to 10 kHz
(Two identical instruments measured against each other, subtract 3 dB for single unit)

Allan Deviation (ADEV)

Averaging time [s]	ADEV
1	1.4×10^{-14}
10	3.5×10^{-15}
100	1.3×10^{-15}
1000	2.8×10^{-16}
10000	3.8×10^{-17}

ADEV specifications single unit



Typical ADEV, measured at 10 MHz, +13 dBm,
Averaging time: 1 s to 10000 s
(Two identical instruments measured against each other, divide by sqrt(2) for single unit)

Frequency Distribution Amplifier

TIMETECH**Part No: 10273, Issue 2**

High Performance, 5 to 100 MHz, 1 Input, 16 Outputs

Specifications**Signal Input**

Number of inputs 1
Frequency 5 to 100 MHz, sine wave, useable from 100 kHz to 200 MHz
Input impedance 50 Ω, nominal
Input level working +6 to +16 dBm (+14 dBm @ 100 MHz, 13 dBm @ 200 MHz)
Input level nominal +13 dBm
Input return loss > 40 dB (> 44 dB @ 1, 5 and 10 MHz), > 30 dB @ 200 MHz
Connectors SMA, BNC option via adaptors

Signal Outputs

Number of outputs 16
Gain 0 dB (+0.15/-0.1 dB @ 1 – 100 MHz, 0.1 dB to -0.5 dB @ 200 MHz)
Output impedance 50 Ω, nominal
Output return loss > 40 dB @ 1-100 MHz, > 50 dB @ 2-20 MHz, > 35 dB @ 200 MHz
Connectors SMA, BNC option via adaptors
Noise figure < 22.5 dB, (21 dB typ., 1 – 100 MHz)

Group delay absolute, 1 – 100 MHz 5.4 ns ± 0.3 ns
Group delay flatness, 1 – 100 MHz < 0.1 ns pp
Group delay variation, channel vs channel < 0.1 ns
Group delay variation versus temperature < 6 ps / K

	5 MHz	10 MHz	100 MHz	200 MHz
No clipping below	+14 dBm	+14 dBm	+14 dBm	
Reverse Isolation [dB]	> 140 (150 typ.)	> 140 (150 typ.)	> 140 (150 typ.)	> 120
Output / Output Isolation [dB]	> 120 (128 typ.)	> 120 (128 typ.)	> 110 (118 typ.)	> 105
Harmonics [dBc]				
(1 st , 2 nd , 3 rd)	+10 dBm	-72 -72 -80	-70 -57 -65	-44 -44 -60
	+13 dBm	-70 -65 -82	-64 -53 -64	-42 -40 -50

Electrical interface

Power Consumption AC: < 15 W Priority on AC supply input
(all outputs loaded) DC: < 15 W, stand-by: < 1 W DC in stand-by when AC connected
Supply voltage AC 100 to 240 V AC, 47 to 65 Hz LED indicating AC voltage
Supply voltage DC 10 to 36 V DC, DC isolated LED indicating DC voltage
2 redundant DC power input connectors, automatic switchover
DC connector included, IEC 61076-2-101 M8
(+) brown (1) & white (2), (-) blue (3) & black (4), polarity reversible

Mechanical

Outline 19 inch, 1 height unit (448.8 mm * 44 mm) depth 448 mm
Weight 4 kg

Environmental

Transportation and Storage

Temperature -20°C to +75°C
Humidity 10% to 90% (non-condensing)
Altitude < 20 000 m
Shock Max. 10g acceleration for 11 ms
Vibration Max. 0.15 mm at 5 to 8 Hz, max. 1g acceleration at 8 to 500 Hz

Operation

Temperature Operational 0°C to + 40°C
Full spec +15°C to +30°C
Humidity 20% to 90% (non-condensing)
Altitude < 2 000 m

Frequency Distribution Amplifier

TIMETECH

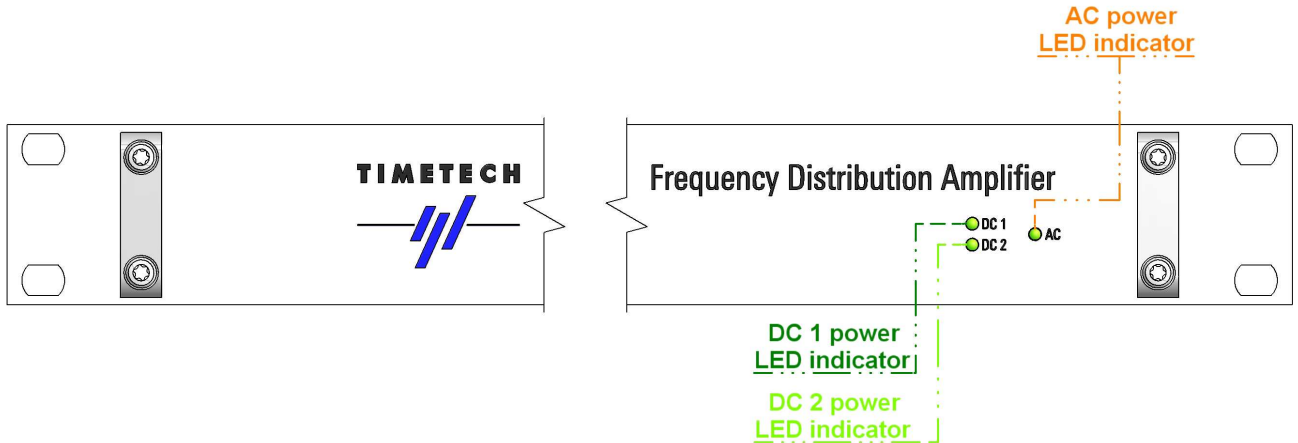
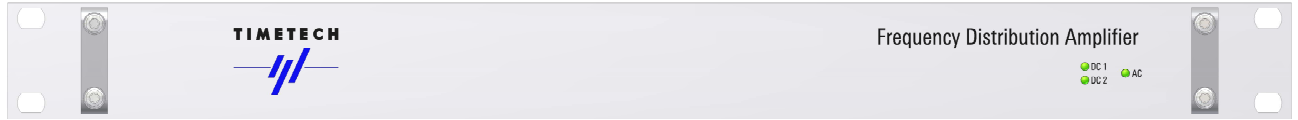


Part No: 10273, Issue 2

High Performance, 5 to 100 MHz, 1 Input, 16 Outputs

Unit Outline

Front View



Rear View

