



US009410828B2

(12) **United States Patent**  
**Nagata et al.**

(10) **Patent No.:** **US 9,410,828 B2**

(45) **Date of Patent:** **Aug. 9, 2016**

(54) **SERVOMOTOR AND ENCODER**

(58) **Field of Classification Search**

(71) Applicant: **MITSUBISHI ELECTRIC CORPORATION**, Chiyoda-ku, Tokyo (JP)

CPC .. G06F 3/0312; G01D 5/3473; G01D 5/2451; G01D 5/2452; G01D 5/2454; G01D 5/2458  
See application file for complete search history.

(72) Inventors: **Hiroshi Nagata**, Chiyoda-ku (JP);  
**Toshikazu Satone**, Chiyoda-ku (JP);  
**Masanori Nimura**, Chiyoda-ku (JP);  
**Hajime Nakajima**, Chiyoda-ku (JP)

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(73) Assignee: **Mitsubishi Electric Corporation**, Tokyo (JP)

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 320 days.

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(21) Appl. No.: **14/347,773**

Communication dated Dec. 9, 2015 from the German Patent and Trademark Office in counterpart application No. 112013006990.3.

(22) PCT Filed: **Apr. 24, 2013**

(Continued)

(86) PCT No.: **PCT/JP2013/062082**

§ 371 (c)(1),

(2) Date: **Mar. 27, 2014**

*Primary Examiner* — Francis M Legasse, Jr.

(74) *Attorney, Agent, or Firm* — Sughrue Mion, PLLC

(87) PCT Pub. No.: **WO2014/174614**

PCT Pub. Date: **Oct. 30, 2014**

(57) **ABSTRACT**

An encoder includes a first multiple rotation counter that generates first multiple rotation data using a rotation signal indicating one rotation of a rotational shaft of a motor, a second multiple rotation counter that generates second multiple rotation data using the rotation signal, a first cumulative-number calculation unit that calculates first accumulated multiple rotation data using an angle signal indicating a rotational angle of the rotational shaft, a second cumulative-number calculation unit that calculates second accumulated multiple rotation data using the angle signal, and a first comparative diagnosis unit that diagnoses whether the encoder has a fault by performing a comparison to determine whether the first multiple rotation data, the second multiple rotation data, the first accumulated multiple rotation data, and the second accumulated multiple rotation data are a same value.

(65) **Prior Publication Data**

US 2016/0131508 A1 May 12, 2016

(51) **Int. Cl.**

**G01D 18/00** (2006.01)

**G01D 5/347** (2006.01)

(Continued)

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

CPC ..... **G01D 18/00** (2013.01); **G01D 5/3473** (2013.01); **G06F 3/0312** (2013.01); **G01D 5/2451** (2013.01); **G01D 5/2454** (2013.01); **G01D 5/2458** (2013.01)

**12 Claims, 4 Drawing Sheets**

