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Technical Specifications for GEL SCANNER
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Technical Specifications of Gel Scanner

Application: DIGE-imaging, fluorescence and NIR imaging, filmless autoradiography for Southern, Northern, Western blotting, and gel documentation imaging for routine molecular biology and protein biology works.

Specifications:

- High speed and High-resolution optical scanner with detection modes for Phosphorescence, densitometry, Fluorescence, Chemiluminescence with simultaneous white light imaging for blots and Near IR fluorescence imaging of gels/blots/tissue sections/arrays and micro well plates.
- The machine should have at least 5 log dynamic range
- The excitation light source should have a minimum warranted life time of 20000 hours
- Detectors should have high quantum efficiency, at least 65% in all fluorescence and chemiluminescence modules
- System should have a minimum of 5 internal lasers of 488nm ± 10 nm, 532nm ± 10 nm, 635nm ± 10 nm, 685 nm ± 10 nm and 785nm ± 10 nm as excitation sources on board for broad range of fluorescence and phosphorimaging applications. System should also have at least two Near IR Lasers of 685 nm ± 10 nm or 785nm ± 10 nm excitation sources for NIR fluorescence detection.
- System should have following filters for phosphor-imaging, fluorescence and NIR fluorescence imaging: IP 390BP, 525BP20, 570BP20, 670BP30, IR-short 720BP20 and IR-long 825BP30
- System should have dual PMT (Photomultiplier tubes) based detectors to cover broad range of fluorescence detection ie blue to near IR range.
- The system must have one bi-alkali PMT and one multi-alkali PMT to achieve the wide dynamic range needed for various multiplexing experiments, selectable as per the laser power requirements.
- System should have resolutions of 10um, 25um, 50um, 100um and 200 um (Selectable).
- System should have pre-scan feature at 1000 um resolution.

- System should be able to detect following radioisotopes:14C,23P,33P,35S,3H,125I and 99Tc etc.,
- System should effectively discriminate between all Cy 2, Cy3, Cy5, cy5.5 dyes and multi spectral western blotting with Q-Dot and Alexaflour.
- System should generate 16-bit image with 5 orders of magnitude of Dynamic range or more.
- System should have high scanning speed of 3 min (50 um 24 x 25 cm) or lower at 50 um for better and fast imaging.
- Detection Sensitivity: : LOD of 0.00518 μCi/g for ^{14}C with autoradiographic standard (CFQ12000) for phosphor-imaging; less than 10 pg for fluorescence and less than 5 pg for IR imaging.
- Maximum Scanning area should 40 x 46 cm for various scanning modes.
- System should be able to simultaneously scan 20 gels or blots, measuring 10 × 8 cm in size. It should also possible to scan up to 9 multiwell plates in a single scan. This feature is required for comparative data within plates/blots.
- System should also have possibility to scan multi-well plates, tissue arrays and array-slides for fluorescence imaging.
- System should be able to simultaneously scan two DIGE gels, each measuring up to 21.5 × 27.5 cm, with the multi-stage.
- System should be able to scan large format sequencing gels (33 x 42 cm).
- System should possess IP stage, fluor stage, multistage, IP eraser (40 X 46 cm or more) and membrane weight to avoid any gel curling
- System should be provided with a LED based closed image eraser
- At least 5 phosphor screens and cassettes of various dimensions to be included.
- System should be quoted with necessary filters to cover entire visible range. The system should have provision to use any 5 filters as per user need.
- System should have option of using commercially available 2 inch rectangular or other optical filters and should be user changeable.
- System should have suitable software to quantify bands in gels and blots and determine molecular weight of proteins and nucleic acids using suitable calibration markers.
- The analysis software should have provision for quantification of fluorescence signal coming form a 96 and 384 well plates and protein/ tissue microarrays.
- Interface and Software: USB 2.0 interface for fast transfer of data and Suitable software to runs on Windows platform for capturing images and analysis of electrophoresis, quantitation with functions like rotation , trimming, superimposing, negative/positive reversing, etc.

- Should be accompanied with a controlling computer (branded) with specifications –Minimum quad core processor (i5 or more), 16 GB RAM; 2 TB HDD + primary SSD drive; DVD-ROM drive; 64 bit OS; high resolution 22 inch display; LAN and wireless connection.

- 30 min UPS (branded) Back up for the entire system

- After the 1st year of manufacturer warranty (both parts and labour), system should come with 4 years of comprehensive maintenance contract/warranty including parts and labor. The defects, if any, shall be attended to on immediate basis but in no case any defect should prolong for more than 24 hours. The comprehensive warranty includes onsite warranty with parts.

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