**TANGO** FT-NIR Spectrometer for Reflection Measurements

**Specifications**

Rugged NIR analyzer with sealed and desiccated optics for routine quality control. The analyzer is equipped with a gold coated integrating sphere for the reflection measurement of samples. Sample spinners for inhomogeneous samples are optionally available. The analyzer is either equipped with a built-in data system with a touch screen or optionally available with an external PC-based data system. The easy-to-use and GMP compliant TANGO software package allows qualitative and quantitative analysis.

**Design**

- **Housing:** rugged, sealed and desiccated housing
- **NIR source:** air cooled Tungsten source (5 V/ 7W), average lifetime 9,000 h, pre-aligned, easily exchangeable by operator
- **Interferometer:** RockSolid™, frictionless bearing, permanently aligned, Quartz substrate beamsplitter with proprietary coating
- **Laser diode:** average lifetime 10+ years
- **Detector:** InGaAs diode, TE-cooled and temperature-stabilized
- **Sample presentation:** reflection measurements in cups, Petri dishes or disposable vials, background measurement w/o removing the sample
Performance
- Spectral range: 11,500 - 4,000 cm\(^{-1}\)
- Resolution: better than 4 cm\(^{-1}\)
- Wavenumber reproducibility: better than 0.04 cm\(^{-1}\), at 7,181 cm\(^{-1}\)
- Wavenumber accuracy: better than 0.1 cm\(^{-1}\), at 7,181 cm\(^{-1}\)
- Photometric accuracy: better than 0.1% T

Electronics
- Data acquisition: 24-bit A/D converter
- Automation: microprocessor controlled optical bench, digital speed control, automatic gain selection, internal background, advanced system check
- Performance check: permanent on-line diagnostics of all optical components, automation units and sampling accessories
- Connectivity: Ethernet interface, 10/100 Mbps

Dimensions
- Spectrometer (w x d x h): 292 mm x 438 mm x 175 mm (plus max. 212 mm height for monitor)
- Weight: 18.6 kg (17.5 kg w/o data system)

Operating Environment
- Protection: NEMA 13 / IP54
- Operating temperature: 5\(^\circ\) C to 35\(^\circ\) C
- Storage temperature: -20\(^\circ\) C to 70\(^\circ\) C
- Operating relative humidity: < 80% non-condensing
- Power requirements: 100 to 240 VAC, 50/60 Hz, 75 W (typical 40 W)
- Regulatory certification and compliance: CE, WEEE and RoHS

Data System
- Embedded PC with 10.5” touch display; optional external PC data system

Validation
- TANGO software: the software package includes functions that facilitate the use of the analyzer in a 21 CFR Part 11 compliant environment
- Instrument qualification: TANGO software supports Operational Qualification (OQ) and Performance Qualification (PQ) optional: qualification according to USP1119/PhEur 2.2.40
- Internal validation unit: filter wheel with reference standards, for automatic PQ tests
- Validation manual: complete hardware and software validation documentation is available as an option
- Service contracts: Preventive maintenance contracts and validation services are available as an option

Software
- GMP compliant TANGO software with user-friendly interface
- Product based operation (Barcode reader friendly)
- Qualitative and/or quantitative evaluations (no method development)
- Customizable analysis reports
- Data exchange via USB stick and/or LAN