



TORONTECH

INFRARED MOISTURE ANALYZER



Infrared Moisture Analyzer - ToronMA™ IR Series

ToronMA™ IR Series infrared moisture analyzer uses infrared tube heating suited to solid and surface-crust samples, delivering 1mg weighing precision and 0.01% moisture readability. The 40–160°C temperature range, lower than halogen moisture analyzers, accommodates heat-sensitive materials that degrade or discolor at higher drying temperatures. An HD backlit LCD displays moisture content and residual dry mass throughout each cycle, with multiple drying programs stored in memory for repeat testing. An optional grinder, printer, and carry case extend utility for sample preparation and field deployment.

The IR100 suits pharmaceutical, food, chemical, and textile moisture testing where infrared heating produces more uniform results than halogen lamps on non-uniform, layered, or surface-crust samples. Moisture content and remaining dryness display simultaneously as percentages, with 15 storage addresses and 5 historical records for RS232 output. External calibration with a user-supplied weight maintains weighing traceability between test sessions. The HD backlit LCD delivers clear readout in varied ambient lighting on production floors and laboratory benches.

The IR100 uses the same 365 × 235 × 185 mm, 7 kg aluminum shell housing as the halogen series, with a multi-layer stainless steel heating chamber and a 400W infrared lamp. A thermal resistance sensor maintains the chamber temperature within 1°C step control across the 40–160°C range. The ø90mm aluminum sample pan and insulated carry basket support safe sample loading and unloading after each drying cycle. Adjustable feet allow the operator to level the instrument before calibration and testing.

APPLICATIONS

Infrared Moisture Analyzer - ToronMA™ IR Series Applications

The ToronMA™ IR Series suits moisture testing applications where sample structure, surface morphology, or heat sensitivity makes infrared heating more appropriate than halogen lamp methods.

- **Pharmaceutical Tablets and Solid Dosage Forms:** moisture testing of tablet cores, capsule shells, and solid oral forms where surface crust formation is common and lower-temperature drying below 160°C preserves active ingredient integrity
- **Surface-Crusted Food Products:** moisture determination in products that form a dry surface layer during heating (bread crust, confectionery coatings, dried fruit surfaces) where infrared penetration reaches the moisture-retaining interior
- **Chemical Intermediates with Volatile Components:** moisture testing of chemical materials that lose volatile compounds at halogen analyzer temperatures, where the 40–160°C ceiling preserves sample composition during the drying cycle
- **Heat-Sensitive Plastics and Polymers:** pre-process moisture verification of polymer pellets and compounds that would melt, deform, or discolor at temperatures above 160°C
- **Solid Raw Materials and Granulations:** moisture determination in pharmaceutical granulations, chemical raw materials, and industrial solids where volumetric infrared heating supports more consistent results than surface-focused halogen lamps
- **Textile and Fiber Products:** moisture content testing of woven and non-woven fabrics and fiber samples where infrared radiation penetrates the fiber matrix for more representative moisture readings
- **Agricultural and Botanical Materials:** moisture analysis of dried herbs, spices, roots, and botanical raw materials where irregular surface geometry and variable particle size benefit from volumetric infrared heating
- **Industrial Powders and Granules:** moisture testing of powdered chemicals and inorganic materials where particle surface area and drying uniformity requirements favor infrared over halogen heating



FEATURES

Infrared Moisture Analyzer - ToronMA™ IR Series Key Features

The ToronMA™ IR Series delivers infrared tube moisture analysis for solid, surface-crust, and heat-sensitive samples where halogen lamp heating would produce inconsistent or damaging results.

- **Infrared Tube Heating:** IR tube radiation penetrates the sample surface volumetrically, making the IR100 suited to thick, dense, and surface-crust materials where top-down halogen heat is blocked by surface crust formation
- **Gentle 40-160°C Temperature Range:** the lower maximum temperature compared to halogen moisture analyzers accommodates heat-sensitive materials, pharmaceutical formulations, and food products that degrade, melt, or lose volatile compounds above 160°C
- **High-Precision Thermal Resistance Sensor:** monitors chamber temperature continuously throughout the drying cycle, maintaining the set temperature within 1°C step precision across the 40-160°C range
- **1mg Weighing Precision / 0.01% Moisture Readability:** 0.001g weighing resolution and 0.01% moisture readability across the full 110g capacity for pharmaceutical and chemical moisture determination
- **Moisture Content and Remaining Dryness Display:** moisture percentage and residual dry mass percentage display simultaneously on the HD backlit LCD throughout the drying cycle, giving the operator a complete sample characterization without manual calculation
- **Multiple Drying Programs Memory:** test parameters for multiple sample types store in the instrument and recall at the start of each session without re-entering temperature, time, or stop mode settings
- **HD Backlit LCD Display:** backlit high-definition display presents moisture content, dry residue, and elapsed test time with clear readability in varied ambient lighting conditions
- **Multi-Layer Stainless Steel Heating Chamber:** durable chamber withstands repeated thermal cycling and resists chemical contamination from volatile or reactive sample materials
- **15 Storage Addresses and 5 Historical Records:** stores test configurations for 15 sample programs and retains 5 historical records for recall and RS232 output
- **RS232 Interface:** connects to printers for hard-copy result output and to PCs for data logging and export

- **External Calibration:** calibrates with a user-supplied reference weight at operator-defined intervals to maintain weighing traceability
- **Aluminum Shell:** rigid outer casing protects the heating chamber and sensing electronics during continuous moisture testing
- **Adjustable Feet:** four adjustable feet support accurate horizontal leveling on any bench surface before calibration and use
- **Optional Grinder:** sample preparation grinder for particle size reduction before moisture testing, supporting more uniform sample presentation and result repeatability
- **Optional Printer:** external RS232 printer for hard-copy moisture result output
- **Optional Aluminum Carry Case:** protective transport case for field deployment and mobile testing applications

THEORY & METHOD

Theory and Method

The ToronMA™ IR Series applies the drying loss method using infrared tube heating rather than a halogen lamp. Infrared radiation penetrates the sample surface and heats the material volumetrically, reducing the effect of surface crust formation that can trap subsurface moisture on halogen-heated samples. The 40–160°C temperature ceiling accommodates materials that discolor, melt, or lose volatile compounds at higher halogen analyzer temperatures. A thermal resistance sensor monitors the chamber continuously, maintaining the set drying temperature within 1°C step control across the full range.

Multiple drying programs store test parameters (temperature, time, and stop mode) for each sample type, allowing the operator to recall settings without re-entering them. The high-precision sensor records sample mass continuously throughout the drying cycle, with moisture content and residual dryness calculated as percentages at each interval. Both values display simultaneously on the HD backlit LCD for complete sample characterization without manual calculation. RS232 connectivity outputs results to a connected printer or PC.

TECHNICAL SPECIFICATIONS

Infrared Moisture Analyzer - ToronMA™ IR Series Technical Specifications



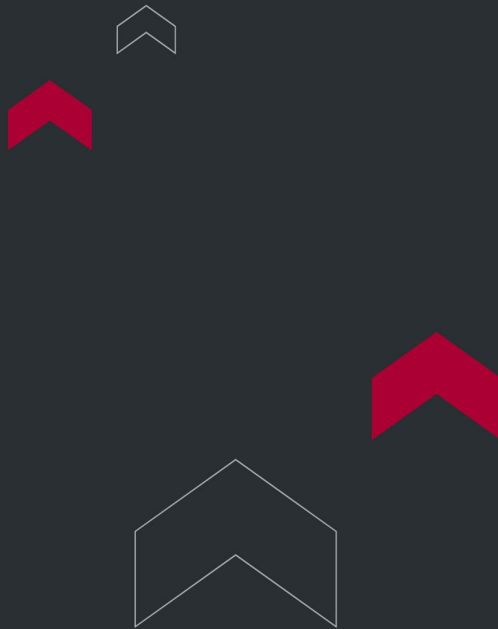
ToronMA™ IR100

Parameter	Specification
Capacity	110 g
Readability	1 mg (0.001g)
Moisture Range	0.00%-100.00%

Parameter	Specification
Moisture Readability	0.01%
Dry Range	100.00%–0.00%
Dry Readability	0.01%
Pan Size	φ90 mm
Heat Source	Infrared lamp
Temperature Sensor	High-precision thermal resistance
Temperature Range	40°C–160°C, 1°C Step
Display	HD Backlit LCD
Calibration Mode	External
Time Setting	1–99 min, 10s Step
Working Temperature	15–30°C
Interface	RS232
Data Storage	15 storage addresses, 5 historical records
Heater Power	220V ±15%, 50Hz / 110V ±15%, 60Hz; 400W
Balance Power	Input: 220V 50Hz / 110V 60Hz; Output: 9V
Product Dimensions (W × D × H)	365 × 235 × 185 mm
Packing Dimensions	485 × 340 × 350 mm
Gross Weight	7 kg

Optional Accessories

Accessory	Description
Grinder	Sample preparation grinder for particle size reduction before moisture testing
Printer	External RS232 printer for hard-copy moisture results
Aluminum Carry Case	Protective transport case for field and mobile deployment



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