3M

Dynatel™
2273E Cable/Fault Locator

Measure and pinpoint sheath and conductor faults, locate cable path/depth quickly and easily with this lightweight, easy-to-handle unit

The 3M™ Dynatel™ 2273E Cable/Fault Locator is a microprocessor-based system that incorporates advanced digital signal processing techniques to quickly and efficiently locate sheath (earth return) faults and trace the path of underground cables, both copper and fiber optic (with metallic trace wire). Lightweight, compact and well-balanced, the cable/fault locator accurately:
• Locates cable path
• Measures cable or sonde depth with the push of a button
• Measures signal current in the cable
• Pinpoints sheath faults and cable breaks
• Discriminates between light and heavy faults
• Identifies cable and cable pairs (with coupler accessory)
• Tones shorts and grounds in aerial cable
• Identifies cable pairs through wet sections with optional 3011 inductive probe
• Locates energized power cable with direct readout of cable depth
    The 2273E cable/fault locator provides accurate cable or sonde depth measurements, giving a digital readout in centimeters, inches, or feet and inches (user-selectable).
    Additionally, when used in conjunction with the 3M™ Dynatel™ 2205/2206 EMS Marker Locating Accessory, the system can:
• Pinpoint the exact location of buried EMS markers
• Trace a cable path while simultaneously finding buried markers along the way

The Dynatel 2273E Cable/Fault Locator can be used with the Dynatel 2205/2206 EMS Marker Locating Accessory. 2

Four modes of operation for accurate locates, even in congested areas

For cable path locating, the Dynatel 2273E receiver uses one of four user-selected locating modes — dual peak, dual null, differential or special peak (which increases the sensitivity of the receiver for tracing over longer distances). The mode is selected depending on which is most effective under the locating conditions.
    The receiver includes four volume settings, including a special "expander" function that makes peaks and nulls more pronounced. The expander feature enhances the amplitude difference between two conductors carrying the same signal, making the unit extremely accurate, even in congested areas. A headphone jack is also included.

Precisely locates faults

The 2273E cable/fault locator can precisely locate sheath (earth return) faults on both short and long cable sections. The unit sends a trace signal simultaneously with the fault-locate signal, allowing the operator to use the cable-locate function when locating sheath faults in long cable sections. Sheath (earth return) fault strength is indicated on the receiver LCD display, allowing minor faults to be ignored, if desired.

The Dynatel 2273E Cable/Fault Locator locates sheath (earth return) faults. 3

A simple, easy-to-use system

The Dynatel 2273E cable/fault locator is easy to operate and requires very little training. Digital liquid crystal display (LCD) readout and push-button operation make the unit easy to understand, for more precise locates. A "memory" feature remembers operator set-up from previous use.
    The system consists of three basic components:
• Transmitter with built-in ohmmeter, which also senses and measures the presence of foreign voltage, and tests the continuity of the circuit.
• One-piece hand-held receiver with bar graph that indicates received signal and proximity to the cable.
• Earth contact frame that is color-coded to correspond with indications from the receiver directing the operator toward the fault.
    The 2273E cable/fault locator uses four active trace frequencies — 577 Hz, 8 kHz, 33 kHz and 133 kHz — which can be used individually or simultaneously to compensate for varying field conditions. It also incorporates two passive trace frequencies — 50/60 Hz power (user-selectable) and VLF — which do not require the use of the transmitter.
    Both the receiver and the transmitter feature a self-test routine which is executed each time the unit is turned on. A power-up battery test indicates the battery level.
    Both components are constructed of heavy-duty materials designed to withstand typical field use.

Standard Dynatel accessories

• Direct-Connect Transmitter Cable
• 8006 Ground Rod; stainless steel
• 3014 Earth Contact Frame
• 9026 Earth Contact Frame cable; 1.2 m (4 ft.) long

- 3019 Dyna-Coupler Kit; consists of 3" Dyna-Coupler for use on cables up to 7.6 cm (3"), Coupler Extension Cable, and Pouch
- 3005 1" Dyna-Coupler; for use on cables up to 2.5 cm (1") in diameter
- 1196 6" Dyna-Coupler; for use on cables up to 17.5 cm (6.9") in diameter; with pouch
- 3011 Inductive Probe; for pair identification
- 9011 Coupler Extension Cable
- 9023 Probe Cable
- 9043 Ground Extension Cable
- 3229 Active Duct Probe

3M™ Dynatel™ 2273E Cable/Fault Locator

Features	Benefits
Transmitter	
Four operator-selectable frequencies	Optimizes unit performance in varying conditions
Simultaneous signals	Enables receiver to verify cable location
Fault-locate and cable-locate signals applied simultaneously	Enables receiver to verify cable location while fault locating
Built-in ohmmeter with voltage sensing/measuring capability	Displays earth fault resistance; confirms far-end grounds and shield continuity
Three signal application methods (direct connect, coupler, induction)	Flexibility under varying plant conditions
Auto load matching	Automatic adjustment of output voltage to maximize signal
High and normal output level	High output level for extreme distance locates and other varying cable conditions
Audible indication of hazardous voltage in ohms mode	Warns operator of potentially dangerous situation
Can connect to energized power cables up to 240 Vac	Prevents inadvertent damage to unit; operates while attached to live circuits
Receiver	
Peak and null modes	Verify cable location
Differential mode	Indicates direction to cable
Push-button digital depth readout (of cable or sonde) in centimeters, inches, or feet and inches	Easy, quick and accurate depth measurements; no conversion table required for sonde depth measurements
Measures signal current in cable	Helps identify target cable regardless of depth
Visual and audible cable locates	Ensure accuracy under varying field conditions
Digital fault strength indicator	Operator can differentiate between light and severe faults
Coupler jack	Pair/cable identification
Graphic display	Operator can distinguish between target cable and other cables in congested areas
Expander function	Improves sensitivity of audible and visual response
50/60 Hz passive power and passive VLF mode	Locates cables using receiver only
Compatible with 2205/2206 marker locating accessory	Allows unit to pinpoint location of buried EMS markers

Physical Specifications

Size	
Transmitter	17.2 cm H x 28.6 cm W x 19.7 cm D (6.75" x 11.25" x 7.75")
Receiver	64.8 cm H x 9.5 cm W x 27.3 cm D (25.5" x 3.75" x 10.75")
Weight	
Transmitter	2.4 kg (5.88 lbs.)
Receiver	1.8 kg (3.98 lbs.)
Shipping	9.3 kg (20.59 lbs.)

Environmental Specifications

Operating temperature	-20° to 50°C (-4° to 122°F)
Storage temperature	-40° to 70°C (-40° to 158°F)

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Electrical Specifications

Receiver

Frequencies	
Trace mode	Active: 577 Hz, 8 kHz, 33 kHz, 133 kHz
	Passive: Power — 50/60 Hz, user-selectable; VLF — 22 kHz
Tone mode	577 Hz and 133 kHz pulsed at 8 Hz
Depth	Range: 0 to 4.5 m (0 to 15')
	Accuracy: ±10% ± 1 digit for 0 to 1.5 m (0 to 60")
	±15% for 1.5 to 4.5 m (60 to 180")
Power	Six alkaline LR6 ("AA") cells
Typical battery life	50 hours

Transmitter

Output frequencies	
Trace mode	577 Hz, 8 kHz, 33 kHz, 133 kHz
Sheath fault mode	4/8 Hz for sheath fault; 577 Hz and 33 kHz for tracing
Tone mode	577 Hz and 133 kHz pulsed at 8 Hz
Induction mode	133 kHz
Output voltage (maximum)	
Sheath fault	30 Vrms
Trace	30 Vrms
Tone	Normal setting: 10 Vrms
	High setting: 30 Vrms
Output power	Normal setting: Limited to 0.5 W
	High setting: Limited to 3 W
Output protection	240 Vrms
Power	Six alkaline LR14 ("C") cells
Typical battery life	Normal output level: 50 hours
	High output level: 10 hours

Ordering Information

To order, specify the appropriate 3M™ Dynatel™ 2273E Cable/Fault Locator using the table below.

Market		Code X
International		E3

Typical Use	Direct connect cable configuration	Code Y
Telephone	5-foot cable with telco-style direct connection clips	T
CATV	10-foot cable with telco-style direct connection clips	C
Power	10-foot cable with large alligator direct connection clips	P

Coupler Kit	Code Z
No coupler kit	N
3" coupler kit	3

Example 2273- XYZ
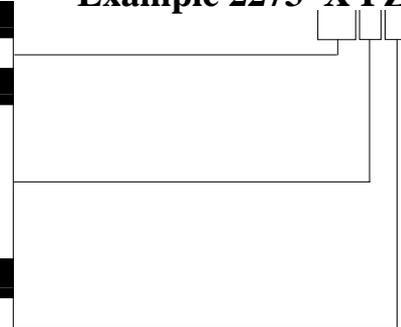
Example: 2273-E3T3 translates to a 2273E Cable/Fault Locator for the International market, used by a telephone utility and includes a 3" Dyna-Coupler Kit

Important Notice

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