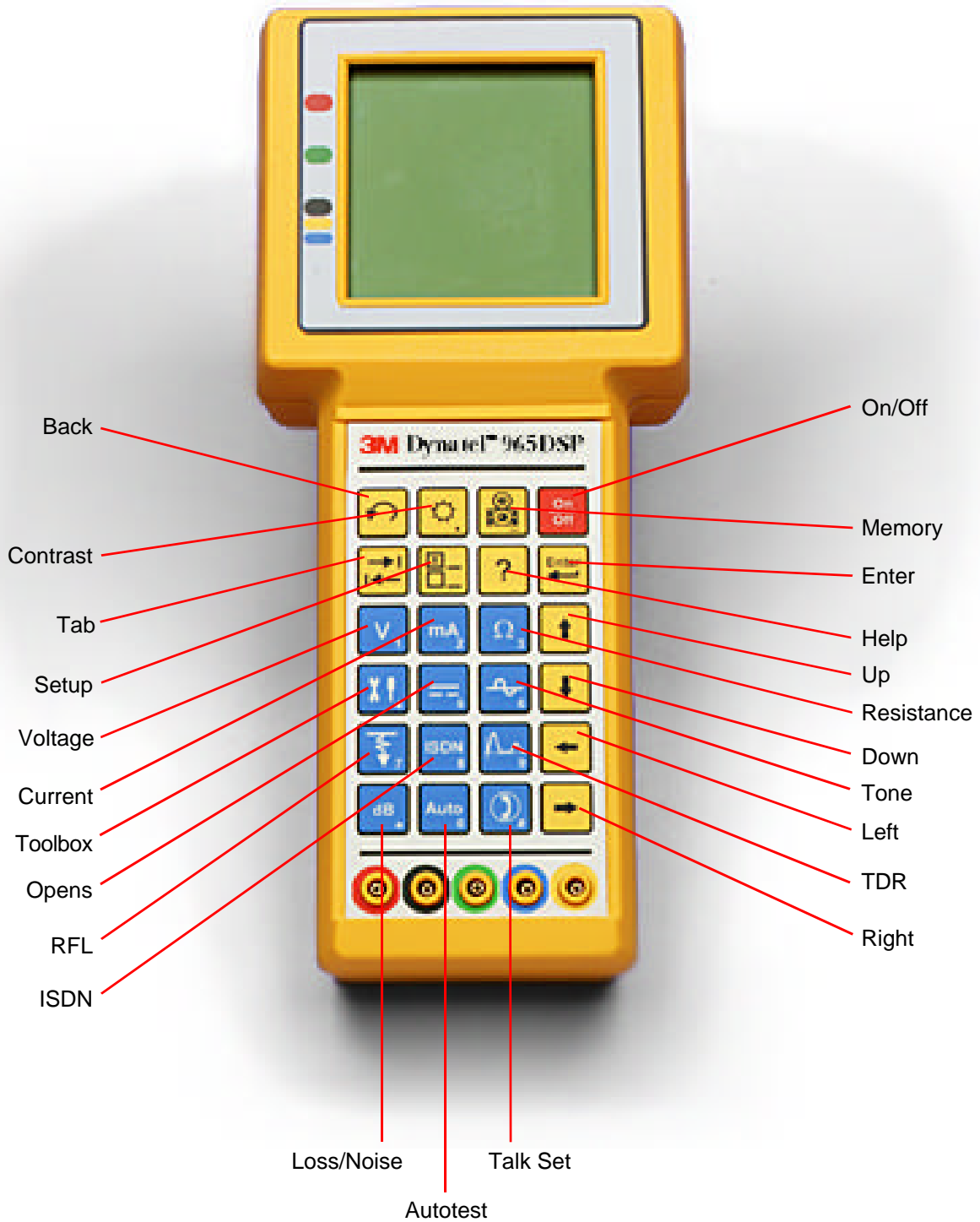


3M

Dynatel™ 965DSP

Subscriber Loop Analyzer





Complete testing of POTS and ISDN subscriber loops

The 3M™ Dynatel™ 965DSP Subscriber Loop Analyzer is a microprocessor-controlled integrated test set that provides full-featured POTS and fundamental ISDN testing. The functions include fault location and repair verification on twisted-pair, quad and coaxial cable (utilizing capacitance bridge, resistance bridge and Time Domain Reflectometer (TDR) functions).

The Dynatel 965DSP subscriber loop analyzer executes a wide range of individual tests, or performs automatic test routines as specified by the user to categorize and sectionalize problems. Specific tests and measurements performed by the unit include:

- Voltage – detects and measures the presence of exchange or foreign DC or AC voltages.
- Tone – provides a test tone for conductor identification; user-selected tones from 1 to 40 kHz for transmission measurements.
- Current – measures DC loop current.
- Ohms – measures conductor and insulation resistance up to 1000 megohms.
- TDR – full-featured TDR with user-selectable pulse widths, length, gain zoom, filter and Vp. Four modes of operation:
 - **Single trace** – provides graphical representation of events on a pair.
 - **Dual trace** – allows active comparison of two traces.
 - **Differential** – displays difference between two circuits.
 - **Crosstalk** – displays the crosstalk from one pair to the other.
- Resistance fault location – displays distance to fault.
- Opens – locates opens at distances up to 100,000 ft. (30 km).
- Splits – locates splits on paired cable.
- Ringer count – counts the number of ringers on a particular loop.
- Load coil count – indicates the presence of load coils in a loop circuit.
- Wideband loss – loss measurements to 200 kHz for pre-qualifying ISDN and HDSL.
- Loss – measures voice band loss.
- Noise – measures noise metallic and noise to ground in dBrc.
- Longitudinal balance – provides active measurement of line balance.

Flexible, practical features

The 965DSP subscriber loop analyzer is designed for functionality and ease of use. Features of the unit include:

- IR port - infrared port for downloading future software programs.
- Self-calibration – internal instrument calibration and set-up procedures.
- Graphical user interface – user-friendly, icon-based display of test results.
- Replaceable five color-coded banana jacks for test connections.
- HELP function – an internal help menu provides information as needed during operation.
- Telephone – internal telephone or “talk set.”
- Rechargeable nickel metal hydride batteries – with battery charger, plus alkaline battery holder.
- Modular hardware and software design – for easy upgrades, investment protection.
- Backlit high resolution/high contrast LCD display.

Rugged, weatherproof design

The hand-held 965DSP test set is housed in a lightweight, ergonomically designed case for portability and ease of handling. The unit is weather-resistant and weighs only 3.3 pounds (1.5 kg).

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Physical Specifications

Size	10.0"H x 4.0"W x 2.5"D	(25 cm x 10 cm x 6 cm)
Net Weight	3.3 lbs. with battery and soft case	(1.5 kg)
Shipping Weight		
Material	High impact grade ABS	

Environmental Specifications

Operating temperature	0° to 140°F	(-18 to 60°C)
Storage temperature	-40° to 165°F	(-40 to 75°C)
Humidity	0-95%, non-condensing	

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Electrical Specifications

Main Functions	Range	Resolution	Accuracy
Voltage (DC)	0 to 99.9 V 100 to 300 V	0.1 V 1 V	1% ± 0.5 V 3%
Voltage (AC)	0 to 99.9 V 100 to 250 V	0.1 V 1 V	1% ± 0.5 V 3%
Current	0 to 59.9 mA 60 to 110 mA	0.1 mA 0.1 mA	1% ± 0.3 mA 2%
Resistance (DC) with CO voltage	0 to 9999 0 to 9999 10 k to 99.9 k 100 k to 999 k 1 M to 9.9 M 10 M to 99 M 100 M to 990 M	1 1 0.1 k 1 k 0.1 M 1 M 10 M	1% ± 5 1% ± 50 1% 3% 3% 5% 10%
Opens (no noise)	0 to 3,000 ft (0 to 1000 m) 3,000 to 10,000 ft (1 km to 3 km) 10,000 to 50,000 ft (3 km to 15 km) 50,000 to 100,000 ft (15 km to 30 km)	1 ft (1 m) 1 ft (1 m) 10 ft (10 m) 100 ft (100 m)	1% ± 3 ft 3% 5% 10%
RFL Fault range Resistance to fault (no noise)	0 to 20 M 0 to 99.99 100 to 999.9 1 k to 7 k	— 0.01 0.1) 1.0	— 0.1% of RTS ± 0.01 0.2% of RTS ± 0.01 1.0% of RTS ± 0.01
Loss (& frequency)	-40 to +10 dBm, 200 to 3000 Hz -40 to +10 dBm, 3000 to 9995 Hz -40 to +10 dBm, 10 k to 19.9 kHz	0.1 dB, 1 Hz 0.1 dB, 5 Hz 1 dB, 10 Hz	0.5 dB, 2 Hz 0.5 dB, 10 Hz 1 dB, 20 Hz
Wideband loss	-40 to +10 dBm, 20 k to 200 kHz	1 dB, 100 Hz	2 dB, 0.1 kHz
Noise metallic	0 to 50 dBrc (-90 to -40 dBm0p)	1 dB	2 dB
Noise to ground	40 to 100 dBrc (-50 to 10 dBm0p)	1 dB	2 dB
Longitudinal balance	62 to 40 dB	1 dB	2 dB
Tone output ID User defined User defined ISDN	200 to 1000 Hz, fixed level 200 to 9995 Hz, -20 to +1 dBm 10 k to 19.99 kHz, -20 to +1 dBm 40 kHz, +6 dBm fixed level	1 Hz 1 Hz, 0.1 dB 10 Hz, 1 dB —	1% 1% Hz, 0.2 dB 2% Hz, 1 dB 2%, 2 dB
Dial mode	DTMF, Pulse	Standard	Standard
TDR Ranges	3 ft–300 ft, 20 ft–1,000 ft, 50 ft–3,000 ft, 150 ft. 10,000 ft, 450 ft–30,000 ft (0–100 m, 5–300 m, 15–1,000m, 45–3,000 m, 140–10,000 m)	1 ft (1 m)	0.6% range
Pulse width Velocity input Modes	5 nS, 34 nS, 235 nS, 1600 nS 0.50 to 0.99 (150 to 299 uS/m) Single trace, dual trace, differential, memory, crosstalk	Fixed values 0.01 (1 uS/m) —	— — —
ISDN Link test Error test	Active/inactive Near-end & far-end block errors	— 1 error	— 1 error
Auto	Same specifications as full tests	See above	See above

Kupfmuller Test

Loop Res	0 to 1K Ohms	—	—
Fault Res	10K Ohms to 10M Ohms	—	—
Fault ratio	(Fault Res.) > twice (Fault Res.)	—	—
Res to Fault	0 to 99 Ohms 100 to 999 Ohms	0.01 Ohms 0.1 Ohms	5% 5%
Material			

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Accessories

Test leads	Five 5 ft (1.5 m) test leads with 2 mm gold-plated banana plugs one end and chrome-plated alligator clips on other end (black/red, blue/yellow, green)
RFLstrap	1.5 ft (0.5 m) with alligator clips on three ends
AC/DC adaptor	100-250 Vac (50/60 Hz) input; 12 Vdc (1 A) output
Soft case	Heavy-duty fabric case for unit and test leads
Battery holder	Plastic holder for 6 AA(LR6) batteries
Battery pack	Custom 1.2 amp-hour Nickel metal hydride

Toolbox Functions	Resolution	Accuracy	
Load coil count	0 to 4	1	1
Ringer count	0 to 5	1	1
Ohms/distance calculator	0-9999 Ohms 0-165000 ft (0-50 km)	0.1 1 ft (0.1 m)	— —
Caller ID	Number, name, date, time	—	—
Carrier level	-4 to -32 dBm	1 dBm	2 dBm
Self-calibrate	Yes or no		

General Specifications

Ruggedness	Survives 5 ft (1.5 m) drop in soft case
Water-resistance	Splash-proof; may be used in light to moderate rain
Standards	Meets FCC part 15, class A: Digital Devices for the US, and EN55022 (radiated emissions), EN55024-2 (electrostatic discharge), EN55024-3 (radiated immunity) EN55024-4 (transient immunity) and IEC1010 (product safety) for Europe. Built to ISO9001 certification for manufacturing facilities. Built to Belcore TSY000078 manufacturing methods. Meets UL50 Rain Test.
Language	English, Spanish, French, German, Danish, Italian
Units	Feet or meters, Fahrenheit or Celsius, dBmC or dBm0p, m/uS or Vf
Battery Life	Rechargeable battery pack, 12 hours typical usage (no backlight), 4 hours typical (with backlight); typical usage defined as 30 minutes on, 30 minutes off
Charging time	4 hours from low to full
Keypad	24-key membrane keypad with tactile feedback
Display	2.5" x 2.5" (74 x 74 cm), 192 by 192 pixel resolution, backlight

Note: Routine calibration is not recommended or required.

Ordering Information

To order, specify the 965DSPSubscriber Loop Analyzer which includes: analyzer, AC adaptor, AC power cord, test leads, alkaline battery holder, conductor strap and operating manual. For further information, please contact your local 3M sales representative.

Stock Number	Product Description	UPC
80-6108-6390-6	965DSP Subscriber Loop Analyzer	051138-57603

Optional accessories

80-6108-6435-9	Black/red test lead, alligator, bed of nails	051138-57648
80-6108-6395-5	Black/red test lead, 4 mm banana, 1.5 m	051138-57608
80-6108-6436-7	Blue/yellow test lead, alligator, bed of nails	051138-57649
80-6108-6397-1	Blue/yellow test lead, 4 mm banana, 1.5 m	051138-57610
80-6108-6437-5	Green test lead, alligator, bed of nails	051138-57650
80-6108-6399-7	Green test lead, 4 mm banana, 1.5 m	051138-57612
80-6108-6472-2	Alkaline battery holder	051138-57685
80-6108-6393-0	110/220 Vac adapter	051138-57606
80-6108-6392-2	Soft case	051138-57605
80-6108-6473-0	Nickel metal hydride, battery pack	051138-57686
80-6109-3830-2	Ground strap, alligator	051138-58529
80-6109-3833-6	Ground strap, 4 mm banana	051138-58532

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