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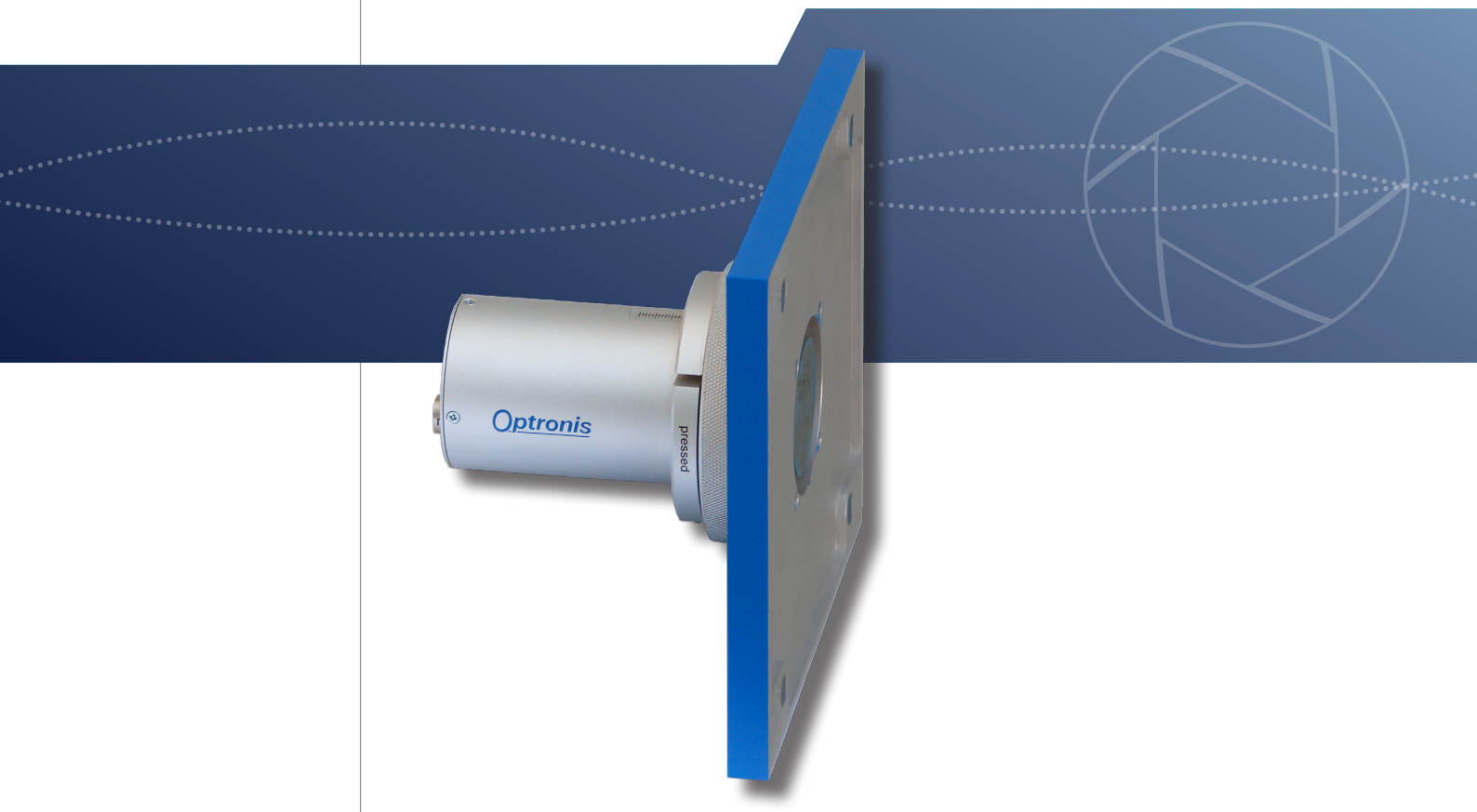
STREAK READOUT UNIT

SRU-BX

Fiber-Optics Readout Camera



- High efficiency fiber-optic coupling
- Gigabit Ethernet interface
- Resolution 1392 x 1040 pixel
- For SC-20 and SC-51 systems

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Streak Readout Unit SRU-BX

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The SRU-BX uses a fiber-optical (FO) taper to efficiently couple a high-sensitive CCD sensor onto the phosphor screen of the OPTOSCOPE SC streak camera. The unit consist of a camera electronics with CCD chip bonded on a fiber optics taper. A mounting plate with fixing ring is used for precise positioning to the streak camera with controlled coupling pressure. The camera provides 12 bit digitalization, variable integration time and high frame rate for convenient streak camera setup. A standard Gigabit Ethernet interface simpifies handling and allows to use notebook type PCs.

SPECIFICATIONS

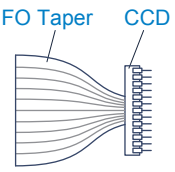
Resolution	1392 (h) × 1040)v) pixel
AD conversion	12 bit
Frame Rate (PC dependent)	17 fps
Readout noise (typ.)	8 e^-
Quantum efficiency (CCD only)	68% (650 nm, typ.)
Conversion factor (typ.)	4.8 e^-/DN
Integration time	1 ms .. 4 s
Trigger operation	Continuous / External Trigger
Interface	Gigabit Ethernet
Trigger input	TTL level, positive edge, BNC
Power supply	100 V .. 240 V / 12 V by separate AC/DC converter
Temperature (operation)	0°C .. +35°C
Humidity	20% .. 80% rel. humidity, non condensing
Dimensions	180 mm × 160 mm × 106 mm
Weight (typ.)	1.3 kg
Delivery	PCI GigE interface board, power supply, trigger cable

ACQUISITION MODES

Integration time of the CCD sensor can be adjusted to adapt for particular streak camera applications. Together with the OptoAnalyse acquisition software image accumulation allows to extend this time to further improve dynamic range beyond the camera performance. The external trigger input is used to synchronize image capture to low and moderate rate sweep cycles in singel-shot mode.

COUPLING OPTICS

The CCD chip is fiber optically coupled to the fiber optic output window of OPTOSCOPE streak cameras. This provides best coupling efficiency and therefore high system sensitivity for image acquisition in analogue and photon counting mode. The fiber optic input of the SRU-BX is mounted on a flexible support to optimize contact and spatial resolution. Mechanical design ensures precise positioning and controlled coupling pressure.



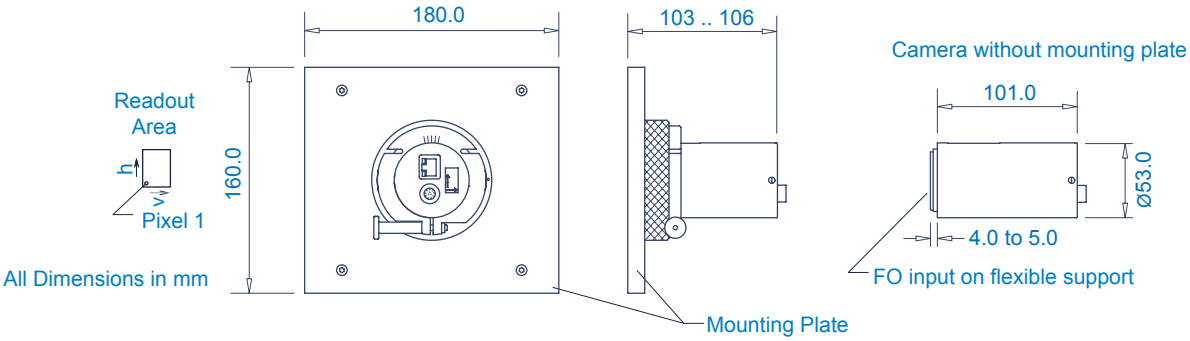
PHOTON COUNTING

Camera sensitivity allows to use the SRU-BX for photon counting applications when combined with SC-20 or SC-51 systems equipped with an image intensifier II140. Tiny scintillations related to a single photon are detected with signal intensity above noise level. Scintillation positions are defined by calculating their center of gravity. Photon couting mode provides increased spatial and temporal system resolution. Additionally, the noise of the readout camera and partly the intensifier noise is removed.

FIBER-OPTICS COUPLING

Reference/Option	Taper	Readout Area (typ.)	Pixel Size (typ.)	Spatial Resolution (FWHM, typ.)	Sensitivity (550 nm, typ.)
SRU-BX/40	40 / 11.5	31.2 × 23.3 mm²	22.4 × 22.4 µm²	35 µm (collimated light) 45 µm (Lamberdian light)	64 photons/DN (collimated light) 770 photons/DN (Lamberdian light)

TECHNICAL DRAWING



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