Models 252, 253, 254

IMPEDANCE MEASUREMENT INSTRUMENTS

- Automatic L, R, C, G and D measurements
- Basic accuracy 0.25%
- Auto-ranging version, 253
- Test frequency 1 kHz on 252 and 253
- Test frequency 120 Hz on 254, ideal for testing electrolytic capacitors
- Shielded four-terminal connections to unknown
- Optional rechargeable battery power pack
- Optional model 1412B Limits Comparator

Digital Impedance Meters

TEGAM Models 252, 253, and 254 are used for evaluating and inspecting components. These meters provide direct, digital display of inductance, capacitance, resistance, conductance and dissipation. They have the versatility and basic measurement accuracy, 0.25%, to satisfy demanding engineering and inspection applications, while being extremely easy to use.

Simply push the button for the desired function, set the range and connect to the unknown. True four-terminal connections are ensured by the standard Kelvin Klip® test leads. The measurement is displayed on the large 3.5 digit readout.

The Model 253 has all of the above characteristics, an auto-ranging feature, and includes one additional measurement range for C and G.

The Model 254 has a 120 Hz test frequency, which makes it ideal for testing electrolytic capacitors. It has full scale ranges from 2,000 pF to 20,000 µF with 1 pF resolution on the lowest range.

An optional battery power pack is available on all versions. This allows these meters to be used with line power when available and unplugged when convenient or necessary.

Available accessories include the optional Model 1412B Universal Limits Comparator and the Model 2001 Sorting Fixture. Other accessories are presented on the back page of this data sheet.

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Prices and specifications subject to change without notice.

252 Ranges

Range No.	0	1	2	3	4	5	6
L_S	200µH	2mH	20mH	200mH	2H	20H	200H
C_p	200pF	2nF	20nF	200nF	2µF	20µF	200µF
R_S	2Ω	20Ω	200Ω	2kΩ	20kΩ	200kΩ	2000kΩ
G_p	2µS	20µS	200µS	2mS	20mS	200mS	2000mS
D	1.999						

253 Ranges

Range No.	0	1	2	3	4	5	6	7
L_S	200µH	2mH	20mH	200mH	2H	20H	200H	200H
C_p	200pF	2nF	20nF	200nF	2µF	20µF	200µF	2000µF
R_S	2Ω	20Ω	200Ω	2kΩ	20kΩ	200kΩ	2000kΩ	2000kΩ
G_p	2µS	20µS	200µS	2mS	20mS	200mS	2000mS	20S
D	1.999							

254 Ranges

Range No.	0	1	2	3	4	5	6	7
L_S	2000µH	20mH	200mH	2000mH	20H	200H	2000H	2000H
C_p	2nF	20nF	200nF	2µF	20µF	200µF	2000µF	20mF
R_S	2Ω	20Ω	200Ω	2kΩ	20kΩ	200kΩ	2000kΩ	2000kΩ
G_p	2µS	20µS	200µS	2000µS	20mS	200mS	2000mS	20S
D	1.999							

Accuracy (15° C to 35° C)

L_S	±(0.25% + (1 + 0.002R_S*) counts)**	±(0.25% + (1 + 0.001R_S*) counts)		±(0.25%+ (1 + 0.002R_S*) counts)	±(0.25% + (1 + 0.002R_S*) counts)
C_p	±(0.25% + (1 + 0.002G_p*) counts)**	±(0.25% + (1 + 0.001G_p*) counts)		±(0.25% + (1 + 0.002G_p*) counts)	±(0.5% + (1 + 0.004G_p*) counts)
R_S	±(0.25% + (1 + 0.002L_S*) counts)	±(0.25% + (1 + 0.001L_S*) counts)		±(0.25% + (1 + 0.002L_S*) counts)	0.25% + (1 + 0.002L_S*) counts)
G_p	±(0.25% + (1 + 0.002C_p*) counts)	±(0.25% + (1 + 0.001C_p*) counts)		±(0.25% + (1 + 0.002C_p*) counts)	±(0.5% + (1 + 0.004C_p*) counts)
D	±(1% + 0.002) for L or C ≥ 200 counts; ±(2% + 0.010) for L or C 50 to 199 counts				±(2% + 0.10)

Test Signal

Voltage C_p, G_p	1.0VRMS		0.1VRMS			0.01VRMS
Current L_S, R_S	100mA	10mA	1mA	100µA	10µA	1µA

Test Frequency
1kHz (252 & 253); 120 Hz (254).
Optional 100 Hz (254).

Measurement Speed
4 per second; one second required for first reading after connection to unknown.

Connection to Unknown
Four-terminal, guarded. Kelvin Klips® supplied with unit.

Display
3.5 digits with decimal point; blanked for overload conditions.

External Bias
0 to 50VDC.

Analog Outputs
L, C, R or G, with simultaneous output of D for L and C.

Static Charge Protection
Diode and resistor discharge network.

Power Requirements
100 to 125V or 200 to 250V, 50/60Hz, 4W.

Dimensions
Height 10 cm (4 inches).
Width 26 cm (10 inches).
Depth 37 cm (14.6 inches).

Weight
3.2 kg (7 lbs) net.

* Digit count, same range.

** After correction for test lead zero reading 0°C to 15°C and 35°C to 50°C add 0.1 (rated accuracy) °C.

Standard Equipment

Kelvin Klips®	43072
Instruction Manual for 252	43158
Instruction Manual for 253	43761
Instruction Manual for 254	43762

Limits Comparator Relay outputs for Handler operation

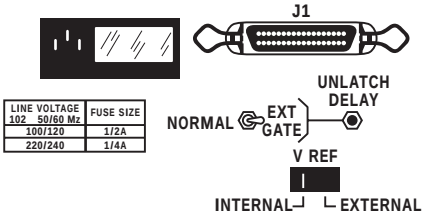
- **Front panel LED for manual sorting**
- **Resolution for nominal 4-1/2 digit**
- **Independent upper and lower limits**
- **Sort by C and D simultaneously**
- **Sorts R, L and G**
- **Operates with 252, 253 or 254**

The Model 1412B is a Limits Comparator used to automatically or manually sort components. When used with a TEGAM Model 252, 253, or 254, it provides either a "GO", "HI", or "LOW" indication for R, L, C, or G. The Model 1412B simultaneously sorts for D and C, so there is also a "D HI" indication for this condition.

Using the 1412B speeds sorting and minimizes component handling. One method of the acceptance indication is through a rear panel connector which allows for integration into a system by connecting the 1412B to automatic handling equipment.

The other indication method is the front panel LED's. There is also a gated mode, where a comparison is initiated by a control switch and held for an adjustable time, up to two seconds, after release of the switch. Both these features simplify manual use.

Resolution of the nominal value is 4.5 digits and the limits switches have three digit resolution. The system has two limits ranges, 10% and 100% of full scale, allowing for range settings of 0 to 9.99% or 0 to 99.9%. The D limit also has two ranges. The upper and lower limits are set independently, which adds to the outstanding flexibility and accuracy of the system.



Specifications

Limit Controls

-%	% deviation lower limit
+%	% deviation upper limit
D	dissipation factor upper limit

Ranges

Nominal value 00500 to 19999 (corresponds to DPM reading of companion unit).

-%	-99.9% to 0, -9.99% to 0
+%	0 to 99.9%, 0 to 9.99%
D	0 to 0.999, 0 to 0.0999

Accuracy

Nominal Value	±0.1% of reading (01999 to 19999) ±0.3% of reading (00500 to 01999)
% limits	±0.5% of full scale
D limit	±0.5% of full scale

Front Panel Lamp Indications

GO	indicates value between - and + % limits, and less than D limit.
LO	indicates value less than - limit
HI	indicates value greater than + limit
D HI	indicates factor greater than D limit

Relay Contacts (Rear Panel Connections)
Four pairs of isolated relay contacts (DPST) close individually in synchronism with front panel lamp indications.

Relay Contacts Ratings
3 watts dc, 28 volts dc maximum, 100 milliamperes; 1 millisecond switch closure time.

Gated Relay Closure
Gated model operation may be selected by means of a rear panel switch. In this condition the relay contacts remain open when a limit is reached, unless closure is initiated by a control switch. Duration of closure, after the control switch is released, is determined by the adjustment of a timing control (two seconds maximum).

Input Signals
C, L, R, G analog; D analog; analog common. Internal reference voltage used with TEGAM Model 252, 253, 254 or other instruments, selected by rear panel switch.

Dimensions
Height 13.5 cm (5.3 inches)
Width 21.6 cm (8.5 inches)
Depth (overall) 33 cm (13 inches)

Weight
3.63 kg (8 lbs) net.

Standard Equipment

Interconnection Cable	42855
Instruction Manual for 1412B	42428

Options and Accessories

Battery Powered 252	SP2596
Battery Powered 253	SP2598
Battery Powered 254	SP2599
Dust Cover	43374
Sorting Fixture	2001
Cable Set for 2001	43586

Calibration & Technical Services

For warranty and remedial repair, calibration services and spare parts, or for additional information on TEGAM sales and service offices around the world, contact us at 440-466-6100 (ph) or 440-466-6110 (fx).

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