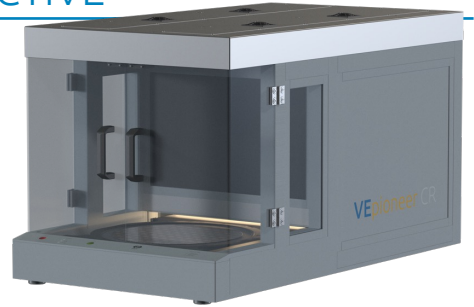


### FAST, COMPREHENSIVE, AND NON-DESTRUCTIVE

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



- **VEpioneer® CR** captures **surface properties, contaminations and deviations** in production specifications fast (mean measurement time 20 s)
- **VEpioneer® CR** 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® CR** is a unique **combination of optical spectroscopy and imaging** to objectively assess the entire sample surface non-destructively. The inspected sample can be **reintegrated** into the manufacturing process.

### INSPECTED MATERIALS

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

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

### INSIGHTS FROM INSPECTION

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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)

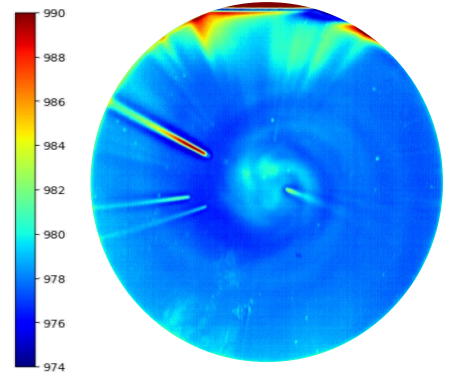


# VEsolve® PRO

## 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® CR** 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	Targeted hypercube screening and 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



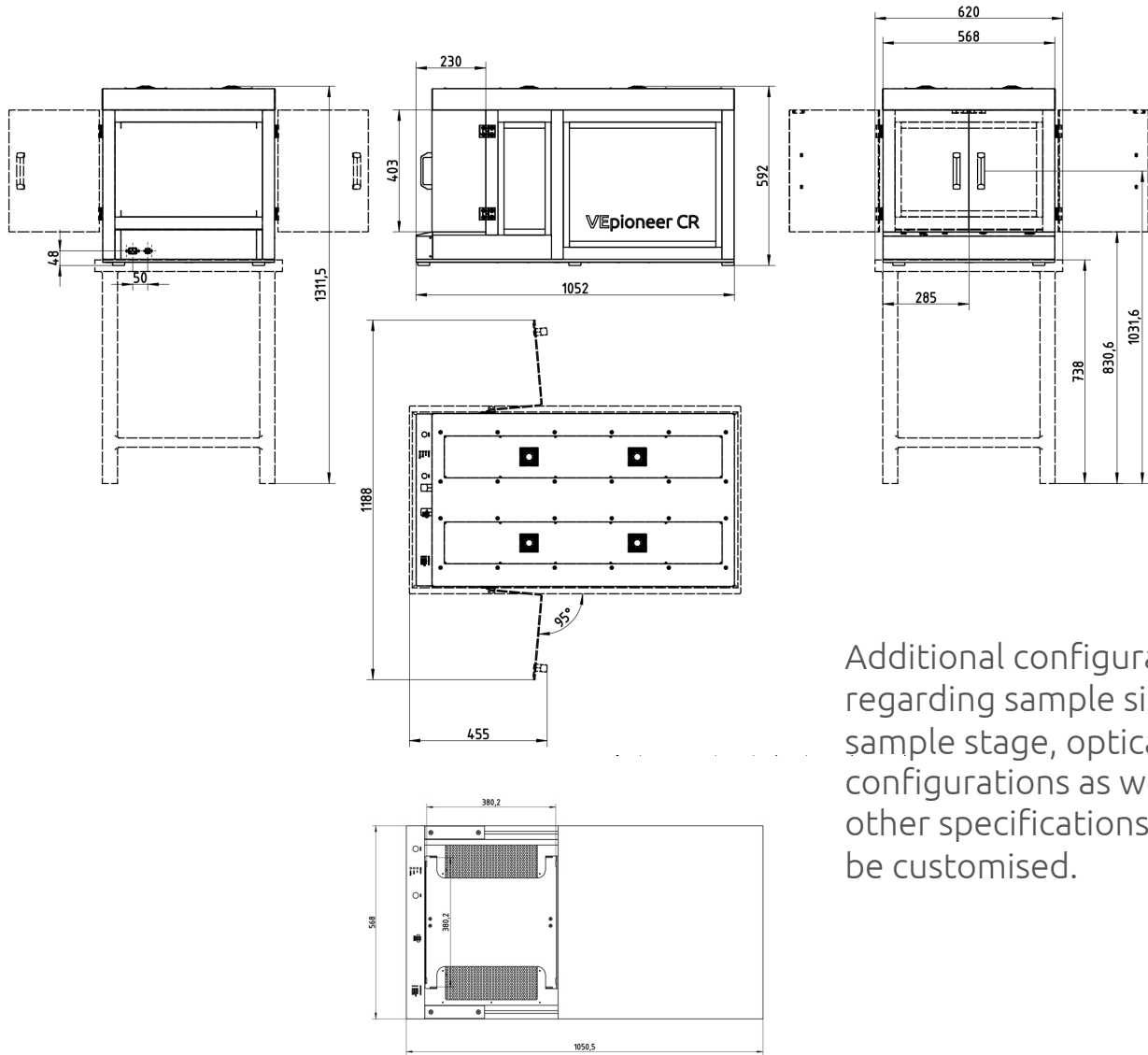
# VEPIONEER® CR

## Hyperspectral Vision System

### TECHNICAL SPECIFICATIONS

Imaging technique	Pushbroom scanning mode
ISO class 1 capability	Internal laminar-flow workspace with FFU
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	<b>VELuminise</b> : 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)	1052 x 568 x 592 mm
Sample size	360 x 360 mm maximum; sample height max. 10 mm (further sample sizes on request)
Sample stage	Linear, 500 mm travel range Sample holder adapted to customer specifications
Reference	Built-in PTFE (Protected aluminium or linear scale optional)
System cooling	By laminar flow FFU
Operating conditions	+5 ... +45 °C (non-condensing)
System weight	90 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 <b>VEsolve® Pro</b> 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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