



US009411150B2

(12) **United States Patent**  
**Nagase**

(10) **Patent No.:** **US 9,411,150 B2**  
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **ENDOSCOPE IMAGE PICKUP UNIT**

(71) Applicant: **OLYMPUS CORPORATION**, Tokyo (JP)

(72) Inventor: **Masatoshi Nagase**, Kokubunji (JP)

(73) Assignee: **OLYMPUS CORPORATION**, Tokyo (JP)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/751,923**

(22) Filed: **Jun. 26, 2015**

(65) **Prior Publication Data**

US 2015/0293343 A1 Oct. 15, 2015

**Related U.S. Application Data**

(63) Continuation of application No. PCT/JP2014/061889, filed on Apr. 28, 2014.

(30) **Foreign Application Priority Data**

Aug. 5, 2013 (JP) ..... 2013-162449

(51) **Int. Cl.**

**A61B 1/04** (2006.01)  
**H04N 9/47** (2006.01)  
**H04N 7/18** (2006.01)  
**G02B 23/24** (2006.01)  
**A61B 1/05** (2006.01)  
**H04N 5/335** (2011.01)  
**H04N 5/225** (2006.01)

(52) **U.S. Cl.**

CPC ..... **G02B 23/2484** (2013.01); **A61B 1/051** (2013.01); **H04N 5/2253** (2013.01); **H04N 5/335** (2013.01); **H04N 2005/2255** (2013.01)

(58) **Field of Classification Search**

CPC ..... A61B 1/00064; A61B 1/051; G02B 23/2484; H04N 5/335; H04N 5/2253  
USPC ..... 348/76  
See application file for complete search history.

(56) **References Cited**

**FOREIGN PATENT DOCUMENTS**

JP S63-68128 A 3/1988  
JP 2007-073958 A 3/2007  
JP 2013-098182 A 5/2013  
JP 2013-123628 A 6/2013

**OTHER PUBLICATIONS**

International Search Report dated Aug. 5, 2014 issued in PCT/JP2014/061889.

*Primary Examiner* — Mehrdad Dastouri

*Assistant Examiner* — Kristin Dobbs

(74) *Attorney, Agent, or Firm* — Scully, Scott, Murphy & Presser, PC

(57) **ABSTRACT**

In an endoscope image pickup unit including an image pickup device having connecting terminal portions on a back surface, and a flexible printed wiring board having a first region on which the image pickup device is mounted, a second region in which an external connection portion for connecting an electric cable is formed, a bent portion provided between the first region and the second region, and two conductive layers, input and output pads for performing input of a voltage to and input and output of signals to and from the image pickup device are disposed at a position closer to the bent portion than ground pads for connecting the image pickup device to a ground, and input and output wirings to be connected to the input and output pads are formed from a same conductive layer as the input and output pads.

**2 Claims, 9 Drawing Sheets**

