

# Troxler RoadReader™ Plus

Now... one gauge meets every compaction control demand!

A new gauge for a  
new era



Thin Asphalt or  
Concrete Overlays



Soil and  
Aggregates



Full Depth Asphalt  
or Concrete



Model 3450 CE



## A New Era for Moisture/Density Gauges

Troxler establishes a new standard for the construction industry with the totally new, totally different RoadReader™ Plus. It is the most versatile moisture/density gauge ever produced. The RoadReader™ Plus combines the measurement modes proven in thousands of Troxler 3400 series gauges with a patented method for true thin layer asphalt and concrete bridge deck overlay density measurement. By combining thin layer and full depth measuring capabilities in one instrument, the RoadReader™ Plus introduces a new era of compaction quality control. With its versatility, speed and economy, the RoadReader™ Plus is designed to control compaction at every stage of your project.

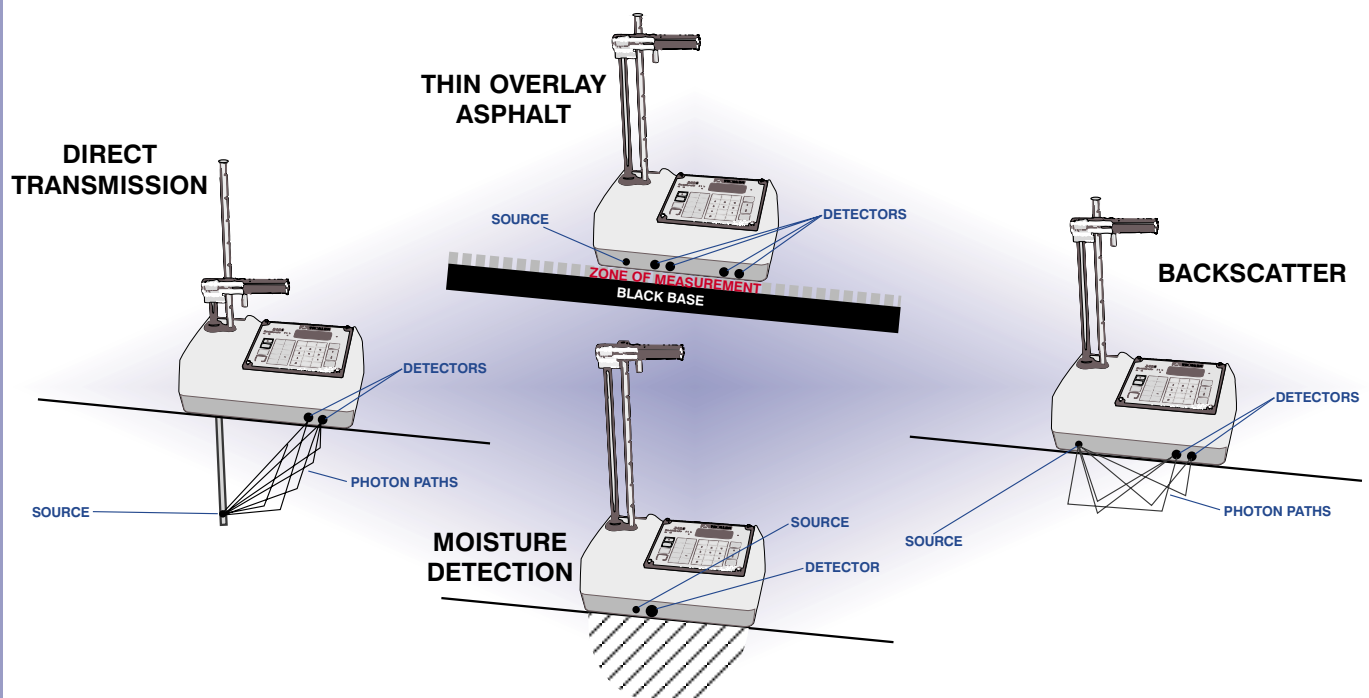
- **Versatility** - Thin layer, full depth and graduated depth measurement in soils, aggregate, asphalt and concrete.
- **Speed** - Instantaneous measurement of both density and moisture without time-consuming calculations. Direct readout of wet density, dry density, moisture, % moisture, % compaction, % voids and % air voids.
- **Economy** - The same instrument can be used on a broad range of materials and can be shared between projects with different compaction control demands.



RoadReader™ Plus is versatile, quick and economical.

### All the Measurement Capabilities in One Instrument

- **Thin Layer** - This patented Troxler process measures the density of asphalt & concrete overlays from 1-4 in. (2.54 - 10.16 cm) without influence from the underlying material.
- **Backscatter** - Ideal nondestructive density measurement mode for full depth asphalt and concrete.
- **Direct Transmission** - Density measurement of choice for lifts of soil, soil aggregate and stone up to 12" (30.48 cm).
- **Moisture** - Nondestructive moisture measurement for soil, soil aggregate and stone base.



### Ease of Operation

For all its sophistication the RoadReader™ Plus is designed with the operator in mind.

- An expanded keypad provides easy access to all major gauge functions.
- A key for each letter of the alphabet assists in the addition of notes for each project entry.
- Easy to follow screen prompts assist the operator through gauge operation.
- A backlighted screen provides exceptional viewing for low light or night time testing.
- An adjustable beeper confirms each keystroke and signals test completion over the roar of traffic or heavy equipment.
- One keystroke changes the measurement mode to match each field application.

### Power

The RoadReader™ Plus should never lose power in the field due to a low charge or dead battery. Its unique design includes 3 battery systems. System one contains a quick charge nicad battery pack. Nicads provide up to 180 hours of service and will fully recharge in four hours. Systems two and three are alkaline backup packs. Let your nicads run from a full charge to a recharge condition. The alkalines will continue to power the gauge until the nicads can be recharged. This ensures maximum life for the nicad batteries and protection for stored data.

A user controlled "sleep mode" shuts down power intensive systems when the gauge is not being used. Press any key to reactivate all systems. All setup and test data is stored and protected.

### Data Storage and Transfer

Troxler brings the customer closer to paperless field reporting.

- Store up to 1000 test results
- Enter project number, station number and notes.
- Data can be transferred to a computer for editing in the most popular spreadsheet programs.

### ASTM

The Troxler Model 3450 exceeds the following ASTM standards:

D2922 D3017 D2950 C1040

### The Troxler Comprehensive Service Package

Troxler designs quality into every gauge. This allows the RoadReader™ Plus to be warranted for 18 months.

Twelve offices in the United States, Canada, and Germany and a worldwide network of 65 appointed distributors ensure that Troxler has knowledge of your local working conditions and requirements. Troxler is always just a phone call away.

Training of Troxler gauge operators in operation, radiation safety and regulation compliance is provided throughout the United States, Canada and through approved Troxler distributors worldwide. Troxler certification is widely accepted by regulatory agencies for licensing.

Contact Troxler or your local distributor today for an on-site demonstration and information on the complete line of Troxler equipment for quality control of construction materials.



# RoadReader™ Plus SPECIFICATIONS

## Measurement Specifications (U.S. Customary Units)

Direct Transmission (6")	15 sec	1 min	4 min
Precision (pcf)	0.32	0.15	0.08
Composition error (pcf)	0.50	0.50	0.50
Surface error (0.05", 100% Void) (pcf)	-1.1	-1.1	-1.1

Backscatter	15 sec	1 min	4 min
Precision (pcf)	1.0	0.50	0.25
Composition error (pcf)	0.87	0.87	0.87
Surface error (0.05", 100% Void) (pcf)	-5.0	-5.0	-5.0

Moisture at 15 pcf	15 sec	1 min	4 min
Precision (pcf)	0.69	0.34	0.17
Surface error (0.05", 100% Void) (pcf)	-1.2	-1.2	-1.2
Depth of measurement = 8.5"			

## (S.I. Units)

Direct Transmission (150 mm)	15 sec	1 min	4 min
Precision (kg/m <sup>2</sup> )	5.2	2.6	1.3
Composition error (kg/m <sup>2</sup> )	8.0	8.0	8.0
Surface error (1.25 mm, 100% Void) (kg/m <sup>2</sup> )	-18.0	-18.0	-18.0

Backscatter	15 sec	1 min	4 min
Precision (kg/m <sup>2</sup> )	16.0	8.0	4.0
Composition error (kg/m <sup>2</sup> )	14.0	14.0	14.0
Surface error (1.25 mm, 100% Void) (kg/m <sup>2</sup> )	-80.0	-80.0	-80.0

Moisture at 240 kg/m <sup>2</sup>	15 sec	1 min	4 min
Precision (kg/m <sup>2</sup> )	11.0	5.5	2.8
Surface error (1.25 mm, 100% Void) (kg/m <sup>2</sup> )	-19.0	-19.0	-19.0
Depth of measurement = 215 mm			

## Thin Overlay Mode

Time (min)	Thickness	kg/m <sup>2</sup>	pcf
1.0	2.5 cm (1.0")	±16	±1.0
	5.0 cm (2.0")	±10	±0.60
	6.3 cm (2.5")	±8	±0.50
	10.0 cm (4.0")	±8	±0.5
4.0	2.5 cm (1.0")	±8	±0.50
	5.0 cm (2.0")	±5	±0.30
	6.3 cm (2.5")	±4	±0.25
	10.0 cm (4.0")	±4	±0.25

Precision is defined as ± one standard deviation in density readings. This number is calculated by the ratio of the standard deviation in the counting rate and slope of the calibration curve at a given density.

## Electrical Specifications

Stored Power	32 watt-hours
Average Power Consumption	
Idle mode	0.12 watts
Measurement mode	0.17 watts
Standby	0.06 watts
Backlight	0.6 watts
Default Time Before Sleep Mode	30 seconds between keypresses, no loss of data or previous status
Time Before Automatic Shutdown	5 hours of complete inactivity
Power Source(s)	Ni-Cad and AA Alkaline Batteries
Charge Source	12 VDC Nominal, 800 MA Minimum
Battery Recharge Time	4 hours maximum, automatic cutoff
Liquid Crystal Display	alphanumeric, 4 line x 20 character, backlight
Keypad	33 key sealed membrane
RAM	128 kbytes non-volatile
Serial Data Format	8 Data Bits 2 Stop Bits No Parity

## Mechanical Specifications

Gauge Size (w/ handle)	12" rod: 604 H x 411 L x 229 W mm (23.8 H x 16.2 L x 9.0 W in)
	8" rod: 503 H x 411 L x 229 W mm (19.8 H x 16.2 L x 9.0 W in)
Shipping Case Size	782 H x 353 L x 455 W mm (30.8 H x 13.9 L x 17.9 W in)
Weight	17 Kgm (37.5 lbs)
Shipping Weight	43 Kgm (96.0 lbs)
Operating Temperature	Ambient 0 to 70°C 32 to 158°F
Max Test Material Surface Temperature	175°C (347°F), for 15 minutes
Storage Temperature	-55 to 85°C -67 to 185°F
Humidity	98%, noncondensing

This instrument contains sensitive electronic components. This instrument must not be subjected to stress, abuse or used other than in accordance with the standard operating procedures listed in the user manual.

## Standard Accessories

3450 Shipping Case, Forged Drill Rod, Scraper Plate, Extraction Tool, Ref (Block) Standard, 120 VAC, 60 HZ Wall Charger (DOM), 100-250 VAC, 47-63 HZ Desktop Charger (Int'l, Euro), DC Charger, User Manual.

## Optional Accessories

Printer Cable, Printer, Printer Battery Pack, Serial Cable, 3450 Concrete Adapter, Radiation Sign Kit, 3880 Leak Test Kit, Survey Meter w/beeper, Emergency Response Kit.

## Radiological Specifications

Gamma Source	0.30 GBq (8 mCi) ± 10% Cs-137
Neutron Source	1.48 GBq (40 mCi) ± 10% Am-241:Be
Source Type	Sealed Source - Special Form
Source Housing	Stainless Steel, single or double encapsulated
Shipping Case	Type A, Yellow II, TI = 0.6



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