



(12) **United States Patent**
Zavis

(10) **Patent No.:** **US 9,410,988 B2**
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **CABLE WITH LED CONNECTION INDICATOR AND METHODS OF USING SAME**

(71) Applicant: **Meggitt (Orange County), Inc.**, Irvine, CA (US)

(72) Inventor: **Wayne Zavis**, San Juan Capistrano, CA (US)

(73) Assignee: **MEGGITT (ORANGE COUNTY), INC.**, Irvine, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 177 days.

(21) Appl. No.: **14/153,997**

(22) Filed: **Jan. 13, 2014**

(65) **Prior Publication Data**

US 2014/0210631 A1 Jul. 31, 2014

Related U.S. Application Data

(60) Provisional application No. 61/758,850, filed on Jan. 31, 2013, provisional application No. 61/807,018, filed on Apr. 1, 2013.

(51) **Int. Cl.**

G08B 5/22 (2006.01)
G01R 5/28 (2006.01)
G08B 21/18 (2006.01)
H01R 13/641 (2006.01)
H01R 13/717 (2006.01)
G01D 3/08 (2006.01)
G01R 13/00 (2006.01)
G01R 31/28 (2006.01)

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

CPC **G01R 5/28** (2013.01); **G08B 21/18** (2013.01); **G08B 21/185** (2013.01); **H01R 13/641** (2013.01); **H01R 13/7175** (2013.01); **G01D 3/08** (2013.01); **G01R 13/00** (2013.01); **G01R 31/2829** (2013.01)

(58) **Field of Classification Search**

CPC G01R 5/28; G01R 13/00; G01R 31/2829; H01R 13/7175; H01R 13/641; G01D 3/08; B60R 1/12; G09F 9/33; G08B 5/36; G08B 21/18; G08B 21/185
USPC 340/815.4, 815.45, 815.49, 521, 522, 340/514, 635, 653, 657; 324/537, 522, 133, 324/384, 76.11, 109
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,070,290 A 1/1978 Crosby
4,426,612 A 1/1984 Wicnienski et al.
5,359,290 A * 10/1994 Cervas F02P 17/00 324/133

(Continued)

OTHER PUBLICATIONS

International Search Report and Written Opinion for International Application No. PCT/US14/11438, filed Jan. 14, 2014, dated May 13, 2014.

(Continued)

Primary Examiner — Anh V La

(74) *Attorney, Agent, or Firm* — Hackler Daghighian & Martino

(57) **ABSTRACT**

An interconnection verification device for sensors and a software implementation of interconnection verification between cabling and sensors in large, multi-channel test configurations are disclosed. In a preferred embodiment the sensor assembly comprises a sensor and an indicator electrically connected inline with the sensor. In a preferred embodiment the indicator is an LED. In an even more preferred embodiment, the sensor is an IEPE.

23 Claims, 7 Drawing Sheets

