

# VAPBOX 500

## > DLI\* CVD & ALD Vaporizer

High Performance, Compact, Precise, Innovative liquid and solid precursors Delivery and Vaporization System for ALD, CVD, MOCVD, PECVD, MLD and all gas phase processes.

The **VAPBOX 500** vaporizes pure liquid compounds and solid ones dissolved in a carrier liquid (organic solvent) up to 250°C.

The **VAPBOX 500** is able to handle and vaporize most of solid and liquid compounds including low vapor pressure, thermally labile and viscous ones.

The **VAPBOX 500** provides high and unmatched performances based on a pulsed injection of a mixture of liquid and carrier gas. That pulsed injection is performed by a proprietary Injection Head (atomizer) and allows a very fine atomization of the liquid to be vaporized. The liquid is flash vaporized and the generated vapors can be used for the synthesis by ALD and CVD of thin films, multilayers structures, nanoparticles and nano-objects of numerous complex functional materials such as for instance multi-metallic oxides (high-k dielectrics, magnetic and superconducting materials, ferroelectrics, piezoelectrics), various chalcogenides (PCRAM and CIS/CIGS photovoltaic materials) and transparent conductive oxides (TCO).

Because of its unique proprietary way to deliver and atomize the liquid inside the vaporizer the **VAPBOX 500** is able to achieve a real non-contact flash vaporization therefore generating particle free vapors.

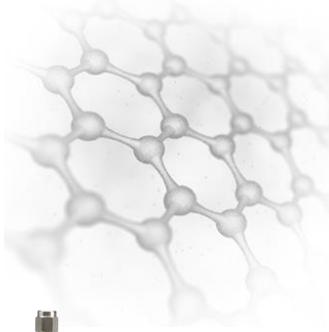
Indeed, the blasting of the carrier gas/liquid mixture inside the vaporizer allows generating an aerosol of droplets around 10 microns in diameter. Such very small droplets can be easily flash vaporized. Competitors' vaporizers are generating bigger liquid droplets that cannot be flash vaporized and clog the vaporizer.

The **VAPBOX 500** operates from vacuum to atmospheric pressure.

Thanks to delivering of accurate and stable liquid flows, the **VAPBOX 500** delivers accurate and stable vapor flows.

\*DLI = Direct Liquid Injection

US patent pending and patents pending in other countries



### > Technical specifications

#### Injection Head (liquid inlet)

> 1

#### ICU (Injection Control Unit)

> 24 VDC or 110-230 VAC remote and rackable 19" 2U unit

#### Heating:

> 1 heating zone, up to 250°C, 1000 W

> 2 K type thermocouples: (1 for control, 1 for alarm)

#### Fittings:

> 1/8" compression type or 1/8" VCR male fitting for liquid inlet

> 1/4" VCR female fitting for carrier gas inlet

> 1/2" VCR male fitting for vapor outlet

#### Versions:

> 230 VAC version and 115 VAC version

#### Accessories:

> Liquid flow controlling kit including a Liquid Flow Meter (LFM)

> Liquid panel including a precursor tank and with an optional solvent tank

> Carrier gas panel including a carrier gas Mass Flow Meter (MFM)

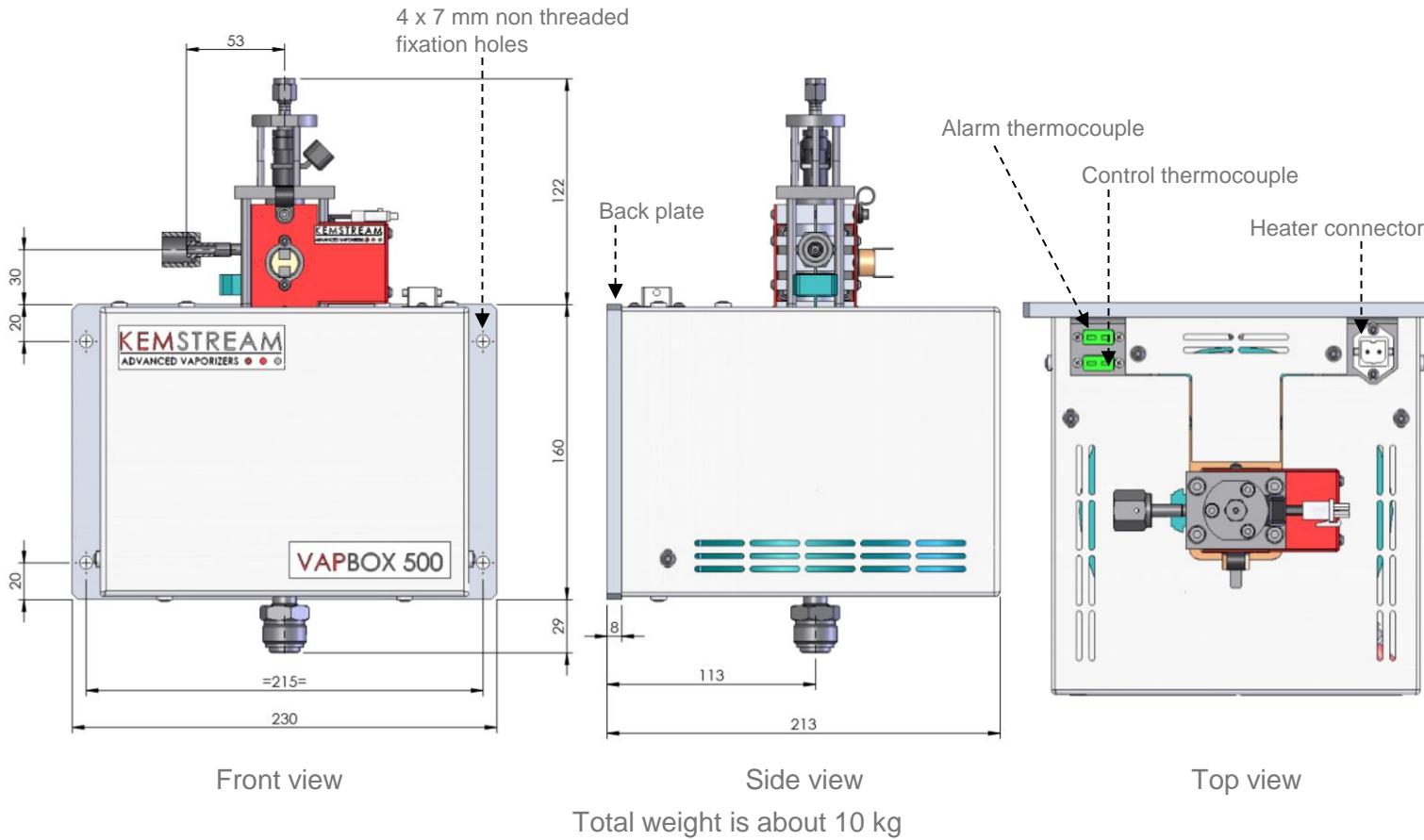
> TCU (Temperature Control Unit): 19" remote and rackable 3U unit

#### Flows range:

> Typical carrier gas flow range = 150 to 7500 sccm

> Typical liquid flow range = 0.1 to 15 g/min

## > Dimensions (mm)



## > Ordering information

### Injection Head

	HB4	-	S2V	F4	H
<b>Liquid inlet fitting</b>					
S2V	1/8" Swagelok				
M2V	1/8" VCR male				
<b>Carrier gas inlet fitting</b>					
F4	1/4" VCR female (standard)				
M4	1/4" VCR male				
S4	1/4" Swagelok				
T4	1/4" OD tube				
<b>Carrier gas inlet direction</b>					
H	Horizontal (standard)				
V	Vertical				

### Vaporizer

	V05	HB	M8	V
<b>Voltage (for heating)</b>				
HB	230 VAC			
LB	115 VAC			
<b>Vapor outlet fitting</b>				
M8	1/2" VCR male (standard)			
M4	1/4" VCR male			
K1	KF16 mm			
other fittings upon request				
<b>Vaporizer pressure (process P)</b>				
V	from 0 to 1.5 bara			
A	above 1.5 bara			

For ordering information about the ICU (Injection Control Unit), please see the datasheet of the ICU

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