



 **TECHTEST**

Recognoil® XL QB

Technical Specification

Description of the device

Recognoil® QB XL is a desktop surface contamination detector. The inspected objects are placed on the measuring table inside and irradiated with powerful UV emitters. This induces fluorescence of contaminants, which is captured by a sensitive detector. Recognoil® QB is also equipped with a source of white light, thanks to which it is possible to capture the real appearance of the part and easily document it. The evaluated area is 100x 100 mm.

Areas of application

Recognoil® QB is an efficient tool for mass inspection of small parts, but also for evaluation of larger complex surfaces. The entire part scanning process is completely non-contact, fast and requires no surface preparation. The device is commonly used to check the condition of the surface, especially before painting, galvanic plating, PVD and CVD coating, welding, soldering, gluing or intentional application of oil films during lubrication and preservation.

Under normal circumstances, the device can be used to detect oil and grease on all commonly used (bare) metal surfaces like steel, aluminium, copper, precious metals etc.

Principle and output

The essence of the detection principle is the induction of luminescence of contaminants, its capture and subsequent evaluation using the supplied software. The standard output of the measurement is the fluorescence intensity [F.U. - fluorescence units] resp. its mean value relative to the measured area and the image output (fluorescence map) showing the distribution of oil / grease substances on the surface of the part.

Limitations

Fluorescence detection principle cannot be used for painted metal surfaces. Detection on plastic surfaces results in decreased sensitivity which strongly depends on the plastic substance composition and colour. We strongly recommend

suitability testing of less common materials in our laboratory before purchase.

Operator protection

The protection of the operator against the effects of UV radiation is ensured by closing the inspected object in the measuring compartment of the box. This also shades the light from the surrounding environment. If the device detects an imperfect closing of the door (magnetic contact) or an external light source, it will not allow the operator to continue scanning.

Modularity

The construction of the device is modular and can thus be supplied in several different dimensions depending on the required size of the inspected parts. In the basic variant, the positioning of the measured objects is done using a manually controlled table, which can also be replaced by a fully automated positioning table or other special accessories. In addition, the function and appearance of the supplied software can be customized according to the customer's requirements, eg. for the needs of simple OK-NOK operation, connection to the company database, etc.

Supplied software

The Recognoil® QB comes standard with the advanced Recognoil® PRO software, which not only displays the scanned and evaluated areas, but also allows further data processing and contains several unique functions:

- display of image data and measurement results, display of 3D results,
 - selection of areas of measured areas,
 - name of the measurement (sample),
 - sorting and searching for files,
 - export files (pdf, jpg, txt),
 - creation of protocols (photo documentation of parts, image and text notes),
 - setting of measurement parameters,
 - conversion of fluorescence units to oil thickness or area concentration,
 - detailed statistics,
 - setting pre-sets and limits,
 - inserting object masks,
 - calculation of over-limit pollution,
 - calculation of frequency and size of spot contamination,
 - possibility of additional implementation of functions according to individual customer requirements.
- * additional service

Hardware requirements

To operate the device, it is necessary to connect it to a PC, laptop or tablet PC or to a company network using a data LAN cable. The supplied SW can be installed on any number of devices meeting the minimum hardware requirements listed below:

- x86/64 Quad-Core CPU, 4 GB RAM
- 1 GB of free disk space
- Microsoft® Windows 10 / 11 operating system
- Microsoft .NET Framework 4.5

Package contents

The Recognoil® QB comes in the following basic configurations:

- Recognoil® QB with dimensions 615 x 650 x 600mm,
- Recognoil® PRO Software,
- measuring table,
- power adapter,
- air blower (dust removal tool)
- user manual, measurement guide with Recognoil® QB,
- CE declaration of conformity,
- calibration protocol.

Maintenance

The device should be placed in a clean and dust-free environment. Contamination of the measuring head of the detector and the working space affects the measurement results. The compartment of the case and the optical part of the detector can be cleaned using an air-blower dust-removal tool for cleaning optical filters. The interior surfaces of the device and the surfaces close to the optical elements, as well as the glass filters, must be kept in clean condition and the operator should never touch these parts. The recommended regular inspection associated with

the maintenance and calibration of the equipment is recommended in the interval of 6-12 months, depending on the frequency of use.

Device calibration

The device comes with a factory calibration protocol. Reproducible results over a long period of time are ensured if the instrument is stored, maintained and operated properly. To verify the condition of the device itself, it is possible to order standards and calibration samples.

Warranty and service

The standard 24-month warranty only applies to manufacturing defects in the device, not to normal wear, or, contamination of the device. To ensure stable and reproducible results, we recommend sending the device at least once per year for regular maintenance (cleaning of optical elements, restoration of the anti-fluorescent coating of active surfaces) and control calibration (output calibration protocol is included).

Additional services

- **Individual SW:** implementation of functions according to the customer requirements.
- **Device modifications:** adjustment of dimensions according to the type and size of the inspected object, automatic positioning.
- **Calibration samples:** calibration samples to verify the correct function and condition of the equipment.
- **Service and laboratory calibration of equipment:** cleaning and factory calibration of equipment.
- **Creation of special adapters:** for mounting and correct position of the inspected part.

Technical Data

<i>Device type:</i>	Recognoil® QB XL
<i>Detection method:</i>	non-destructive, optical - completely contactless
<i>Function principle:</i>	excitation of oil and grease substances by UV radiation and image evaluation of the fluorescence signal
<i>UV wavelength / power:</i>	365 nm / approx. 30 Watt
<i>Device dimensions:</i>	615 x 650 x 600 mm, the dimensions of the device can be modified at an additional cost to meet the customer's requirements
<i>Size of the evaluated area:</i>	100 x 100 mm
<i>Maximum size of the measured object:</i>	540 x 480 x 160 mm (width, depth, height)
<i>Sensor chip resolution:</i>	HD: approx. 2400 x 2400 px., 1 px ~ 40 µm SD: approx. 1200 x 1200 px., 1 px ~ 80 µm
<i>Measurement and evaluation time:</i>	1 to max. 10 seconds, depending on the type of oil / grease substances and properties base material
<i>Detection limit:</i>	minimum surface concentration approx. 15 to 70 mg.m ⁻² (approx. 16 to 77 nm layer thickness), depending on the type of contamination and the roughness of the base material, the range can be freely adapted to layer thicknesses up to approx. 4 - 10 µm
<i>Power supply:</i>	230V AC / 2A
<i>Required hardware:</i>	PC / laptop / tablet PC with Windows operating system 10 / 11, not suited for Android and Mac operating systems
<i>Supplied software:</i>	Recognoil® PRO - desktop application for MS Windows for operation, setup, evaluation and data management
<i>Interface type for data transmission:</i>	LAN data cable (Ethernet RJ45)
<i>Device weight:</i>	49 kg
<i>Device body material:</i>	Aluminium, PMMA, PETG, aluminium construction system allows the construction of equipment according to customer requirements
<i>Certification:</i>	CE
<i>Manufacturer:</i>	TechTest, s.r.o.
<i>Country of origin:</i>	Czech Republic (European Union)

Effective date: 20th December 2024