SLOVENSKI STANDARD
oSIST prEN IEC 60730-2-8:2024

01-maj-2024

Avtomatske električne krmilne naprave - 2-8. del: Posebne zahteve za električno krmiljene vodne ventile, vključno z mehanskimi zahtevami

Automatic electrical controls - Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

Dispositifs de commande électriques automatiques - Partie 2-8: Exigences particulières pour les électrovannes hydrauliques, y compris les exigences mécaniques

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IEC TC 72 : AUTOMATIC ELECTRICAL CONTROLS	
SECRETARIAT: United States of America	SECRETARY: Ms Grace Roh
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☒ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
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TITLE:

Automatic electrical controls - Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATIC ELECTRICAL CONTROLS –

Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

FOREWORD

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IEC 60730-2-8 has been prepared by IEC technical committee 72: automatic electrical controls. It is an International Standard.

This fourth edition of IEC 60730-2-8 cancels and replaces the third edition IEC 60730-2-8:2018 and Amendment 1:2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

adoption to IEC 60730-1:2022 with all its significant changes to IEC 60730-1:2013, Amendment 1:2015 and Amendment 2:2020.

159 The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

160
161 Full information on the voting for its approval can be found in the report on voting indicated in
162 the above table.

163 The language used for the development of this International Standard is English.

164 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
165 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
166 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
167 described in greater detail at www.iec.ch/publications.

168 A list of all parts of the IEC 60730 series, under the general title: automatic electrical control, can
169 be found on the IEC website.

170 This part 2-8 is intended to be used in conjunction with IEC 60730-1:2022. Consideration may
171 be given to future editions of, or amendments to, IEC 60730-1.

172 This part 2-8 supplements or modifies the corresponding clauses in IEC 60730-1, so as to
173 convert that publication into the IEC standard: Particular requirements for electrically operated
174 water valves, including mechanical requirements .

175 Where this part 2-8 states "addition", "modification" or "replacement", the relevant requirement,
176 test specification or explanatory matter in part 1 should be adapted accordingly.

177 Where no change is necessary part 2-8 indicates that the relevant clause or subclause applies.

178 In the development of a fully international standard it has been necessary to take into
179 consideration the differing requirements resulting from practical experience in various parts of
180 the world and to recognize the variation in national electrical systems and wiring rules.

181 The reader's attention is drawn to the fact that Annex Q to Annex T list all of the "in-some-
182 country" clauses on differing practices of a less permanent nature relating to the subject of this
183 document.

184 In this publication:

185 1) The following print types are used:
186 – requirements proper: in roman type;
187 – *test specifications: in italic type;*
188 – explanatory matter: in smaller roman type.
189 – Defined terms: **bold type**.
190 2) Subclauses, notes or items which are additional to those in Part 1 are numbered starting
191 from 101, additional annexes are lettered AA, BB, etc.

192

193
194

195 The committee has decided that the contents of this document will remain unchanged until the
196 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
197 specific document. At this date, the document will be

198 • reconfirmed,
199 • withdrawn,
200 • replaced by a revised edition, or
201 • amended.

202

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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AUTOMATIC ELECTRICAL CONTROLS –

Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

1 Scope

Replacement:

This document applies to **electrically operated water valves**

- for use in, on, or in association with equipment for household appliance and similar use;

NOTE 1 Throughout this document, the word "equipment" means "appliance and equipment" and "control" means "electrically operated water valve".

EXAMPLE 1 **Electrically operated water valves** for appliances within the scope of IEC 60335.

- for building automation within the scope of ISO 16484 series and IEC 63044 series (HBES/BACS);

EXAMPLE 1 Independently mounted **water valves**, controls in smart grid systems and controls for building automation systems within the scope of ISO 16484-2.

- for equipment that is used by the public, such as equipment intended to be used in shops, offices, hospitals, farms and commercial and industrial applications;

EXAMPLE 2 **Electrically operated water valves** for commercial catering, heating and air-conditioning equipment.

- that are **smart enabled electrically operated water valves**;

EXAMPLE 3 Smart grid control, remote interfaces/control of energy-consuming equipment including computer or smart phone.

- that are AC or DC powered **electrically operated water valves** with a rated voltage not exceeding 690 V AC or 600 V DC;
- used in, on, or in association with equipment that use electricity, gas, oil, solid fuel, solar thermal energy, etc., or a combination thereof;
- utilized as part of a **control system** or **controls** which are mechanically integral with **multifunctional controls** having non-electrical outputs;
- using NTC or **PTC thermistors** and to discrete **thermistors**, requirements for which are contained in Annex J;
- that responsive to or controlling such characteristics as temperature, pressure, passage of time, humidity, light, electrostatic effects, flow, or liquid level, current, voltage, acceleration, or combinations thereof;
- **actuators** and to **valve** bodies which are designed to be fitted to each other.
- as well as manual controls when such are electrically and/or mechanically integral with automatic controls.

NOTE 2 Requirements for manually actuated mechanical switches not forming part of an automatic control are contained in IEC 61058-1-1.

This document applies to

– the inherent safety of **electrically operated water valves**, and

– functional safety of **electrically operated water valves** and safety related systems,

– controls where the performance (for example the effect of EMC phenomena) of the product can impair the overall safety and performance of the controlled system,

– the operating values, operating times, and operating sequences where such are associated with equipment safety.

This document specifies the requirements for construction, operation and testing of **electrically operated water valves** used in, on, or in association with an equipment.

This document contains requirements for electrical features of **water valves** and requirements for mechanical features of **valves** that affect their intended operation.

This document does not

- apply to **electrically operated water valves** intended exclusively for industrial process applications unless explicitly mentioned in the relevant part 2 or the equipment standard. However, this document can be applied to evaluate automatic electrical controls intended specifically for industrial applications in cases where no relevant safety standard exists.
- apply to
  - **electrically operated water valves** of nominal connection size above DN 50;
  - **electrically operated water valves** for admissible **nominal pressure rating** above 1,6 MPa;
  - food dispensers;
  - detergent dispensers;
  - steam valves;
- take into account the **response value** of an **automatic action** of a **electrically operated water valve**, if such a **response value** is dependent upon the method of mounting the control in the equipment. Where a **response value** is of significant purpose for the protection of the **user**, or surroundings, the value defined in the appropriate equipment standard or as determined by the manufacturer will apply.
- address the integrity of the output signal to the network devices, such as interoperability with other devices unless it has been evaluated as part of the control system.
- cover the prevention of contamination of drinking water as a result of contact with materials.

Throughout this document, where it can be used unambiguously, the term:

– "**valve**" is used to denote an **electrically operated water valve** (including **actuator** and **valve body assembly**);

– "**actuator**" means "electrically operated mechanism or prime mover";

– "**valve body**" means "**valve body assembly**";

– "equipment" includes "appliance" and "control system".

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 65:1981, *Carbon steel tubes suitable for screwing in accordance with ISO 7-1*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 630-2:2011, *Structural steels – Part 2: Technical delivery conditions for structural steels for general purposes*

ISO 1179-1, *Connections for general use and fluid power – Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing – Part 1: Threaded ports*

ISO 4144, *Pipework – Stainless steel fittings threaded in accordance with ISO 7-1*

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.2 Definitions of types of control according to purpose

3.2.13

electrically operated valve

Addition:

Note 101 to entry: A semi-automatic **valve** that is opened manually and closes automatically or vice versa is also covered by this definition.

Add the following definitions:

3.2.13.101

valve
device consisting of an **actuator** connected to a **valve body assembly** and used to stop or regulate the flow of fluid by the closure or partial closure of an orifice

3.2.13.102
water valve
valve intended to be connected to a water supply and to control water flow

3.2.13.103
heating-water valve
valve intended to control the water circulation in heating systems

3.2.13.104
actuator
electrically operated mechanism or prime mover used to effect the opening or closing action of a **valve**

Note 1 to entry: An actuator may be integral with the **valve**, fixed to the **valve body assembly** or delivered as a separate component.

Note 2 to entry: An actuator may also include the **valve** and **closure member**.

3.2.13.105
valve body assembly
assembly comprising the **valve body**, inlet and outlet **end connection**s, the **valve seat**, **closure member** and **stem** or shaft

Note 1 to entry: In some cases, the **stem** and **closure member** may be part of the actuator.

3.2.13.106
valve body
part of the **valve body assembly** which is the main pressure boundary

Note 1 to entry: It provides the water flow passage-ways with **end connection**s.

3.2.13.107
nominal size
numerical designation of size which is common to all components in a fluid-conducting system other than components designated by outside diameter or by thread size

Note 1 to entry: It may be designated by "DN" followed by a convenient round number, for reference purposes only.

Note 2 to entry: Some older international standards refer to **nominal size** as nominal diameter but, for the purpose of this document, the two terms are synonymous.

3.2.13.108
nominal pressure rating
numerical designation of pressure rating

Note 1 to entry: It may be designated by the letters "PN" (also referred to as the pressure number) followed by a convenient round number, for reference purposes only.

3.2.13.109
end connection (end-connection)
valve body configuration provided to make a pressure-tight joint to the fluid-conducting system

3.2.13.110
valve seat
surface of the orifice within the **valve** which makes full contact with the **closure member**

3.2.13.111
closure member
movable part of the **valve** which is positioned in the flow path to modify the rate of flow through the **valve**

Note 1 to entry: A **closure member** may be a plug, ball, disc, vane, gate, etc.

3.2.13.112
stem
component which connects the actuator to, and positions, the **closure member**

Note 1 to entry: For rotary **valves**, the word "shaft" should be used in place of "**stem**".

Note 2 to entry: In some controls, the **stem** may be part of the actuator.

3.2.13.113
fitting
any device such as a reducer, expander, elbow, or T-piece which is attached directly to an end-connection of the **valve body assembly**

3.3 Definitions relating to the function of controls

Add the following definitions:

3.3.101

on-off valve
valve which is open or closed, without any intermediate positions

3.3.102
normally closed valve
valve which is closed when not electrically energized

3.3.103
normally open valve
valve which is open when not electrically energized

3.3.104
modulating valve
valve which has a variable **flow rate** between predetermined flow limits

3.3.105
diverting valve
valve with one or more inputs and outputs which may permit flow from any combination of inputs to outputs

3.3.106
closed position
position of the **closure member** when there is no water flow from the outlet side of the **valve**

3.3.107
travel
displacement of the **closure member** from the **closed position**

3.3.108
rated travel
displacement of the **closure member** from the **closed position** to the **full open position**

3.3.109
open position
position of the **closure member** when there is a flow of water from the outlet side of the **valve**

3.3.110
full(y) open position
position of the **closure member** so that the amount of water flowing through the **valve** is in accordance with the **rated flow rate**

3.3.111
flow rate
volume of water flowing through the **valve** in unit time

3.3.112
rated flow rate
flow rate at the **rated travel** under standard reference conditions of temperature and pressure declared at a given pressure difference

3.3.113
flow factor
factor specifying the amount of water which can pass through the **valve** at a specified pressure difference

Note 1 to entry: The **flow factor** may be referred to as flow coefficient.

Note 2 to entry: The relationship between the different **flow factor**s in use is indicated in Annex AA.

3.3.114
maximum operating pressure differential
declared maximum difference in pressure between inlet and outlet ports of the **valve** against which the actuator can operate the **closure member**

3.3.115
minimum operating pressure differential
declared minimum pressure difference at which the **valve** opens or closes

3.3.116
water hammer
excessive **transient pressure** which can occur in some water supply systems as a result of closing a **valve** as intended