REVISIONS			DOC. NO. SPC-F004 * Effective: 12/21/98 * DCP No: 680					
DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
430	A	Released	JWM	5/17/02	HO	5/17/02	DJC	5/17/02

Features:

- Measures inductance, capacitance, resistance, Q and dissipation factor
- Dual display allows simultaneous measurement of inductance and Q or capacitance and disipation factor
- 4 digit, 9999 count LCD display
- Auto or manual ranging
- Selectable test frequency, 120Hz & 1KHz
- Dynamic recording of MIN/MAX/AVG
- Auto-Power off after 5 minutes
- Relative mode for deviation measurement
- Tolerance mode (1%, 5%, and 10%)
- Data Hold
- Built-in Tilt Stand
- Includes 9V battery, test leads and owner's manual
- Complies with EN61010 (IEC 1010-1) installation Category II 50V, Pollution Degree 2

SPC-F004.DWG

TENMA®

Unless Otherwise Specified: Dimensions are shown for reference only!

DRAWN BY:	DATE:
Jeff McVicker	5/17/02
CHECKED BY:	DATE:
Hisham Odish	5/17/02
APPROVED BY:	DATE:
Daniel Carey	5/17/02

DRAWING TITLE: Dual Display L/C/R Meter

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	72-960	66F3567.dwg	A

SCALE: NTS | U.O.M.: Millimeters | SHEET: 1 OF 5

General Specifications

Parameters Measured: L/C/R, D/Q

Measurement Circuit Mode:

1.Capacitance/Resistance Measurement

Defaults to parallel mode for all ranges

 : Parallel measured mode

2. Inductance Measurement –

Defaults to series mode for all ranges

 : Series measured mode

Both Series and Parallel mode data can be obtained through simple key operation

Displays :

L/C/R: Max display 9999 except 10mF(120Hz), 1mF(1KHz) measurement ranges with max display 1999

D/Q: Max display 999 (AUTO RANGE)

Measurement Terminals: 2 terminals with sockets

Ranging Mode: Auto & manual

Test Frequency: 1KHz ~ 120Hz

Freq Accuracy: ±0.01%

Measurement Rate: 1 measurement/second, nominal

Test Signal Level: 0.9 Vrms approx.

Response Time: Approx. 1 second/DUT(device under test) (@ manual range)

Temperature Coefficient:

0.05 x (Specified Accuracy)/°C (0°C–<18°C or 28°C–50°C)

Operation Temperature: 0°C to 40°C; 0–70% R.H.

Storage Temperature: –20°C to +50°C; 0–80% R.H.

Power Requirements

1) Battery: DC 9V Battery
2) Ext. DC Adaptor: DC 12Vmin-15Vmax (LOAD 50mA min)

Low Battery Indication : Approx. 6.8V

Power Consumption: Approx. 40 mA; 0.3mA Auto Power-off

Protective Fuse: 0.1A fast-blow 250V AC (Please refer to Safety Information)

Auto Power-Off Time: Approx. 5 mins.

Dimensions: 37 mm(H) x 90 mm(W) x 192(L)

Weight: 390g

Standard Accessories: Test alligator clips (pair), battery (DC 9V), spare fuse (0.1A/250V AC fast-blow) and operator manual

Electrical Specifications

Resistance

All accuracies are @ 23°C; <75% R.H.

Range	Max. Display	Accuracy		Specified Note
		Test Freq. 120Hz	Test Freq. 1KHz	
10M Ω	9.999MΩ	±(2%+8 counts) *(note 3)*	±(2%+8 counts) *(note 3)*	after open cal.
1M Ω	999.9k Ω	±(0.5%+5 counts)	±(0.5%+5 counts)	after open cal.
100kΩ	99.99k Ω	±(0.5%+3 counts)	±(0.5%+3 counts)	
10kΩ	9.999k Ω	±(0.5%+3 counts)	±(0.5%+3 counts)	
1k Ω	999.9 Ω	±(0.5%+3 counts)	±(0.5%+3 counts)	
100k Ω	99.99 Ω	±(0.8%+5 counts)	±(0.8%+5 counts)	after short cal.
10 Ω	9.999 Ω	±(1.2%+8 counts)	±(1.2%+8 counts)	after short cal.

NOTES:

1. *This specification is based on the measurement performed at the test socket*
2. *DUT & Test lead to be properly shielded to GND (DC "-") if necessary.*
3. *This specification is based on internal power (battery) operation.*

Capacitance

Test Frequency: 120Hz

Range	Max. Display	Accuracy		Specified Note
		Cx *(Note 5)*	DF	
10mF	9.99mF *(note 4)*	±(5% + 5 counts) (DF<0.1)	±(10% + 100/Cx + 5 Counts) (DF<0.1)	after short cal.
1000µF	999.9µF	±(1% + 5 counts) (DF<0.1)	±(2% + 100/Cx + 5 Counts) (DF<0.1)	
100µF	99.99µF	±(0.7% + 3 counts) (DF<0.5)	±(0.7% + 100/Cx + 5 Counts) (DF<0.5)	
10µF	9.999µF			
1000nF	999.9nF			
100nF	99.99nF	±(0.7% + 5 counts) (DF<0.5)	±(0.7% + 100/Cx + 5 Counts) (DF<0.5)	after open cal.
10nF	9.999nF	±(1% + 5 counts) (DF<0.1)	±(2% + 100/Cx + 5 Counts) (DF<0.1)	

Test Frequency: 1kHz

Range	Max. Display	Accuracy		Specified Note
		Cx *(Note 5)*	DF	
1000µF	0.999mF *(note 4)*	±(5% + 5 counts) (DF<0.1)	±(10% + 100/Cx + 5 Counts) (DF<0.1)	after short cal.
100µF	99.99µF	±(1% + 5 counts) (DF<0.1)	±(2% + 100/Cx + 5 Counts) (DF<0.1)	
10µF	9.999µF	±(0.7% + 3 counts) (DF<0.5)	±(0.7% + 100/Cx + 5 Counts) (DF<0.5)	
1000nF	999.9nF			
100nF	99.99nF			
10nF	9.999nF	(0.7% + 5 counts) (DF<0.5)		after open cal.
1000pF	999.9pF	±(1% + 5 counts) (DF<0.1)	±(2% + 100/Cx + 5 Counts) (DF<0.1)	

NOTES:

1. Q value is the reciprocal of DF

2. This specifiction is based on the measurement performed at the test socket

3. Dut & test lead to be properly shielded to GND (DC "-") if necessary

4. This reading can be extended to 1999 MAX display with accuracy not specified

5. Cx = Counts of displayed C value e.g. C=88.88 µF then Cx=8888

Inductance

Test Frequency: 120Hz

Range	Max. Display	Accuracy		Specified Note
		Lx (DF<0.5) *(Note 5)*	**DF (DF<0.5)**	
10000H	9999H	Note 4	Note 4	- - - -
1000H	999.9H	±[1% + (Lx/10000)% +5 counts]	±(2% + 100/Lx + 5 Counts)	after open cal.
100H	99.99H	±[0.7% + (Lx/10000)% +5 counts]	±(1.2% + 100/Lx + 5 Counts)	- - - -
10H	9.999H			- - - -
1H	999.9 mH			- - - -
100mH	99.99mH	±[1% + (Lx/10000)% +5 counts]	±(3% + 100/Lx + 5 Counts)	after short cal.
10mH	9.999mH	±[2% + (Lx/10000)% +5 counts]	±(10% + 100/Lx + 5 Counts)	

Test Frequency: 1KHz

Range	Max. Display	Accuracy		Specified Note
		Lx (DF<0.5) *(Note 5)*	**DF (DF<0.5)**	
1000H	999.9H	Note 4	Note 4	- - - -
100H	99.99H	±[1% + (Lx/10000)% +5 counts]	±(1.2% + 100/Lx + 5 Counts)	after open cal.
10H	9.999H	±[0.7% + (Lx/10000)% +5 counts]		- - - -
1H	999.9 mH			- - - -
100mH	99.99 mH			- - - -
10mH	9.999mH	±[1.2% + (Lx/10000)% +5 counts]	±(5% + 100/Lx + 5 Counts)	after short cal.
1mH	999.9 µH	±[2% + (Lx/10000)% +5 counts]	±(10% + 100/Lx + 5 Counts)	

NOTES:
1. Q value is the reciprocal of DF
2. This specifiction is based on the measurement performed at the test socket
3. DUT & test lead to be properly shielded to GND (DC "-") if necessary
4. Not specified
5. Lx = Counts of displayed L value e.g. L=88.88 µF then Lx=8888