

INDUSTRIAL DIGITAL REFRACTOMETER



Industrial Digital Refractometer - ToronDR™ I Series

A Digital Refractometer in the ToronDR™ I Series is built for industrial liquid verification and concentration control using direct digital readout. The ToronDR™ I series cover refractive index plus application-specific concentration scales for common plant chemicals such as hydrogen peroxide (H₂O₂), calcium chloride (CaCl₂), DMSO, ethylene-water mixtures, ethylene glycol mixtures, sulfuric acid, nitric acid, silicone oil, and other industrial solutions, depending on the model.

This series is best suited to production floors, incoming inspection, chemical preparation, and routine QC where operators need quick numeric results and repeatable checks without a benchtop refractometer workflow.

ToronDR™ I Series instruments use digital refractometry to convert optical response into a direct value such as concentration scale and/or nD refractive index. Many ToronDR™ models in this platform also use automatic temperature compensation (ATC) to reduce routine temperature correction needs, and the standard package structure across the DR line includes the meter, mini screwdriver, protective case, and manual.

Compared with a manual optical refractometer, these units are easier to read during repeated testing and better suited to operators who want a direct numeric value rather than interpreting a light/dark boundary line.

APPLICATIONS

Industrial Digital Refractometer - ToronDR™ I Series Application

- Chemical preparation and dilution control: industrial plants often need quick confirmation of concentration during mixing, dilution, or transfer. The ToronDR™ I Series fits this use because many models are configured for specific chemicals such as hydrogen peroxide, CaCl₂ brines, DMSO, acids, and glycols.

- Incoming inspection and batch verification: a digital refractometer is useful for receiving checks, confirming supplier batches, and screening for off-spec solutions before the material enters production. Refractive index is a common “fast physical property” used for comparison when paired with an expected range or concentration scale.
- In-process QC for aqueous solutions and process liquids the ToronDR™ I Series line is commonly positioned as a quick, portable tool for measuring solution concentration and refractive index across different applications. ToronDR™ I extends that approach to industrial chemicals where the process control variable is concentration.



TORONTECH

ToronDR™ I Series
Industrial Digital Refractometer

FEATURES

Industrial Digital Refractometer - ToronDR™ I Series Key Features

- Handheld Digital Refractometer platform for industrial concentration and refractive index screening.
- Application-specific models for industrial solutions (e.g., peroxide, salts, solvents, acids, glycols, oils).
- ATC is used across the DR line to reduce routine temperature correction work.
- Standard DR package format: ATC Digital Refractometer + mini screwdriver + protective case + manual.
- Model selection is driven by the chemical and the required scale range, rather than one universal meter for all liquids.
- One-Point Calibration: Simple calibration using distilled or deionized water.
- Durability: Stainless steel sample well and high-quality optical glass prism.
- Portable Design: Compact and handheld for field or laboratory use.
- Digital Display: Large LCD for clear reading of both concentration and refractive index.
- Corrosion Resistance: The DRH models (like the Nitric and Sulfuric acid units) utilize high-grade materials to withstand corrosive chemical samples.
- Dual-Scale Function: Most units display both the specific concentration/temp scale and the base Refractive Index scale for cross-verification.
- Ease of Use: Simple one-point calibration using distilled or deionized water.
- Industrial Build: Designed for both laboratory precision and on-site industrial testing.

THEORY & METHOD

Theory and Method

A Digital Refractometer measures how light changes when passing through a liquid sample, then converts that optical response into a digital value. In the ToronDR™ platform, this value can be displayed as a refractive index (nD) and/or as a calibrated concentration scale tied to a specific solution.

Many DR models use ATC to reduce temperature correction effort in routine use. This supports faster checks during production and field work.

TECHNICAL SPECIFICATIONS

Industrial Digital Refractometer - ToronDR™ I Series Technical Specification

Feature	Specification
Resolution	±0.2% / ±0.0003 nD
Accuracy	0.1% (Concentration) / 0.0001 nD (Refractive Index)
Automatic Temperature Compensation	10°C to 40°C (50°F to 104°F)
Measurement Time	Approximately 1.5 seconds
Min. Sample Volume	2 metric drops
Light Source	Yellow LED
Sample Cell	Stainless steel ring and flint glass prism

Feature	Specification
Voltage	1 x 9V Battery (approx. 5,000 readings)
Automatic Shut-off	After 3 minutes of non-use
Dimension	121 x 58 x 25 mm
Weight	0.4 kg

Model Series	Application / Substance	Measurement Range	Refractive Index Range
ToronDR™ I 102GL	Glycerol Concentration	0 - 100%	1.3330 - 1.5040 nD
ToronDR™ I 803	Hydrogen Peroxide (H ₂ O ₂)	0 - 61%	1.3330 - 1.4490 nD
ToronDR™ I 802F2	Calcium Chloride (CaCl ₂)	0 - 40%	1.3330 - 1.4490 nD
ToronDR™ I DMSO	Dimethyl Sulfoxide (DMSO)	0 - 100%	1.3330 - 1.5040 nD
ToronDR™ I 901	Ethylene Glycol / Water	-50°C - 0°C	1.3330 - 1.4200 nD
ToronDR™ I 907EG	Ethylene Glycol (v/v)	0 - 100%	1.3330 - 1.4200 nD
ToronDR™ I 909	Sulfuric Acid (H ₂ SO ₄)	0 - 65%	1.3330 - 1.4490 nD
ToronDR™ I 913	Nitric Acid (HNO ₃)	0 - 70%	1.3330 - 1.5040 nD
ToronDR™ I 917	Silicone Oil	0 - 100%	1.3330 - 1.4490 nD
ToronDR™ I 605	Multi-Fluid (Cleaner, EG, PG, Battery SG, Urea)	Cleaner: -40-0°C; EG/PG: -50-0°C; Urea: 0-40%	1.3330 - 1.4200 nD



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