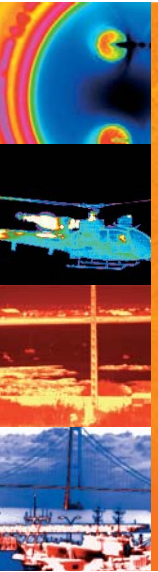




The Global Leader in Infrared Cameras

## SILVER 450M

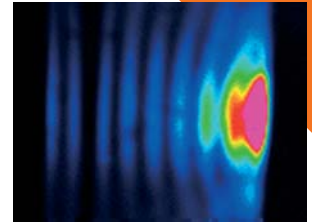
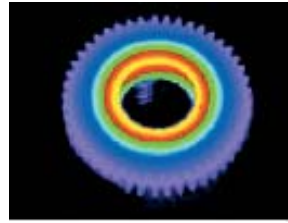
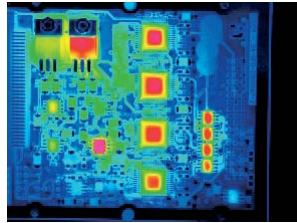
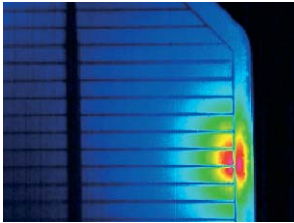
Ultra fast frame rate infrared cameras for R&D and thermography applications



**ULTRA FAST**

- > New generation of InSb focal plane array
- > Uses fast high linearity ROIC
- > Ultra high sensitivity typical 15 mK
- > 3-5  $\mu\text{m}$  spectral range
- > 380 Hz maximum frame rate in full format
- > Up to 20 000 Hz with 64x8 pixel sub window
- > Smart trigger and advanced capabilities
- > 14 bits dynamic range
- > Full radiometric capabilities
- > Motorized filter wheel and focus control
- > Plug & play interface with CAMLINK and USB2

The SILVER 450M is the most advanced IR cooled camera featuring ultra fast frame rate and high sensitivity



- 1 Heat dissipation by conduction only, no fan = no dust inside
- 2 Temperature sensors for precise radiometric measurements
- 3 Smart trigger input ultra low jitter
- 4 High quality S-Video
- 5 USB2 output for digital video & commands
- 6 Camlink interface transfer digital video at the faster frame rate
- 7 High performance InSb FPA
- 8 Long life durability cooler >10 000 hours MTBF
- 9 Rugged cast aluminium housing
- 10 Removable filter wheel
- 11 Build in lens motorized auto-focus

The SILVER 450M is specifically designed for the most demanding users of IR technology, who want to perform thermal imagery at ultra fast frame rate with the highest sensitivity, accuracy at an affordable cost.

### Ultra high frame rate obtained from the latest ROIC technology

Our 320x240 pixels format InSb focal plane array delivers an outstanding 400 Hz frame rate while keeping extraordinary linearity and sensitivity figures. The use of our latest technology of read out integrated circuit provides low noise and high pixel rate without compromising for sensitivity.

### Frame rate, sub arrays windowing mode and smart trigger and advanced capabilities

The frame rate is programmable from 1Hz to 400Hz in full frame format. Sub array windowing modes are user friendly and flexible. Integration time is adjustable in 1 $\mu$ s increments. A smart external triggering allows synchronizing the image capture to the most fugitive events.

### Plug & Play interfaces

The SILVER 450M is truly plug & play using either CAMLINK or USB2.0 interfaces to transmit both commands and full dynamic range digital video. Using the CAMLINK interface gives access to third party off the shelf frame grabber cards.

# SILVER 450M and ALTAIR software provide outstanding recording capabilities and radiometric performances.

## Plug & play interfaces

The SILVER 450M is fully compatible with ALTAIR software for digital image recording and radiometric measurement even at full frame rate. The CAMLINK output of the camera allows transferring images at 40MHz pixel rate and full 14 bits dynamic range. Advanced image analysis features and functionalities dedicated to thermal measurements are standard.

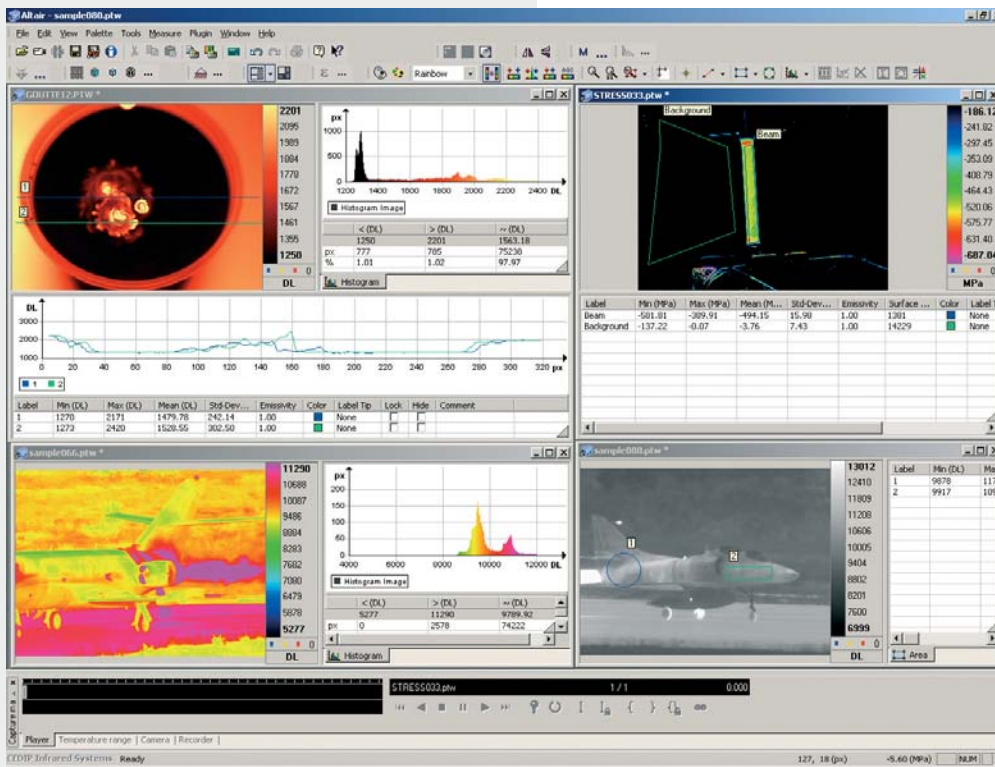
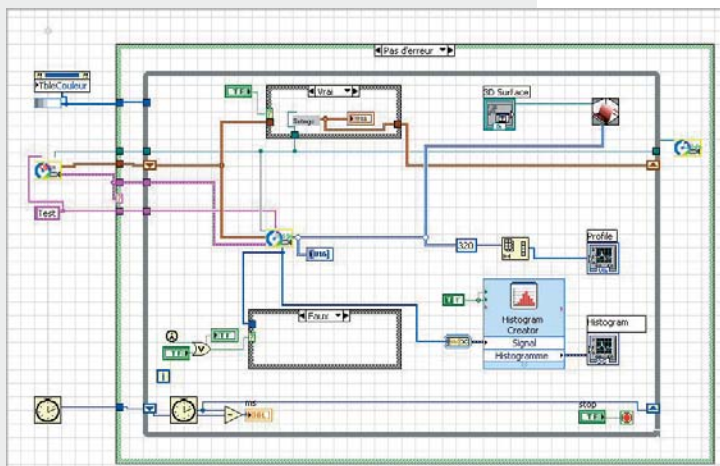


Image sequence of pressurized injection droplets taken at 400 frames per seconds



For users, who want to interface the camera with their own experiments, we offer a complete Labview driver interface for controlling the camera features, acquiring and processing images.



# Silver 450M. Ultra fast frame rate infrared cameras for R&D and thermography applications

## Feature List for Silver 450M

Sensor type	InSb
Waveband	3 - 5 $\mu$ m
Pixel resolution	320 x 256
Pitch	30 $\mu$ m
NETD	< 25 mK (20 mK typical)
Cooler	Closed-cycle (rotary) stirling cooler
Max frame rate (full frame)	5 - 380 Hz (20 kHz @ 64x4)
Sub array windowing	User defined size & location
Integration time	Variable from 10 $\mu$ s to 5000 $\mu$ s
Frame rate in subwindow mode	20 000 Hz with 64x8 pixel sub window
Lens	27 mm (20x16 deg FOV) lens w/ bayonet front ring for accessory lenses
Optical interface	Bayonet
Field of view	20° x 16°
Filter wheel	4 slots for 1" filter 1 mm thick
Analogue video	S-Video
Digital Video	Camlink (USB for command only)
Temperature measurement accuracy	$\pm$ 1°C or $\pm$ 1 %
CNUC™ / Hypercal™	Yes

## Physical specifications

Size (LxWxH)	320 x 141 x 159 mm
Weight	3.8 kg
Operational temperature	-20 °C / +55 °C
Shock	Operational 2 G, IEC 68-2-29
Vibration	Operational 2 G, IEC 68-2-26
Input voltage	+12 VDC
Power consumption (cooldown / stab)	30 W / 25 W

## Optional lens

Microscope lens G1 F3 (9.6 x 7.2 mm FOV)
Close up lens : 60 $\mu$ m resolution
12 mm F3 (45x36 deg FOV)
54 mm F3 (10x8 deg FOV)



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