



# New 2020 S1 TITAN

● Definition of Precision

## ● The S1 TITAN Series Handheld XRF Analyzers

The S1 TITAN series is designed to quickly and accurately report the elemental analysis of your sample. Whether you need to analyze large machined parts, children's toys, or small jewelry, the S1 TITAN will deliver fast and accurate results. The ergonomic pistol grip and trigger are designed for all-day use. The color touch-screen LCD is easily seen in all lighting conditions. Weighing in at just 1.5kg (3.3 lbs), the S1 TITAN is among the lightest tube-based XRF analyzers on the market.

Designed as a "point and shoot" analyzer, the S1 TITAN requires minimal setup and operator training. Equipped with both user-level and supervisor-level access, a manager can choose to grant basic operator control or full functionality. This two tier approach and intuitive interface make the S1 TITAN perfect for both beginning users, as well as power users.

Since XRF is a non-destructive technique, it is ideal for analyzing and sorting incoming material, finished goods and in-process production parts. Applications for the S1 TITAN are not limited to clean manufactured parts; scrap metal sorting, geochemical assays and soil testing are also well within the capabilities of the S1 TITAN. Available calibrations are as diverse as the list of applications, but if you don't find a calibration to match your application, we can customize a calibration to perfectly fit your requirements.



**Detector Technology:** The S1 TITAN product line is entirely based on the latest detector technology. Every S1 TITAN model is equipped with the high-performance graphene window Silicon Drift Detector (SDD). As a result, the end-user can expect to have fast, precise analysis regardless of the chosen S1 TITAN model.

The new S1 TITAN is available in three high-performance configurations: S1 TITAN 500, 500S, and 800, all sharing the same advanced detector technology.

The S1 TITAN 800 is the premium model, with the best performance and widest application range and best light element performance for Mg, Al and Si. The S1 TITAN model 500S is fast and easy to use analyzer which can measure both light and heavier elements simultaneously. The S1 TITAN 500 model is an excellent value choice when analysis of light elements is not required - it is designed for simple and fast analysis of heavier elements, starting from Titanium.

**Easy to use:** The S1 TITAN is among the lightest X-ray tube-based XRF analyzers available on the market today. The user interface has been designed to provide intuitive operation and results presentation. Data management and transfer are exceedingly easy to use.

- Intuitive user interface
- Requires very little operator training
- Multiple fields for sample identification
- Lightweight – only 1.5kg / 3.3 lbs, including battery

**Environmental conditions:** IP54 rated; the S1 TITAN is designed to withstand field operation in all environments, including humid and dusty conditions.

- Sealed against moisture and dust
- Ruggedized with rubber over-molding
- Protected from dirt and windblown dust
- Sample stand for measurement of small and complex samples
- Operating Temperature: -10°C to +50°C
- Sample Temperature (intermittent use): 150°C for Ultralene® window. 350°C for Kapton® window (max. 5 sec measurement, min. 60 sec cool down).

**TITAN Detector Shield™:** The ultimate defense against punctured detectors.

This unique patented S1 TITAN accessory protects the detector window from being punctured by sharp objects like scrap shavings and wire, while still allowing rapid and accurate analysis of almost any material.

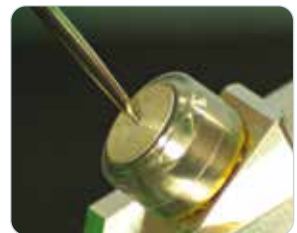
- Prevents costly detector punctures
- Increases equipment up-time
- No need to change window or calibration when measuring light elements
- No sacrifice to analytical performance, even when measuring light elements such as Mg, Al or Si



Damaged detector



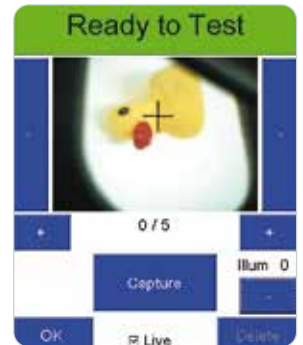
Undamaged detector  
when fitted with  
TITAN Detector Shield



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**Integrated camera & small spot collimator:** The S1 TITAN can be equipped with an integrated camera (640 x 480 pixels) to provide sample visualization and accurate positioning of the measurement spot. The small spot option provides a small measurement area for the isolation of small features to be tested. Thanks to the S1 TITAN's SharpBeam™ optimized geometry, the precision and accuracy of the measurement with small spot collimator are the same as for the normal spot; there is no need to extend the measurement time to achieve the desired precision.

- Small spot isolates specific sampling area
- Camera ensures accurate measurement positioning
- Save up to 5 images per assay (provides record of measurement spot)
- Images easily import into reports
- No loss of accuracy with small spot option



Element Name	Wt%	Wt%	Wt%	Wt%
Al	0.000	0.000	0.000	0.000
Si	0.000	0.000	0.000	0.000
Fe	0.000	0.000	0.000	0.000
Mn	0.000	0.000	0.000	0.000
Pb	0.000	0.000	0.000	0.000
...	...	...	...	...

## Data Management:



### Data storage

- Images, spectra, sample identification, and results are stored in a single protected file for easy storage and access
- Results are available in both a protected and unprotected file formats
  - The unprotected file format can be imported directly into Excel or other database programs
- Data may be stored in internal instrument memory or a USB flash drive or both
- The assay's GPS coordinates can be exported to GIS compatible software



### Bluetooth® wireless accessories

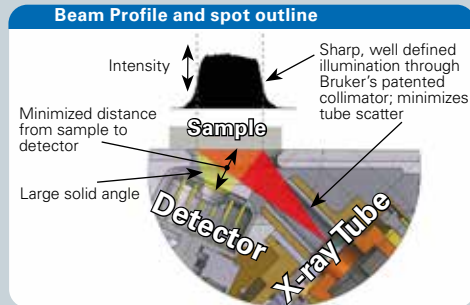
- External GPS receiver providing GPS coordinates to the S1 TITAN
- Portable, ruggedized thermal printer
- Bar code reader

### Bruker Software: PC software for control and communications

- S1 RemoteCtrl: Wi-Fi or USB remote control of the S1 TITAN
- Bruker Instrument Tools: Communicate with the instrument and manipulate data from the S1 TITAN. Features include: Report generator, Grade table editor, Spectrum viewer, software updates.
- Bruker Data Stream: Automated data transfer

Every S1 TITAN is precision built with Bruker's patented **SharpBeam™ Optimized Geometry** (patent # 8,223,925). Benefits include:

- Produces a sharp, defined measurement spot
- Improved measurement precision
- Reduced power requirements
- Reduces stray scatter
- Increased battery life
- Reduced weight



### SMART Grade™ (System Monitored Automatic Run Time):

The S1 TITAN 800, when ordered with an Alloy calibration, are automatically equipped with Bruker's SMART Grade™ calibration. **This application automatically determines the proper conditions and measurement times for each alloy measured.**

- Pull the trigger and the analyzer does the rest
- Like having an expert operate your analyzer
- Optimum measurement conditions for each alloy
- Multiple condition measurement when required
- Fast measurement (2-3 sec) for standard alloys
- Automatically extended times (5-15 sec) for alloys containing light elements



**Grade Library:** All S1 TITANS ordered with Alloy calibration includes extensive grade libraries (1,000+ grade definitions) covering various international standards. User selectable libraries: EN-DIN, JIS, GB and others. These libraries cover the following alloy classes:

- Low alloy steels
- Cr-Mo steels
- Tool steels
- Stainless steel
- Specialty alloys
- Nickel alloys
- Zirconium alloys
- Brasses
- Bronzes
- Cobalt alloys
- Zinc alloys
- Aluminum alloys
- Titanium alloys
- Exotic alloys

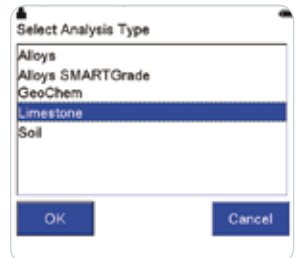
304SS				
42 Match 9.6 01-04 22:38				
Time 2.0				
El	Min	%	Max	+/-
Fe	66.35	71.80	74.00	0.37
Cr	18.00	18.05	20.00	0.16
Ni	8.00	8.36	10.50	0.16
Mn	0.00	1.22	2.00	0.09
Cu	0.00	0.17	0.50	0.03
Mo	0.00	0.13	0.50	0.01
Co		0.28		0.03

Inco 792				
42 Match 9.8 01-04 19:38				
Time 3.0				
El	Min	%	Max	+/-
Ni	60.00	62.50	69.00	1.76
Cr	11.00	12.36	13.00	0.32
Co	8.00	8.94	10.00	0.28
W	3.60	3.98	4.59	0.17
Ti	3.50	3.75	4.50	0.20
Ta	3.50	3.60	4.50	0.15
Mo	1.60	2.00	2.40	0.09

## • The S1 TITAN Series Handheld XRF Analyzers

**Calibrations:** Several different calibration options are available for the S1 TITAN, depending upon the model of interest. Below are some typical examples. For a comprehensive list, please consult with your sales partner.

- **Alloy-29:** New easy to use single phase measurement for all alloy types covering the full elemental range from Mg to Bi. Lower 29kV excitation provides more straightforward regulatory process in some countries.
- **Alloy LE:** Dual phase alloy analysis (Mg - U), including direct measurement of light elements (Mg, Al, Si and P) and extended grade ID; Includes high accuracy type-specific calibrations for most alloy groups.
- **Precious Metals:** Optimized for analysis of jewelry and other precious metal alloy samples, including gold, silver, platinum and palladium alloys. Includes gold karat display.
- **Food Quality:** For Nutrients and Fortificants in Foodstuff; Includes powdered check sample. Used to analyze Food and feed Quality at critical points for raw materials, inprocess and finished products.
- **Restricted Materials:** For RoHS consumer product screening. Auto mode and user selectable calibrations for plastics, mid-density materials, and metals with IEC and user defined compliance limit settings.
- **Limestone:** For the cement, construction and building industry to analyze raw and prepared limestone, cement and gypsum. This calibration is only available for models 800 & 500S.
- **Geo Exploration:** Optimized for mining, exploration, grade control, drilling and soil screening. For model 800, this calibration includes GeoExploration and GeoMining for full light element support via three phase measurement.
- **Maritime Sulfur (MARPOL):** Optimized to analyze the limited Sulfur content in maritime fuels. This calibration is available for models 800 & 500S.



S1 TITAN Configurations	Excitation	Detector	Elemental Range	Spot Size	Camera
<b>Model 800</b> 	6-50kV; 5 position automatic filter changer	SDD (graphene window)	Mg - U	8, 5 or 3mm	Optional
<b>Model 500</b> 	40kV; Fixed Al/Ti filter	SDD (graphene window)	Ti - U	8mm	Optional
<b>Model 500S</b> 	29kV; No filter	SDD (graphene window)	Mg - U	8mm	Optional

**Optional Accessories:** There are a variety of optional accessories available for the S1 TITAN. Please reference the S1 TITAN Accessories brochure for complete details.

Popular accessories include:

- Benchtop stand with full safety interlock
- Portable desktop stand (small samples)
- Barcode scanner
- Mobile printer
- GPS receiver
- Laptop kit
- Field geo sample preparation kit
- Alloy check sample kit
- Weld adapter
- Belt holster

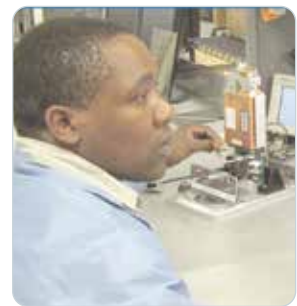


**Service Care Programs:**

Bruker has been in the instrument business for many years and supplied products and services to companies just like yours. We understand the critical importance of post-sales support to our clients. Our Service Care program provides the highest level of service in the industry. Our care programs cover the following benefits:

- Annual maintenance and re-certification of measurement accuracy
- 50% discount on repair due to accidental damage
- Priority access to technical support hotline
- Warranty: All repair parts/labor included
- Remote diagnostic services
- On-going User Training
- Rental services
- Guaranteed Loaner program\*
- Free consumables\*
- Free SW updates\*

\*Conditions apply



# The S1 TITAN Series Handheld XRF Analyzers

Bruker (Handheld XRF division), can trace its history back to the early 1980s and the US National Laboratory in Richland, Washington. It was there that a team of scientists from United Nuclear Inc and the US Department of Energy pioneered the early breakthroughs in portable XRF. That led to the formation of Scitec, the company that would later become Bruker.

A lot has changed since those early days. A series of innovations has made handheld XRF technology an indispensable tool in fields as diverse as PMI (Positive Material Identification), art conservation, scrap sorting, petrochemical industries and the NASA space exploration program. S1 TITAN is the latest in a long line of innovations. During this development, Bruker has produced thousands of handheld XRF instruments which have been sold and serviced throughout the world.



- 1982**  
Scitec Incorporated
- 1998**  
C-Thru acquires Scitec
- 1999**  
Keymaster Technologies acquires C-Thru
- 2001**  
Keymaster introduces the first tube-based portable XRF
- 2002**  
Keymaster/NASA introduces first light element portable XRF
- 2006**  
Bruker acquires Keymaster Technologies
- 2008**  
Bruker introduces first SDD-based XRF
- 2013**  
Bruker introduces TITAN Detector Shield™
- 2020**  
Bruker introduces all SDD Graphene Detector portfolio

-  **1982**  
Map 1
-  **1994**  
Map 4
-  **2001**  
Tracer 1
-  **2002**  
NASA vacuum instrument
-  **2005**  
TRACER III-V
-  **2006**  
OEM Product
-  **2008**  
S1 TURBO<sup>SD</sup>
-  **2009**  
S1 SORTER
-  **2012**  
S1 TITAN
-  **2013**  
S1 TITAN  
2<sup>nd</sup> generation
-  **2016**  
TRACER 5i
-  **2018**  
CTX
-  **2018**  
TRACER 5g

## Contact Us

[www.bruker.com/s1titan](http://www.bruker.com/s1titan)

### Americas / Asia / Rest of World

Bruker  
Kennewick, WA · USA  
Tel. +1 (509) 736-2999  
sales.hmp@bruker.com

### Europe / Middle East / Africa

Bruker  
Berlin · Germany  
Tel. +49 30 670990-11  
sales.hmp@bruker.com