



X-SIGHT 2106 (ASTM)

ASTM-focused Optical Extensometer

FEATURES

- All-in-one box extensometer
- Ideal for general tensile tests
- For up to 10" (260 mm) measuring length
- Stackable for joined fields of view

SOFTWARE

- X-Sight Alpha
- Axial software module included
- Additional advanced features

SUPPORTED OPERATING SYSTEMS

- Win 11 64bit / Win 10 64bit
- Win Server 2019 / Win Server 2022

Latest Release on date of purchase



X-SIGHT 2106 (ASTM) VE COMES WITH A CAMERA, LENS, LIGHT, AND CALIBRATION GRID.

OVERVIEW

The X-Sight 2106 is a versatile video extensometer (VE) designed for tensile testing across a broad spectrum of engineering materials. X-Sight 2106 offers simultaneous measurement of multiple parameters, enabling strain measurements at different positions or with various gauge lengths. It accurately measures strain, total length, delta length, angle, and more.

MODELS

The X-Sight 2106 is available in both single and multiple-camera configurations. The model designation follows this format:

X-Sight-2x06

where the position **x** typically takes the value **1, 2, or 3**, indicating the number of VE units included in the system setup.

MEASURING LENGTH

The maximal length of the system's field of view on which the device fulfills the resolution requirements is given by the **ASTM E83** standard. Adding an extra VE unit almost doubles the measuring length, leaving just a small portion of the image for overlap.

Model Designation	Max Measuring Length for Class B-1 [in] Gauge Length 0.5"	Max Measuring Length for Class B-1 [in] Gauge Length 1"
X-Sight-2106	9	10
X-Sight-2206	17.5	19.5
X-Sight-2306	26.5	29.5

Be aware that VE unit is 8.7" long, so fields of view shorter than this value cannot be joined due to mechanical interference.

SAMPLING RATE

The camera resolution and 5Gbps data throughput of the USB3.0 bus give the default sampling rate.

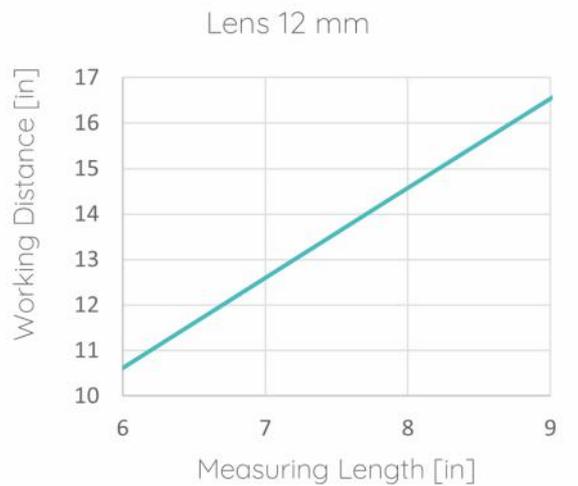
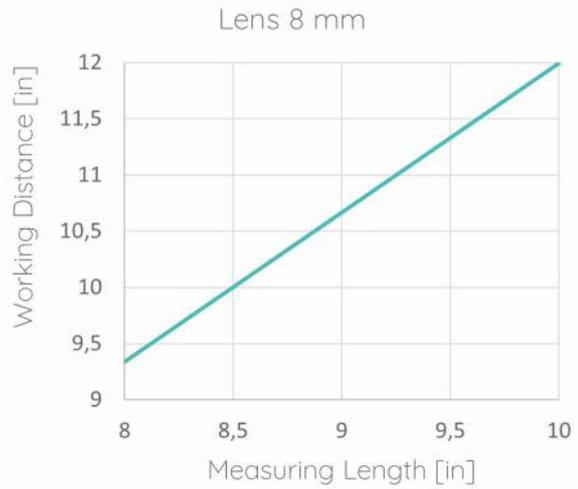
Model Designation	Sampling Rate at Full View [Hz]	Typical Sampling Rate [Hz]
X-Sight-2106	60	200

The sampling rate can be raised up to 500 Hz by reducing the width of the camera view, which is, in most cases, not used.

WORKING DISTANCE

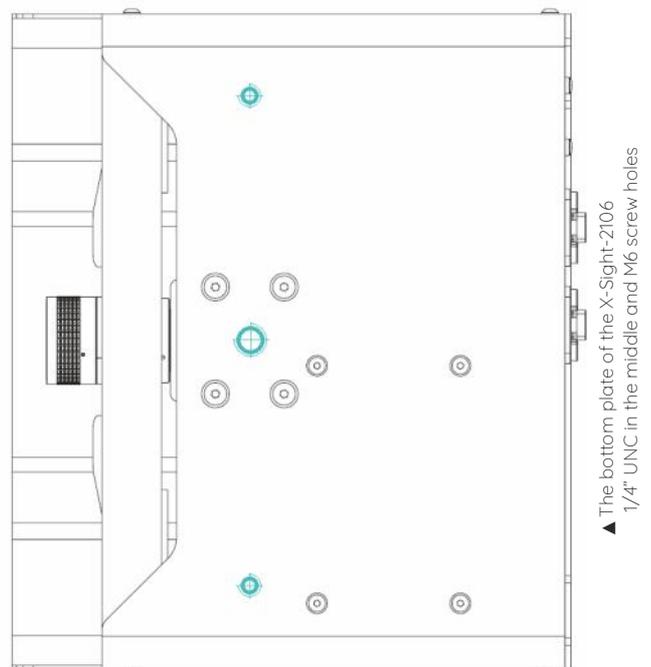
The device comes equipped with a low-distortion 8mm lens. The chart below shows the dependency of Working Distance on the desired Measuring Length.

A 12mm lens can be used instead if a shorter measuring length is required. This increases the working distance while reducing the field of view. **The request for a 12mm lens must be specified when ordering the system;** otherwise, the standard 8mm lens will be used.



MECHANICAL INTERFACE

The VE unit can be mounted via a 1/4" UNC threaded hole in the middle of the bottom plate to a tripod head for portable use. However, a common way of mounting the VE to a UTM is using two M6 screw holes with a 165 mm vertical span securing the system in a fixed position.



MECHANICAL DIMENSIONS

The following table includes the mechanical dimensions for each VE unit.

Dimension	Value
Length	221 mm; 8.7"
Width	187 mm; 7.36"
Height	80 mm; 3.15"
Weight	3.1 lbs. (per VE unit)

LIGHT PARAMETERS

Each X-Sight-2106 unit is equipped with a bar LED light.

Parameter	Value
Active Length	208 mm
Color	White
Luminous Flux	1000 lumens
Power	8 W

LIGHT CONTROL

The X-Sight-2106 does not include a USB relay by default but can be equipped with one. The request for a USB relay must be specified in the order.

PC CONNECTION

The VE is connected to the PC using one USB 3.0 cable for each VE unit and one USB 2.0 cable for relay operation (if present). The standard cable length is **9.85 ft (3m)**. All cables can be extended using Active Optical Cables. A USB 3.0 extension card to the PCIe slot supplied by X-Sight is recommended to secure a stable camera connection, as some integrated USB 3.0 ports may lack appropriate bandwidth.

DATA TRANSFER

Multiple ways exist to **OUTPUT** the measured data to the machine control unit or the testing machine software.

• DIGITAL

DOLI Binary, MODBUS, HP VIDEO, TCP/IP, RS232

• API

Alpha API (JSON), MRT API

• ANALOG

Auxiliary AD/DA converters

• PULSE

quadrature encoder-like pulse communication with the use of a PULSEGEN device

INPUT of external data to X-Sight Alpha software (force, temperature, pressure) is also possible (requires Device Input software module - DI).

The API communication allows the VE to be remotely operated. This feature includes commands like START/STOP, Method Switch, Set Gauge Length, and others. For more info, check out the **Communication Options** document.

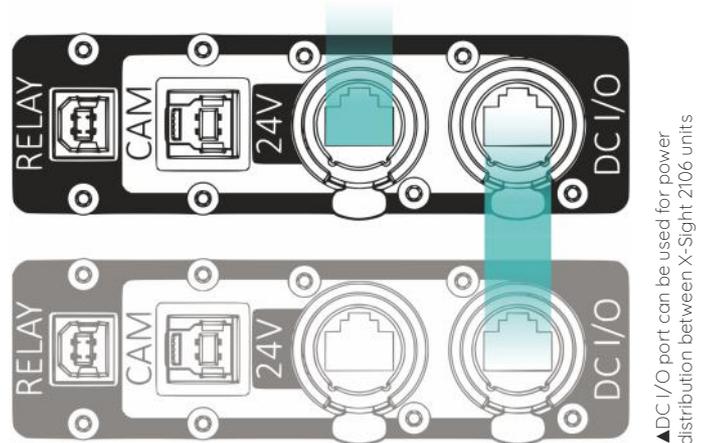
POWER CONNECTION

An ethernet PoE cable provides power for VE unit. This cable is connected to a **24 V** marked RJ45 port on the back side of VE unit.

An 802.3.af Mode B PoE standard is used to power the X-Sight 2106 unit.

Pin	Connection
4 & 5	DC+ (24V)
7 & 8	DC- (GND)

When using multiple cameras, the power can be distributed via the DC I/O ports in the following serial manner:



The DC I/O port can be used as an alternative power **INPUT**. In such a case, the power is distributed directly to the LED light, bypassing the USB relay (if present). The DC I/O port as a power **OUTPUT** provides the 24 V DC voltage only when the USB relay is switched ON. A typical use of DC output is the powering of an auxiliary light.

POWER CONSUMPTION

Each VE unit has the following power consumption.

Dimension	Value
Camera	3 W
USB relay (if present)	1 W
LED Light	8 W
SUM	11 W

The camera and the relay are powered via the USB bus.

OPERATION CONDITIONS

The X-Sight 2106 unit is designed for indoor use only. Do not allow the unit to get wet.

Item	No. of pieces
Temperature	5-40 °C
Humidity	30-70 %

X-Sight 2106 allows measurement through the glass or the use of a mirror. In such cases, these optical elements must be highly optical so as not to introduce unwanted disturbance to the measurement.

When measuring through the glass, a polarization set may be required to reduce/eliminate the light reflections.

When measuring with a climatic chamber, be aware that the vibrations and heat turbulence may introduce a raised noise base to your signal. This equipment is compatible with Class A of CISPR 32. In a residential environment, this equipment may cause radio interference. This product complies with EU Directive 2002/96/EC and FCC regulations.



PACKAGE CONTENTS

Each VE unit has an 8 mm lens (unless changed upon request) and 200 mm LED light.

Each system contains one calibration grid of size adequate to a desired application. Single camera systems include MONO grids, and multiple camera systems include JOINED grids to allow stitching of the camera views.

Item	No. of pieces
VE unit*	1, 2, or 3
Cable harness	1
Power Supply	1
Calibration Grid	1
Installation USB	1
USB License Key	1

▲*Depends on the X-Sight 2106

SYSTEM REQUIREMENTS

X-Sight 2106 VE runs on the X-Sight Alpha software to deliver high-quality measurement results while providing a straightforward user experience.

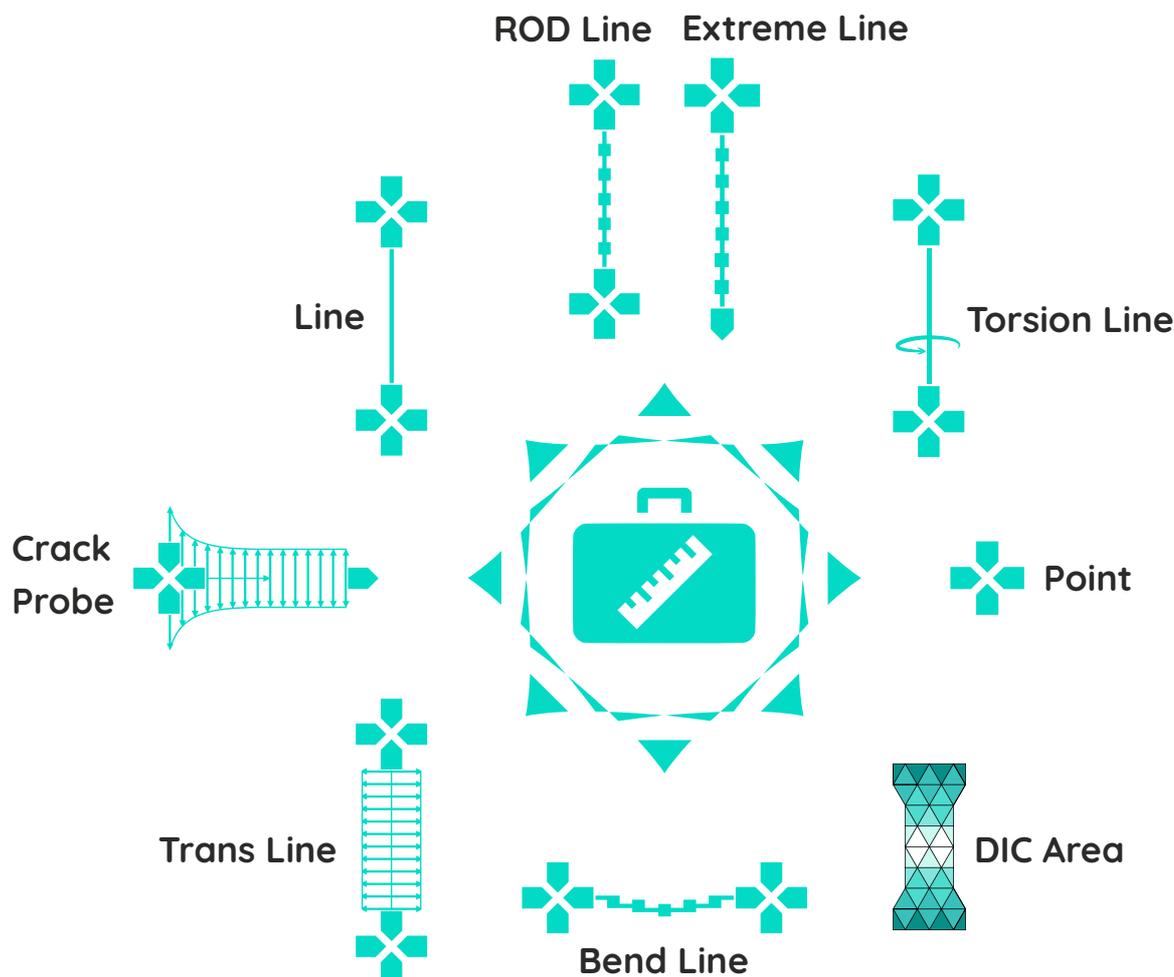
MODULARITY AND PROBES

The X-Sight Alpha software is split into several modules. Modules group different measuring probes or advanced features.

The VE typically includes an AXIAL software module. The measurements with VE are primarily performed in real-time using line-based measuring probes with online data transfer to the testing machine. However, to get the most out of an optical strain measuring device, there is an option to add a post-processing feature. In post-processing, the number of line-based probes can be multiplied or switched for an area strain or displacement mapping function.

LICENSING

X-Sight 2106 has a perpetual Alpha DIC software license bonded to an HW USB dongle. This allows the user to install the software on unlimited computers and use only the one where the license key is plugged in. This way of licensing makes it easy to switch the computer in case of a PC breakdown.



Software Module	Point	Line	Extreme Line	Trans Line	Bend Line	Torsion Line	Crack Probe	ROD Line	DIC Area
AX	•	•	•						
TR*				•	•				
TO*						•			
CR*							•		
ITT*								•	
DIC*									•
PP*	Post-processing of recorded measurements (different probes or layouts)								
DI*	Possibility to input auxiliary signals (digital and analog)								
LVD*	Color value distribution along Extreme, ROD, or Bend Line								

* Expansion software module requires the presence of AX.

SYSTEM REQUIREMENTS

System requirements	System requirements Recommended
CPU	Intel/AMD 2GHz 2-core (>3000 points - Average CPU Mark *) Intel/AMD 4GHz >8-core (>4000 points - Single Thread Rating **)
GPU	NVidia/AMD/Intel OpenGL 3.0 1024x768px (>300 points ***) NVidia/AMD/Intel OpenGL 3.0 1920x1200px (>5000 points ****)
Memory	4GB 16GB DDR4
Disk	8GB HDD free 1TB SSD / M.2
Ports	1xUSB (HW key), 1xUSB3.0 for each ONE device + 1xUSB2.0 (relay) (Optional) 1xUSB for peripheral data transfer device (Optional) 1xEthernet Port of MODBUS or TCP/IP communication
Operating System	Windows 11 64-bit ***** or Windows 10 64-bit ***** Windows Server 2019 ***** or Windows Server 2022 *****

* MID CPU BENCHMARK www.cpubenchmark.net

** HIGH-END CPU BENCHMARK www.cpubenchmark.net

*** MIDLOW GPU BENCHMARK www.videocardbenchmark.net

**** HIGH-END GPU BENCHMARK www.videocardbenchmark.net

***** Latest Release on date of purchase