



颗粒分析器

CAMSIZER® X2+

## Shorter measurement time. Better optical resolution. More frames per second.

The CAMSIZER X2+ is one of the most powerful, extremely versatile particle size and shape analyzers with a wide measuring range that combines state-of-the-art camera technology with flexible dispersion options. Based on the principle of Dynamic Image Analysis (ISO 13322-2), the CAMSIZER X2+ provides precise particle size and shape information of powders, granules and suspensions in a measuring range from 0.9  $\mu\text{m}$  to 8 mm.

The CAMSIZER X2+ produces a particle flow which is characterized by an optical system with high resolution. An ultrabright LED stroboscopic light sources and two high-resolution digital cameras achieve a frame rate of more than 420 images per second which are evaluated in real time by a powerful software. Thus, the CAMSIZER X2+ captures the images of hundreds of thousands to several millions of particles with highest accuracy within only 1 to 3 minutes.

The CAMSIZER X2+ provides a wide selection of particle information which allows for comprehensive and reliable characterization of the sample material. It is suitable for use in R&D as well as for routine tasks in quality control.



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## 颗粒分析仪 CAMSIZER X2+

- | 采用动态图像法(ISO 13322-2) 分析0.9  $\mu\text{m}$  到 8 mm之间的颗粒粒径粒形信息。
- | 宽粒径分布样品的精确分析
- | 对于窄分布及多峰分布样品具有极佳的分辨率
- | 微量过大或过小颗粒都能够准确检测
- | 结果完全可以和筛分及激光粒度仪结果进行比对
- | 分析评估选项丰富 (不同粒径定义的粒径参数, 多种粒形参数, 颗粒图库, 单张颗粒图像分析等)
- | 重现性非常好
- | 典型测量时间1-3min, 可测试样品量大
- | "X-Change"分散模块切换系统, 适合干法和湿法测量
- | 超强LED光源及高分辨率相机以获得最清晰的结果
- | 操作简单, 几乎免维护



颗粒分析仪 CAMSIZER X2+

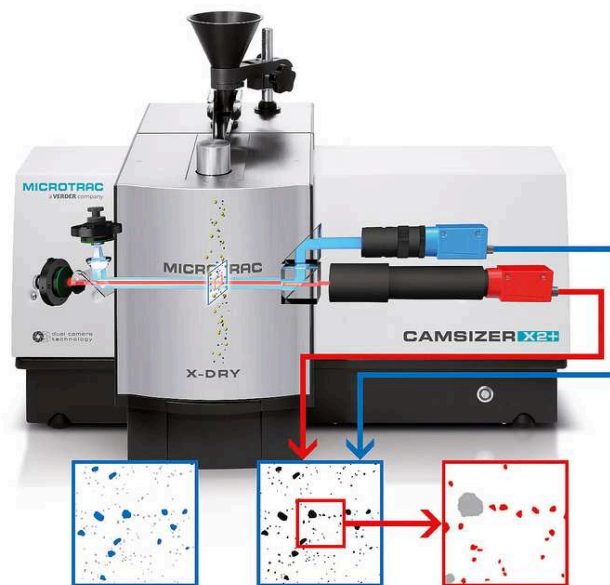
由于双镜头技术，超宽的测量范围。

Microtrac独特的双镜头技术是动态图像分析发展的里程碑。通过同时使用两个不同放大倍数的相机，获得了极宽的动态测量范围。这是在没有硬件调整或修改的情况下完成的，并且不会影响精度。每个镜头专用于一个测量范围。放大镜头以最高的精度分析细颗粒，而基准镜头以极好的统计数据检测较大的颗粒。一个特殊的算法结合了两个相机提供的信息，并在测量范围内提供精确的粒径分布，已有三十多年！这种设计解决了许多图像分析系统一个重大的缺点，只使用一个镜头，如显微镜。这种仪器要么在宽粒径分布范围内，不能正确地测量细颗粒，要么由于视野小而无法准确捕获大颗粒。



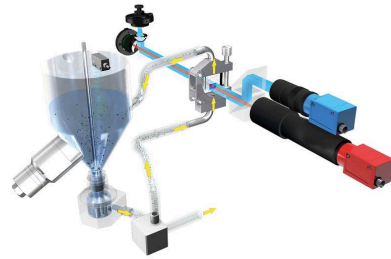
## 测量原理

????????CCD??CCD????????????????????????????????????



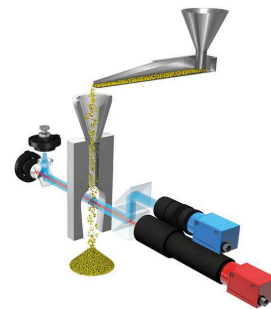


X-Flow????????0.9 $\mu$ m?1 mm????????????????????  
????????????CCD????????????X-Flow????????????  
????????????????????????????????????



### X-FALL重力分散模块

??X-Fall????????????????????????????????  
?????X-Fall????????8 mm????????????????  
?????????X-Fall????????

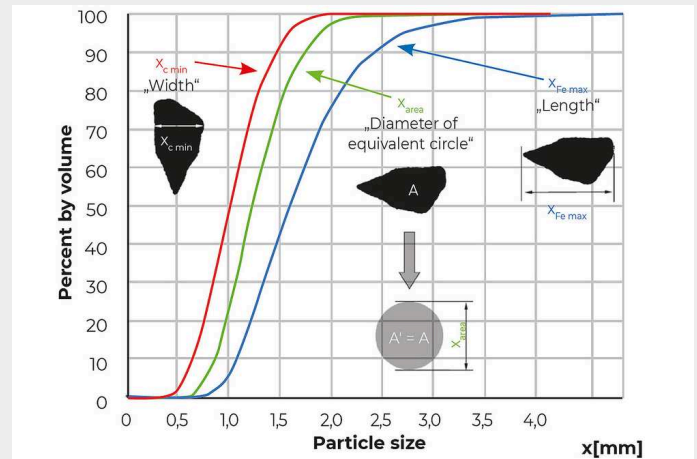




颗粒分析仪 CAMSIZER X2+

## 可与筛分仪及激光粒度仪结果比对

?????????"?"??  
 ???  
 ??????? ???  
 ???  
 ???  
 ???  
 ???  
 ???



每个应用程序的最佳配置

## 附件和选项

Microtrac为特殊应用提供各种料斗和料槽。分散喷嘴和样品池有不同的孔径大小，以确保每次测量的最佳条件。CAMSIZER X2+校准只需一分钟，可以使用高精度参考校正板进行。



### 漏斗和降落装置

To achieve optimum feeding conditions, even for adhesive powders, we offer different chutes made of either stainless steel or aluminium hard-coat. The hoppers can be made of aluminium or stainless steel and can hold up to 0.6 l of sample. The hopper is adjustable in height which promotes uniform flow of the sample.

??  
?????0.6?????



### 分散喷嘴

X-jet模块有不同尺寸的喷嘴可供选择使用。标准喷嘴孔尺寸为14 mm x 3.8 mm，适合大多数样品分析。对于特别大或特别小的颗粒，其它尺寸的喷嘴会有一些优势。



### 参照物

Camsizer标准校正板由电子平板印刷技术制得，可以随时提供可靠便捷的校正服务。



**防护罩 (X-JET, X-FALL)**

????????????????????????????????  
????????????????????????????????  
????5????????????????????X-Dry??  
????



**测量池 (X-FLOW)**

X-Flow模块有三种优质的石英玻璃流通池可供选择使用。流通池的间隙宽度有4mm（标准）、或者2mm。



**自由落体轴 (X-FALL)**

??X-Fall????????7 mm X 14 mm?  
????????14 mm X 14 mm?????  
??

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## 扩大测量范围

Due to the unique two-camera principle, all measurement ranges can be analyzed in one measurement run, without any hardware adjustments.

### Measurement range specifications for the diameter of compact particles <sup>1)</sup>:

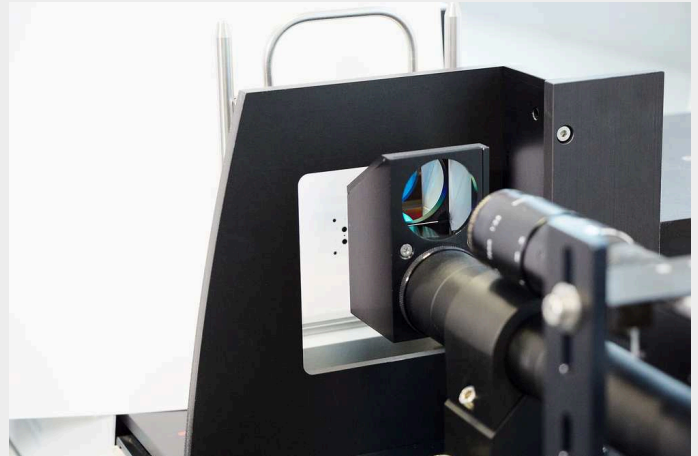
- | X-Jet (air pressure dispersion)  
Standard: 0.9  $\mu\text{m}$  to 2.5 mm with nozzle size 3.8 mm x 14 mm  
Alternative: 0.9  $\mu\text{m}$  to 6 mm with nozzle size 9 mm x 14 mm  
Alternative: 5  $\mu\text{m}$  to 8 mm with nozzle size 13.5 mm x 14 mm
- | X-Fall (gravity dispersion) <sup>2)</sup>  
Standard: 10  $\mu\text{m}$  to 4 mm with nozzle size 7 mm x 14 mm  
Alternative: 10  $\mu\text{m}$  to 8 mm with nozzle size 14 mm x 14 mm
- | X-Flow (wet dispersion) <sup>3)</sup>  
Standard: 0.9  $\mu\text{m}$  to 1 mm

1) Measurement ranges are sample dependent

2) The lower limit for X-Fall depends on the sample properties (agglomeration). For agglomerating particles the X-Jet or X-Flow module are recommended.

3) The upper size limit for X-Flow depends on the density of the sample material.

**Measurement range specifications for fibers and elongated particles available on request.**

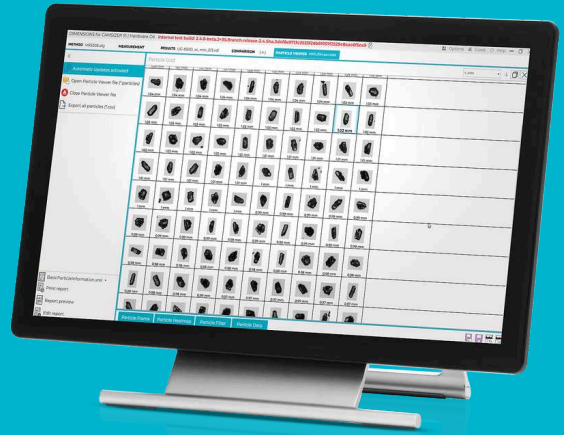


随时总览全部内容

## DIMENSIONS 軟體

所有参数一览：动态图像分析提供了有关本样品材料的丰富信息。功能强大的 DIMENSIONS 软件可针对单个颗粒采集数十个参数并在一份有条理、符合标准的测量报告中显示结果，测量报告可根据个性化需求进行调整。

- | 操作直观
- | 工作区域布置条理
- | 用户自定义报告模板
- | 测量结果对比一览
- | 新设计的工作区域“颗粒视图”
- | SOP 确保统一的测量条件
- | 自动检测产品规格
- | 不同的用户层级
- | LIMS 连接
- | 可提供符合《联邦法规 21 章》第 11 款的版本
- | 先进的第 4 代筛分相关算法



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## 典型应用

散装物料的许多特性，例如流动性、溶解性、过滤效率、反应性、耐磨性和气味等，都主要受粒度的影响。因此，粒度确定在许多不同的工业分支中都被作为质量控制的一部分。



金属粉末



化学试剂



咖啡

- | 金属和矿物粉末
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- | 化学试剂
- | 活性炭
- | 清洁剂
- | 建筑原料

- | 药粉/颗粒/制剂
- | 玻璃 / 玻璃珠
- | 塑料光纤
- | 塑料粉末
- | 木质纤维

- | 食物
- | 盐 / 糖
- | 耐火材料
- | 研磨料
- | 砂子

...等等！

要找到满足您的颗粒表征需求的最佳解决方案，请访问我们的应用数据库

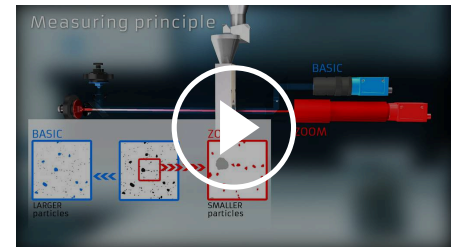
粒度和粒形分析器 CAMSIZER X2+

**技术参数**

测量原理	动态图像分析(ISO 13322-2)
测量范围	0.9 µm to 8 mm 0.9 µm to 8 mm (air pressure dispersion) 10 µm to 8 mm (gravity dispersion) 0.9 µm to 1 mm (wet dispersion)
分析类型	干法和湿法分析
测量时间	~ 1 to 3 min (depends on desired measuring statistics, including analysis and data processing)
镜头数量	2 (Dual Camera Technology)
样品量	< 20 mg - 500 g (视待测样品性质和测量模式)
<b>Camera performance</b>	> 420 image/s, each with > 5.0 MPixel
测量区域宽度	~ 350 mm <sup>2</sup>
<b>Digital Resolution</b>	0.9 µm per pixel
测量参数	particle size (smallest diameter, length, mean diameter, etc.) particle shape (aspect ratio width to length, symmetry, sphericity, convexity etc., acc. to ISO 9276-6)
设备尺寸 (宽x高x深)	~ 850 x 580 x 570 mm
重量 (测量单元)	~ 50 kg
操作单元	Quad Core PC incl. Windows 11, monitor, keyboard and mouse, network card, PC interface cards for hardware communication, evaluation software

## 作用原理

Camsizer X2+ 采用专利数字成像系统：分散样品经过LED光源前方，投影被双CCD镜头捕捉，放大镜头分析小颗粒，基础镜头统计整个颗粒分布。软件界面友好，可同时分析每一个颗粒的粒度和粒形信息，最终经过软件计算后给出实时分布曲线。



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[www.microtrac-mrb.cn/camsizerx2+](http://www.microtrac-mrb.cn/camsizerx2+)