

DIN EN 161:2024-02 (E)

Automatic shut-off valves for gas burners and gas appliances

Contents		Page
European foreword		4
Introduction		6
1	Scope	8
2	Normative references	8
3	Terms and definitions	9
4	Classification	11
4.1	Classes of control	11
4.2	Groups of control	11
4.3	Classes of control functions	11
4.4	Types of DC supplied controls	11
5	Test conditions and uncertainty of measurements	11
6	Design and construction	11
6.1	General	11
6.2	Mechanical parts of the control	11
6.3	Materials	14
6.4	Gas connections	15
6.5	Electrical parts of the control	15
6.6	Protection against internal faults for the purpose of functional safety	16
6.101	Pneumatic and hydraulic actuating mechanisms	16
7	Performance	16
7.1	General	16
7.2	Leak-tightness	16
7.3	Torsion and bending	16
7.4	Rated flow rate	17
7.5	Durability	17
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	19
7.105	Sealing force	19
7.106	Closed position indicator switch	21
7.107	Endurance	21
8	Electrical requirements	23
8.1	General	23
8.2	Protection by enclosure	23
8.101	Switches	23
8.102	Plug connections	23
8.103	Power saving circuits	24
9	Electromagnetic compatibility (EMC)	24
9.1	Protection against environmental influences	24
9.2	Supply voltage variations below 85 % of rated voltage	24

9.3	Voltage dips and interruptions	24
9.4	Supply frequency variations	25
9.5	Surge immunity tests	25
9.6	Electrical fast transient/burst	25
9.7	Immunity to conducted disturbances induced by radio frequency fields	25
9.8	Immunity to radiated disturbances induced by radio frequency fields	25
9.9	Electrostatic discharge tests	25
9.10	Power frequency magnetic field immunity tests	25
9.11	Harmonics and interharmonics including mains signalling at a. c. power port, low frequency immunity tests	25
10	Marking, instructions	25
10.1	Marking	25
10.2	Instructions	26
10.3	Warning notice	27
	Annex A (informative) Abbreviations and symbols	28
	Annex B (informative) Leak-tightness test for gas controls - volumetric method	29
	Annex C (informative) Leak-tightness test for gas controls - pressure loss method	30
	Annex D (normative) Calculation of pressure loss into leakage rate	31
	Annex E (normative) Electrical/electronic component fault modes	32
	Annex F (normative) Additional requirements for safety accessories and pressure accessories as defined in EU Directive 2014/68/EU	33
	Annex G (normative) Materials for pressurized parts	34
	Annex H (normative) Additional materials for pressurized parts	35
	Annex I (normative) Requirements for controls used in DC supplied burners and appliances burning gaseous or liquid fuels	36
	Annex J (normative) Method for the determination of a Safety Integrity Level (SIL)	37
	Annex K (normative) Method for the determination of a Performance Level (PL)	38
K.1	Scope	38
K.2	Normative references	38
K.3	Terms and definitions	38
K.4	Performance	38
K.5	Marking, instructions	40
	Annex L (informative) Relationship between Safety Integrity Level (SIL) and Performance Level (PL)	41
	Annex M (normative) Reset functions	42
	Annex N (informative) Guidance document on Environmental Aspects	43
	Annex O (normative) Seals of elastomer, cork and synthetic fibre mixtures	44
	Annex AA (informative) Model of a FMEA for valves	45
	Annex ZA (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 aimed to be covered	63
	Bibliography	66