

HANDHELD LIBS ANALYZER - TORONLIBS™ P SERIES



Handheld LIBS Analyzer - ToronLIBS™ P Series

Portable elemental analyzer ToronLIBS™ P100/P200 measures carbon content in steel and lithium content in ore or battery scrap, giving quality teams and field crews a laser-based alternative to shipping samples to an outside lab. Built on laser-induced breakdown spectroscopy (LIBS), the Handheld LIBS Analyzer comes in two configurations: the P100 for carbon measurement in steel and stainless grades, and the P200 for lithium quantification in mining and recycling work. Both share the same rugged, one-handed body, so operators move between sites without learning a new interface.

Steel producers, pipeline inspectors, and fabrication shops rely on the ToronLIBS™ P100 to confirm carbon content down to low parts-per-million levels, a measurement that handheld X-ray analyzers cannot make. Lithium miners and battery recyclers rely on the ToronLIBS™ P200 to quantify lithium directly in ore samples or recovered battery material, cutting the wait for outside lab results. Both configurations are priced competitively against comparable handheld analyzers, putting on-site elemental analysis within reach for smaller operations and field teams.

Each unit returns a result in about one second, with a two-second display, from a device that weighs less than 2 kg with its battery and argon cartridge installed. Operators press a single trigger to fire the laser and read results on the touchscreen, keeping training time short for new staff on the shop floor or in the field.

APPLICATIONS

Handheld LIBS Analyzer - ToronLIBS™ P Series Applications

The ToronLIBS™ P100 and ToronLIBS™ P200 cover two distinct workflows built around the same handheld LIBS platform.

- Steel and Stainless Steel Carbon Verification: measures carbon down to low parts-per-million levels to distinguish H-grade from L-grade stainless steel and support carbon equivalency calculations for weldability

- Petrochemical and Pipeline PMI: confirms carbon content in piping, valves, and pressure-boundary components as part of positive material identification programs
- Automotive and Construction Steel QC: verifies carbon specifications in structural and welded steel components during fabrication and receiving inspection
- Lithium Ore Exploration and Grade Control: quantifies lithium content directly in spodumene, petalite, lepidolite, and amblygonite ore samples in the field
- Lithium-Ion Battery Recycling: measures recovered lithium content in battery scrap and black mass to support material valuation and reuse decisions
- Mining Geochemical Screening: supports on-site sorting and grade decisions at mine sites without shipping samples to an off-site laboratory



FEATURES

Handheld LIBS Analyzer - ToronLIBS™ P Series Key Features

The ToronLIBS™ P100 and ToronLIBS™ P200 share a common platform tuned with model-specific optics for their target elements.

- Dedicated High-Resolution Spectrometer: resolves emission lines to better than 0.1 nm on the ToronLIBS™ P100 and 0.2 nm on the P200, giving each model the resolving power its target elements require
- Onboard Argon Purge: a replaceable argon cartridge (99.9% to 99.99% purity) displaces atmospheric interference around the plasma, supporting accurate low-level carbon and lithium readings
- Integrated Macro Camera: captures a reference image of the test location alongside each reading for documentation and traceability
- Dual-Band Wi-Fi and Bluetooth 4.1: 802.11 b/g/n/ac connectivity plus BLE support enable direct data transfer to a network, PC, or compatible printer
- Capacitive Touchscreen Display: a brightness-adjustable touchscreen (4.3 in on the P100, 4.0 in on the ToronLIBS™ P200) stays legible indoors and outdoors
- 16GB Onboard Storage: keeps an extensive test history and library data on the instrument without frequent offloading
- Customizable Grade Library (ToronLIBS™ P100): ships with a UNS-based alloy library that operators can expand to match specific carbon and stainless steel grades
- Compact, Field-Ready Build: weighs 1.77 kg (3.9 lb) including battery and argon cartridge, built for continuous handheld use in mills, yards, and mine sites
- One-Year Factory Warranty: full parts coverage backs both models from the date of purchase

THEORY & METHOD

Theory and Method

Both configurations generate their reading by focusing a short, high-energy laser pulse onto the sample surface, depositing enough energy in a few nanoseconds to vaporize a microscopic spot and ionize it into plasma. As that plasma cools over the following microseconds, its atoms release light at wavelengths specific to each element present, producing an emission spectrum that the onboard spectrometer resolves into a list of elements and concentrations.

Carbon and lithium sit near the light end of the periodic table, and their emission lines fall close together and interact with atmospheric gases in ways heavier elements do not. To read them reliably, the ToronLIBS™ P100 and ToronLIBS™ P200 draw argon from a replaceable cartridge into the plasma zone during each test, displacing ambient air so the analysis is not skewed by atmospheric carbon or nitrogen. The P100 pairs this purge with a dedicated high-resolution channel below 0.1 nm to separate the carbon emission line from nearby iron lines, while the ToronLIBS™ P200 uses a 0.2 nm channel tuned to the lithium emission region.

This combination lets the ToronLIBS™ P100 report carbon concentration low enough to separate H-grade from L-grade stainless steel, a distinction that affects weldability and mechanical performance. The P200 applies the same argon-purge principle to lithium-bearing minerals and battery materials, quantifying lithium content that X-ray fluorescence instruments cannot detect at all, since fluorescence from such light elements is too weak to register on a standard detector.

TECHNICAL SPECIFICATIONS

Handheld LIBS Analyzer - ToronLIBS™ P Series Technical Specifications

Parameter	ToronLIBS™ P100 (Carbon)	ToronLIBS™ P200 (Lithium)
Technology	Laser-induced breakdown spectroscopy (LIBS)	
Dimensions (L x W x H)	90 x 280 x 150 mm (3.6 x 11.0 x 5.9 in)	

Parameter	ToronLIBS™ P100 (Carbon)	ToronLIBS™ P200 (Lithium)
Weight	1.77 kg (3.9 lb), with battery and argon cartridge	
Laser	Class 3B, 1064 nm, passive Q-switched DPSS	
Spectrometer Resolution	< 0.1 nm	< 0.2 nm
Display	4.3 in capacitive touchscreen, adjustable brightness	4.0 in touchscreen, adjustable brightness
Internal Storage	16 GB	
Camera	Integrated macro camera	
Wi-Fi	802.11 b/g/n/ac, 2.4 and 5.0 GHz	
Bluetooth	Bluetooth 4.1, BLE	
Battery	14.8 V lithium-ion, 3,250 mAh	
Material Base	Alloy steel, carbon steel, stainless steel	Spodumene, amblygonite, lepidolite, petalite, and related lithium ores
Element Capability	Al, C, Co, Cr, Cu, Fe, and additional elements (library dependent)	Li, Al, Ca, Fe, K, Mg, Na, Si
Argon Purity	99.99% or higher	
Grade Library	UNS-based, user-customizable	Not applicable
Operating Temperature	Up to 35°C	
Storage Temperature	Up to 40°C	
Control Software	Onboard grade-identification interface with customizable library and report export	
Certifications	IC, FCC, CE, RoHS, IP54, laser safety	

Optional Accessories

Item	Description
Thermal Printer	Optional printer for on-site result printouts
Grinder	Optional surface-prep grinder for sample cleaning before testing
Protective Sleeve	Optional sleeve or case for field transport and storage



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