

Title (en)
Detector device

Title (de)
Detektorvorrichtung

Title (fr)
Dispositif de détection

Publication
EP 2560189 B1 20200617 (DE)

Application
EP 12179417 A 20120806

Priority

- DE 102011052738 A 20110816
- DE 102012101679 A 20120229

Abstract (en)
[origin: EP2560189A1] The detector apparatus (1) has a housing (4) in which a detector (5) is arranged. A cooling component (11) is in direct contact with detector for cooling the detector. An electrically insulating structure (12) is provided to insulate the detector with respect to housing. The detector is provided with a light sensor e.g. photocathode (8) that is arranged on a substrate (7) for receiving to be detected light entering through an entry optic (9) of housing.

IPC 8 full level
H01J 40/02 (2006.01); **H01J 40/16** (2006.01); **H01J 43/02** (2006.01); **H01J 43/28** (2006.01)

CPC (source: EP)
H01J 40/02 (2013.01); **H01J 40/16** (2013.01); **H01J 43/28** (2013.01)

Citation (examination)

- EP 0595468 A1 19940504 - HAMAMATSU PHOTONICS KK [JP]
- EP 1276135 A1 20030115 - HAMAMATSU PHOTONICS KK [JP]
- EP 1995761 A1 20081126 - HAMAMATSU PHOTONICS KK [JP]
- EP 1892749 A1 20080227 - HAMAMATSU PHOTONICS KK [JP]
- US 5695393 A 19971209 - GRANZIERA GILLES [FR]
- JP H03147241 A 19910624 - YOKOGAWA ELECTRIC CORP
- DE 3118997 A1 19830120 - GAUTING GMBH APPARATEBAU [DE]
- US 2006140462 A1 20060629 - SAGGAU PETER [US], et al
- MOTOHIRO SUYAMA ET AL: "PHOTOMULTIPLIERS: Hybrid detector combines PMT and semiconductor-diode technologies", LASER FOCUS WORLD, 1 March 2008 (2008-03-01), pages 1 - 8, XP055565747, Retrieved from the Internet <URL:<https://www.laserfocusworld.com/articles/2008/03/photomultipliers-hybrid-detector-combines-pmt-and-semiconductor-diode-technologies.html>> [retrieved on 20190307]

Citation (opposition)

- Opponent : Carl Zeiss Microscopy GmbH
- JP H11329338 A 19991130 - HAMAMATSU PHOTONICS KK
 - "Advanced Time-Correlated Single Photon Counting Techniques", 1 January 2005, SPRINGER, article BECKER W.: "PMT Modules", pages: 244 - 365, XP055967235
 - MARTINI JOERG, TOENSING KATJA, DICKOB MICHAEL, ANSELMETTI DARIO: "2-photon laser scanning microscopy on native human cartilage", SPIE SMART STRUCTURES AND MATERIALS + NONDESTRUCTIVE EVALUATION AND HEALTH MONITORING, 2005, SAN DIEGO, CALIFORNIA, UNITED STATES, SPIE, US, vol. 5860, 30 June 2005 (2005-06-30), US, pages 586003, XP055967229, ISSN: 0277-786X, ISBN: 978-1-5106-4548-6, DOI: 10.1117/12.632940
 - BELISLE JONATHAN: "Design and Assembly of a Multimodal Nonlinear Laser Scanning Microscope", THESIS, 1 January 2006 (2006-01-01), XP055967230, [retrieved on 20221003]
 - ANONYMOUS: "PMTS FOR 2-HOTON IMAGING", LABRIGGER, 11 October 2010 (2010-10-11), XP055967232, Retrieved from the Internet <URL:<http://labrigger.com/blog/2010/10/11/pmts-for-2-photon-imaging/>> [retrieved on 20221003]
 - ANONYMOUS: "Metal Package PMT with Cooler Photosensor Modules H7422 Series", HAMAMATSU - DATASHEET, 10 March 2001 (2001-03-10), pages 14 - 17, XP055967244, [retrieved on 20221003]
 - CHRISTIE JASON M., JAHR CRAIG E.: "Dendritic NMDA Receptors Activate Axonal Calcium Channels", NEURON, ELSEVIER, AMSTERDAM, NL, vol. 60, no. 2, 1 October 2008 (2008-10-01), AMSTERDAM, NL, pages 298 - 307, XP055967242, ISSN: 0896-6273, DOI: 10.1016/j.neuron.2008.08.028
 - BENDER KEVIN J., FORD CHRISTOPHER P., TRUSSELL LAURENCE O.: "Dopaminergic Modulation of Axon Initial Segment Calcium Channels Regulates Action Potential Initiation", NEURON, ELSEVIER, AMSTERDAM, NL, vol. 68, no. 3, 1 November 2010 (2010-11-01), AMSTERDAM, NL, pages 500 - 511, XP055967238, ISSN: 0896-6273, DOI: 10.1016/j.neuron.2010.09.026
 - "Thermoelectric Handbook", 1 January 2006, article MELCOR: "Thermoelectric History / General Information", pages: 1 - 13, XP055967253
 - ANONYMOUS: "Thermo Module", KOMATSU ELECTRONICS - CATALOGUE, 9 June 2010 (2010-06-09), pages 1 - 12, XP055967247, [retrieved on 20221003]
 - "Handbook of Biological Confocal Microscopy", 1 January 2006, SPRINGER, article PAWLEY JAMES B.: "The Photomultiplier Tube", pages: 28 - 31, XP055967251
 - ANONYMOUS: "Photomultiplier tube", WIKIPEDIA, THE FREE ENCYCLOPEDIA, 14 July 2011 (2011-07-14), XP055967249, Retrieved from the Internet <URL:https://en.wikipedia.org/wiki/Photomultiplier_tube> [retrieved on 20221003]
 - BECKER W., SU B., HOLUB O., WEISSHART K.: "FLIM and FCS detection in laser-scanning microscopes: Increased efficiency by GaAsP hybrid detectors", MICROSCOPY RESEARCH AND TECHNIQUE., WILEY-LISS, CHICHESTER., GB, vol. 74, no. 9, 3 October 2010 (2010-10-03), GB , pages 804 - 811, XP055967250, ISSN: 1059-910X, DOI: 10.1002/jemt.20959
 - HAMAMATSU, PHOTOMULTIPLIER TUBES - BASICS AND APPLICATIONS, 2006
 - JAMES B. PAWLEY: "Handbook of Biological Confocal Microscopy", 1 January 2006, SPRINGER NEW YORK, NY, ISBN: 978-0-387-25921-5, article INOUÉ SHINYA: "Foundations of Confocal Scanned Imaging in Light Microscopy", pages: 16 - 17, XP093103891, DOI: 10.1007/978-0-387-45524-2
 - PAWLEY JAMES B.: "Handbook Of Biological Confocal Microscopy", 1 January 2006, SPRINGER , New York, NY , ISBN: 978-0-387-25921-5, article PAWLEY JAMES B.: "Fundamental Limits in Confocal Microscopy", pages: 38 - 41, XP093103896, DOI: 10.1007/978-0-387-45524-2
 - PAWLEY JAMES B.: "Handbook Of Biological Confocal Microscopy", 1 January 2006, SPRINGER , New York, NY , ISBN: 978-0-387-25921-5, article GRATTON ENRICO, MARTIN J. VANDEVEN: "Laser Sources for Confocal Microscopy", pages: 84 - 85, XP093103901, DOI: 10.1007/978-0-387-45524-2

- PAWLEY JAMES B.: "Handbook Of Biological Confocal Microscopy", 1 January 2006, SPRINGER , New York, NY , ISBN: 978-0-387-25921-5, article CHENG PING-CHIN: "The Contrast Formation in Optical Microscopy", pages: 200 - 201, XP093103906, DOI: 10.1007/978-0-387-45524-2
- PAWLEY JAMES B.: "Handbook Of Biological Confocal Microscopy", 1 January 2006, SPRINGER , New York, NY , ISBN: 978-0-387-25921-5, article STELZER ERNST H-K: "The Intermediate Optical System of Laser-Scanning Confocal Microscopes", pages: 218 - 219, XP093103914, DOI: 10.1007/978-0-387-45524-2
- PAWLEY JAMES B.: "Handbook Of Biological Confocal Microscopy", 1 January 2006, SPRINGER , New York, NY , ISBN: 978-0-387-25921-5, article CANNELL MARK B, ANGUS MCMORLAND, CHRISTIAN SOELLER: "Image Enhancement by Deconvolution", pages: 498 - 499, XP093103919, DOI: 10.1007/978-0-387-45524-2

Cited by

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