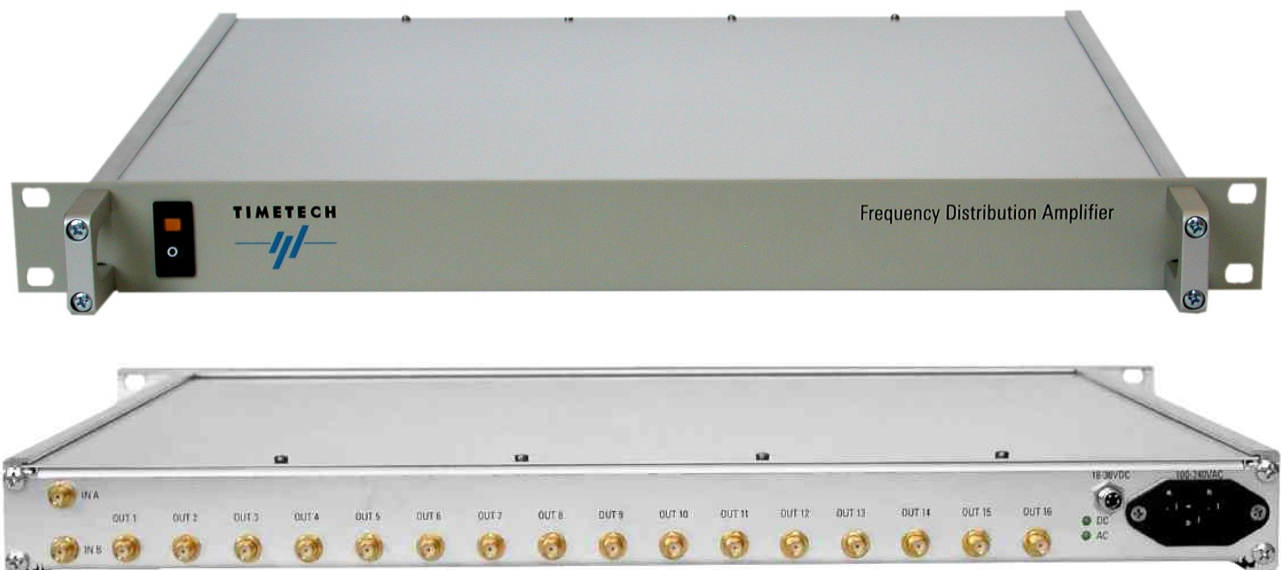


Frequency Distribution Amplifier

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

Part No: 10276



Key features:

- Compact design (1HU), rack mountable
- Low phase noise
- Very high output and reverse isolation
- Excellent input and output match to 50 Ω
- Excellent for high performance frequency references
- Useable 100 kHz to 200 MHz
- AC and DC inputs, automatic switch-over
- Combination of two input signals to form a single frequency reference

Frequency Distribution Amplifier



Part No: 10276

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

The Frequency Distribution Amplifier is a one-height unit rack mountable unit. The unit allows a cost and space efficient way to distribute reference frequencies throughout a system without any loss or degradation. The standard product gain is 0 dB with feeding a single input only. Different gain is available on customer request.

The unit employs a combiner function that vectorially adds the both input signals. The output power is increased by 6 dB in case the both input signals are in-phase. This function is used for combining two redundant primary clock sources to form a single reliable clock source. In case of loss of one input signal the combined frequency output signal power level drops by 6 dB and its phase will change by half the phase offset between the both primary clock sources before the failure. In normal applications this phase offset is zero. Therefore there is virtually no phase hit in case of failure. Combining input frequency signals originating from synchronised but statistically independent sources of equal noise performance causes the phase noise performance of the output signal to improve by 3 dB.

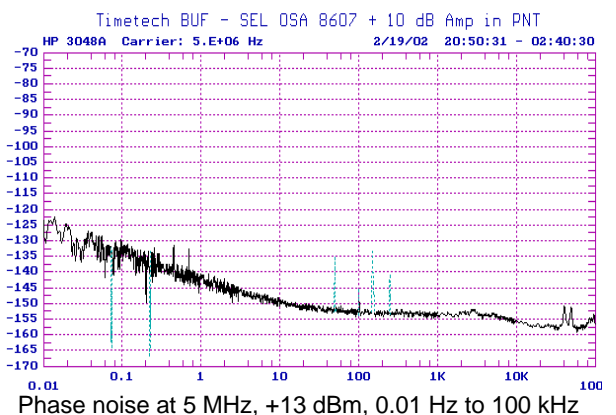
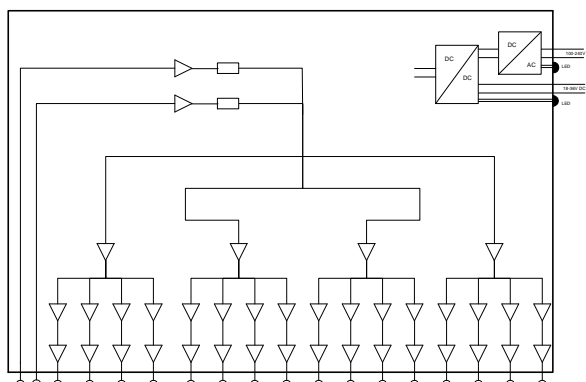
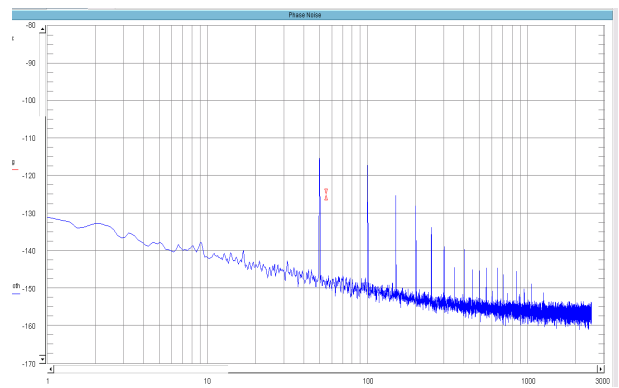
When the combiner function is used there may be the need for reducing the input power level of the both input signals in order not to exceed the maximum output power level of +15 dBm.

The Distribution Amplifier is optimised for very low phase noise, very good input and output match to 50 Ω and for excellent isolation – this is for output to output, output to input, and input to input.

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

The Distribution Amplifier is designed to minimise phase noise and shows the following performance, measured under laboratory environment, temperature +18 .. +24°C, controlled to 1K pp with maximum slopes of 0.5 K/h:

Freq. Offset [Hz]	Phase Noise [dBc]		
	5 MHz	10 MHz	100 MHz
0.1 Hz	-132		
1 Hz	-142	-141	-131
10 Hz	-149	-148	-140
100 Hz	-152	-152	-150
1000 Hz	-153	-153	-153
10000 Hz	-153	-153	-153



Block diagram of the Frequency Distribution Amplifier

Frequency Distribution Amplifier



Part No: 10276

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

Specification

Signal Inputs

Number of inputs 2, either of the inputs can be used, or both simultaneously.
Frequency 5 to 100 MHz, sine wave, useable from 100 kHz to 200 MHz
Input impedance 50 Ω , nominal
Input level working +6 to +15 dBm (+14 dBm @ 100 MHz, 13 dBm @ 200 MHz)
Input level nominal +13 dBm
Input return loss > 40 dB (44 dB typ. @ 5, 10 and 100 MHz, > 30 dB @ 200 MHz)
Connectors SMA, BNC option via adaptors

Signal Output

Number of outputs 16
Gain 0 dB (± 0.1 dB, 1 – 100 MHz, +0.1 to -0.5dB @ 200 MHz)
Gain variation < 0.1 dB, output vs. output and input A vs. input B
Output impedance 50 Ω , nominal
Output return loss > 40 dB (> 43 dB typ., 1 – 100 MHz)
Connectors SMA, BNC option via adaptors
Noise figure < 24 dB, (22.5 dB typ., 1 – 100 MHz)

Group delay absolute, 1 – 100 MHz 4.5 ns +2/-1 ns
Group delay flatness, 1 – 100 MHz < 0.1 ns pp
Group delay variation, channel vs channel, input A vs input B < 0.1 ns
Group delay variation versus temperature < 6 ps / K

	5 MHz	10 MHz	100 MHz	200 MHz
Gain compression (-1 dB) at Pout = + 15.5 dBm	+ 15.5 dBm	+ 15.5 dBm	+ 14.5 dBm	+ 13 dBm
Reverse Isolation [dB]	> 140 (150 typ.)	> 140 (150 typ.)	> 140 (150 typ.)	> 120
Input / Input Isolation [dB]	> 105	> 100	> 80	> 70
Output / Output Isolation [dB]	> 120 (128 typ.)	> 120 (128 typ.)	> 110 (118 typ.)	> 105
Harmonics +10 dBm [dBc]	-72 -72 -80	-70 -57 -65	-44 -44 -60	
(1 st , 2 nd , 3 rd) +13 dBm [dBc]	-67 -67 -82	-62 -53 -64	-42 -40 -50	

Electrical interface

Power Consumption AC: < 15 W Priority on AC supply input
(all outputs loaded) DC: < 12 W, Stand-By: < 1 W DC is used as back-up supply.
Supply voltage AC 95 to 265 V AC, 47 to 65 Hz LED indicating AC voltage
Supply voltage DC 18 to 36 V DC, DC isolated LED indicating DC voltage
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 1.5 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 -10°C to +50°C
Humidity 20% to 90% (non condensing)
Altitude < 3 000 m

Option

BNC adaptors for all connectors