TEST REPORT No. 4552

Manufacturer:	Hengstler GmbH Германия, Uhlandstraße 49, 78554 Aldingen, Germany
Product / sample identification:	Реле, электромеханические реле, реле безопасности, Торговая марка: KACO, HENGSTLER, модель Реле
Test standard / regulatory basis:	Technical Regulation of the Customs Union "On safety of low-voltage equipment" (TR CU 004/2011)

Date of report: 19.05.2026

The test results stated in this report apply only to the sample(s) submitted for testing.

Evaluation legend used in this report: Complies - the sample meets the requirement; Not applicable - the requirement/test item is not applicable to the tested sample.

Test conditions:

Ambient temperature, °C	20 ± 5
Relative humidity, %	30 - 80
Atmospheric pressure, kPa	84 - 115

Test results

TR CU 004/2011 On safety of low-voltage equipment

GOST 12.2.007.0-75

Clause	Requirement / test item	Assessment result
2	**Classes of electrical products according to the method of protection against electric shock**	-
2.1	Five protection classes are established: 0, 01, I, II, III.	Complies
3	**Safety requirements for the electrical product and its parts**	-
3.1	**General requirements**	-
3.1.1	Availability of noise and vibration protection measures.	Complies
3.1.2	Products creating electromagnetic fields shall have protective elements (screens, absorbers, etc.).	Not applicable
3.1.3	Limitation of harmful radiation (thermal, optical, X-ray, etc.) and indication of protective elements in technical specifications.	Not applicable
	Requirements for means limiting the intensity of radiation and ultrasound.	Not applicable
3.1.4	Availability of design elements providing protection against accidental contact with moving, live and heated parts.	Complies
3.1.5	Exclusion of accidental switching on and switching off.	Complies
3.1.6	Arrangement and connection of product parts shall ensure convenience and safety during assembly, inspection, testing and maintenance.	Complies
	Where necessary, products shall be equipped with inspection windows, hatches and local lighting facilities.	Complies
3.1.7	The product design shall prevent incorrect connection during installation.	Complies
	The design of plugs and socket-outlets for voltage above 42 V shall differ from the design of plugs and socket-outlets for voltage 42 V and below.	Complies
3.1.8	Where necessary, products shall be equipped with signalling devices, inscriptions and rating plates.	Complies
	For connection by means of a plug and socket-outlet, the power source shall be connected to the socket-outlet and the load to the plug.	Complies
	Warning signals, inscriptions and plates shall indicate energized condition, voltage presence, insulation breakdown, operating mode, prohibition of access inside without proper precautions, excessive temperature of parts, operation of protective devices, etc.	Complies
	Signs used for warning plates and signalling shall comply with GOST 12.4.026 and be placed on products in locations convenient for viewing.	Complies
3.1.9	Availability of lifting, lowering and holding devices for installation works for products and components with mass exceeding 20 kg.	Not applicable
	Shape, dimensions and rated load capacity of lifting devices shall comply with GOST 4751-73 or GOST 13716-73. Other devices ensuring safe installation and rigging works are permitted.	Not applicable
3.1.10	Fire safety of the product and its elements shall be ensured both in normal and abnormal operating modes.	Complies
3.2	**Requirements for insulation**	-
3.2.1	Selection of insulation for the product and its parts is determined by heat-resistance class, supply voltage level and climatic environmental factors.	Complies
	Values of dielectric strength and insulation resistance shall be specified in standards and technical specifications for particular types of products.	Complies
	For products operating at voltage not higher than 12 V AC and 36 V DC, it is permitted not to state dielectric strength and insulation resistance values in the specified documents.	Not applicable
3.2.2	Insulation of accessible parts shall provide protection against electric shock.	Complies
	Coating of live parts with varnish, enamel or similar materials is not sufficient for protection against direct contact with such parts and against electric arc transfer from live parts to other metal parts.	Complies
3.3	**Requirements for protective earthing**	-
3.3.1	Availability of an earthing element on the equipment, except for equipment of protection classes II and III.	Complies
	Products which may be manufactured without an earthing element and need not be earthed.	Not applicable
3.3.2	Welded or threaded connections for connection of the earthing conductor.	Complies
	By agreement with the customer, the earthing conductor may be connected to the product by soldering or crimping performed with a special tool, fixture or machine.	Not applicable
3.3.3	Compliance of the earthing terminal with GOST 21130-75.	Complies
	Bolts, screws and studs used as fastening parts shall not be used for earthing.	Complies
3.3.4	The bolt (screw, stud) for connection of the earthing conductor shall be made of corrosion-resistant metal or coated with a metal protecting it from corrosion; the contact area shall have no surface paint.	Complies
3.3.5	The earthing bolt (screw, stud) shall be located on the product in a safe and convenient place for connection of the earthing conductor.	Complies

Clause	Requirement / test item	Assessment result
	A permanent earthing symbol shall be placed near the point where the earthing conductor specified in clause 3.3.2 is to be connected.	Complies
	Dimensions of the symbol and method of application shall comply with GOST 21130-75 and, for luminaires, with GOST 17677-82.	Complies
	A contact area for connection of the earthing conductor shall be provided around the bolt (screw, stud). The area shall be protected against corrosion or made of corrosion-resistant metal and shall have no surface paint.	Complies
	Measures shall be taken to prevent loosening of contacts between the earthing conductor and earthing bolt (screw, stud), such as lock nuts or spring washers.	Complies
	Diameters of the bolt (screw, stud) and contact area.	Complies
3.3.6	Use of washers.	Complies
	The washer material shall meet the same requirements as the material of the earthing bolt (screw, stud).	Complies
3.3.7	Electrical connection shall be ensured between all accessible non-current-carrying metal parts which may become live and the earthing elements.	Complies
	Earthing resistance shall not exceed 0.1 Ohm.	Complies
3.3.8	Availability of an earthing element on enclosures, frames, racks, etc.	Complies
3.3.9	Independent connection of separate parts of the product to the earthing element.	Complies
3.3.10	Earthing of product parts installed on moving parts.	Complies
3.3.11	Location of the earthing element of the metal enclosure inside or outside the enclosure.	Complies
3.3.12	Electrical contact between removable and earthed parts of the equipment.	Not applicable
3.4	**Requirements for control devices**	-
3.4.1	Control devices shall be provided with inscriptions or symbols.	Complies
3.4.2	In automatic operating mode, manual controls shall be disabled.	Not applicable
3.4.3	Using manual controls in a sequence different from that specified shall not lead to a hazard.	Complies
	For products having several controls for the same operation from different stations, simultaneous control from different stations shall be prevented.	Not applicable
	Emergency stop buttons shall be made without the above interlock.	Complies
3.4.4	Products having several emergency stop buttons shall use latching buttons.	Not applicable
	Buttons without forced return are permitted when acting on power elements that allow voltage to be supplied only after removal of manual locking.	Not applicable
3.4.5	Controls locked in a set position shall have a position indicator.	Complies
3.4.6	Metal shafts of manual drives and similar parts shall be insulated from live parts and shall have electrical contact with earthed parts.	Not applicable
3.4.7	Surface temperature of controls shall not exceed 40 °C.	Complies
	For equipment with internal temperature equal to or below 100 °C, surface temperature shall not exceed 35 °C. If these temperatures cannot be achieved for technical reasons, measures shall be provided to protect personnel from possible overheating.	Not applicable
3.4.8	The control used for stopping shall be red.	Complies
	The control used for starting (switching on) shall have achromatic colour (black, grey or white). It is permitted to make this control green.	Complies
	A control used alternately for stopping or starting the product shall be achromatic only. Handles of automatic circuit breakers may be yellow-brown.	Complies
	A control acting to prevent product failure shall be yellow.	Not applicable
	A control used for operations other than those listed above shall be achromatic or blue.	Not applicable
3.4.9	Increased size of the emergency stop button.	Complies
3.4.10-3.4.12	Working zones for installation of controls.	Complies
3.4.13-3.4.14	Installation height of measuring instruments.	Complies
3.4.10-3.4.15	Dimensions specified in clauses 3.4.10-3.4.14 may be adopted differently depending on product purpose and operating conditions.	Not applicable
3.4.15	Actuating force of pushbuttons shall not exceed the values specified in Table 2.	Complies
3.5	**Requirements for interlocking**	-
3.5.1	When interlocking is provided, false operation shall be prevented.	Not applicable
3.5.2	Interlocking of products intended for installation in rooms whose entrances are not interlocked and having holding electromagnets or charged springs shall be designed so as to eliminate hazards related to movement of product parts due to accidental removal or application of voltage to control circuits.	Not applicable
3.5.3	By agreement with the customer, instead of interlocks whose design significantly complicates maintenance of electrical products, other measures ensuring safe maintenance may be applied.	Not applicable
3.6	**Requirements for enclosures**	-
3.6.1	Enclosures shall be connected with the main parts of products into a single structure, cover the hazardous area and be removable only with a tool.	Complies

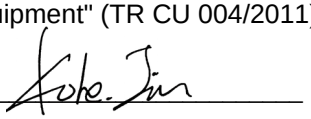
Clause	Requirement / test item	Assessment result
3.6.2	Where necessary, enclosures shall have handles, brackets and other devices for convenient and safe holding during removal or installation.	Complies
3.6.3	When doors and hatches of enclosures are opened or closed, contact with moving parts or live parts shall be prevented.	Complies
3.6.4	The degree of protection against contact with live and moving parts by means of enclosures shall comply with GOST 14254 and be specified in technical specifications for particular products.	Complies
3.6.5	Enclosures shall retain protective properties in normal and abnormal operating modes according to their marking or product documentation.	Complies
3.6.6	Enclosures of products containing contact connections should not be made of thermoplastic materials.	Complies
3.7	**Requirements for terminals and entry devices**	-
3.7.1	Entry of wires into housings through insulating parts.	Complies
3.7.2	Design and material of entry devices shall prevent accidental contact with live parts, as well as short-circuiting of conductors to the housing or between each other.	Complies
3.7.3	There shall be sufficient space inside the entry device for wire entry and termination.	Complies
3.7.4	Screw contact connections shall not be a source of ignition in the "poor contact" mode.	Complies
3.8	**Requirements for warning signalling**	-
3.8.1	Signalling shall be visual or audible.	Complies
	Visual signalling may be provided by continuously lit or flashing lights.	Complies
3.8.2	Application of colours.	Complies
3.8.3	Signal lamps and other visual signalling devices shall have symbols or inscriptions indicating the meaning of signals.	Complies
3.9	**Requirements for marking and distinctive colouring**	-
3.9.1	Plug connectors shall be marked to identify the parts of connectors to be connected to each other. Mating parts of the same connector shall have identical marking.	Complies
	Marking shall be applied on housings of mating connector parts in a visible place. Marking may be omitted if the connector of this type is the only one in the product.	Complies
3.9.2	Terminals of the product shall be marked. Hanging marking tags are not permitted.	Complies
3.9.3	Conductor marking shall be applied at both ends of each conductor in accordance with regulatory and technical documentation.	Complies
3.9.4	Conductor marking shall be made so that it remains on the marked conductor when the conductor is disconnected from the terminal.	Complies
3.9.5	Colour of conductor insulation according to functional purpose.	Complies

Assessment legend

Complies	The sample meets the specified requirement / passed the test.
Not applicable	The requirement / test item is not applicable to the tested object.

Conclusion:

The samples submitted for testing comply with the requirements of the Technical Regulation of the Customs Union "On safety of low-voltage equipment" (TR CU 004/2011).

Report prepared by: 

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