DIN EN ISO 13856-1:2013-08 (E)

Safety of machinery - Pressure-sensitive protective devices - Part 1: General prin ciples for the design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)

Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Terms and definitions 7

4 Requirements for design and testing 8
4.1 General 8
4.2 Actuating force 10
4.3 Response time 12
4.4 Static loading 12
4.5 Number of operations 12
4.6 Output state of sensor 12
4.7 Response of output signal switching device(s) to actuating force 13
4.8 Access for maintenance 13
4.9 Adjustments 13
4.10 Connections 14
4.11 Environmental conditions 14
4.12 Power supply 15
4.13 Electrical equipment 15
4.14 Enclosure 16
4.15 Performance levels and categories for SRP/CSs in accordance with ISO 13849-1 16
4.16 Sensor fittings 17
4.17 Tripping 17
4.18 Slip-resistance 17
4.19 Additional coverings of top surfaces of sensor(s) 18
4.20 Failure due to blocking or wedging 18

5 Marking 18
5.1 General 18
5.2 Marking of control unit 18
5.3 Marking of sensor 18
5.4 Marking of other components 18

6 Information for use 18
6.1 General 18
6.2 Instructions for use 19

7 Testing 21
7.1 General 21
7.2 Sensor test sample 22
7.3 Test pieces for load tests 22
7.4 Test No. 1 -- Actuating force 23
7.5 Test No. 2 -- Response time 25
7.6 Test No. 3 -- Static loading 27

7.7 Test No. 4 -- Number of operations 27
7.8 Test No. 5 -- Output state of sensor 32
7.9 Test No. 6 -- Response of output signal switching device to actuating force 33
7.10 Test No. 7 -- Access for maintenance 33
7.11 Test No. 8 -- Adjustments 33
7.12 Test No. 9 -- Connections 33
7.13 Test No. 10 -- Environmental conditions 33
7.14 Test No. 11 -- Electrical power supply 35
7.15 Test No. 12 -- Electrical equipment 35
7.16 Test No. 13 -- Enclosure 35
7.17 Test No. 14 -- PL according to ISO 13849-1 35
7.18 Test No. 15 -- Slip-resistance 35
7.19 Test No. 16 -- Additional coverings of top surfaces of sensor(s) 35
7.20 Test No. 17 -- Failure due to blocking or wedging 36

Annex A (normative) Timing diagrams for pressure-sensitive mats/floors with/without reset 37

Annex B (informative) Application notes 40

Annex C (informative) Design notes 45

Annex D (informative) Installation, commissioning and testing 50

Bibliography 52

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 53