X-MET 3000TXR

uJj bq3000TXR

- 가볍고 휴대가 용이한 RoHS 측정용 XRF 분석기 – 현장에서 즉각적인 분석 가능

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Main Features

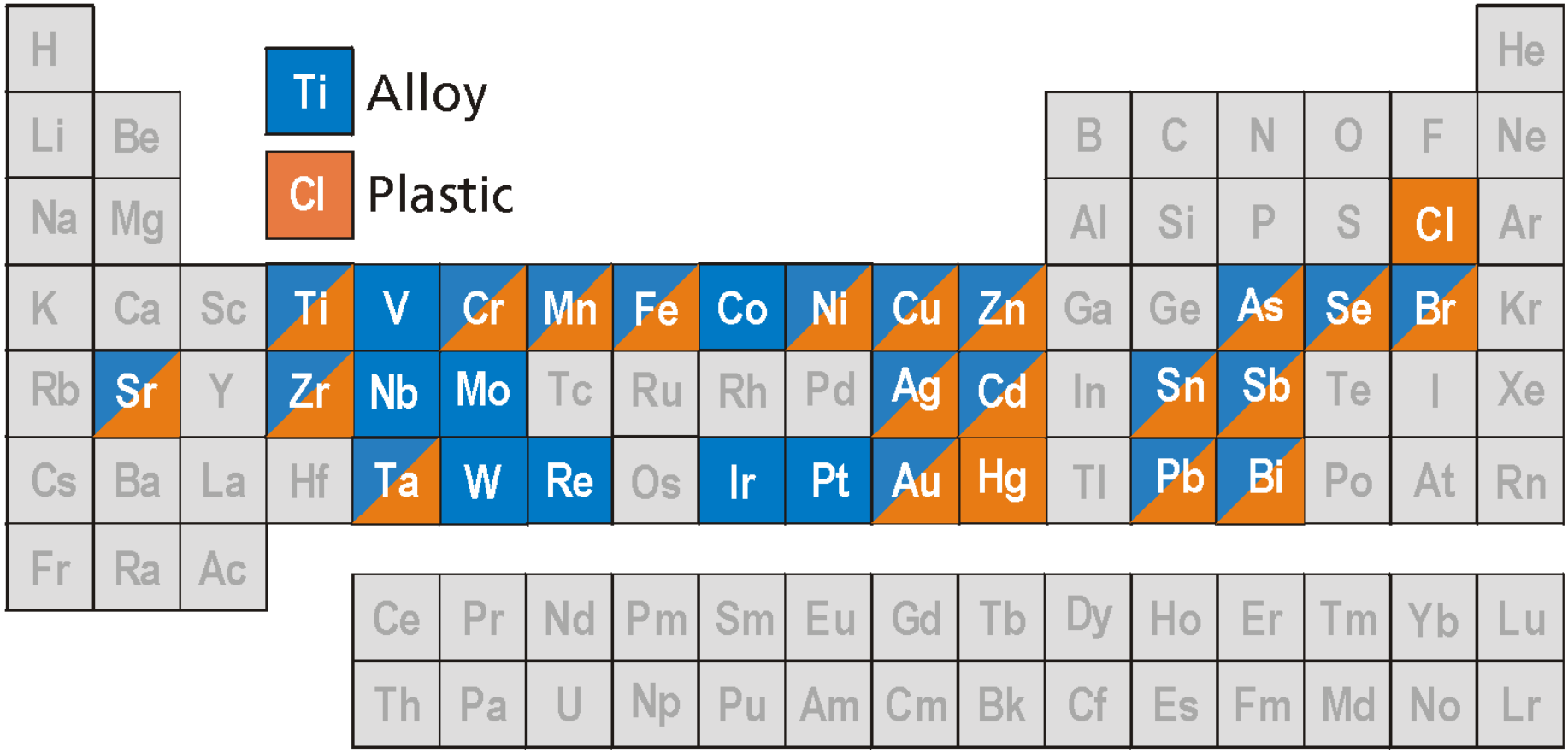
- RoHS screening and QC of all materials
- No sampling required, direct on-site measurement
- Easy and quick to use: 10sec to 1min for results
- Totally non-destructive
- RoHS element detection limit typically 10 to 50ppm.

Applications

- Components, connectors, bare-board PCB and populated boards for Pb.
- Solder - incoming bar stock as well as ladle dips and solder balls for Pb, Cu, Fe, Ag, Bi…
- Polymer samples for Br, Pb, Hg and Cd
- Metal parts, frames etc
- Plastic recycling, sorting based on PVC or Br etc

Alloy & Plastic FP elements

X-MET3000TXR



New generation XRF Alloy Analyzer

X-ray Tube Based

- Proprietary miniature X-ray tube
  - No isotope means
    - No regulatory controls
    - No travel restrictions
    - No licencing costs
    - No disposal problems
  - Long tube life - guaranteed 5 years

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Maximize flexibility with choice of analysis models

Fundamental parameters (FP) Two modes

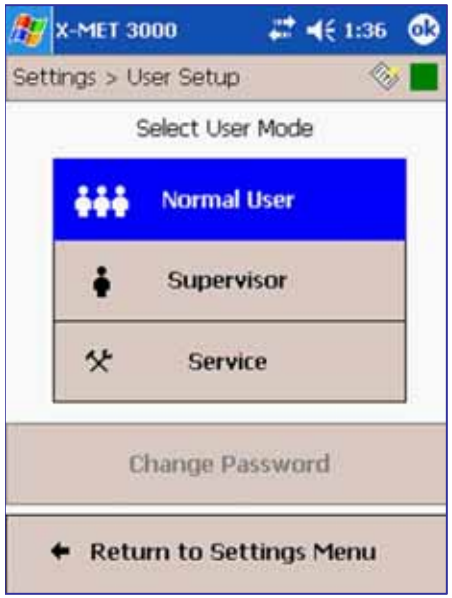
- **Plastics:** Universal calibration for all plastic types and other low density materials like paint, cardboard or ceramics. 22 elements calibrated including all RoHS elements
- **Metals:** - Universal metal calibration for 29 most common alloying elements including RoHS elements

Empirical mode for customer specific calibrations

- Empirical calibration for solder alloys, optimized for new lead free solders
- Plastic calibrations with customers samples

Quick and easy measurements

- Easy to Use
- Brief operator training
- Point and shoot analysis
- No special knowledge required
- Intuitive user interface



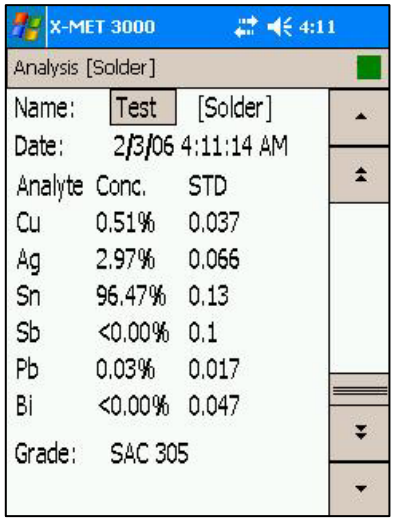
- Just point the probe at the sample, pull the trigger and read the result

Rugged and reliable

- Suitable for all weather conditions: 50°C — -15°C
- Protective covers provided as standard

- TÜV Certified for added confidence
  - 1 metre drop test
  - safety tested
  - technology based on over 30 years XRF experience!

PDA based technology for flexibility and simplicity



- bright color touch screen display
- easy-to-use menu
- wireless transfer of data
- off-the-shelf commercial PDA
- easily replaced if damaged
- full Windows CE functionality
- PC compatible
- data back-up flash card
- customizable
- transferable
- unlimited storage of results

PDA = Personal Digital Assistant

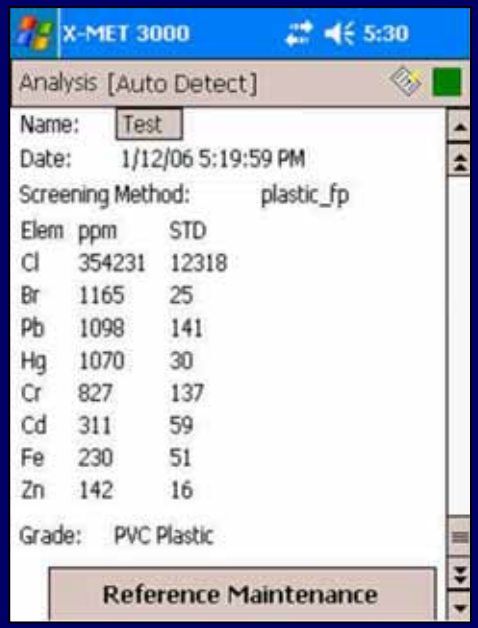
Easy reporting - time saving and trouble-free

- Recording of results can be automated if desired
- Measurement data is easily transferred to a PC by via Bluetooth connection for further inspection and report generation
- An unlimited number of results can be stored for future processing
- PC Report Generator for easy and versatile formatting of final QC reports
- Microsoft Excel, Word and Access can be used to store and process the data and to generate custom reports

- User can verify data integrity at any step in the process

PDA Screens

Result



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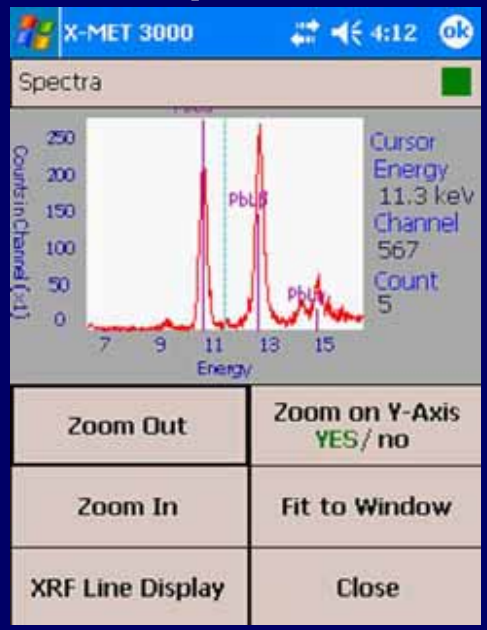


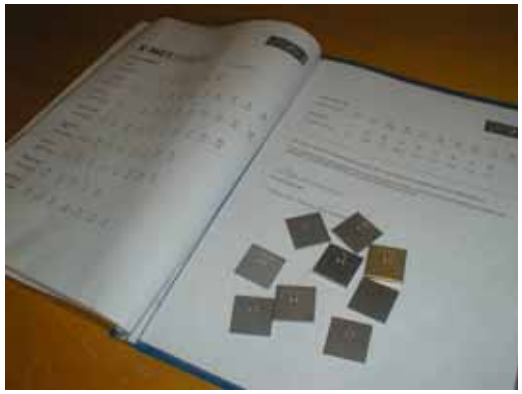
Safe use during analysis

- Radiation shielding provided by snout
- X-ray is generated only when sample in position
- Indicator lights:
  - Yellow indicates power on
  - Red indicates X-rays are being generated

IR sensor for sample contact
- automatic shut-off when instrument is removed from sample

Delivered as “turn-key” analysis tool

- Each delivery includes a calibration certificate
- Instrument performance is guaranteed by measuring alloy specific check samples (provided with each instrument)



Calibration Certificate

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This is to certify that the X-ray fluorescence analyzer identified with

Serial number: *121212*

has been calibrated to analyze metals using calibration method based on Certified Reference Materials and Reference Materials (as defined in ISO 30:1981 standard).

The suppliers of the materials utilized in X-MET analyzers' calibrations are:
Brammer Standard Company Inc., USA
Analytical Reference Materials International Inc., USA
MBH Analytical Ltd., UK

Espoo 3.5. 2003

Marjo Lievonen
Product Manager

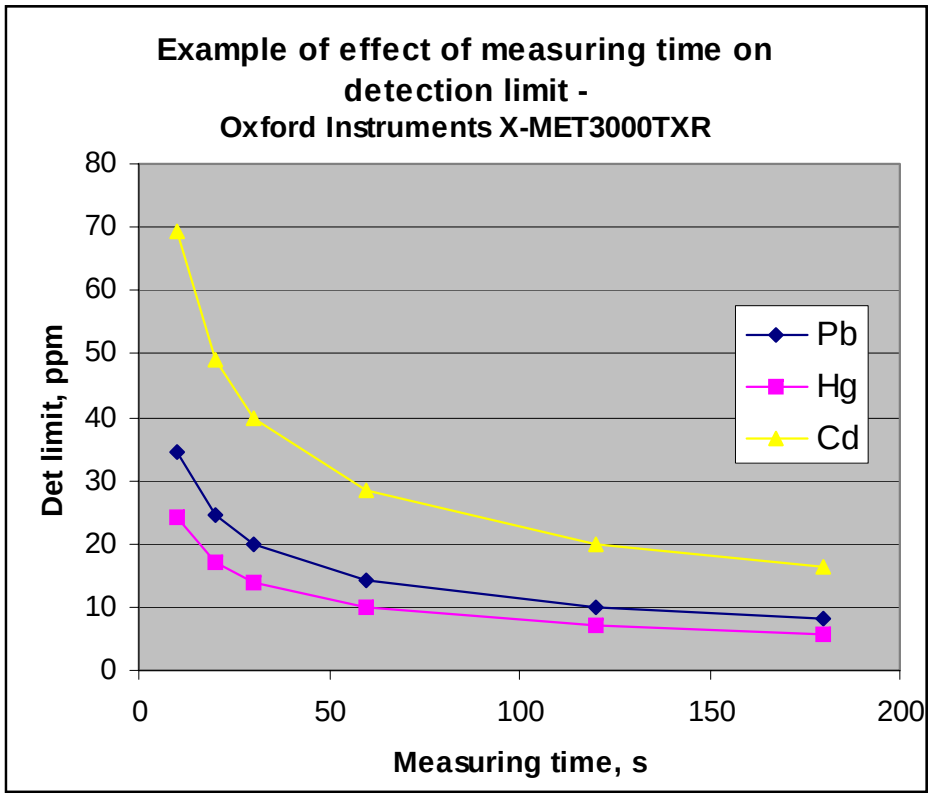
X-MET3000TXR Performance

Detection limits (ppm) for metals and plastics, (Interference free, 3 sigma)

Element	Polymers (PE)		Metals (Fe)	
	100s	30s	100s	30s
Cr	90	170	300	540
Br	3	5	12	22
Cd	22	40	54	99
Hg	8	14	15	28
Pb	13	24	27	49
Ni	9	16	261	476

Effect of Measurement time on detection limit

- Measurement is an integral of set measuring time, system analyzes continuously and reports average result of measuring time
- Measurement time can be freely selected, it is typically from 5 sec to 10 minutes



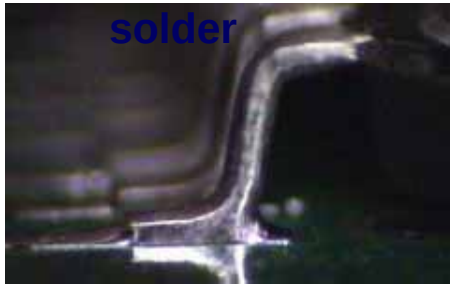
X-MET3000TXR Solder analysis

- Empirical solder calibration for optimized Pb detection for new Pb-free solders
- New solder types requires strict quality control of solder composition to avoid tin whiskering and other potential solder defects which may lead very expensive system failures

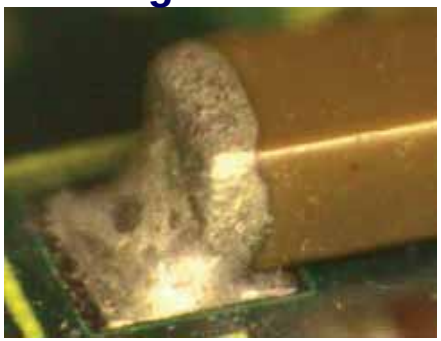
Most common solder types

Alloy composition	Mp, C
Sn Pb	183
Sn 0.7Cu	227
Sn 3.5Ag	221
Sn 3.5Ag 0.7Cu	217
Sn Ag Bi	212
Sn 9Zn	198
Sn 8Zn 3Bi	191
58Bi 42Sn	138

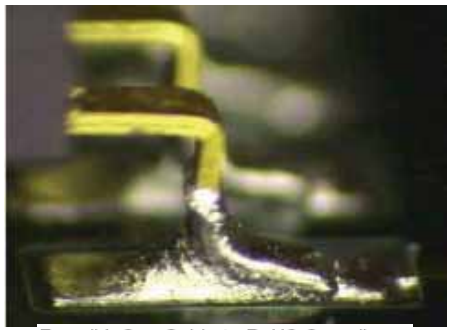
SnPb solder



SnAgCu solder



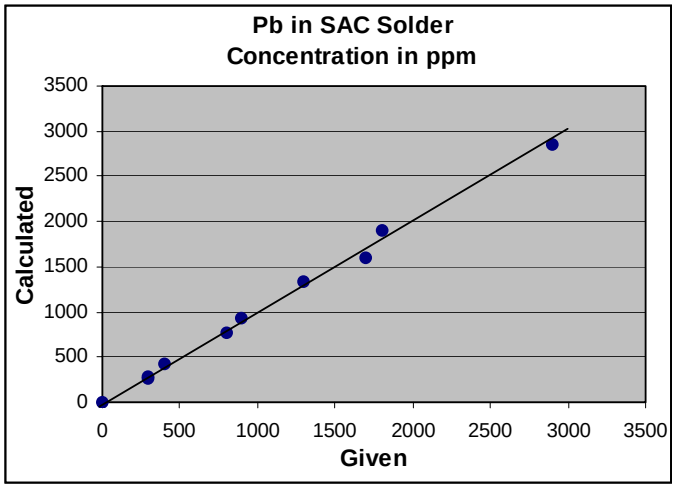
SnAgCu solder



Farnell InOne Guide to RoHS Compliance

X-MET3000TXR Solder analysis

- Empirical solder calibration for optimized Pb detection and composition analysis
- Calibration ranges
  - Sn: 30…100%
  - Ag: 0…4%
  - Pb: 0…0.5%
  - Cu: 0…5%
  - Sb: 0…1%
  - Bi: 0…57%



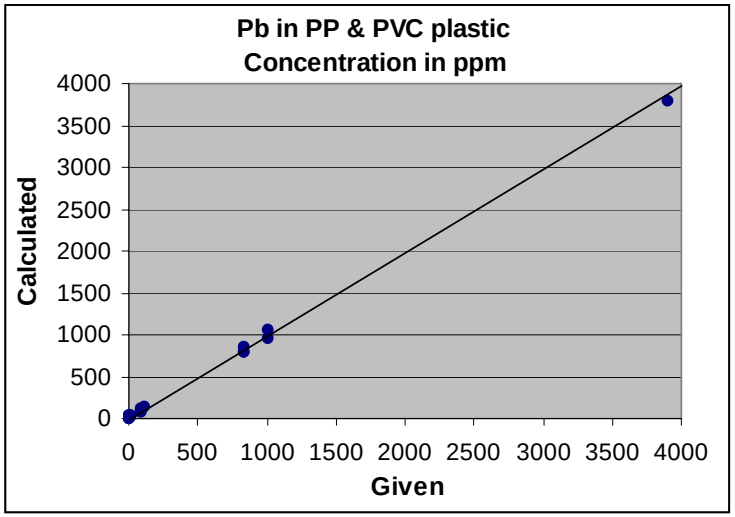
Test data

Solder sample 1, 30s measuring time (All values in%)						
Analyte	Sn	Cu	Ag	Pb	Sb	Bi
Ref value	96.3	0.06	3.11	0.04	0.03	0.000
1	96.370	0.054	3.020	0.041	0.025	0.000
2	96.365	0.053	3.043	0.035	0.027	0.000
3	96.235	0.062	3.083	0.046	0.032	0.000
4	96.284	0.055	3.093	0.045	0.030	0.000
5	96.292	0.047	3.063	0.042	0.026	0.000
Average	96.309	0.054	3.060	0.042	0.028	0.000
STD	0.058	0.005	0.030	0.004	0.003	0.000

X-MET3000TXR Plastic analysis

- FP, universal calibration for all main heavy elements in polymers
  - For all different plastic types: PVC, PE, ABS, PS, Epoxy etc
  - Thickness correction to compensate effect of different sample thickness
  - Suitable also for other “light matrix” materials like rubber, ceramics, wood, paper, cardboard, fiberglass, liquids, fabric, paint, aluminum & magnesium alloys etc
  - Following 22 elements are measured with Plastic FP: Cl, Br, Sn, Sb, Ti, Cr, Mn, Fe, Ni, Cu, Zn, As, Pb, Bi, Se, Cd, Hg, Sr, Ag, Au, Mo, Ta

- Optional empirical calibration for optimal accuracy and speed
  - Possibility to make customer specific calibrations with customer samples
  - Cd, Hg,Br, Cr, Pb etc



Plastic FP
Typical Accuracy

Test sample concentration ranges					
	Cr	Br	Cd	Hg	Pb
Average ppm	170	278	129	148	294
min ppm	0	0	0	0	0
max ppm	1000	1099	407	1100	1202
range ppm	1000	1099	407	1100	1202
Estimated Average Errors					
	Cr	Br	Cd	Hg	Pb
RMS ppm abs	87	39	40	27	73
RMS of Avg %	51	14	31	18	25
RMS of range %	9	4	10	2	6

RMS = average deviation of the true value

- **Typical Plastic FP accuracy for plastic standards 0…1200ppm**
- **Test standards are PVC or PE materials**
- **120s measuring time**

X-MET3000TXR Metal analysis

- Universal FP calibration for all alloy types for quality control and RoHS screening
- Measures also Pb-free and SnPb solders
- Detection of RoHS elements
- Concentration of total 29 elements analyzed:
  - Ag , As, Au, Bi, Co, Cr, Cu, Fe, Ir, Mn, Mo, Nb, Ni, Pb, Pt, Sb, Se, Sn, Ta, Ti, V, W, Sr,Y, Zn, Zr,Br, Cd, Hg
- Optional empirical MSG alloy calibration available, for users which use X-MET3000TXR also for PMI (Positive Material Identification) and Scrap sorting

X-MET3000TXR Technical Specifications (1)

- Analysis range: From Ti to U (also Cl in Plastic FP)
- Display: 320 x 240, 65536 colors
- Memory: 64 MB
- Detector: High-resolution Peltier cooled Si-PIN
- Batteries: Inside the handle
  Two Li-ion - 4 hours operation each
- Battery charger: 240/110V - 50-60Hz
- X-ray tube: Max voltage 40kV - Rh target
- User Interface: PDA/Windows CE OS
- Alloy analysis software on PDA
- Data transfer: USB - download cables supplied
  Bluetooth, IR
- Data storage: Compact Flash card memory

X-MET3000TXR Technical Specifications (2)

- Operating conditions: Temperature range
  -10°C to +50°C; 14°F-120F
- Safety features: Infrared beam safety sensor at the nose of the instrument
  Dual failsafe red warning light when X-ray is on
  Failsafe yellow warning light when high voltage generator is on
  Safety shield for small sample measurements
- Dimensions: 9.9 cm (W) x 28.3 cm (L) x 27.8 cm (H)
- Weight: 1.8 kg

X-MET3000TXR Technical Specifications (3)

- Bench top operation:
  - Bench top instrument stand kit
  - PDA cradle
  - PDA AC adapter
  - Remote extension cable
  - Safety shield for small samples

- Carrying and transportation:
  - Field carrying case
  - Shoulder strap

- Optional accessories:
  - Holster
  - Sample bag holder

Warranties:

- Instrument - 2 years
- X-ray tube - 5 years