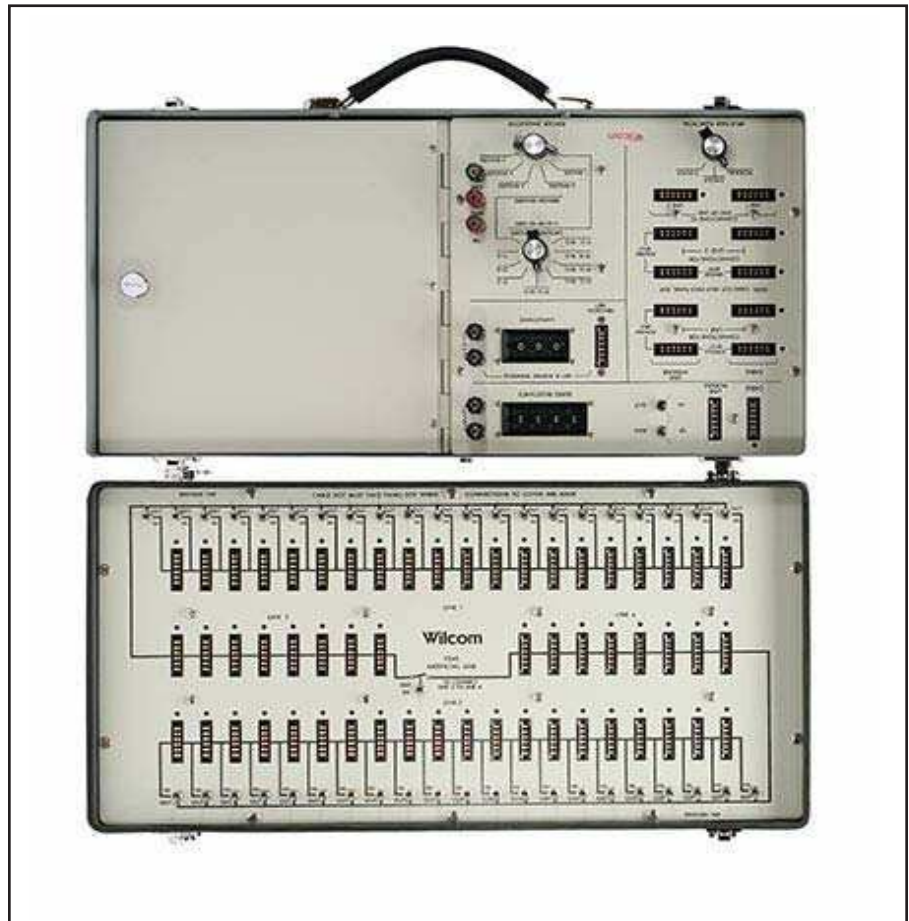


artificial cable kit

T240

Features

- Plug-in Line Sections w/ Lattice Network and Ground Path
- Plug-in Load Coils w/Switchable Faults
- Precision Networks
- Compromise Networks
- Switches for Connecting a Bridged Tap
- Capacity for a Line Using 56 Modules
- Means for Connecting Single or Double Split Pairs
- Five Simulated Bridged or Grounded Ringers
- Unbalanced Series Resistance Decade
- Build Out Capacitor
- Carrying Case for Module Storage



Description

The Model T240 is an advanced concept in artificial cable kit design providing line sections which closely represent actual telephone cable sections, and including facilities which simplify and expedite the analysis of fault conditions on a cable when used in conjunction with the Wilcom T195 Level Tracer. Switches are included for introducing conditions which normally would require the removal of modules from an artificial line and then reassembling the line.

New features make it possible to set up conditions for analyzing the effects of split pairs, unbalanced grounded ringers, high series resistance unbalance, shunt capacitance unbalance, bridged taps, and the effect of missing or improperly connected load coils, and to estimate

how many bridged ringers may be on a loop. Appropriate precision and compromise networks are provided for return loss and impedance measurements. All modules are enclosed in 2" X 2" X 3/4" aluminum cans and equipped with rugged connectors for insertion and receptacles on a plug-board panel.

The basic package consists of a plugboard unit and cover. The plugboard is equipped with receptacles for mounting the plug-in line sections and load coil modules. The accessory cover has a panel which provides a variety of switchable conditions and a storage area for patch cords. An optional plain cover is available which provides storage for 96 plug-in modules.

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Plugboard Unit

The plugboard panel is mounted in a case 20" L X 10" W X 2 3/4" D. It contains 56 receptacles which accept plug-in modules comprising line sections, load coils, terminations, binding post assemblies, and cables for connecting to special functions. Switches are included to provide means for setting up a variety of simulated cable configurations and fault conditions. All receptacles and switches are mounted on printed circuit board assemblies to minimize distributed capacity of wiring and to assure uniformity in production assembly. Among the more common arrangements that can be set up are the following:

1. All 56 modules can be connected to produce one long line. If a loaded line is to be set up in a conventional configuration H88 loading, maximum number of load coils that could be set up would be 26. This arrangement would also include two binding post modules and two 3000 ft. end sections as well as 6000 ft. line sections.
2. Two lines of 20 modules each, which could include two binding post modules, two 3000 ft. end sections eight load coils, and seven 6000 ft. sections for H88 loading. In addition, a bridged tap of up to eight modules could be set up for each line. Switches are provided for connecting the bridged tap at any point on each line.
3. One line of up to forty modules can be set up and two bridged taps can be switched in at any two points on the line, depending on how the line is arranged.

A variety of other line configurations can be arranged by using the appropriate modules, patch cords, and switches.

Accessory Cover

The accessory cover, which is standard equipment, provides cord storage space and includes four features which facilitate the analysis of a variety of conditions on a telephone cable. The cover mates to the plugboard unit, and its dimensions are 20" L X 10" W X 4 1/4" D. The four features included are:

1. Split Pair Function

Connections and switching for setting up two lines with single or double split pairs are provided. If the effect of split pairs on loaded cable are to be observed, two lines with a maximum of 12 load coils each can be set up on the Plugboard Unit.. A set of cables are included to

set up the proper connections. A rotary switch on the split pair function panel provides for normal operation of the two lines, a single split pair, or a double split pair.

2. Series Resistance

A variable resistance decade which provides resistances up to 9999 ohms in 1 ohm steps, and means for inserting this resistance in series with either the tip or ring side of the line are included. It is possible to insert this series resistance at any point along the length of the artificial line. The resistance is also available across a pair of binding posts for use in other applications. The maximum current which may flow in each resistance decade is:

1 ohm	steps	500 mA
10 ohm	steps	150 mA
100 ohm	steps	50 mA
1000 ohm	steps	15 mA

3. Build Out Capacitor

A variable capacitor decade which provides capacitances from 0 to .999 μ F in .001 μ F steps and a connector for a precision network are included. The voltage rating in 150 V DC. When the network is not used, the capacitance is available across a pair of binding posts and is useful in demonstrating the effect of shunt capacitance unbalance.

4. Ringer Simulator

An arrangement for connecting up to five simulated ringers across the tip and ring on a bridged basis, or for connecting ringers to ground in any combination adding up to five is provided. This feature makes it possible to determine if an equal number of ringers are connected from tip and ring to ground on party lines, or to determine the number of ringers bridged across the line, when the T240 is used in combination with the T195 Level Tracer.

Line Section Modules

Each line section includes a lattice network, a ground path, capacitors to ground to closely simulate the characteristics of a section of telephone cable. All component values have tight tolerances to assure good balance to ground and uniformity in production. The rating of series elements is such that each section can safely carry a current of 150 mA. All elements are mounted on a printed circuit board which is firmly attached to a connector used for insertion in the receptacles on the Plugboard Unit.

Each line section will have a label attached to the top of the module indicating the length and gauge of the line section. All modules are aluminum cases 2" L X 2" W X 3/4" D and are anodized with the following color code:

- 19 Gauge — GRAY
- 22 Gauge — RED
- 24 Gauge — GREEN
- 26 Gauge — BLUE

Line sections are available in these lengths; 50, 100, 250, 500, 750, 1000, 1500, 2250, 3000, 4500, 6000 feet. Line sections simulate a cable with a capacitance of .083 μ F per mile.



Load Coil Modules

Load Coils are mounted in a module assembly similar to that of the Line Sections. A three position toggle switch is mounted on the top of the can to provide the following arrangements:

1. Load Coil connected normally.
2. Load Coil with only one side connected, to show the effect of connecting only one half of the coil.
3. Load Coil missing.

This arrangement eliminates the need for physically removing a load coil from the line to note the effect of a missing or improperly connected coil. Consequently, tests for missing coils are greatly accelerated and simplified.

Three load coils are available with color coding for easy identification:

<u>Inductance</u>	<u>Color</u>
44 mH	Green
66 mH	Gray
88 mH	Red

Other values of inductance are made available upon request.

Network Modules

Two types of network modules are available. These are also assembled with the same construction as the line section modules.

1. Precision Networks

Precision Networks similar to the Western Electric Type 4066 are available for each line section gauge and loading scheme. Build-out capacitors are not included in the network module as they are available in the T195 Level Tracer and the T240 Accessory Cover.

2. Compromise Network

A compromise network is available to connect either 600 or 900 ohms in series with a 2.16 μ F capacitor across a line. A toggle switch is mounted on the top of the module for selecting with 600 or 900 ohms.

Binding Post Modules

Each module consists of three binding posts and a connector for insertion in the receptacles on the Plug-board Unit. Two binding posts colored red are used for connecting to the tip and ring leads of a line. The third binding posts colored black, is used for connecting to the ground path of the line sections.

Patch Cords

Four patch cords are available to facilitate connections to test equipment and various functions in the accessory cover and for interconnecting special arrangements on the Plugboard Unit. They are:

<u>Type</u>	<u>Description</u>
2BA-60	5 ft. long with twin banana plugs at each end.
2BA-AL-60	5 ft. long with twin banana plugs at one end and two alligator clips at the other end.
B 36 Red	3 ft. long single conductor and banana plug at each end.
B 36 Black	3 ft. long single conductor and banana plug at each end.

Module Carrying Case

A carrying case which can store 192 modules is available. It is sectionalized for the protection of individual

Specifications and Ordering Information

modules and housed in an aluminum case and cover 20" L X 10" W X 8" D.

All units which combine to make a complete artificial cable kit can be ordered individually as required or in suggested kits which result in some cost saving.

Individual items can be ordered with the following part numbers:

PLUGBOARDS & COVERS (without plug-in modules)

Model	Description
T240PC	Plugboard unit with plain cover
T240PAC	Plugboard unit with accessory cover
T240CAC	Accessory cover when ordered separately

PLUG-IN MODULES

Line Sections

Available Gauges: 19, 22, 24, and 26

Available Lengths:

50 ft. 750 ft.

3000 ft.

100	1000	4500
250	1500	6000
500	2250	

Note: 50 ft. and 100 ft. lengths are not available for 19 gauge. When ordering line sections, each section is to be designated by a type number which includes the prefix LS followed by the gauge and length, as shown in the following examples:

Type	Description
LS 19-500	Line Section, 19 gauge, 500 ft.
LS 22-3000	Line Section, 22 gauge, 3000 ft.
LS 24-4500	Line Section, 24 gauge, 4500 ft.

PRECISION NETWORKS

- Available Gauges: 19, 22, 24, and 26
- Available Loading Arrangements: H88, D66

When ordering precision networks, each network is to be designated by a type number which includes the prefix PN followed by the gauge and loading arrangement, as shown in the following examples:

Type	Description
PN 19-88	Precision Network, 19 gauge, H88 loading
PN 22-88	Precision Network, 22 gauge, H88 loading
PN 22-66	Precision Network, 22 gauge, D66 loading

LOAD COILS

Type	Description
LC 44	44 mH load coil
LC 66	66 mH load coil
LC 88	88 mH load coil

OTHER MODULES

Type	Description
CN-1	Compromise Network (switchable 600 or 900)
BPM-3	Binding Post Module (with 3 Binding Posts)

CORD SET

SPC-6	Set of 6 cords for connections between accessory cover and plugboard unit.
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CARRYING CASE for Storing Modules

T240MCC Module Carrying Case
Capacity for 192 modules

PATCH CORDS

Optional and should be ordered with the designations listed in the section on cords.

SUGGESTED KITS

Kit #	K240AC	K240B	K240C	K240D
Line Section				
Module Gauge	22	24	26	19
Length/ft.	Quantity	Quantity	Quantity	Quantity
50	3	6	6	—
100	3	6	6	—
250	3	6	6	2
500	6	6	6	3
750	6	6	6	3
1000	6	6	6	6
1500	6	6	6	6
2250	4	4	4	4
3000	8	6	6	8
4500	2	2	2	2
6000	10	8	8	10
Precision Net (specify type)	2	2	2	2
Load Coils (specify type)	16			
Binding Post Modules	6			
Compromise Net	2			
SPC 6 cords - set of 6	1			
T240 PAC unit & cover	1			

The above kit arrangement assumes that a 22-gauge kit would be a basic kit and that the others would be added as required. However, if a basic kit of another gauge is preferred, add the suffix C to the kit number. This would add the rest of the items listed below the Precision Net. If a kit of only the 22-gauge line sections and precision nets is required, delete the suffix C and order the K240A kit.

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Specifications and prices are subject to change without notice.
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