

# SECTION 1

## GENERAL INFORMATION

### 1.1 INTRODUCTION

The Wavetek Model 4101 is a compact, fully automatic modulation meter designed to make rapid and accurate modulation measurements when testing communications transceivers and other similar equipment. It is capable of comprehensive analysis of both amplitude and frequency modulated signals.

Model 4101 features exceptionally wide coverage of both

carrier frequency (1.5 MHz to 2.0 GHz) and level (3 mV to 1 V) with no user adjustments. The front-panel controls are simple and self-explanatory. Selection of function, meter range, filter, and de-emphasis is made via pushbuttons.

In addition to providing extreme ease of operation, the compact, lightweight Model 4101 features a rechargeable battery option (six hour operating time), making it an ideal instrument for assessing modulation performance in either the laboratory or the field.

### 1.2 SPECIFICATIONS

#### 1.2.1 RF INPUT

Frequency Range	1.5 MHz to 2.0 GHz
Input Level Range	
Specified	10 mV to 1 V
Operational	3 mV to 1 V
Maximum	1 Watt (7 VRMS)
Input Impedance	50 ohms

#### 1.2.2 FM MEASUREMENT

Modulation Frequency Range	25 Hz to 50 kHz
Deviation Ranges	1, 3, 5, 10, 30, 50 & 100 kHz Measurements of positive and negative deviation and difference can be made
Accuracy at 1 kHz modulation rate	± (2% of FS + 2% of reading + residual FM)
Residual FM	< 20 Hz for carrier frequencies up to 100 MHz. Above 100 MHz, increases linearly with frequency (20 Hz/100 MHz)
De-Emphasis	Selectable 50, 75, 750 μsec or off. Time constant accuracy = ±5%.
Modulation Frequency Response referenced to 1 kHz	
25 Hz – 50 kHz FILTER	±.5 dB in band
25 Hz – 15 kHz FILTER	±.5 dB in band
300 Hz – 3 kHz	-3 dB ±.5 dB at band limits

### 1.2.3 AM MEASUREMENT

Modulation Frequency Range	25 Hz to 50 kHz
AM Ranges	10, 30, 50, and 100% Measurements of peak, trough or difference can be made
Accuracy at 1 kHz modulation rate	$\pm$ (2% of FS +2% of reading + residual AM)
Residual AM	< .5% with 15 kHz bandwidth selected

### 1.2.4 SIGNAL OUTPUTS

IF Output	
Connector	Rear-panel BNC
Frequency	$\sim$ 420 kHz
Level	100 mV into 50 ohms
AF Output	
Connector	Front-panel BNC
Level	.5 VRMS at 1 kHz modulation frequency equals meter FS on any range
Frequency Response	Controlled by selected filter (see AM and FM frequency response)
Output Impedance	600 ohms
Distortion	
FM	< 1% for 50 kHz deviation at 1 kHz modulating frequency
AM	< 1% for 80% AM at 1 kHz modulating frequency

### 1.2.5 GENERAL

Power Requirements	100, 120, 220 or 240 VAC, +5% -10%, 48 to 400 Hz, 5 VA maximum
Dimensions And Weight	Width 28.6 cm (11 1/4 in) Height 10.2 cm (4 in) Depth 26.7 cm (10 1/2 in) Weight 2.7 kg (6 lbs)

### 1.2.6 ENVIRONMENTAL

Specifications apply over the temperature range of from 15° C to 30° C (operational from 0° C to 40° C)  
Storage Temperature Range is -20° C to +65° C  
Maximum relative humidity is 95% at 30° C

### 1.3 OPTIONS

BA-1	Internal Nickel/Cadmium battery provides approximately 6 hours operating time, recharging time is $\sim$ 14 hours.
------	--

### 1.4 ACCESSORIES

Furnished With Instrument	Instruction Manual Detachable Line Cord (NEMA 5-15P) Fuse for 220/240 VAC operation
Available At Extra Cost	Rack Mount Kit K015