Appendix B
Specifications

General Specifications

Weight	2 Kg. [4.5 lbs.] Nominal
Dimensions	29.2 x 17.8 x 6.7 cm [11.9" x 7.0" x 2.65"] Nominal
Keyboard	36-Key Elastomeric
LCD	240 x 128 pixel LCD bit-mapped Display
LED Indicators	19
Internal Battery Pack	9 Sub-C NiCad Cells 9 Sub-C NiMetal Hydride Cells
External AC Adapter/Battery Charger	AC input: 100V to 240V, 0.8A, 50-60 Hz DC output: 24V, 1.25A
Shock and Vibration	Meets requirements of MIL-T-28800E for Type II, Class 5, Style E equipment
Communication Ports	(1) RS-232C Serial Port
Network Ports	(2) MAU and/or Hub Connectors, RJ-45 and DB-9 (only on the Fluke 686, 685, and 680) (2) NIC Connectors, RJ-45 and DB-9 (the DB-9 is only on the Fluke 686, 685, and 680) (1) BNC Connector (on the Fluke 686, 685, 683, and 682)

Analog Accuracy Specifications

DC Resistance

500Ω to 500kΩ (± 10%) RJ-45

10Ω to 200Ω (± 10%) BNC

Cable Length

Note

Length specifications are relative to the calibrated NVP value using a representative reference cable. Variations, not included in the specification occur due to variations in the relative permittivity of the dielectric of the cable. The length of different pairs in a cable may vary as a result of different twist rates and should not be used to verify performance of the cable length measurement function.

	Twisted Pair Cable	**Coax, 50Ω**	**STP, 150Ω**
Range	0 to 30 m (100 ft)	0 to 30 m (100 ft)	0 to 30 m (100 ft)
Resolution	0.1 m or 1 ft	0.1 m or 1 ft	0.1 m or 1 ft
Accuracy:	± (1 m (3 ft) + 2% of reading)	±(1 m (3 ft) + 2% of reading)	±(1 m (3 ft) + 2% of reading)
Range	30 to 328 m (1000 ft)	30 to 600 m (2000 ft)	30 to 600 m (2000 ft)
Resolution	0.1 m or 1 ft	0.1 m or 1 ft	0.1 m or 1 ft
Accuracy:	± (1 m (3 ft) + 4% of reading)	± (1 m (3 ft) + 4% of reading)	± (1 m (3 ft) + 4% of reading)

- ❒ The length measurement range of Type 1 STP cable and 50 Ω coaxial cable exceeds 600 meters.
- ❒ Accuracy specification for Length excludes the error in Nominal Velocity of Propagation (NVP).
- ❒ The LANMeter instrument allows you to enter the value for NVP or to “calibrate” the NVP of a cable type. Minimum cable length for calibration is 15 m (50 ft).

Propagation Delay

	Twisted Pair Cable	Coax, 50Ω	STP, 150Ω
Range	0 to 150 ns	0 to 150 ns	0 to 150 ns
Resolution	1 ns	1 ns	1 ns
Accuracy:	± (5 ns + 2% of reading)	± (5 ns + 2% of reading)	± (5 ns + 2% of reading)
Range	150 to 1500 ns	150 to 2500 ns	150 to 1500 ns
Resolution	1 ns	1 ns	1 ns
Accuracy:	± (5 ns + 4% of reading)	± (5 ns + 4% of reading)	± (5 ns + 4% of reading)

The propagation delay range to Type 1 STP cable and 50Ω coaxial cable exceeds 3000 ns.

Propagation Delay Skew

Propagation Delay Skew measurement accuracy is twice the accuracy of the propagation delay function, at the propagation delay that is measured. It is the difference between the propagation delay in the wire pairs and is particularly important for 100BASE-T4 and 100BASEVG standard requirements.

Fiber Test Option

DSP-FOM Optical Power Meter

Calibrated wavelengths:	850 nm, 1300 nm, and 1550 nm
Dynamic range:	+3 to -50 dBm
Measurement accuracy:	±0.25 dB at -10.0 dBm and 25° C
Display resolution:	0.01 dB (0.001 µW)
Detector type:	Germanium
Optical adapter:	ST
Operating temperature:	0° C to +40° C
Storage temperature:	-20° C to +70° C
Dimensions:	4.5 x 2.5 x 1.5 in (11.4 x 6.4 x 3.8 cm)
Weight:	5.0 oz (142g)
Battery type:	9V alkaline
Battery life:	90 hours typical

FOS-850/1300 Optical Source

Transmit wavelengths:	850 nm and 1300 nm
Power output:	-20 dBm
Source type:	LED
Optical Adapter:	ST
Operating temperature:	0° C to +40° C
Storage temperature:	-20° C to +70° C
Dimensions:	4.5 x 2.5 x 1.5 in (11.4 x 6.4 x 3.8 cm)
Weight:	5.0 oz (142g)
Battery type:	9V alkaline
Battery life:	24 hours typical

LS-1310/1550 Laser Source

Output wavelengths:	1310 nm or 1550 nm, switch selectable
Power Output:	-10 dBm, adjustable
Source Type:	Laser (Class l)
Optical adapter:	Single Mode ST
Operating Temperature:	0° C to +40° C
Storage Temperature:	-10° C to +60° C
Dimensions:	6.8 x 3 x 1.5 in (17.4 x 7.6 x 3.8 cm)
Weight:	9.4 oz (266 g)
Battery type:	9V alkaline
Battery life:	16 hours typical

Cable Test Specifications

Cable Types

Unshielded Twisted Pair LAN cables (100Ω UTP category 3, 4, and 5)

Foil-screened Twisted Pair cables (100Ω ScTP 3, 4, and 5)

Shielded Twisted Pair cables (150Ω, IBM Type 6 and 9)

Coaxial cables: RG-8 ThickLAN (10BASE5), RG-58 ThinLAN (10BASE2), RG-58 Foam

Test Standards

TIA Link Committee standards for both Channel and Basic Link, Category 3, 4, and 5

ISO/IEC IS-11801 Class C and D

IEEE 10BASE5, 10BASE2, and 10BASE-T

IEEE Token Ring 4 Mbps or 16 Mbps

IEEE 100BASE-TX

IEEE 100BASE-T4

IEEE 802.12 (100VG-AnyLAN) 4-UTP

Autotest

The Enterprise LANMeter automatically executes a series of measurements and compares the results against the selected Network Specification resulting in PASS/FAIL test results. Typical Autotest test time is < 90 seconds. The applicable tests are described below.

Cable Length

Refer to the specifications of the stand alone Cable Length test.

Characteristic Impedance

Twisted Pair Range:	50Ω to 200Ω
Coax Range:	25Ω to 100Ω
Accuracy:	+/-(5Ω + 5% of reading)

Wire Map

Tested on up to four pairs. PASS/FAIL on pairs called out in selected network specification.

DC Resistance

500Ω to 500kΩ (+/- 10%) RJ-45
10Ω to 200Ω (+/- 10%) BNC

Test Storage

Up to 128 Autotest Summary Results

100 MHz Remote (Optional)

The 100 MHz Remote meets the TIA Level I Accuracy Requirements and supports 100 ohm Twisted Pair Cable **only**.

Functions

Attenuation

Frequency Range:	1 MHz to 100 MHz in 1 MHz step sizes
Accuracy:	Typically better than +/- 1.3 dB at TIA Cat 5 Limits

Near End Crosstalk (NEXT)

100 MHz Remote measures NEXT at the far end. Measured for all cable pair combinations as called out by network specification.

Accuracy: Typically better than +/- 3.8 dB (Basic Link), +/- 3.4 dB (Channel) at TIA Cat 5 Limits

Frequency Range: 1 MHz to 100 MHz

In High Resolution Mode NEXT Test Sampling Step Size:
1-31.25 MHz (≤ 150 KHz),
31.25-100 MHz (≤ 250 KHz)

In Low Resolution Mode NEXT test Sampling Size:
1-100 MHz (≤ 500 KHz)

Residual NEXT Loss

(With Category 5 compliant connector) better than 70 dB at 1 MHz and better than 40 dB at 100 MHz.

Random Noise Floor

Typically better than 75 dB, measured as specified in the TIA Link standard.

Attenuation to Crosstalk Ratio (ACR)

Calculated from NEXT and attenuation measurements.

Physical

Case

Dimensions: 8.5” X 12.5” X 2.5” (21.6 cm X 31.8 cm X 6.4 cm) Nominal
Weight: 9.25 oz (260g) Nominal

Test Connector

RJ-45

LEDs

Three LED indicators are used for communicating AUTOTEST results; green (Pass), red (Fail), and yellow (Test in Progress).

Power

Remote Unit: Replaceable 9 Volt Alkaline cell.

Environmental Requirements

Operating Temperature	10°C to 30°C with up to 95% Relative Humidity 10°C to 40°C with up to 75% Relative Humidity
Non-Operating Temperature	-20°C to +60°C
Approvals	The AC Adapter for the instrument has UL, CSA, and CE approvals or other approvals valid in the USA, Canada, and Europe.
Electromagnetic Interference	Tested to EN 50082-1. Exempt for USA and Canadian emissions regulations if it does not interfere with licensed communications.
Connection to public telephone network	The Fluke 68x Series should not be connected to the public telephone network at any time.