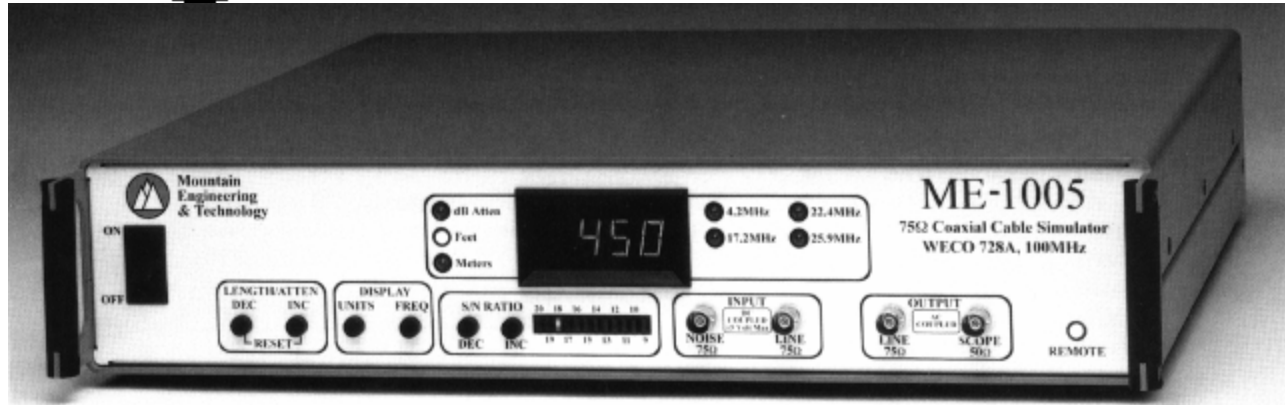




**Mountain  
Engineering  
& Technology**

**ME-1005**  
**75Ω Coaxial Cable Simulator**  
**WECO 728A, 100MHz**



## Features

- Simulates 75Ω coaxial cable, WECO 728A (Belden 9231)
- Selectable cable lengths from 0ft to 1485ft (453m) in 45ft (13.7m) steps
- Noise mixer input provides variable S/N ratio simplifying interference margin testing to CCITT G.703 specifications
- Buffered 50Ω oscilloscope output (1/4 level) provides end-of-line view of data signal for easy pulse mask verification
- Accurate over a 3 decade frequency range, from 100kHz to 100MHz
- Convenient front panel controls and displays, calibrated in Feet, Meters, and dB of Attenuation at 4 standard frequencies
- Remote control of all functions via standard RS-232 port

## Compatibility

- US and European AMI-PCM codes:
  - DS2 - 6.312 Mb/s
  - DS3 - 44.736 Mb/s
  - CCITT - 32.064 Mb/s
  - CEPT - 8.448 Mb/s
  - CEPT - 34.368 Mb/s
- SONET STS-1 - 51.840Mb/s
- Ethernet and other LAN protocols
- CATV and HDTV signals

## Applications

- Design and evaluation of serial data receivers and repeaters
- Replaces almost 1500ft (453m) of 75Ω coaxial cable and multi-tap patch panels in laboratory experiments
- Allows automated testing of telecommunications, PBX, CATV, HDTV and LAN equipment

## General Description

The ME-1005 is a highly accurate, programmable filter designed to simulate the attenuation versus frequency characteristics of the 75Ω coaxial cable, type WECO 728A (Belden 9231) specified by ANSI and CCITT for use in high speed networks used in the US and around the world. The same wire is also found in office buildings and industrial complexes where it forms the backbone of PBX and LAN communication systems. By simulating 1500ft (453m) of transmission line in 45ft (13.7m) increments, the ME-1005 offers a convenient and practical method of developing and testing communications equipment intended for use in high speed networks.

Easy to use front panel controls set the ME-1005's simulated cable length displayed in Feet, Meters, or dB of Attenuation at 4 standard frequencies (in MHz): 4.2, 17.2, 22.4, and 25.9. A 75Ω noise mixer signal input allows interference margin testing with S/N ratios from 9dB to 20dB in accordance with CCITT G.703 while a buffered 50Ω oscilloscope output simplifies viewing of individual data pulse for easy mask verification. All ME-1005 functions can be computer controlled via a standard RS-232 serial port for automated test applications. Options include a rack-mount chassis and battery backup.

# ME-1005

## Operating Specifications

(Valid at all attenuation settings, test signal (fo)=22.4MHz and 0°C < T<sub>AMBIENT</sub> < 40°C unless otherwise stated)

### Input

Terminating Impedance ..... 75Ω, ±5%  
 Recommended Frequency Range ..... 100kHz to 100MHz  
 Maximum Input Voltage, Absolute  
     Zero to Peak ..... ±5V  
 Maximum Input Voltage, (<0.25dB Compression)  
     Zero to Peak ..... ±3.75V

### Output

Sourcing Impedance (At 1MHz)..... 75Ω /50Ω, ±5%  
 Maximum Rise/Fall Time At 0dB,  
     V<sub>IN</sub> = 1 V<sub>PEAK-TO-PEAK</sub> ..... < 2nsec  
 Maximum Overshoot At 0dB  
     V<sub>IN</sub> = 1 V<sub>PEAK-TO-PEAK</sub> ..... < 5%  
 Short Circuit Tolerance ..... Continuous

### Attenuation Characteristics

Attenuation range at f<sub>0</sub> with display setting:

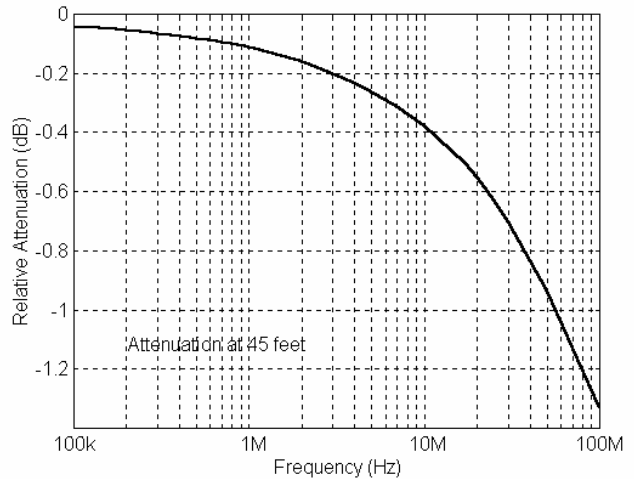
f<sub>0</sub> = 4.2 MHz ..... 0dB to -7.9dB  
 f<sub>0</sub> = 17.2 MHz ..... 0dB to -16.7dB  
 f<sub>0</sub> = 22.4 MHz ..... 0dB to -19.4dB  
 f<sub>0</sub> = 25.9 MHz ..... 0dB to -21.1dB

Frequency dependent attenuation simulates that of 75Ω coax cable (WECO 728A) at 20°C. The following table lists the cable attenuation (A<sub>45</sub>) vs. frequency at a length of 45 ft.

Freq. (MHz)	.10	.20	.30	.50	.70	1.0	2.0
A <sub>45</sub> (dB)	.040	.054	.065	.081	.095	.112	.162
Freq. (MHz)	3.0	4.2	5.0	7.0	10	17.2	20
A <sub>45</sub> (dB)	.202	.240	.264	.314	.376	.505	.550
Freq. (MHz)	22.4	25.9	30	50	70	100	
A <sub>45</sub> (dB)	.588	.640	.700	.936	1.13	1.33	

The attenuation at any frequency, A(f), can be calculated as a function of the simulated cable length as follows:

$$A(f) = A_{45}(f) \times (\text{Length}/45\text{ft})$$

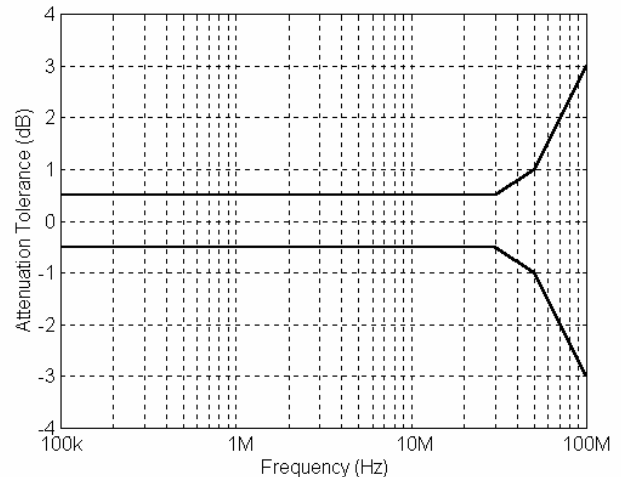


### Attenuation Accuracy

Attenuation tolerance for both LINE and NOISE inputs and LINE and SCOPE outputs at f<sub>0</sub> display setting:

f<sub>0</sub> = 4.2 MHz ..... ± 0.25dB  
 f<sub>0</sub> = 17.2 MHz ..... ± 0.25dB  
 f<sub>0</sub> = 22.4 MHz ..... ± 0.25dB  
 f<sub>0</sub> = 25.9 MHz ..... ± 0.25dB

LINE input attenuation accuracy at any frequency is specified to a maximum of -20dB. NOISE input attenuation accuracy at any frequency is specified to a maximum of -40dB. Attenuation tolerance at all other frequencies relative f<sub>0</sub> to is given by the following graph:



### General Specifications

Power input voltage: Option A ..... 103V to 132V  
                           Option B ..... 210V to 250V  
                           Option J ..... 90V to 110V  
 Power input frequency ..... 45Hz to 66Hz  
 Power Consumption ..... 14W  
 Dimensions (w x h x d in inches) ..... 17 x 3.5 x 14  
 Weight ..... 14 lbs  
 Storage Temperature ..... -40°C to 85°C

### Ordering Information

Transmission Line Simulator: ME-1005-A-1C  
 Options: A - 120V supply \_\_\_\_\_  
           B - 240V supply \_\_\_\_\_  
           J - 100V supply \_\_\_\_\_  
           1 - Bench-top chassis \_\_\_\_\_  
           2 - Rack-mount chassis \_\_\_\_\_  
           C - Battery back-up \_\_\_\_\_

