



US 20230231938A1

(19) **United States**

(12) **Patent Application Publication**  
**Mahany et al.**

(10) **Pub. No.: US 2023/0231938 A1**

(43) **Pub. Date: Jul. 20, 2023**

(54) **ETHERCAT DEVICE**

**Publication Classification**

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(51) **Int. Cl.**  
**H04L 69/22** (2006.01)  
**G06F 9/4401** (2006.01)  
**H04J 3/06** (2006.01)  
**H04L 12/10** (2006.01)

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(52) **U.S. Cl.**  
CPC ..... **H04L 69/22** (2013.01); **G06F 9/4418**  
(2013.01); **H04J 3/0658** (2013.01); **H04L**  
**12/10** (2013.01)

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(21) Appl. No.: **18/125,857**

(22) Filed: **Mar. 24, 2023**

**Related U.S. Application Data**

(62) Division of application No. 17/030,439, filed on Sep.  
24, 2020.

**Foreign Application Priority Data**

Oct. 30, 2019 (IN) ..... 201911043952

(57) **ABSTRACT**

An EtherCAT device is disclosed. The EtherCAT device comprises a data input port to receive a signal representing data, the signal representing one of a plurality of possible logical values; and a degradation calculation circuit. The degradation calculation circuit is to read, demodulate, and convert the received signal into a digital domain representation; process the digital domain representation into slices, where the value of the received signal at a respective time is represented in a respective one of the slices; determine differences between the respective slices and reference slices; identify an intended logical value of the received signal responsive to the determined differences; determine a quantification of error at the respective time responsive to the identified logical value and the determined differences; and determine a signal quality index responsive to the determined quantification of error.

