

FAST, COMPREHENSIVE, AND NON-DESTRUCTIVE

VEpioneer® is the world's first fully integrated one-button bench-top Hyperspectral Vision system, tailored to your needs with the AI-equipped software **VEsolve® Pro**.



- **VEpioneer®** captures **surface properties, contaminations and deviations** in production specifications comprehensive and fast (mean measurement time 20 s) instead of time-consuming single-point measurements.
- **VEpioneer®** boosts the information content by orders of magnitude compared to your single-point measurements and random sampling like FT-IR, GD-OES, TEM/SEM, LIBS, X-ray, Contact-angle or AFM measurements with just **one comprehensive measurement** (full sample, 100 %).
- **VEpioneer®** is a unique **combination of optical spectroscopy and imaging** to objectively assess the entire sample surface non-destructively.

INSPECTED MATERIALS

The system is designed for simple and fast area measurement of **surfaces and thin layers**, e.g.:

- Substrates: Metals, polymers, glass, semiconductors, ceramics, etc.
- Layers: Oxides, nitrides, carbides, polymers, etc.

INSIGHTS FROM INSPECTION

Extend your sample knowledge by spatially resolved optical recognition of:

- Layer thicknesses (1 nm - 500 µm, depending on layer material)
- Roughness of surfaces and interfaces
- Defects and contaminations of surfaces and layers
- Chemical, electrical and optical properties of surfaces and layers
- Quality criteria of surface and layers (i. e. processing status)

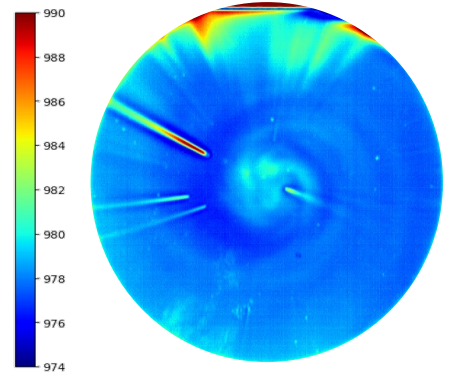


VEsolve® PRO

Hyperspectral Vision Software

TARGETED, USER-CENTERED, AND AI-DRIVEN

VEsolve® Pro is the powerful all-in-one software suite designed for DIVE technology, comprising acquisition, screening and exploration of Hyperspectral Vision data (“hypercubes”). Easy handling of sophisticated math utilizing commonly known concepts empower users to commence productive work immediately.



Layer thickness in nm as provided by VEsolve® Pro

- **VEsolve® Pro** controls **VEpioneer®** data capturing – providing optimised presets per sample and ensuring highest data quality through live correction of all non-sample influences.
- **VEsolve® Pro** handles high-dimensional hypercubes as easy as conventional images and visualises the insights within milliseconds after the inspection for the users.
- Teach your own sample specific AI models by simply “painting” or apply existing model by simply one click without being a data specialist.

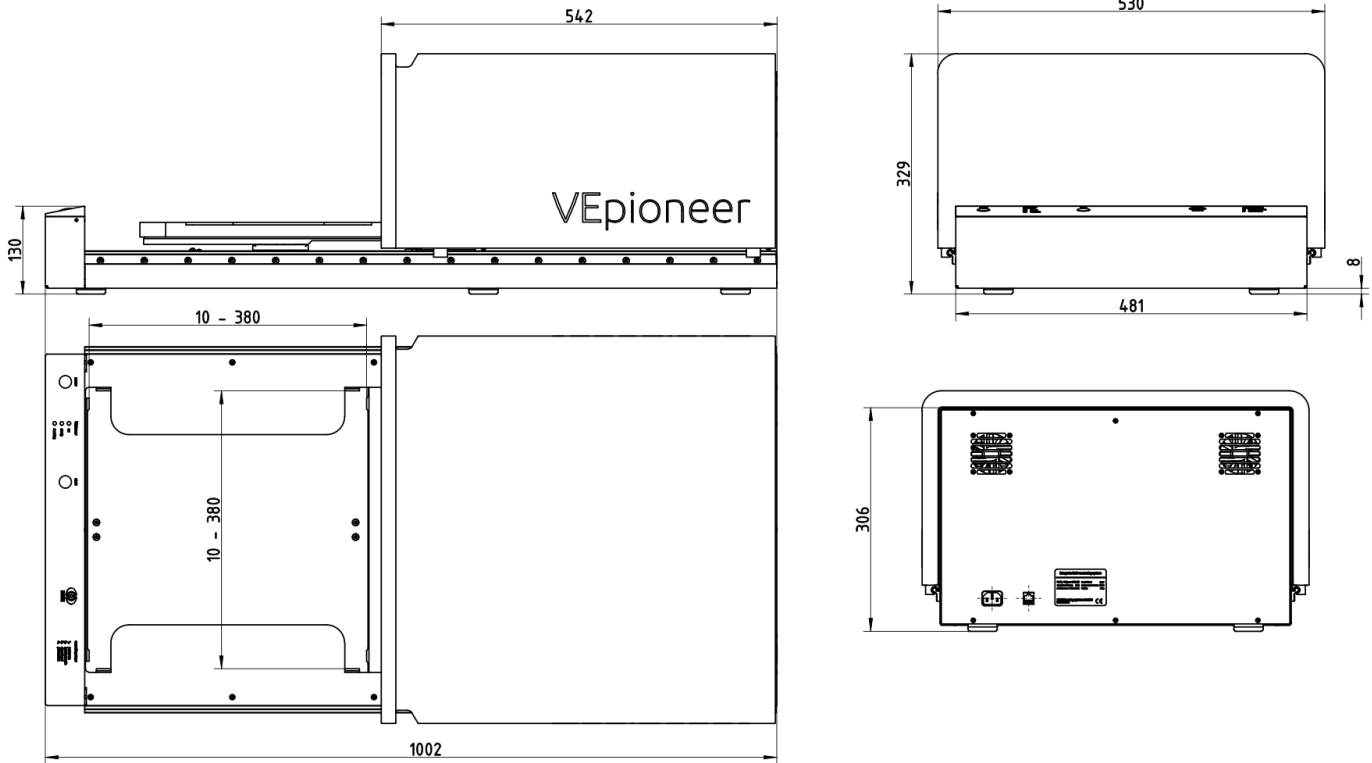
SOFTWARE FEATURES

| | |
|---------------------------------------|---|
| Data acquisition | Live frame, white and dark reference, pixel-binning, exposure time, averaging (and more), widely assisted |
| Data screening and Data pre-treatment | Hypercube editing (resampling, crop, stitching), Spectral processing (and more) |
| Data exploration | Machine learning algorithms |
| Unsupervised | PCA, k-means |
| Classification | LDA, random forest |
| Regression | PCR, PLS |
| Data import | ENVI (bsq, bil, bip), .jpg.hsi, .csv, .hdf |
| Data export | ENVI, .tiff, .jpg, .png, .csv, .xml |

TECHNICAL SPECIFICATIONS

| | |
|----------------------------|---|
| Imaging technique | Pushbroom scanning mode |
| Measurement mode | Reflectance (fluorescence on request) |
| Measurement time (typical) | 20 s (@framerate 50 Hz) |
| Wavelength range | VNIR: 400 – 1000 nm SWIR 1: 900 – 1700 nm optional SWIR 2: 1000 – 2500 nm on request |
| Spectral bands | 448 (VNIR) 224 (SWIR 1) |
| Spectral resolution | 1.34 nm (VNIR) 3.5 nm (SWIR 1) |
| Field of view (FOV) | 300 mm (macro inspection) (200 mm optional, further FOV on request) |
| Spatial resolution | x-axis, scan direction standard: 300 µm (quadratic pixel) x-axis, scan direction high resolution: 30 µm (adv. scan mode) y-axis, sensor based: VNIR: 300 (200) µm@ 300 (200) mm FOV, SWIR1: 470 (298) µm@ 300 (200) mm FOV |
| Lighting | VEluminise : tuneable halogen broadband source for homogeneous light field (broadband LED with spectral range 400 – 900 nm or UV-LED excitation optional) |
| Dimensions (L x W x H) | 1000 x 450 x 350 mm |
| Sample size | 360 x 360 mm maximum; sample height max. 10 mm (further sample sizes on request) |
| Sample stage | Linear, 450 mm travel range Sample holder adapted to customer specifications |
| Reference | Built-in PTFE (Protected aluminium, mirror or linear scale optional) |
| System cooling | Active |
| Operating conditions | +5 ... +45 °C (non-condensing) |
| System weight | 45 kg |
| System certification | CE, RoHS, UKCA |
| Power requirements | Rated voltage: 115 / 230 VAC, Rated frequency: 50 - 60 Hz Rated power: 170 W |
| Connectivity | RJ45 (ethernet) |
| Compute unit | Embedded system control User interface: Laptop or PC (customer specification) with DIVE VEsolve® Pro software |

DIMENSIONS



Additional configurations regarding sample size and sample stage, optical configurations as well as other specifications can be customised.

CONTACT



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