

DIN EN 16678:2024-02 (E)

Safety and control devices for gas burners and gas burning appliances - Automatic shut-off valves for operating pressure of above 500 kPa up to and including 6300 kPa

| Contents | | Page |
|-------------------------|---|-------------|
| European foreword | | 4 |
| Introduction | | 5 |
| 1 | Scope | 7 |
| 2 | Normative references | 7 |
| 3 | Terms and definitions | 9 |
| 4 | Classification | 10 |
| 4.1 | Classes of control | 10 |
| 4.2 | Groups of control | 10 |
| 4.3 | Classes of control functions | 10 |
| 4.4 | Types of DC supplied controls | 10 |
| 5 | Units of measurement and test conditions | 10 |
| 6 | Construction requirements | 10 |
| 6.1 | General | 10 |
| 6.2 | Mechanical parts of the control | 10 |
| 6.3 | Materials | 12 |
| 6.4 | Gas connections | 13 |
| 6.5 | Electrical parts of the control | 14 |
| 6.6 | Protection against internal faults for the purpose of functional safety | 14 |
| 6.101 | Pneumatic and hydraulic actuating mechanisms | 14 |
| 7 | Performance | 15 |
| 7.1 | General | 15 |
| 7.2 | Leak-tightness | 15 |
| 7.3 | Torsion and bending | 15 |
| 7.4 | Rated flow rate | 16 |
| 7.5 | Durability | 16 |
| 7.6 | Performance tests for electronic controls | 17 |
| 7.7 | Long-term performance for electronic controls | 17 |
| 7.8 | Data Exchange | 17 |
| 7.101 | Closing function | 17 |
| 7.102 | Closing force | 18 |
| 7.103 | Delay time and opening time | 18 |
| 7.104 | Closing time | 18 |
| 7.105 | Sealing force | 19 |
| 7.106 | Closed position indicator switch | 19 |
| 7.107 | Endurance | 20 |
| 8 | Electrical requirements | 21 |
| 8.1 | General | 21 |
| 8.2 | Protection by enclosure | 21 |
| 8.101 | Switches | 21 |
| 8.102 | Plug connections | 22 |

| | | |
|-------|--|----|
| 8.103 | Power saving circuits | 22 |
| 9 | Electromagnetic compatibility (EMC) | 22 |
| 9.1 | Protection against environmental influences | 22 |
| 9.2 | Supply voltage variations below 85 % of rated voltage | 23 |
| 9.3 | Voltage dips and interruptions | 23 |
| 9.4 | Supply frequency variations | 23 |
| 9.5 | Surge immunity tests | 23 |
| 9.6 | Electrical fast transient/burst | 23 |
| 9.7 | Immunity to conducted disturbances induced by radio frequency fields | 23 |
| 9.8 | Immunity to radiated disturbances induced by radio frequency fields | 23 |
| 9.9 | Electrostatic discharge tests | 23 |
| 9.10 | Power frequency magnetic field immunity tests | 23 |
| 9.11 | Harmonics and interharmonics including mains signalling at a. c. power port, low frequency immunity tests | 23 |
| 10 | Marking, instructions | 23 |
| 10.1 | Marking | 23 |
| 10.2 | Instructions | 24 |
| 10.3 | Warning notice | 25 |
| | Annex A (informative) Abbreviations and Symbols | 26 |
| | Annex B (informative) Leak-tightness test for gas controls - volumetric method | 27 |
| | Annex C (informative) Leak-tightness test for gas controls - pressure loss method | 28 |
| | Annex D (normative) Calculation of pressure loss into leakage rate | 29 |
| | Annex E (normative) Electrical/electronic component fault modes | 30 |
| | Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EU Directive 2014/68/EU | 31 |
| | Annex G (normative) Materials for pressurized parts | 32 |
| | Annex H (normative) Additional materials for pressurized parts | 33 |
| | Annex I (normative) Requirements for controls used in DC supplied gas burners and appliances burning gaseous or liquid fuels | 34 |
| | Annex J (normative) Method for the determination of a Safety Integrity Level (SIL) | 35 |
| | Annex K (normative) Method for the determination of a Performance Level (PL) | 36 |
| | Annex L (informative) Relationship between Safety Integrity Level (SIL) and Performance Level (PL) | 39 |
| | Annex M (normative) Reset functions | 40 |
| | Annex N (informative) Guidance document on Environmental Aspects | 41 |
| | Annex O (normative) Seals of elastomer, cork and synthetic fibre mixtures | 42 |
| | Annex ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 aimed to be covered | 43 |
| | Bibliography | 46 |