

# Remote Sample Definition

Today's laboratories are continuously required to improve their efficiency. The Thermo Scientific™ OXSAS™ Remote Sample Definition option helps achieving this goal by automating sample registration and all its analytical parameters for analysis on Thermo Scientific OES and XRF spectrometers. It allows a better integration of these analyzers in laboratory or on production floor and in automation process.

## Reception of sample identities and other analysis parameters from external software

The Remote Sample Definition option allows OXSAS OES or XRF software to receive sample identifications and analysis parameters sent from an external application, to avoid their re-input by the operator. This external application can be hosted by another computer connected via a network link or resident on the instrument computer. Any number of sample definitions can be downloaded in advance.

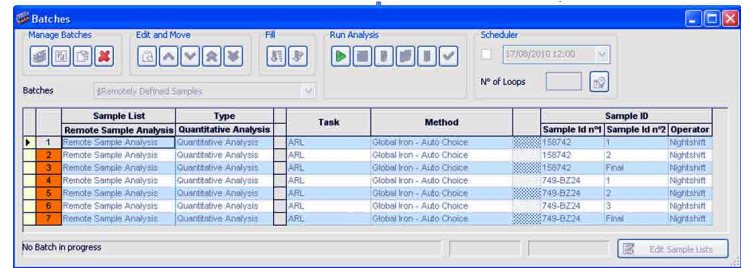
This option brings many benefits. It saves time, eliminates typing errors and considerably facilitates the operator's work: he just needs to select the corresponding sample identity from a list prior starting the analysis. In case of OXSAS XRF, fully automatic and unattended analysis can be launched when an autosampler is available.

Following information can be remotely set for every sample:

- Analysis task name. defining also the automatic selection of destinations where to distribute the analysis result
- The analytical category and its associated method name. The category can be either a grade (quality) or a type standard analysis or a method
- Up to 10 sample identity fields
- Up to 15 external values (known as manual input elements in OXSAS methods)

At any time, the operator can leave the Remote Sample Definition mode in order to analyze urgent samples, to control or to standardize the instrument. Meanwhile, the external software can continue registering samples in OXSAS.

## The Remote Sample Batch in OXSAS



Sample List		Type	Task	Method	Sample ID		
	Remote Sample Analysis	Quantitative Analysis			Sample Id n°1	Sample Id n°2	Operator
1	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	158742	1	Nightshift
2	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	158742	2	Nightshift
3	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	158742	Final	Nightshift
4	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	749-BZ24	1	Nightshift
5	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	749-BZ24	2	Nightshift
6	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	749-BZ24	3	Nightshift
7	Remote Sample Analysis	Quantitative Analysis	ARL	Global Iron - Auto Choice	749-BZ24	Final	Nightshift

Two application examples of this option:

- An external computer downloads all expected samples for the coming production day
- At the external software, a batch preparation is defined and sent to the OXSAS XRF software. The operator just needs to start it when the samples are physically ready on the autosampler of the instrument.

Besides the many sample registration communication functions available, the Remote Sample Definition option is also able to return the analysis results to the external software by the same channel as the one used to define the samples.

## Using Remote Sample Definition

Once a sample definition is received, it is recorded in a dedicated batch of OXSAS which allows as many samples as desired. The operator starts the analysis by just selecting the desired sample and pushing the start batch button.

Once the sample is picked and started, the analysis procedure is conducted just like in manual mode.

During sample registration, the external software defines whether the operator will be able to modify the sample parameters or not. A sample removal from the batch by the operator can also be protected.

## Simple commands protocol

The communication protocol between OXSAS and the software application managing the samples registration is a simple Client-Server protocol using ASCII string terminated by a Null character. Typical features that this protocol allows are:

- Survey OXSAS through a Watchdog
- Get OXSAS analytical configuration (Tasks, Methods, Type Standards and Grades)
- Monitor the instrument state
- Define production samples (one by one or in batches)
- Get an acknowledge (with or without results values) when a sample analysis is completed
- Automatic start of sample analysis with the OXSAS XRF.

Below are two examples of communications using the Remote Sample Definition protocol.

### Checking OXSAS availability

**Command sent to OXSAS:**

ARE\_YOU\_THERE@

**OXSAS immediate answer:**

I\_AM\_HERE@

### One XRF sample definition and analysis

**Command sent to OXSAS:**

PS\_DEFINE\_SAMPLE@

Task="ARL"@

Category\_Prod=Q@

Associated\_File="32AZ-K4"@

Cassette\_to\_Analyse=428@

Auto\_Start=Y@

SID1="527683"@SID2="Final"@

MIC1=1.045@

Return\_Result=R@

**OXSAS immediate answer:**

PS\_SAMPLE\_DEFINED@

Status=Y@

... .. delay for analysis ... ..

**OXSAS message:**

PS\_ANALYSIS\_RESULT\_PLUS@

SID1="527683"@SID2="Final"@

Status=Q@

Elements="Mn",..., "Nb"@

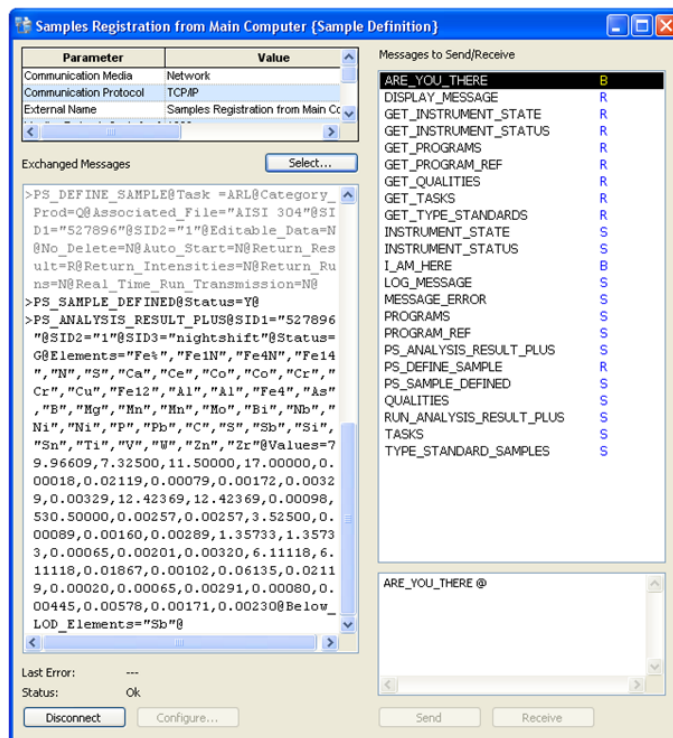
Values=1.357,...,0.00324@

Below\_LOD\_Elements="Sb", "Zr"@

Below\_QL\_Elements="Ni", "Cr"@

## Technical notes

- The communication between the external software and the OXSAS software uses the TCP/IP network protocol
- The communication message structure is ASCII based using keyword identifiers. Full details of the format syntax are available to allow development of the communication application on the external software side
- The Remote Sample Definition option includes a monitoring and diagnostic tool displaying the exchanged messages content
- The end user is responsible for the supply and installation of the protocol layer for the Thermo Scientific OES or XRF instrument computer (just like for any other PC of his network). However, the protocol layer is usually the default one provided by the Windows® Operating System package.
- No hardware of any kind is supplied with this option.



The OXSAS monitoring tool

Find out more at [thermofisher.com/oxsas](http://thermofisher.com/oxsas)

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