

ABB MEASUREMENT & ANALYTICS

TALYS ASP500 series

Flexible analyzer for real-time control of chemical processes



Measurement made easy

The TALYS ASP500 series represent the latest advances in process analytics for chemical industries. This new generation of analyzer captures several years of expertise in process spectroscopy implementation by ABB in close partnership with chemical customers.

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Streamlined analytics for complex processes

A flexible solution for real-time process control.

TALYS ASP500 is a fiber optics based industrial FT-NIR analyzer designed for in-line monitoring and control of batch or continuous processes. Its seamless installation enables reactor profiling, real-time determination of process end-point, cycle-time reduction, process characterization and early troubleshooting.

TALYS was designed around the following key concepts:

- Ease of implementation
- Ease of use
- State-of-the-art analytical performance
- Industrial robustness



Simplified implementation



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01 TALYS ASP500 series can be used with different types of accessories like probes and transmission cells to address specific application needs.

Minimal footprint and embedded processor

The TALYS design is optimized in order to minimize the complexity and burden traditionally associated with process equipment implementation.

This analyzer has minimal footprint and can be shelf-mounted or wall-mounted in a safe area without requiring additional enclosure.

Real-time process measurements are performed via fiber optics connected to a process sampling interface. TALYS is flexible and supports different types of insertion probes or flow-through cells for real-time measurements in remote locations on various types of processes (fluids or solids).

The TALYS ASP500 series feature an embedded processor, therefore no external computer needs to be supplied, approved or regularly upgraded by plant IT services.

The instrument is intended to run real-time process applications. In addition, a special “sample grabbing” utility also allows performing offline spectra acquisitions during the calibration model development phase.

A robust analyzer serving critical processes

Flexible yet simple to use

TALYS ASP500 embedded software executes real-time measurements and reporting operations according to a pre-defined template that incorporates standard inputs and outputs for process control.

During operations, the process engineering values and alarms can be sent to plant IT systems (DCS / PLC / controllers) via an ethernet port enabling Modbus TCP, OPC or CanBus communications.

The analyzer also features a simplified operator display (HMI) that provides key information on process status and supports multiple languages for instruction messages.

Users can switch at any time between 3 different process monitoring configurations with up to 5 properties per chemistry. When application modifications are required, the software configuration is updated remotely and simply uploaded on the analyzer using a USB key.

Conversely at the end of a batch, spectral data and electronic reports can easily be retrieved via the instrument USB port.

Uncompromised analytical performance



01 Seamless transfers can be performed between ABB laboratory analyzers and TALYS ASP500 series process analyzers.

State-of-the-art interferometer design

The core of TALYS ASP500 series is the latest generation of double-pivot compact interferometer developed by ABB. Innovative features related to interferometer design and signal sampling ensure exceptional analytical performance, stability and robustness of the analyzer:

- Patented scan mechanism
- Integrated modular compact design including source module and output collimator with Jacquinot stop
- Unique patented 24-bit sampling algorithm for optimal dynamic range

TALYS interferometer design is the same as used in ABB's latest generation of laboratory FT-NIR analyzers (MB3600 series). This common design, combined with the very strict manufacturing tolerances and high reproducibility of ABB analyzers ensures a smooth transfer of calibration between sites and instruments-provided sampling interfaces and detectors are similar:

- Seamless transfer between ABB laboratory and process analyzers
- Seamless transfer between ABB process analyzers

In addition, TALYS supports a variety of detectors to ensure optimal analytical performance (sensitivity and spectral range) tailored to application needs.

Setting a new standard for industrial analytics

A rugged design adapted to modern plant constraints

TALYS ASP500 series analyzers are built for long maintenance-free operations in manufacturing environment. The compact interferometer is fully enclosed and therefore insensitive to air currents. In addition, the analyzer benefits from a new metrology system based on a diode laser with 20 years average lifetime, and an NIR source with over 4 years lifetime.

In case of shutdown, process data are saved on an internal memory (>30 days storage capacity) and the system can be restarted and restored to initial condition with a special bootable USB key. Field-service is largely simplified thanks to the analyzer modular concept using pre-aligned components.

To assist process engineers with critical decisions, TALYS can identify and categorise specific process or hardware conditions from an extensive list of diagnostics.

During operations, the health monitoring utility runs continuously in the background and allows flagging uncalibrated sources of variation that may affect spectroscopic measurements.

Technical specifications

Specifications

- Dimensions:
37 x 35 x 26 cm (14.56 x 13.77 x 10.23 in.) | H x W x D
- Weight: 20 kg (primary analyzer enclosure)
- Mounting: wall or shelf mounting
- Detectors available:
 - InGaAs 2.1: 4,550 to 10,500 cm^{-1}
 - InGaAs 2.1 TE-cooled: 4,750 to 10,500 cm^{-1}
 - InGaAs 2.6: 4,000 to 10,000 cm^{-1}
- Source: quartz halogen with electronic stabilization
- Metrology: solid state laser
- Apodized spectral resolution adjustable from 1 cm^{-1} to 64 cm^{-1}
- Wavenumber repeatability (@7,300 cm^{-1}): < 0.006 cm^{-1}
- Wavenumber accuracy (@7,300 cm^{-1}): < 0.06 cm^{-1}

Communications

- ModBus TCP
(ethernet, serial RS232/RS485 via converter)
 - OPC DA (ethernet)
 - CanOpen (via USB to CAN converter)
- Packages supported for chemometrics models^A:
- Horizon MB Quantify
 - PLSPlus
 - PLSIQ
 - Unscrambler
 - Pirouette (via PLSPlus exported *.cal file)
- Fiber optics connectors: SMA 905
 - Electrical: <100 W consumption in routine operation

Environmental

- Operating temperature: 5 to 35 °C (41 to 95 °F)
- Operating relative humidity: <95% non-condensing
- General purpose area classification
- Purgeable
- Enclosure: IP54

Certifications

- cTÜVus, CE, CB Scheme (IEC), FCC, laser safety FDA/IEC/EN 60825-1, RoHS, WEEE

^A Check with ABB for latest version supported.

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