

Distribution Amplifier

FS730 and FS735 series — 10 MHz distribution amplifiers



FS730/1 Front Panel



FS735/1/4 Rear Panel with one Broadband 50 Ω distribution amplifier and one 10 MHz distribution amplifier side by side.

FS730 & FS735 Series 10 MHz Distribution Amplifiers

- **Sine wave outputs (+13 dbm)**
- **Amplitude leveling**
- **Low additive phase noise**
- **High channel-to-channel isolation**
- **High return loss**

• **FS730/1 ... \$1250 (U.S. list)**

• **FS735/1/1 ... \$1950 (U.S. list)**

This distribution amplifier is intended to distribute a low noise 10 MHz frequency reference. The amplifier has one input and seven outputs, all on BNC connectors. The input is coupled through a series LC network allowing the use of inputs with a DC offset. The input source impedance is 50 Ω at 10 MHz.

The input is conditioned by a limiter which provides several advantages. It removes amplitude modulation from the input signal, outputs have fixed amplitude, and input noise that occurs more than 50 mV away from the zero-crossing is blocked. Virtually any waveform with a duty cycle near 50% may be used as an input.

The input limiter is followed by a bandpass filter and a fixed gain amplifier. This signal is passed to seven output amplifiers, each of which is followed by a low pass filter and an output transformer. All of the outputs have 50 Ω source impedance and provide a 1 Vrms (+13 dBm) sine wave into a 50 Ω load.

There are four indicator LEDs. The “power” LED indicates that the unit has AC power. The “signal” LED indicates that an input signal is present. The “overload” LED indicates that the input signal has excessive amplitude. The “fault” LED indicates one or more of these conditions: no input signal, excessive input signal, no output signal, or low internal DC power supply.

Configuration

The FS73x series of products can be configured as half width, 1U size benchtop instruments (FS730), or in full-width, 19" rack-mount enclosures (FS735).

The FS730/1 model provides 7 output BNC connectors on the front panel, and one or two units can be rack mounted with an optional rack mount kit.

The FS735/1/1 model provides 14 output BNC connectors on the rear panel, with status indicators on the front panel. Several types of distribution amplifiers are available as listed below. Different types may be combined within the FS735 chassis.

- Option 1 - 10 MHz distribution amplifier
- Option 2 - 5 MHz distribution amplifier
- Option 3 - CMOS logic distribution amplifier
- Option 4 - Broadband 50 Ω distribution amplifier
- Option 5 - Broadband 75 Ω distribution amplifier



FS730/1 Rear Panel



FS735/1/4 Front Panel

Ordering Information

FS730/1	10 MHz distribution amplifier with BNCs on front	\$1250
RMIU	1U dual rack-mount for one or two FS730s	\$85
FS735/1/1	Two distribution amps with BNCs on rear	\$1950

FS730 & FS735 Series Specifications

Input

Frequency	10 MHz, ±1%
Level	0 dBm to +16 dBm (0.6 V _{pp} to 4 V _{pp})
Waveform	Any with ≈ 50% duty
Impedance	50 Ω, ±5% at 10 MHz
Coupling	Series LC (Open at DC)

Output

Waveform	Sine
THD	<1%
Level (50 Ω load)	+13 ±1 dBm (1 V _{rms} , 2.82 V _{pp})
Level (high-Z load)	2 V _{rms} (5.6 V _{pp})
Impedance	50 Ω, ±5% at 10 MHz
Coupling	Transformer (Short at DC)
Bandwidth	±200 kHz (-3 dB)
Spurious	< -120 dBc within 100 kHz
Isolation	> 100 dB ⁽¹⁾
Pulling	< 1 ps ^(1, 2)
TC of phase	≈ -5 ps/°C

Additive phase noise

(with +7 dBm input)

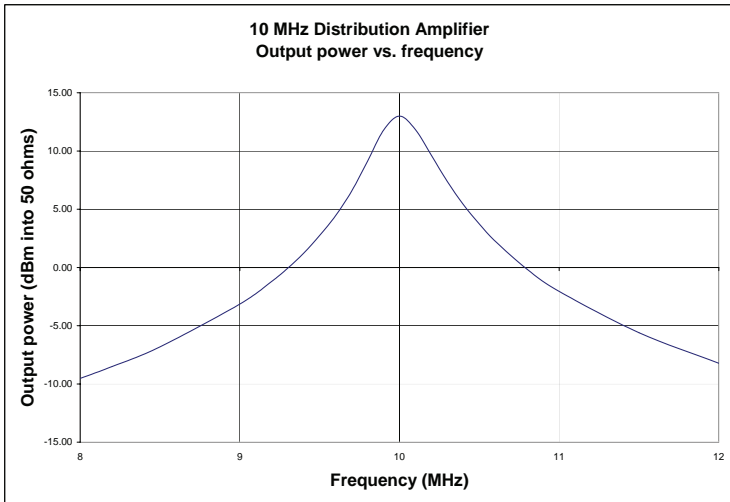
Offset (Hz)	Noise (dBc/Hz)
1	-125
10	-135
100	-146
1k	-155
10k	-158
100k	-158

General

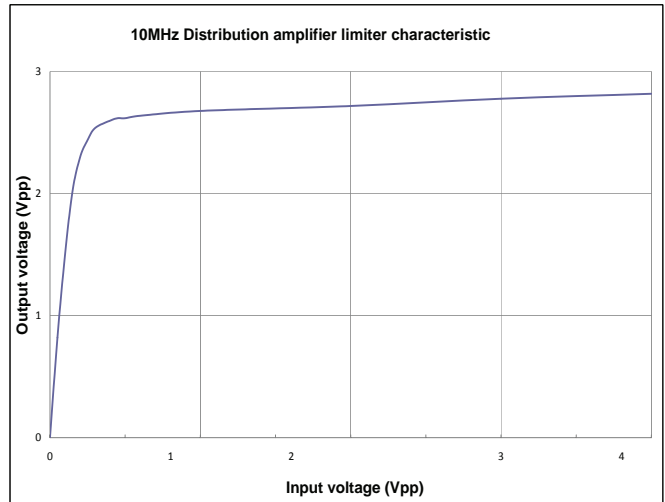
Power	10 W, 100/120/220/240 VAC, 50/60 Hz
Dimensions	8.3" × 1.5" × 8.0" (WHL)
Weight	1.5 lbs.
Warranty	One year parts and labor on defects in materials and workmanship

(1) Measured with 1 V_{rms} at 10.001 MHz from a 50 Ω source applied to an adjacent output. The isolation increases at frequencies far away from 10 MHz.

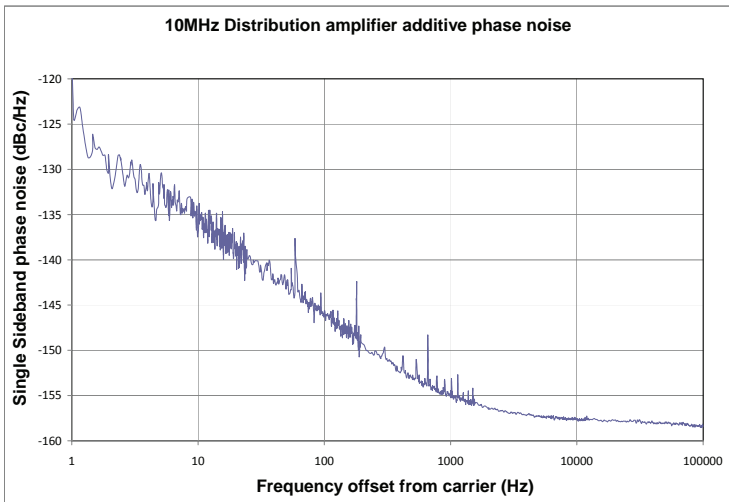
(2) The pulling is comparable to that caused by a reflected wave from an unterminated cable on an adjacent output.



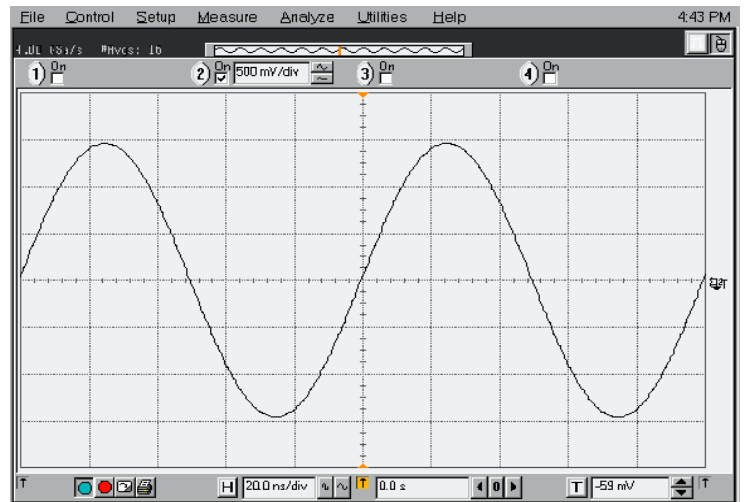
10 MHz distribution amplifier, output power vs. frequency



10 MHz distribution amplifier limiter characteristics



10 MHz distribution amplifier, additive phase noise



10 MHz distribution amplifier, sine wave output