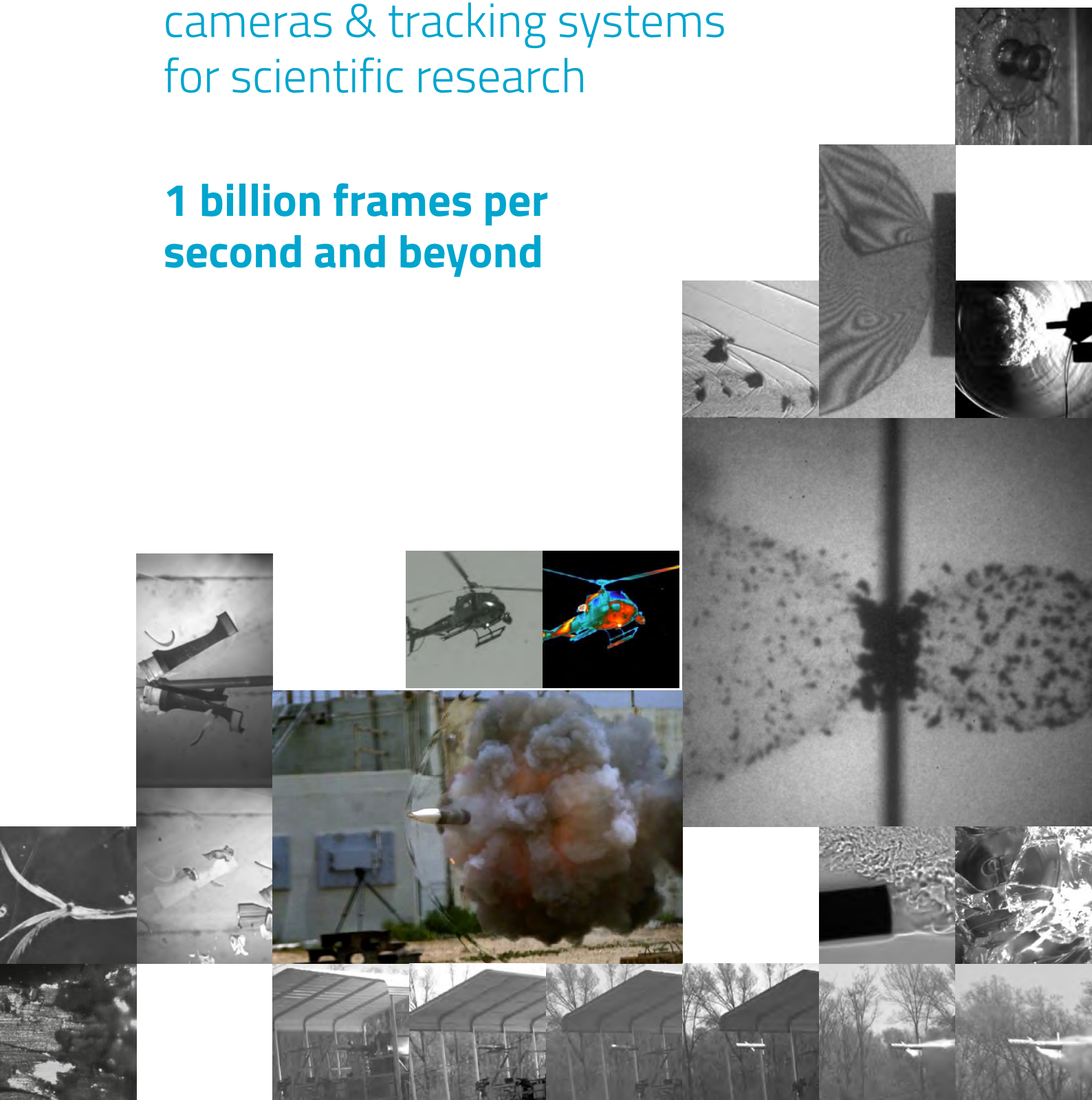




Ultra high speed framing cameras & tracking systems for scientific research

1 billion frames per second and beyond





Delivering individual, specific
ultra high-speed solutions that
meet our clients needs exactly,
whatever the application.

That's our commitment.



Our company

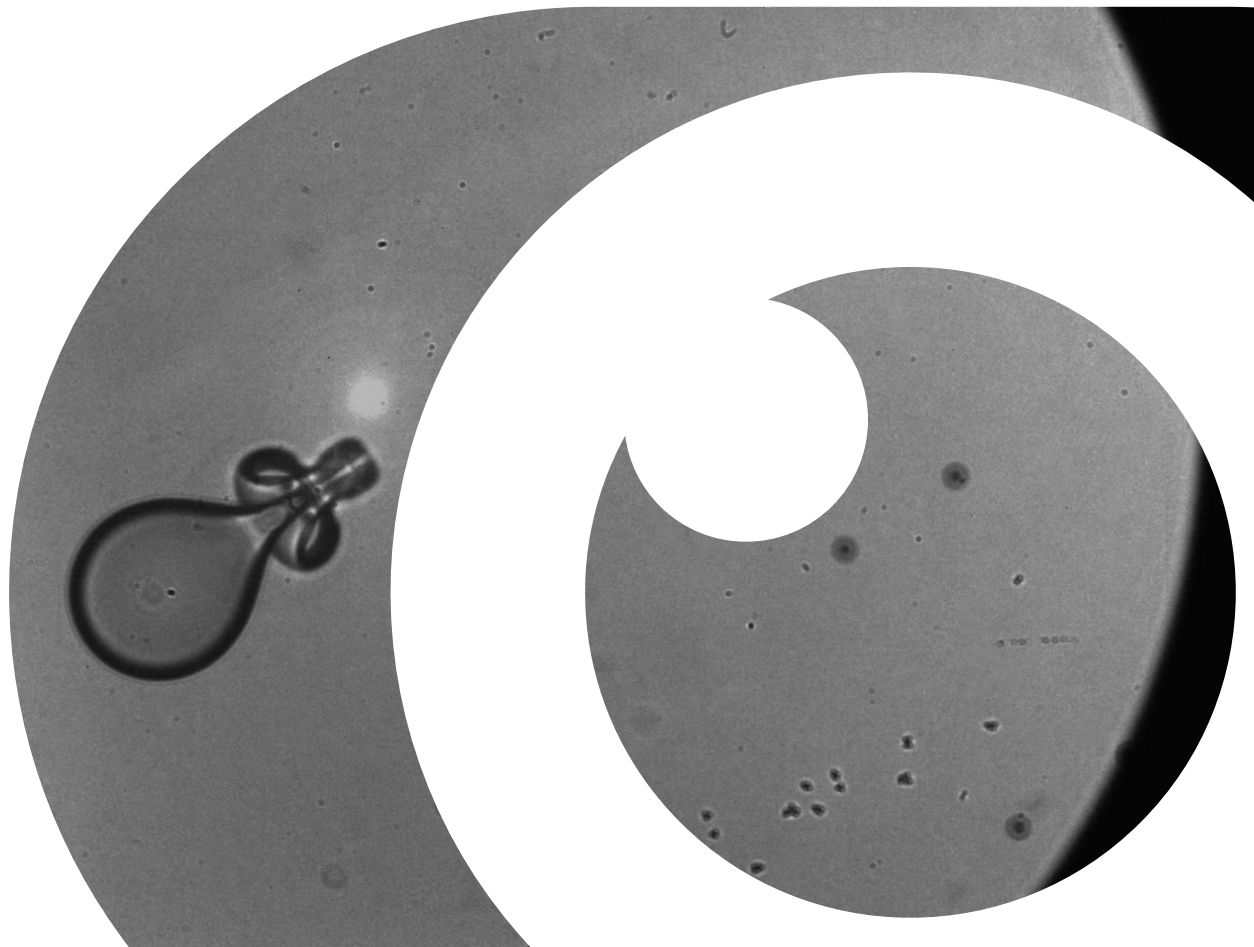
Specialised Imaging is an internationally renowned company that focuses on the design and manufacture of ultra-high-speed imaging cameras for industrial, scientific and defence research applications.

The company was formed in 2003, its founder members having previously worked together in the high-speed imaging field and bringing over 80 years' combined experience to the venture.

Specialised Imaging has successfully launched many new and innovative ultra-high-speed imaging systems.

The company is at the forefront of world-wide innovation in the high-speed imaging field, having won the BEEA's Small Company of the Year award in 2009, the Queen's Award for Enterprise in 2011 and 2016.

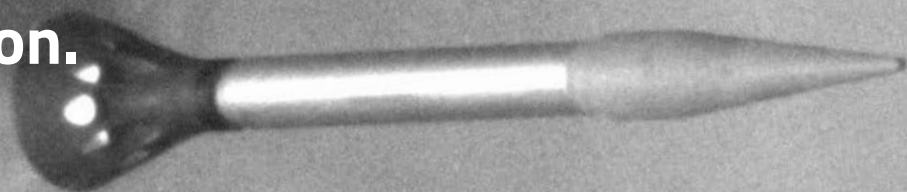
This commitment to development has enabled the company to establish a reputation as an exciting and creative player in the high-speed camera market.





Innovative imaging solutions
that incorporate the latest
technological advances.

That's our passion.



Supporting you... and your camera

At Specialised Imaging we relish new technological challenges, and we enjoy creating effective solutions. Producing a system that exactly meets your requirements, demands a company prepared and able to create specific optimised solutions.

Specialised Imaging has a strong track record in working with clients to design and develop new functions and facilities that fulfil their requirements.

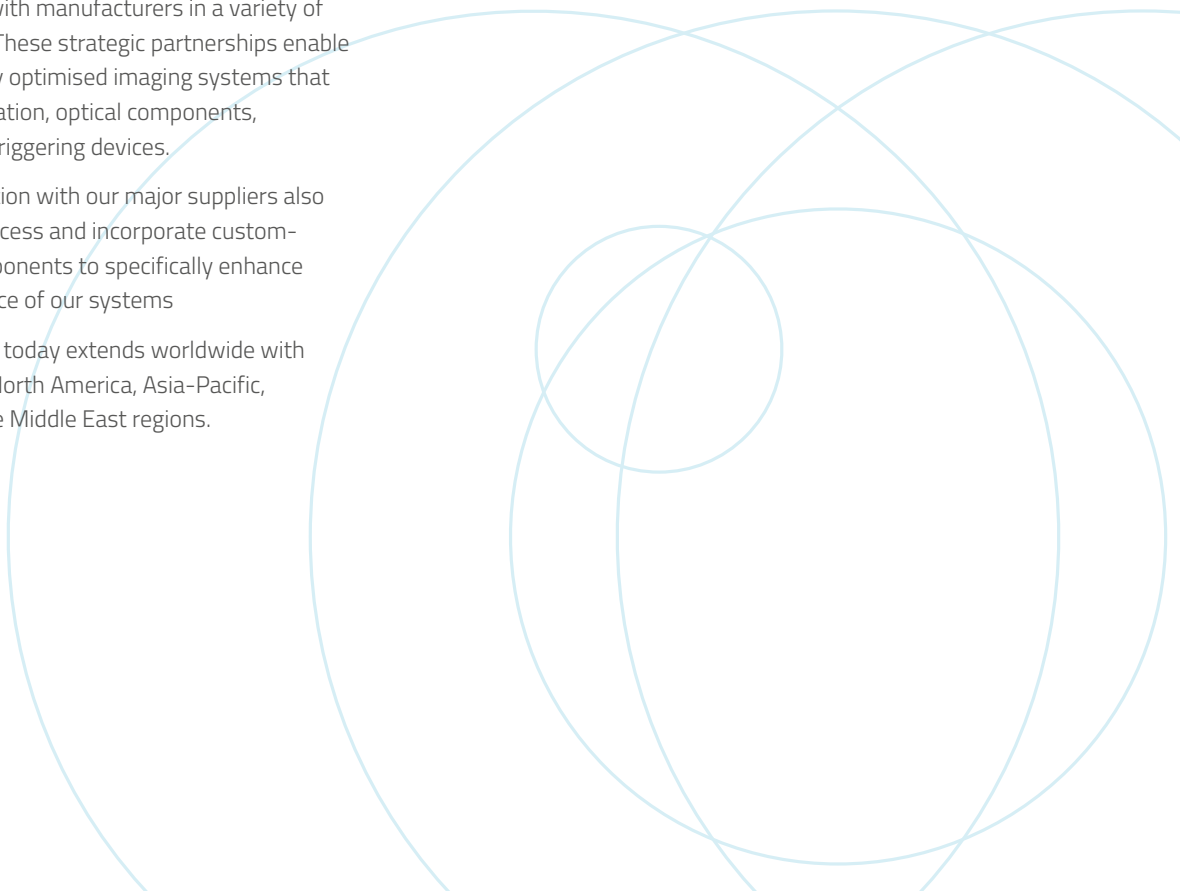
This level of commitment and support continues throughout the life of your product – on-going advice, problem-solving and the design and reconfiguration of software are all part of our after-sales service.

World-wide partnerships

To provide you with a total ultra-high-speed imaging solution, we have formed strong, strategic relationships with manufacturers in a variety of related fields. These strategic partnerships enable us to offer fully optimised imaging systems that include illumination, optical components, supports and triggering devices.

Close cooperation with our major suppliers also allows us to access and incorporate custom-designed components to specifically enhance the performance of our systems

Our reputation today extends worldwide with customers in North America, Asia-Pacific, Europe and the Middle East regions.



1 Channel Delay Generator



200MHz, System Clock

5ns Resolution

Enable function

1 input channel / 1 output channel

The Specialised Imaging 1 Channel Delay Generator is built within a compact enclosure and utilises a 200MHz quartz system clock providing 5ns timing accuracy.

The range of acceptable input signals are converted into the more commonly used TTL signal to trigger a range of devices including strobes, lasers and flash units.

FEATURES

- ☐ Ethernet communication
- ☐ Software driven

TIMING PARAMETERS

System Clock	200MHz, quartz crystal controlled
Inherent Delay	50ns
Range	5ns to 1s in 5ns steps independently variable
Jitter (trigger)	5ns

INPUT / OUTPUT SIGNALS

Input channel	1 (BNC Connector) Threshold variable from $\pm 25V$ Positive or Negative polarity, Make/Break 50 Ω or 1K Ω termination
Output channel	1 (BNC Connector) +ve TTL Pulse width user programmable 50 Ω termination
Enable Unit	1 (BNC Connector) +ve TTL Enable 0V Disable
Control interface	100Mbps Ethernet
Maximum On Time	30 μs
Software	Custom software compatible with Microsoft Windows Operating Systems for Control and data archiving.
Electrical input	Mains 100-240V AC 50-60Hz

MECHANICAL

Dimension mm (w/d/h)	220mm x 120mm x 90mm (+15mm)
Dimension inches (w/d/h)	8.7" x 4.7" x 3.5"
Weight	2Kg (4.4lbs)

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating Temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

4 Channel Delay Generator



200MHz, System Clock

5ns Resolution

2 independent input channels

4 independent output channels

The Specialised Imaging 4 Channel Delay generator is built within a compact IP65 rated enclosure and utilises a 200MHz quartz system clock providing 5ns timing accuracy.

A range of acceptable signals allow the 2 independent inputs, and 4 independent outputs to trigger a range of peripheral devices, including Framing cameras, Ultra high-speed video cameras and flash, laser or strobe illumination systems.

FEATURES

- ☐ Ethernet communication
- ☐ 19" Rack mount option
- ☐ Software driven

TIMING PARAMETERS

System Clock	200MHz, quartz crystal controlled
Inherent Delay	50ns
Range	5ns to 1s in 5ns steps independently variable
Jitter (trigger)	5ns
Jitter (channel to channel)	<500ps

INPUT / OUTPUT SIGNALS

Input/trigger channels	2 (independent) Electrical signal (BNC connector) Threshold variable from $\pm 25V$ Positive or Negative polarity, Make/Break 50 Ω or 1K Ω termination
Output channels	4 (independent) +ve TTL (BNC connector) Pulse width user programmable 50 Ω termination
Control interface	100Mbps Ethernet
Software	Custom software compatible with Microsoft Windows Operating Systems for Control and data archiving.
Electrical input	Mains 100-240V AC 50-60Hz Battery option (inc. charger)

MECHANICAL

Dimension mm (w/d/h)	360mm x 200mm x 77mm (with handles)
Dimension inches (w/d/h)	14.17" x 7.87" x 3.03" (with handles)
IP rating	IP65
Weight	4Kg (8.8lbs)

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating Temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards



Rack mount option

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FM87429

AD-500



Single or multiple head high intensity flash system



The Specialised Imaging AD500 Flash system offers the flexibility of up to four controllable high intensity flash heads for use in scientific and industrial environments.

500J Flash head with 2ms duration

Up to four independent flash heads

40s recycle time

Trigger options - short or positive edge

CONTROL UNIT

Signal Input	Four independent Channels
Trigger Mode	1. Independent - All channels trigger separately 2. Simultaneous - Any channel triggers all channels
Trigger Source	Short Circuit 5-100V positive edge
Input Impedance	50Ω
Mains Input	IEC socket
Electrical input	Mains 100-240V AC 50-60Hz
Dimensions mm	(LxWxH) 220mm x 110mm x 128mm
Weight	3.7kg
EMC	Meets all UKCA/EU harmonised standards

FLASH HEAD

Light Duration (Typ)	2ms measured to 50% of peak output
Stored Charge (max)	500J
Charge Voltage	340V
Light Source	U-Shape Xenon flashtube
Rise Time	50μs
Delay (typ)	30μs
Recycling Time (typ)	40 seconds
Dimensions	(LxDia) 270mm x 170mm
Weight (Kg)	5.25kg
Lamp cable length	2.5m
EMC	Meets all UKCA/EU harmonised standards

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FM 87429

specialised-imaging.com info@specialised-imaging.com

MSFH-370



**High intensity flash
with dedicated fibre
optic output**



The Specialised Imaging MSFH370 Flash system offers the flexibility of up to four controllable high intensity flash heads for use in scientific and industrial environments.

5mm diameter FO output

370J Flash head with 750µs duration

Up to four independent flash heads

40s recycle time

Trigger options - short or positive edge

CONTROL UNIT

Signal Input	Four independent Channels
Trigger Mode	1. Independent - All channels trigger separately 2. Simultaneous - Any channel triggers all channels
Trigger Source	Short Circuit 5-100V positive edge
Input Impedance	50Ω
Mains Input	IEC socket
Electrical input	Mains 100-240V AC 50-60Hz
Dimensions mm	(LxWxH) 220 x 120 x 90 mm
Weight	4.5 kg
EMC	Meets all UKCA/EU harmonised standards

FLASH HEAD

Light Duration (Typ)	750µs measured to 50% of peak output
Stored Charge (max)	370J
Charge Voltage	340V
Light Source	Linear spark source flashtube
Rise Time	50µs
Delay (typ)	30µs
Recycling Time (typ)	40 seconds
Dimensions	(LxDia) 270 x 170 mm
Weight (Kg)	6 kg (Including handle, legs, FO mounting)
Lamp cable length	2.5m
EMC	Meets all UKCA/EU harmonised standards

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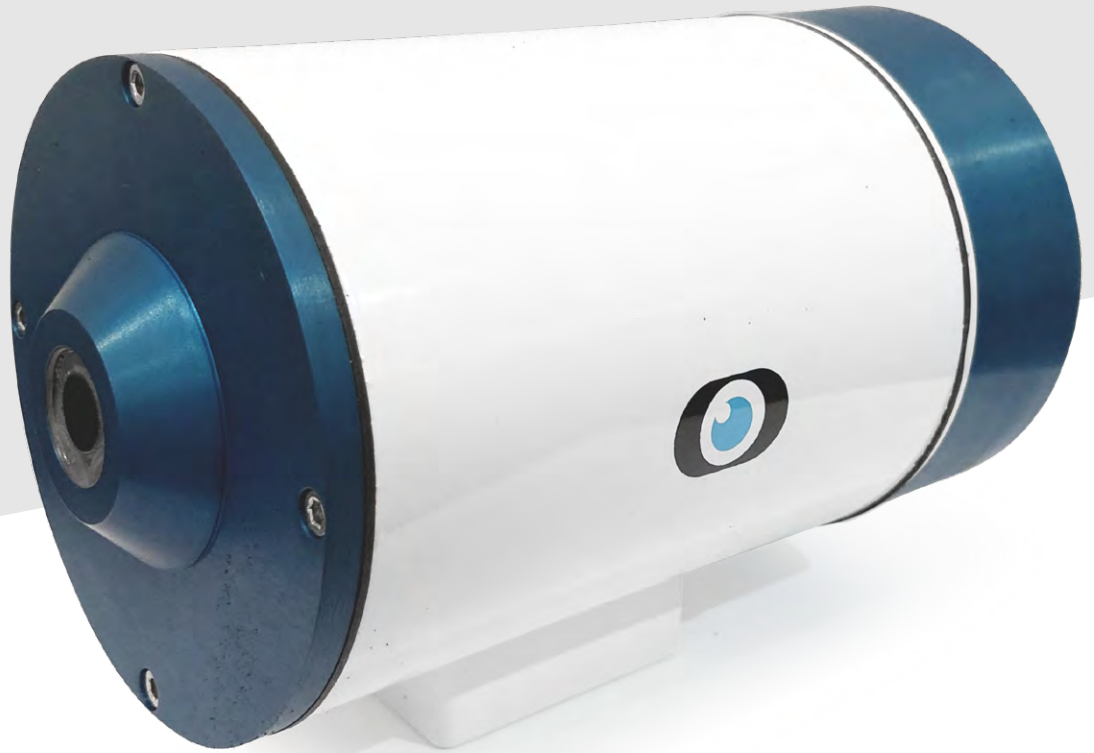
FM 87429

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SI-AT1



Acoustic trigger Unit



Built in battery power

Compact size

User selectable sensitivity settings

TTL trigger output

The Specialised Imaging SI-AT1 provides a reliable acoustic trigger for blast or shockwave detection.

Built in battery power within a compact, rugged enclosure allows the AT1 to be used outside in all weathers and independent of mains power for up to 8 hours.

FEATURES

- ☐ Small and rugged
- ☐ Battery powered for up to 8 hours
- ☐ User adjustable sensitivity
- ☐ Standard tripod mounting threads

SENSOR

Sensor	Piezoelectric acoustic sensor
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INPUT / OUTPUT SIGNALS

Output	Positive 5V TTL (BNC socket connector) 50Ω termination
Pulse width	30mS
Trigger indicator	LED
Electrical input	Battery powered (Built in) Battery charger included
Low power indicator	LED

MECHANICAL

Dimension mm (w/d/h)	Unit 152mm x 88mm (5.9" x 3.46") Tripod mount block 16mm high (0.62")
Weight	1Kg (2.2lbs)
Tripod mount	1 x 1/4-20UNC 1 x 3/8-16UNC

ENVIRONMENTAL

Storage temperature	-20°C to +50°C
Operating temperature	-15°C to +50°C
Charging temperature	0°C to +40°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

Multi-head Intensified Camera System

**Up to 8 camera heads per
control module**

**1360 x 1024 pixel, 12-bit
sensor resolution**

**Single or double
image capture**

**5ns minimum
shutter**



The Specialised Imaging CERBERUS camera system offers framing camera image capture performance with the addition of multiple camera control.

Each camera head can capture either one or two 1.4 MegaPixel 12-bit images with exposure times down to 5ns.

A maximum of 8 Control modules can be connected to allow a total of 64 cameras controlled from a single PC.

The CERBERUS system is flexible enough to allow multiple 3D/Stereoscopic image pairs or sequential images with a 5ns interframe time, equating to 200 Million Frames/second.

FEATURES

- ☐ Control up to 64 camera heads
- ☐ Adjustable exposure down to 5ns
- ☐ Head to Head adjustable interframe time down to 5ns
- ☐ Nikon lens mount fitting
- ☐ Ethernet communications
- ☐ Compact and rugged design

OPTICAL

Lenses	Nikon F-mount (ruggedized mounting system)
Shutter	Electro-mechanical
Distortion	Nominally zero
Intensity variation	Better than 5% across the image

INTENSIFIER / SENSOR

X-HEAD

D-HEAD

Image Sensor	ICX285AL (Intensified)	
Active CCD Pixel	1360 (H) x 1024 (V) pixels	
Pixel Size	6.45 µm (H) x 6.45 µm (V)	
Dynamic Range	12 bits	
Intensifier	8mm High resolution MCP	
Input window	Fused Silica	
Output window	Fibre Optic	
Photocathode	S25, others on request	
Phosphor screen	P43	P46
Gain	Variable up to 10,000	
Dynamic resolution	50lp/mm	>36lp/mm
Images	Single	Two (550ns interframe time)

MECHANICAL

Dimension mm (w/d/h)	Head (without lens) 9.4cm x 21cm x 9.4cm (3.7" 8.2" x 3.7") Controller 19" rack mount 3U case
Weights	Head 3kg (6.6lbs) Controller 7kg (15.4lbs)
Head Mounting	3/8- 16 UNC Female in head base

ENVIRONMENTAL

Housing	19" Rack Mount 2U case
Storage temperature	-10°C to +50°C
Operating Temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

TIMING PARAMETERS

System Clock	200MHz quartz crystal control
Inherent Delay	500ns
Exposure Mode (each head)	Single exposure or multiple exposures (Max. 8) per head
Exposure Time	5ns – 10ms in 5ns steps
Interframe Time (head-to-head)	5ns – 20ms in 5ns steps
Delay to 1st exposure	500ns – 10ms in 5ns steps
Flash Outputs	5ns to 1ms in 5ns steps
Separation Time	30ns – 20ms in 5ns steps (multiple exposures on same channel)

INPUT / OUTPUT SIGNALS

Trigger 1	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Trigger 2	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Timing Monitor Pulse	Pulse width (min. 5ns) and position user programmable TTL into 50Ω
Flash Trigger Outputs	Pulse width (min. 5ns) and position user programmable TTL into 50Ω
Remote Camera Interface	Data and command transfer via custom 10m cable.
Camera head control	Data and command transfer via 100Mbps Ethernet cable length 10m (standard), other lengths up to 100m available 100FX Fibre optic Ethernet link (up to 2Km) - optional
Software	Custom software compatible with Microsoft Windows Operating Systems for cameracontrol, image data archiving in various file formats.
Electrical input	Mains 100-240V AC 50-60Hz

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FM87429

The Ultimate High-Speed Video Camera

**Up to 7 Million images/
second capture speed**

**924 x 768 pixel,
10-bit sensor resolution**

180 images

**50ns minimum
shutter**



The Specialised Imaging KIRANA is a true Ultra high-speed video camera that combines the flexibility of a video camera with the speed/resolutions approaching those only available with Framing cameras.

The unique custom design sensor offers 180 images at capture speeds up to 7 Million Images/second at full resolution.

In line with high-speed video cameras the KIRANA can be Frame synchronised with an external device such as another KIRANA or laser.

The KIRANA can also be recording prior to the event and triggered before, during or after the event.

FEATURES

- ☐ Up to 7 Million images/second
- ☐ Adjustable exposure down to 50ns
- ☐ Pre & Post event triggering
- ☐ External synchronisation
- ☐ Nikon lens mount fitting
- ☐ Gigabit ethernet communications
- ☐ Compact and rugged design

Kirana1M Up to 1 Mfps

Kirana5M Up to 5 Mfps

Kirana7M Up to 7 Mfps

MODEL SPECIFICATION

	Kirana1M	Kirana5M	Kirana7M
Frame Rate (Frames per second)	Up to 1 Mfps	Up to 5 Mfps	Up to 7 Mfps
Exposure Time (minimum)	1µs 10ns step	100ns 10ns step	50ns 10ns step
Trigger Mode	Start on Trigger, Stop on Trigger (user defined post trigger frames)		

OPTICAL

Lenses	Nikon F-Mount
Shutter	Electro-mechanical
Distortion	Zero

INTENSIFIER / SENSOR

Sensor	µCMOS
Number of Active Pixels	924 (W) x 768 (H)
Pixel Size	30µm
Digitisation	10bits
Number of Frames	180

MECHANICAL

Dimension mm (w/d/h)	Head: 22.8cm x 42cm x 19cm (without lens) Power supply: 19.5cm x 39.5cm x 19.5cm (inc. handle)
Weights	Head: 10.6Kg (23lbs) without lens. Power Supply: 4.8Kg (10.5lbs)
Head Mounting	3/8-16 UNC Female in base.

TIMING PARAMETERS

System Clock	200MHz quartz crystal controlled
Exposure time	1µs, 100ns or 50ns – 1/Frame rate
Framing rates	1000fps - 1Mfps / 5Mfps / 7Mfps

INPUT / OUTPUT SIGNALS

Trigger (2 off)	Electrical signal (BNC connector) Threshold variable from ± 25V Maximum Input level 50V Integrated velocity timing system Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Video Out	XVGA
Aux Out	FSync or user programmable pulse width and position for strobe/laser illumination sources. TTL into 50Ω
Sync In	Input to allow the synchronisation of two cameras in Master-Slave configuration
Camera Control	Remote control via Standard 1Gbps Ethernet
Software	Custom software compatible with Microsoft Windows Operating Systems for control and data archiving in various file formats
Electrical input	Mains 100-240V AC 50-60Hz
Saved Image Format	TIFF, JPEG, AVI or RAW

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

Laser illumination system

Up to 400W lighting power

640nm wavelength

**Flexible triggering/
synchronisation**



The Specialised Imaging LUX640 laser illumination system provides up to 400W of lighting power at pulse frequencies up to 10MHz or single pulses up to 30 μ S.

Simple triggering allows the SI-LUX640 to interface with most high-speed cameras ranging from High-speed video to Ultra highspeed framing cameras.

The 2m laser output light guide includes user interchangeable low coherence beam expanders.

FEATURES

- ☐ Low coherence
- ☐ Pulse width from 10ns – 30 μ s
- ☐ Pulse frequency range from single to 10MHz
- ☐ Compact design

OPTICAL

Beam Expanders	Ø25mm and Ø50mm versions
Wavelength	640nm ± 6nm
Output power	200W (-10/ + 30%) or 400W (-10/ + 20%)
Power drop	~ 0.2% / µS for pulses less than 5µS

INPUT / OUTPUT SIGNALS

Sync. Input	+5V TTL (BNC connector) (laser pulse duration = duration of +5V state)
Indicators	Green LED – Laser is powered & ready
Software	Custom software compatible with Microsoft Windows Operating Systems for Control.
Electrical Input	Mains 100-240V AC 50-60Hz

SAFETY FEATURES

Laser rating	Class 3b
Safety features	Key operated master control power on/off Connector for remote Interlock Capping shutter on lens and laser head
Visual indicator	Green LED = Laser is powered & ready Red LED = interlock indicator Laser classification stated on unit

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

TIMING PARAMETERS

Max pulse rate	10MHz
Min. single pulse duration	~10ns
Max. single pulse duration	30µS (max. power drop 20%)
Rise time	~10ns (10%...90%)
Fall time	~5ns
Delay	70ns between input to start of light pulse (incl. control cable delay)
Jitter	<5ns
Operating limits	Max. 0.03% duty cycle for unlimited operation Max. 100% duty cycle for 30µS laser operation

MECHANICAL

Dimension (w/d/h)	Laser: 6.2cm x 15cm x 3.6cm (6" x 2.4" x 1.4") Master control box: 12cm x 6cm x 12cm (4.7" x 2.4" x 4.7")
Weight	Laser: 0.5Kg (1.1lbs) Master control box: 0.5Kg (1.1lbs)
Light guide	2m
Control cable	2m between control/safety box & laser

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FM87429

SI-OT4



Optical Trigger Unit

Rugged Design

Battery Powered

Shadow and IR Flash Detector



The Specialised Imaging OT4 provides a reliable optical trigger for either projectile "shadow" detection or IR flash detection. Battery powered, with a rugged enclosure allows the OT4 to be used outside in all weathers and independent of mains power. Battery powers OT4 for up to 8 hours, battery charger included.

FEATURES

- ☐ Small and lightweight
- ☐ Battery powered for up to 8 hours
- ☐ Nikon lens mount fitting
- ☐ User adjustable sensitivity



Battery pack

OPTICAL

Lenses	Nikon F-Mount
Alignment	Optical viewport

SENSOR

Sensor	Multi-Segment Photodiode array. 400nm – 700nm range
--------	--

INPUT / OUTPUT SIGNALS

Output	Positive 5V 50Ω BNC connector
Trigger indicator	LED
Electrical input	Battery Pack (inc. charger)

MECHANICAL

Dimension mm (L x W x H)	OT4 Unit (without lens) 160mm x 140mm x 85mm 6.3" x 5.5" x 3.3" Battery 150mm x 120mm x 150mm 5.9" x 4.7" x 5.9"
Weights	OT4 Unit 1.1Kg / 2.4lb Battery 5.7Kg / 12.5lb
Sensor head mounting	1/4 - 20 UNC Female Base and top

ENVIRONMENTAL

Storage temperature	-10°C to +60°C
Operating temperature	-5°C to +45°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

Compact image intensifier/converter

Range of Intensifier tube options

Up to 40lp/mm resolution

Gate times down to 10ns

**Comprehensive triggering
for High-speed video
and other cameras**



The Specialised Imaging SIL3 image intensifier is the latest generation of intensifier that can be synchronised to almost any high-speed video, conventional video or stills camera.

Maximum equivalent frame rates ranging from 100,000fps to 1,000,000fps and minimum gate (exposure) time of 10ns.

All Intensifier tube options use fused silica input windows as standard. The two possible output window diameters, Phosphor decay times and Wavelength responses options (inc. UV) allows the SIL3 to be configured as a unique enhancement to any camera.

Intuitive custom control software allows gain, gate/exposure and delay adjustment via Ethernet.

FEATURES

- ☐ 18mm and 25mm Intensifier tube options
- ☐ Fully adjustable gating times down to 10ns
- ☐ Gain adjustment up to 500,000X
- ☐ Nikon lens mount fitting
- ☐ Optical camera coupling
- ☐ Ethernet communications
- ☐ UV wavelength conversion option

BASE UNIT	AVAILABLE OPTION	PHOTO- CATHODE	RESPONSE (>10% QE)	MINIMUM GATING TIME	SYSTEM GAIN	MAX FREQUENCY	LIMITING RESOLUTION	
			nm	ns	X	kHz	Stated lp/mm	Equivalent µm
SIL3 18NG-50		S25	450 - 875	50	7,000	100	40	12.5
	Short Gating	-	-	10	-	-	-	-
	UV Sensitive	S20	200 - 550	-	-	-	-	-
	High Gain 40K	-	-	-	70,000	100	30	16.7
	FAST	-	-	-	7,000	1,000	40	12.5
	FAST + High Gain 40K	-	-	-	70,000	1,000	30	16.7
SIL3 25NG-50		S25	450 - 875	50	10,000	100	40	12.5
	Short Gating	-	-	20	-	-	-	-
	UV Sensitive	S20	200 - 550	-	-	-	-	-
	High Gain 100K	-	-	-	100,000	100	36	13.9
	High Gain 500K	-	-	-	500,000	100	36	13.9
	FAST	-	-	-	10,000	1,000	36	13.9
	FAST + High Gain 100K	-	-	-	100,000	1,000	32	15.6
	FAST + High Gain 500K	-	-	-	500,000	1,000	32	15.6

OPTICAL

Front Lens mount	F-mount
Optical Coupling	F-mount

MECHANICAL

Dimension mm (w/d/h)	17.8cm x 18.5cm x 19.7cm (7.0" x 7.3" x 7.8") without lenses
Mount	3/8-16UNC Female (standard tripod)
Weight	4.8Kg (10.6lbs) without lenses
Lens/Camera Support	Option available

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5° to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

TIMING PARAMETERS

System Clock	200MHz, quartz crystal controlled.
Inherent Delay (5ns jitter)	60ns
Exposure Time	50ns—DC in 5ns steps independently variable
Inter Exposure Time	50ns—25ms in 5ns steps independently variable
Number of exposures	Up to 64 in pulsed mode. Unlimited in REP (synchronous) mode

INPUT / OUTPUT SIGNALS

Triggers	Electrical signal (BNC connector) Maximum Input level 50V Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Aux Outputs	Pulse width and position user programmable (min. 5ns) TTL into 50Ω
Control Interface	Remote control via Standard 100Mbps Ethernet
Inhibit Input	5V TTL (user input brightness protection)
Software	Custom software compatible with Microsoft Windows Operating Systems for control
Electrical input	Mains 100-240V AC 50-60Hz

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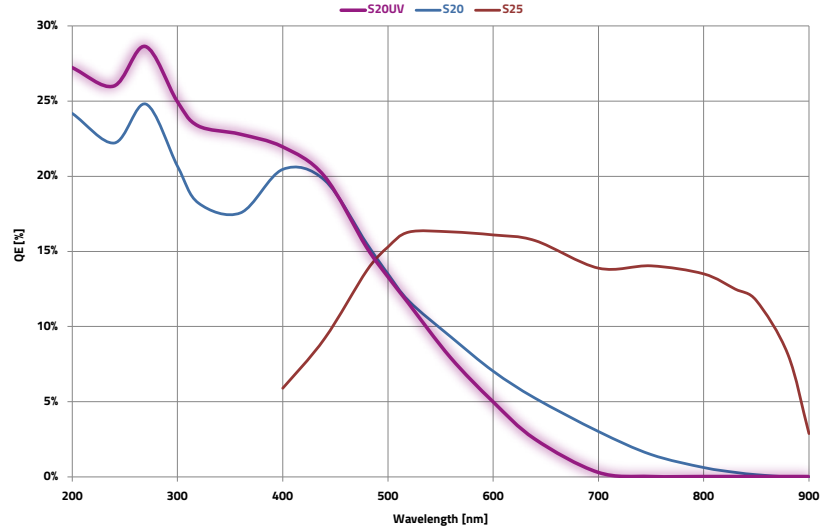
FM87429

Photocathode Spectral sensitivities:

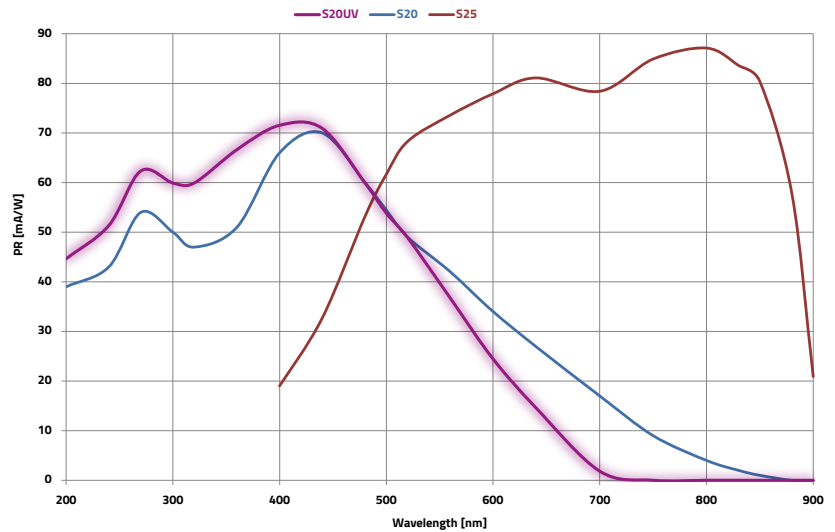
The Fused Silica input window used in the SIL3 allows transmission down to 180nm. This feature improves the spectral response normally limited by the transmission of other input window materials, such as borosilicate or Fibre optic glass which have an inherent cut off frequency around 300 - 350nm.



QE photocathodes for Image Intensifiers



PR photocathodes for Image Intensifiers



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FM87429



Duplex multi channel framing camera

**Up to 1 Billion frames
per second capture
speed**

**Better than 36lp/mm
system resolution**

**1360 x 1024 pixel
sensor resolution**

**Up to 16 discrete
intensified optical
channels**



The Specialised Imaging SIMD Framing Camera offers up to 32 images without creating shading, or parallax. Highly accurate timing and fully flexible intensified CCD sensors provide almost infinite control over interframe time, gain and exposure to capture even the most difficult ultra-fast phenomena.

Comprehensive triggering adjustment and a wide range of output signals are controlled using the custom software package which also includes measurement and image enhancement functions.

The SIMD has an optional port for the addition of a high-speed video, or streak camera to allow simultaneous long duration or ultra high temporal resolution capture. The SIMD camera allows the number of images captured to be double the number of channels. Precision filter holders allow off-the shelf filters to be exchanged by the user

FEATURES

- ☐ Adjustable inter-frame time in 1ns steps
- ☐ Fully adjustable exposure down to 3ns
- ☐ Gain adjustment up to 10,000X
- ☐ Programmable output triggers
- ☐ Nikon lens mount (standard)
- ☐ Canon lens mount (optional)
- ☐ Gigabit Ethernet communications
- ☐ Double shot configuration camera
- ☐ User interchangeable filters

MODELS

	SIMD8	SIMD16	SIMD20	SIMD24	SIMD32
Number of Channels	4	8	10	12	16
Number of images	8	16	20	24	32

Single and multiple channel upgrades are available up to a maximum of 16 channels.

OPTICAL

Optics	Single input beam splitting optics
Filters	2 - 8 CH: 25mm dia. x 2mm filters (up to 8 channels) 9 - 16 CH: 25mm dia. x 1mm - 3mm filters (up to 11 channels)
Lenses	Nikon F-Mount (Standard) Canon Mount (Optional)
Internal electro-mechanical iris	f2.8 - f22
Shutter	Electro-mechanical
Distortion	Nominally zero
Channel Registration	Within one pixel after software correction
Intensity Variation	Better than 5% across the image
Auxiliary Optical Channel Interface	Nikon F-mount bayonet (Optional)

INTENSIFIER / SENSOR

Image Sensor	ICX285AL
Active CCD Pixel	1360 (H) x 1024 (V)
Pixel Size	6.45 µm (H) x 6.45 µm (V)
Digitisation	12 bits
Intensifier	Gen II 18mm High resolution MCP Input window Fused Silica Output window Fibre Optic Photocathode S25, others available on request Phosphor screen P46 Gen III intensifiers available on request
Gain	Variable up to 10,000
System resolution	>36 lp/mm

MECHANICAL

Dimensions in cm (LxWxH)	57.2 x 43.8 x 31.9 (> 8CH, without lens) 57.2 x 23.8 x 31.9 (< 8CH, without lens)
Mount	3/8-16 UNC Female
Weight	37.5Kg (< 8CH, without lens) 24Kg (> 8CH, without lens)

TIMING PARAMETERS

System Clock	1GHz quartz crystal controlled
Exposure Mode (each image)	Single exposure or multiple exposures (Max. 8) per channel
Exposure Time	3ns - 10ms in 1ns steps independently variable
Separation Time (multiple exposure mode)	30ns - 20ms in 1ns steps independently variable
Interframe Time	0ns - 20ms in 1ns steps independently variable
Delay to 1st exposure	65ns to 10ms in 1ns steps, independently variable
Flash Outputs	5ns - 1ms in 1ns steps independently variable
Framing rates	up to 1 Billion fps

INPUT / OUTPUT SIGNALS

Trigger 1	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Trigger 2	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Timing Monitor Pulses	Pulse width (min. 3ns) and position user programmable TTL into 50Ω
Flash Trigger Outputs	Pulse width (min. 5ns) and position user programmable TTL into 50Ω
Camera control	Data and command transfer via Gigabit ethernet cable length 10m (standard), other lengths up to 100m. Optional Fibre Optic ethernet link (up to 2Km)
Software	Custom software compatible with Microsoft Windows Operating Systems for camera control, image data archiving in various file formats.
Electrical input	Mains 100-240V AC 50-60Hz

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429



High resolution multi channel framing camera

**Up to 1 Billion frames
per second capture
speed**

**Better than 50lp/mm
system resolution**

**1360 x 1024 pixel
sensor resolution**

**Up to 16 discrete
intensified optical
channels**



The Specialised Imaging SIMX Framing Camera offers up to 16 high resolution images without creating shading, or parallax. Highly accurate timing and fully flexible intensified CCD sensors provide almost infinite control over interframe time, gain and exposure to capture even the most difficult ultra-fast phenomena.

Comprehensive triggering adjustment and a wide range of output signals are controlled using the custom software package which also includes measurement and image enhancement functions.

The SIMX has an optional port for the addition of a high-speed video, or streak camera to allow simultaneous long duration or ultra high temporal resolution capture. The SIMX camera can provide up to 16 high resolution images. Precision filter holders allow off-the-shelf filters to be exchanged by the user.

FEATURES

- ☐ Adjustable inter-frame time in 1ns steps
- ☐ Fully adjustable exposure down to 3ns
- ☐ Gain adjustment up to 10,000X
- ☐ Programmable output triggers
- ☐ Nikon lens mount (standard)
- ☐ Canon lens mount (optional)
- ☐ Gigabit Ethernet communications
- ☐ High system resolution configuration
- ☐ User interchangeable filters

MODELS

	SIMX4	SIMX8	Large body models		
			SIMX10	SIMX12	SIMX16
Number of Channels	4	8	10	12	16
Number of images	4	8	10	12	16

Single and multiple channel upgrades are available up to a maximum of 16 channels.

OPTICAL

Optics	Single input beam splitting optics
Filters	2 - 8 CH: 25mm dia. x 2mm filters (up to 8 channels) 9 - 16 CH: 25mm dia. x 1mm - 3mm filters (up to 11 channels)
Lenses	Nikon F-Mount (Standard) Canon Mount (Optional)
Internal electro-mechanical iris	f2.8 - f22
Shutter	Electro-mechanical
Distortion	Nominally zero
Channel Registration	Within one pixel after software correction
Intensity Variation	Better than 5% across the image
Auxiliary Optical Channel Interface	Nikon F-mount bayonet (Optional)

INTENSIFIER / SENSOR

Image Sensor	ICX285AL
Active CCD Pixel	1360 (H) x 1024 (V)
Pixel Size	6.45 µm (H) x 6.45 µm (V)
Digitisation	12 bits
Intensifier	Gen II 18mm High resolution MCP Input window Fused Silica Output window Fibre Optic Photocathode S25, others available on request Phosphor screen P43 Gen III intensifiers available on request
Gain	Variable up to 10,000
System resolution	50 lp/mm

MECHANICAL

Dimensions in cm (LxWxH)	57.2 x 43.8 x 31.9 (> 8CH, without lens) 57.2 x 23.8 x 31.9 (< 8CH, without lens)
Mount	3/8-16 UNC Female
Weight	37.5Kg (< 8CH, without lens) 24Kg (> 8CH, without lens)

TIMING PARAMETERS

System Clock	1GHz quartz crystal controlled
Exposure Mode (each image)	Single exposure or multiple exposures (Max. 8) per channel
Exposure Time	3ns - 10ms in 1ns steps independently variable
Interframe Time	0ns - 20ms in 1ns steps independently variable
Delay to 1st exposure	65ns to 10ms in 1ns steps, independently variable
Flash Outputs	5ns - 1ms in 1ns steps independently variable
Framing rates	up to 1 Billion fps

INPUT / OUTPUT SIGNALS

Trigger 1	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Trigger 2	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Timing Monitor Pulses	Pulse width (min. 3ns) and position user programmable TTL into 50Ω
Flash Trigger Outputs	Pulse width (min. 5ns) and position user programmable TTL into 50Ω
Camera control	Data and command transfer via Gigabit ethernet cable length 10m (standard), other lengths up to 100m available 100FX fibre optic ethernet link (up to 2Km) - optional
Software	Custom software compatible with Microsoft Windows Operating Systems for camera control, image data archiving in various file formats.
Electrical input	Mains 100-240V AC 50-60Hz

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

High Resolution Dual Image Intensified camera

Single or Double image capture

**Up to 10.7 MegaPixel
12-bit images**

**Lightweight and
Rugged construction**



The Specialised Imaging SIR3 Framing Camera offers up to 2 high resolution images, 100µs apart. Fully flexible intensified CCD sensor provides control over interframe time, gain and exposure.

Comprehensive triggering adjustment and a wide range of output signals are controlled using the custom software package which also includes measurement and image enhancement functions.

FEATURES

- ☐ Fully adjustable interframe time to 100µs
- ☐ Fully adjustable exposure down to 10ns
- ☐ Gain adjustment up to 10,000X
- ☐ Adjustable output triggers
- ☐ Nikon lens mount fitting
- ☐ Gigabit ethernet communications

OPTICAL

Lenses	Nikon F-mount (ruggedized mounting system)
System Aperture	f 2
Shutter	Electro-mechanical
Distortion	Nominally zero
Coupling	CCD to MCP via FO
Vignetting	<3%
Intensity variation	Better than 5% across the image
Optical Viewfinder	Optional

INTENSIFIER / SENSOR

	SIR3-18D	SIR3-25D	SIR3-40D
Image Sensor	ICX285AL	KAI4021M	KAI11002M
Active CCD Pixel	1360 (H) x 1024 (V)	2048 (H) x 2048 (V)	4008 (H) x 2688 (V)
Pixel Size	6.45 µm (H) x 6.45 µm (V)	7.4 µm (H) x 7.4 µm (V)	9 µm (H) x 9 µm (V)
Dynamic Range	12 bits	12 bits	12 bits
Intensifier diameter	18mm MCP	25mm MCP	40mm MCP
Photocathode	All models: S25		
Phosphor / decay	P46/300ns	FS/10µs	FS/10µs
Input / Output windows	All models: Glass / Fibre		
Gain	Variable up to 10,000 all models		

MECHANICAL

Dimension mm (w/d/h)	17.0cm x 48.5cm x 19.3cm (without lens)
Mount	1/4 - 20 UNC and 3/8 - 16 UNC female
Weight	15Kg (33lbs) without lens

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

TIMING PARAMETERS

System Clock	200MHz quartz crystal controlled
Inherent Delay	<130ns
Imaging Mode	Single or Double image
Exposure Modes (each image)	Single exposure or multiple exposures (Max. 16 - subject to imaging conditions).
Exposure Times	10ns – 10ms in 5ns steps independently variable
Delay to 2nd exposure	100µS – 10mS in 5ns steps.
Flash output	20ns to 1ms in 5ns steps independently variable
Separation	30ns to 20ms in 5ns steps independently variable

INPUT / OUTPUT SIGNALS

Trigger 1	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Trigger 2	Electrical signal (BNC connector) Threshold variable from ± 25V Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Flash Trigger Output	Pulse width (min. 10ns) and position user programmable. TTL into 50Ω
Camera Control	Data and command transfer via Gigabit Ethernet Cable length 100m (standard) 1000FX fibre optic Ethernet link (up to 2Km) - optional
Software	Custom software compatible with Microsoft Windows Operating Systems for camera control, image data archiving in various file formats.
Electrical input	Mains 100-240V AC 50-60Hz

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FM87429

Optical Sky Screen Trigger Unit

Rugged Design

Battery Powered

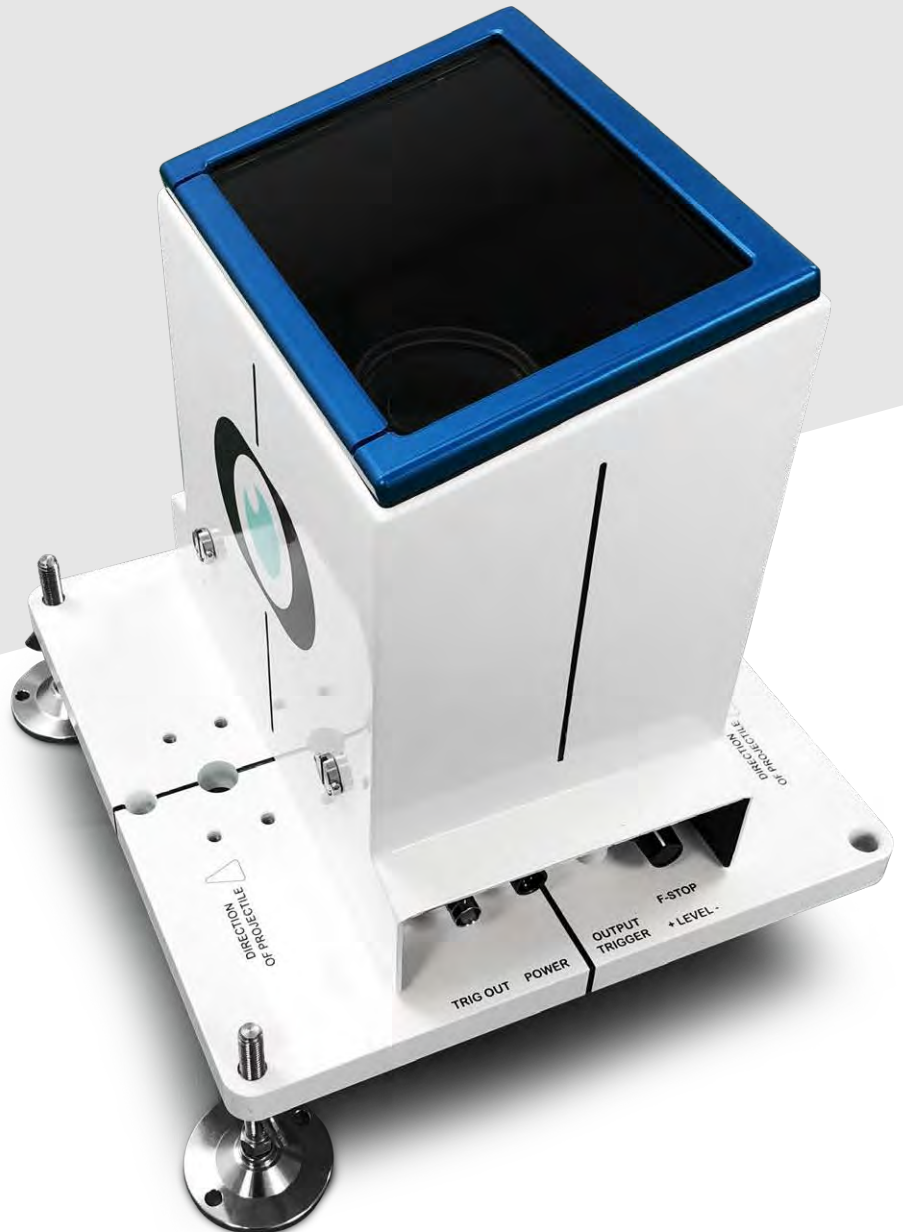
Shadow Detector

High / Low pass filtering

The Specialised Imaging SST1 provides a reliable optical trigger for projectile "shadow" detection.

Battery powered, with a rugged enclosure allows the SST1 to be used outside in all weathers and independent of mains power.

Battery powers SST1 for up to 8 hours. Battery charger included.



FEATURES

- ☐ Small and lightweight
- ☐ Battery powered for up to 8 hours
- ☐ Nikon lens mount fitting
- ☐ Local sensitivity adjustment
- ☐ Optional remote sensitivity adjustment



OPTICAL

Lenses	Nikon F-Mount
Alignment	Engraved Datum lines

SENSOR

Sensor	Multi-Segment Photodiode array. 400nm – 700nm range
--------	--

INPUT / OUTPUT SIGNALS

Output	Positive 5V 50Ω BNC connector
Trigger indicator	LED
Electrical input	Battery Pack (inc. charger)

MECHANICAL

Dimension mm (w/d/h)	Unit with Standard cover 28cm x 28cm x 29cm (11" x 11" x 11.5") Unit with Extended cover (Optional) 28cm x 28cm x 38cm (11" x 11" x 15") Battery Pack 15cm x 12cm x 15cm (5.9" x 4.7" x 5.9")
Weights	Standard unit 5.8Kg (12.7lbs) Extended cover unit (Optional) 6Kg (13.2lbs) Battery 5.7Kg (12.5lbs)

ENVIRONMENTAL

Storage temperature	-10°C to +60°C
Operating temperature	-5°C to +45°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

High Resolution non-intensified camera

Single image capture

**Up to 11 MegaPixel
12-bit images**

**Compact and rugged
construction**



The Specialised Imaging T-Cam Camera offers single high resolution monochrome images.

Comprehensive triggering adjustment and a wide range of output signals are controlled using the custom software package which includes measurement and image enhancement functions.

FEATURES

- ☐ Fully adjustable exposure from 1 μ s to 10ms
- ☐ Adjustable output triggers
- ☐ Nikon lens mount fitting
- ☐ Gigabit ethernet communications

OPTICAL

Lenses	Nikon F-mount
System Aperture	Limited by lens
Distortion	Nominally zero

SENSOR

	T-Cam 43100	T-Cam 22100
Image Sensor	KAI11002M	KAI4021M
Active CCD Pixel	4008 (H) x 2688 (V)	2048 (H) x 2048 (V)
Pixel Size	9µm (H) x 9µm (V)	7.4 µm (H) x 7.4 µm (V)
Dynamic Range	12 bits	12 bits

MECHANICAL

Dimension mm (w/d/h)	17.8cm x 18.5cm x 19.7cm (7.0" x 7.3" x 7.8") without lenses
Mount	1/4-20 UNC Female (standard tripod)
Weight	6Kg (13.2lbs) without lens.

INPUT / OUTPUT SIGNALS

Trigger 1	Electrical signal (BNC connector) Threshold variable from $\pm 25V$ Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Trigger 2	Electrical signal (BNC connector) Threshold variable from $\pm 25V$ Positive or Negative polarity, Make/Break 50Ω or 1KΩ termination
Flash Trigger Output	Pulse width (min. 10ns) and position user programmable. TTL into 50Ω
Camera Control	Data and command transfer via Gigabit Ethernet. Cable length 10m (standard), other lengths up to 100m available 1000FX fibre optic Ethernet link (up to 2Km) - optional
Software	Custom software compatible with Microsoft Windows Operating Systems for camera control, image data archiving in various file formats.
Electrical input	Mains 100-240V AC 50-60Hz

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating temperature	-5°C to +40°C
Humidity	10—90% RH non condensing
Vibration shock	10—40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards

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FM87429

Compact High-Speed Linear Tracker System



**Developed from the award winning
Trajectory Tracker² system**

Multiple tracking modes

Manual positional adjustment

**Integrated high-speed
camera options**

The Specialised Imaging Tracker^{Lite} is a smaller, lighter system that retains the core functions of the Award winning Tracker² system.

Simplification of the Tracker² system includes manual alignment adjustment with projectile flightpath, and three inputs for real time projectile velocity variation adjustment.

Mounted on heavy, stable tripod, the fully weatherproof mirror/camera housing allows smaller high-speed video cameras with long focal length lenses to be used.

Custom software controls the Tracker and triggering set up, provides calculators for camera fields-of-view and depth of focus for different cameras, lenses and Tracker locations.

FEATURES

- ☐ Multiple operating modes allow capture of decelerating, accelerating, user defined velocity profiled projectiles
- ☐ Scan ratio (SR) range from 1 to 40 (Optional 1 to 100)
- ☐ Typical scanning accuracy of $\pm 0.2^\circ$.
- ☐ Gigabit ethernet communications
- ☐ Built in camera power, communications and trigger
- ☐ No calibration required

OPERATING MODES

Fixed Velocity	Single trigger using known velocity
Velocity	The scan is corrected using the measured velocity from at least 2 of the 3 available detector inputs.
Position	The scan position is corrected from the detector inputs. Known velocity is assumed.
Drag	The scan is corrected using the measured velocity and drag from 3 detector inputs.
Pre-defined profile	Programmable Velocity Vs Time curve. Triggered using single trigger. Used for non-linear projectile trajectories.
Advanced User Functions	Specialised Imaging is prepared to customise modes of operation to user requirements.
Skewed Geometry	Allows non perpendicular operation

OPERATING PARAMETERS

Scan Ratio (SR)	1 to 40, or 1 to 100 (defined as the ratio of projectile velocity/stand-off distance)
Scanning range (Max.)	-50° to +50°
Scanning Distance	≥ 2 x standoff distance (shortest distance between Tracker and line of flight)
Scanning Accuracy	± 0.2° (SR>80 accuracy ± 0.5°)
Calibration	Not required
Projectile Velocity	SR x Standoff distance
Projectile Drag	0 to 100 m/s/m
Acceleration Angle	1° - 5° depending on scan rate (defined as the angle required to accelerate the mirror from rest to full scanning speed)

ENVIRONMENTAL

Storage temperature	-10°C to +74°C
Operating temperature	-5°C to +45°C
Warmup Period	Not Required
Humidity	10 - 90% RH non-condensing
Operational vibration	10G, 10-40Hz Max, any direction
EMC	Meets all UKCA/EU harmonised standards

MECHANICAL

Dimensions mm (w/d/h)	650 x 230 x 310 (without tripod)
Weight	16kg / 35lbs (without camera and lens)
Mount	3/8-16 UNC Female

MIRROR

Type	Optical flat elliptical surface silvered
Size (HxW) mm	135 x 85

INPUT / OUTPUT SIGNALS

Detector In	BNC
Number of inputs	3
Trigger In	Make/Break, Positive or Negative edge, Threshold variable to ± 17V 50Ω or 1KΩ termination
Camera Trigger	TTL positive pulse
Communication Interface	Data and command transfer via 1Gbps ethernet cable
Software	Custom software compatible with Microsoft Windows Operating Systems for control and data archiving in various file formats
Electrical input	Mains 100-240V AC 50-60Hz

CONTROL UNIT

System Clock	10MHz quartz crystal controlled
Trigger Jitter	<1us

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FM87429

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Comprehensive High-Speed Linear Tracker System



Award winning flight follower system

Multiple tracking modes

Remote control motorised adjustment

**Multiple high-speed
camera options**

The Specialised Imaging Tracker² is the next generation of projectile tracking platforms for high-speed video and measurement.

Full motorised remote control of three axis rotation and multiple inputs for real-time velocity adjustment contribute to the evolution of this award-winning system.

Built on a sturdy mount, the fully weatherproofed mirror and camera housings allow a large range of high-speed video cameras and long focal length lens options.

Custom software controls the Tracker system and provides calculators for Tracker placement, camera fields-of-view and velocities.

FEATURES

- ☐ Full remote control operation
- ☐ Multiple operating modes allow capture of decelerating, accelerating, user defined velocity profiled projectiles
- ☐ Scan ratio range from 0.1 to 100
- ☐ Scanning accuracy of $\pm 0.2^\circ$
- ☐ Gigabit ethernet communications
- ☐ Built in camera power, communications and trigger
- ☐ No calibration required

OPERATING MODES

Fixed Velocity	Single trigger using known velocity
Velocity	The scan is corrected using the measured velocity from at least 2 of the 8 available detector inputs.
Position	The scan position is corrected from the detector inputs. Known velocity is assumed.
Drag / Acceleration	The scan is corrected using the measured velocity and drag / acceleration from at least 3 of the 8 available detector inputs.
Pre-defined profile	Programmable Velocity Vs Time curve. Triggered using single trigger. Used for non-linear projectile trajectories.
Advanced User Functions	Specialised Imaging is prepared to customise modes of operation to user requirements.
Skewed Geometry	Allows non perpendicular operation

OPERATING PARAMETERS

Scan Ratio (SR)	0.1 to 100 (defined as the ratio of projectile velocity/ stand-off distance)
Scanning range (Max.)	-60° to +60 °
Scanning Distance	>=2x standoff distance (distance from the line of flight to Tracker2)
Scanning Accuracy	±0.2°
Positional Accuracy	±0.018°
Calibration	Not required
Projectile Velocity	SR x Standoff distance
Projectile Drag	0 to 100 m/s/m
Acceleration Angle	1° - 5° depending on scan rate (defined as the angle required to accelerate the mirror from rest to full scanning speed)

ENVIRONMENTAL

Storage temperature	-10°C to +74°C
Operating temperature	-5°C to +50°C
Warmup Period	Not Required
Humidity	10 - 90% RH non-condensing
Operational vibration	10G, 10-40Hz Max, any direction
EMC	Meets all UKCA/EU harmonised standards

MECHANICAL

Dimensions mm (w/d/h)	1340 x 670 x 590 (without tripod)
Mount	Tripod Included

INPUT / OUTPUT SIGNALS

Detector In	BNC
Number of inputs	8
Trigger In	Make/Break, Positive or Negative edge, Threshold variable to ± 17V 50Ω or 1KΩ termination
Camera Trigger	TTL positive pulse
Communication Interface	Data and command transfer via 1Gbps ethernet cable length 100m (standard). Other lengths available 1000FX fibre optic ethernet link (up to 2Km) - optional
Software	Custom software compatible with Microsoft Windows Operating Systems for control and data archiving in various file formats
Electrical input	Mains 100-240V AC 50-60Hz

MIRROR

Type	Optical flat elliptical Silicon Carbide Mirror
Size (HxW) mm	135 x 85 x 2

CONTROL UNIT

System Clock	10MHz quartz crystal controlled
Trigger Jitter	<1us

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Tripods



A range of tripods designed to work with Specialised Imaging cameras and systems

Strong, thick walled anodized tubular construction guarantees years of reliable performance.

Large diameter footprint offer stable platforms. A selection of heads to suit any Specialised Imaging camera or system.

Unsurpassed in quality and reliability, they provide micro control for Pan and Tilt movements with handwheels and counter balancing stainless steel springs. All control knobs are located for the operator's convenience.



TP-G



TP-H







TP-S



TRIPOD STANDS

	DESCRIPTION	MAX LOAD	MAX HEIGHT	MIN HEIGHT	WEIGHT	COLUMN TRAVEL
TP-G8	Tripod with Column	91kg 200 lb	216 cm 85 in	105 cm 41.5 in	18.9 kg 41.6 lb	53.3 cm 21 in
TP-G6	Tripod with Column	91kg 200 lb	165.1 cm 65 in	76.2 cm 30 in	15 kg 33.5 lb	53.3 cm 21 in
TP-H8	Tripod with Column	68kg 150 lb	178cm 70 in	80.3cm 31.6 in	11kg 25.4 lb	45cm 18 in
TP-H6	Tripod with Column - Short	68kg 150 lb	144cm 57 in	66cm 26 in	9.6kg 21.2 lb	45cm 18 in
TP-H7BQ	Tripod with Column - Extended height	68kg 150 lb	393.7cm 155 in	190.5cm 75 in	20.9kg 46 lb	44.4cm 17.5 in
TP-H2	Pedestal - mobile	36kg 80 lb	142cm 56 in	96.5cm 38 in	15.9kg 35 lb	45cm 18 in
TP-S7	Tripod with column	18.2kg 40 lb	193cm 76 in	86.4cm 34 in	4.5kg 10 lb	45cm 18 in

TRIPOD HEADS

	DESCRIPTION	MAX LOAD	DIMS	WEIGHT	PAN	TILT	PLATE & SCREW
TPH-G7 	Geared head with vernier slide	90.9kg 180 lb	31.8 x 25.4 x 33cm 12.5 x 10 x 13 in	9.5kg 21 lb	360°	53" Up 67" Down	Fixed plate 20 x 25.4 cm 8x10 in Male Thread 3/8 in - 16
TPH-H3 	Geared head with platform	22.7kg 50 lb	24.6 x 19.8 x 28.4 cm 9.7 x 7.8 x 11.2 in	5.5kg 12 lb	360°	45" Up 45" Down	Fixed plate 22.5 x 15 cm 9 x 6 in Male Thread 3/8 in - 16
TPH-H9 	Geared head with calibrations	13.6kg 30 lb	24.1 x 22.9 x 26.7 cm 9.5 x 9 x 10.5 in	4.2kg 9.3 lb	360°	45" Up 90" Down	Fixed plate 10 x 10 cm 4 x 4 in Male Thread 1/4 in - 20
TPH-S3 	Geared head and slide tilt	11.4kg 25 lb	21.6 x 16.5 x 15.2 cm 8.5 x 6.5 x 6 in	1.1kg 2.5 lb	360°	45" Up 90" Down	Fixed plate 16.5 x 21.6 cm 6.25 x 8.5 in Male Thread 1/4 in-20

We have a range of adaptors and accessories to compliment both tripods and heads. Contact us for more info.

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Ballistic Velocity Measurement System



3,330 measurements / second

Up to 9,000 measurements storage

5ns Resolution

3 independent input channels

4 independent output channels

The Specialised Imaging VT2 system performs time of flight and/or velocity measurements using 3 input channels.

Capture rates up to 3,330 measurements per second (200,000 rounds per minute) can be measured and up to 9,000 measurements can be stored locally in the Unit head.

The four independent Output channels can be used as a delay generator for other instrumentation to ensure correct triggering of framing, ultra high-speed and high speed video cameras.

FEATURES

- ☐ Velocity measurement
- ☐ Time of flight measurement
- ☐ Ethernet communication
- ☐ Built in 4 channel delay generator
- ☐ Battery powered option
- ☐ 19" Rack mount option

OPERATING PARAMETERS

Measurements	Time of flight or Velocity
Max. rate of capture/fire	200,000 measurements/minute (3,330 Hz)
Max. storage	9,000 measurements (velocity or time of flight)

INPUT / OUTPUT SIGNALS

Input/trigger channels	3 (independent) Electrical signal (BNC connector) Threshold variable from $\pm 25V$ Positive or Negative polarity, Make/Break 50 Ω or 1K Ω termination
Output channels	4 (independent) +ve TTL (BNC connector) Pulse width user programmable 50 Ω termination
Control interface	100Mbps Ethernet
Software	Custom software compatible with Microsoft Windows Operating Systems for Control and data archiving.
Electrical input	Mains 100-240V AC 50-60Hz Battery option (inc. charger)

TIMING PARAMETERS

System Clock	200MHz, quartz crystal controlled
Inherent Delay	50ns
Range	5ns to 1s in 5ns steps independently variable
Jitter (trigger)	5ns
Jitter (channel to channel)	<500ps

MECHANICAL

Dimension mm (w/d/h)	360mm x 200mm x 77mm (with handles)
Dimension inches (w/d/h)	14.17" x 7.87" x 3.03" (with handles)
IP rating	IP65
Weight	4Kg (8.8lbs)

ENVIRONMENTAL

Storage temperature	-10°C to +50°C
Operating Temperature	-5°C to +40°C
Humidity	10 - 90% RH non condensing
Vibration shock	10 - 40 Hz Max. 10g in any direction
EMC	Meets all UKCA/EU harmonised standards



Rack mount option

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As part of our on-going commitment to improvement we reserve the right to alter specifications, designs or figures, without prior notice. All dimensions and weights are approximate.



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SIL-1500-01-Q02



Ballistics
Detonics
Plasma
Impact studies
Combustion research
Spray and particle analysis
Medical testing and research
Low light machine vision system
Nanotechnology and micro-machines
Elasticity, crack propagation and shock resistance

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