



All Solid-State, Time-Gated Digital CCD Camera System



The ultimate solution for Time-Gated, Fluorescence Lifetime, Chemiluminescence and Bioluminescence imaging

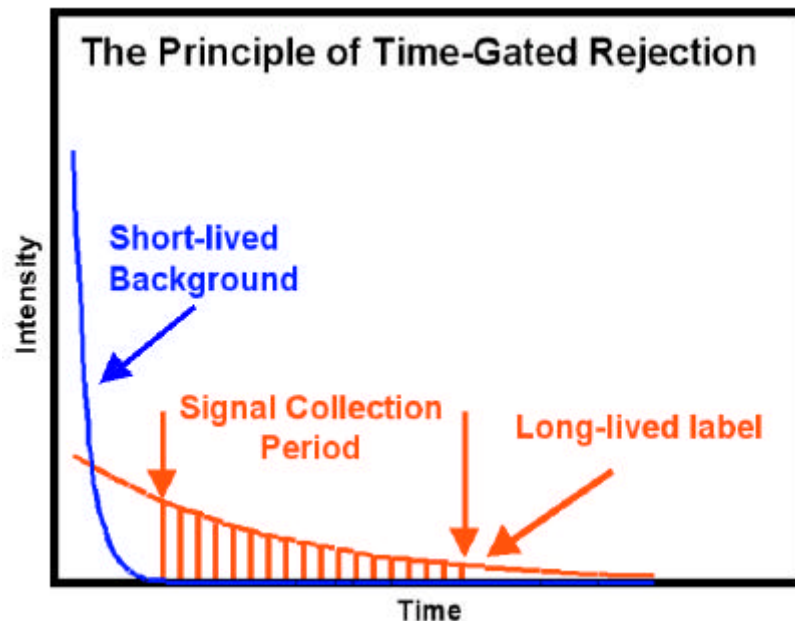
The *Imagex-TGi* system is a revolution in imaging technology, capable of taking high-resolution Time-Gated images but sensitive enough for chemiluminescence. Because it does *not* use intensifier technology it is robust, low-noise and low-cost. The camera head has a standard C-Mount lens thread so it can easily be incorporated into your fluorescence imaging system. The system is supplied as a complete turnkey unit with an easy-to-connect parallel interface and a sophisticated but simple-to-use time-gated imaging package.

Imagex-TGi is ideal for use in the detection of long-lived emission such as delayed fluorescence and phosphorescence. Labels showing long-lived emission can be detected with extremely high sensitivity and virtually total rejection of exciting light and prompt fluorescence.

Time gating allows you to 'cut out and keep' just the signal you are interested in from the sea of background fluorescence. It does this by dumping all the signal outside a user-defined time period following the triggering of your pulsed excitation source. Unlike a standard CCD the Imagex camera can do this repetitively, storing the results of thousands of lamp pulses before reading out the image.

The system has found applications in fields as diverse as genomics, microscopy, aerospace research and clinical analysis. and works with a wide range of fluorescent probes and light sources.

Because the *Imagex-TGi* camera is an all solid-state phase-sensitive imager it does not suffer from the problems encountered with gated Intensified CCDs. It is low-noise has excellent quantum efficiency, is robust and excellent value for money.



In Time-Gated mode the *Imagex-TGi* system can detect very low levels of long-lifetime label even in the presence of very high levels of short lifetime background. This is because in Time-Gated Mode the camera *does not record* the short lifetime fluorescence.

As well as rejecting short lifetime fluorescence the *Imagex-TGi* system can *measure* Fluorescence Lifetime, to produce 'FLIM' images. Applications of FLIM imaging include oxygen sensing, proteomics and FRET imaging.

In addition to time-gated imaging the *Imagex-TGi* camera has a special mode for ultra-low signal detection using techniques such as Chemiluminescence and Bioluminescence. In this mode the standard *Imagex-TGi* camera can integrate for over 10 hours before readout!*

*Mean thermal noise after 10 hours integration c.5% of full well capacity

System Specifications

The system comprises everything you need to get started. The camera is a 2/3" triple-Peltier-cooled CCD with 14-bit CDS A/D converter and onboard video-line memory. The computer interface plugs straight into the computer's parallel printer port so it is extremely easy to install and can even be used with laptop PCs to optimise space usage.

The Time-Gating system has an internal programmable frequency generator which can operate from 10Hz to 100kHz. It can also be driven with external TTL signals for synchronisation with other apparatus. The onboard memory system allows for extremely versatile control of the gating signals and allows up to 5 individually accessible light sources to be connected.

The system is compatible with a wide variety of TTL-controlled light sources such as pulsed YAG lasers, diode, lasers, the PRS100 series of multiLED lamps and broadband Xenon flashlamps.

CCD Resolution	752 by 582 pixels at 14 bits per pixel with correlated double sampling
CCD cooling	40 deg C below ambient
CCD chip size/type	2/3 inch microlens-based interline transfer,
Peak sensitivity	550nm
50% of peak sensitivity	430-730nm
Time-Gating Properties	Gate Period can be of any length and with any delay as long as it falls within the lamp repetition time (minimum increment 1 microsecond).

Interface Type	Bidirectional Parallel Printer Port
External Modulation Input	TTL (0V 5V)
Lamp Modulation Output	TTL (0V-5V)
Internal Frequency Source	10Hz-100kHz controlled by software.

Control Software Features

- Windows 95/98/ME™ Mouse- and Keyboard- driven control interface
- Eight 16-bit software-selected Framestore banks for image acquisition-each bank can have its own time gating settings
- Full frame readout in 0.8 seconds/(med res) 3 seconds (high res)
- Continuous Image Display Mode for setup/focusing
- Time-Gated or Chemiluminescence imaging modes
- Software Control of modulation frequency and light source modulation profile
- Pre-programmable MultiExpose function for collection of multiple images with different gating properties
- Multiple Area definitions for area averaging-shapes include rectangles, circles, ellipses and squares
- Export to 16-Bit TIFF file and 24-bit true colour bitmap files

Delivery is 9 weeks from date of order. For further information about applications of the *Imagex-TGi* system please see our information sheets *Applications of time-gated imaging*.

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