



# VEPIONEER® CR

Hyperspectral Vision System

## FAST, COMPREHENSIVE AND NON-DESTRUCTIVE

VEpioneer® CR is the world's first fully integrated, one-button, bench-top Hyperspectral Vision system designed for cleanroom environments (ISO 3). It efficiently captures surface properties, detects thin films, and identifies deviations from production specifications.

- **FAST**

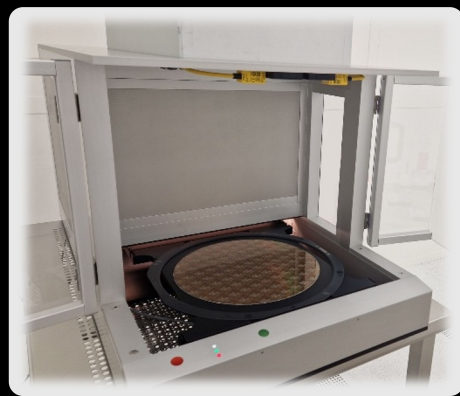
Measurement time: 20 seconds

- **COMPREHENSIVE**

One run: 100% sample information

- **NON-DESTRUCTIVE**

Unique combination of optical spectroscopy and imaging



## INSIGHTS FROM INSPECTION

VEpioneer® CR boosts your product and sample knowledge by orders of magnitude with spatially resolved recognition of:

- **LAYER THICKNESS**

1 nm - 500 µm, depending on layer material

- **QUALITY CRITERIA**

Defects, contaminations, processing status, roughness of surfaces and interfaces

- **SAMPLE PROPERTIES**

Chemical, electrical, optical

CHECK  
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# VEPIONEER® CR

## Hyperspectral Vision System

### INSPECTED MATERIALS

VEpioneer® CR is designed for simple and fast area measurement of surfaces and thin films on various substrates:

- **SUBSTRATES**  
Semiconductors (Si, SiC, ...), metals, polymers, ceramics, glass, ...
- **LAYERS**  
Oxides, nitrides, carbides, polymers, ...

### SPECIFICATIONS

Imaging technique	Pushbroom scanning mode
cleanroom capability	ISO class 3, including laminar flow FFU
Measurement mode	Reflectance   fluorescence optional
Measurement time (typical)	20 s (@framerate 50 Hz)
Wavelength range	VNIR: 400-1000 nm   SWIR 1: 900 – 1700 nm
Spectral bands	VNIR: 448   SWIR: 224
Spectral resolution	VNIR: 1.34 nm   SWIR: 3.5 nm
Field of view (FOV)	300 mm   200 mm optional
Spatial resolution	VNIR: 300 µm   SWIR: 470 µm field of view configurable 200 – 300 mm   further scan modes with high-resolution available
Lighting	VELuminise unit: tuneable halogen broadband source for homogeneous light field broadband LED with spectral range 400 – 900 nm or UV-LED excitation optional
Dimensions	1052 x 568 x 592 mm (L x W x H)
Sample size	360 x 360 mm maximum   sample height max. 10 mm, further sample sizes optional
Sample stage	Linear, 500 mm travel range, sample holder adapted to customer specifications
Reference	Built-in PTFE   protected aluminium optional
Operating conditions	+5 ... +45 °C (non-condensing)
System weight	90 kg
System certification	CE, RoHS, UKCA
Power requirements	Rated voltage: 230 VAC (115 V optional)   Rated frequency: 50 - 60 Hz   Rated power: 170 W
Connectivity	RJ45 (ethernet)
Compute unit	Laptop or PC with DIVE VEsolve® Pro software

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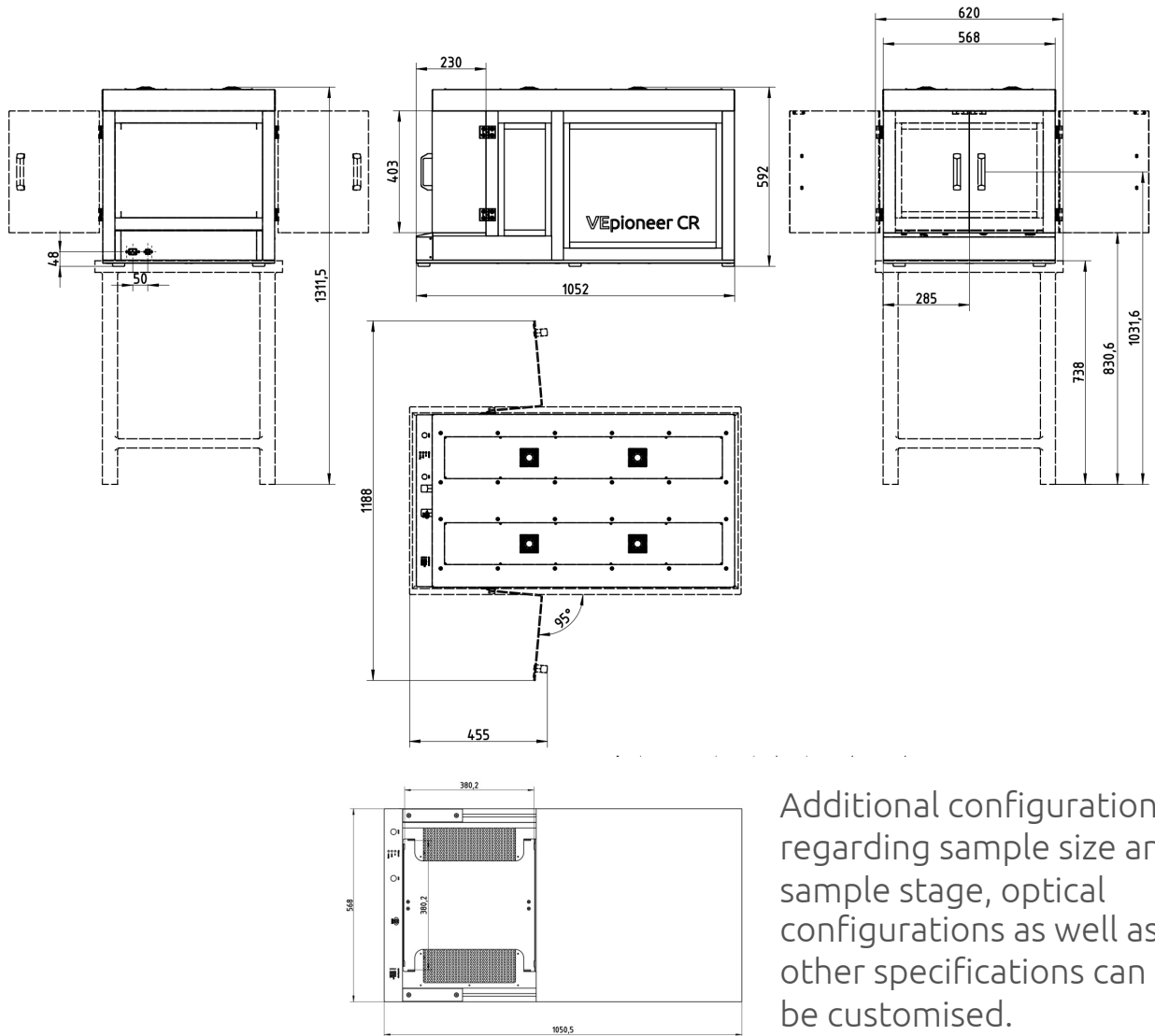
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### DIMENSIONS



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

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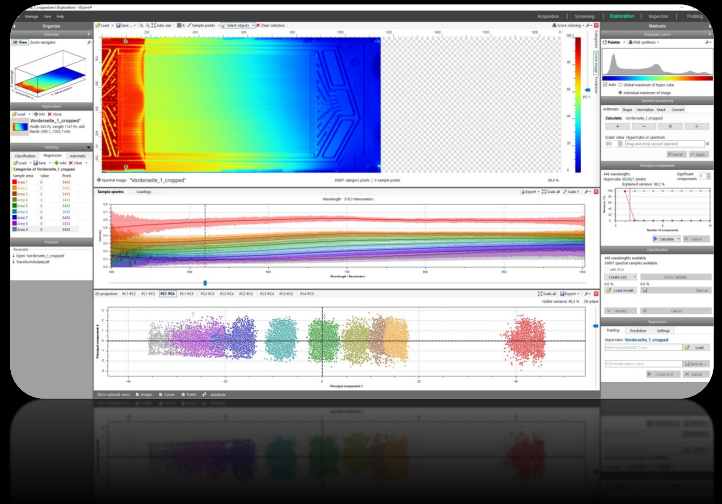
# VESOLVE<sup>®</sup> PRO

## Hyperspectral Vision Software

### TARGETED, USER-CENTERED AND AI-DRIVEN

VEsolve<sup>®</sup> Pro is the powerful all-in-one software suite designed for DIVE technology, comprising acquisition, screening and exploration of Hyperspectral Vision data ("hypercubes").

- **TARGETED**  
Designed for DIVE hardware
- **USER-CENTERED**  
Visualise the insights within milliseconds after data recording
- **AI-DRIVEN**  
Teaching and application of AI models by simply one click



### START EASY

VEsolve<sup>®</sup> Pro boosts your productivity together with DIVE's VEpioneer<sup>®</sup> system by orders of magnitude:

- **PRESETS**  
Provision of optimised presets per sample and ensuring highest data quality through live correction of all non-sample influences
- **PRESS PLAY**  
The green button just starts the preset and runs the measurement

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## Hyperspectral Vision Software

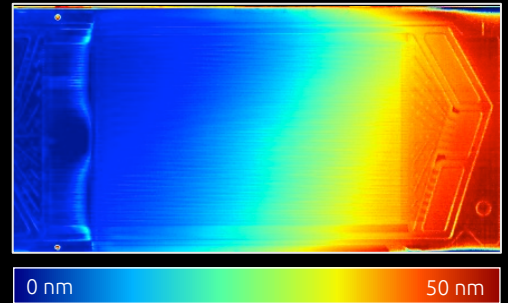
### RUN EASY

VEsolve<sup>®</sup> Pro provides easy handling of sophisticated math utilizing commonly known concepts empower users to commence productive work immediately.

- **AI models**

Teach your own AI models by simply “painting” the hypercube or utilize existing models

Bipolar plate with graphite like carbon layer and applied thickness model



### SOFTWARE FEATURES

Data acquisition	with live frame
Referencing	white and dark reference   fault correction optional
Measurement control	preset use excitation intensity   exposure time   framerate   pixel binning region of interest (if supported by hardware)   spatial resolution (scan direction)
Sampling modes	standard (scan moving) reduced noise (step-wise by averaging frames) free run (record frames or record until stop)
Data screening	palette selection   RGB synthesis
Hypercube editing	resampling   crop   rotation   stitching
Object separation	threshold   arithmetic operations
Spectral processing	smoothing   median calculation   derivative calculation normalization   masking
Data exploration	unsupervised and supervised AI
Exploratory AI	PCA, k-means
Classification AI	LDA, random forest
Regression AI	PCR, PLS
Data import	ENVI (bsq, bil, bip), .jpg, .hsi, .csv, .hdf
Dat export	ENVI, .tiff, .jpg, .png, .csv, .xml
Software requirements	PC or laptop, 32 GB RAM and 1 TB SSD recommended, Windows 11

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