

VANTA

Rugged. Revolutionary. Productive.



Vanta™ handheld XRF analyzers are rugged and built for analytically demanding applications in the harshest environments. Vanta analyzers are IP 65* rated for protection against dust and water, are drop tested, and built to withstand a temperature range of -10 °C to 50 °C (14 °F to 122 °F).**

Vanta analyzers provide fast, accurate elemental analysis. Each device features Olympus' new Axon™ technology, a revolution in XRF signal processing that provides accurate, repeatable results for greater productivity and a fast return on investment. Vanta analyzers feature an intuitive interface and application-specific software so new users can work with the device with minimal training. Data is easily exported via Wi-Fi, Bluetooth®, or USB.

The Vanta Series

No matter the model, each Vanta analyzer is engineered for durability and analytical superiority. Olympus manufactures Vanta™ analyzers to suit a variety of applications depending on your needs.

M Series

Our most powerful Vanta analyzers feature exceptional performance to handle the most demanding applications. Each M Series analyzer comes equipped a large-area silicon drift detector, your choice of either a rhodium (Rh) or a tungsten (W) anode, and a 50 kV X-ray tube.

C Series

The C Series combine value with superior speed, limits of detection (LODs), and elemental range. Each C Series analyzer is equipped with a silicon drift detector and your choice of an Rh or W anode 40 kV X-ray tube, or a silver (Ag) anode at 50 kV X-ray tube.

VANTA Specifications

Dimensions (W × H × D)	8.3 cm × 28.9 cm × 24.2 cm (3.25 in. × 11.4 in. × 9.5 in.)
Weight	1.70 kg (3.75 lb) with battery, 1.48 kg (3.25 lb) without battery
Excitation Source	4-Watt X-ray tube with application optimized anode material (rhodium (Rh), silver (Ag), or tungsten (W)) M Series (Rh & W) and C Series (Ag): 8–50 kV C Series (Rh & W): 8–40 kV
Primary Beam Filtration	8-position auto selected filter per beam per mode
Detector	M Series: Large area Silicon Drift Detector C Series: Silicon Drift Detector
Power	Removable 14.4 V Li-Ion battery or 18 V power transformer 100-240 VAC, 50–60 Hz, 70 W max
Display	800 × 480 (WVGA) LCD with capacitive touch-screen supporting gesture control
Operating Environment	Temperature: -10 °C to 50 °C (continuous duty cycle with optional fan) Humidity: 10% to 90% relative humidity non-condensing
Drop Test	Military Standard 810-G 4-foot (1.3 M) drop test
IP Rating	M Series IP 64: dust tight and protected against water splashing from all directions C Series IP 65: dust tight and protected against water jets from all directions
Pressure Correction	Built-in barometer for automatic altitude and air density correction
GPS	Embedded GPS / GLONASS receiver
Operating System	Linux
Data Storage	4 GB embedded storage, micro SD slot for expandable storage
USB	(2) USB 2.0 type A host ports for accessories such as Wi-Fi, Bluetooth®, and USB flash drives. (1) USB 2.0 type mini-B port for connection to computer.
WiFi	Supports 802.11 b/g/n (2.4 GHz) via optional USB adapter
Bluetooth	Supports Bluetooth and Bluetooth Low-Energy via optional USB adapter
Aiming Camera	Full VGA CMOS camera
Panoramic Camera	5-megapixel CMOS camera with autofocus lens

www.olympus-ims.com

OLYMPUS®

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OLYMPUS SCIENTIFIC SOLUTIONS AMERICAS
is certified to **ISO 9001, ISO 14001, and OHSAS 18001.**

*M Series analyzers are IP 64 rated

** With optional fan. The fan assembly is IP 54 rated. Operates continuously at 33 °C without the fan.

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VANTA

Rugged. Revolutionary. Productive.



Built Tough for Maximum Uptime



You asked for a more rugged Positive Material Identification (PMI) analyzer. Olympus has responded by redefining what toughness means in portable XRF with our Vanta™ series of analyzers.

PMI is important for industrial plant operators and component suppliers. Alloy mix-ups can result in component failure, leading to plant downtime or even loss of life. Handheld XRF has become an essential tool to help prevent such failures through nondestructive alloy identification and is viewed by OSHA as a Recognized and Generally Accepted Engineering Practice (RAGAEP). Vanta handheld XRF analyzers for PMI provide highly specific material chemistry to quickly and accurately identify pure metals and alloy grades. With Vanta analyzers, inspectors can quickly determine correct alloy installation in critical locations.

In modern industrial environments, Vanta™ analyzers are vital for:

- Complying with American Petroleum Institute (API) Recommended Practice (RP) 578 — Material Verification Program for New and Existing Alloy Piping Systems
- Detecting sulfidation corrosion susceptibility (API RP 939-C)
- Evaluating flow accelerated corrosion (FAC) susceptibility
- Discerning residual element corrosion susceptibility in hydrofluoric acid (HF) alkylation units

When inspection professionals need a reliable analytical tool to provide fast and accurate PMI data, they turn to Vanta analyzers. From piping, valves, welds, and components, to pressure vessels, Vanta analyzers provide anywhere, anytime testing with accurate and repeatable results.



Traceability and Rapid Reporting

Pulling the trigger and taking an analysis is only one part of a material verification program. Vanta™ handheld XRF has features such as two optional cameras, integrated GPS, and automatic time/date stamp that make it easy to customize, capture, and export comprehensive shot data for efficient record keeping and traceability. Vanta analyzers enable inspectors to create custom data label templates for each project, job, or vendor. Optional Wi-Fi and Bluetooth® connectivity make it easy to download results for archiving.

Weld Grade Library

The weld grade library is used alongside the standard inspection library for comprehensive PMI work enabling accurate identification of weld materials.

Residual/Tramp Elements

The Vanta handheld XRF for PMI comes loaded with a residual “tramp” element library based on industry standards that set maximum tolerated concentrations for residual elements in grade families. Vanta analyzers measure trace levels of contaminating elements, important for many applications such as RE corrosion in HF alkylation units, sulfidation corrosion, and FAC corrosion without compromising or delaying fast, accurate, and conclusive grade matches.

From simple alloy verification to precise chemistry, Vanta handheld XRF provides highly specific material chemistry to rapidly and accurately identify pure metals and alloy grades including:

- Stainless steels
- Chromium-molybdenum steels
- Nickel and nickel/cobalt alloys
- Low alloy steels
- Copper alloys
- Aluminum and wrought aluminum alloys
- Tool steels
- Zinc alloys
- Zirconium alloys
- Titanium alloys
- Cobalt alloys
- Magnesium alloys
- Exotic alloys

Essential for Material Verification

Per API, ASME, and AWS codes and recommended practices, Vanta analyzers are important tools in a material verification program for new and existing assets within a plant or refinery. From verifying incoming warehouse material to final confirmation at the point of installation, Vanta analyzers provide essential asset integrity information to help prevent catastrophic or unplanned maintenance events and increase asset life expectancy.

- Confirm the material of construction
- Verify material against mill certificates and material test reports
- Identify non-traceable or improperly marked material

Vanta analyzers are the ideal tools to verify the chemical composition and grade of welds. The optional 3 mm aiming camera enables an inspector to accurately analyze thin weld beads independent of base material as well as other conjoined metals, alloys, and small fixture components, such as wires and solders. An optional panoramic camera saves images along with the analysis results for archiving and reporting.

Durable and Reliable for Any Job in Any Environment

Rugged

Working conditions can be tough on electronic devices, often causing breakdowns that cost time and money. Vanta™ analyzers are durable for increased uptime and a low cost of ownership. Vanta handheld XRF analyzers are IP 65* rated to withstand rain, dirt, and dust, and are drop tested to U.S. Department of Defense standards (MIL-STD-810G) to help prevent breakages and costly repairs. The detector shutter on silicon drift detector models helps prevent punctures so you can analyze rough surfaces with confidence.

Able to withstand a temperature range of -10 °C to 50 °C (14 °F to 122 °F), Vanta analyzers ensure you get 100% testing time without wasting time waiting for it to cool, even in hot environments.** The devices are engineered for in-service inspection of high-temperature systems and hot sample surfaces up to 425 °C (800 °F). Their ruggedness and durability make Vanta analyzers resistant to damage for maximum productivity and uptime with minimal cost of ownership.

Revolutionary

Every circuit, contour, and interface of Vanta handhelds is engineered to be the best of its kind. Vanta analyzers incorporate Olympus' new Axon™ technology, a breakthrough in XRF signal processing that delivers accurate and repeatable test data and ensures inspectors get alloy chemistry and grade ID in 1–2 seconds for typical plant and refinery applications. Axon uses ultra-low-noise electronics that facilitate higher X-ray counts per second and faster results. Coupled with a new quad-core processor, Axon makes Vanta analyzers remarkably responsive, pushing the limits of performance so you get the best results in the least amount of time. Axon technology provides test-to-test and instrument-to-instrument repeatability. Whether it's your first test on your first analyzer or your thousandth test with your hundredth analyzer, the Vanta handheld XRF gives you the same result every time.

Vanta analyzers accurately and repeatably detect and quantify:

- Residual Elements (RE) in low alloy and carbon steels
- Trace silicon (Si) in carbon steel per API RP 939-C
- Sulfur (S) and phosphorus (P) for in-service stainless steels

Productive

Vanta analyzers for PMI include innovative software features that enable inspectors to make accurate inspections with minimal training. Testing times that once took 5 to 10 seconds with other handheld XRF devices now take just 1 to 2 seconds with even greater accuracy and precision. The friendly, modern user interface is intuitive and customizable so that operators can begin using the device with minimal training.

Vanta analyzers maximize user throughput and make data archiving easy.

- A new, intuitive interface enables the user to quickly navigate the device's settings and software functions.
- The UI can be configured based on a customer's specific needs. Users can customize which software features and functions are displayed on the main screen.
- Data are easily exported via a USB flash drive, Wi-Fi, or Bluetooth®. Vanta analyzers are designed to enable powerful cloud applications.
- Vanta analyzers feature a clear, bright LCD touch screen that is readable in any light.
- Unique username and password login for each user.
- Balanced analyzer body and form factor for comfortable daily and extended use.
- Ergonomic buttons and an industrial-grade, push-button joystick enable users to easily navigate the system with gloved hands.



The Vanta Series

No matter the model, the rugged, fast, and reliable Vanta™ analyzer features Olympus' Axon™ technology, and is rated to pass a 4 foot drop test, and is rated to IP 65.*



M Series

Our most powerful Vanta analyzers feature exceptional performance to handle the most demanding applications. Each M Series analyzer comes equipped a large-area silicon drift detector, your choice of either a tungsten (W) or rhodium (Rh) anode, and a 50 kV X-ray tube.

C Series

The C Series combine value with superior speed, limits of detection (LODs), and elemental range. Each C Series analyzer is equipped with a silicon drift detector and your choice of a Rh or W anode 40 kV X-ray tube, or a silver (Ag) anode at 50 kV X-ray tube.

Olympus

Olympus is a leader in XRF technology with a reputation for quality and accuracy. We are committed to providing the best technical support and after-sales service for our products, applications, training, and technologies through our global network of sales and service teams.

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OLYMPUS®

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*M Series analyzers are IP 64 rated.

** With optional fan. The fan assembly is IP 54 rated. Operates continuously at 33 °C without the fan.

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Limits of Detection

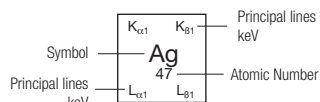
Low-Density Sample Types — (soils, powders, liquids)																																					
Not Available		<3000 ppm		<400 ppm		<50 ppm																															
<25 ppm		<10 ppm		<5 ppm																																	
H 1	IIA																He 2																				
0.05 Li 3	0.11 Be 4																	0.18 B 5	0.28 C 6	0.39 N 7	0.52 O 8	0.68 F 9	0.85 Ne 10														
1.04 Na 11	1.25 Mg 12																	1.49 Al 13	1.56 Si 14	1.74 P 15	1.84 S 16	2.01 Cl 17	2.14 Ar 18	2.31 K 19	2.46 Ca 20	2.62 Sc 21	2.82 Ti 22	2.96 V 23	3.19 Cr 24								
3.31 K 19	3.59 Ca 20	3.69 Sc 21	4.01 Ti 22	4.09 V 23	4.46 Cr 24	4.51 Mn 25	4.93 Fe 26	4.95 Co 27	5.43 Ni 28	5.41 Cu 29	5.95 Zn 30	5.9 Ga 31	6.49 Ge 32	6.4 As 33	7.06 Se 34	6.93 Br 35	7.65 Kr 36	7.48 Rb 37	8.26 Sr 38	8.05 Y 39	8.91 Zr 40	8.64 Nb 41	9.25 Mo 42	9.89 Tc 43	10.98 Ru 44	10.54 Rh 45	11.73 Pd 46	11.22 Ag 47	12.5 Cd 48	11.92 In 49	13.29 Sn 50	12.65 Sb 51	14.11 Te 52	12.85 I 53	14.11 Xe 54		
13.4 Rb 37	14.96 Sr 38	14.96 Y 39	16.74 Zr 40	15.78 Nb 41	16.62 Mo 42	17.48 Tc 43	18.37 Ru 44	19.28 Rh 45	21.66 Pd 46	20.22 Ag 47	22.72 Cd 48	21.18 In 49	23.82 Sn 50	22.16 Sb 51	24.94 Te 52	23.17 I 53	26.1 Xe 54	24.21 Fr 87	27.28 Ra 88	25.27 Ac 89	28.49 Th 90	26.36 Pa 91	29.73 U 92	27.47 Np 93	31 Pu 94	28.61 Am 95	32.29 Cm 96	29.78 Bk 97	32.29 Cf 98	29.78 Es 99	33.62 Fm 100	29.78 Md 101	33.62 No 102	29.78 Lr 103	33.62 Rn 86	33.62 Fr 87	33.62 Ra 88
86.1 Fr 87	97.47 Ra 88	88.47 Ac 89	100.13 Th 90	12.03 Pa 91	14.77 U 92	12.34 Np 93	15.24 Pu 94	12.03 Am 95	14.77 Cm 96	12.03 Bk 97	14.77 Cf 98	12.03 Es 99	14.77 Fm 100	12.03 Md 101	14.77 No 102	12.03 Lr 103	14.77 Rn 86	12.03 Fr 87	14.77 Ra 88																		

Lanthanides
57–71

33.44 La 57	37.8 Ce 58	34.72 Pr 59	39.26 Nd 60	36.03 Pm 61	40.75 Sm 62	37.36 Eu 63	42.27 Gd 64	38.72 Tb 65	43.83 Dy 66	40.12 Ho 67	45.41 Er 68	41.54 Tm 69	47.04 Yb 70	43 Lu 71	48.7 44.48 50.38 46 52.12 47.55 53.88 49.13 55.68 50.74 57.52 52.39 59.37 54.07 61.28
4.65 5.04	4.84 5.26	5.03 5.49	5.23 5.72	5.43 5.96	5.64 6.21	5.85 6.46	6.06 6.71	6.27 6.98	6.5 7.25	6.72 7.53	6.95 7.81	7.18 8.1	7.42 8.4	7.66 8.71	

Actinides
89–103

90.88 Ac 89	102.85 Th 90	93.35 Pa 91	105.61 U 92	95.87 Np 93	108.43 Pu 94	98.44 Am 95	111.3 Cm 96	101.00 Bk 97	114.18 Cf 98	103.65 Es 99	117.15 Fm 100	106.35 Md 101	120.16 No 102	109.10 Lr 103	123.24 111.90 126.36 114.75 129.54 117.65 132.78 120.60 136.08
12.65 15.71	12.97 16.2	13.29 16.7	13.61 17.22	13.95 17.74	14.28 18.28	14.62 18.83	14.96 19.39	15.31 19.97	15.66 20.56	16.02 21.17	16.38 21.79				



Detection limits are a function of testing time, sample matrix, and presence of interfering elements. Detection limits are estimates based on 2 minutes test times and detection confidence of 3σ (99.7% confidence). Interference-free detection limits are intended as guidelines; please contact Olympus to discuss your specific application. Rare earth element (REE) LODs are calculated using L lines in the absence of any transition-metal elements.

For alloy LODs, please see the separate alloy analysis LOD specifications.

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PHOTON ENERGIES, IN ELECTRON VOLTS, OF PRINCIPAL K- AND L-SHELL EMISSION LINES

Element	Symbol	Atomic #	K _{α1}	K _{β1}	L _{α1}	L _{β1}
Actinium	Ac	89	90.88	102.85	12.65	15.71
Aluminum	Al	13	1.49	1.56	0	0
Antimony	Sb	51	26.36	29.73	3.6	3.84
Argon	Ar	18	2.96	3.19	0	0
Arsenic	As	33	10.54	11.73	1.28	1.32
Astatine	At	85	81.52	92.3	11.43	13.88
Barium	Ba	56	32.19	36.38	4.47	4.83
Beryllium	Be	4	0.11	0	0	0
Bismuth	Bi	83	77.11	87.34	10.84	13.02
Boron	B	5	0.18	0	0	0
Bromine	Br	35	11.92	13.29	1.48	1.53
Cadmium	Cd	48	23.17	26.1	3.13	3.32
Calcium	Ca	20	3.69	4.01	0.34	0.34
Carbon	C	6	0.28	0	0	0
Cerium	Ce	58	34.72	39.26	4.84	5.26
Cesium	Cs	55	30.97	34.99	4.29	4.62
Chlorine	Cl	17	2.62	2.82	0	0
Chromium	Cr	24	5.41	5.95	0.57	0.58
Cobalt	Co	27	6.93	7.65	0.78	0.79
Copper	Cu	29	8.05	8.91	0.93	0.95
Dysprosium	Dy	66	46	52.12	6.5	7.25
Erbium	Er	68	49.13	55.68	6.95	7.81
Europium	Eu	63	41.54	47.04	5.85	6.46
Fluorine	F	9	0.68	0	0	0
Francium	Fr	87	86.1	97.47	12.03	14.77
Gadolinium	Gd	64	43	48.7	6.06	6.71
Gallium	Ga	31	9.25	10.26	1.1	1.12
Germanium	Ge	32	9.89	10.98	1.19	1.22
Gold	Au	79	68.8	77.98	9.71	11.44
Hafnium	Hf	72	55.79	63.23	7.9	9.02
Holmium	Ho	67	47.55	53.88	6.72	7.53
Indium	In	49	24.21	27.28	3.29	3.49
Iodine	I	53	28.61	32.29	3.94	4.22
Iridium	Ir	77	64.9	73.56	9.18	10.71
Iron	Fe	26	6.4	7.06	0.71	0.72
Krypton	Kr	36	12.65	14.11	1.59	1.64
Lanthanum	La	57	33.44	37.8	4.65	5.04
Lead	Pb	82	74.97	84.94	10.55	12.61
Lithium	Li	3	0.05	0	0	0
Lutetium	Lu	71	54.07	61.28	7.66	8.71
Magnesium	Mg	12	1.25	1.3	0	0
Manganese	Mn	25	5.9	6.49	0.64	0.65
Mercury	Hg	80	70.82	80.25	9.99	11.82
Molybdenum	Mo	42	17.48	19.61	2.29	2.39
Neodymium	Nd	60	37.36	42.27	5.23	5.72

Element	Symbol	Atomic #	K _{α1}	K _{β1}	L _{α1}	L _{β1}
Neon	Ne	10	0.85	0	0	0
Nickel	Ni	28	7.48	8.26	0.85	0.87
Niobium	Nb	41	16.62	18.62	2.17	2.26
Nitrogen	N	7	0.39	0	0	0
Osmium	Os	76	63	71.41	8.91	10.36
Oxygen	O	8	0.52	0	0	0
Palladium	Pd	46	21.18	23.82	2.84	2.99
Phosphorus	P	15	2.01	2.14	0	0
Platinum	Pt	78	66.83	75.75	9.44	11.07
Polonium	Po	84	79.29	89.8	11.13	13.45
Potassium	K	19	3.31	3.59	0	0
Praseodymium	Pr	59	36.03	40.75	5.03	5.49
Promethium	Pm	61	38.72	43.83	5.43	5.96
Protactinium	Pa	91	95.87	108.43	13.29	16.7
Radium	Ra	88	88.47	100.13	12.34	15.24
Radon	Rn	86	83.78	94.87	11.73	14.32
Rhenium	Re	75	61.14	69.31	8.65	10.01
Rhodium	Rh	45	20.22	22.72	2.7	2.83
Rubidium	Rb	37	13.4	14.96	1.69	1.75
Ruthenium	Ru	44	19.28	21.66	2.56	2.68
Samarium	Sm	62	40.12	45.41	5.64	6.21
Scandium	Sc	21	4.09	4.46	0.4	0.4
Selenium	Se	34	11.22	12.5	1.38	1.42
Silicon	Si	14	1.74	1.84	0	0
Silver	Ag	47	22.16	24.94	2.98	3.15
Sodium	Na	11	1.04	1.07	0	0
Strontium	Sr	38	14.17	15.84	1.81	1.87
Sulfur	S	16	2.31	2.46	0	0
Tantalum	Ta	73	57.53	65.22	8.15	9.34
Technetium	Tc	43	18.37	20.62	2.42	2.54
Tellurium	Te	52	27.47	31	3.77	4.03
Terbium	Tb	65	44.48	50.38	6.27	6.98
Thallium	Tl	81	72.87	82.58	10.27	12.21
Thorium	Th	90	93.35	105.61	12.97	16.2
Thulium	Tm	69	50.74	57.52	7.18	8.1
Tin	Sn	50	25.27	28.49	3.44	3.66
Titanium	Ti	22	4.51	4.93	0.45	0.46
Tungsten	W	74	59.32	67.24	8.4	9.67
Uranium	U	92	98.44	111.3	13.61	17.22
Vanadium	V	23	4.95	5.43	0.51	0.52
Xenon	Xe	54	29.78	33.62	4.11	4.42
Ytterbium	Yb	70	52.39	59.37	7.42	8.4
Yttrium	Y	39	14.96	16.74	1.92	2
Zinc	Zn	30	8.64	9.57	1.01	1.03
Zirconium	Zr	40	15.78	17.67	2.04	2.12