# DIN EN 1643:2024-02 (E)

## Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - Valve proving systems for automatic shut-off valves

## Contents

Page


European foreword ....4

Introduction ....5

1 Scope ....6

2 Normative references ....6

3 Terms and definitions ....7

4 Classification ....9
4.1 Classes of control ....9
4.2 Groups of control ....9
4.3 Classes of control functions ....9
4.4 Types of DC supplied controls ....9

5 Test conditions and uncertainty of measurements ....9

6 Design and construction ....9
6.1 General ....9
6.2 Mechanical parts of the control ....9
6.3 Materials ....9
6.4 Gas connections ....10
6.5 Electrical parts of the control ....10
6.6 Protection against internal faults for the purpose of functional safety ....10
6.101 Additional constructional requirements for VPS ....13

7 Performance ....13
7.1 General ....13
7.2 Leak-tightness ....13
7.3 Torsion and bending ....15
7.4 Rated flow rate ....15
7.5 Durability ....15
7.6 Performance tests for electronic controls ....15
7.7 Long-term performance for electronic controls ....15
7.8 Data exchange ....15
7.101 Functional requirements ....16

8 Electrical requirements ....18
8.1 General ....18
8.2 Protection by enclosure ....18

9 Electromagnetic compatibility (EMC) ....18
9.1 Protection against environmental influences ....18
9.2 Supply voltage variations below 85 % of rated voltage ....19
9.3 Voltage dips and interruptions ....19
9.4 Supply frequency variations ....19
9.5 Surge immunity tests ....20
9.6 Electrical fast transient/burst ....20
9.7 Immunity to conducted disturbances induced by radio frequency fields ....20
9.8 Immunity to radiated disturbances induced by radio frequency fields ....21

9.9 Electrostatic discharge tests ... 21
9.10 Power frequency magnetic field immunity tests ... 21
9.11 Harmonics and interharmonics including mains signalling at AC power port, low frequency immunity tests ... 21

10 Marking, instructions ... 22
10.1 Marking ... 22
10.2 Instructions ... 22
10.3 Warning notice ... 22

Annex A (informative) Abbreviations and Symbols ... 23

Annex B (informative) Leak-tightness tests for gas controls - volumetric method ... 24

Annex C (informative) Leak-tightness tests for gas controls - pressure loss method ... 25

Annex D (normative) Calculation of pressure loss into leakage rate ... 26

Annex E (normative) Electrical/electronic component fault modes ... 27

Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EU Directive 2014/68/EU ... 29

Annex G (normative) Materials for pressurized parts ... 30

Annex H (normative) Additional materials for pressurized parts ... 31

Annex I (normative) Requirements for controls used in DC supplied burners and appliances burning gaseous or liquid fuels ... 32

I.1 Introduction ... 32

Annex J (normative) Method for the determination of a Safety Integrity Level (SIL) ... 34

Annex K (normative) Method for the determination of a Performance Level (PL) ... 35

Annex L (informative) Relationship between Safety Integrity Level (SIL) and Performance Level (PL) ... 36

Annex M (normative) Reset functions ... 37

Annex N (informative) Guidance document on Environmental Aspects ... 38

Annex O (normative) Seals of elastomer, cork and synthetic fibre mixtures ... 39

Annex AA (informative) Application Guidance ... 40

AA.1 General ... 40

AA.2 Use of a VPS ... 40

Annex ZA (informative) Relationship between this document and the essential requirements of Directive 2009/142/EC aimed to be covered ... 41

Annex ZB (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 aimed to be covered ... 42

Annex ZC (informative) Relationship between this document and the essential requirements of Directive 2014/68/EU aimed to be covered ... 43

Bibliography ... 44