DIGITAL / ANALOG TRAINER

MODEL XK-700
A COMPLETE MINI-LAB FOR BUILDING, TESTING
AND PROTOTYPING ANALOG AND DIGITAL CIRCUITS

Tools and meter not included.

Instruction Manual
For Trainer with Organizer Case

Elenco® Electronics, Inc.
INTRODUCTION

Congratulations on your purchase of the Elenco® Model XK-700 Digital / Analog Trainer. This trainer is designed to simplify designing of digital and analog circuits. It contains most of the necessary test equipment needed to build and test these circuits.

Your XK-700 has four basic trainers in a single package. They are, 5 independent power supplies, an analog trainer, a digital and a breadboard assembly trainer. We shall proceed in describing each trainer in the following sections.

POWER SUPPLY

Model XK-700 has five built-in power supplies which will satisfy most design needs. This includes two variable power supplies giving up to +20 volts and –20 volts at .5 amp. Below 15V the current available is over 1 amp. Three fixed power supplies give you +12VDC, –12VDC or +5VDC at 1 amp each. These fixed voltages are the most commonly used voltages for design work. All supplies are regulated to within 150mV. This means that you can increase the current draw from no load to .5 amp and the voltage will change less than 150 millivolts. All supplies are also short circuit protected by using integrated circuit regulator devices.

ANALOG TRAINER SECTION

FUNCTION GENERATOR

The analog trainer contain a complete function generator capable of producing sine, square and triangle waveform. The frequency of this generator is continuously variable from one hertz to over 100,000 hertz in five steps. A fine tuning control makes selection of any frequency easy. The output voltage amplitude is variable between 0 to 15Vpp. The output impedance is approximately 330 ohms.

DIGITAL TRAINER SECTION

The digital trainer has the necessary functions to do your digital designs. They consist of a clock generator, two no bounce logic switches, 8 LED indicator lamps and 8 data switches. These functions will make it easy to do your digital experiments.
1) **Fuse holder** - Easy access for replacement of 1.25A 250V fuse.
2) **On-Off switch** - Allows power to be applied to all outputs. Switch will light when on.
3) **Power output terminals** - This provides 30VAC center tapped at 15VAC - also provides output terminal for positive and negative variable voltages.
4) **Variable positive voltage control** - Varies positive voltage from 0 to 20V at indicated output terminal.
5) **Variable negative voltage control** - Varies negative voltage from 0 to –20V at indicated output connector pin.
6) **Output terminals** for 1kΩ and 100kΩ undedicated potentiometers.
7) 1kΩ undedicated potentiometer.
8) 100kΩ undedicated potentiometer.
9) **Waveform selection control**, square, triangle or sine generator waveforms.
10) **Output terminals** for all functions as stated, 4 pins per block.
11) **Two logic switches** - These are no bounce logic switches. Give one signal state change per movement of switch.
12) Selects five ranges of frequencies from 10 to 100,000 hertz.
13) **Fine frequency control** - allows easy selection of desired function generator frequency.
14) **Amplitude control** - Controls the function generation output amplitude, 0-15Vpp.
15) **DC offset control** - controls the DC level of the generator output. DC may be varied ±10 volts from zero level.
16) **Input points for logic indicator LEDs.** “A” input corresponds with A lamp, etc.
17) **Logic indicators LEDs**, total eight.
18) **Eight data switches** - Lets output of 5V or 0V depending on position.
19) Output terminals for all functions as stated, 4 pins per block.
20) **Two breadboards** containing a total of 1,660 tie points including 6 independent bus lines.
GENERAL SPECIFICATIONS FOR MODEL XK-700

Power Supplies:
- 0V to 20VDC @ 0.5A (0V to 15V @ 1A)
- 0V to –20VDC @ 0.5A (0V to –15V @ 1A)
- +12V ± 5% @ 1A
- –12V ± 5% @ 1A
- +5V ± 5% @ 1A
- 30VAC center-tapped at 15VAC @ 1A.
- Load regulation all DC supplies less than 0.2V no load to 0.5A
- Line regulation all DC supplies less than 0.2V 105 to 135V
- Hum and ripple all DC supplies less than .01V rms
- Short protection all DC supplies-Internal IC thermal cutoff
- Fuse - 1.25A 250V

Function Generator Analog Section:
- Waveforms sine, square, triangle, complimentary square
- Frequency - 1Hz to 100kHz in 5 steps continuously variable
- Fine frequency adjust - 10:1 approximate
- Amplitude variable 0-15Vpp
- Output impedance 330Ω: short protected
- DC offset change ± 10V from zero crossing

Digital Section:
- Data switches, eight DPDT, Hi 5V, low 0V
- Logic switches, two no bounce with complimentary output
  “On” voltage level 2.8V min., “Off” voltage level 1V max.
  Input impedance 100kΩ.
- Eight LED readouts, 100kΩ input impedance
- Clock frequency, 1Hz to 100kHz in 5 steps continuously variable
- Clock amplitude, 5Vpp squarewave
- Clock rise time, better than 100nsec.

Breadboards Section:
- Two breadboards containing 830 tie points each (total 1,660 pins)
- 6 independent power bus lines for common connections

Variable Resistance (undedicated):
- 1kΩ Potentiometer
- 100kΩ Potentiometer
TESTING THE XK-700 DIGITAL ANALOG TRAINER

The following paragraphs give detailed instructions on testing the digital / analog trainer.

Note that in the XK-700 trainer there are five major functions, (1) Power Supply (2) Logic Indicators (3) Function Generator (4) Logic Switches and (5) Data Switches. We shall proceed in testing out each section. If any test fails, refer to the schematic diagram and check the wiring and soldering of the section involved.

POWER SUPPLY TESTING
Plug the trainer into a 120VAC outlet and switch to the “ON” position (the power switch should light). With a digital voltmeter, measure the voltage outputs at the power blocks. The +12V should measure between 11.4 and 12.6 volts. The 5V supply should read between 4.75 and 5.25 volts. The –12V supply should read between –11.4 and 12.6 volts.

Do not short the 15VAC output to ground. Short the +12V, –12V and +5V supply to ground. They should turn off and recover when the short is removed. If you have a 25Ω 10 watt resistor, place it across the output terminal (2 watt resistor will work, but use it only for a few seconds). The output of the 12V supply should not change more than 0.20 volts. Do the same on the 5V supply using a 10Ω 5 watt resistor. Again, the output should not change more than 0.20 volts. In making this test, the voltmeter leads should be clipped to the terminal directly and no to the load leads. This is to prevent errors due to voltage drop from contact resistance of the load.

Check the variable voltage supplies in the same manner. Set the output voltage between 10-15 volts. Place the 25Ω 10 watt resistor across the output terminal. The voltage should stay within 0.20 volts of the no load voltage.

TESTING THE FUNCTION GENERATOR
To test the function generator, you will need an oscilloscope. Connect the scope to the terminal marked FREQ., and the ground clip to the terminal marked GND. Adjust the waveform switch to sine, the coarse frequency switch to 1k and the amplitude control to maximum. Your scope should show a sine wave with an output of about 15Vpp. If the sinewave is clipped on top or bottom, adjust the DC offset control for the most linear reading. Turn the FINE ADJ control and the frequency should vary between 100 and 1,000 hertz. Check the other coarse frequency positions.

Now, check the CLK output terminal. You should see a square wave of about 5Vpp. If the scope is a dual trace, connect one input to the CLK and the other FREQ terminal. Set the waveform switch to squarewave. You will note the two frequencies are 180° out of phase. If no scope is available, connect a wire to the CLK terminal and input to “A” of the logic indicators. Connect another wire to the FREQ terminal and input “B”. Set the coarse frequency switch to 10 hertz and the fine freq control to minimum position. The two LEDs should blink alternately.

TESTING THE LOGIC INDICATOR FUNCTION
There are eight logic indicators which you will be checking out. Place a wire to the 5V power supply and touch the “A” logic indicator test pin. The “A” LED should light up. Remove the wire and the LED should go out. Do the same for the B, C, D, E, F, G and H test pins.
TESTING THE LOGIC SWITCHES
There are two logic switches and four conditions to be checked out. Connect a wire from the “X” test pin to the “A” logic indicator test pin. Connect another from the “X” test pin to the “B” test pin.

Apply power and note that the “A” LED indicator should be lit when the logic switch is in the “X” positions and the “B” LED is not lit. Moving the logic switch to “X” should reverse the indicator LEDs, that is, the “B” LED should light and the “A” LED not light. Check the Y logic switch in the same manner.

TESTING THE DATA SWITCHES
There are eight data switches to be checked. The output of the switches are at 5V or ground depending on position. Connect a wire to SW1 terminal and the “A” test pin, the “A” LED should light when the switch is placed toward the top case. Repeat the same test on SW2, SW3, SW4, SW5, SW6, SW7 and SW8.

This completes the testing of the trainer.

CIRCUIT DESCRIPTION
The XK-700 power supply features two variable output voltages and three fixed 12V, –12V and 5V, variable output voltages are 0V to 20V and 0V to –20V at up to 1 ampere maximum current. All supplies are regulated to better than .2V when going from no load to full load. Varying the input AC voltage from 105 to 135V will have practically no effect on the output voltages. This is because of the specially designed IC circuits used in the XK-700 circuits. Severe overloading or even shorting the output circuits will not damage the supplies. Special turn-off circuits in the IC sense the overload and turn off the output.

THE POSITIVE 0V TO 20V POWER SUPPLY
Figure 1 shows a simplified circuit diagram of the positive supply. It consists of a power transformer, a DC rectifier stage and the regulator stage.

TRANSFORMER
The transformer T1 serves two purposes. First, it reduces the 120VAC input to 17VAC to allow the proper voltage to enter the rectifier stages. Second, it isolates the power supply output from the 120VAC line. This prevents the user from dangerous voltage shock should he or she be standing in a grounded area.

AC TO DC CONVERTER
The AC to DC converter consists of diodes D1, D2 and capacitor C1. Transformer T1 has two secondary windings which are 180° out of phase. The AC output at each winding is shown in Figure 2A and 2B.

Diodes are semiconductor devices that allow current to flow in one direction. The arrow in Figure 3 points to the direction current will flow. Only when the transformer voltage is positive will current flow through the diodes. Figure 3 shows the simplest possible rectifier circuit. This circuit is known as a half-wave rectifier. Here the diode conducts only half of the time when the AC wave is positive as shown in 2C. Use of this circuit is simple but inefficient. The big gap between cycles require much more filtering to obtain a smooth DC voltage.
By the addition of a second diode and transformer winding we can fill in the gap between cycles as shown in Figure 4. This circuit is called full-wave rectification. Each diode conducts when the voltage is positive. By adding the two outputs, the voltage presented to capacitor C1 is more complete, thus easier to filter, as shown in Figure 2E. When used in 60 cycles AC input power, the output of a full wave rectifier will be 120 cycles.

Capacitor C1 is used to store the current charges, thus smoothing the DC voltage. The larger the capacitor, the more current is stored. In this design 1000μF capacitors are used, which allows about 5 volts AC ripple when one amp is drawn.

In practice, the current through the diodes is not as shown in Figure 2C. Because capacitor C1 has a charge after the first cycle, the diode will not conduct until the positive AC voltage exceeds the positive charge in the capacitor. Figure 5 shows a better picture of what the current flow looks like assuming no loss in the diode.

It takes a few cycles for the voltage to build up on the capacitor. This depends on the resistance of the winding and diode. After the initial start-up, there will be a charge and discharge on the capacitor depending on the current drawn by the output load. Remember, current only flows through the diodes when the anode is more positive than the cathode. Thus, current will flow in short bursts as shown in Figure 5.

The DC load current may be one ampere but the peak diode current may be three times that. Therefore, the diode rating must be sufficient to handle the peak current. The 1N4001 has peak current rating of 10 amps.

**REGULATOR CIRCUIT**

The regulator circuit in the Model XK-700 power supply consists of a LM-317 integrated circuit. This IC is specially designed to perform the regulation function. Figure 6 shows a simplified circuit of how the LM-317 IC works.

Transistors Q1 and Q2 form a circuit known as a differential amplifier. Transistor Q1 base is connected to a stable 1.5V reference voltage. The base of Q2 is connected to the regulator output circuit through a voltage divider network. The collector of transistor Q2 is connected to a current source. This basically is a PNP transistor biased to draw about 1mA current. Transistor Q2 sees the current source as a very high resistor of about 1 meg ohms. Thus, the gain of transistor Q2 is extremely high.
Transistor Q5 is called the pass transistor. It controls the current reaching the output. Transistor Q3 and Q4 are emitter followers. Their function is to raise the impedance of the pass transistor. Note that transistor Q2, Q3, Q4, Q5 and resistor R1 form a close loop. Also note that the feedback to the base of Q2 is negative, that is, when the base of Q2 goes positive, the output at emitter Q5 goes negative. Now if the 2V output voltage goes down because of current drain at the output, the base of Q2 will drop forcing the collector voltage of Q2 to go higher. This will bring the output voltage back to 2V. This is the basis of all negative feedback regulators.

Another feature of the LM-317 regulator is to protect the IC against overload and output shorts. If the IC is overloaded, the junction of an overload transistor will overheat. A transistor will sense this overheating and shut down transistor Q5.

The LM-317 IC basically is a 1.25 volt regulator. To be able to vary the output from 0 to 20V, you stack the IC on the negative 1.25VDC voltage as shown in Figure 6A. When VR1 equals 0, the output voltage is 0 volts.

THE LOGIC SWITCHES
The logic switches perform the same function as the data switch, that is, they produce high or low states. But there is one big difference. When switching the data switches, many pulses may be produced due to bouncing of the contacts.

In the logic switches, only one pulse is produced, no matter how many times the contacts bounce. This is extremely important if you are producing pulses for counting circuits. Figure 7 shows the wiring of the logic switch. The two NAND gates are connected so that when X input is grounded the output X goes high. Opening and closing the ground at X will not change the output. Only when X is grounded will the output change to low. Thus, only one output change is produced with one movement of the X switch. There are two outputs from logic switch, X and X or Y and Y.

THE FUNCTION GENERATOR
The function generator frequencies are produced by an XR-2206 integrated circuit. This IC is capable of producing high quality sine, square, and triangle waveform of high stability and accuracy. Figure 8 shows the block diagram of the XR-2206 IC.
The XR-2206 is comprised of four functional blocks: a voltage controlled oscillator (VCO), an analog multiplier & sine shaper, a unity gain buffer amplifier, and a set of current switches.

The VCO actually produces an output frequency proportional to an input current. Across pins 5 and 6, a timing capacitor, is switched on to give 5 different ranges of frequencies via COARSE FREQ. switch. On pin 7, the FINE FREQ. ADJ. variable resistor controls the actual frequency output. These two components form the RC time constants for the oscillator frequency.

The VCO produces a squarewave signal. This squarewave is sent to a shaper and converted into a sine wave.

THE LOGIC INDICATORS
There are eight logic indicators. Figure 9 shows the circuit. It consists of a 74HC04 IC. When the input is over 2.8V, the output of the IC will be low, drawing current through the LED indicator. The 120 ohm resistor limits the current in the LED to about 30mA.

![Figure 9](image)

### FUSE REPLACEMENT

1. Turn the trainer off and unplug it from 120VAC power source.
2. Unscrew fuse holder cap and remove fuse.
3. Use only a 1.25A fuse. Larger fuses or other fuse bypass will void the warranty of the trainer.
4. Place the new fuse into the fuse holder cap and screw it back into the holder.
5. Plug trainer into 120VAC power source and turn the unit on.
ORGANIZER CARRYING CASE
The carrying case for the XK-700 Digital/Analog Trainer has been designed to hold a meter and many of the most important tools. The layout below shows a suggestive layout for equipment and tools. For added storage area, the tool palette has two sides; one with pockets and elastic as shown and the other with elastic.

When ordering a meter to be used with the XK-700 trainer, specify a PSV-50 kit which will provide you with velcro to hold the meter in place. This is supplied FREE with meter order.
## PARTS LIST

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Description</th>
<th>Part#</th>
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<td>Description</td>
<td>Part#</td>
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<td>Qty.</td>
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<td>Part#</td>
</tr>
<tr>
<td>Qty.</td>
<td>Description</td>
<td>Part#</td>
</tr>
</tbody>
</table>

### Resistors
- **Resistors**
- **2** 10Ω 5% 1/4W brn-blk-brn-gold 131000
- **10** 12Ω 5% 1/4W brn-red-brn-gold 131200
- **1** 20Ω 5% 1/4W red-blk-brn-gold 132000
- **1** 22Ω 5% 1/4W red-red-brn-gold 132200
- **2** 33Ω 5% 1/4W org-org-brn-gold 133000
- **5** 1kΩ 5% 1/4W brn-blk-red-gold 141000
- **2** 2kΩ 5% 1/4W brn-red-red-gold 141200
- **1** 22kΩ 5% 1/4W yel-vio-red-gold 144700
- **1** 47kΩ 5% 1/4W yel-vio-org-gold 154700
- **1** 51kΩ 5% 1/4W grn-brn-org-gold 155100
- **16** 100kΩ 5% 1/4W brn-blk-org-gold 161000
- **1** 100kΩ Pot PC Mount 191610
- **1** 1kΩ Pot PC Mount 192412
- **2** 2kΩ Pot PC Mount 192421
- **1** 10kΩ Pot PC Mount 192531
- **3** 100kΩ Pot PC Mount 192612

### Capacitors
- **Capacitors**
- **1** 5pF 10% 50V Disc 205010
- **1** 22pF 10% 50V Disc 212210
- **1** 100pF 10% 50V Disc 221017
- **1** .001μF 10% 100V Mylar 231017
- **1** .002μF 10% 50V Disc 232216
- **1** .01μF 10% 100V Mylar 241017
- **4** .1μF 10% 100V Mylar 251017
- **1** 1μF 50V Lyrical Radial 261047
- **2** 10μF 25V Lyrical Radial 271045
- **5** 100μF 25V Lyrical Radial 281045
- **2** 1000μF 25V Lyrical Radial 291045
- **4** 1000μF 35V Lyrical Radial 291046

### Semiconductors
- **Semiconductors**
- **19** 1N4001 Diode 314001
- **2** 1N4148 Diode 314148
- **2** 2N3904 NPN Transistor 323904
- **1** 2N3906 PNP Transistor 323906
- **1** LM317 Regulator 330317
- **1** LM318 Integrated Circuit 330318
- **1** LM337 Regulator 330337
- **1** XR2206 Integrated Circuit 332206
- **1** SN7403 Integrated Circuit 337403
- **1** LM7805 Regulator 337805
- **1** LM7812 Regulator 337812
- **1** LM7912 Regulator 337912
- **8** LED Red 350002
- **2** 74HC04 Integrated Circuit 39HC04

### Miscellaneous
- **Miscellaneous**
- **1** Transformer 44K500
- **1** PC Board 514550
- **1** Fuse 1.25A 530125
- **10** Switch Slide PC Mount DPDT 541009
- **1** Switch Rocker Illuminated 541204
- **1** Switch Rotary 2P5POS 542206
- **1** Switch Rotary 4P3POS 542405
- **2** Connector 3-pin 591032
- **2** Connector 4-pin 591042
- **1** Connector 5-pin 591052
- **4** Bracket L 4-40 Tap 613008
- **1** Panel Top 614108
- **1** Case 623051
- **1** Bushing Insulated 624003
- **1** Spacer Nylon 7/16” 4-40 Tap 624013
- **8** Spacer 1/4” #8 Plastic 624124
- **2** Screw #10-32 x 3/8” Hex 641158
- **1** Screw #4-40 x 1/4” Phil Flat 641431
- **9** Screw #4-40 x 1/4” Phil Truss 641438
- **6** Screw #6-32 x 3/8” 641640
- **4** Screw #4 x 1/4” Phil AB Blk 642430
- **4** Screw #6 x 3/8” Phil TC 642660
- **4** Screw #6 x 1/2” Phil AB Blk 642662
- **7** Nut Pot 7mm 644101
- **2** Nut Pot 9mm 644102
- **6** Nut #6-32 Hex 644601
- **2** Nut #10-32 Hex 644810
- **7** Washer Flat 8mm ID x 14mm OD 645101
- **2** Washer Flat 9mm ID x 15mm OD 645103
- **4** Washer Flat Black #6 645400
- **5** Washer Fiber #4 645404
- **2** Lockwasher #10 External 646910
- **1** Fuse Holder 663000
- **1** IC Socket 8-Pin 664008
- **3** IC Socket 14-Pin 664014
- **1** IC Socket 16-Pin 664016
- **18** Bredblox 4-Pin 665204
- **5** Insulator Mica 780002
- **5** Insulator Washer 780101
- **5” Wire 20GA Red Top Coat 813120
- **2.5” Wire 22GA Jumper 845000
- **1** Line Cord 862105
- **2” Shrink Tubing 1/2” Dia 891101-2
- **2” Shrink Tubing 3/4” Dia 899110-2
- **1** 9426 Bredboard 99426
- **1** 9830 Bredboard 99830
### Model M-2795

**Features**
- 3 3/4 digit, 4,000 count display
- Audible continuity test
- Data hold / rel. value
- Frequency to 15MHz
- Capacitance to 200μF
- Diode and transistor test
- AC/DC current to 10A
- Auto power off
- Holster included

**Specifications**

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<thead>
<tr>
<th>AC + DC volts</th>
<th>400mV, 4V, 40V, 400V, 600V</th>
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<tbody>
<tr>
<td>Accuracy</td>
<td>±0.5% DC, ±0.8% AC</td>
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<td>DC volts</td>
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<td>Accuracy</td>
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<tr>
<td>Frequency</td>
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<tr>
<td>Accuracy</td>
<td>±0.1% + 5%</td>
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<tr>
<td>Accessories</td>
<td>Heavy-duty test leads, holster, manual &amp; 9V battery included</td>
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<tr>
<td>Dimensions / weight</td>
<td>7 1/2&quot; x 3 1/2&quot; (W) x 1 3/4&quot; (D) (without holster) / 10.56 oz. (without holster)</td>
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### Model M-1700

**Features**
- 3 1/2 digit, 2,000 count display
- Frequency to 20MHz
- Capacitance to 20μF
- Diode and transistor test
- Audible continuity
- AC/DC current to 10A
- 3-way overload protection
- Low cost
- Holster included

**Specifications**

<table>
<thead>
<tr>
<th>AC + DC volts</th>
<th>200mV, 2V, 20V, 200V, 600V</th>
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<tr>
<td>Accuracy</td>
<td>±0.5% rdg +1 dgt DC, ±1% rdg +4 digits AC</td>
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<td>DC volts</td>
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<td>Accuracy</td>
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<td>Resistance</td>
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<tr>
<td>Accuracy</td>
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<tr>
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<tr>
<td>Accessories</td>
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<td>6&quot; [H] x 2 1/2&quot; [W] x 1 1/4&quot; [D]</td>
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### Model M-1750

**Features**
- 3 3/4 digit, 4,000 count display
- Frequency to 10MHz
- Capacitance to 200μF
- Diode and transistor test
- Audible continuity
- AC/DC current to 10A
- 3-Way overload protection
- Holster included
- Relative measurement

**Specifications**

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<thead>
<tr>
<th>AC + DC volts</th>
<th>400mV, 4V, 40V, 400V, 600V</th>
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<td>Accuracy</td>
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<td>Dimensions</td>
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### Compact Multimeter Model M-1000D

**Features**
- 3 3/4 digit, 4,000 count display
- Transistor test
- Audible continuity
- Diode test
- Relative measurement
- 3-way overload protection
- Pocket-size
- Low cost

**Specifications**

<table>
<thead>
<tr>
<th>AC + DC volts</th>
<th>200mV, 2V, 20V, 200V, 1000V, 2000V, 7500V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.5% DC, ±1.2% AC</td>
</tr>
<tr>
<td>Input impedance</td>
<td>1MΩ</td>
</tr>
<tr>
<td>DC current</td>
<td>200μA, 2mA, 20mA, 200mA, 10A</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1.2% rdg +2 Digits</td>
</tr>
<tr>
<td>Resistance</td>
<td>200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.1% rdg +2 Digits</td>
</tr>
<tr>
<td>Capacitance</td>
<td>2pF, 20pF, 200pF, 2μF, 20μF</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5%</td>
</tr>
<tr>
<td>Frequency</td>
<td>10Hz - 20MHz autoring</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5%</td>
</tr>
<tr>
<td>Accessories</td>
<td>Test leads, manual, 9V battery included</td>
</tr>
<tr>
<td>Options</td>
<td>C-90, C-17</td>
</tr>
<tr>
<td>Dimensions</td>
<td>5&quot; [H] x 2 29/32&quot; [W] x 1&quot; [D]</td>
</tr>
<tr>
<td>Weight</td>
<td>4.9 oz.</td>
</tr>
</tbody>
</table>

Available as a kit (M-1007K)
WARRANTY POLICY

Your XK-700 Digital / Analog Trainer has been tested and conforms to our rigid requirements on performance and durability. It is guaranteed to be free of defects in workmanship, materials and construction for a period of 2 years. If this product should fail during normal use within the first 3 months from the date of purchase, Elenco® will repair or replace the unit at no cost. For the remainder of the warranty period, a nominal service charge is required to cover shipping and handling.

When returning merchandise for repair, please include proof of purchase, a brief letter of explanation of problem and sufficient packing material. Before returning any merchandise, please call our service department at (847) 541-3800 to obtain a return merchandise authorization number (RMA).

Elenco® Electronics, Inc. • Service Department
150 Carpenter Avenue • Wheeling, IL  60090