

DELTA<sup>®</sup> Handheld XRF Analyzer  
for Scrap Sorting and Recycling



The Powerful Handheld XRF  
for Fast, Decisive Results

# The DELTA<sup>®</sup> Handheld XRF Analyzer for Scrap Sorting and Recycling

The DELTA alloy analyzer has an ergonomic, forward-looking design incorporating the latest in electronics, components, and software technology. The DELTA analyzer offers excellent sensitivity and precision in faster time for more materials than before.

Configured with a standard package of more than 25 elements, the DELTA analyzer provides alloy chemistry and grade ID in seconds. From simple sorting to challenging grade separations, the analyzer provides highly specific material chemistry in order to rapidly and accurately identify pure metals and alloy grades. The analyzer's SmartSort\* feature maximizes scrap sorting throughput.

## Where Ruggedness and Performance Converge



## Tough on the Outside, Smart on the Inside

- Aluminium alloys
- Chrome-moly steels
- Cobalt alloys
- Copper alloys
- Exotic alloys
- Magnesium alloys
- Nickel alloys
- Nickel-cobalt alloys
- Precious metals
- Stainless steels
- Tool steels
- Titanium alloys
- Wrought aluminium alloys
- Zinc alloys
- Zirconium alloys

\*The SmartSort feature is available with the DELTA Professional model.



## Nonferrous Alloys

DELTA analyzers excel at quick analysis and ID of stainless steels, Ni superalloys, and other high-alloy materials. Sort out heavy alloys based on low levels of Si and Al content. Use SmartSort to maximize speed and accuracy.

## Jewelry/Precious Metals

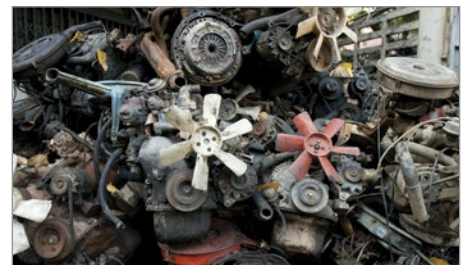
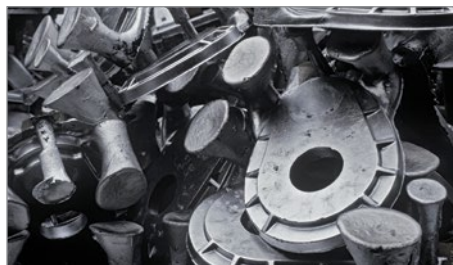
The DELTA analyzer provides karat determination and chemistry analysis so that you can test gold, silver, platinum, and other alloys confidently. It is available with an integrated camera and small spot collimation to analyze complex materials.

## Electronics

Sort out electronics components with precious metal content (Ag, Au, Pd, etc.). Separate and identify poisons and Pb-containing solders. Evaluate copper content in shredded materials. The DELTA analyzer is available with an integrated camera and small spot collimation for detailed analysis of complex materials.

## Copper

Within seconds, separate brasses, bronzes, leaded alloys, and aluminum and silicon-containing alloys. Sort out Be-copper using the analyzer's nominal chemistry feature.



## Glass

Quickly sort out Pb-containing glass and glass-ceramic from recycling streams. Detect toxic elements.

## Aluminum and Light Alloy

With the technical advances of the DELTA Professional analyzer, the range of light alloy capabilities continues to expand. Their outstanding Mg sensitivity enables you to confidently sort aluminum alloys once relegated to OES systems.

## Car Catalysts

Olympus works with industry experts to develop calibrations ideal for the analysis of auto catalyst materials for precious metal content, including Pd, Pt, and Rh.

## Slags

Monitor the chemistry of slags during melts for quality control and furnace life prediction. Sort and evaluate recovered slags from different melt operations.

## Low-Alloy Steels

Verify residual content in steels. Confirm Si, S, and P content, along with Mn and alloying element levels. Measure trace levels of Mn, Cr, Ni, Cu, or Mo. Confirm Si, S, and P content.

# DELTA<sup>®</sup> for Scrap Sorting and Recycling

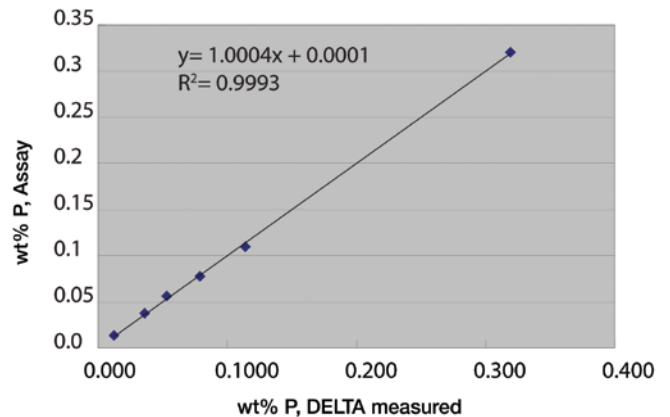
## With X-act Count<sup>™</sup> Technology

### Superior Light Element Analysis with the DELTA Professional

Traditionally a difficult area for handheld XRF, the analysis of light alloys and elements (Mg, Al, Si, P, S) can now be routine with the DELTA alloy and metal XRF silicon drift detector (SDD) analyzer with X-act Count technology. Its integration with a 40 kV Rh-anode tube and automatic filtering provides fast, precise analysis of transition and heavy metals, and sensitive measurement of light element content. SmartSort maximizes testing throughput – sample by sample, testing is automatically extended or terminated, maximizing accuracy and throughput.

### DELTA SDD Analyzer Benefits

- Magnesium (Mg) detection down to 0.20%
- Quick and accurate quantification of S content in stainless and low alloy steels
  - Reliable identification of 303 and 416 grades
- Measures Si and Al in stainless, bronzes and other alloys
- Measures P in carbon steel down to 0.014% with 3-beam Alloy Plus calibration
- Extensive grade library combined with SmartSort provides nominal chemistry for light elements when the fast testing speeds are required



Correlation plot of phosphorus (P) in low-alloy steel analysis by the DELTA Premium SDD analyzer.



### Ultimate Aluminum Analysis

The Olympus DELTA SDD analyzer offers excellent Al performance. It easily and directly sorts and grades aluminum and aluminum-containing materials.

#### Aluminum Alloys

- Accurately measures Mg content in 5000 series alloys and separates Mg-containing alloys; sorts 3003 and 3004; 1100 and 6063; 2014 and 2024

#### Titanium Alloys

- Accurately determines the Al content in Ti alloys, including CP Ti cut with Al

#### Red Metals

- Accurately classifies Al and Si bronzes

#### High-Temperature Cast Stainless

- Measures Al in high-temp, Ni/Co superalloys

El	%	+/-	Spec (356)
Mg	0.38	0.13	[0.20-0.45]
Al	92.31	0.19	[89.75-93.30]
Si	6.90	0.04	[6.50-7.50]
Mn	0.021	0.006	[0.00-0.35]
Fe	0.17	0.01	[0.00-0.60]
Ni	0.027	0.003	Tramp[0.05]
Cu	0.055	0.004	[0.00-0.25]
Zn	0.076	0.004	[0.00-0.35]
Pb	0.019	0.002	Tramp[0.05]
Bi	0.034	0.002	Tramp[0.05]

DELTA alloy analyzer results screen

# Innovative Features

The analytical capabilities of handheld XRF enable operators to be more effective and efficient. DELTA<sup>®</sup> handheld XRF analyzers offer innovative features for scrap sorting and recycling. Within seconds, the DELTA analyzer displays easy-to-interpret results that can be viewed in a customizable list or spectral format. Simple, fast data export is achieved via USB to a Microsoft<sup>®</sup> Excel<sup>®</sup> spreadsheet, or printed directly via a wireless printer.

## Tough on the Outside

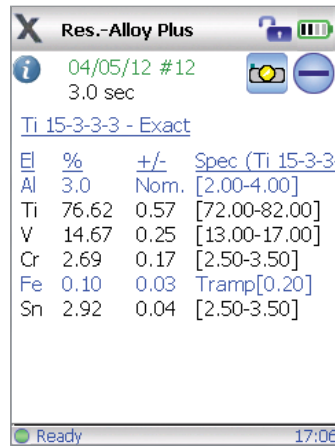
Ideally suited for the harsh scrap recycling environment, the DELTA analyzer is rugged with a protective housing.

## Smart on the Inside

Engineered with advanced technology but simple to use, the intuitive user interface makes navigation easy for both non-technical and more advanced operations.



Exact match results

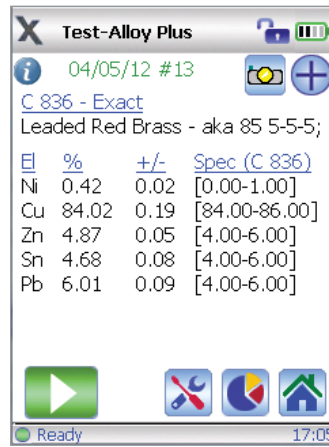


"Nominal" value display

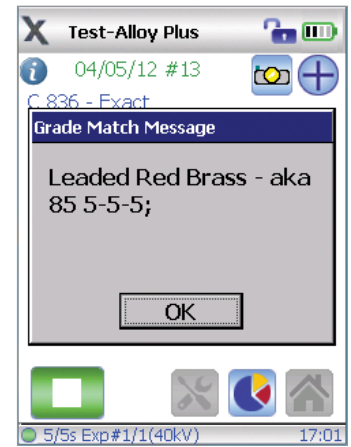
## SmartSort Mode

SmartSort automates sorting decisions, enabling even inexperienced operators to maximize both speed and sorting accuracy for the DELTA Professional analyzer.

- Maximizes efficiency for speed testing – automatically extends tests for light elements (Mg, Al, Si, P, S) when absolutely necessary, eliminating unnecessarily long tests and mix-ups
- Stop overpaying; SmartSort knows when to extend testing to find the aluminum in red metals or nickel grades



Real-time GMM



GMM popup assignment

## Nominal Chemistry

- Nominal chemistry is provided for 'invisible' elements based on grade ID
- In just a second, get a warning that a bronze is an "aluminum bronze" or a that a copper is a "beryllium copper"; get the price right when you accurately identify Al and Si bronzes

## Tramp Library

- Enables the operator to set a max tolerated concentration for tramp and residual elements in grade families
- The analyzer comes preloaded with a tramp library based on industry standards
- The analyzer reports tramp material and uses the tramp library to improve grade IDs based on residual content fluctuations
- Fast, confident grade ID

## Grade Match Messaging (GMM)

- GMM offers excellent user efficiency and effectiveness for:
  - Immediate sorting instructions
  - Reduced operator training
  - Increased efficiency and higher throughput
  - Assign a match message to any grade
- Use real-time or pop-up messages or both

# The DELTA<sup>®</sup> Series

## Everything You Need in Handheld XRF

DELTA handheld XRF analyzers are ergonomically advanced with a forward-looking design that incorporates advanced in electronics, components, and software technology. The DELTA X-act Count™ technology can provide good sensitivity and precision quickly for more materials than before. Throughput is increased with the same or better precision in half the time for most elements.

### Features and Benefits

- Powerful 4 W X-ray tube for optimum element excitation
- Tight geometry for exceptional LODs and fast analysis
- Fast data acquisition for faster testing time
- Floating point processor: Provides more calculations in less time and leverages more advanced calibration algorithms
- Analysis indicator lights visible from 360° to help ensure safe use
- Advanced colortouch LCD screen for clarity, brightness, responsiveness, and energy efficiency for indoor/outdoor use
- DELTA PC software for enhanced data analysis, calibration modeling, and optional closed beam workstation operation
- USB interface port for high-speed downloads and seamless PC control
- Ergonomic rubberized handle for enhanced grip
- Hot swap batteries to maximize uptime and productivity



The unique DELTA Docking Station frees you from having to power down the analyzer. The station charges the analyzer battery and a spare, and performs periodic calibration checks. DELTA analyzer's can be operated 24/7 in the field with hot swap battery replacement\*.

\*Available for the DELTA Professional.



# Optional DELTA® Accessories



## 1. DELTA Portable Workstation

The portable workstation with integrated safety-lock and shielding is convenient for analyzing bagged, prepped, and liquid samples, multiple small objects, and filters or dust wipes. A PC is connected for remote control of this closed-beam DELTA setup.

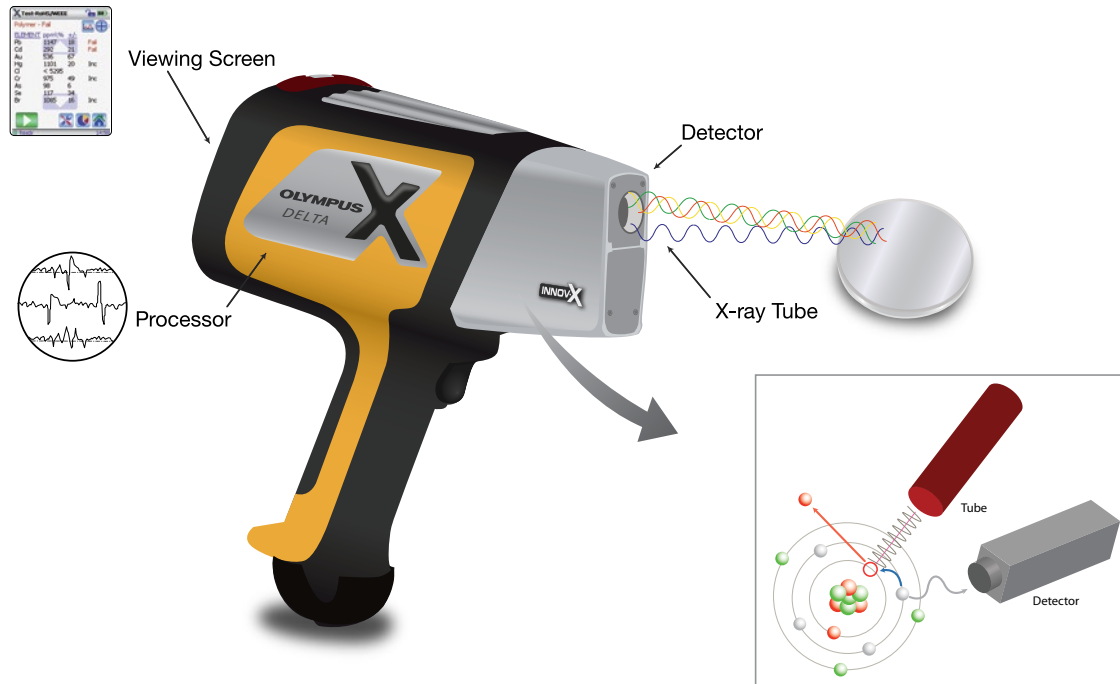
## 2. DELTA Holster

The holster keeps the analyzer by your side and within easy reach.

## 3. DELTA FlexStand

The lightweight, mobile test stand with shielded sample chamber is ideal for testing small samples, sample cups, and bagged samples.

# DELTA Handheld XRF Configuration



The DELTA analyzer brings the power and flexibility of handheld X-ray fluorescence spectrometry to the field. Ruggedized and portable, this fast, 24/7 technology provides accelerated testing times, enabling hundreds more tests to be conducted per day with analytical confidence. DELTA series analyzers are configured with powerful miniature X-ray tubes, Si-PIN detectors, or highly advanced silicon drift detectors (SDD), specialized filters, and multi-beam optimization for the ultimate in XRF field analysis. The analyzer's real value is to help make decisions in real time with minimal reliance on off-site laboratory testing.

# DELTA® Series



## DELTA Professional

The DELTA Professional analyzer provides a good value with excellent performance in speed, LODs, and elemental range.

## DELTA Element

The DELTA Element analyzer is our entry-level handheld XRF, built for economy and fast ROI for basic alloy identification and metals analysis.

## DELTA Comparison\*

DELTA Professional	DELTA Element
4 W Ag, Rh, Au, or Ta anode (per application) X-ray tube	4 W Au anode X-ray tube
Silicon Drift Detector	Si-PIN Diode Detector
Alloy and Mining: Mg and up for Rh/Ag and Al and up for Ta/Au; Soil: P and higher	Alloy: Ti and higher
Weight: 1.5 kg (3.25 lbs) without battery	
Dimensions: 260 × 240 × 90 mm (10.25 × 9.5 × 3.5 in.)	
Environmental Temperature Range: -10 °C to 50 °C (14 °F to 122 °F)	
Processing Electronics: 530 MHz CPU with integrated FPU with 128 MB RAM; Proprietary Olympus Digital Pulse Processor (DPP)	
Power: Rechargeable Li-ion battery; Hot-swap maintains analyzer power during battery charge	
Data Display: 32 bit Color QVGA resolution, Blanview transmissive backlit touch screen; 57 × 73 mm (2.25 × 2.9 in.)	
Data Storage: 1 GB microSD™ (stores ~75,000 readings)	
Data Transfer: USB	

## Standard Accessories\*

- Carrying Case
- Li-ion Battery
- Electronic User Manual and User Interface Guide and Printed Quick Start Guide
- Battery Charger
- Mini USB Cable
- 316 Stainless Steel Calibration Check Reference Coin
- Ten (10) Spare Windows
- Integrated Wrist Strap
- DELTA PC Software
- Factory Authorized Training & Support

[www.olympus-ims.com](http://www.olympus-ims.com)

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**OLYMPUS CORPORATION OF THE AMERICAS**  
48 Woerd Avenue, Waltham, MA 02453, USA, Tel.: (1) 781-419-3900  
110 Magellan Circle, Webster TX, 77598, USA, Tel.: (1) 281-922-9300

For inquiries - contact  
[www.olympus-ims.com/contact-us](http://www.olympus-ims.com/contact-us)