	machine can only be controlled from operator control station in one or more predetermined zones or locations	
9.2.7.3	Stop	-
	Operator control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the motions that can cause a hazardous condition	Not applicable.
	The actuating means to initiate this stop function shall not be marked or labeled as an emergency stop device	Not applicable.
	A machine which is equipped wit cableless control shall have a means of automatically initiating the stopping of the machine and of preventing a potentially hazardous operation	Not applicable
9.2.7.4	Series data communication	-
	In a machine where the control of safety-related functions relies on series data transfer, correct communications shall be ensured by using an error detection method that is able to cope with up to three error bits in any command sequence	Not applicable
9.2.7.5	Use of more than one operator control station	-
	Where a machine has more than one operator control station, measures shall be taken to ensure that only one control station can be enabled at a given time	Not applicable
	An indication of which operator control station is in control of the machine shall be provided at suitable locations as determined by the risk assessment of the machine	Not applicable
9.2.7.6	Battery-powered operator control stations	-
	A variation in the battery voltage shall not cause a hazardous condition	Not applicable
	If one or more potentially hazardous motions are controlled using a battery-powered operator control station, a clear warning shall be given to the operator when a variation in battery voltage exceeds specified limits	Not applicable
	Under those circumstances, the operator control station shall remain functional long enough to put the machine	Not applicable

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	into a non-hazardous condition	
9.3	Protective interlocks	-
9.3.1	Reclosing or resetting of an interlocking safeguard	-
	The reclosing or resetting of an interlocking safeguard shall not initiate machine motion or operation	Pass
9.3.2	Over travel limits	-
	Use of a position sensor or limit switch	Not applicable
9.3.3	Operation of auxiliary functions	-
	The correct operation of auxiliary functions shall be checked by appropriate devices	Not applicable.
	Use of appropriate interlocking	Not applicable.
9.3.4	Interlocks between different operations and for contrary motions	-
	Interlocking shall be provided against incorrect operation	Pass.
9.3.5	Reverse current braking	-
	Use of reverse current braking	Not applicable.
9.4	Control functions in the event of failure	-
9.4.1	General requirements	-
	Provision of control functions in case of failure according to the level of risk assessment	Pass. According to the risk assessment.
9.4.2	Measures to minimize risk in the event of failure	-
9.4.2.1	Use of proven circuit techniques and components	-
	Use of proven circuit techniques and components	Pass. Appropriate components have been used.
.4.2.2	Provisions for redundancy	-
	Provisions for redundancy	Not applicable.
9.4.2.3	Use of diversity	-
	Use of diversity	Not applicable.
9.4.2.4	Functional tests	-
	Carried out automatically by the control system or manually by inspection	Pass.
9.4.3	Protection against maloperation due to earth faults, voltage interruptions and loss of circuit continuity	-
9.4.3.1	Earth faults	-
	Bonding to the protective bonding circuit may be provided according to 8.2 and the devices may be	Pass.

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	connected as described in 9.1.4	
9.4.3.2	Voltage interruptions	-
	Where a memory device is used, proper functioning in the event of power failure shall be ensured to prevent any loss of memory that can result in a hazardous condition	Not applicable
9.4.3.3	Loss of circuit continuity	-
	Where the loss of continuity of safety-related control circuits depending upon sliding contacts can result in hazardous condition, appropriate measures shall be taken	Not applicable.
10	Operator interface and machine-mounted control devices	-
10.1	General	-
10.1.1	General device requirements	-
	As far as is practicable, those devices shall be selected, mounted, and identified or coded according to IEC 60073and IEC 60447	Pass.
10.1.2	Location and mounting	-
	Appropriate location mounting for machine-mounted and hand-operated control devices	Pass
10.1.3	Protection	-
	Operator and machine mounted control devices shall with stand the stress of expected use	Pass. They can withstand the stress of expected use.
	The operator interface control devices shall have a min. degree of protection: IPXXD	Pass.
10.1.4	Position sensors	-
	Position sensors shall not be damaged in the event of over travel	Not applicable
	Position sensors used in circuits with safety-related functions either hall have positive opening operation or shall provide similar reliability	Not applicable
10.1.5	Portable and pendant control stations	-
	Portable and pendant control stations and their control devices shall be so selected and arranged as to minimize the possibility of inadvertent machine operations caused by shocks and vibrations	Pass.
10.2	Push-buttons	-

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10.2.1	Colors	-
	Push-button actuators shall be color -coded according to table 2	Pass. Their colors are according to table 2.
10.2.2	Markings	-
1.2.3	Use of adequate markings for push-buttons	Pass. Adequate markings are used.
10.3	Indicator lights and displays	-
10.3.1	Modes of use	-
	Indication and /or confirmation	Pass
10.3.2	Colors	-
	Color-coded according to table 3 (Unless otherwise agree between the supplier and the user)	Pass. Their colors are according to table 3.
10.3.3	Flashing lights	-
	Use of flashing lights	Not applicable
10.4	Illuminated push-buttons	-
	Color-coded according to table 2 and 3	Pass. Their colors are according to table 3.
10.5	Rotary control devices	-
	Devices having a rotational member shall be mounted to prevent rotation of the stationary member (Friction alone shall not be sufficient)	Pass. Appropriate measure has been provided to prevent rotation of the stationary member.
10.6	Start devices	-
	Shall be constructed and mounted to minimise inadvertent operation	Pass. Flat type start push -buttons are used to prevent inadvertent operation.
10.7	Devices for emergency stop	-
10.7.1	Location	-
	Devices for emergency stop shall be readily accessible	Pass. It is readily accessible.
	Emergency stop devices shall be located at each operator control station and at other locations where the initiation of an emergency stop can be required	Pass. All of them are located at each operator control station.

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10.7.2	Types	-
	Use of type - a push-button operated switch - a pull-cord operated switch - a pedal-operated switch without a mechanical guard	Pass. a pedal-operated switch without a mechanical guard
	Shall be of the self-latching type and shall have positive opening operation	Pass.
10.7.3	Restoration of normal function after emergency stop	-
	It shall not be possible to restore an emergency stop circuit until all emergency stop devices have been manually reset	Pass. This requirement has been complied with.
10.8.5	Local operation of the supply disconnecting device to effect emergency switching off	-
	Where the supply disconnecting device is to be locally operated for emergency switching off, it shall be readily accessible and should meet the colour requirements of 10.8.4	Not applicable
10.9	Displays	-
11	Electronic equipment	-
11.1	General	-
11.2	Basic requirements	-
11.2.1	Inputs and outputs	-
	Status indication of all digital inputs and outputs should be provided	Pass. This function has been provided.
11.2.2	Equipotential bonding	-
	Electrically bonded together according to the supplier's specifications	Pass.
11.3	Programmable equipment	-
11.3.1	Programmable controllers	Not applicable
	Programmable controllers shall conform to relevant IEC standards	Not applicable
11.3.2	Memory retention and protection	-
	Means shall be provided to prevent memory alternation by unauthorized persons and the requirements detailed in 9.4.3.2 shall apply	Not applicable
11.3.3	Software verification	-
	Shall have means for verifying	Not applicable

11.3.4	Use in safety-related functions	-
	Programming electronic equipment shall not be used for category 0 emergency stop functions.	Pass. This requirement has been complied with.
12	Control gear: location, mounting, and enclosures	-
12.1	General requirements	-
12.2	Location and mounting	-
12.2.1	Accessibility and maintenance	-
	All control gears can be identified without moving or the wiring	Not applicable
	Replacement without dismantling other equipment or parts of the machine	Not applicable
	Terminals not associated with control gear shall also comply with the requirements mentioned above	Not applicable
	Facilitate operation and maintenance from the front	Not applicable
	Use of special tools (if necessary)	Not applicable
	If access is required for regular maintenance or adjustment, the devices shall be located between 0.4 m and 2.0 m above the severing level	Not applicable
	It is recommended that terminals be at least 0.2m above the servicing level and so placed that connectors and cables can be easily connected to them	Not applicable
	Except those for operating, indicating, measuring and cooling, no devices shall be mounted on doors, and normally removable access covers, of enclosures	Not applicable
	If control devices are connected through plug-in arrangements, their association shall be made clear by type (shape), marking or designation, singly or in combination.	Not applicable.
	Plug in devices shall be provided with non-interchangeable features	Not applicable.
	Use of plug/socket combinations shall be unobstructed access	Not applicable.
12.2.2	Physical separation or grouping	-
	Non-electrical parts and devices not directly associated with the electrical equipment shall not be located within enclosures containing control gear	Pass.

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	Devices such as solenoid valves should be separated from the other electrical equipment	Pass.
	Control devices mounted in the same location and connected to the supply voltage, or to both supply and control voltages, shall be grouped separately from those connected only to the control voltages	Pass.
	Terminals shall be separated into groups for : - power circuits; - associated control circuits - other control circuits, fed from external sources	Pass.
	The clearances and creep distances specified for the devices shall be maintained	Pass.
12.2.3	Heating effects	-
	Heat generating components shall be located so that the temperature of each component in the cicinity remains within the permitted limit	Pass
12.3	Degrees of protection	-
	Enclosures of control gear: at least IP 22	Pass.
12.4	Enclosures, doors and openings	-
	Enclosure shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses	Pass.
	Fasteners used to secure doors and covers should be of the captive type	Pass.
	Windows provided for viewing internally mounted indicating devices shall be of a material suitable to withstand mechanical stress and chemical attach	Not applicable.
	It is recommended that enclosures doors shall have: - Not wider than 0.9 m - Vertical hinges - Lift-off type - Angle of opening at least 95°	Pass. These requirements have been taken into account during the design.
	If enclosures which readily allow a person fully to enter, the relevant requirements specified in this clause shall be comply	No this kind of situation.
	The joints or gaskets of doors, lids, covers and enclosures shall withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine	Pass. They can withstand the chemical effects of the aggressive liquids, vapors, or gases used on the

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		machine.
	The means used to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or maintenance shall be secured	Pass. They can be secured firmly.
	The degree of protection for all openings in the enclosures shall be secured	Pass.
	Openings for cable shall be easily re-opened on site	Pass. They can be re-opened easily.
	There shall be no opening between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate	No this kind of opening has been found.
	The requirement mentioned above does not apply to electrical devices specially designed to operate in oil nor to electrical equipment in which coolants are used	Not applicable.
	Where there are holes in an enclosure for mounting purpose, the degree of protection for the enclosure shall be secured	Pass. Appropriate protection degree can be secured.
	Equipment that, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material, the relevant requirements shall be complied	Not applicable.
12.5	Access to control gear	-
	The min. dimensions of gangways in front of and between control gear shall be according to 481.2.4 of IEC 60364-4-481	Not applicable.
	Doors in gangways and for access to electrical operating areas shall: - be at least 0.7 m wide and 2.0 m high; - open outward; - have a menace to allow opening from the inside without the use of a key or tool	Not applicable.
13	Conductors and cables	-
13.1	General requirements	-
	Conductors and cables shall b e selected so as to be suitable for the operating conditions and external	Pass. All of conductors and cables used

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	influences	on these machines are suitable for the operating conditions and external influences.
13.2	Conductors	-
	Conductors shall be of copper	Pass. Copper.
	Conductors of any other material shall have a nominal cross-sectional area such that, carrying the same current, the max. temerparure shall not exceed the value given in table 4	Not applicable.
	If aluminium is used, the cross-sectional area shall be at least 16mm^2	Not applicable.
	All conductors that are subject to frequent movement shall have flexible stranding of class 5 or class 6 (see table C.4)	Pass.
13.3	Insulation	-
	Dielectric strength test for insulation conductors and cables: - 2000 V a.c. for a duration of 5 min (for operating voltage higher than 50 V a.c. or 120 V d.c.) - 500 V a.c. for duration of 5 min. (for separate PELV circuit)	Pass.
	The mechanical strength and thickness ofj the insulation shall not be damaged in operation of during laying, especially for cables pulled into ducts	Pass. Appropriate insulation with sufficient mechanical strength and thickness is provided.
13.4	Current-carrying capacity in normal service	-
	Max. allowable temperature of rocnductors shall not exceed the values given in table 4	Pass. According to table 4.
13.5	Conductor and cable voltage drop	-
	The voltage drop for conductors and cables shall not exceed 5% of the nominal voltage	Pass. Not exceed 5%.
13.6	Minimum cross-section area	-
	To ensure adequate mechanical strength, the corss - secitonal area of conductors should be less than as shown in table 6	Pass.
13.7	Flexible cables	-

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13.7.1	General	-
	Flexible cables shall have class 5 or class 6 conductors	Not applicable.
	Cables that are subjected to server duties shall be of adequate construction	Not applicable.
13.7.2	Mechanical rating	-
	The tensile stress for copper conductors shall not exceed 15 N/mm^2 of the copper cross-sectional area	Pass. Not exceed 15 N/mm^2
	If the demands of the application exceed the tensile stress, it of 15 N/mm^2, cables with special construction fertures should be used and the allowed max. tensile stress strength should be agree with the cable manufacturer	Not applicable.
13.7.3	Current-carry capacity of cables wound on drums	-
	Cables to be wound on drums shall be selected with conductors having a cross-sectional area such that, when fully wound on the drum and carrying the normal service load, the max. Allowable conductor temperature is not exceeded	Not applicable.
	For cables of circular cross-sectional area installed on drums, the max. current-carrying capacity in free air should be derated according to table 7	Not applicable.
13.8	Collector wires, collector bars and slip-ring assemblies	-
13.8.1	Protection against direct contact	-
	Collector wires, collector bars and slip-ring assemblies shall be installed or enclosed by the applicantion of one of the following protective measures: -by partial insulation of live parts -by enclosures or barriers of at least IP2X	Not applicable.
	Min. protector degree of horizontal top surface of barriers or enclosures that are readily accessible: IP4X	Not applicable.
	If the required degree of protection is not achieved, protection by placing live parts out of reach in combination with emergency switching off according to 9.2.5.4.3 shall be applied	Not applicable.
	Collector wires and collector bars shall be so placed and/or protected as to: -prevent contact	Not applicable.

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	-prevent damage from a swinging load	
13.8.2	Protective conductor circuit	-
	Where collector wires, collector bars and slip-ring assemblies are installed as part of the protective bonding circuit, they shall not carry current in normal operation	Not applicable.
	The continuity of the protective conductor circuit using sliding contacts shall ensured by taking appropriate measures	Not applicable.
13.8.3	Protective conductor current collectors	-
	Not interchangeable with the other current collectors	Not applicable.
	Not interchangeable with the other current collectors	Not applicable.
	Such current collectors shall be of the sliding contact type	Not applicable.
13.8.4	Removable current collectors with a disconnect function	-
	Shall be so designed that the protective conductor circuit is interrupted only after the live conductors have been disconnected, and the continuity of the protective conductor circuit is re-established before any live conductor is reconnected	Not applicable.
13.8.5	Clearance in air	-
	Shall be suitable for operation in pollution degree 3 conditions	Pass
13.8.6	Creepage distances	-
	Shall be suitable for operation in pollution degree 3 conditions	Pass
13.8.7	Conductor system sectioning	-
	If collector wires or collector bars can be divided into isolated sections, suitable design measures shall be employed to prevent the energization of adjacent sections by the current collectors themselves	Not applicable.
13.8.8	Construction and installation of collector wire, collector bar systems and slip-ring assemblies	Not applicable.
	Used for power circuits shall be grouped separately from those used for control circuit	Not applicable.
	Shall be capable of withstanding, without damage, the mechanical forces and thermal effects of short-circuit currents	Not applicable.
	Removable covers shall not be opened by one person	Not applicable.

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	without the aid of a tool	
	If collector bars are installed in a common metal enclosure, the individual sections of the enclosure shall be bonded together and earthed are several points depending upon their length	Not applicable.
	Metal covers of collector bar laid underground or underflow shall also be bonded together and earthed	Not applicable.
	Undergound and underflow collector bar ducts shall have drainage facilities	Not applicable.
14	Wiring practices	-
14.1	Connections and routing	-
14.1.1	General requirements	-
	All connections shall be secured against accidental loosening	Pass. All connections can be secured against accidental loosening.
	The means of connection shall be suitable for the cross-sectional areas and neutral of the conductors being terminated	Pass. The means of connection is suitable.
	The connection of two or more conductors to one terminal is permitted (only when the terminal is designed for that purpose)	Pass. No terminal has been connected with three or more conductors.
	One protective bonding circuit conductor shall be connected to one terminal connecting point	Pass. One conductor connected to one terminal.
	Soldered connections shall only be permitted if terminals are suitable for soldering	Not applicable.
	Terminals on terminal blocks shall be plainly identified to correspond with markings on the diagrams	Pass. All of them have been marked corresponding to markings on the diagrams.
	The installation of flexible conduits and cables shall be such that liquids shall drain away from the fittings	Pass. Liquids can drain away from the fittings.
	Means of retaining conductor strands shall be provided (Solder shall not be used for that purpose)	Pass. By appropriate terminals.
	Shielded conductors shall be so terminated s to prevent fraying of strands and to permit easy disconnection	Pass. Appropriate termination is taken.

	Identification tags shall be legible, permanent, and appropriate for the physical environment	Pass. They are legible, permanent, and appropriate for the physical environment.
	Terminal blocks shall be so mounted and wired, that the internal and external wiring does not cross over the terminals	Pass. No conductor cross over the terminals.
14.1.2	Conductor and cable runs	-
	Shall be urn from terminal to terminal without splices or joints	Pass. All of them are run from terminal to terminal without splices or joints.
	If it is necessary to connect and disconnect cables assemblies, a sufficient extra length shall be provided	Pass.
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors	Pass. Adequate support measure has been taken.
14.1.3	Conductors of different circuits	-
	Suitable arrangement for conductors of different circuits	Pass, Suitable arrangement is provided.
14.2	Identification of conductors	-
14.2.1	General requirements	-
	Conductors shall be identifiable at each termination according to the technical documentation (see clause 18)	Pass. Make reference to clause 18.
	Use of color-coding for identification of conductors	Pass. Color-coding for identification is used.
	Color GREEN or YELLOW should hot be used	Pass. No GREEN or YELLOW conductor is used.
14.2.2	Identification of the protective conductor	-
	Shall be really distinguishable by shape, location, marking or color	Pass By marking and color.
	When identification is by color alone, the bicolor combination GREEN-AND YELLOW shall be used	Pass. By GREEN-AND-YELLOW.
	For the bicolor combination GREEN-AND YELLOW : one of the color covers at least 30% and not more than 70% of the surface of the conductor, the other color	Pass.

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	covering the remainder of the surface	
	Use of graphical symbol ⏚	Pass. The earthing symbol has been used.
14.2.3	Identification of the neutral conductor	-
	The color shall be Light Blue	Pass
	Requirements for bare conductors used as neutral conductors	Pass
14.2.4	Identification of other conductors	-
	Identification of other conductors shall be by color, number, alphanumeric, or a combination of color and numbers or alphanumeric	Pass. By a combination of color and numbers or alphanumeric.
14.3	Wiring inside enclosures	-
	Panel conductors shall be supported where necessary to keep them in place	Pass. Appropriate supports is provided.
	Non-Metallic ducts shall be permitted only when they are made with a flame-retardant insulating material	Pass. Some non-metallic ducts are used with a flame-retardant insulating material.
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors according to 13.2	Pass. Connections according to 13.2.
	The conductors shall be anchored to the fixed part and to the movable part independently of the electrical connection	Pass. Adequate anchored measures have been taken.
	Conductors and cables that do not run in ducts shall be adequately supported	Pass. All of them have been supported adequately.
	Terminal blocks or plug-socket combinations shall be used for control wiring that extends beyond the enclosure	Pass. This application has been taken.
14.4	Wiring outside enclosures	-
14.4.1	General requirements	-
	The protection degree shall be ensured when cables or ducts are introduced into the enclosure	Pass. The protection degree can be secured.
14.4.2	External ducts	-
	Shall be enclosed in suitable ducts as described in 14.5	Pass

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	except for suitably protected cables	
	Fittings used with ducts or multiconductor cable shall be suitable for the physical environment	Pass
	Flexible coduit or flexible multiconductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations	Pass
	The weight of the pendant stations shall be supported by means other that the flexible conduit or the flexible multiconductor cable	Pass
	Flexible conduit or flexible multiconductor cable shall be used for connections involving small or infrequent movements	Pass
14.4.3	Connection to moving elements of the machine	-
	Connection to frequently moving parts shall be made using conductors according to 13.2	Not applicable.
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and strainging, particularity t the fittings	Not applicable.
	Cables subject to movement shall be supported in such a way that there is no mechanical strain on the connection points nor any sharp flexing	Not applicable.
	If the requirement mentioned above is achieved by using of a loop, it shall have sufficient length to provide for a bending radius of the cable of at least 10 times the diameter of the cable	Not applicable.
	Flexible cables of machines shall be protected to minimize the possibility of external damage	Not applicable.
	The cable sheath shall be resistant to the normal wear that can be expected from movement and to the effects of atmospheric contaminants	Not applicable.
	If cables subject to movement are close to moving parts, it shall have a space of at least 25 mm between the moving parts and the cables	Not applicable.
	Where the distance mentioned above is not practicable, fixed barriers shall be provided between the cables and the moving parts	Not applicable.
	The cable handing system shall be so designed that the lateral cable angles do no exceed 5°, avoiding torsion in	Not applicable.

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	the cable	
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum	Not applicable.
	Min. permitted bending radii for the forced guiding of flexible cables shall not less than the values given in table 8	Not applicable.
	The strength section between section between two bends in an S-shaped length or a bend into another plane shall be at least 20 times the diameter of the cable	Not applicable.
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexile conduit under all conditions of operation	Not applicable.
	Flexible metallic conduit shall not be used for rapid of frequent movements	Not applicable.
14.4.4	Interconnection of devices on the machine	-
	The connections shall be conveniently placed, adequately protected, and shown on the relevant diagrams	Pass. Through terminals.
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams	Pass. These requirements have been complied with.
14.4.5	Plug/socket combinations	-
	Shall be of adequate size and shall have sufficient contact pressure and a wiping action to ensure electrical continuity	Not applicable
	Clearances between contacts shall e adequate for the voltages used and shall be maintained during insertion and removal of the connectors	Not applicable.
	Prevent unintentional contact with live parts at any time	Not applicable.
	Protective bonding circuit connection shall be made before any live connections are made, and shall not disconnected until all live connections in the plug are disconnected	Not applicable.
	Rated at more than 16 A or that remain connected during normal service shall be of a remaining type to prevent unintended disconnection	Not applicable.
	Rated at 63 A or above shall be of an interlocked type with a switch, so that connection and disconnection is	Not applicable.

	possible only when the switch is in the OFF position	
	If more than one plug-socket combination is used in the same electrical equipment, they shall be clearly identifiable	Not applicable.
	It is recommended that mechanical coding be used to prevent incorrect insertion	Not applicable.
	According to IEC 60309-1 or of a type used for domestic application shall not be used for control circuits	Not applicable.
14.4.6	Dismantling for shipment	-
	Terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage	Pass. All of them are enclosed suitably.
14.4.7	Additional conductors	-
	Spare conductors shall be connected to spare terminals or isolated to prevent contact with live parts	Pass. All spare conductors are connected to spare terminals or isolated to prevent contact with live parts.
14.5	Ducts, connection boxes and other boxes	-
14.5.1	General requirements	-
	Min. protection degree for ducts: IP 33	Pass.
	Appropriate protection for conductors insulation	Pass. Suitable protection is taken.
	Drain holes of 6 mm diameter are permitted	Pass.
	Ducts and cables trays shall be rigidly supported and positioned at a sufficient distance from moving parts	Pass. Suitable support and sufficient distance have been taken.
	In areas where human passage is required, the ducts and cable trays shall be mounted at least 2 m above the working surface	Not applicable.
	Ducts shall be provided only for mechanical protection	Pass.
	Cable trays that are partially covered should not be considered to be ducts or cable trunking system, and the cables used shall be suitable for installation on cable trays	Not applicable.
14.5.2	Percentage fill of ducts	-
	The dimensions and arrangement of the ducts be such as	Pass.

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	to facilitate the insertion of the conductors and cables	This requirement has been complied with.
14.5.3	Rigid metal conduit and fittings	-
	Shall be of galvanized steel or of a corrosion-resistant material	Not applicable.
	Conduits shall be securely held in place and supported at each end	Not applicable.
	Fitting shall be threaded	Not applicable.
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment	Not applicable
	The conduit shall not be damage and the internal diameter of the conduit shall not e effectively reduced when it is bent	Not applicable.
14.5.4	Flexible metal conduit and fittings	-
	Flexible metal trbing and suitable for the expected physical environment	Pass.
14.5.5	Flexible non-metal conduit and fittings	-
	Shall be resistant to kinking and suitable for the expected physical environment	Not applicable.
14.5.6	Cable trunking systems	-
	Shall be rigidly supported and clear of all moving or contaminating portions of the machine	Not applicable.
	Covers shall be shaped to overlap the sides; gasket shall be permitted	Not applicable.
	Covers shall be attached to cable trunking systems gy hinges or chain and held closed by means of captive screws or other suitable fasteners	Not applicable.
	On horizontal cable trunking systems, the cover shall not be on the bottom	Not applicable.
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed	Not applicable.
	The only openings permitted shall be those required for wiring or for drainage	Not applicable.
	Cable trunking systems shall not have opened but unused knockouts	Not applicable.

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14.5.7	Machines compartments and cable trunking systems	-
	Are isolated from coolant or oil reservoirs and are entirely enclosed	Not applicable.
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage	Not applicable.
14.5.8	Connection boxes and other boxes	-
	Shall be readily accessible for maintenance	Pass. They are readily accessible for maintenance.
	Shall provide protection against the ingress of solid bodies and liquids	Pass. Adequate protection is provided.
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flying, oil, and coolant	Pass. These requirements have been complied with.
14.5.9	Motor connection boxes	-
	Shall enclose only connections to the motor and motor-mounted devices	Not applicable.
15	Electric motors and associated equipment	-
15.1	General requirements	-
	Electric motor should conform to the requirements of IEC 60034-1	Pass.
	Motor control equipment shall be located and mounted according to clause 12	Pass.
15.2	Motor enclosures	-
	Protection degree shall be at least IP 23	Pass. At least IP23.
15.3	Motor dimensions	-
	As far as is practicable, the dimensions of the motors shall comply with IEC 60072-1 and IEC 60072-2	Pass. It is in compliance with IEC 60072-1 and IEC 60072-2.
15.4	Motor mounting and compartments	-
	Each motor and its associated couplings, belts and pulleys, or chains, shall be so mounted that they are adequately protected and are easily for inspection	Pass. They have adequate protection and are easily for inspection.

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	Shall be such that all motor hold-down means can be removed and all terminal boxes are accessible	Pass. This requirement has been complied with.
	The proper cooling shall be ensured and the temperature rise remains within the limits of the insulation class	Pass. This requirement has been complied with.
	Motor compartment should be clean and dry, and shall be ventilated directly to the exterior of the machine	Not applicable. No motor compartment is found.
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level	Pass. Adequate vents are provided.
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements	Pass. No this kind of opening.
	If a conduit or pipe is run into the motor compartment from another compartment not meet the motor compartment requirements, any clearance around the conduit or pipe shall e sealed	Not applicable.
15.5	Criteria for motor selection	-
	Shall be selected according to the anticipated service and physical environment conditions	Pass. They are selected according to the anticipated service and physical environment conditions.
15.6	Protective devices for mechanical brakes	-
	Operation of the overload and over current protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators	Not applicable.
16	Accessories and lightning	-
16.1	Accessories	-
	Socket-outlets for accessory equipment shall comply:	-
	Should conform to IEC 60309-1 (if this is not possible, they should be clearly marked with the voltage and current ratings)	Pass. Marked with the voltage and current ratings.
	The continuity of the protective bonding circuit to the socket-outlet shall be ensured	Pass. It can be ensured.
	All unearthed conductors: Over current or overload protection according to 7.2 and 7.3 separately from the	Pass. Over current protection is provided.

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	protection of other circuits	
	If the power supply to the socket outlet is not disconnected by the supply disconnecting device, the clause 5.3.5 shall apply	Pass. Please see the related clause.
16.2	Local lighting of the machine and equipment	-
16.2.1	General	-
	Connections to the protective bonding circuit according to 8.2.2	Pass. Please see the related clause.
	The ON-OFF switch shall not be incorporated in the lamp holder or in the flexible connecting cords	Pass. This requirement is complied with.
	Stroboscopic effects from lights shall be avoided	Pass. Stroboscopic effects from lights has been avoided
16.2.2	Supply	-
	The nominal voltage of the local lighting circuit shall not exceed 250 V	Pass. This requirement is complied with.
	Lighting circuits shall be supplied from one of the sources specified in this clause	Pass. Please see the related clause.
16.2.3	Protection	-
	Local lighting shall be protected according to 7.2.6	Pass. Please see the related clause.
16.2.4	Fittings	-
	Adjustable lighting fittings shall be suitable for the physical environment	Pass.
	The lamp holders shall be: - According to the relevant IEC publication; - Constructed with an insulating material protection the lamp cap so as to prevent unintended contact	Pass. This requirement has been taken into account during design.
	Reflectors shall be supported by a bracket and not by the lamp holder	Pass. Reflectors are supported by a bracket.
17	Marking, warning signs and reference designations	-
17.1	General	-
	The electrical equipment shall be marked with the supplier's name, trade mark, or other identifying symbol and, when required, with a certification mark	Pass. These information have been marked.
	Shall be of sufficient durability to withstand the physical	Pass.

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	environment involved	They can withstand the physical environment involved.
17.2	Warning signs	-
	Enclosures shall be marked with the warning sign ⚠	Pass. This warning sign has been used.
	The warning sign shall be plainly visible on the enclosure door or cover	Pass. It is plainly visible on the enclosure door.
17.3	Functional identification	-
	Control devices, visual indicators and displays, used in man-machine interface shall be clearly and durably marked with regard to their functions either on or adjacent to the item	Pass. Appropriate markings have been provided for these devices.
	Preference should be given to the use of standard symbols give in IEC 60417 and ISO 7000	Pass. These relevant requirements appropriate for this machine have been used.
17.4	Marking of control equipment	-
	Control equipment shall be legibly and durably marked in a way that is plainl6 visible after the equipment is installed	Pass. They have been marked legibly and durably.
	A nameplate giving the relevant information specified in this clause shall be attached to the enclosure	Pass. A nameplate is used.
	The full-load current shown on the nameplate shall be sufficient	Pass.
17.5	Reference designations	-
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designations as shown in the technical documentation	Pass. These information have been provided within the instruction manual.
	Where size or location preclude the use of an individual reference designation, group reference designation shall be used	Pass. Make reference to the instruction manual.
18	Technical documentation	-
18.1	General	-
	The information necessary for installation, operation, and maintenance of the electrical equipment of a	Pass. All the information have been

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	machine shall be supplied in the form of drawings, diagrams, charts, tales and instructions	provided by many forms.
	The information shall be in an agreed language	Pass. In English.
	The supplier shall be ensure that the technical documentation in this clause is provided with each machine	Pass. The instruction manual is equipped with each machine.
18.2	Information to be provided	-
	The information provided with the electrical equipment shall include the requirements specified in this clause	Pass. Please see the related clause.
18.3	Requirements applicable to all documentation	-
	Relevant requirements according to 18.4 to 18.10 shall be complied	Pass. Please see the related clause.
18.4	Basic information	-
	Min. requirements for he technical documentation shall be contained	Pass.
18.5	Installation diagram	-
	Use and requirements for installation diagram	Pass. Installation diagrams are provided.
18.6	Block (system) diagrams and function diagrams	-
	Use and requirements for system (block) diagram	Pass. System diagrams are provided.
18.7	Circuit diagrams	-
	Use and requirements for circuit diagrams	Pass. Circuit diagrams are provided.
18.8	Operating manual	-
	Use and requirements for operating manual	Pass. Operating manual is provided.
18.9	Maintenance manual	-
	Use and requirements for maintenance manual	Pass. Maintenance manual is provided.
18.10	Parts list	-
	Use and requirements for parts list	Pass. Parts list is provided in manual book
19	Testing and verification	
19.1	General	

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	When these tests are performed, it is recommended that they follow the sequence listed	Pass. All tests have been carried out according to the following sequence.
	When the electrical equipment is modified, the requirements stated in 19.7 shall apply	Pass.
19.2	Continuity of the protective bonding circuit	-
	Test conditions: a current of at least 10 A at 50 Hz or 60 Hz	Pass.
	The measured voltage shall not exceed the values given in table 9	Pass. See the test report in detail.
19.3	Insulation resistance tests	-
	Test conditions : 500 V d.c.	Pass.
	The measured values shall not less than 1 MΩ	Pass. See the test report in detail.
19.4	Voltage tests	-
	Test conditions : - at least 1 second - test voltage is twice the raged supply voltage of the equipment or 1000 V, whichever is greater - frequency of 50/60 Hz - supplied from a transformer with a min. rating of 500 VA	Pass.
	Shall not breakdown	Pass. See the test report in detail.
19.5	Protection against residual voltages	-
	Tests shall be preformed to ensure complacence with 6.2.4	Not applicable.
19.6	Functional test	-
	The functions of electrical equipment shall be tested (particularly those related to safety and safeguarding)	Pass. All functions equipped with this machine have been tested.
19.7	Retesting	-
	Where a portion of the machine and its associated equipment is changed or modified, that portion shall verified and retested, as is appropriate	Not applicable.

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GACIA ELECTRICAL APPLIANCE CO.,LTD

2.Test Record:

• Manufacturer	: Dongguan Hongya Machinery Co., Ltd.
• EUT	: Hardcover book back-gluing machine
• Test model	: HY618
• application model	: HY618
• Ratings	: 220VAC 26KW
• Test Equipment	: Extech Electronics
Withstanding Voltage/Arc/Insulation/Grounding Tester	
Model	: 7740
Date of Calibration :September 30 , 2012	
• Test according to	: Chapter 19 of EN 60204-1
• Test conditions	: 10A / 50Hz
• Date	: 05/08/2013

(1) Grounding continuous test

The test record:

Test Points	Test Result (mΩ)	Test current (A)	Voltage Drop (V)
PE – Enclosure	2	10	0.02

Result: pass

(2) Insulation Resistance test

The test record:

Test Points	Test Result (MΩ)	Required value no less than 1MΩ
PE – L1	>380	pass
PE – L2		

Result: pass

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(3) Withstanding Voltage test

The test record:

Test Points	Applicable voltage	Test period in sec	Breakdown?
PE – L	440V	1s	No

Result: pass

3. List of test equipment used

Clause	Measurement / testing	Testing / measuring equipment / material used	Manufacturer	Range used	Model/Specification	S/N	Calibration Date	Calibration Due
4.4.6	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
6.2.2	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
10.1.3	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
11.3	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
11.4	L	Protractor	Zhejiang Lishui Nanguang Measuring Tool Co., Ltd	L°	0-360°	NG1303820	02-08-2013	02-07-2014
11.4	m	Roulette Tape	Yucheng County Mingzhi Measuring Tool Co., Ltd	0-2 m	0832	06	02-08-2013	02-07-2014
12.3	V	multifunctional handheld device serial	Clare Electronic Co., Ltd	10000V	A252	A8.51.5	02-08-2013	02-07-2014
18.3	MΩ	multifunctional handheld device serial	Clare Electronic Co., Ltd	MΩ	A252	A8.51.5	02-08-2013	02-07-2014
18.4	V	multifunctional handheld device serial	Clare Electronic Co., Ltd	10000V	A252	A8.51.5	02-08-2013	02-07-2014

End

ОРИГИНАЛ

GACIA ELECTRICAL APPLIANCE CO.,LTD

Списък на отделните изпитания:

1. Обхват;
2. Нормативни референции;
3. Дефиниции;
4. Общи изисквания;
5. Входящи проводници за захранване и устройства за разединяване и изключване;
6. Защита срещу електрически удар;
7. Защита на оборудването;
8. Изравняване на потенциали;
9. Контролни вериги и контролни функции;
10. Оперативен интерфейс и устройство за контрол на машините;
11. Електрическо оборудване;
12. Контролен механизъм: местоположение, монтаж и приложения;
13. Проводници и кабели;
14. Практики за окабеляване;
15. Електрически мотори и свързано оборудване;
16. Аксесоари и осветление;
17. Маркиране, предупредителни знаци и референтни обозначения;
18. Техническа документация;
19. Тестване и верификация;

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Триполюсни автоматични прекъсвачи НН с лят корпус, от 160 А до 1250 А, с електронна защита, категория А”

Приложение № 5

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L3258)

China National Accreditation Service for Conformity Assessment has accredited

Mambocert (shanghai)

Technology Co., Ltd

No. 620 Yishan Road Xuhui District

Shanghai

to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

The scope of accreditation is detailed in the attached schedule bearing the same accreditation number as above. The schedule forms an integral part of this certificate.

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

Date of Issue: 2013-12-15

Date of Expiry: 2017-12-11

Date of Initial Accreditation: 2012-12-12

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation system for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Mutual Recognition Arrangement(ILAC MRA) and the signatory to Asia Pacific Laboratory Accreditation Cooperation Mutual Recognition Arrangement(APLAC MRA).

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Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

Certificate of Compliance

No. 0P151117.GEAQU50

Certificate's Holder:	GACIA ELECTRICAL APPLIANCE CO.,LTD. No. 545 Dongdajie, Baitawang Industrial Zone Beibaixiang, Wenzhou, 325603, China
Certification ECM Mark:	Type Approved
Product:	MCCB
Model(s):	PN1600SE, PN1600HE, LN1600SE, LN1600HE
Verification to:	Standard: EN 60947-2:2006/A2:2013 related to CE Directive(s): 2014/35/EU (Low Voltage)

Remark: The product(s) has been verified on a voluntary basis. The product(s) satisfies the requirements of the Certification Mark of ECM, in reference to the above listed Standard(s). The above Certification Mark can be affixed on the product(s) accordingly to the ECM regulation about its release and its use. Regulation can be found at www.entecerma.it.
Whereas the Manufacturer is responsible of the CE certification of the product(s) and not exempted to perform all the necessary activities before placing the product(s) on the market.
The Manufacturer is also responsible to maintain efficient the internal production control to ensure the product(s) are in compliance with the Certification ECM Mark.
This certificate can be checked for validity at www.entecerma.it

Date of issue 17 November 2015

Expiry date 16 November 2020

Chief Manager
Tim Mahan

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

Deputy Manager
Viola Miller

На основание чл. 2 от ЗЗЛД

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Превод от английски език

лого на ilac-MRA
лого на CNAS

Китайската национална служба за акредитация за оценка на съответствието

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ НА ЛАБОРАТОРИЯ

(Регистрационен No. CNAS L3258)

Китайската национална служба за акредитация за оценка на съответствието е акредитирала

Мамбосерт (Шанхай) Технолоджи Ко., Лтд

бул. Йишан № 520, квартал Ксухуи, Шанхай

към ISO/IEC 17025:2005 Основни изисквания към системата за компетентност на лаборатории за тестване и калибрация (CNAS-CL01 критерии за акредитадция за компетентност на лаборатории за тестване и калибрация) за компетентност в областта на тестване.

Обхвата на акредитация е описан в приложението, носейки същия номер за акредитация както горния. Формулярите в списъка са неразделна част от този сертификат.

Дата на издаване: 2013-12-15
Дата на изтичане: 2017-12-11
Дата на първоначална акредитация: 2012-12-12

Подпис: (не се чете)
Подписан от страна на Китайската национална служба за акредитация за оценка на съответствието

Китайската национална служба за акредитация за оценка на съответствието (CNAS) е оторизирана от Сертифицираща и Акредитираща Администрация на Народна република Киатй (CNCA) да оперира нациоланите системи за акредитация со оценка на съответсвието.
CNAS е подписваща страна към Международната кооперация за акредитации на лаборатории (ILACMRA) и подписваща стана към Азия Пасифик Международна кооперация за акредитации на лаборатории (APLAC-MRA).

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

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"Триполюсни автоматични прекъсвачи НН с лят корпус, от 160 А до 1250 А, с електронна защита, категория А"

Приложение № 6

GACIA

PN/LN Series

Molded Case Circuit Breaker

Operating Instruction Manual

Standards: IEC60947-2
GB14048-2

ВЯРНО С
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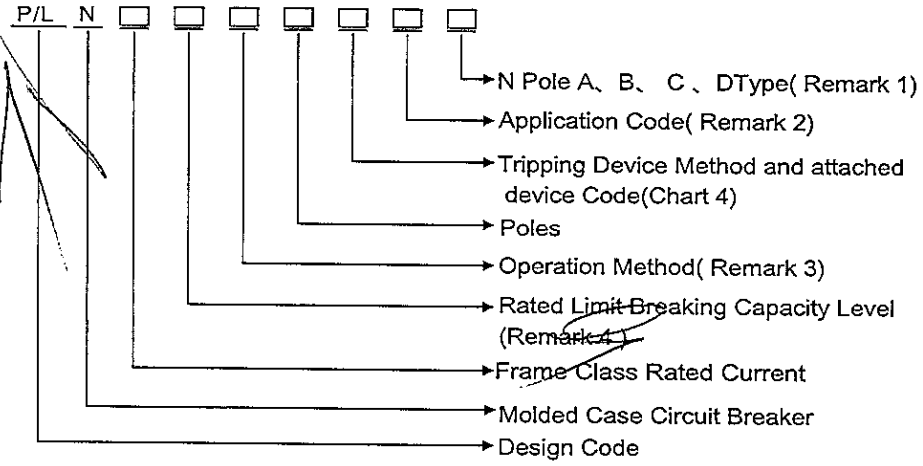
1. Scope of Application and Purpose

PN/LN series molded case circuit breaker(hereinafter circuit breaker)is one of the new type circuit breakers which is researched and developed by our company through use of international advanced technology. It has the rated insulation voltage 750V and is suitable for the circuit of AC 50Hz(60Hz) with rated working voltage not more than 690V and rated working current from 10A to 1600A. It is used for power distribution, infrequent switching on and off at the normal circumstances and used for protection of the circuit and device at the state of overload and undervoltage. Circuit breakers with the rated frame current not more than 400A can also be used for infrequent start of squirrel cage type motor, switching off at the working state, and the protection of motors from overload, short circuit, and undervoltage.

PN is the standard LN for Luxury

This product complies with IEC60947-2 and GB14048.2 standards.

2. Model Implication



Remark 1: According to the product poles number, this product can be divided into 3 pole, 4 pole within which 4 pole product can be divided into four types according to the types of its Neutral pole.

A type N pole is not assembled with over-current tripping device, will be at the "on" state all the time and will not be switching on and off together with other three poles.

B type N pole is not assembled with current tripping device and will be switching on and off together with other three poles.

C type N pole is assembled with current tripping device and will be switching on and off together with other three poles.

D type N pole is assembled with over-current electronic tripping device, will be at the "on" state all the time and will not be switching on and off together with other three poles.

Remark 2 : Power distribution circuit breaker has no code, motor protection circuit breaker will be indicated by "2".

Remark 3: Fixed type has no code. Adjustable type can be indicated by "S". Electronic type will be indicated by "E".

Remark 4: According to the rated limit short-circuit breaking capacity(Icu), it can be divided into N Type(Standard Type), S Type(Higher breaking capacity type),
H Type(High breaking capacity).

3. Product Category

1) Installation Method: Vertical Installation, level installation
2) Scope of application: power distribution protection, motor protection
3) Wiring mode: front wiring, back wiring, plug-in wiring
4) Operation mode: direct handle operation, external rotary handle operation, motor operation
5) Tripping device type: instantaneous operation tripping device (electro-magnetic tripping device), Thermal operation + electro-magnetic tripping device (compound), electronic tripping device.

During the using procedure of this product, ambient medium should not be more than +40℃ (for ship use +45℃) , not be lower than -5℃.

4. Main technical data(refer to chart 1)

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ИНСТРУКЦИИ ЗА ТРАНСПОРТ, СКЛАДИРАНЕ, МОНТИРАНЕ, ПОДДЪРЖАНЕ И ЕКСПЛОАТАЦИЯ

МЕХАНИЧНО НАТОВАРВАНЕ НА КЛЕМОВИТЕ СЪЕДИНЕНИЯ

Транспортиране и складиране:
Автоматичните прекъсвачи лят корпус трябва да се транспортират в заводската си опаковка, добре застопорени, за избягване на наранявания на корпуса, механични повреди и в следствие отклонения от характеристиките и създаване на нежелани условия за нарушаване безопасността на електрическата верига и работа.
Прекъсвачите трябва да се съхраняват в сухи помещения и нормална температура.

1. **Инсталиране и обслужване.**
   - **1.1. Инсталиране**
     - **1.1.1. Проверете маркировката за да се убедите, че е в съответствие с нормалните работни условия.**
     - **1.1.2. Превключете ръчно няколко пъти автоматичния прекъсвач за да няма задържане.** Проверете го и се убедете, че няма видими повреди по него и тогава го инсталирайте.
     - **1.1.3. Фиксирайте автоматичния прекъсвач на монтажната шина и натиснете застопоряващия механизъм нагоре.** По този начин той няма да може да се освободи от монтажната шина. Натиснете надолу застопоряващия механизъм за да извадите автоматичния прекъсвач.
     - **1.1.4. Схемата е включена и символа „ON" ще се покаже, когато ръкохватката е в затворено положение.** Схемата е изключена и символа „OFF" ще се покаже, когато ръкохватката е в отворено положение.
     - **1.1.5. Входящата линия се свързва в горната страна на автоматичния прекъсвач, а изходящата линия се свързва в долната страна на прекъсвача.** Не разменяйте страните на свързване. Напречното сечение на медните проводници е дадено в таблица 3. Поставете проводниците в отворите за свързване, след това завийте винта. Проводниците не би трябвало да са хлабави и да не се местят. Не оставяйте оголени проводници извън терминала за връзка.
     - **1.1.6. Автоматичният прекъсвач би трябвало да се превключи няколко пъти преди да се свърже към схемата.** Механизмът трябва да бъде подвижен, заслужаващ доверие и без задържане.
   - **1.2. Обслужване**
     - **1.2.1. Проверете автоматичния прекъсвач по разписание по време на неговата работа.** Според експлоатационния режим определете контролния период.
     - **1.2.2. След прекъсване на ток на претоварване или ток на късо съединение**, би трябвало първо да се отстрани дефекта преди да се включи прекъсвача, иначе това може да въздейства злополучно на издържливостта на прекъсвача.
     - **1.2.3. Не трябва да има вода и продукта не трябва да се повреждa по време на работа, когато е на склад или при транспортиране.**
2. **Предупреждения за безопасност.**

2.1. Не тествайте функцията на продукта, като свързвате проводник под напрежение непосредствено към земята или към нулата, иначе това ще въздейства на личната безопасност.

2.2. Завийте винта до края така, че проводниците да не са хлабави и да не се местят, когато ги свързвате към автоматичния прекъсвач. Не оставяйте

оголени проводници извън отворите на връзката.

3. Често срещани неизправности повреди и начини за отстраняване то им.

Често срещаните неизправности и начините за отстраняването им са показани в таблица 5.

Таблица 5

Неизправност	Причина	Метод за отсраняване	Забележка
Прекъсвача не може да затвори	Късо съединение в защитаваната верига.	Елиминирайте късото съединение	
	Дефект в механизма	Заменете продукта.	
	Номиналният ток на прекъсвача не съответства на тока на товара.	Променете спецификацията на продукта.	
Загряване в горната част.	Винта не притиска плътно проводника или е хлабав.	Стегнете винта!	
	Напречното сечение на проводника е малко.	Променете спецификацията на проводника.	
Прекъсвача не може да изключи при условие на късо съединение.	Прекъсвача е в несъответствие с работните условия на товара.	Променете спецификацията на продукта	
Прекъсвача не осъществява верига.	Оголения проводник е твърде къс.	Оголете проводника отново	
	Винта не притиска плътно проводника или е хлабав.	Стегнете винта!	

Механично натоварване на клемовите съединения:

въртящ момент (Nm): 10Nm на клемова връзка към кабел,

3Nm на клемова връзка към прекъсвач;

5 пъти по 2 отделни единици затягане: Готови проводници (кабели с обувка)

ИНСТАЛАЦИЯ, РАБОТА И РЕМОНТ НА АВТОМАТИЧНИ ПРЕКЪСВАЧИ ЛЯТ КОРПУС

Инсталация и работа

За безопасността на лицето и електрическо оборудване, трябва да се спазват следните инструкции, преди да пуснете в експлоатация автоматичните прекъсвачи лят корпус:

- Моля, прочетете тази инструкция за експлоатация внимателно преди инсталиране на автоматични прекъсвачи.
- Автоматичните прекъсвачи лят корпус трябва да се използват при нормални условия на експлоатация.
- Проверете възможностите на прекъсвач за точното му приложени, преди инсталацията.
- Измерете изолационното съпротивление с помощта на 500V мегом метра преди инсталацията. Измерената стойност не трябва да бъде по-ниска от 10M при стайна температура 20±5, и относителна влажност 50% до 70%. В противен случай, прекъсвачът трябва да се изсуши, и не може да да се използва, докато не подобри съпротивление на изолацията съгласно изискванията.
- Инсталацията на прекъсвач в избрана позиция е възможно, без влияние върху неговата ефективност. Но определеното разстояние отгоре, отдолу, отстрани и отпред, както и от другите прекъсвачи следва да бъде спазено за безопасна работа.
- Прекъсвача може да се монтира на неподвижна опора или плоча-база със стандартни винтове.
- Трябва да се внимава да не попаднат чужди проводими предмети в прекъсвача, когато го инсталирате.
- Кабелите, използвани за свързване на прекъсвач трябва да бъде гладки, ненаранени и да не са пречупени при инзталацията на пркеъсвача за предотвратяване на повреди на прекъсвач и отклонения от неговите стандартни характеристики.
- След като инсталирате прекъсвача, следните оперативни тестове се провеждат преди да се пусне веригата. Тя не може да бъе пусната в експлоатация докато всички условия не са коректни и точни:

1) Проверете внимателно дали няма да има чужди частици в трифазовите проводници и кабели. Премахнете, ако има такива. Прекъсвачът трябва да се пази в чиста състояние.
2) Ако прекъсвачът е оборудван с електрически аксесоари или електрически работен механизъм, трябва да се свърже с допълнителна верига с тях в съответсвие с диаграматав техническия каталог, а след това проверка на съответствието на номинално работно напрежение от напрежение освобождаване, шунт и мотор със захранващото напрежение.
3) Проверка на текущите настройки на защитите от претоварване и късо съединение.
4) След всички проверки и инспекции, допълнителната верига може да бъде пусната. Само в този случай, прекъсвачът може да бъде затворен, след като защитата е затворен.
5) Ръчен тест на работа на прекъсвача: Ръчно включване и ръчно изключване няколко пъти. Прекъсвачът трябва да се държи нормално.
6) Електрически тест на работа на прекъсвача: включване от електрически работен механизъм, а след това изключване от него няколко пъти Прекъсвачът трябва да се държи нормално

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Шини пресувани, правоъгълни, алуминиева сплав EAl – 99,5 %, дължина 6 m"

Приложение № 1

240

Всичко за енергетиката от една ръка
TRADE COMPANY
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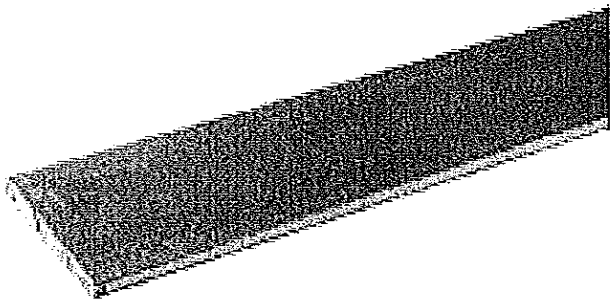
1233 София; ж.к. Банишора, ул. Опълченска, бл.42А, вх. Ж, пом. 1, **тел.** (02) 931-0473, **факс:** (02) 931-4184, sofia@contragent.com
4000 Пловдив; бул. Коматевско шосе 26, , **тел.** (032) 67-37-31, **факс:** (032) 67-37-32, plovdiv@contragent.com

9000 Варна; ПК 150; **тел.** (052) 599 631, **факс:** (052) 599 632, varna@contragent.com
Web site: www.contragent.com

Каталог алуминиева шина

Производител – Контрагент 35 ЕООД



Алуминиевите шини са произведени и отговарят на БДС 12440-74

Стандартни размери

№	Код	Наименование	Дилжина, м	Материал	Тегло, кг
1	40_4_4	Шина Al 40x4	4	EAl – 99,5 %	1.728
2	50_5_4	Шина Al 50x5	4	EAl – 99,5 %	2.7
3	60_6_4	Шина Al 60x6	4	EAl – 99,5 %	3.88
4	60_8_4	Шина Al 60x8	4	EAl – 99,5 %	5.184
5	80_8_4	Шина Al 80x8	4	EAl – 99,5 %	6.912
6	100_10_4	Шина Al 100x10	4	EAl – 99,5 %	10.8
7	40_4_6	Шина Al 40x4	6	EAl – 99,5 %	2.592
8	50_5_6	Шина Al 50x5	6	EAl – 99,5 %	4.05
9	60_6_6	Шина Al 60x6	6	EAl – 99,5 %	5.82
10	60_8_6	Шина Al 60x8	6	EAl – 99,5 %	7.776
11	80_8_6	Шина Al 80x8	6	EAl – 99,5 %	10.368
12	100_10_6	Шина Al 100x10	6	EAl – 99,5 %	16.2

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Шини пресувани, правоъгълни, алуминиева сплав EAl – 99,5 %, дължина 6 m”

Приложение № 2

ТЕХНИЧЕСКИ СПЕЦИФИКАЦИИ

Наименование на материала: Шини пресувани, правоъгълни, алуминиева сплав EAl – 99,5 %, дължина 6 m

Кратко наименование на материала: Шини правоъгълни, EAl – 99,5%, 6 m

Характеристика на материала:

Шини, изработени чрез пресуване от алуминиева сплав за електротехнически приложения EAl – 99,5% без термична обработка, с дължина 6 m с правоъгълни сечения: 60x6 mm и 60x8 mm; както са показани схематично на фиг. 1 по-долу.

Използване:

Пресуваните алуминиеви шини с правоъгълно сечение са предназначени за използване при изграждане, ремонтиране и експлоатация и поддържане на открити и закрити разпределителни уредби СрН и комплектни комутационни устройства НН.

Съответствие на предложеното изпълнение със стандартизационните документи:

Пресуваните алуминиеви шини с правоъгълно сечение отговарят на БДС 12440-74 „Шини пресувани за електротехнически цели от алуминий и алуминиеви сплави" и на неговите валидни изменения и поправки или еквивалент.

Технически данни

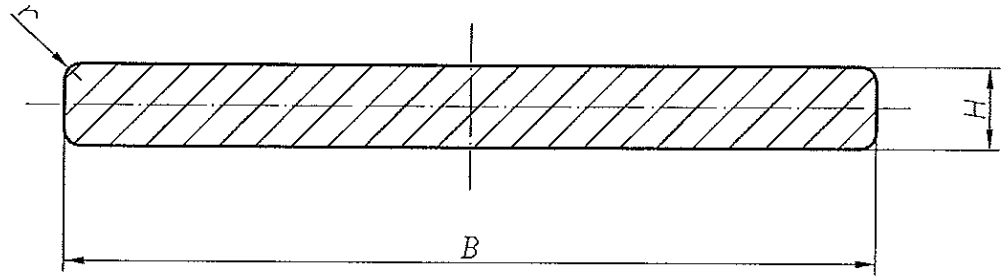
1. Характеристики на работната среда

№ по ред	Характеристика	Стойност
1.1	Място на монтиране	На открито/закрито
1.2	Максимална околна температура	+ 40°C
1.3	Минимална околна температура	Минус 25°C
1.4	Относителна влажност	До 100 %

2. Общи технически параметри и други данни

№ по ред	Параметър	
2.1	Алуминиева сплав	EAl - 99,5 %
2.2	Химичен състав на алуминиевата сплав:	-
2.2a	Al	99,5%
2.2b	Si	0,07%
2.2c	Fe	0,37%
2.2d	Cu	0,03%
2.2e	Mn	0,01%
2.2f	Cr	0%
2.2g	Zn	0,03%
2.3	Плътност (индикативно)	2,7 g/cm³
2.4	Електрическо съпротивление	0,001044 Ω
2.5	Механически свойства:	-
2.5a	якост на опън	70 N/mm²
2.5b	относително удължение	15 %
2.6	Дължина	6000^{+30} mm

Съкратено наименование на материала		Шина правоъгълна 60x8 mm, EAI – 99,5%, 6 m
№ по ред	Технически параметър	
4.12.1	Размери: (съгласно фиг. 1)	-
4.12.1a	широчина (B)	60 ± 0,85 mm
4.12.1b	дебелина (H)	6 ± 0,40 mm
4.12.1c	радиус на закръгление (r)	1 mm
4.12.2	Тегло на една дължина	7,776 kg



Фиг. 1 – Сечение на алуминиева шина

Дата 24.11.2015 г.

Кандидат

подпис и печат

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Шини пресувани, правоъгълни, алуминиева сплав EAl – 99,5 %, дължина 6 m"

Приложение № 3

НЕЗАВИСИМА СТРОИТЕЛНА ЛАБОРАТОРИЯ
към Н С Л "ИНФРАСТРУКТУРА" ЕООД

1619 София, бул. "Цар Борис III" № 257, Телефон: (02) 957 05 04; (02) 857 01 07 Факс: (02) 957 05 04; E-поща: labor@pie.bg; http://nsli.org

П Р О Т О К О Л
ОТ ИЗПИТВАНЕ
№49-С/11.02.2010

1. **Наименование на продукта:** Шина алуминиева електротехническа.

2. **Клиент:** „КОНТРАГЕНТ 35" ЕООД – гр. София
Заявка №34/11.02.2010 г.

3. **Метод за изпитване:** БДС EN ISO 6892:2009

4. **Дата на получаване на пробите:** 11.02.2010 г.

5. **Количество на изпитаните проби:** Пет проби от по две пробни тела с ширина на работната част 40 mm и с уширени глави в краищата.
Според заявката за изпитване представените проби са взети от шини EAI – 99,5% със следните номинални размери:
   - лаб №С 56 – шина 50×5 mm;
   - лаб №С 57 – шина 60×6 mm;
   - лаб №С 58 – шина 60×8 mm;
   - лаб №С 59 – шина 80×8 mm;
   - лаб №С 60 – шина 100×10 mm.

   Проведено е изпитване на опън, като са определени якостта на опън R_m и относително удължение след разрушаване A.

6. **Дата на изпитване:** 11.02.2010 г.

РЪКОВОДИТЕЛ НА ЛАБОРАТОРИЯТА:
(инж. Цв. Дражева)

ВЯРНО С ОРИГИНАЛА

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7. Резултати от изпитването:

№ по ред	Характеристика	Единица за измер-ване	Стандарти/ валидирани методи	Пробно тяло		Резултати от изпитването, стойност, неопределе-ност	Изисквания към характеристи-ката	Условия на изпитва-нето
				лаб. №	размери			
1	Якост на опън R_m	MPa	БДС EN ISO 6892:2009	С 56-1	39,4×5,06	74,9	≥70,0	t=19°C
				С 56-2	40,1×5,08	75,2		
				С 57-1	40,1×5,91	70,9		
				С 57-2	40,0×5,82	72,4		
				С 58-1	40,2×7,92	89,5		
				С 58-2	40,0×8,35	86,5		
				С 59-1	40,0×7,92	70,3		
				С 59-2	40,0×7,95	70,3		
				С 60-1	40,1×10,14	75,4		
				С 60-2	40,0×10,19	76,4		
2	Относително удължение след разрушаване A	%		С 56-1	39,4×5,06	21,0 *)	≥15	
				С 56-2	40,1×5,08	– *)		
				С 57-1	40,1×5,91	31,5		
				С 57-2	40,0×5,82	42,0		
				С 58-1	40,2×7,92	28,0		
				С 58-2	40,0×8,35	28,0		
				С 59-1	40,0×7,92	45,5		
				С 59-2	40,0×7,95	45,5		
				С 60-1	40,1×10,14	39,5		
				С 60-2	40,0×10,19	39,5		

*) Пробното тяло е разрушено по сечение, близко до край на мерната дължина.

ЗАБЕЛЕЖКА: Резултатите от изпитванията се отнасят само за изпитваните образци. Извлечения от изпитвателния протокол не могат да се размножават без писмено съгласие на лабораторията за изпитване.

ПРОВЕЛ ИЗПИТВАНЕТО: На основание чл. 2 от ЗЗЛД

ОВОДИТЕЛ НА ЛАБОРАТ: На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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ELIA
Орган за контрол
от вида С

1510 София
ул. "Васил Петлешков" No.14
тел./факс: 02 / 945 49 21, 945 46 29
e-mail: elia-sofia@eliaplc.com
web: http://www.eliaplc.com

О Р Г А Н З А К О Н Т Р О Л "Е Л И А" С.К.11

Сертификат за акредитация № 140*ОКС* Вид С
с валидност 30.11.2012г. и заповед №1198/07.11.2008г.

С Е Р Т И Ф И К А Т З А К О Н Т Р О Л

№006-88-006 / 10.02.2010г.

1. **Клиент:** „Контрагент 35" ЕООД
2. **Контролиран обект:** Шина алуминиева
3. **Контролирани параметри:** активното съпротивление на алуминиева шина
4. **Заключение от извършения контрол:** активното съпротивление на алуминиева шина съответства на изискванията на БДС 904

Протокол № 006-006 / 10.02.2010г. е неразделна част от Сертификата за контрол общо 3 стр.

Оценител: ..

На основание чл. 2
от ЗЗЛД

Ръководител на органа за контрол: ..

ОРГАН ЗА КОНТРОЛ

ВЯРНО С
ОРИГИНАЛА

248

ELiA
Орган за контрол
от вида С

1510 София
ул. "Васил Петлешков" No.14
тел./факс: 02 / 945 49 21, 945 46 29
e-mail:elia-sofia@eliaplc.com
web: http://www.eliaplc.com

Пр.К.2

Процедура за контрол №2

Заявка №88

ПРОТОКОЛ

№ 006-006 / 10.02.2010 г

Контрол на силови линии

1. **Клиент:** „Контрагент 35" ЕООД
2. **Обект:** Шина алуминиева
   - 2.1. **Вид на обекта:** нов
3. **Нормативни актове, регламентиращи контрола:**
   - 3.1. **Метод на контрола:**
     - активното съпротивление – БДС 2374
   - 3.2. **Нормативни изисквания:**
     - активното съпротивление – БДС 904
4. **Технически данни:**

No.	Тип	Дължина m
1	Al	6

ВЯРНО С ОРИГИНАЛА

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5. **Контрол на активното съпротивление на токопроводимите жила:**

5.1. Използвани означения и формули.

$R_{20} = \frac{Rt}{1+\alpha(t-20)}$, [Ω]- приведено съпротивление на токопроводимите жила към 20°C;

t [°C]– температура, при която е проведено измерването;

Rt[Ω] – измереното съпротивление при температура t;

α[°C^{-1}] - температурен коефициент на съпротивлението:

- За мека мед - α=0,00393°C^{-1};
- За твърда мед - α=0,00381°C^{-1};
- За алуминий - α=0,00403°C^{-1};

5.2. Резултати от контрола.

Температура при измерването t = 20 [°C]

No.	Rt Ω	Норма Ω
1	0,001014	-

6. **Забележка:**

7. **Използвани технически средства:**

№	Наименование	Тип	№ на апарата	Клас	Обхват
1.	Микроомметър	MOM 690	2550463	±2%R+2 D	R 999,9μΩ-100mΩ
2.	Мултиметър	HEXAGON 340	21101574	±0,3%+3 d	T° 10°C-80°C

Извършили контрола:

1. .....

2. .....

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

250

ДИРЕКЦИЯ ИЗПИТВАТЕЛНА ЛАБОРАТОРИЯ
КЪМ ЕВРОТЕСТ-КОНТРОЛ ЕАД
София 1797,бул. "Г.М. Димитров" № 16 , тел. (02) 9651-600 ,971-1412;тел./факс (02) 8700 583 ; www.eurotest.bit.bg. E-mail:lgi@inet.bg

Сертификат за одобрение по ISO 9001/2000 No. 207186 LRQA

ПРОТОКОЛ № 6.2 – 1.58/ 10 .02. 2010 год.

Възложител: „Контрагент 35" ЕООД

Входящ No: 189/ 10 .02. 2010 год.

Проба - алуминиева шина

АНАЛИЗИТЕ СА ИЗВЪРШЕНИ НА СКАНИРАЩ ЕЛЕКТРОНЕН МИКРОСКОП JEOL JSM 35 CF С РЕНТГЕНОВ МИКРОАНАЛИЗАТОР TRACOR NORTHERN TN - 2000, ЧРЕЗ ЕНЕРГИЙНО ДИСПЕРСИВНА СИСТЕМА. ИЗПОЛЗВАНИ СА ЕТАЛОНИ НА ФИРМАТА JEOL:

РЕЗУЛТАТИ ОТ ИЗСЛЕДВАНЕТО

в тегловни %

Ускоряващо напрежение: 25 keV

Метод на изследване: E D S

Вид на анализа: количествен

Ток на сондата: $2x10^{-9}$ A

Хим.елемент	Проба № 1
Mg	<0.01
Al	99.50
Si	0.07
Fe	0.37
Cu	0.03
Mn	<0.01
Zn	0.03

На основание чл. 2 от ЗЗЛД

Извършил анализа:.....

Ръководител отдел:.....

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Шини пресувани, правоъгълни, алуминиева сплав EAl – 99,5 %, дължина 6 m”

Приложение № 4

БЪЛГАРСКА СЛУЖБА ЗА АКРЕДИТАЦИЯ

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ

"НЕЗАВИСИМА СТРОИТЕЛНА ЛАБОРАТОРИЯ ИНФРАСТРУКТУРА" ЕООД

НЕЗАВИСИМА СТРОИТЕЛНА ЛАБОРАТОРИЯ

Адрес на управление и лаборатория:
1619 гр. София, бул. "Цар Борис III" № 257

ЕИК: 131083073

ОБХВАТ НА АКРЕДИТАЦИЯ:

ДА ИЗВЪРШВА ИЗПИТВАНЕ НА:
Почви строителни. Добавъчни материали. Пясък за пътни настилки, бетон и строителни разтвори. Брашно минерално и активирано за асфалтобетонни смеси. Смеси асфалтобетонни за пътни настилки. Битуми нефтени вискозни, полимермодифицирани и битумни емулсии за пътно строителство. Смеси бетонни, бетон, разтвори и скални материали. Строителни изделия. Строителни конструкции, положени и уплътнени асфалтови пластове, хоризонтална пътна маркировка. Строителни продукти и изделия.

ДА ИЗВЪРШВА ВЗЕМАНЕ НА ПРОБИ ОТ:
Почви строителни. Добавъчни материали. Пясък за пътни настилки, бетон и строителни разтвори. Брашно минерално и активирано за асфалтобетонни смеси. Смеси асфалтобетонни за пътни настилки. Битуми нефтени вискозни, полимермодифицирани и битумни емулсии за пътно строителство. Смеси бетонни, бетон, разтвори и скални материали. Строителни изделия. Строителни конструкции, положени и уплътнени асфалтови пластове, хоризонтална пътна маркировка. Строителни продукти и изделия.

АКРЕДИТИРАН СЪГЛАСНО БДС EN ISO/IEC 17025:2006

Заповед № ..... *1105/10.11.2009* ..... е неделима част от сертификата за акредитация,

общо ..... *12* ..... страници.

Валиден до: ..... *31.03.2010* ..... БСА рег. № ..... *142 ЛИ* .....

Изпълнителен директор:

инж. Елза [redacted]

София .....

Дата на първоначална акредитация – 28.03.2006 г.

На основание чл. 2 от ЗЗЛД

БЪЛГАРСКА СЛУЖБА ЗА АКРЕДИТАЦИЯ ОРИГИНАЛ РЕПУБЛИКА БЪЛГАРИЯ

1797 София, бул. "Цар Борис III" 257, тел.: 02 873 5302; факс: 02 873 5303

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БЪЛГАРСКА СЛУЖБА ЗА АКРЕДИТАЦИЯ

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ

"ЕЛИА" АД
ОРГАН ЗА КОНТРОЛ „ЕЛИА" ОТ ВИДА С

Адрес на управление и на офис:
1510 гр. София, ул. "Васил Петлешков" № 14

ЕИК 831818341

ОБХВАТ НА АКРЕДИТАЦИЯ:

Контрол на:
Въздушни електропроводни линии над 1000V. Мълниезащита на сгради и съоръжения
Силови кабелни линии
Комплектни разпределителни уредби за закрит и открит монтаж (КРУ и ОРУ).
Комплектни трансформаторни подстанции
Силови трансформатори и стъпални регулатори
Измервателни трансформатори
Въртящи се електрически машини
Апарати, релета, вторични вериги и електрически инсталации за напрежение до 1000V.
Защити срещу поражения от електрическия ток

АКРЕДИТИРАН СЪГЛАСНО БДС EN ISO/IEC 17020

Заповед № 1198/07.11.2008 г. е неделима част от сертификата за акредитация, общо 5 страници

Валиден до: 30.11.2012 г. БСА рег. № 140 ОКС

Дата на първоначална акредитация: 22.04.2004 г.

Изпълнителен директор: инж. [redacted]

Дата на преакредитация: София

На основание чл. 2 от ЗЗЛД

1797 София, бул. "Г.М. Димитров" 52Б, тел.: 02 873 5302; факс: 02 873 5303

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БЪЛГАРСКА СЛУЖБА ЗА АКРЕДИТАЦИЯ

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ

" ЕВРОТЕСТ - КОНТРОЛ" АД
ДИРЕКЦИЯ „ИЗПИТВАТЕЛНА ЛАБОРАТОРИЯ"
Адрес на управление и лаборатория:
1797, гр. София, бул. „Д-р Г. М. Димитров" № 16

ЕИК по БУЛСТАТ: 121128591

ОБХВАТ НА АКРЕДИТАЦИЯ:

Да извършва изпитване на: Води - повърхностни и подземни: питейни, минерални, битови отпадни, производствени, придънни, морски, рудничні, съпътстващи нефта; Почви; Почви строителни /земна механика/; Глини, глинести суровини и изделия; Материали естествени зърнести; Скали и минерали; Гипс; Цимент; Бетони; Руди, концентрати, агломерати и пелети; Нефт; Течни горива; Масла; Парафин и церезин; Природен газ, газови смеси и втечнени въглеводороди; Горива твърди; Метали, сплави и изделия:/черни метали – чугун, стомана феросплави, цветни метали и сплави, платина и платиноиди, редки метали и съединения на: хафний, телур, талий, церий, галий, германий, цирконий, индий, тербий, лантаноиди обикутерсни сплави; Тънки слоеве /включително живописни/; Стъкла; Микрочастици с размери от 0.1 μm до 100 μm; Растения; Разтвори.

Да извършва вземане на проби от: води, почви, плочки керамични подови и стенни, руди, концентрати, агломерати, нефт и нефтопродукти, природен газ, твърди горива, метали и сплави, скали, строителни и добавъчни материали.

Да извършва калибриране на: Спектрограф PGS; Анализатор за сяра и въглерод; Енергийно дисперсивна система на рентгенов микроспектрален анализатор; Атомно-емисионен спектрометър с източник на възбуждане индуктивно свързана плазма; Рентгенофлуоресцентен спектрометър; Атомноабсорбционен спектрометър; Газов хроматограф; Рентгенодифрактометрична система; Спектрофотометър; Фотоколориметри; Фотометър Spectroquant; Пламъков фотометър; Инфрачервен спектрофотометър; Комплексна PVT апаратура.

АКРЕДИТИРАН СЪГЛАСНО БДС EN ISO/IEC 17025:2006

Заповед № ...765/31.10.2007..... е неделима част от сертификата за акредитация,

общо ...19..... страници

Валиден до: ...31.10.2011..... БСА рег. № .....3.0406.....

Дата на: акредитация 30.10.2003 г.

Изпълнителен директор: Елза Янева

Дата на преакредитация:

София 31

На основание чл. 2 от ЗЗЛД

БЪЛГАРСКА СЛУЖБА ЗА АКРЕДИТАЦИЯ РЕПУБЛИКА БЪЛГАРИЯ

1797 София, бул. „Д-р Г.М. Димитров" 52А, тел.: 02 873 5302; факс: 02 873 5303

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 1

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ПРИЛОЖЕНИЕ №1

" ЕЛПРОМ ЕМЗ " ООД ГРАД ШАБЛА

ГАМА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ НН ТИП СТ-1; СТ-2, СТ-3 И СТ-4

ТЕЛЕФОНИ ЗА КОНТАКТИ:
Управител 05743 / 45 - 68
Гл.счетоводител 05743 / 42 - 84
Търг. Отдел 05743 / 41 - 84
Факс/тел.секретар 05743 / 50 - 20
E-mail : elpromemz@inbox.infotel.bg

таблица 1.

Тип Type	Преводно отношение Ipn/Isn Ratel current ratio A / A	Най-високо работно напрежение Ratel voltage power network kV	Клас на точност Class of accuracy %	Номинална мощност Sn Rated power VA	Номинален ток на терм. устойчивост Rated short-time termal stavility Ith, kA	Номинален ток на дин. устойчивост Rated short-time dinamic stavility Idyn, kA	Номинален коефициент на безоп. Security factor for apparatus Fs	Заводски шифър Serial number
1	2	3	4	5	6	7	8	9
СТ - 1 първич и вторич	30 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210302 - XXXX
	50 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210502 - XXXX
	75 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210752 - XXXX
	100 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1211002 - XXXX
	150 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1211502 - XXXX
СТ -2 шина 30x10 40x10 кабел ф36	150 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1221505 - XXXX
	200 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1222005 - XXXX
	250 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1222505 - XXXX
	300 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1223005 - XXXX
СТ - 3 шина 30x10 40x10 ф36	300 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1233005 - XXXX
	400 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1234005 - XXXX
	500 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1235005 - XXXX
	600 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1236005 - XXXX
СТ - 3 шина 50x10 ф48	500 / 5	0,72	0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1235005 - XXXX
	600 / 5	0,72	0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1236005 - XXXX
	750 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1237505 - XXXX
	800 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1238005 - XXXX
СТ-4 за шина 80x10 или кабел ф73	300 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1243005 - XXXX
	400 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1244005 - XXXX
	500 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1245005 - XXXX
	600 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1246005 - XXXX
	750 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1247505 - XXXX
	800 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1248005 - XXXX
	1000 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12410005 - XXXX
	1200 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12412005 - XXXX
	1250 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12412505 - XXXX
	1500 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12415005 - XXXX

УПРАВИТЕЛ

На основание чл. 2 от ЗЗЛД

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Токови измервателни трансформатори НН Х/5 А, проходен тип”

Приложение № 2

Приложение 2

РЕПУБЛИКА БЪЛГАРИЯ

ДЪРЖАВНА АГЕНЦИЯ ЗА МЕТРОЛОГИЯ И ТЕХНИЧЕСКИ НАДЗОР
STATE AGENCY FOR METROLOGY AND TECHNICAL SURVEILLANCE

УДОСТОВЕРЕНИЕ
ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ
Measuring Instrument Type-approval Certificate

№ 06.04.4547

Издадено на: *Issued to*	"ЕЛПРОМ-ЕМЗ" ООД, 9680 Шабла, обл. Добричка, ул. "Нефтяник" № 38
На основание на: *In Accordance with:*	чл. 32, ал. 1 от Закона за измерванията (ДВ, бр. 46 от 2002 г.)
Относно: *In Respect of:*	гама токови измервателни трансформатори, тип CT-x
Производител: *Manufacturer:*	"ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла
Знак за одобрен тип: *Type Approval Mark:*	BG 06 4547
Технически и метрологични характеристики: *Technical and metrological characteristics:*	приложение, неразделна част от настоящото удостоверение за одобрения тип средство за измерване
Срок на валидност: *Valid until:*	03.04.2016 г.
Вписва се в регистъра на одобрените за използване типове средства за измерване под №: *Reference №:*	4547
Дата на издаване на удостоверението за одобрен тип: *Date:*	03.04.2006 г.

ПРЕДСЕДАТЕЛ:

На основание чл. 2 от ЗЗЛД

ОРИГИНАЛА

Образец с приложения

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Приложение №

Приложение към удостоверение за одобрен тип № 06.04.4547

Издадено на: "ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла

Отнасяно: гама токови измервателни трансформатори, тип СТ-х

1. Описание на типа:

Токовите трансформатори тип СТ– х са предназначени за измерване на ток и за защита на разпределителни съоръжения (уредби) във вътрешно изпълнение.

Токовите трансформатори тип СТ– х се състоят от тороидален магнитопровод с първична и вторична намотка, поместени в кутия от пластмаса с клас на възпламеняемост съгласно IEC 707-V-0.

Изолацията спрямо магнитопровода и намотките е суха с клас на топлоустойчивост В.

Трансформаторите тип СТ–х са предназначени за експлоатация при надморска височина до 1000 m за закрит монтаж при температура на въздуха от минус 5° С до + 40° С и относителна влажност на въздуха до 70 % за условия на умерен климат

1.1. Технически и метрологични характристики:

Номинален първичен ток, А	СТ – 1 СТ – 2 СТ – 3	30, 50, 75, 100, 150 200, 250, 300 400, 500, 600
Номинален вторичен ток, А		5
Клас на точност	СТ – 1 СТ – 2 СТ – 3	0,2; 0,5 0,5 0,5
Коефициент на безопасност - Fs		5, 10
Номинална мощност, VA	СТ – 1 СТ – 2 СТ – 3	5, 10 5, 10 5, 10, 15
Максимално работно напрежение, kV		0.72

Забележка: * Номиналната мощност 10 VA не се отнася за трансформатори с токово отношение 150/5 А.

1.2. Означаване на типа:

Означението на типа е СТ-х (СТ-1, СТ-2 и СТ-3)

Параметрите като клас наточност, първичен ток, вторичен ток, номинално напрежение и коефициент на сигурност са посочени на табелката на трансформатора.

ВЯРНО С ОРИГИНАЛА

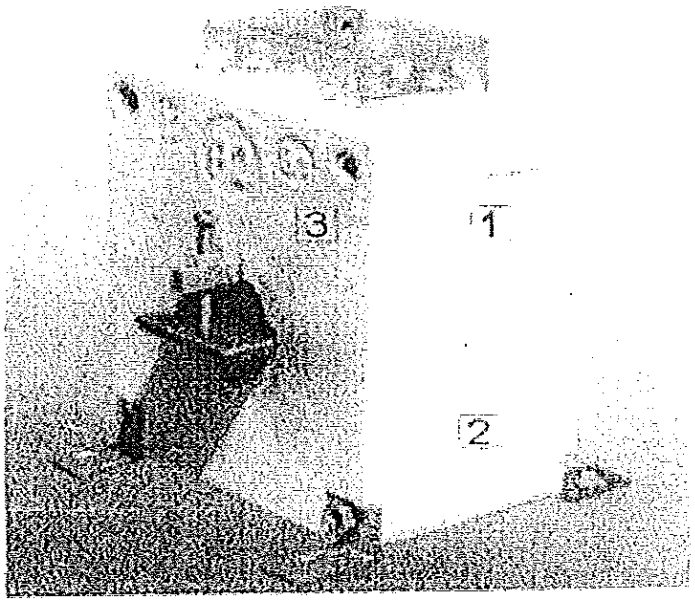
Вярно с оригинала

260

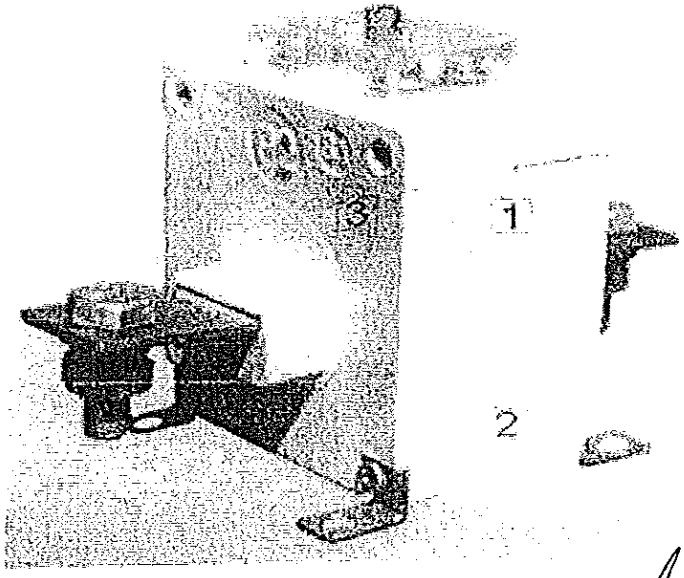
Приложение 2

Приложение към удостоверение за одобрен тип № 06.04.4547

2. Схеми на местата за поставяне на знаците, удостоверяващи резултатите от контрола и места за пломбиране.



1 – Знак за първоначална проверка (марка за залепване)
2 – Знак за последваща проверка (марка за залепване)
3 – Знак за одобрен тип



1 – Знак за първоначална проверка (марка за залепване)
2 – Знак за последваща проверка (марка за залепване)
3 – Знак за одобрен тип

ВЯРНО С ОРИГИНАЛА

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Приложение 2

РЕПУБЛИКА
БЪЛГАРИЯ

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

BULGARIAN INSTITUTE OF METROLOGY

ДОПЪЛНЕНИЕ № 06.07.4547.1

КЪМ УДОСТОВЕРЕНИЕ ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ № 06.04.4547

Measuring Instrument Type-approval Certificate-Revision 1

Издадено на: *Issued to:*	"ЕЛПРОМ-ЕМЗ" ООД, 9680 Шабла, обл. Добричка, ул. "Нефтяник" № 38
На основание на: *In Accordance with:*	чл. 32, ал. 1 от Закона за измерванията (ДВ, бр. 46 от 2002 г.)
Относно: *In Respect of:*	токов измервателен трансформатор, тип СТ-х
Производител: *Manufacturer:*	"ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла
Технически и метрологични характеристики: *Technical and metrological characteristics:*	приложение, неразделна част от настоящото удостоверение за одобрен тип средство за измерване.
Срок на валидност: *Valid until:*	03.04.2016 г.
Средството за измерване е вписано в регистъра на одобрените за използване типове средства за измерване под №: *Reference №:*	4547
Дата на издаване на допълнението към удостоверението за одобрен тип: *Date:*	17.07.2006 г.

ПРЕДСЕДАТЕЛ:
К. Катранджиев

ВЕРНО-С ОРИГИНАЛА

Вярно с оригинала

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Приложение към Допълнение № 06.07.4547.1 към удостоверение № 06.04.4547

Издадено на: "ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла

Относно: токов измервателен трансформатор, тип СТ-4

Описание на допълнението

1. Към т. 1 Описание на типа, се добавя:

Токовите трансформатори с клас на точност 0,5 S са за специални цели. Свързват се с електромери, които измерват стойности на тока между 50 mA и 6 A, което е от 1 % до 120 % от номиналния ток на трансформатора – 5 A.

Токовата и ъгловата грешка при 1 % от номиналния ток не превишават стойностите, посочени в стандарт БДС EN 60044-1:2001.

2. Към т. 1.1 Технически и метрологични характеристики:

2.1 Включва се токов измервателен трансформатор тип СТ-4 със следните метрологични характеристики:

Номинален първичен ток, А	750, 800, 1000, 1200, 1250 и 1500
Номинален вторичен ток, А	5
Клас на точност	0,5 и 0,5 S
Коефициент на безопасност – Fs	5, 10
Номинална мощност, VA	5, 10 и 15
Максимално работно напрежение, kV	0,72

2.2 Включва се клас на точност 0,5 S за трансформатори тип СТ-1, тип СТ-2 и тип СТ-3;

2.3 Отпада забележката.

ВЯРНО С ОРИГИНАЛА

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Приложение 2

РЕПУБЛИКА БЪЛГАРИЯ
Български институт по метрология

REPUBLIC OF BULGARIA
Bulgarian Institute of Metrology

ДОПЪЛНЕНИЕ № 13.11.4547.2

КЪМ УДОСТОВЕРЕНИЕ ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ № 06.04.4547

Measuring Instrument Type-approval Certificate-Revision 1

Издадено на производител:
Issued to manufacturer:
„Елпром ЕМЗ" ООД, гр. Шабла

На основание на:
In Accordance with:
чл. 32, ал. 1 от Закона за измерванията (ДВ, бр. 46 от 2002 г., изм. бр. 88 от 05 г., изм. и доп. бр. 95 от 2005 г.)

Относно:
In Respect of:
токови измервателни трансформатори тип СТ-х

Технически и метрологични характеристики:
Technical and metrological characteristics:
приложение, неразделна част от настоящото удостоверение за одобрен тип средство за измерване

Срок на валидност:
Valid until:
03.04.2016 г.

Средството за измерване е вписано в регистъра на одобрените за използване типове средства за измерване под №:
Reference №:
4547

Дата на издаване на допълнението към удостоверението за одобрен тип:
Date:
04.11.2013 г

И.Д. ПРЕДСЕДАТЕЛ:
Димка Иванова

ВЯРНО С ОРИГИНАЛА

Страница 1 от 2

Вярно с оригинала

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Приложение

Приложение към Допълнение № 13.11.4547.2 към удостоверение № 06.04.4547

Издадено на производител: „Електрон ЕМЗ" ООД, гр. Шабла

Относно: токови измервателни трансформатори тип СТ-х

Описание на допълнението към удостоверение за одобрен тип № 06.04.4547

В т. 1.1 „Технически и метрологични характеристики" към „Номинален първичен ток, А" в графата за **СТ-2** се добавят следните стойности:

Номинален първичен ток, А	СТ-2	100; 150

ВЯРНО С ОРИГИНАЛА

Страница 1 от 1

Вярно с оригинала

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 3

01

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ПРИЛОЖЕНИЕ №3

"ЕЛПРОМ ЕМЗ" ООД град ШАБЛА

ТЕЛЕФОНИ ЗА КОНТАКТИ:
Управител 05743 / 45 - 68
Гл.счетоводител 05743 / 42 - 84
Търг. Отдел 05743 / 41 - 84
Факс/тел.секретар 05743 / 50 - 20
E-mail : elpromemz@mbox.infotel.bg

ТЕХНИЧЕСКО ОПИСАНИЕ

ГАМА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ
тип СТ-1, СТ-2, СТ-3 и СТ-4 за НН до 1000V
ПРОИЗВОДСТВО НА " ЕЛПРОМ ЕМЗ " ООД град ШАБЛА

Токови измервателни трансформатори тип СТ-1; тип СТ-2, тип СТ-3 и тип СТ-4 са за ниско напрежение до 1000V за вътрешен монтаж с клас на точност 0.2; 0.5 или 0.5S и номинална мощност до 50VA в диапазона от номинални токове до 3000А съгласно БДС EN 60044-1:2001 и IEC 60044-1:1999.

- Тип СТ-1 се състои от тороидален магнитопровод с първична и вторична намотки , поместени в кутийка от пластмаса изработена от пластмаса тип Pocan – B4235 с клас на възпламеняемост съгласно IEC 707 – V-0.

  Произвежданите токови трансформатори са в диапазона от 30/5 А до 150/5 А с клас на точност 0.2, 0.5 или 0.5S с мощност 5VA и 10VA.

- Тип СТ-2 Тип, СТ-3 и Тип СТ-4 са проходни типове токови измерителни трансформатори пригодени съответно за шина или кабел – състоят се от тороидален магнитопровод с вторична намотка , поместени в кутийка от пластмаса изработена от пластмаса тип Pocan – B4235 с клас на възпламеняемост съгласно IEC 707 – V-0.

  Произвежданите токови трансформатори са в диапазона от 150/5А до 2000/5А с клас на точност 0.5 или 0.5S и мощност 5VA; 10VA и 15VA.

07.2.2012 г.

ЕЛПРОМ ЕМЗ ООД ОРИГИНАЛА ШАБЛА

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ТЕХНИЧЕСКИ ДАННИ Тип СТ-1, Тип СТ-2, Тип СТ-3 и Тип СТ-4

Условия на работа: Токовите измервателни трансформатори за средно напрежение се монтират на закрито при температура на околната среда от -35С до +45С и височина над морското равнище до 1000м.

1.	Номинално напрежение	- до 0,75 KV
2.	Честота	- 50 Hz
3.	Номинален първичен ток Ipn	- до 2000 A
4.	Номинален вторичен ток Isn	- 5 A
5.	Клас на точност на ядрото за мерене	- 0.2, 0.5, 05S
6.	Номинална мощност	- 5, 10, 15VA
7.	Номинален ток на термична устойчивост Ith, кА	- 60 Ipn
8.	Номинален ток на динамична устойчивост Idyn, кА	- 2,5 Ith
9.	Номинален коефициент на безопастност Fs	- 5 или 10
10.	Маса, в кг взависимост от преводното отношение от	- 0.485 до 1,070
11.	Изолация - суха, клас на топлоустойчивост B	

Стандартизирани документи: Изделието отговаря на БДС EN 60044-1:2001 и IEC 60044-1:1999.

При всичките произвеждани от " ЕЛПРОМ ЕМЗ " ООД град Шабла токови измервателни трансформатори е предвидена възможност за пломбиране както на кутията на трансформатора с цел предотвратяване на неправомерен достъп до магнитопровода и самите намотки, така и на предпазната капачка, която предпазва клемите на вторичната намотка на трансформатора.

УПРАВИТЕЛ :

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 4

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Приложение: 4.

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ
Главна дирекция Мерки и измервателни уреди
отдел "Изследване на типа на средства за измерване"
сектор "Електрични величини"
София, бул. Г.М.Димитров 52 Б, тел. 873-52-98

ПРОТОКОЛ ОТ ИЗПИТВАНЕ

№ 19-ЕВ / 13.07.2006 г.

1. **Обект на изпитването:** Токов измервателен трансформатор тип СТ- Х
2. **Номер и дата на заявката:** АУ-03-654/27.06.2006 г.
3. **Заявител:** " ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
4. **Производител:** " ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
5. **Метод на изпитване:** БДС EN 60044-1 Измервателни трансформатори Част 1: Токови трансформатори.
6. **Период на изпитване:** 07.07.2006 г. до 14.07.2006 г.
7. **Изпитани образци:** ф. № 20218, 33063, 29967, 29477, 34805, 32820
8. **Описание на типа:**

Гамата измервателни токови трансформатори тип СТ-х са за мрежи ниско напрежение.

Токовите трансформатори тип СТ-1 се състоят от тороидален магнитопровод с първична и вторична намотка, а тип СТ-2, тип СТ-3 и тип СТ-4 са проходен тип трансформатори, пригодени за шина или кабел, с вторична намотка.

Резултатите в протокола се отнасят само за изпитваните образци.

Началник отдел ИТСИ:
/ин

На основание чл. 2 от ЗЗЛД

Протокола може да бъде разпечатван единствено и само с разрешение на началник отдел "Изследване на типа на средствата за измерване"

ЕЛПРОМ ЕМЗ ШАБЛА ООД
СЪОТВЕТСТВИЕ С ОРИГИНАЛА

Вярно с оригинала.

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Приложение: 4

9. Технически и метрологични характеристики:

Тип на трансформатора	СТ-1	СТ-2	СТ-3	СТ-4
Номинален първичен ток, А	30, 50, 75, 100,150	200, 250, 300	400, 500, 600	1200, 1250, 1500
Номинален вторичен ток, А	5			
Клас на точност	0,5 S			
Максимално работно напрежение, kV	0,72			
Честота, Hz	50			
Номинална мощност, VA	5, 10	5, 10	5, 10, 15	5, 10, 15

10. Технически средства използвани при изпитването:

10.1. Уредба за проверка на токови трансформатори тип АИТ ф. № 45/1972 с еталонен трансформатор тип ТІ 50 ф. № 7210453, свидетелство за калибриране № 037- ЕЕИ/ 16.03.2005 год.

10.2. Уредба за изпитване на диелектрична якост тип РЕО 3/50 ф. № 671897308

10.3. Мегаомметър тип Ф 41/2, ф. № 62862.

11. Резултати от изпитванията:

11.1. Проверка на маркировката

11.1.1. Маркировка на изводите – БДС EN 60044-1 т. 10.1.1 и 10.1.2

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.1.2 Означение на полярностите – БДС EN 60044-1 т. 10.1.3

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.2. Маркировка на табелките с технически данни – БДС EN 60044-1 т. 10.2 и т. 11.7

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

ВЕРНО С ОРИГИНАЛА

Вярно с оригинала

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Приложение: 4

11.3. Проверка на диелектричната якост на първичната намотка – /3 kV за 60 s/ — БДС EN 60044-1 т. 5.1.4

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.4. Проверка на диелектричната якост на вторичната намотка – /3 kV за 60 s/ — БДС EN 60044-1 т. 5.1.4

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.5. Определяне грешките на трансформаторите – — БДС EN 60044-1 т.11.2

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.6. Проверка – коефициент на безопасност - — БДС EN 60044-1 т.11.6

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.

Присъствали на изпитването:

Младши експерт: На основание чл. 2 от ЗЗЛД

/и

Началник сектор

/и

ВЯРНО С ОРИГИНАЛА

Копията е оригинала

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 5

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Приложение №5

" ЕЛПРОМ ЕМЗ " ООД град ШАБЛА

ПАСПОРТ - СЕРТИФИКАТ

ИЗПИТАТЕЛЕН ПРОТОКОЛ

За трансформатор токов измервателен ниско напрежение

Тип СТ – 4 обхват 1200 / 5А

Заводски № 15412005.....

I. Указания на работа . Токовите трансформатори ниско напрежение се монтират на закрито при температура на околната среда от -35° С до +45° С и височина над морското равнище до 1000м

II. Технически характеристики :

1 Номинално напрежение	-	0,75 KV
2 Честота	-	50 Hz
3 Номинален първичен ток Iрн	-	1200А
4 Номинален вторичен ток Iвн	-	5 А
5 Клас на точност	-	0,5
6 Номинална мощност	-	15 VA
7 Ток на термична устойчивост	-	60 х Iрн
8 Маса	-	0,920 кг

9. Изолация – сухо, клас на топлоустойчивост В

III. Стандартизиращи документи: Изделието отговаря на БДС ЕN 61869-2:2012, IEC 61869-2:2012.

IV. Резултати от приемно-предавателните изпитания

1 Проверка класа на точност Отговаря на клас на точност - 0,5

2 Изпитание на изолацията между първичната и вторичната намотки с променливо напрежение 3 KV за 1 минута издържа

V. Сертификат за качество : Настоящият сертификат за качество се дава въз основа на приемно - предавателните заводски изпитания:

НАСТОЯЩИЯТ ТИП ТОКОВ ИЗМЕРИТЕЛЕН ТРАНСФОРМАТОР Е ОДОБРЕН ОТ ДАМТИ С УДОСТОВЕРЕНИЕ № 4547 от 05.04.2006 година .

VI. Комплектност на доставката: Запасни части към изделието не се предвиждат

ИНСТРУКЦИЯ ЗА МОНТАЖ И ЕКСПЛОАТАЦИЯ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ ТИПСТ – 4

1. Места на монтаж: на закрито

2. Начин на свързване: Първичната намотка на токовите трансформатори се свързва последователно във веригата преводници на монтажа, а релетата и измервателните уреди паралелно на вторичната намотка

3. Електрозащитни условия на работа : При монтаж на токовите трансформатори трябва да се спазят следните условия:

А/ Трансформаторите да се свързват в закрити помещения

Б/ Съединителните проводници да се свързват добре към изводите и контактите. Когато изводите са на винтове, съединителните проводници трябва да се плетнат здраво между две месингови шайби или хубаво обуват.

В/ Токът, който се черпи от трансформатора, по отношение номиналността на трансформатора, да не е по-голяма от номиналната, посочена на табелката. Претоварването на трансформаторите се ограничава от допустимите температури на загряване на изолацията.

Г/ Токовите трансформатори трябва да работят при непрекъснат или периодичен контрол

Д/ При обслужване на токовите трансформатори е задължително да се спазва следното условие.

ПРИ ВКЛЮЧЕНА ВЪВ ВЕРИГАТА ПЪРВИЧНА НАМОТКА ВТОРИЧНАТА НАМОТКА НА ТРАНСФОРМАТОРА НЕ ТРЯБВА ДА ОСТАВА ОТВОРЕНА !

Когато се налага прекъсване на вторичната верига, вторичните клеми на трансформаторите трябва да се свържат на късо с проводник със сечение 2,5 кв. мм. Във вторичната верига на токов трансформатор предпазители не се поставят

Б/ При работа на трансформатора единият извод на вторичната намотка се заземява

4. Безопасност и хигиена на труда : За осигуряване на безопасна работа на обслужващия персонал е необходимо да се спазват следните условия:

А/ Единият извод на вторичната намотка да се заземи

Б/ При включване на първичната намотка във веригата, вторичната намотка да не се остави отворена.

В/ След извършване на монтажа на трансформаторите към таблата и уредите, върху клемите НН на първичната намотка, да се поставе предпазна капачка и да се пломбира.

Г/ При ремонт на трансформаторите, същите да не са под напрежение.

Д/ При проверка на трансформаторите отдъм насрещна страна обслужващия персонал да работи с лично предпазни средства

При добри условия на работа и при периодичен контрол, трансформаторите могат да работят продължително време без повреда.

5. Опаковка, транспорт и съхранение Трансформаторите се поставят в индивидуални кутии от картон – велпапе. Транспортират се във всякакъв вид транспортни средства.

ПРИ НЕСПАЗВАНЕ НА НАСТАВЛЕНИЯТА, ДАДЕНИ В НАСТОЯЩАТА ИНСТРУКЦИЯ, ЗАВОДЪТ ПРОИЗВОДИТЕЛ НЕ ПРИЕМА РЕКЛАМАЦИИ, НАПРАВЕНИ В ГАРАНЦИОННИЯ СРОК НА ИЗДЕЛИЕТО.

ГАРАНЦИОННА КАРТА

"ЕЛПРОМ ЕМЗ" ООД град Шабла се задължава да замени или ремонтира безплатно токови измервателни трансформатори, които в продължение на 36 месеца от датата на продажбата им от завода, по вината на дефекти или потребителят с констатирал неизправността на трансформатора е писменото на ползвателя стандарт.

Замяната или ремонтът се извършва при условие, че са спазени изискванията за транспорт, съхранение, монтаж и експлоатация, дадени от предприятието - производител и приложената документация и е запазен оригиналният паспорт - сертификат с гаранционната карта на съответния трансформатор.

Дата ...
гр. Ш...

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

214

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

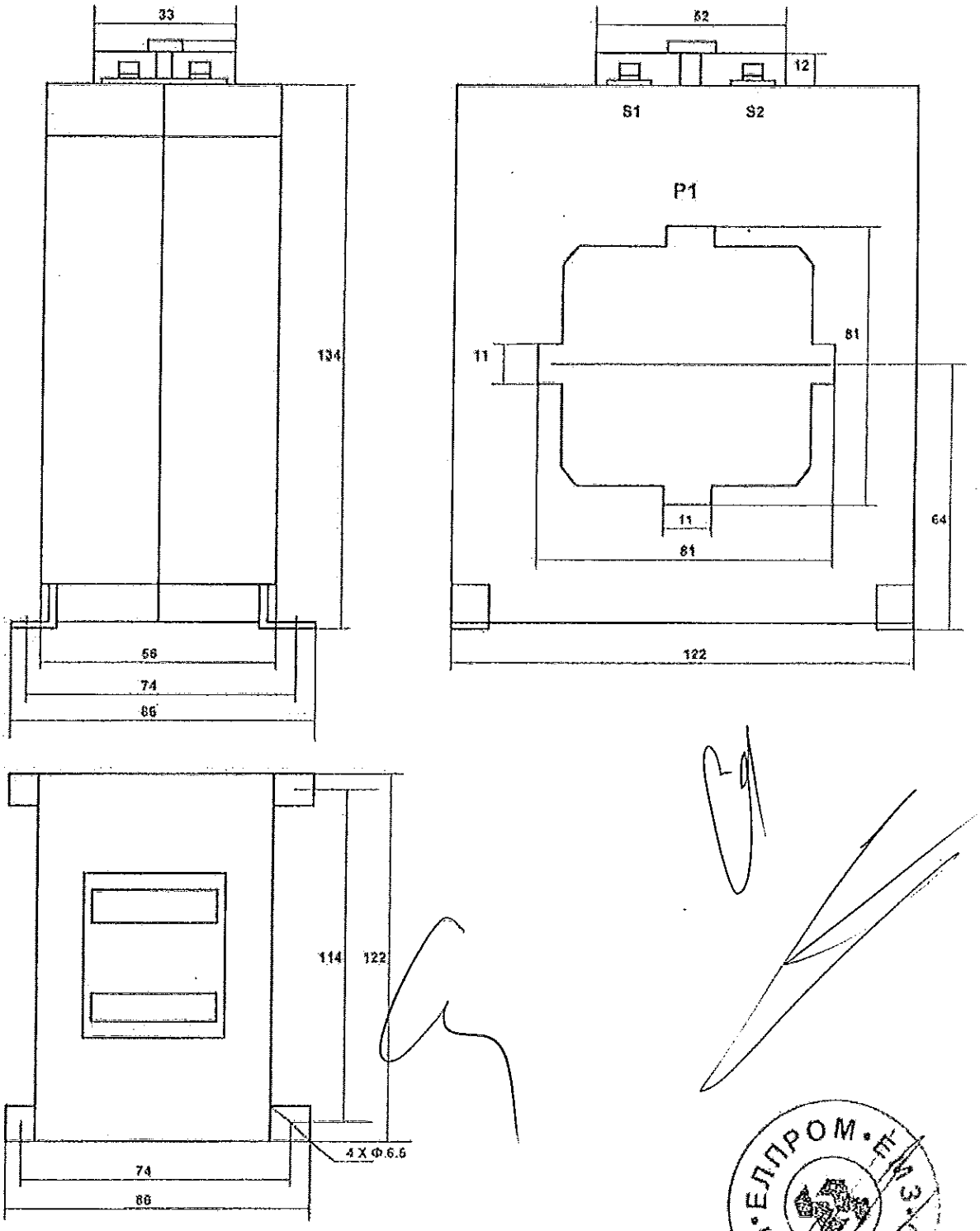
"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 6

ПРИЛОЖЕНИЕ № 6.

ПРИСЪЕДИНИТЕЛНИ РАЗМЕРИ ЗА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ

тип СТ- 4 включващи преводните отношения 800/5А, 1000/5А, и 1200/5А



276

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Токови измервателни трансформатори НН Х/5 А, проходен тип”

Приложение № 7

277

ПРИЛОЖЕНИЕ №7

"ЕЛПРОМ ЕМЗ" ООД град ШАБЛА

ИНСТРУКЦИЯ ЗА МОНТАЖ И ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,

1. **Място на монтаж** : на закрито.
2. **Начин на свързване** : Първичната намотка на токовите трансформатори се свързва последователно към захранващите проводници на монтажа, а релетата и апаратите – последователно на вторичната намотка.
3. **Експлоатационни условия на работа** : При ползване на токовите трансформатори трябва да се спазват следните условия :

А/ Трансформаторите да се монтират в закрити помещения.

Б/ Съединителните проводници да са свързани добре към източника и консуматора. Когато изводите са на винтове, съединителните проводници трябва да се затегнат здраво между две месингови шайби или кабелна обувка.

В/ Токът, който се черпи от трансформатора, по специално мощността на трансформатора, да не е по-голяма от мощността, посочена на табелката. Претоварването на трансформаторите се ограничава от допустимите температури на загряване на изолациите.

Г/ Токовите трансформатори трябва да работят при непрекъснат или периодичен контрол.

Д/ При обслужване на токовите трансформатори е задължително да се спазва следното условие:

ПРИ ВКЛЮЧЕНА ВЪВ ВЕРИГАТА ПЪРВИЧНА НАМОТКА ВТОРИЧНАТА НАМОТКА НА ТРАНСФОРМАТОРА НЕ ТРЯБВА ДА ОСТАВА ОТВОРЕНА !

Когато се налага прекъсване на вторичната верига, вторичните клеми на трансформаторите трябва да се свързват на късо с проводник със сечение 2,5 кв. мм. Във вторичната верига на токов трансформатор предпазители не се поставят.

Е/ При работа на трансформатора единият извод на вторичната намотка се заземява.

4. **Безопасност и хигиена на труда** : За осигуряване на безопасна работа на обслужващия персонал е необходимо да се спазват следните условия:

А/ Единият извод на вторичната намотка да се заземи.

ЕЛПРОМ ЕМЗ ООД ШАБЛА

ВЕРНО С ОРИГИНАЛА

Б/ При включване на първичната намотка във веригата, вторичната намотка да не се оставя отворена.

В/ След извършване на монтажа на трансформаторите към таблата и уредите, върху клемите НН на първичната намотка, да се постави предпазна капачка и да се пломбира.

Г/ При ревизия на трансформаторите, същите да не са под напрежение.

Д/ При проверка на трансформаторите откъм ниската страна обслужващия

персонал да работи с лични предпазни средства.

При добри условия на работа и при периодичен контрол, трансформаторите могат да работят продължително време без повреда.

5. **Опаковка, транспорт и съхранение** : Трансформаторите се поставят в специални кутии от картон - велпапе.Транспортират се във всякакъв вид транспортни средства.

ПРИ НЕСПАЗВАНЕ НА НАСТАВЛЕНИЯТА, ДАДЕНИ В НАСТОЯЩАТА ИНСТРУКЦИЯ, ЗАВОДЪТ ПРОИЗВОДИТЕЛ НЕ ПРИЕМА РЕКЛАМАЦИИ, НАПРАВЕНИ В ГАРАНЦИОННИЯ СРОК НА ИЗДЕЛИЕТО.

На основание чл. 2
от ЗЗЛД

ПОДПИС и ПЕЧАТ:
УПРАВИТЕЛ (ин

Дата: 09.02.2012 година

ВЯРНО С
ОРИГИНАЛА

279

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Токови измервателни трансформатори НН Х/5 А, проходен тип"

Приложение № 8

280

ПРИЛОЖЕНИЕ №8

„ ЕЛПРОМ ЕМЗ “ ООД град ШАБЛА

ИНСТРУКЦИЯ ЗА СЪХРАНЕНИЕ И ТРАНСПОРТ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,

1. Опаковка: токовите измервателни трансформатори тип СТ-2, тип СТ-3 и тип СТ-4 се поставят в специални кашони от картон - велпапе по 12/дванадесет/ броя трансформатори в кашон, 56/петдесет и шест/ кашона подредени върху европалет правят една транспортна единица.

2. Съхранение : токовите измервателни трансформатори трябва да се съхраняват в закрити помещения и складове.

3. Транспорт: токовите измервателни трансформатори се транспортират във всякакъв вид закрити транспортни средства.

ПРИ НЕСПАЗВАНЕ НА НАСТАВЛЕНИЯТА, ДАДЕНИ В НАСТОЯЩАТА ИНСТРУКЦИЯ, ЗАВОДЪТ ПРОИЗВОДИТЕЛ НЕ ПРИЕМА РЕКЛАМАЦИИ, НАПРАВЕНИ В ГАРАНЦИОННИЯ СРОК НА ИЗДЕЛИЕТО.

ПОДПИС и ПЕЧАТ: _____
(ин

Дата: 09.02.2012

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

281

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

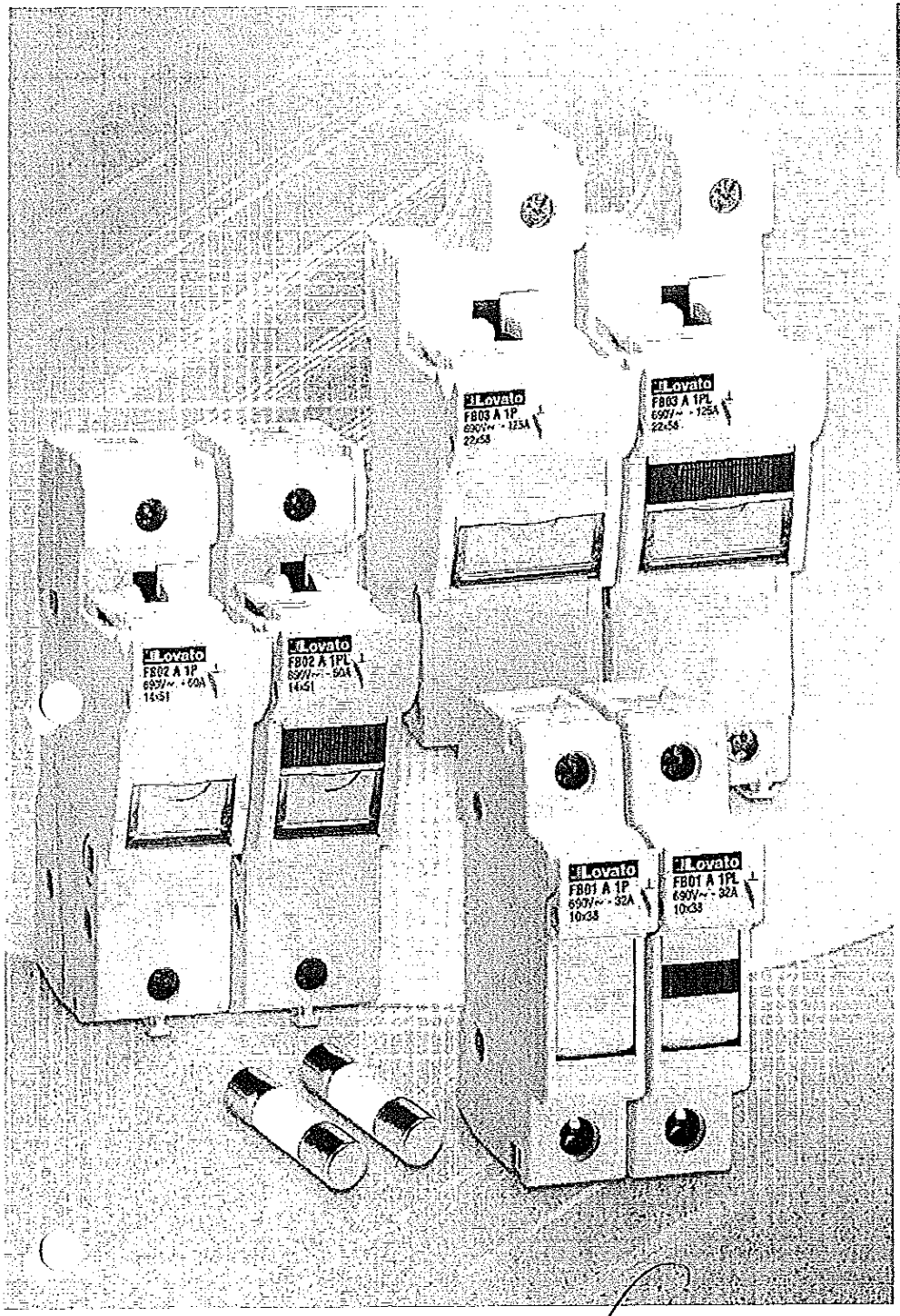
„Доставка на разпределителни табла за ниско напрежение“

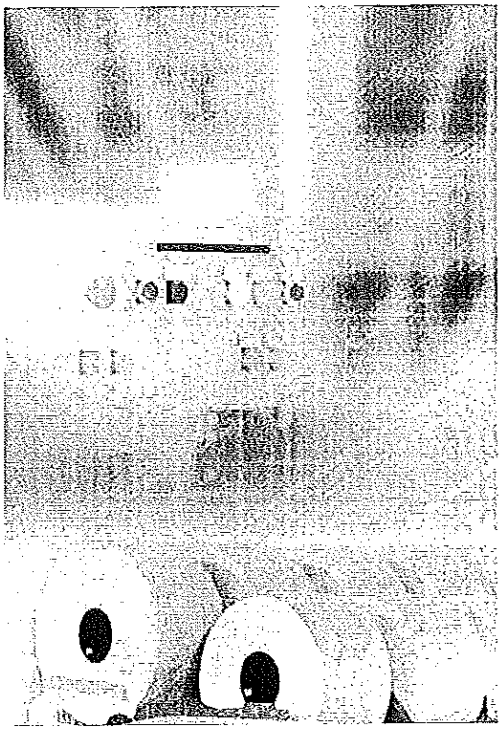
РЕФ. № PPD 17-118

“Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm”

Приложение № 1

282





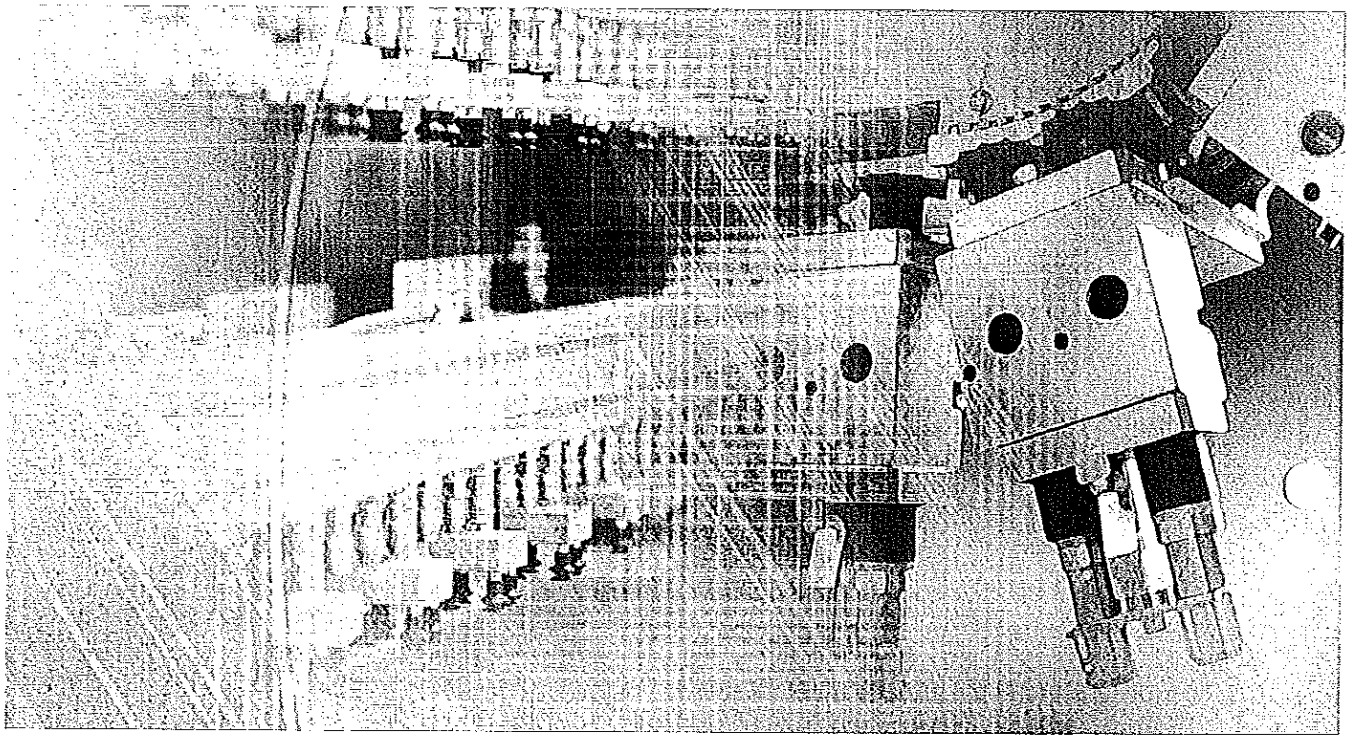
Fuse holders and fuses

Lovato electric

100% electricity

283

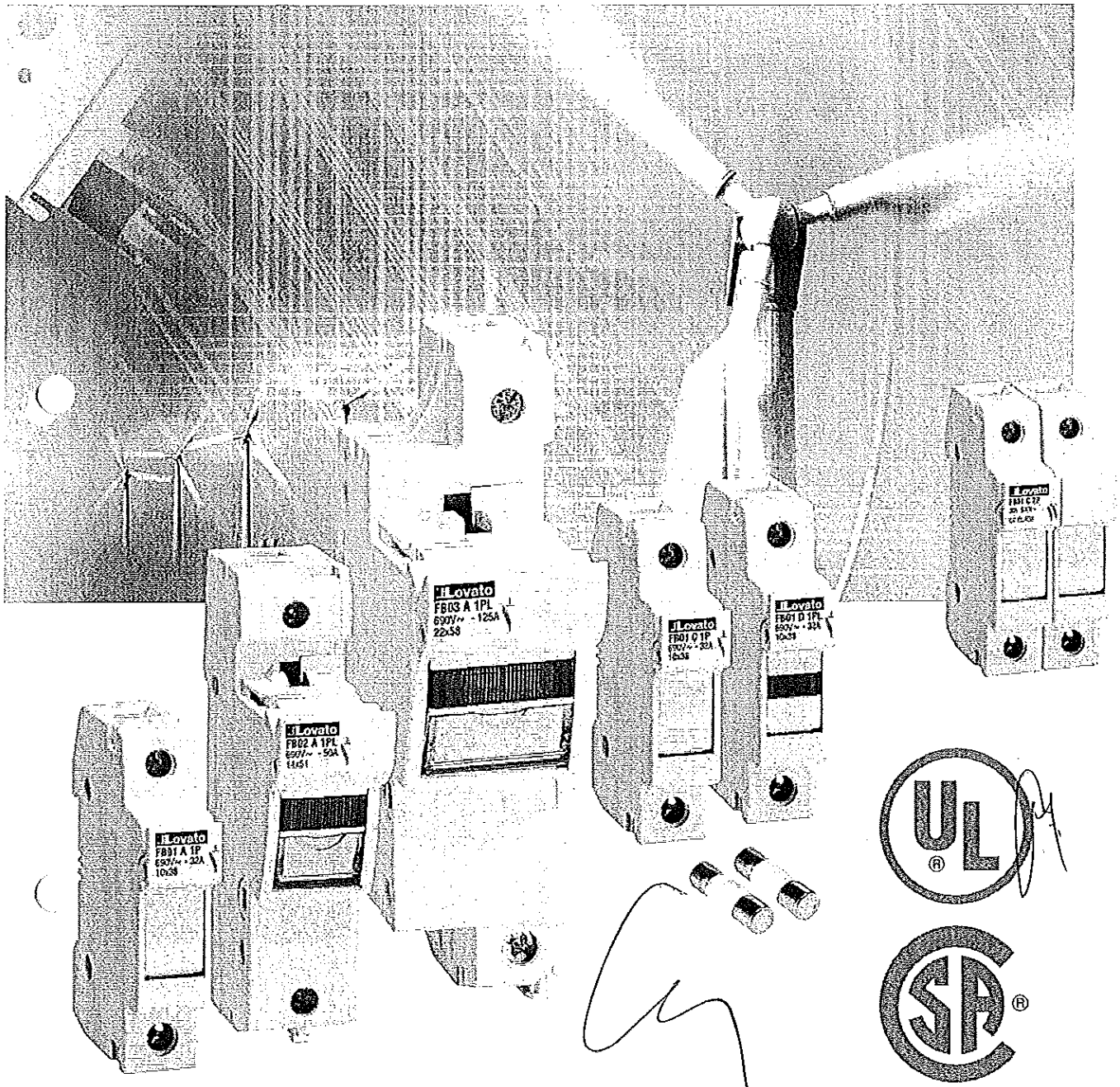
Fuse holders



- Modular concept for quick assembly of different versions based on various requirements.
- Compact size compliant with standards for electrical equipment.
- DIN rail mounting and removal ease.
- IP20 protection degree, finger safe.
- Sealable cover in open or closed position to increase user's safety.
- Version with status indicator to quickly determine if the fuse is still operative or needs to be replaced.
- Ergonomic grip for easy cover opening.
- Dedicated cylindrical 10x38 DC fuses for photovoltaic systems.
- UL and CSA certified versions.

Range	AC			DC	DC FUSES	CLASS CC
Fuse size	10x38	14x51	22x58	10x38	10x38	10x38
Type	gG or aM			gPV	gPV	Class CC
Rated voltage	690VAC			1000VDC / 690VAC	1000VDC	600VAC
Rated current	32A	50A	125A	32A	20A	30A
Utilisation category	AC-22B 500V AC-21B 690V		–	DC-20B 1000VDC AC-21B 690V	DC-20B 1000VDC	AC-22B 500V AC-21B 690V

and fuses



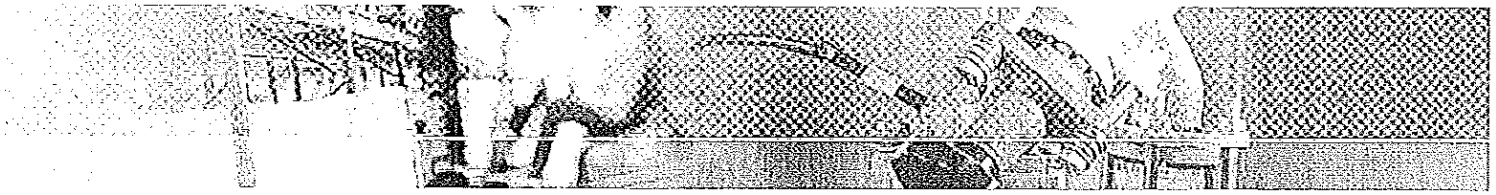
LOVATO Electric fuse holders can be used to protect against overloads and short circuits of electric lines, for motor protection and control and for the protection of electric installations.

This equipment can assure the disconnect function but is not suitable for isolation so cannot be used as switch disconnector.

The range is available in two versions: with or without fuse status indicator. If the fuse fitted on the holder blows, the failure status is shown by the indicator on the fuse-holder front.

All the fuse holders are certified for the North-American market (UL Listed, UL Recognized and CSA). Furthermore, there is a non-certified version in 10x38mm size available too.

Lovato electric

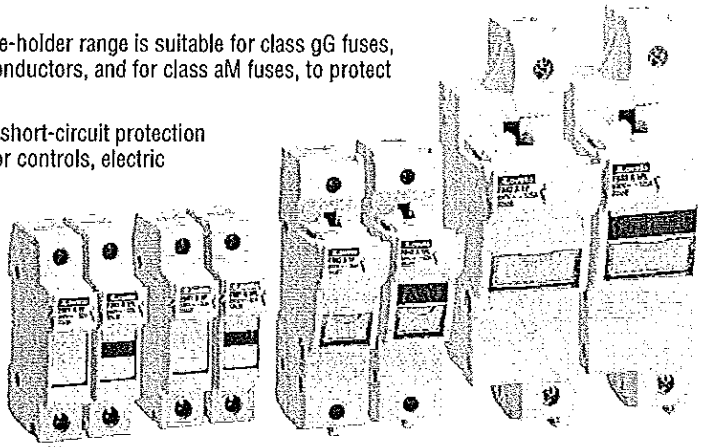


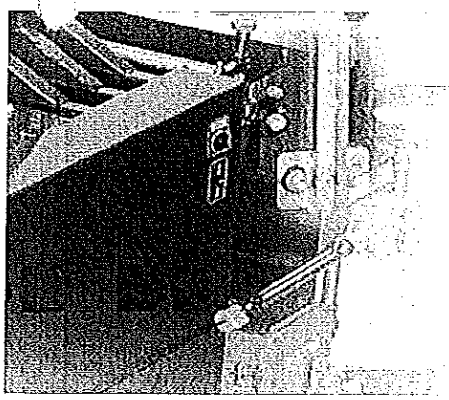
Fuse holders AC RANGE

LOVATO Electric AC fuse-holder range is suitable for class gG fuses, to protect cables and conductors, and for class aM fuses, to protect motor starting.

Function: Overload and short-circuit protection of control circuits, motor controls, electric installations.

Usage: Service industry, electric panels onboard machinery, electric installations in general.





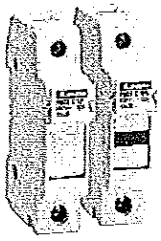
	FB01 A...	FB01 B...	FB02 A...	FB03 A...
Fuse size	10x38		14x51	22x58
Version without indicator	1P, 1P+N, 2P, 3P, 3P+N			
Version with indicator	1P			
Main characteristics				
- Rated voltage	690VAC			
- Rated current	32A		50A	125A
- Utilisation category	AC-22B 500V, AC-21B 690V		AC-22B 500V, AC-21B 690V	AC-21B 690V
- Suitable for fuses	10x38 gG or aM		14x51 gG or aM	22x58 gG or aM
- Maximum conductor cross section	16mm² flexible/stranded; 25mm² rigid/solid		25mm² flexible/stranded; 35mm² rigid/solid	35mm² flexible/stranded; 50mm² rigid/solid
Certifications obtained	UR, CSA	–	cURus	cURus
Compliant with standards	IEC/EN 60947-1, IEC/EN 60947-3, RoHS directive, UL512, CSA C22.2 n°39			

UR: UL Recognized; cURus: UL Recognized for USA and Canada.

CLASS CC Fuse holders RANGE

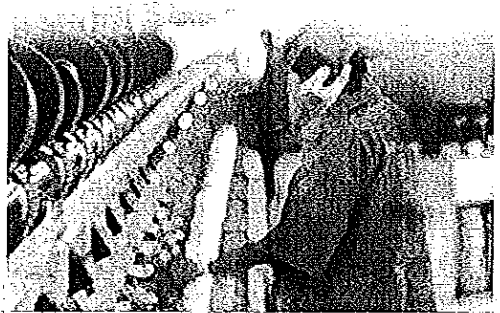
LOVATO Electric fuse holders for class CC fuses are used to protect branch circuits, consisting of conductors and components following the last overcurrent protective device protecting a load, in industrial applications which require high breaking capacity.
Suitable only and exclusively for fitting fuses defined as "class CC", quite common on the North American market.

Usage: Service industry, electric panels onboard machinery, electric installations in general.

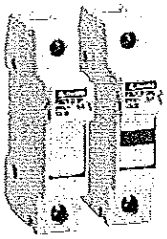


FB01 C...

Fuse size	**Class CC**
Version without indicator	1P, 2P, 3P
Version with indicator	1P
Main characteristics	
- Rated voltage	600VAC
- Rated current	30A
- Utilisation category	AC-22B 500V, AC-21B 690V
- Suitable for fuses	10x38 class CC
- Maximum conductor cross section	16mm² flexible/stranded; 25mm² rigid/solid
Certifications obtained	UL, CSA
Compliant with standards	IEC/EN 60947-1, IEC/EN 60947-3UL512, RoHS directives, CSA 22.2 n° 39



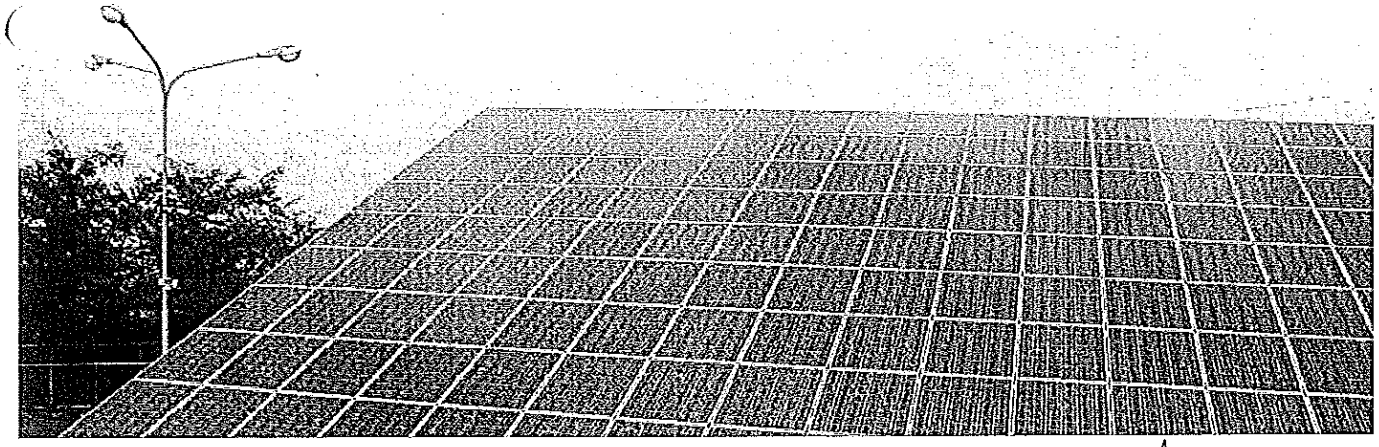
Fuse holders DC



FB01 D...

LOVATO Electric DC fuse holder range is suitable for 1000VDC rated voltage and gPV class.
Used for overload and short-circuit protection of photovoltaic modules (strings) and the relative connecting cables.

Fuse size	10x38
Version without indicator	1P, 2P
Version with indicator	1P
Main characteristics	
- Rated voltage	1000VDC / 690VAC
- Rated current	32A
- Utilisation category	DC-20B 1000VDC, AC-21B 690V
- Suitable for fuses	10x38 gPV
- Maximum conductor cross section	16mm² flexible/stranded, 25mm² rigid/solid
Compliant with standards	IEC/EN 60947-1, IEC/EN 60947-3, RoHS directive



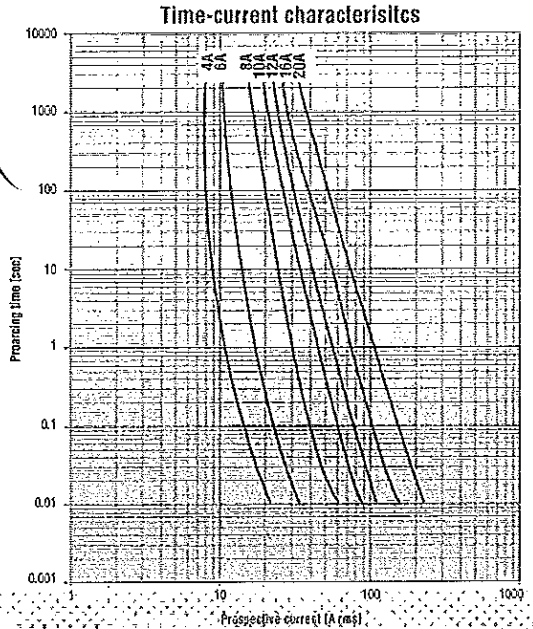
Fuses DC

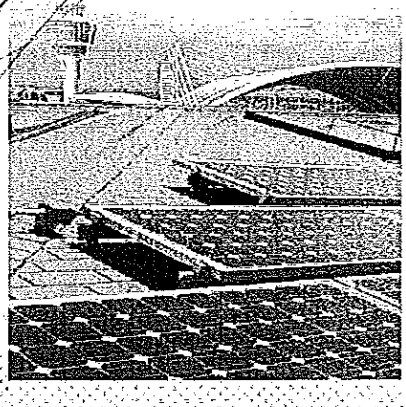
FE01 D 0...

LOVATO Electric offers a range of cylindrical 10x38 fuses dedicated to photovoltaic duty and designed for 1000VDC maximum use.
Contrary to AC type fuses that blow for high overcurrent values, this type of DC fuse is designed to blow with low-intensity overcurrent values, created on photovoltaic cells and panels.

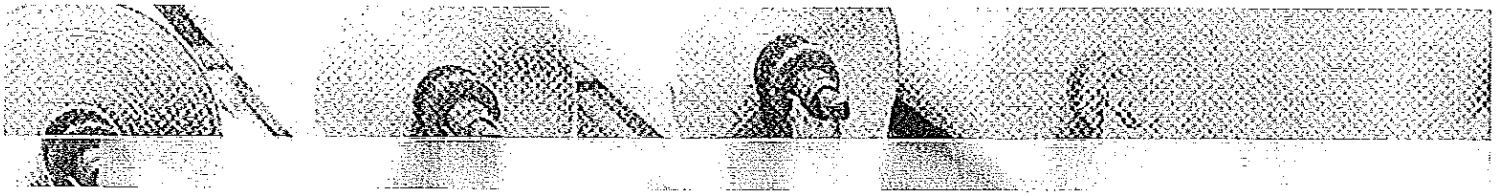
Fuses for photovoltaic application	
Breaking capacity	30kA
Mains characteristics	
- Rated voltage	1000VDC
- Rated current	2...20A

Time-current characteristics





Lovato electric

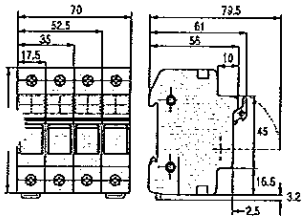


TECHNICAL CHARACTERISTICS

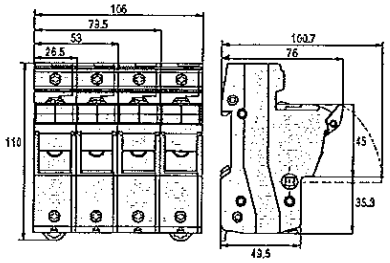
Type		FB01 A...	FB01 B...	FB02 A...	FB03 A...	FB01 C...	FB01 D...
Range		**AC**	**AC**	**AC**	**AC**	**Class CC (AC)**	**DC**
Certifications obtained		UR, CSA	–	cURus	cURus	UL, CSA	–
Maximum power dissipation		3W	3W	5W	9.5W	3W	4W
Derating factor of current Ie for different ambient temperatures	20°C	1	1	1	1	1	1
	30°C	0.95	0.95	0.95	0.95	0.95	0.95
	40°C	0.9	0.9	0.9	0.9	0.9	0.9
	50°C	0.8	0.8	0.8	0.8	0.8	0.8
	60°C	0.7	0.7	0.7	0.7	0.7	0.7
	70°C	0.5	0.5	0.5	0.5	0.5	0.5
Derating factor of current Ie for sid-by-side fuse holders - n° poles	1-3	1	1	1	1	1	1
	4-6	0.8	0.8	0.8	0.8	0.8	0.8
	7-9	0.7	0.7	0.7	0.7	0.7	0.7
	>10	0.6	0.6	0.6	0.6	0.6	0.6
Voltage for status indicator		120...690VAC	120...690VAC	230...690VAC	230...690VAC	120...600VAC	350...1000VDC
CONNECTIONS							
Maximum tightening torque		2.5Nm/22lbin	2.5Nm/22lbin	3Nm/26lbin	4Nm/35lbin	2.5Nm/22lbin	2.5Nm/22ibin
Maximum conductor cross section	flexible/stranded	1-16mm²/8 AWG	1-16mm²/6 AWG	1-25mm²/4 AWG	1-35mm²/2 AWG	1-16mm²/8 AWG	1-16mm²/6 AWG
	rigid/solid	1-25mm²/8 AWG	1-25mm²/4 AWG	1-35mm²/2 AWG	1-50mm²/1 AWG	1-25mm²/10 AWG	1-25mm²/4 AWG
AMBIENT CONDITIONS							
Operating temperature		-20...+70°C	-20...+70°C	-20...+70°C	-20...+70°C	-20...+70°C	-20...+70°C
Storage temperature		-40...+80°C	-40...+80°C	-40...+80°C	-40...+80°C	-40...+80°C	-40...+80°C
HOUSING							
Din rail mount version		Yes	Yes	Yes	Yes	Yes	Yes
Degree of protection		IP20	IP20	IP20	IP20	IP20	IP20

DIMENSIONS

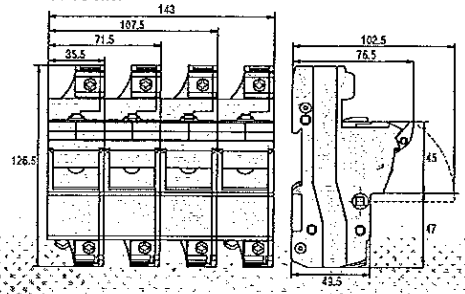
FB01 A... FB01 B... FB01 C... FB01 D...



FB02 A...

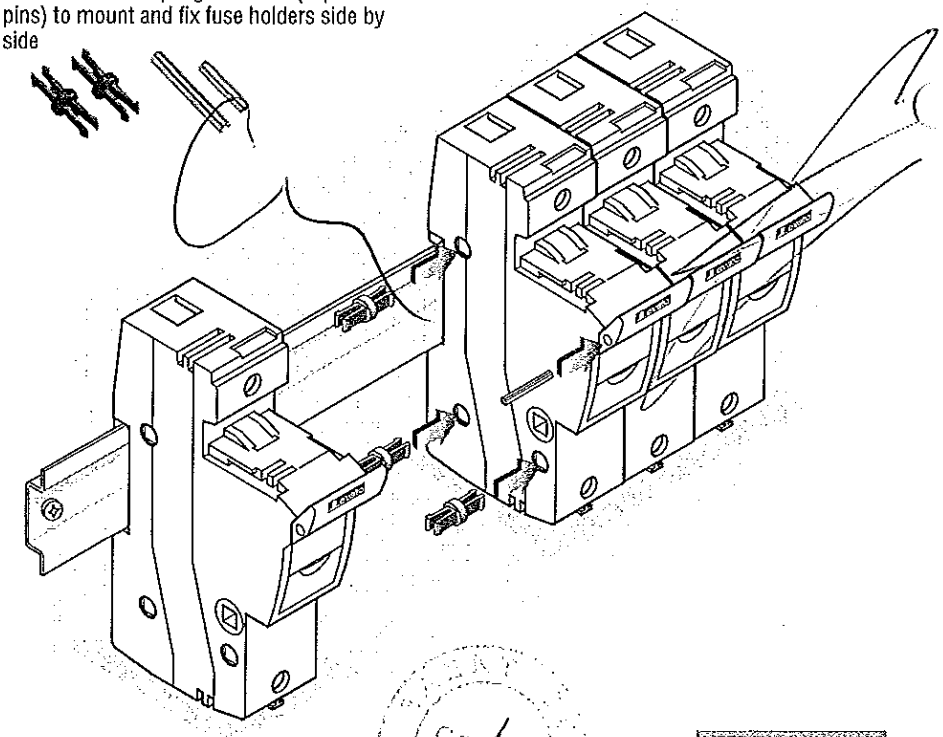


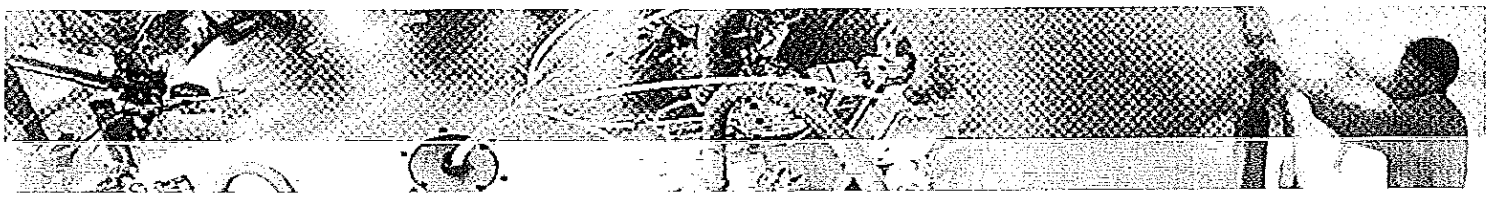
FB03 A...



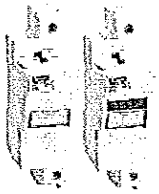
ASSEMBLY

Accessories: Coupling elements (clips and pins) to mount and fix fuse holders side by side





HOW TO ORDER



FUSE HOLDERS

Order code	Pole arrangement	DIN modules	Status indicator	Rated voltage Ue	Rated nominale Ie	Qty per pkg	Weight
		n°		[V]	[A]	n°	[kg]
Fuse holder (fuse disconnector), 10x38, certified by UR and CSA.							
FB01 A 1P	1 pole	1	–	690VAC	32	12	0.750
FB01 A 1PL	1 pole	1	Yes	690VAC	32	12	0.750
FB01 A 1N	1 pole + N	2	–	690VAC	32	6	0.750
FB01 A 2P	2 poles	2	–	690VAC	32	6	0.750
FB01 A 3P	3 poles	3	–	690VAC	32	4	0.750
FB01 A 3N	3 poles + N	4	–	690VAC	32	3	0.750
Fuse holder (fuse disconnector), 14x51, certified by cURus.							
FB02 A 1P	1 pole	1.5	–	690VAC	50	6	1.000
FB02 A 1PL	1 pole	1.5	Yes	690VAC	50	6	1.000
FB02 A 1N	1 pole + N	3	–	690VAC	50	3	1.000
FB02 A 2P	2 poles	3	–	690VAC	50	3	1.000
FB02 A 3P	3 poles	4.5	–	690VAC	50	2	1.000
FB02 A 3N	3 poles + N	6	–	690VAC	50	1	0.650
Fuse holder (fuse disconnector), 22x58, certified byt cURus.							
FB03 A 1P	1 pole	2	–	690VAC	125	6	1.050
FB03 A 1PL	1 pole	2	Yes	690VAC	125	6	1.050
FB03 A 1N	1 pole + N	4	–	690VAC	125	3	1.050
FB03 A 2P	2 poles	4	–	690VAC	125	3	1.050
FB03 A 3P	3 poles	6	–	690VAC	125	2	1.050
FB03 A 3N	3 poles + N	8	–	690VAC	125	1	0.70c
Fuse holder (fuse disconnector), class CC, certified by UL and CSA.							
FB01 C 1P	1 pole	1	–	600VAC	30	12	0.750
FB01 C 1PL	1 pole	1	Yes	600VAC	30	12	0.750
FB01 C 2P	2 poles	2	–	600VAC	30	6	0.750
FB01 C 3P	3 poles	3	–	600VAC	30	4	0.750
Fuse holder (fuse disconnector), 10x38.							
FB01 B 1P	1 pole	1	–	690VAC	32	12	0.750
FB01 B 1PL	1 pole	1	Yes	690VAC	32	12	0.750
FB01 B 1N	1 pole + N	2	–	690VAC	32	6	0.750
FB01 B 2P	2 poles	2	–	690VAC	32	6	0.750
FB01 B 3P	3 poles	3	–	690VAC	32	4	0.750
FB01 B 3N	3 poles + N	4	–	690VAC	32	3	0.750
Fuse holder (fuse disconnector), 10x38, for photovoltaic applications.							
FB01 D 1P	1 pole	1	–	1000VDC	32	12	0.750
FB01 D 1PL	1 pole	1	Yes	1000VDC	32	12	0.750
FB01 D 2P	2 poles	2	–	1000VDC	32	6	0.750

FUSES FOR PHOTOVOLTAIC APPLICATIONS

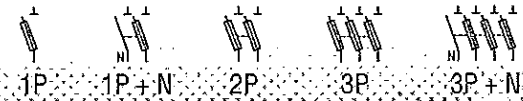
Order code	Rated breaking capacity	Rated voltage Ue	Rated current Ie	Qty per pkg	Weight
	[kA]	[V]	[A]	n°	[kg]
FE01 D 00200	30	1000VDC	2	10	0.130
FE01 D 00400	30	1000VDC	4	10	0.130
FE01 D 00600	30	1000VDC	6	10	0.130
FE01 D 00800	30	1000VDC	8	10	0.130
FE01 D 01000	30	1000VDC	10	10	0.130
FE01 D 01200	30	1000VDC	12	10	0.130
FE01 D 01600	30	1000VDC	16	10	0.130
FE01 D 02000	30	1000VDC	20	10	0.130

ACCESSORIES

Order code	Description	Qty per pkg	Weight
		n°	[kg]
FBX 00	Coupling clip for 10x38, 14x51 and 22x58 sizes	100	0.050
FBX 01	Coupling pin for 10x38 size	100	0.130
FBX 02	Coupling pin for 14x51 and 22x58 sizes	100	0.150

N.B. Two clips FBX 00 and one pin FBX 01 are needed to couple two fuse holder FB01... types.
Three clips FBX 00 and one pin FBX 02 are needed to couple two fuse holder FB02... and FB03... types.

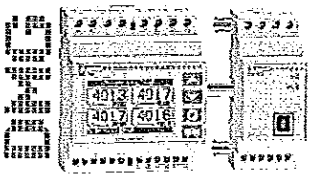
WIRING DIAGRAMS



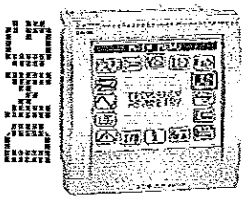
new

2011

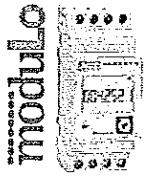
Switch disconnectors
16 to 1600A



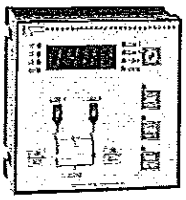
Modular digital multimeters



Flush-mount digital multimeters
and power analyzers



Energy meters



Automatic transfer switch
controllers

Switching power supplies

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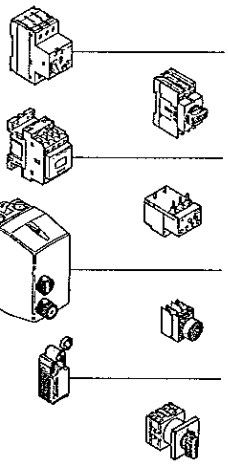
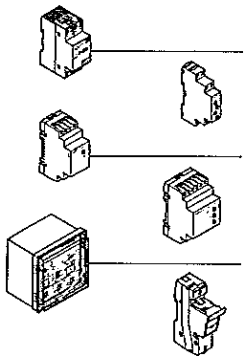
Panel Switch



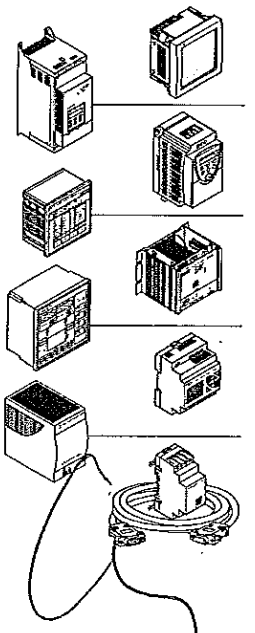
Motor protection circuit breakers
Switch disconnectors
Contactors
Motor protection relays
Electromechanical starters
Control and signalling units
Limit , micro and foot switches
Rotary cam switches

Panel DIN



Modular contactors
Time relays
Protection relays
Level control relays
Earth leakage relays
Fuse holders

Panel Logic



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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

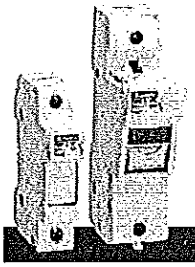
„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm"

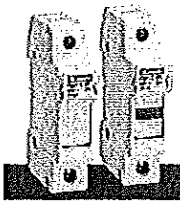
Приложение № 2

291



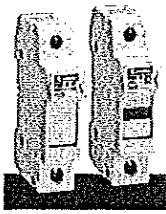
Page 12-2

AC FUSE HOLDERS
- Version without indicator: 1P, 1P+N, 2P, 3P, 3P+N
- Version with indicator: 1P
- For fuses 10x38, 14x51 and 22x58mm IEC class gG or aM.
- Rated current: 32A, 50A, 125A
- Rated voltage: 690VAC.



Page 12-2

AC FUSE HOLDERS CLASS CC FOR NORTH AMERICAN MARKET
- Version without indicator: 1P, 2P, 3P
- Version with indicator: 1P
- For 10x38mm UL/CSA class CC fuses
- Rated current: 30A
- Rated voltage: 600VAC.



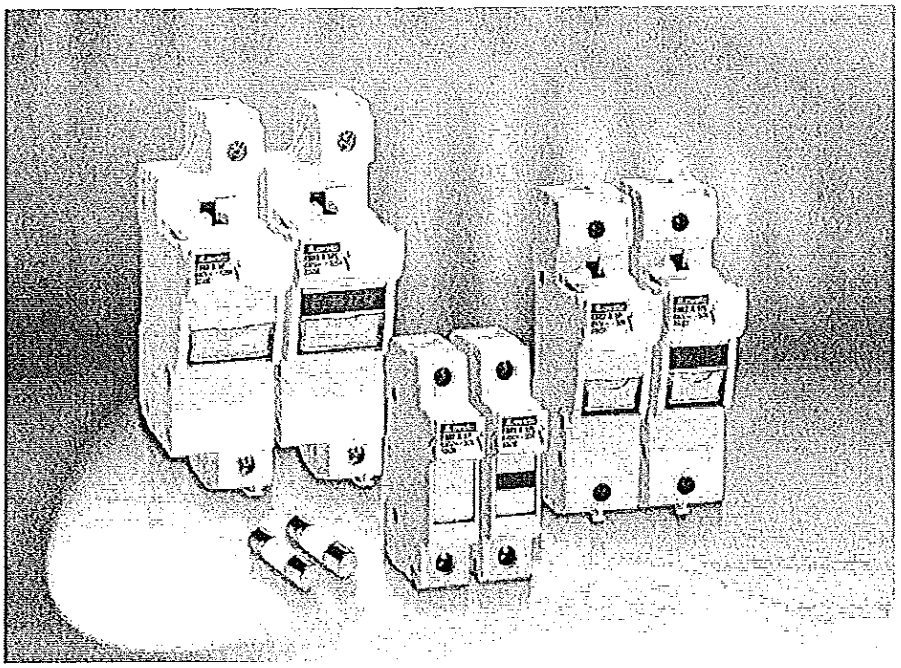
Page 12-3

DC FUSE HOLDERS FOR PHOTOVOLTAIC APPLICATIONS
- Version without indicator: 1P, 2P
- Version with indicator: 1P, 2P
- For 10x38mm IEC class gPV fuses
- Rated current: 32A
- Rated voltage: 1000VDC
- IEC utilisation category: DC20B.

Page 12-3

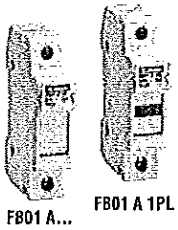
DC FUSES FOR PHOTOVOLTAIC APPLICATIONS
- 10x38mm, IEC class gPV
- Rated current: 20A
- Rated voltage: 1000VDC.

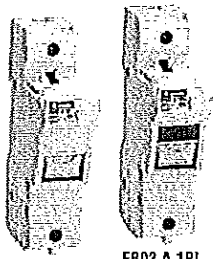
FUSE HOLDERS

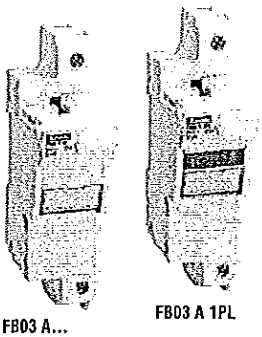


- Modular size for 10x38, 14x51 and 22x58mm fuses
- Finger safe - IP20 IEC degree of protection against accidental contact with live parts and with sealable cover for operators' safety
- Version with status indicator to quickly determine if the fuse is still operative or needs to be replaced
- UL and CSA certified versions.

Fuse holders UL Recognized and CSA certified







Order code	Pole arrange-ment	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
For 10x38mm fuses. 32A rated current at 690VAC.					
FB01 A 1P	1P	—	1	12	0.066
FB01 A 1PL	1P	YES	1	12	0.065
FB01 A 1MO	1P+N	—	1	12	0.062
FB01 A 1N	1P+N	—	2	6	0.134
FB01 A 2P	2P	—	2	6	0.132
FB01 A 3P	3P	—	3	4	0.188
FB01 A 3N	3P+N	—	4	3	0.260
For 14x51mm fuses. 50A rated current at 690VAC.					
FB02 A 1P	1P	—	1	12	0.113
FB02 A 1PL	1P	YES	1	12	0.114
FB02 A 1N	1P+N	—	2	6	0.237
FB02 A 2P	2P	—	2	6	0.224
FB02 A 3P	3P	—	3	4	0.335
FB02 A 3N	3P+N	—	4	3	0.460
For 22x58mm fuses. 125A rated current at 690VAC.					
FB03 A 1P	1P	—	1	12	0.167
FB03 A 1PL	1P	YES	1	12	0.167
FB03 A 1N	1P+N	—	2	6	0.354
FB03 A 2P	2P	—	2	6	0.334
FB03 A 3P	3P	—	3	4	0.500
FB03 A 3N	3P+N	—	4	3	0.720

O Not certified.

Operational characteristics
- IEC rated voltage Ue:
  - 690VAC (FB01 A 1M excluded)
  - 400VAC (FB01 A 1M only)
- IEC rated current Ie:
  - FB01 A: 32A
  - FB02 A: 50A
  - FB03 A: 125A
- IEC utilisation category:
  - FB01 A: AC22B 500V, AC21B 690V (except FB01 A 1M: AC22B 400V)
  - FB02 A: AC22B 500V, AC21B 690V
  - FB03 A: AC21B 690V
- Suitable for IEC fuse class: gG and aM
- IEC degree of protection: IP20.

Certifications and compliance
Certifications obtained:

Type	UL Recognized for USA (File E343395)	CSA certified (File 252040 class 6255)	UL Recognized for USA and Canada (File E343395)
FB01 A 1P, FB01 A 1PL, FB01 A 1N	●	●	—
FB02 A...	—	—	●
FB03 A...	—	—	●

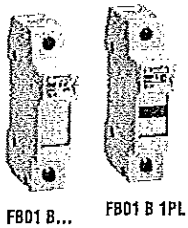
● Certification obtained.

"UL Recognized": Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

Compliant with standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-1, IEC/EN 60947-3, UL 4248-1, UL 4248-4, CSA C22.2 n°4248.1, CSA C22.2 n°4248.4.

12

Fuse holders

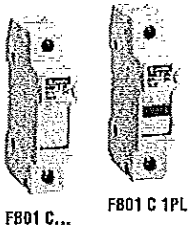


Order code	Pole arrange-ment	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
For 10x38mm fuses. 32A rated current at 690VAC.					
FB01 B 1P	1P	—	1	12	0.062
FB01 B 1PL	1P	YES	1	12	0.064
FB01 B 1N	1P+N	—	2	6	0.127
FB01 B 2P	2P	—	2	6	0.128
FB01 B 3P	3P	—	3	4	0.185
FB01 B 3N	3P+N	—	4	3	0.247

Operational characteristics
- IEC rated voltage Ue: 690VAC
- IEC rated current Ie: 32A
- IEC utilisation category: AC22B 500V, AC21B 690V
- Suitable for IEC fuse class: gG and aM
- IEC degree of protection IP20.

Reference standards
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, IEC/EN 60269-1, IEC/EN 60269-2.

Fuse holders UL Listed and CSA certified for class CC fuses for North American market



Order code	Pole arrange-ment	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
For 10x38mm fuses. 30A rated current at 600VAC.					
FB01 C 1P	1P	—	1	12	0.070
FB01 C 1PL	1P	YES	1	12	0.072
FB01 C 2P	2P	—	2	6	0.140
FB01 C 3P	3P	—	3	4	0.210

NOTE: UL Listed and CSA certified as "Fuseholders, Cartridge Fuse" for use with Class CC fuses. Interrupting rating 200,000 Amps rms symmetrical. Voltage rating 600V. Current rating 30A.

Operational characteristics
- IEC rated voltage Ue: 600VAC
- IEC rated current Ie: 30A
- IEC utilisation category: AC22B 500V, AC21B 690V
- Suitable for UL/CSA fuse class: CC
- IEC degree of protection IP20.

Certifications and compliance
Certifications obtained: UL Listed (File E343395) and CSA certified (File 252040 class 6225).
Compliant with standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-1, IEC/EN 60947-3, UL 4248-1, UL 4248-4, CSA C22.2 n°4248.1, CSA C22.2 n°4248.4.

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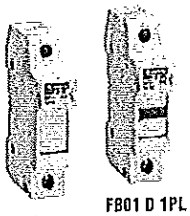
Fuse holders for photovolatic applications


FB01 D...

FB01 D 1PL

Order code	Pole arrange-ment	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
For 10x38mm fuses. 32A rated current at 1000VDC.					
FB01 D 1P	1P	—	1	12	0.064
FB01 D 1PL	1P	YES	1	12	0.065
FB01 D 2P	2P	—	2	6	0.127
FB01 D 2PL	2P	YES	2	6	0.130

Operational characteristics
- IEC rated voltage Ue: 1000VDC
- IEC rated current Ie: 32A
- IEC utilisation category: DC20B 1000VDC
- Suitable for IEC fuse class: gPV
- IEC degree of protection: IP20.

Reference standards
Compliant with standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-1, IEC/EN 60947-3.

Fuses for photovoltaic applications


FE01 D...

Order code	Rated current In	Qty per pkg	Wt
	[A]	n°	[kg]
For 10x38mm fuses. 30kA breaking capacity at 1000VDC.			
FE01 D 00200	2	10	0.008
FE01 D 00400	4	10	0.008
FE01 D 00600	6	10	0.008
FE01 D 00800	8	10	0.008
FE01 D 01000	10	10	0.008
FE01 D 01200	12	10	0.008
FE01 D 01600	16	10	0.008
FE01 D 02000	20	10	0.008

Operational characteristics
- IEC rated voltage Ue: 1000VDC
- IEC rated current Ie: 2-20A
- IEC fuse class: gPV.

Reference standards
Compliant with standards: IEC/EN 60269-6.

Accessories


FBX 00


FBX 01
FBX 02


FBX 05


FBX 07


FBX 08

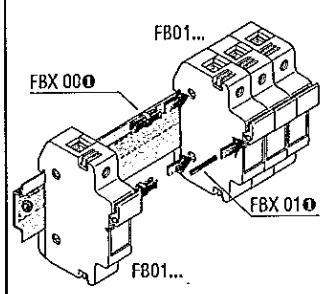

FBX 11

Order code	Description	Qty per pkg	Wt
	[A]	n°	[kg]
FBX 00❶	Coupling clip for 10x38, 14x51 and 22x58mm sizes❶	100	0.003
FBX 01❶	Coupling pin for 10x38mm size❶	100	0.005
FBX 02	Coupling pin for 14x51 and 22x58mm sizes	100	0.008
For FB01 A... and FB01 B... types.			
FBX 05	Three-phase connection busbar, for 57 modules in total, 1m/3.3ft long	10	0.465
FBX 07	One-pole terminal for 25mm² max conductor	25	0.010
FBX 08	One-pole terminal for 50mm² max conductor	25	0.020
FBX 11	End cap for FBX05 busbar	50	0.001

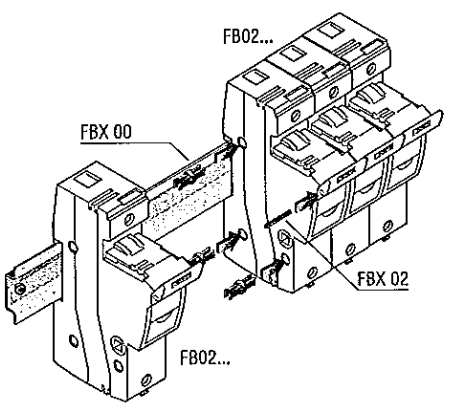
❶ Not suitable for FB01 B1N, FB01 B2P, FB01 B3P and FB01 B3N types.

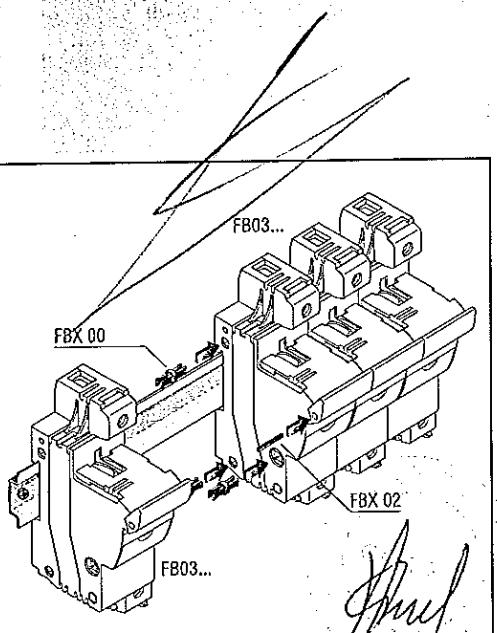
General and operational characteristics
THREE-PHASE BUSBAR
- Central point of power supply: 130A max
- Side point of power supply: 80A max
- Pitch: 18mm/0.7in
- Busbar section: 10mm²
- Number of modules/poles: 57
- For paralleling connection
- Length (standard supplied): 1m/3.3ft which can be cut in shorter sections.

Fuse holder assembly in multiple pole configuration



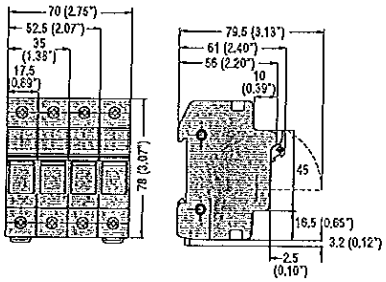
❶ Not suitable for FB01 B1N, FB01 B2P, FB01 B3P and FB01 B3N types.



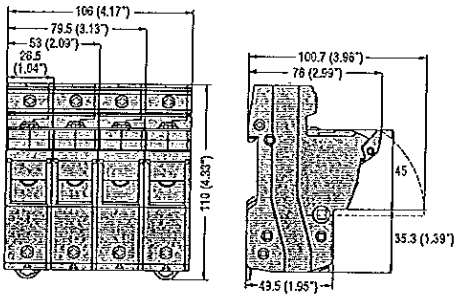


FUSE HOLDERS

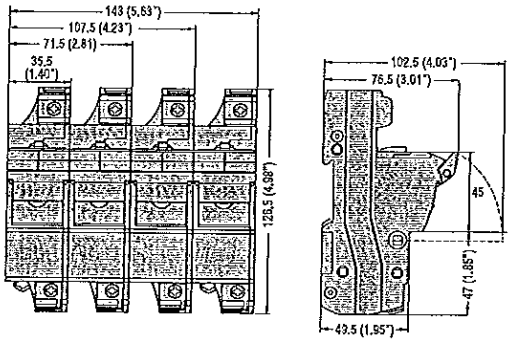
FB01 A... FB01 B... FB01 C... FB01 D...



FB02 A...

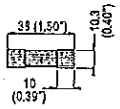


FB03 A...

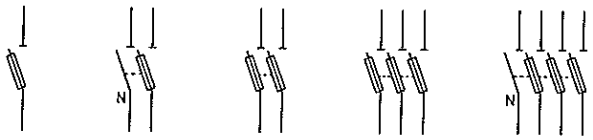


FUSES

FE01 D 0...



Wiring diagrams



1P 1P+N 2P 3P 3P+N

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TYPE		FB01 A...	FB01 B...	FB02 A...	FB03 A...	FB01 C...	FB01 D...
Range		AC				Class CC (AC)	DC
IEC maximum rated current In		32A		50A	125A	30A	32A
IEC maximum rated voltage In		690VAC; 400VAC ❶	690VAC			600VAC	1000VDC
IEC utilisation category		AC22B 500V; AC21B 690V; AC22B 400V ❶			AC21B 690V	AC22B 500V; AC21B 690V	DC20B 1000VDC
Maximum power dissipation		3W		5W	9.5W	3W	4W
Derating factor of current In for different ambient temperatures	20°C	1					
	30°C	0,95					
	40°C	0.9					
	50°C	0.8					
	60°C	0,7					
	70°C	0,5					
Derating factor of current In for side-by-side fuse holders - n° poles	1-4	1					
	5-6	0.8					
	7-9	0,7					
	≥10	0.6					
Voltage for status indicator		120...690VAC		230...690VAC		120...600VAC	350...1000VDC

CONNECTIONS							
Maximum tightening torque		2,5Nm; 2Nm ❶ / 22lbin		3Nm / 26lbin	4Nm / 35lbin	2.5Nm / 22lbin	
Maximum conductor cross section	flexible/stranded	1x16mm²; 1-16mm² ❶ / 8AWG		1x25mm² / 6AWG	1x35mm² / 2AWG	1x16mm² / 8AWG	1x16mm² / 6AWG
	rigid/solid	1x25mm²; 1-10mm² ❶ / 8AWG		1x35mm² / 8AWG	1x50mm² / 1AWG	1x25mm² / 10AWG	1x25mm² / 4AWG

AMBIENT CONDITIONS	
Operating temperature	-20...+70°C
Storage temperature	-40...+80°C
Maximum altitude	3,000m
Operation position	Any
Fixing	On 35mm DIN rail (IEC/EN 60715)

❶ Values valid only for FB01 A 1M type.

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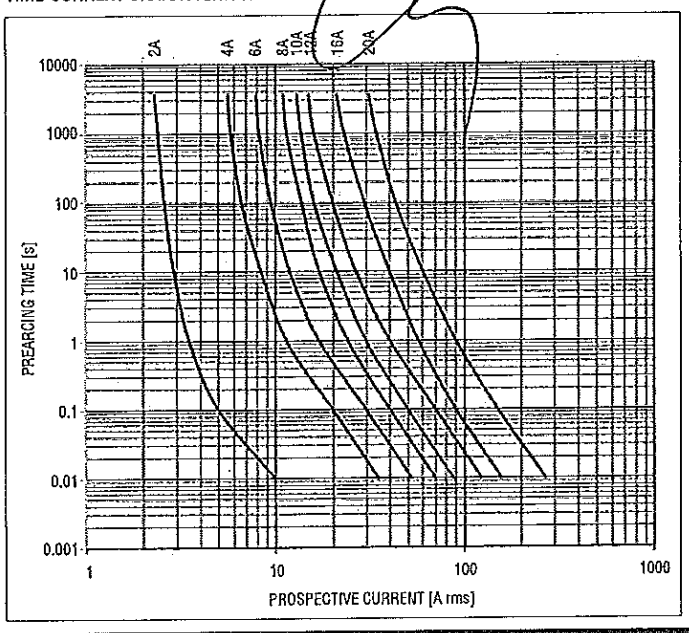
TECHNICAL CHARACTERISTICS FOR FE01 D... FUSES

TYPE	Rated current [A]	Power consumption at 0.7 In [W]	Power consumption at In [W]	Prearcing I²t [A²s]	Total I²t at 1000VDC [A²s]
FE01 D 00200	2	0.62	1.54	1.78	6.5
FE01 D 00400	4	0.73	1.84	3	11
FE01 D 00600	6	0.96	2.4	8.5	32
FE01 D 00800	8	1.02	2.55	25	93
FE01 D 01000	10	1.03	2.58	11	52
FE01 D 01200	12	1.04	2.6	25	116
FE01 D 01600	16	1.08	2.7	33	152
FE01 D 02000	20	1.16	2.9	85	390

TIME-CURRENT CHARACTERISTICS FOR FE01 D... FUSES



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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm"

Приложение № 3

PHOENIX CONTACT KABEL

ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

Долуподписаният Владимир Лазаров,

Управител на фирма "ВиВ Изоматик" ООД, София, ул.Пирин 40А

В качеството си на търговски представители на LOVATO Electric

Декларираме, че продуктът:

Марка:	LOVATO
Продукт:	Основа за стопяеми предпазители
Серия:	FB

За който се отнася тази декларация, при условие, че е инсталиран, обслужван и използван за приложения, за които е предназначен, е в съответствие със следните стандарти, технически одобрения или други нормативни актове:

2006/95/EC /LV/
2004/108/EC/EMC/
IEC/EN 60269-1
IEC/EN 60947-1 ; 3

На основание чл. 2 от ЗЗЛД

София, 20.10.2015

ител

ВЯРНО С ОРИГИНАЛА

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

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Приложение № 4

DEVICE UNDER TEST..... **Fuse holder *FB01B types***

MANUFACTURER..... Lovato Electric S.p.A.

TYPE OF TEST..... **Temperature rise test on FB01B fuse holders**

DATE OF DEVICE RECEIPT..... 27/04/2011

START / END TESTING..... 29/04/2011 – 13/05/2011

SAMPLES STORING..... ☒ Eliminated / returned to customer ☐ Storage :

INDEX.....

ISSUE..... 16/05/2011

COMPILED..... STAFF LPR

APPROVED..... RESP. LPR

ВЯРНО С
ОРИГИНАЛА

The test results are related only to the exemplary tested and listed under the "test samples".

1. PURPOPSE OF TESTING

Requested test (according to the customer specification):
Temperature rise at 690V – 32A on FB01B fuse holders

Test purpose:
"Verify the good function of FB01B fuse holders ."

Test target:
Pass the test.

2. TEST SAMPLES

N. 1 FB01B1P fuse holder - 32A (10 x 38 mm), batch production number ...[1]
N. 1 FB01B2P fuse holder - 32A (10 x 38 mm), batch production number ...[1]
N. 1 FB01B3P fuse holder - 32A (10 X 38 mm), batch production number ...[1]

3. TEST METHOD

IEC 60947-3 (2008-08) Ed. 3.0 + IEC 60947-1 Ed. 5.1 (2011-03)
Temperature rise (§ 8.3.3.1)

4. TEST PROCEDURES

Temperature rise..... Test instruction LPR 051-1, rev. 4, dated 11/10/2010.

ВЯРНО С ОРИГИНАЛА

[1] not available
[1] not available
[1] not available

5. TEST RESULTS

5.1 TEMPERATURE RISE

5.1.1 WITH LEGRAND FUSE 32 A gG 400 V

Sample under test.....N. 1 FB01B1P - 32A
N. 1 FB01B2P - 32A
N. 1 FB01B3P - 32A

Test conditions

Ambient temperature.....21 °C
Relative humidity.....46 %
Installation.....in vertical way, on DIN RAIL 35mm

Data sheet fusible used:
- Supplier.....Legrand
- Code.....cod. 133 32

Test parameters

Wiring of the main circuit
- cables section / length.....6,0 mm^2 / 1,0 m
- screws tightening nominal torque.....2,0 ÷ 2,5 N.m
- screws applied tightening torque.....2,0 N·m

Supply of the main circuit
- rated current.....Ith = 25 - 32 A
- test current.....I = 32 A
- supply frequency.....50 Hz

Test results

See next page.

ВЯРНО С ОРИГИНАЛА

Temperature rise main circuit

	[K]			Standard limit EN60947-1 tab. 2
	One pole fuse holder FB01B1P	2 pole fuse holder FB01B2P	3 pole fuse holder FB01B3P	
Terminal L1	43	54	57	65
Terminal T1	39	51	52	65
Terminal L2	-	55	61	65
Terminal T2	-	49	58	65
Terminal L3	-	-	57	65
Terminal T3	-	-	50	65
Note .....:	Silver plated-brass terminal			

Temperature rise for accessibile parts

	[K]			Standard limit EN60947-1 tab. 3
	One pole fuse holder FB01B1P	2 pole fuse holder FB01B2P	3 pole fuse holder FB01B3P	
Line side	14	24	29	40
Load side	10	19	21	40
Left side	24	30	32	40
Right side	22	30	31	40
On front	18	24	29	40
Lever	9	16	17	40

ВЯРНО С ОРИГИНАЛА

6. TEST EQUIPMENT AND INSTRUMENTS

6.1. TEST EQUIPMENT

Description	Used for	Full scale	Code
Current supply station	Power supply main circuit	20V – 50A	LPRA 065

6.2. MEASURING INSTRUMENTS

Description	Used to measure	Full scale	Code	Calibration expiration date
Thermohygrometer	Ambient temperature	-5 ÷ 50 °C	LPR 165	27/10/2011
Thermohygrometer	Relative humidity	10 ÷ 90%	LPR 165	27/10/2011
Termometric instrument	Temperature rise	-30 ÷ +200 °C	LPR 201	10/01/2012
Termocouple T type	Temperature rise	-30 ÷ +200 °C	L PR 201	10/01/2012
Termocouple T type	Temperature rise	-30 ÷ +200 °C	L PR 201.13	10/01/2012
Current transformer	Main circuit current	1.004/50 A	LPR 155	11/05/2014
Digital multimeter	Main circuit current	10 A	LPR 55	11/05/2012
Digital multimeter	Drop voltage	mV - Autom.	LPR 125	11/05/2012
Dynamometric screw driver	Main terminal screw tightening	6,0 Nm	LPR 231	07/01/2012

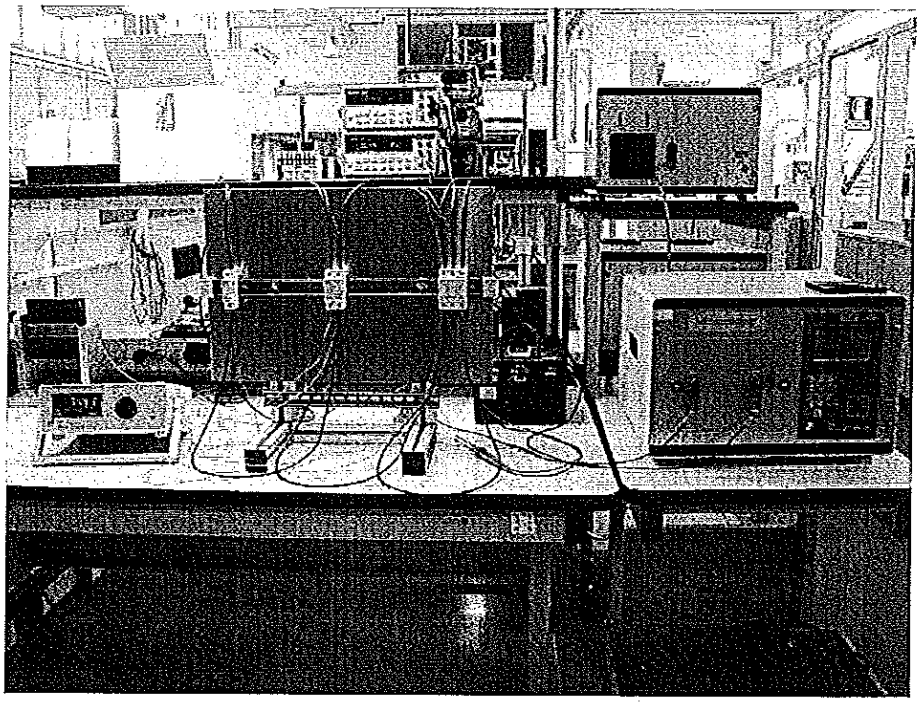
7. REMARKS & ANALYS

Temperature rise test 690V – 32A: test passed

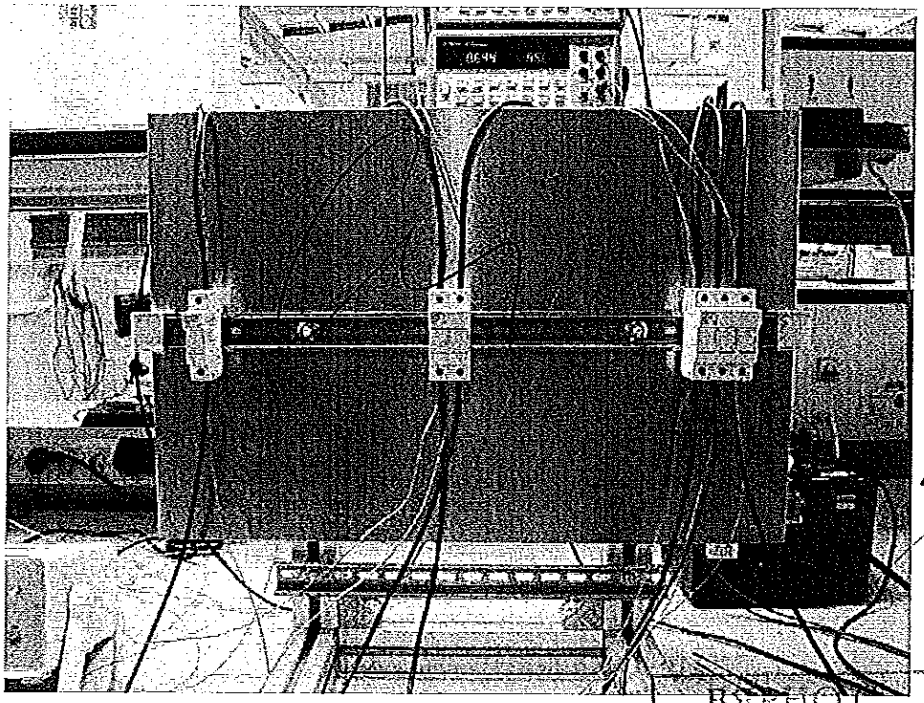
ВЯРНО С
ОРИГИНАЛА

8. ANNEX

Picture 1: Temperature rise – test setup

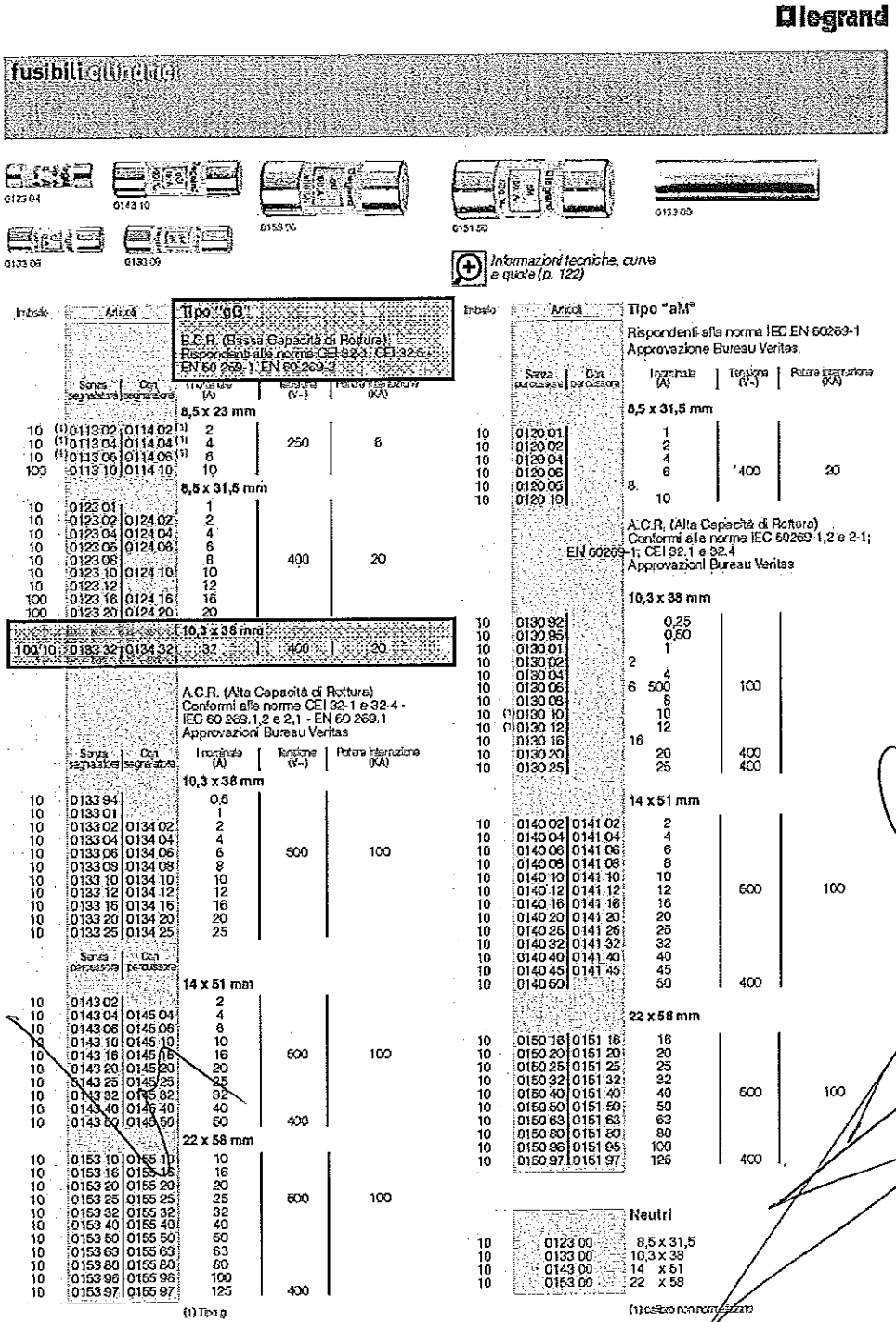


Picture 1a: Temperature rise – test setup



ВЯРНО С ОРИГИНАЛА

Picture 2: Catalogue Legrand fuses



legrand

fusibili cilindrici

0123 04 0143 10 0153 06 0151 50 0133 09

0133 09 0133 09

Informazioni tecniche, curve e quote (p. 122)

Tipo "gG"

B.C.R. (Bassa Capacità di Rottura)
Rispondenti alle norme CEI 32-1; CEI 32-6; EN 60 269-1; EN 60 269-2

Imballo	Articoli: Senza segnalatore	Con segnalatore	Intensità (A)	Tensione (V~)	Potere interruzione (kA)
			8,5 x 23 mm		
10	(1) 0113 02	0114 02 (1)	2	250	6
10	(1) 0113 04	0114 04 (1)	4		
10	(1) 0113 06	0114 06 (1)	6		
100	0113 10	0114 10	10		
			8,5 x 31,5 mm		
10	0123 01		1	400	20
10	0123 02	0124 02	2		
10	0123 04	0124 04	4		
10	0123 05	0124 06	6		
10	0123 08		8		
10	0123 10	0124 10	10		
10	0123 12		12		
100	0123 16	0124 16	16		
100	0123 20	0124 20	20		
			10,3 x 38 mm		
100	10 0133 32	0134 32	32	400	20

A.C.R. (Alta Capacità di Rottura)
Conformi alle norme CEI 32-1 e 32-4 - IEC 60 269.1,2 e 2,1 - EN 60 269.1
Approvazioni Bureau Veritas

Imballo	Articoli: Senza segnalatore	Con segnalatore	Intensità (A)	Tensione (V~)	Potere interruzione (kA)
			10,3 x 38 mm		
10	0133 94		0,5	500	100
10	0133 01		1		
10	0133 02	0134 02	2		
10	0133 04	0134 04	4		
10	0133 06	0134 06	6		
10	0133 08	0134 08	8		
10	0133 10	0134 10	10		
10	0133 12	0134 12	12		
10	0133 16	0134 16	16		
10	0133 20	0134 20	20		
10	0133 25	0134 25	25		
	Senza percussore	Con percussore			
			14 x 51 mm		
10	0143 02		2	500	100
10	0143 04	0145 04	4		
10	0143 06	0145 06	6		
10	0143 10	0145 10	10		
10	0143 16	0145 16	16		
10	0143 20	0145 20	20		
10	0143 25	0145 25	25		
10	0143 32	0145 32	32		
10	0143 40	0145 40	40	400	
10	0143 50	0145 50	50		
			22 x 58 mm		
10	0153 10	0155 10	10	500	100
10	0153 16	0155 16	16		
10	0153 20	0155 20	20		
10	0153 25	0155 25	25		
10	0153 32	0155 32	32		
10	0153 40	0155 40	40		
10	0153 50	0155 50	50		
10	0153 63	0155 63	63		
10	0153 80	0155 80	80		
10	0153 96	0155 96	100		
10	0153 97	0155 97	125	400	

(1) Tipo g

Tipo "aM"

Rispondenti alla norma IEC EN 60269-1
Approvazione Bureau Veritas.

Imballo	Articoli: Senza percussore	Con percussore	Intensità (A)	Tensione (V~)	Potere interruzione (kA)
			8,5 x 31,5 mm		
10	0120 01		1	400	20
10	0120 02		2		
10	0120 04		4		
10	0120 06		6		
10	0120 05		8		
10	0120 10		10		

A.C.R. (Alta Capacità di Rottura)
Conformi alle norme IEC 60269-1,2 e 2-1; EN 60269-1; CEI 32.1 e 32.4
Approvazioni Bureau Veritas

Imballo	Articoli: Senza percussore	Con percussore	Intensità (A)	Tensione (V~)	Potere interruzione (kA)
			10,3 x 38 mm		
10	0130 92		0,25	500	100
10	0130 95		0,60		
10	0130 01		1		
10	0130 02		2		
10	0130 04		4		
10	0130 06		6		
10	0130 08		8		
10	(1) 0130 10		10		
10	(1) 0130 12		12		
10	0130 16		16		
10	0130 20		20	400	
10	0130 25		25	400	
			14 x 51 mm		
10	0140 02	0141 02	2	500	100
10	0140 04	0141 04	4		
10	0140 06	0141 06	6		
10	0140 08	0141 08	8		
10	0140 10	0141 10	10		
10	0140 12	0141 12	12		
10	0140 16	0141 16	16		
10	0140 20	0141 20	20		
10	0140 25	0141 25	25		
10	0140 32	0141 32	32		
10	0140 40	0141 40	40		
10	0140 45	0141 45	45		
10	0140 50		50	400	
			22 x 58 mm		
10	0150 16	0151 16	16	500	100
10	0150 20	0151 20	20		
10	0150 25	0151 25	25		
10	0150 32	0151 32	32		
10	0150 40	0151 40	40		
10	0150 50	0151 50	50		
10	0150 63	0151 63	63		
10	0150 80	0151 80	80		
10	0150 96	0151 95	100		
10	0150 97	0151 97	125	400	

Neutri

Imballo	Articoli	
10	0123 00	8,5 x 31,5
10	0133 00	10,3 x 38
10	0143 00	14 x 51
10	0153 00	22 x 58

(1) calibro non normalizzato

115

ВЯРНО С ОРИГИНАЛА

The test results are related only to the exemplary tested and listed under the "test samples".

PHOENIX CONTACT KABEL

Тестови изпитвания приложени върху предпазител-разединители

Предпазител разединителите FB са изпитани съгласно IEC 60947-3 (2008-08) Ed. 3.0 + IEC 60947-1 Ed. 5.1 (2011-03) + IEC/EN 60269-1, IEC/EN 60269-2

извършените тестове са:

Капацитет за присъединявания проводник

Механична якост

Огъване

Усилие за отделяне на проводника

Изолационно разстояние

Повишено напрежение

Загуба на напрежение

Температурен тест

Тест при ток на късо съединение

Тест за стареене на материала

Точково нагряване

Управит

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

308

СПИСЪК

на типовите изпитвания, проведени от независима изпитвателна лаборатория,
за предлаганите стопяеми цилиндрични предпазител-прекъсвач-разединители, както следва:

Марка: LOVATO
Продукт: предпазител-разединители
Серия: FB01B

5. Резултати
5.1 Повишаване на температурата
6. Тестово оборудване и инструменти
6.1 Тестово оборудване
6.2 Инструменти
7. Забележки и анализи

ВЯРНО С
ОРИГИНАЛА

309

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm"

Приложение № 5

310

A C A E

TESTING AUTHORIZATION

ACAE *(Associazione per la Certificazione delle Apparecchiature Elettriche), Member of* ***LOVAG*** *(Low Voltage Agreement Group)*

authorizes the Laboratory

LOVATO ELECTRIC S.p.A. *Via Don Mazza 12 Gorle (BG)*

Laboratory codification number: IL 01

to carry out the tests *listed in the following, for the purpose to certify the products as stated in the Certificate n° 070B and its enclosure, issued to ACAE by ACCREDIA.*

List of the authorized tests on the low - voltage components:

Verification of dielectric withstand
Verification of temperature – rise
Operation and operating limits
Making and breaking capacities
Overload performance
Mechanical properties of terminals

ACAE will witness the tests according to its Quality Procedure PA 5.2.1 "Test supervision".
The renewal of the authorization is subjected to annual audit.

First issue date: 2013-05-14 ***Current issue date: 2014-12-01***

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ИГИНАЛА

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRD N°070 B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

A C A E
ASSOCIAZIONE PER LA CERTIFICAZIONE DELLE APPARECCHIATURE ELETTRICHE
Via Tito Livio 5 - 24123 Bergamo BG - ITALY
Tel: +39 035 4175244 Fax: +39 035 4534662
e-mail: acae@acaecert.it www.acaecert.it
C.F. 03260610104 P.IVA IT 02911610166
R.E.A. N. 333322 C.C.I.A. BG

LOVAG

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm"

Приложение № 6

Инструкция за транспорт, съхранение, монтаж и експлоатация на стопяеми цилиндрични предпазител-прекъсвач-разединители

1. Транспорт

Предпазител-прекъсвач-разединителите трябва да се транспортират опаковани в оригиналната опаковка.

Няма специфични изисквания към начина на транспорт.

2. Съхранение

Предпазител-прекъсвач-разединителите трябва да се съхраняват в сухи, закрити помещения опаковани в оригиналната опаковка.

Температура на съхранение: от -25 до +55 °C.

Няма специфични изисквания към начина на съхранение.

3. Монтаж и експлоатация

Монтажа и експлоатационната поддръжка на предпазител-прекъсвач-разединителите е необходимо да се извършва от правоспособен електротехник с минимум III та квалификационна група.
Необходимо е да се спазват следните изисквания.
Да не се прилагат ток и напрежение по-големи от указаните.
Да се спазват въртящите моменти за затягане на клемите от минимум 2Nm и максимум 2,5Nm.
Предпазител-прекъсвач-разединителите да не се мокрят или подлагат на атака от химически реагенти.
Да не се прилагат механични удари.

ВЯРНО С ОРИГИНАЛА

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Вертикален предпазител-разединител НН 400 А, с триполюсно управление"

Приложение № 1

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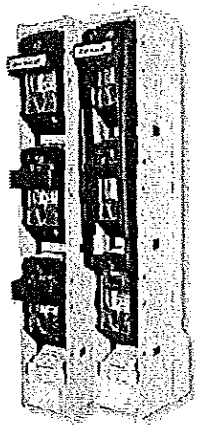
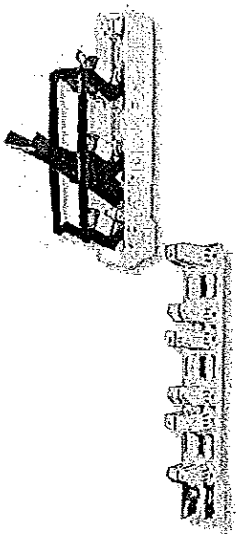
NH-Sicherungslastschaltleisten
NH strip-type fuse-switch-disconnectors

NH-Sicherungslastschaltleisten Größe 1-3 für 185mm Sammelschienensysteme
NH strip-type fuse-switch-disconnectors size 1 to 3 for 185mm busbar systems





Vorteile, die überzeugen

Schalthebel

- Langer Schalthebel für sicheres und schnelles Schalten
- Abschließbar mit bis zu 3 Vorhängeschlössern in EIN- und AUS-Stellung

Montage

- Sichere Montage unter Spannung durch stets berührgeschütztes Kontaktsystem
- Nachrüstbare Montagehaken

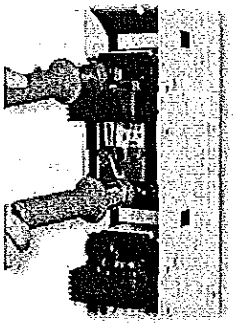
Convincing advantages

Operating lever

- *Long operating lever for safe and reliable switching*
- *Lockable with up to 3 padlocks in both ON and OFF position*

Installation

- *Safe installation on live busbars due to always touch proof contacts*
- *Retrofitable mounting hooks*

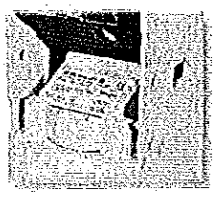


Messung und Überwachung

- Sichere Spannungsmessung durch Prüflöcher über den Sicherungsaufnahmekontakten
- Elektronische Sicherungsüberwachung oder Sicherungsüberwachung durch Motorschutzschalter
- Einsatz von Wandlersicherungen für temporäre Strommessungen

Measuring and monitoring

- *Safe voltage testing through test holes leading to blade-contacts*
- *Electronic fuse monitoring or fuse-monitoring by means of motor circuit-breaker*
- *Current-transformer (c.t.) fuse-links for temporary current measurements*



Anschlussraumabdeckung

- Anschlussraumabdeckung im Gerät integriert
- Typenschild auch im eingebauten Zustand jederzeit lesbar

Terminal cover

- *Integrated in NH strip-type fuse-switch-disconnector*
- *Markings always readable before and after installation*

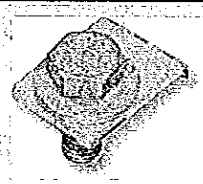
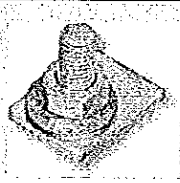
Größe 1-2 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **OMEGA Kontaktsystem › 1-polig schaltbar**
*Size 1-2 › 185mm busbar system › Terminal at top or bottom side › **OMEGA contact system › 1-pole switchable***

Größe *Size*	Anschlussart *Terminal version*	Anschluss *Connection* [mm²]	I_n [A]	VE *PU*	Typ *Type*	Artikel-Nr. *Article-No.*
	Flachanschluss M10 *Flat terminal M10*	25-150			SL1H-3X/3A	L193100103
1	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	250		SL1H-3X/9/KM2G-F	L199600403
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300			SL1H-3X/9/KM2G	L199602903
	Flachanschluss M12 *Flat terminal M12*	25-240			SL2H-3X/3A	L293100103
	Stehbolzenanschluss M12x35 *Stud bolt terminal M12x35*	25-240		1	SL2H-3X/4A	L294100203
2	Stehbolzenanschluss M12x60 *Stud bolt terminal M12x60*	25-240	400		SL2H-3X/4A-60	L294100303
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240			SL2H-3X/9/KM2G-F	L299600403
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300			SL2H-3X/9/KM2G	L299600503

Größe 2 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **OMEGA Kontaktsystem › 1-polig schaltbar › Versenkbarer Griff**
*Size 2 › 185mm busbar system › Terminal at top or bottom side › **OMEGA contact system › 1-pole switchable › Retractable handle***

	Flachanschluss M12 *Flat terminal M12*	25-240			SL2H-3X/3A/GV	L293100603
2	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	400	1	SL2H-3X/9/KM2G-F/GV	L299600903
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300			SL2H-3X/9/KM2G/GV	L299601003

Anschlussarten/*Terminal versions*

Flachanschluss *Flat terminal M...*	Stehbolzenanschluss *Stud bolt terminal*	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*
			

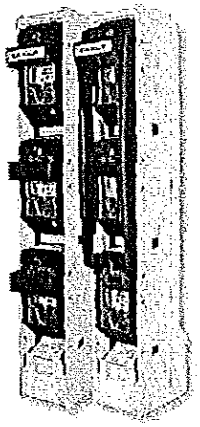
NH-Sicherungslelsten *NH strip-fuseways*
NH-Sicherungslastschaltleisten *NH strip-type fuse-switch-disconnectors*
NH-Sicherungslasttrennschalter *NH fuse-switch-disconnectors*
CIOISI
CIOISIM
Klemmen *Terminals*
Anhang *Appendix*

Zubehör/*Accessories* Seite/*Page*: SL-32ff
Technische Daten/*Technical data* Seite/*Page*: SL-46f
Maßzeichnungen/*Dimensions* Seite/*Page*: SL-60

NH-Sicherungslastschaltleisten

NH strip-type fuse-switch-disconnectors

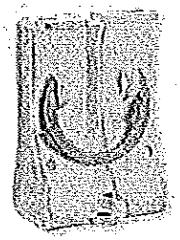
NH-Sicherungsleisten Größe 1-3
DELTA und OMEGA Kontaktsystem
NH strip-fuseways size 1-3
DELTA and OMEGA contact system



Vorteile, die überzeugen

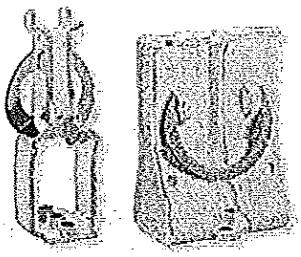
OMEGA Kontaksystem

- Maximale Sicherheit dank hohem Kurzschlusseinschaltvermögen (120kA/500V)
- Gefahrloser Betrieb durch hohe Schaltleistung bis zu AC-23B (400V/400A)
- Korrosionsfreie Edelstahl-Fremdfederung
- Robustes und alterungsbeständiges Kontaktsystem mit hohen Rückstelleigenschaften



DELTA Kontaksystem

- Gezielte Lichtbogenführung und geringer Kontaktverschleiß durch Opferelektroden
- Gefahrloser Betrieb durch hohe Schaltleistung bis zu AC-23B (400V/630A)
- Hohe Alterungsbeständigkeit durch zwei voneinander unabhängige Fremdfederemente
- Optimale Kontaktlenung und niedrige Verlustleistung durch 2fach-Linienkontaktsystem
- Hohe Kurzschlussfestigkeit bis zu 120kA durch integrierte Kurzschlussblockade



Einsatz

- Das OMEGA Kontaktsystem bietet für die typischen Anwendungen im Bereich der Versorgungsnetzbetreiber für Geräte der Größe 1 und 2 ein ideal angepasstes Leistungsprofil
- Das DELTA Kontaktsystem sorgt mit seiner Stromtragfähigkeit von bis zu 1000A Dauerstrom insbesondere in industriellen Anwendungen sowie in Geräten mit einem Bemessungsstrom von › 400A für hervorragende Lastschalteigenschaften

Convincing advantages

OMEGA contact system

- *Maximum safety thanks to high short-circuit making capacity (120kA/500V)*
- *Riskless operation due to high switching capacity up to AC-23B (400V/400A)*
- *Corrosion-resistant external spring elements made by stainless steel*
- *Robust and age-resistant contact system with high restoring properties*

DELTA contact system

- *Defined arc initiation and low contact wear due to sacrificial elektrodes*
- *Riskless operation due to high switching capacity up to AC-23B (400V/630A)*
- *High age resistance by two independend spring elements*
- *Optimal contacting and low power loss by dual line contact system*
- *High short-circuit strength up to 120kA by integrated short circuit pinch-stop*

Application

- *The OMEGA contact system offers an optimum performance profile for size 1 and 2 devices to be installed in power utility networks*
- *The DELTA contact system, having continuous current carrying capability up to 1000A, provides excellent load-break capability in industrial applications and in switching devices having rated currents above 400A*

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Größe 1-3 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **DELTA Kontaktsystem › 1-polig schaltbar**
*Size 1-3 › 185mm busbar system › Terminal at top or bottom side › **DELTA contact system › 1-pole switchable***

Größe *Size*	Anschlussart *Terminal version*	Anschluss *Connection* [mm²]	I [A]	VE *PU*	Typ *Type*	Artikel-Nr. *Article-No.*
	Flachanschluss M10 *Flat terminal M10*	25-150			SL1-3X/3A	L1931001
1	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	250		SL1-3X/9/KM2G-F	L1996004
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300			SL1-3X/9/KM2G	L1996029
	Flachanschluss M12 *Flat terminal M12*	25-240			SL2-3X/3A	L2931001
	Stehbolzenanschluss M12x35 *Stud bolt terminal M12x35*	25-240			SL2-3X/4A	L2941002
2	Stehbolzenanschluss M12x60 *Stud bolt terminal M12x60*	25-240	400		SL2-3X/4A-60	L2941003
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240			SL2-3X/9/KM2G-F	L2996004
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300		1	SL2-3X/9/KM2G	L2996005
	Flachanschluss M12 *Flat terminal M12*	25-300			SL3-3X/3A	L3931001
	Stehbolzenanschluss M12x35 *Stud bolt terminal M12x35*	25-300			SL3-3X/4A	L3941002
3	Stehbolzenanschluss M12x60 *Stud bolt terminal M12x60*	25-300	630		SL3-3X/4A-60	L3941003
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240			SL3-3X/9/KM2G-F	L3996018
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300			SL3-3X/9/KM2G	L3996004
2 x 3	Flachanschluss 3 x M12 *Flat terminal 3 x M12*	3 x 300, 4 x 185	1250		SL3-3X2/1250/HA	L3921400

Größe 2-3 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **DELTA Kontaktsystem › 1-polig schaltbar › Versenkbarer Griff**
*Size 2-3 › 185mm busbar system › Terminal at top or bottom side › **DELTA contact system › 1-pole switchable › Retractable handle***

	Flachanschluss M12 *Flat terminal M12*	25-240			SL2-3X/3A/GV	L2931006
2	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	400		SL2-3X/9/KM2G-F/GV	L2996009
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300		1	SL2-3X/9/KM2G/GV	L2996010
	Flachanschluss M12 *Flat terminal M12*	25-300			SL3-3X/3A/GV	L3931005
3	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	630		SL3-3X/9/KM2G-F/GV	L3996048

Zubehör/*Accessories*	Technische Daten/*Technical data*	Maßzeichnungen/*Dimensions*
Seite/*Page*: SL-32ff.	Seite/*Page*: SL-44ff.	Seite/*Page*: SL-60, SL-66

NH-Sicherungslastschaltleisten

NH strip-type fuse-switch-disconnectors

Größe 1-3 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **DELTA Kontaktsystem › 3-polig schaltbar**
Size 1-3 › 185mm busbar system › Terminal at top or bottom side › DELTA contact system › 3-pole switchable

Größe *Size*	Anschlussart *Terminal version*	Anschluss *Connection* [mm²]	I_e [A]	VE *PU*	Typ *Type*	Artikel-Nr. *Article-No.*
1	Flachanschluss M10 *Flat terminal M10*	25-150	250	1	SL1-3X3/3A	L1031001
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	250		SL1-3X3/9/KM2G-F	L1096004
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300	250		SL1-3X3/9/KM2G	L1096026
2	Flachanschluss M12 *Flat terminal M12*	25-240	400		SL2-3X3/3A	L2031001
	Stehbolzenanschluss M12x35 *Stud bolt terminal M12x35*	25-240	400		SL2-3X3/4A	L2041002
	Stehbolzenanschluss M12x60 *Stud bolt terminal M12x60*	25-240	400		SL2-3X3/4A-60	L2041003
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	400		SL2-3X3/9/KM2G-F	L2096015
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300	400		SL2-3X3/9/KM2G	L2096005
3	Flachanschluss M12 *Flat terminal M12*	25-300	630		SL3-3X3/3A	L3031001
	Stehbolzenanschluss M12x35 *Stud bolt terminal M12x35*	25-300	630		SL3-3X3/4A	L3041002
	Stehbolzenanschluss M12x60 *Stud bolt terminal M12x60*	25-300	630		SL3-3X3/4A-60	L3041003
	V-Stahl-Rahmenklemme KM2G-F *Steel-frame clamp KM2G-F*	25-240	630		SL3-3X3/9/KM2G-F	L3096012
	V-Stahl-Rahmenklemme KM2G *Steel-frame clamp KM2G*	25-300	630		SL3-3X3/9/KM2G	L3096004
2 x 3	Flachanschluss 3 x M12 *Flat terminal 3 x M12*	3 x 300, 4 x 185	1250		SL3-3X6/1250/HA	L3021400

Größe 1-3 › 185mm Sammelschienensystem › Kabelabgang oben oder unten › **DELTA Kontaktsystem › 3-polig schaltbar › Elektronische Sicherungsüberwachung ES00**
Size 1-3 › 185mm busbar system › Terminal at top or bottom side › DELTA contact system › 3-pole switchable › Electronic fuse-monitoring unit ES00

Größe *Size*	Anschlussart *Terminal version*	Anschluss *Connection* [mm²]	I_e [A]	VE *PU*	Typ *Type*	Artikel-Nr. *Article-No.*
1	Flachanschluss M10 *Flat terminal M10*	25-150	250	1	SL1-3X3/3A/ES00	L1031720
2	Flachanschluss M12 *Flat terminal M12*	25-240	400		SL2-3X3/3A/ES00	L2031720
3	Flachanschluss M12 *Flat terminal M12*	25-300	630		SL3-3X3/3A/ES00	L3031720

Zubehör/*Accessories*	Technische Daten/*Technical data*	Maßzeichnungen/*Dimensions*
Seite/*Page* SL-32ff.	Seite/*Page* SL-44ff.	Seite/*Page* SL-60f., SL-66

NH-Sicherungslastschaltleisten

NH strip-type fuse-switch-disconnectors

Typ/Type				SL1	SL2
Elektrische Kenngrößen *Electrical characteristics*	Nach Norm/*According to standard*			DIN EN 60947-3	
	Für NH-Sicherungen nach DIN VDE 0636-2 *For NH fuse-links acc. to DIN VDE 0636-2*	Größe *Size*		1	2
	Bemessungsbetriebsspannung *Rated operational voltage*	U_e	V	AC690	AC690
	Bemessungsbetriebsstrom [1] *Rated operational current* [1]	I_e	A	250	400
	Konv. therm. Strom frei in Luft mit Sicherungen *Conv. free air thermal current with fuse-links*	I_{th}	A	250	400
	Konv. therm. Strom frei in Luft mit Trennmessern *Conv. free air thermal current with solid-links*	I_{th}	A	400	630
	Bemessungsfrequenz *Rated frequency*	–	Hz	40-60	40-60
	Bemessungsisolationsspannung *Rated insulation voltage*	U_i	V	AC1000	AC1000
	Gesamtverlustleistung bei I_{th} (ohne Sicherungen) *Total power loss at I_{th} (without fuse-links)*	P_v	W	23	54
	Verlustleistung bei 80% I_{th} (ohne Sicherungen) [2] *Power loss at 80% I_{th} (without fuse-links)* [2]	P_v	W	14,7	34,6
	Bemessungsstoßspannung *Rated impulse withstand voltage*	U_{imp}	kV	12	12
	Gebrauchskategorie *Utilization category*	–	–	AC-23B (250A/400V) AC-22B (250A/500V) AC-22B (250A/690V)	AC-23B (400A/400V) AC-22B (400A/500V) AC-21B (400A/690V)
	Bedingter Bemessungskurzschlussstrom [3] *Rated conditional short-circuit current* [3]	I_{cc}	kA	120	
	Max. zul. Verlustleistung pro Sicherungseinsatz *Max. permis. power loss per fuse-link*	P_s	W	32	45
Kabelanschluss *Cable terminal*	Flachanschluss *Flat terminal* – Bolzendurchmesser *Bolt diameter*	–	–	M10	M12
	Flachanschluss *Flat terminal* – Kabelschuh *Cable lug*	–	mm²	1 x 25-150	1 x 25-240
	Flachanschluss *Flat terminal* – Flachschiene *Flat bar*	–	mm	30 x 10	30 x 10
	Flachanschluss *Flat terminal* – Anzugsdrehmoment *Tightening torque*	M_a	Nm	30-35	35-40
	Klemme *Clamp* – Klemmquerschnitt *Clamping cross-section*	–	mm²	KM2G-F 25-240	25-240 KM2G-F
	Klemme *Clamp* – Anzugsdrehmoment *Tightening torque*	–	Nm	32	32

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Typ/*Type*					SL1	SL2
Schutzart *Degree of protection*	Frontseitig, Gerät eingebaut mit Klemmen- und Seitenabdeckung *Front side, device fitted with clamp and lateral covers*	Betriebszustand *Operating condition*	–	–	IP30	IP30
		Schaltdeckel geöffnet *Switching element open*	–	–	IP10	IP10
Betriebsbedingungen *Operating conditions*	Umgebungstemperatur[4]/*Ambient temperature*[4]	T_{amb}	°C		-25 bis/*to* +55	
	Bemessungsbetriebsart/*Rated operating mode*	–	–		Dauerbetrieb/*Uninterrupted duty*	
	Betätigung/*Actuation*	–	–		Abhängige Handbetätigung *Dependent manual operation*	
	Einbaulage/*Mounting position*	–	–		Senkrecht, waagerecht *Vertical, horizontal*	
	Höhenlage/*Altitude*	–	m		Bis zu 2000/*Up to 2000*	
	Verschmutzungsgrad/*Pollution degree*	–	–		3	
	Überspannungskategorie/*Overvoltage category*	–	–		IV	

1) Bei Einbau von mehreren Geräten in Niederspannungs-Schaltgerätekombinationen sind Bemessungsbelastungsfaktoren nach DIN EN 61439 zu beachten.
In case of mounting of several units in low voltage switchgear-combinations, please consider rated diversity factors acc. to DIN EN 61439.

2) Bezugsgröße für Austausch von Geräten nach DIN EN 61439-1 Abs. 10.10.4.2.
Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.

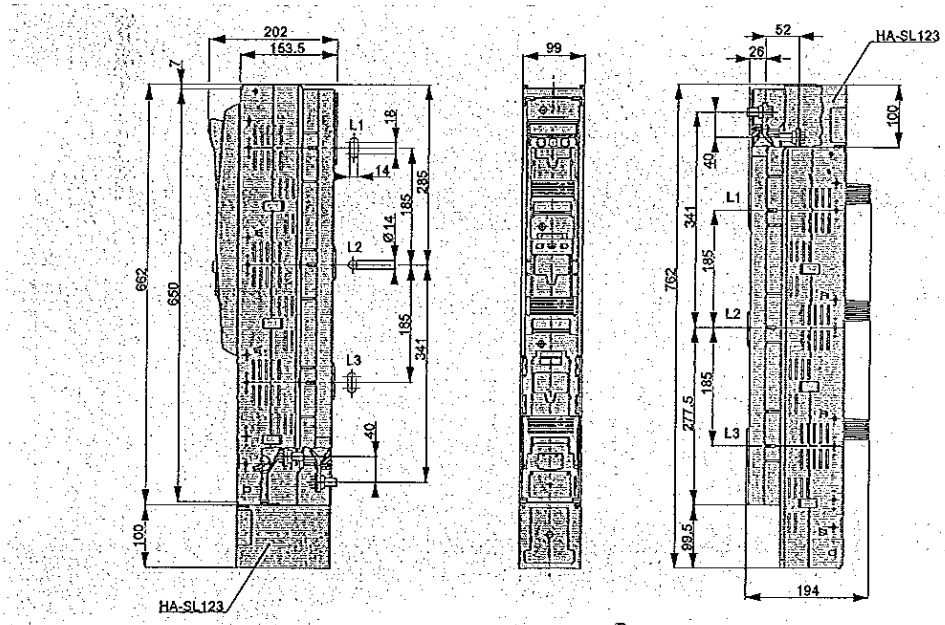
3) Typgeprüft mit NH-Sicherungseinsätzen Betriebsklasse gG./*Type tested with NH fuse-links characteristic gG.*

4) 35°C Normaltemperatur, bei 55°C mit reduziertem Betriebsstrom./*35°C Normal temperature, at 55°C with reduced operating current.*

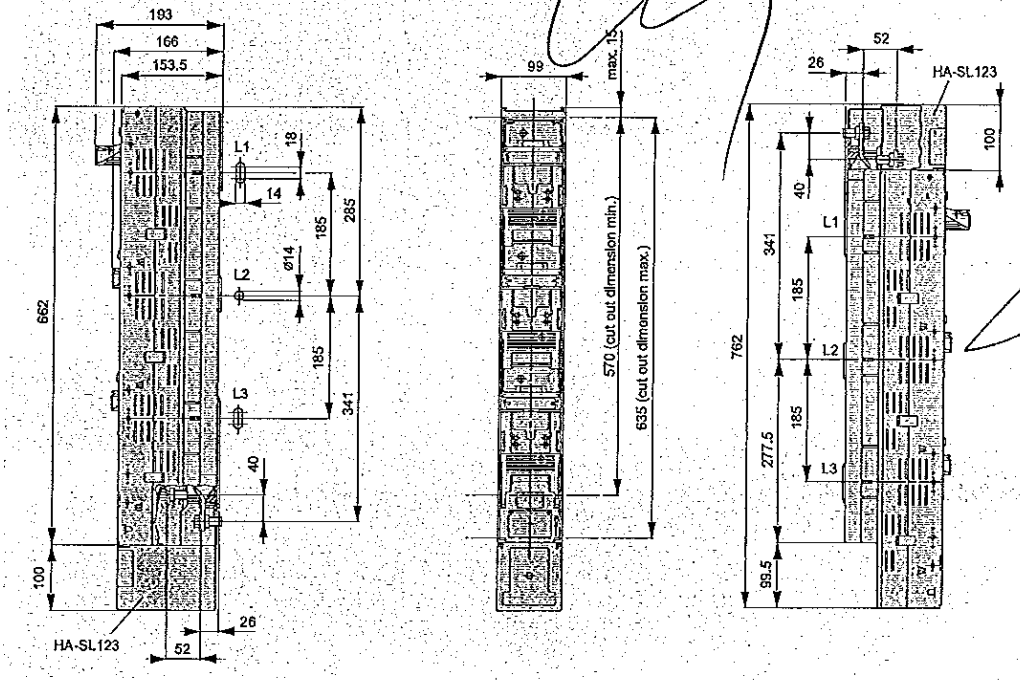
NH-Sicherungslastschaltleisten

NH strip-type fuse-switch-disconnectors

Typ/*Type*	Artikel-Nr./*Article-No.*		Seite/*Page*	Typ/*Type*	Artikel-Nr./*Article-No.*		Seite/*Page*
SL1(G)-3X/... (W)	L19...	L12...	SL-17,SL-19	SL2-3X3/... (W)	L20...	L23...	SL-20
SL1-3X3/... (W)	L10...	L13...	SL-20	SL3-3X/... (W)	L39...	L32...	SL-19
SL2(G)-3X/... (W)	L29...	L22...	SL-17,SL-19	SL3-3X3/... (W)	L30...	L33...	SL-20



Typ/*Type*	Artikel-Nr./*Article-No.*	Seite/*Page*	Typ/*Type*	Artikel-Nr./*Article-No.*	Seite/*Page*
SL2(G)-3X/.../GV	L29...	SL-17, SL-19	SL3-3X/.../GV	L3931005	SL-19



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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Вертикален предпазител-разединител НН 400 А, с триполюсно управление”

Приложение № 2

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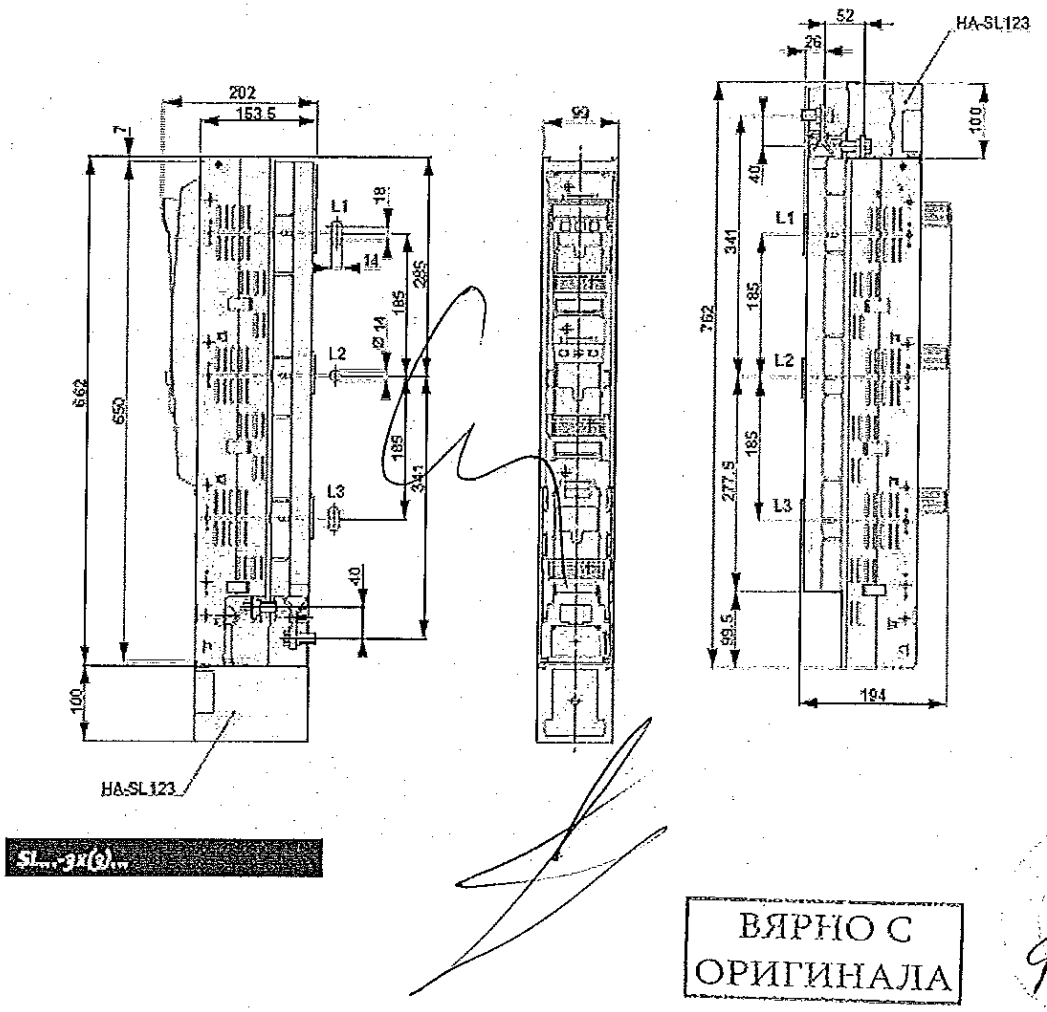
ТЕХНИЧЕСКО ОПИСАНИЕ
на
Вертикален предпазител-разединител НН 400А с триполюсно управление

I. Описание

Триполюсните предпазител-разединители серия SL 2 са произведени от фирма Jean Muller и са предназначени за включване, изключване, разединяване и защита на кабелни линии НН.
Те комбинират три еднополюсни предпазител-разединителя в един корпус. SL 2 са с вертикална конструкция с общо управление на полюсите и могат да бъдат включвани и изключвани под товар. Те са за директен монтаж върху събирателни шини с междуосово разстояние 185 mm.
Корпусът на SL2 е изработен от високоякостна стъклонапълнена пластмаса. Контактната система със сребърно покритие осигурява малки загуби, оптимални термични характеристики и висока комутационна способност. Тоководещите части (високомощните предпазители р-р 2 и тоководещите шини) остават недостъпни и след премахване на горната част, благодарение на защитните капаци с вградени дъгогасителни камери оставащи в основата.

II. Размери



ВЯРНО С ОРИГИНАЛА

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Вертикален предпазител-разединител НН 400 А, с триполюсно управление”

Приложение № 3

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KEMA

CCA
CENELEC CERTIFICATION AGREEMENT
ACCORD DE CERTIFICATION DU CENELEC
CENELEC-ZERTIFIZIERUNGS-ABKOMMEN

Ref.no. NTR-NL 4575

NOTIFICATION OF TEST RESULTS

Product	fuse-switch-disconnectors
Tested by request of	Jean Müller GmbH, Friedrichstrasse 21,
	D-65343 Eltville am Rhein, Germany
Manufactured at (name and place)	Jean Müller GmbH, Friedrichstrasse 21,
	D-65343 Eltville am Rhein, Germany
Rating and principal characteristics	Ui 1000V, Ith 400 A/630 A
Pre-licence factory inspection carried out by	VDE
Trade mark (if any)	JEAN MÜLLER
Model/Type Ref.	SL 2-3x and SL 2-3x3
Additional information (if any)	
A sample of product has been tested and found to be in conformity with the current HD/EN and equivalent national standard, (number and edition)	EN 60947-3:1999
as shown in the Test Report (ref.No.)	2001980.52 (30 pages)

This Notification of Test Results is the result of testing a sample of the product submitted, in accordance with the provisions of the relevant specific standard.

This Notification of Test Results has been established by a body which participates in the CENELEC Certification Agreement (CCA) of 11th September 1973 as amended on 29th March 1983. Any other body participating in the CCA will take this Notification as a basis for granting a national mark of conformity or a national approval as specified in the CCA, as long as the standard referred to above is still in force in the country of that body.

На основание чл. 2
от ЗЗЛД

N.V. KEMA

Signature:

Arnhem

Date: June 23, 2000

Internal ref: HLS/Sco

N.V. KEMA
Utrechtseweg 310, 6812 AR Arnhem
P.O. Box 9035, 6800 ET Arnhem
The Netherlands
Telephone +31 26 3 56 28 50
Telefax +31 26 3 51 49 22

ВЕРНО С ОРИГИНАЛА

KEMA

TEST REPORT

EN 60 947-3

Low-voltage switchgear and controlgear
Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Report

Reference No. ..... : *2001980.52*

Tested by (+ signature) ..... : *H. L. Schendstok*

Approved by (+ signature) ..... : *L.J.W. van Megen*

Date of issue ..... : *2000-06-22*

Contents ..... : *30* pages

..... :

This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator (see below).

Testing laboratory

Name ..... : KEMA Registered Quality B.V.

Address ..... : Utrechtseweg 310, 6812 AR Arnhem, The Netherlands

Testing location ..... : as above *and*

..... : *Holec Laagspanning B.V., Hengelo, The Netherlands*
All tests were observed by compiler

Client

Name ..... : *Jean Müller GmbH*

Address ..... : *Friedrichstrasse 21*

..... : *D-65343 ELTVILLE am Rhein, Germany*

Test specification

Standard ..... : EN 60 947-3:99

Test procedure ..... : CCA-scheme

Procedure deviation ..... : N.A.

Non-standard test method ..... : N.A.

..... :

Test Report Form/blank test report

Test Report Form No. ..... : 60947-3B/98-09

TRF originator ..... : KEMA

Master TRF ..... : dated 98-05

Test item

Description ..... : *fuse-switch-disconnector*

Trademark ..... : *Jean Müller*

Model and/or type reference ..... : *SL 2-3x and SL 2-3x3*

Manufacturer ..... : *Jean Müller GmbH, Eltville am Rhein, Germany*

Rating(s) ..... :	*Ui 1000 V, Ith 400 A / 630 A*
..... :	

Particulars: test item vs. test requirements

- method of operation ..... :	*dependent manual operation*
- switching positions ..... :	*2 (on and off)*
- number of poles ..... :	*3-poles*
- kind of current ..... :	*AC*
- number of phases ..... :	*3*
- rated frequency (Hz) ..... :	*50 Hz*
- number of positions of the main contacts ..... :	*2 (on and off)*
Rated and limiting values, main circuit ..... :	
- rated operational voltage Ue (V) ..... :	*400 V, 500 V and 690 V*
- rated insulation voltage Ui (V) ..... :	*1000 V*
- rated impulse withstand voltage Uimp (kV) ..... :	*12 kV*
- conventional free air thermal current Ith (A) ..... :	*fuse: 400 A* *disconnect knife: 630 A*
- conventional enclosed thermal current Ithe (A) .... :	
- rated operational current Ie (A) ..... :	*fuse: 400 A* *disconnect knife: 630 A*
- rated uninterrupted current Iu (A) ..... :	*fuse: 400 A* *disconnect knife: 630 A*
- utilization category ..... :	*with disconnect knife:* *AC-21B 630 A 690 V* *AC-22B 630 A 400 V* *AC-22B 630 A 500 V* *with fuse:* *AC-21B 400 A 690 V* *AC-22B 400 A 400 V* *AC-22B 400 A 500 V*
Short-circuit characteristic ..... :	
- rated short-time withstand current Icw (kA) ..... :	-
- rated short-time making capacity Icm (kA) ..... :	-
- rated conditional short-circuit current ..... :	*80 kA*
Rated and limiting values, auxiliary circuits ..... :	*N*
- rated operational voltage (V) ..... :	
- rated frequency (Hz) ..... :	

ВЯРНО С ОРИГИНАЛА

- number of circuits ..... :	
- number and kind of contact elements ..... :	
Co-ordination of short-circuit protective devices .... :	
- kind of protective device ..... :	*fuse-link, NH2 gL/gG 400 A*

Test case verdicts	
Test case does not apply to the test object ..... :	N(.A.)
Test item does meet the requirement ..... :	P(ass)
Test item does not meet the requirement ..... :	F(ail)
..... :	

Testing	
Date of receipt of test item ..... :	*2000-02-24*
Date(s) of performance of test ..... :	*2000-03 and 2000-04*
..... :	

ВЯРНО С
ОРИГИНАЛА

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The making and breaking tests and short-circuit tests were carried out with a metallic screen placed at 165 mm at the top and 150 mm from the side of the fuse-switch-disconnector, with the cable terminals at the bottom.

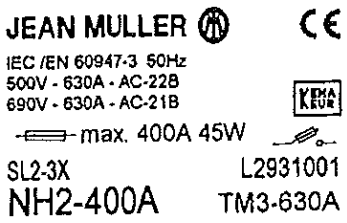
The fuse-switch-disconnector type SL 2-3x were tested as follows:

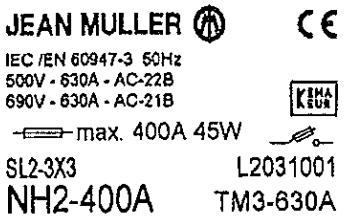
Test sequence I and II: tests were done on phase L2, the load circuit was connected to phase L2, phases L1 and L3 were connected to the supply.

Test sequence IV: tests were done with a 3-phase supply, in the 'O-test' the load circuit was connected to all phases, in the 'CO-test' the load circuit was connected to L1 and L2.

ВЯРНО С ОРИГИНАЛА

Copy of marking plate





ВЯРНО С
ОРИГИНАЛА

EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict

5.2	MARKING		
	Marking on equipment itself or on nameplate or nameplates attached to the equipment and legible from the front after mounting		
	- indication of the open and closed position	*main contacts are visible in the open position*	*P*
	- suitability for isolation		*P*
	- disconnectors AC-20 and DC-20 only: marked "Do not open under load"		*N*
	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	*JEAN MÜLLER*	*P*
	- type designation or serial number	*SL 2-3x and SL 2-3x3*	*P*
	- rated operational current	*630 A*	*P*
	- rated operational voltage	*500 V / 690 V*	*P*
	- utilization category	*AC-21B / AC-22B*	*P*
	- rated frequency	*50* Hz	*P*
	- manufacturer's claim for compliance with IEC 60 947-3	*IEC/EN 60947-3*	*P*
	- degree of protection	IP	*N*
	Marking on fuse-combination units:		
	- fuse type	*NH2-400 A*	*P*
	- maximum rated current	*400* A	*P*
	- power loss of the fuse-link	*45 W*	*P*
	Identification of terminals:		
	- line terminals	*immaterial*	*P*
	- load terminals	*L1, L2, L3*	*P*
	- neutral pole terminal		*N*
	- protective earth terminal		*N*
	Data in the manufacturer's published information:		
	- rated insulation voltage	*1000 V*	*P*
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	*12 kV*	*P*
	- pollution degree, if different from 3	*3*	*P*
	- rated duty	*uninterrupted duty*	*P*

EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- rated short-time withstand current and duration		*N*
	- rated short-circuit making capacity		*N*
	- rated conditional short-circuit current	*80* kA	*P*

7.1	CONSTRUCTION		
7.1.2	Current-carrying parts and their connection	*no contact pressure through insulation material*	*P*
7.1.3	Clearances		
	Rated impulse withstand voltage	(see test sequence I)	*P*
	Creepage distances		
	Pollution degree ..... :	*3*	–
	Comparative tracking index (V) ..... :	*600* V, *450* V, *375* V	–
	Material group ..... :	*I, II, IIIa*	–
	Rated insulation voltage Ui (V) ..... :	*1000* V	–
	Minimum creepage distances (mm) ..... :	*16* mm	–
	Measured creepage distances (mm) ..... :	> *16* mm	*P*
	In case Uimp is not indicated		*N*
7.1.4	Actuator		
7.1.4.1	Insulation		
7.1.4.2	Direction of movement	(IEC 447)	*P*
7.1.5	Indication of contact position		
7.1.5.1	Indicating means	*by actuator*	*P*
7.1.5.2	Indication by the actuator	*all main contacts are visible in the open position*	*P*
7.1.6	Additional safety requirements for equipment suitable for isolation		
7.1.6.1	Additional constructional requirements for equipment suitable for isolation (Ue > 50 V):		
	- marking according to 5.2b		*P*
	- indication of the position of the contacts	*all main contacts are visible in the open position*	*P*
	- construction of the actuating mechanism		*P*
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) ..... :	*14* mm	–
	- measured clearances (mm) ..... :	> *14* mm	

ВЕРНО С ОРИГИНАЛА

EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- test Uimp across gap (kV) .....:	*18,5* kV	*P*
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		*N*
	auxiliary switch shall be rated according to IEC 60 947-5-1		
	minimum time interval between opening of the contacts of the auxiliary contact and the contacts of the main poles (ms) .....:		–
	measured time interval (ms) .....:		–
	During the closing operation the contacts of the auxiliary switch shall close after or simultaneously with the contacts of the main poles		
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		
	the locking means shall be designed in such a way that it cannot be removed with the appropriate padlock(s) installed	*only SL 2-3x3*	*P*
	test force F applied to the actuator in an attempt to operate to the closed position (N) ..:	*178 N*	–
	rated impulse withstand voltage (kV) .....:	*12 kV*	–
	test Uimp on open main contacts at the test force	*18,5 kV*	*P*
7.1.7	Terminals		
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	(see 8.2.4 below)	*P*
	Terminal connections shall be such that necessary contact pressure is maintained	(see 8.2.4 below)	*P*
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	*P*
	Terminal shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operator of equipment and the insulation voltage shall not be reduced below the rated value	(see 8.2.4 below)	*P*
8.2.4	Mechanical properties of terminals		*P*
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm^2)	*(cable lugs or busbars)*	–
	diameter of thread (mm) .....:	*M12*	–

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	torque (Nm) ..... :	*40 Nm x 110% = 44 Nm*	–
	5 times on 2 separate clamping units		*P*
	Testing for damage to and accidental loosening of conductor (flexion test)		*N*
	conductor of the smallest cross-sectional area (mm^2) ..... :		–
	number of conductor of the smallest cross section ..... :		–
	diameter of bushing hole (mm) ..... :		–
	height between the equipment and the platen . :		–
	mass at the conductor(s) (kg) ..... :		–
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
	Pull-out test		*N*
	force (N) ..... :		–
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
	conductor of the largest cross-sectional area (mm^2) ..... :		–
	number of conductor of the largest cross section ..... :		–
	diameter of bushing hole (mm) ..... :		–
	height between the equipment and the platen . :		–
	mass at the conductor(s) (kg) ..... :		–
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
	Pull-out test		*N*
	force (N) ..... :		–
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
	conductor of the largest and smallest cross-sectional area (mm^2) ..... :		–
	number of conductor of the smallest cross section, number of conductor of the largest cross section ..... :		–
	diameter of bushing hole (mm) ..... :		–
	height between the equipment and the platen . :		–

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	mass at the conductor(s) (kg) ..... :		–
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
	Pull-out test		*N*
	force (N) ..... :		–
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		*N*
7.1.7.2	Connection capacity		
	type of conductors ..... :	*(cable lugs or busbars)*	–
	minimum cross-sectional area of conductor (mm^2) ..... :		–
	maximum cross-sectional area of conductor (mm^2) ..... :		–
	number of conductors simultaneously connectable to the terminal ..... :		–
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation		*P*
	clamping screws and nuts shall not serve to fix any other component		*P*
7.1.7.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor		*N*
	protective earth terminal		*N*
	other terminals	*L1, L2, L3*	*P*
7.1.8	Additional requirements for equipment provided with a neutral pole		*N*
	Marking of neutral pole		*N*
	The switched neutral pole shall not break before and shall not make after the other poles		*N*
	Conventional thermal current of neutral pole		*N*
7.1.9	Provisions for protective earthing		*N*
7.1.9.1	The exposed conductive parts shall be electrically interconnected and connected to a protective earth terminal		*N*
7.1.9.2	The protective earth terminal shall be readily accessible		*N*
	The protective earth terminal shall be suitably protected against corrosion		*N*

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Clause	Requirement – Test	Result - Remark	Verdict
	The electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		N
	The protective earth terminal shall have no other functions		N
7.1.9.3	Protective earth terminal marking and identification		N
7.1.10	Enclosure for equipment		N
7.1.10.1	Design		N
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		N
	Sufficient space shall be provided inside the enclosure		N
	The fixed parts of a metal enclosure shall be electrically connected to the other exposed conductive parts of the equipment and connected to a terminal which enables them to be earthed or connected to a protective conductor		N
	Under no circumstances shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		N
	The removable parts of the enclosure shall be firmly secured to the fixed parts by a device such that they cannot be accidentally loosened or detached owing to the effects of operation of the equipment or vibrations		N
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means shall be provided to prevent loss of the fastening devices		N
	If the enclosure is used for mounting push-buttons, it shall not be possible to remove the buttons from the outside of the enclosure		N
7.1.10.2	Insulation		N
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining shall be securely fixed to the enclosure		N
7.1.11	Degree of protection of enclosed equipment		N

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Clause	Requirement – Test	Result - Remark	Verdict
	Degree of protection ..... :	IP	*N*

8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C ..... :	*24* °C	–
	test enclosure W x H x D (mm x mm x mm) .... :	-	–
	material of enclosure ..... :	-	–
	Main circuits, test conditions:		
	- conventional thermal current Ith (A) ..... :	*400 A with fuse-links* *630 A with disconnect knives*	–
	- conventional enclosed thermal current Ithe (A)		–
	- cable/busbar cross-section (mm²) / (mm) ..... :	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark ..... :	-	–
	- manufacturer's model or type reference ..... :	*dummy*	–
	- rated current (A) ..... :	*400 A*	–
	- power loss (W) ..... :	*45* W	–
	- rated breaking capacity (kA) ..... :	- kA	–
	Temperature-rise	(see appended table)	*P*
	Auxiliary circuits: temperature rise of connecting terminals (K) ..... :		*N*
	idem, requirement (K) ..... :	≤	–
	rated operation current (A) ..... :		–
	cross-section (mm²) ..... :		–
8.3.3.2	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		
	- rated impulse withstand voltage (kV) ..... :	*12* kV	–
	- test Uimp main circuits (kV) ..... :	*14,8* kV	*P*
	- test Uimp auxiliary circuits (kV) ..... :		*N*

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Clause	Requirement – Test	Result - Remark	Verdict
	- test Uimp on open main contacts (equipment suitable for isolating) (kV) .....:	*18,5* kV	*P*
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		*N*
	- rated insulation voltage (V) .....:		–
	- main circuits, test voltage for 1 min (V) .....:		
	- control and auxiliary circuits, test voltage for 1 min (V) .....:		

8.3.3.3	Making and breaking capacity	*fuse-switch-disconnector type SL 2-3x3*	
	utilization category .....:	*AC-22B*	–
	rated operational voltage Ue (V) .....:	*500* V	–
	rated operational current Ie (A) or power (kW) .:	*630* A	–
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: *542 V* L2: *542 V* L3: *542 V*	–
	- test current I/Ie = (A) .....:	L1: *1979 A* L2: *1919 A* L3: *1931 A*	–
	- power factor/time constant .....:	L1: *0,65* L2: *0,65* L3: *0,65*	–
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: L2: L3:	–
	- test current I/Ie = (A) .....:	L1: L2: L3:	–
	- power factor .....:	L1: L2: L3:	–
	transient recovery voltage (V) .....:	L1: *547 V* L2: *551 V* L3: *551 V*	–
	current duration (ms) .....:	*580* ms	–
	time interval between operations .....:	*30 s*	–

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Clause	Requirement – Test	Result - Remark	Verdict
	Number of make/break or make and break operations ..... :	*5 x make/break*	*P*
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz) ..... :	*62,68* kHz	–
	Measured oscillatory frequency (kHz) ..... :	L1: *66,6 kHz* L2: *67,5 kHz* L3: *66,6 kHz*	*P*
	Factor γ ..... :	L1: *1,12* L2: *1,13* L3: *1,13*	*P*
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		*P*
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		*P*
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) ..... :	*2000* V	–
	No flashover or breakdown		*P*
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA ..... :		*N*
	Leakage current (other utilization categories) ≤ 2 mA) ..... :	*4,4 μA – 8,1 μA*	*P*
	test voltage (1,1 Ue) (V) ..... :	*550 V, tested with 800 V*	–
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K ..... :	*fuse-links: 38 K – 49 K* *disconnect knives:* *46 K – 73 K*	*P*
	conductor cross-sectional area (mm²) ..... :	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives:* *40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) ..... :	*fuse-links: 400 A* *disconnect knives 630 A*	–
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.) ..... :	*one-hand operated (e)*	–
	actuating force for opening (N) ..... :	*178* N	–

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Clause	Requirement – Test	Result - Remark	Verdict
	test force with blocked main contacts (N) .....:	*400* N	–
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts .....:		*P*
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		*P*

8.3.3.3	Making and breaking capacity	*fuse-switch-disconnector type SL 2-3x*	
	utilization category .....:	*AC-22B*	–
	rated operational voltage Ue (V) .....:	*500* V	–
	rated operational current Ie (A) or power (kW) .:	*630* A	–
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: L2: *532 V* L3:	–
	- test current I/Ie = (A) .....:	L1: L2: *1956 A* L3:	–
	- power factor/time constant .....:	L1: L2: *0,66* L3:	–
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: L2: L3:	–
	- test current I/Ie = (A) .....:	L1: L2: L3:	–
	- power factor .....:	L1: L2: L3:	–
	transient recovery voltage (V) .....:	L1: L2: *531 V* L3:	–
	current duration (ms) .....:	*820* ms	–
	time interval between operations .....:	*30 s*	–
	Number of make/break or make and break operations .....:	*5 x make/break*	*P*
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		

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Clause	Requirement – Test	Result - Remark	Verdict
	oscillatory frequency (kHz) ..... :	*62,68* kHz	–
	Measured oscillatory frequency (kHz) ..... :	L1: L2: *64,1 kHz* L3:	*P*
	Factor y ..... :	L1: L2: *1,14* L3:	*P*
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		*P*
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		*P*
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) ..... :	*2000* V	–
	No flashover or breakdown		*P*
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA ..... :		*N*
	Leakage current (other utilization categories) ≤ 2 mA) ..... :	*4,0 μA – 7,3 μA*	*P*
	test voltage (1,1 Ue) (V) ..... :	*550 V, tested with 800 V*	–
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K ..... :	*fuse-links: 39 K – 49 K* *disconnect knives: 54 K – 70 K*	*P*
	conductor cross-sectional area (mm²) ..... :	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) ..... :	*fuse-links: 400 A* *disconnect knives 630 A*	–
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.) ..... :	*one-hand operated (e)*	–
	actuating force for opening (N) ..... :	*141* N	–
	test force with blocked main contacts (N) ..... :	*400* N	–

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Clause	Requirement – Test	Result - Remark	Verdict
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts .....:		*P*
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		*P*

8.3.3.3	Making and breaking capacity	*fuse-switch-disconnector type SL 2-3x3*	
	utilization category .....:	*AC-21B*	—
	rated operational voltage Ue (V) .....:	*690* V	—
	rated operational current Ie (A) or power (kW) .:	*630* A	—
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: *747 V* L2: *747 V* L3: *747 V*	—
	- test current I/Ie = (A) .....:	L1: *974 A* L2: *986 A* L3: *985 A*	—
	- power factor/time constant .....:	L1: *0,95* L2: *0,95* L3: *0,95*	—
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) .....:	L1: L2: L3:	—
	- test current I/Ie = (A) .....:	L1: L2: L3:	—
	- power factor .....:	L1: L2: L3:	—
	transient recovery voltage (V) .....:	L1: *740 V* L2: *745 V* L3: *747 V*	—
	current duration (ms) .....:	*280* ms	—
	time interval between operations .....:	*30 s*	—
	Number of make/break or make and break operations .....:	*5 x make/break*	*P*
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz) .....:	kHz	—

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Clause	Requirement – Test	Result - Remark	Verdict
	Measured oscillatory frequency (kHz) .....:	L1: L2: L3:	*N*
	Factor y .....:	L1: L2: L3:	*N*
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		*P*
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		*P*
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:	*2000* V	–
	No flashover or breakdown		*P*
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		*N*
	Leakage current (other utilization categories) ≤ 2 mA) .....:	*4,1 μA – 7,5 μA*	*P*
	test voltage (1,1 Ue) (V) .....:	*759 V, tested with 800 V*	–
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K .....:	*fuse-links: 38 K – 52 K* *disconnect knives: 55 K – 65 K*	*P*
	conductor cross-sectional area (mm²) .....:	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) .....:	*fuse-links: 400 A* *disconnect knives 630 A*	–
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.) .....:	*one-hand operated (e)*	–
	actuating force for opening (N) .....:	*178* N	–
	test force with blocked main contacts (N) .....:	*400* N	–
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts .....:		*P*

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Clause	Requirement – Test	Result - Remark	Verdict
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		*P*

8.3.3.3	Making and breaking capacity	*fuse-switch-disconnector type SL 2-3x*	
	utilization category ..... :	*AC-21B*	–
	rated operational voltage Ue (V) ..... :	*690* V	–
	rated operational current Ie (A) or power (kW) . :	*630* A	–
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) ..... :	L1: L2: *747 V* L3:	–
	- test current I/Ie = (A) ..... :	L1: L2: *991 A* L3:	–
	- power factor/time constant ..... :	L1: L2: *0,94* L3:	–
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V) ..... :	L1: L2: L3:	–
	- test current I/Ie = (A) ..... :	L1: L2: L3:	–
	- power factor ..... :	L1: L2: L3:	–
	transient recovery voltage (V) ..... :	L1: L2: *745 V* L3:	–
	current duration (ms) ..... :	*360* ms	–
	time interval between operations ..... :	*30 s*	–
	Number of make/break or make and break operations ..... :	*5 x make/break*	*P*
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz) ..... :	kHz	–
	Measured oscillatory frequency (kHz) ..... :	L1: L2: L3:	*N*

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Clause	Requirement – Test	Result - Remark	Verdict
	Factor y ..... :	L1: L2: L3:	*N*
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		*P*
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		*P*
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) ..... :	*2000* V	–
	No flashover or breakdown		*P*
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA ..... :		*N*
	Leakage current (other utilization categories) ≤ 2 mA) ..... :	*3,9 μA – 7,8 μA*	*P*
	test voltage (1,1 Ue) (V) ..... :	*759 V, tested with 800 V*	–
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K ..... :	*fuse-links: 39 K – 51 K* *disconnect knives: 59 K – 68 K*	*P*
	conductor cross-sectional area (mm²) ..... :	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) ..... :	*fuse-links: 400 A* *disconnect knives 630 A*	–
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.) ..... :	*one-hand operated (e)*	–
	actuating force for opening (N) ..... :	*141* N	–
	test force with blocked main contacts (N) ..... :	*400* N	–
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts ..... :		*P*
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		*P*

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Clause	Requirement – Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY *fuse-switch-disconnector type SL2-3x*		
8.3.4.1	Operational performance test		
	utilization category .....:	*AC-21B and AC-22B*	–
	rated operational voltage (V) .....:	*500 V and 690V*	–
	rated operational current (A) .....:	*630 A*	–
	Test conditions electrical operation cycles:		
	test voltage (V) .....:	L1: - L2: *689 V* L3: -	–
	test current (A) .....:	L1: - L2: *634 A* L3: -	–
	power factor/time constant .....:	L1: - L2: *0,81* L3: -	–
	Number of cycles with current .....:	*200*	*P*
	Number of cycles without current .....:	*1400*	*P*
	First test sequence (with/without current) .....:	*with current*	–
	Second test sequence (with/without current) ..:	*without current*	–
	time interval between first and second test sequence .....:	*1 hour*	–
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:	*2000* V	–
	No breakdown or flashover		*P*
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		*N*
	Leakage current (other utilization categories) ≤ 2 mA .....:	*5,8* µA – *8,2* µA	*P*
	test voltage (1,1 Ue) (V) .....:	*759 V, tested with 800 V*	–
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K .....:	*fuse-links: 39 K – 48 K* *disconnect knives: 44 K – 79 K*	*P*

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Clause	Requirement – Test	Result - Remark	Verdict
	conductor cross-sectional area (mm²) .....:	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) .....:	*fuse-links: 400 A* *disconnect knives: 630 A*	–

8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY ***fuse-switch-disconnector type SL2-3x3 only without current***		
8.3.4.1	Operational performance test		
	utilization category .....:	*AC-21B and AC-22B*	–
	rated operational voltage (V) .....:	*500 V and 690V*	–
	rated operational current (A) .....:	*630 A*	–
	Test conditions electrical operation cycles:		
	test voltage (V) .....:	L1: - L2: L3: -	–
	test current (A) .....:	L1: - L2: L3: -	–
	power factor/time constant .....:	L1: - L2: L3: -	–
	Number of cycles with current .....:		*P*
	Number of cycles without current .....:	*1400 + 200*	*P*
	First test sequence (with/without current) .....:	*without current*	–
	Second test sequence (with/without current) ..:		–
	time interval between first and second test sequence .....:		–
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:	*2000* V	–
	No breakdown or flashover		*P*
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		*N*

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Clause	Requirement – Test	Result - Remark	Verdict
	Leakage current (other utilization categories) ≤ 2 mA ..... :	*5,3 µA – 7,3 µA*	*P*
	test voltage (1,1 Ue) (V) ..... :	*759 V, tested with 800 V*	–
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K ..... :	*fuse-links: 55 K – 75 K* *disconnect knives: 50 K – 65 K*	*P*
	conductor cross-sectional area (mm²) ..... :	*fuse-links: 30 x 10 mm busbar and 240 mm² cable* *disconnect knives: 40 x 10 mm busbar and 2 x 185 mm² cable*	–
	test current Ie (A) ..... :	*fuse-links: 400 A* *disconnect knives: 630 A*	–

8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		*N*
8.3.5.1	Short-time withstand current test		
	Rated short-time withstand current Icw (A) ..... :		
	test voltage (V) ..... :	L1: L2: L3:	–
	r.m.s. test current (A) ..... :	L1: L2: L3:	–
	peak test current (A) ..... :	L1: L2: L3:	–
	power factor/time constant ..... :	L1: L2: L3:	–
	test duration (s) ..... :		–
	Equivalent with ..... :		
8.3.5.1.5	Behaviour of the equipment during the test		
8.3.5.1.6	Conditions of the equipment after the test		
8.3.5.2	Short-circuit making capacity		
	Rated short-circuit making capacity Icm (A) ..... :		

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Clause	Requirement – Test	Result - Remark	Verdict
	test voltage (V) .....:	L1: L2: L3:	–
	r.m.s. test current (A) .....:	L1: L2: L3:	–
	peak test current (A) .....:	L1: L2: L3:	–
	power factor/time constant .....:	L1: L2: L3:	–
	current duration (s) .....:		–
	number of making cycles .....:		–
8.3.5.2.5	Behaviour of the equipment during the test		
8.3.5.2.6	Conditions of the equipment after the test		
8.3.5.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:		–
	No flashover or breakdown		
8.3.5.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		
	Leakage current (other utilization categories) ≤ 2,0 mA .....:		
	test voltage (1,1 Ue) (V) .....:		–
8.3.5.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K .....:		
	cross-sectional area (mm²) .....:		–
	test current Ie (A) .....:		–

8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT *fuse-switch-disconnector type SL 2-3x3*		
	Protective device details:		
	- manufacturer's name, trademark or identification mark .....:	*Jean Müller*	–
	- manufacturer's model or type reference .....:	*M2gL400Ml/am*	–
	- rated voltage (V) .....:	*500* V	–

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TRF originator: KEMA

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- rated current (A) ..... :	*400 A*	–
	- rated breaking capacity (kA) ..... :	*120* kA	–
8.3.6.2	Fuse protected short-circuit withstand		
	test voltage (1,05 Ue) (V) ..... :	L1: *725* V L2: *725* V L3: *725* V	–
	test current (kA) ..... :	L1: *84,4* kA L2: *84,7* kA L3: *82,9* kA	–
	rated frequency (Hz) ..... :	*50* Hz	–
	power factor ..... :	*0,17*	–
	Fuse protected short-circuit withstand		
	- max. let-through current (kA) ..... :	L1: *7,17* kA L2: *37,4* kA L3: *38,5* kA	–
	- Joule integral I^2dt (A^2s) ..... :	L1: *160* kA^2s L2: *1370* kA^2s L3: *1290* kA^2s	–
	Fuse protected short-circuit making		
	- mean velocity of 15 manually under no-load conditions operations (m/s) ..... :	*1,77* m/s	–
	- point at which the measurement is made ..... :		–
	- test speed during the fuse protected short-circuit making (m/s) ..... :	*0,65* m/s	–
	- max. let-through current (kA) ..... :	L1: *35,6* kA L2: *35,6* kA L3: *7,55* kA	–
	- Joule integral I^2dt (A^2s) ..... :	L1: *1180* kA^2s L2: *1090* kA^2s L3: *94,1* kA^2s	–
8.3.6.2.5	Behaviour of the equipment during the test		P
8.3.6.2.6	Conditions of the equipment after the test		P
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) ..... :	*2000* V	–
	No flashover or breakdown		P
8.3.6.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA ..... :		

ВЯРНО С ОРИГИНАЛА

EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	Leakage current (other utilization categories) ≤ 2,0 mA .....:	*4,4* µA – *7,3* µA	*P*
	test voltage (1,1 Ue) (V) .....:	*759 V, tested with 800 V*	–
8.3.6.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K .....:	*39* K – *49* K	*P*
	cross-sectional area (mm²) .....:	*30 x 10 mm busbar and 240 mm² cable*	–
	test current Ie (A) .....:	*fuse-links: 400 A*	–

8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT ***fuse-switch-disconnector type SL 2-3x***		
	Protective device details:		
	- manufacturer's name, trademark or identification mark .....:	*Jean Müller*	–
	- manufacturer's model or type reference .....:	*M2gL400MI/am*	–
	- rated voltage (V) .....:	*500* V	–
	- rated current (A) .....:	*400 A*	–
	- rated breaking capacity (kA) .....:	*120* kA	–
8.3.6.2	Fuse protected short-circuit withstand		
	test voltage (1,05 Ue) (V) .....:	L1: *725* V L2: *725* V L3: *725* V	–
	test current (kA) .....:	L1: *84,4* kA L2: *84,7* kA L3: *82,9* kA	–
	rated frequency (Hz) .....:	*50* Hz	–
	power factor .....:	*0,17*	–
	Fuse protected short-circuit withstand		
	- max. let-through current (kA) .....:	L1: *6,85* kA L2: *38,1* kA L3: *39,0* kA	–
	- Joule integral I^2dt (A^2s) .....:	L1: *144* kA^2s L2: *1410* kA^2s L3: *1330* kA^2s	–
	Fuse protected short-circuit making		
	- mean velocity of 15 manually under no-load conditions operations (m/s) .....:	*1,15* m/s	–

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- point at which the measurement is made .....:		–
	- test speed during the fuse protected short-circuit making (m/s) .....:	*0,65* m/s	–
	- max. let-through current (kA) .....:	L1: *36,6* kA L2: *36,6* kA L3:	–
	- Joule integral I^2dt (A^2s) .....:	L1: *1200* kA^2s L2: *1200* kA^2s L3:	–
8.3.6.2.5	Behaviour of the equipment during the test		*P*
8.3.6.2.6	Conditions of the equipment after the test		*P*
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:	*2000* V	–
	No flashover or breakdown		*P*
8.3.6.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		
	Leakage current (other utilization categories) ≤ 2,0 mA .....:	*3,7* µA – *7,2* µA	*P*
	test voltage (1,1 Ue) (V) .....:	*759 V, tested with 800 V*	–
8.3.6.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K .....:	*37* K – *48* K	*P*
	cross-sectional area (mm^2) .....:	*30 x 10 mm busbar and 240 mm^2 cable*	–
	test current Ie (A) .....:	*fuse-links: 400 A*	–

8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY		
8.3.7.1	Overload test		
	ambient temperature 10-40 °C .....:	*24* °C	–
	test enclosure W x H x D (mm x mm x mm) ....:	-	–
	material of enclosure .....:		–
	test current 1,6 Ithe or 1,6 Ith (A) .....:	*640 A*	–
	cable/busbar cross-section (mm^2) / (mm) .....:	*busbar 30 x 10 mm* *cable 240 mm^2*	–
	Fuse-link details:		

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- manufacturer's name, trademark or identification mark .....:	*Jean Müller*	—
	- rated current (A) .....:	*400 A*	—
	- power loss (W) .....:	*40* W	—
	- rated breaking capacity (kA) .....:	*120* kA	—
	- time duration of the overload test (s) .....:	*1500* s	—
	Within 3 min after the fuse(s) has(have) operated (or 1 h), the equipment shall be operated once, i.e. opened and closed		*P*
	The equipment shall not have undergo any impairment hindering such operation		*P*
8.3.7.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V) .....:	*2000* V	—
	No flashover or breakdown		*P*
8.3.7.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA .....:		
	Leakage current (other utilization categories) ≤ 2 mA) .....:	*4,8* µA – *7,6* µA	*P*
	test voltage (1,1 Ue) (V) .....:	*759* V	—
8.3.7.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K (K) .....:	*36* K – *47* K	*P*
	cross-sectional area (mm²) .....:	*30 x 10 mm busbar and 240 mm² cable*	—
	test current Ie (A) .....:	*fuse-links: 400 A*	—

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict

	TABLE: temperature rise measurements *with dummy*	

temperature rise dT of part:	phase	dT (K)	required dT (K)
terminal to horizontal busbar system (line terminal)	*L1* *L2* *L3*	*52* *51* *51*	*70* *70* *70*
terminal to cable(s) (load terminal)	*L1* *L2* *L3*	*45* *48* *62*	*70* *70* *70*
internal busbar near insulation material	*L1*	*123*	*145*
actuator	-	*4*	*25*

	TABLE: temperature rise measurements *with contact knifes*	

temperature rise dT of part:	phase	dT (K)	required dT (K)
terminal to horizontal busbar system (line terminal)	*L1* *L2* *L3*	*60* *60* *58*	*70* *70* *70*
terminal to cable(s) (load terminal)	*L1* *L2* *L3*	*64* *59* *60*	*70* *70* *70*

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Remarks

Additional test:

- Parts of insulation material necessary to retain current carrying parts were subjected to a glow-wire test according EN 60947-1, at 960 °C for the other insulation materials 650 °C.
These tests withstood the requirements.

description:

Type SL 2-3x	:	*fuse-switch-disconnector, 3-poles, switching pole after pole*
Type SL 2-3x3	:	*fuse-switch-disconnector, 3-poles, switching 3-poles, with locking device in close and open position*

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СПИСЪК

на типовите изпитвания, проведени от независима изпитвателна лаборатория,
за предлаганите вертикални предпазител-разединители, както следва:

Марка: Jean Muller
Продукт: вертикален предпазител-разединители
Серия: SL2

5.2 Маркировка
7.1 Конструкция
8.3.3 Основни характеристики
8.3.3.1 Повишаване на температурата
8.3.3.2 Диелектрични свойства
8.3.3.3 Работна и гранична изключвателна възможност при късо съединение
8.3.3.4 Проверка на диелектричните свойства
8.3.3.5 Ток на утечка
8.3.3.6 Проверка при повишаване на температурата
8.3.3.7 Експлоатационна възможност на задвижващия механизъм
8.3.4 Работни характеристики
8.3.4.1 Изпитване на експлоатационната възможност
8.3.4.2 Проверка на диелектричните свойства на прекъсвач-разединителя
8.3.4.3 Ток на утечка
8.3.4.4 Проверка при повишаване на температурата
8.3.5 Характеристики при късо съединение
8.3.5.1 Издържан импулсен ток
8.3.5.2 Работна изключвателна възможност при късо съединение
8.3.5.3 Проверка на диелектричните свойства
8.3.5.4 Ток на утечка
8.3.5.5 Проверка при повишаване на температурата
8.3.6 Условен ток на късо съединение
8.3.6.2 Издържан ток на късо съединение със стопяем предпазител
8.3.6.3 Проверка на диелектричните свойства
8.3.6.4 Ток на утечка
8.3.6.5 Проверка при повишаване на температурата
8.3.7 Характеристики при претоварване
8.3.7.1 Изпитване на претоварване
8.3.7.2 Проверка на диелектричните свойства
8.3.7.3 Ток на утечка
8.3.7.4 Проверка при повишаване на температурата

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Вертикален предпазител-разединител НН 400 А, с триполюсно управление"

Приложение № 4

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Annex to ISO/IEC 17025:2005 declaration of accreditation for registration number: **L 022**

of **DEKRA Certification B.V.**

This annex is valid from: **29-04-2015** to **01-03-2018** Replaces annex dated: **03-11-2014**

Location where activities are performed under accreditation

Head Office

Meander 1051
6825 MJ
Arnhem
The Netherlands

No.	Material or product	Type of activity	Reference number	Remarks
		A. Electrical Safety Tests		
1a	Cables and cords **(CABL)**	Type test of cables and cords according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	HD 21 HD 22 HD 603 HD 604 HD 605 EN 13501, EN 50143; EN 50214; EN 50267; EN 50525; EN 50288; EN 50399; EN 50618 NEN/EN 50200 NEN/EN/IEC 60228 NEN-EN 50525 NEN/EN 50266 NEN/EN 50362 NEN/EN /IEC 61034 IEC 60092; IEC 60227 *; IEC 60245 *; IEC 60331; IEC 60332; IEC 60502-1; IEC 60502-2; IEC 60754; IEC 60800; IEC 60840; IEC 62067	* see note 3

This annex has been approved by:

Ir. J.C. van der Poel
Chief Executive

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No.	Material or product	Type of activity	Reference number	Remarks
1a	Cables and cords **(CABL)**	Type test of cables and cords according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	DEKRA K 42; DEKRA K 102 DEKRA K 145; DEKRA K 146 DEKRA K 151; DEKRA K 152 DEKRA K 156; DEKRA K 157 DEKRA K 158; DEKRA K160 DEKRA K 161; DEKRA K 162 DEKRA K 163; DEKRA K 164 DEKRA K 165; DEKRA K 167 DEKRA K 168; DEKRA K 169 DEKRA K 170; DEKRA K 171 DEKRA K 175; DEKRA K 176 DEKRA K 177; DEKRA K 178 DEKRA K 179 BS 6004; BS 6007; BS 4553; BS 5467; BS 6231; BS 6346; BS 6387; BS 6500; BS 6622; BS 6724; BS 6883; BS 7211; BS 7629; BS 7835; BS 7846; BS 7889; BS 8491; BS EN 50288-7 BS EN 50525 DIN VDE0815; DIN VDE0250	* see note 3
		Test methods for non-metallic materials	IEC 60811-201; IEC 60811-202 IEC 60811-203; IEC 60811-401 IEC 60811-402; IEC 60811-403 IEC 60811-404; IEC 60811-405 IEC 60811-406; IEC 60811-408 IEC 60811-409; IEC 60811-411 IEC 60811-412; IEC 60811-501 IEC 60811-502; IEC 60811-503 IEC 60811-504; IEC 60811-505 IEC 60811-506; IEC 60811-507 IEC 60811-508; IEC 60811-509 IEC 60811-510; IEC 60811-511 IEC 60811-605; IEC 60811-606 IEC 60811-607	
		Electrical test methods for low voltage energy cables	NEN-EN 50395	
		Non electrical test methods for low voltage energy cables	NEN-EN 50396	

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No.	Material or product	Type of activity	Reference number	Remarks
1b	Conduits	Type test of conduits according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	NEN/EN/IEC 61386 DEKRA K24 EN 50086	
1c	Installation systems Cable trays Cable ladders	Type test of cable trays and cable ladders, according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	KEMA 55 NEN/EN 50085 NEN/IEC/EN 61537 BS EN 61537	
1d	Boxes and enclosures for electrical installations	Type test of boxes and enclosures for electrical installations, according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	NEN/EN/IEC 60670	
2a	Switches for appliances and automatic controls for electrical household appliances **(CONT)**	Type test of switches according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests.	IEC/EN 60730*, 61095* IEC/EN 60691, 60934, 61058*, 60529 IEC 60265, 62271-1, 62271-100, 62271-101, 62271-102, 62271-105, 62271-110, 62271-200, 62271-201, 62271-202, 62271-203, EN 50152-1 IEEE Std C37.09, C37.081, 37.60, C37.013, C37.34 ANSI C37.41, C37.73, C37.20.2, C37.122 ANSI/IEEE C37.21 ANSI C37.54, C37.55, C37.20.2, C37.72	*** see note 3**

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No.	Material or product	Type of activity	Reference number	Remarks
3	Household and similar equipment **(HOUS)**	Type test of household equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60335* IEC/EN 61770 IEC/EN 62233 EN 50366 IEC/EN 60204 IEC/EN 60730-1/ 2-8 / 2-9 IEC/EN 61558-1/ 2-3 / 2-6 / 2-5 / 2-6 / 2-16 IEC/EN 62061 EN/ISO 13849-1	* see note 3
		Low power measurements	IEC/EN 62301	
4	Installation accessories and connection devices **(INST)**	Type test of installation accessories and connection devices according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60309*, 60320*, 60669*, 60670*, 60799*, 60884*, 60998*, 61058*, 61242*, 61534*, 61984*, 62208*; IEC/EN 60335-2-76, 60974, 61316, 61386, 62094 EN 50075, 50066, 50146, 50250, 50393 NEN 1251, IEC 60884*, 61238, 62080 BS 1363-1, BS 1363-2, BS 1363-3, BS 1363-4 SS 145 BS 546 BS 4573 BS 5733 NEN 1020 NF C61-314 DIN VDE 0620-1 DIN VDE 0620-2-1 CEI 23-50 NBN C 61-112-1 NEK IEC 60884-1 NEK 502 ÖVE/ÖNORM E 8684-1 ÖVE/ÖNORM E 8620-2(-8,-4, -5) SFS 5610 SS 428 08 34 DS 60884-2-D1 SEV 1011 UNE 20315-1-1; UNE 20315-1-2 IEC/EN 61535 EN 50428 required with 60669	* see note 3

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No.	Material or product	Type of activity	Reference number	Remarks
5	Luminaires **(LITE)**	Type test of luminaires according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60155*, 60238*, 60400*, 60570*, 60598*, 60838*, 60921*, 60968*, 60969*, 61347*, 62471* IEC/EN 60929, 61184, 62031, 62035, 60923, 60925, 60927, 61047, 62384, 62560, 61195, 62493	*** see note 3**
6	Measurement, control and laboratory equipment **(MEAS)**	Type test of measurement-, control- and laboratory equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 61010* IEC/EN 60044 IEC/EN 61243 IEEE Std C57.13	*** see note 3**
7	Electrical equipment for medical use **(MED)**	Type test of electrical equipment for medical use according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60601* IEC/EN/ISO 80601 HD 395	*** see note 3**
8	Miscellaneous equipment **(MISC)**	Type test of miscellaneous equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60825*	*** see note 3**

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No.	Material or product	Type of activity	Reference number	Remarks
9	IT and office equipment **(OFF)**	Type test of IT and office equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60950* IEC/EN 62040* IEC/EN 60825 IEC 62368 EN 41003	* see note 3
10	Low voltage, high power switching equipment **(POW)**	Type test of low voltage, high power switching equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60439*, 61439, IEC/EN 60947* IEC/EN 60282, 62208 EN 50178, IEC 60470, 60549, 60644, EN 60282-1 IEEE Std C37.41, C37.60 ANSI C37.44 IEC 61921	* see note 3
11	Installation protective equipment **(PROT)**	Type test of installation protective equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60127*, 60269*, 60529*, 60898*, 61008*, 61009*, 61643*, 60755, 62019 IEC 60099, 60137, 60168, 60383, 60507, 60660, 61109, 60815 HD 630, 639, 60269 IEEE Std 62.11 ANSI C29 CAN/CSA C411.1	* see note 3
12	Safety transformers and similar equipment **(SAFE)**	Type test of safety transformers and simillar equipment according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60044*, IEC/EN 61558* IEC/EN 62040, IEC/EN 60076, IEC/EN 60353 EN 50091, EN 50464-1 HD 538.1 IEEE Std. C57.12.90, C57.21 NEMA 107 CISPR 16	* see note 3

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No.	Material or product	Type of activity	Reference number	Remarks
13	Electric tools **(TOOL)**	Type test of electric tools according to the tests in the standard, among others: - electrical safety tests - mechanical tests - environmental tests	IEC/EN 60745* IEC/EN 61029* IEC/EN 60335* (Gardening) IEC/EN 62233, IEC/EN 60204 EN 50144 EN 50260-2-7 EN 792 EN/ISO 1114 IEC/EN 62061 EN/ISO 13849-1	* see note 3
14	Electronics, entertainment equipment **(TRON)**	Type test according to the tests as mentioned in the standard, except the following tests which are subcontracted: 60065, cl. 20.1.3 Pre-conditioning of printed circuit boards 60065, cl. 12.1.2 Vibration-sine	IEC / EN 60065* IEC / EN 60491 IEC 62368	* see note 3
15	Products within the scope of the EMC Directive 2004/108/EC **(EMC)**	Type test according to the tests as mentioned in the standard	CISPR11; CISPR12; CISPR13; CISPR14-*; CISPR15; CISPR16-*-*; CISPR20; CISPR22; CISPR24; CISPR25; IEC60601-*-*; IEC60945; IEC60947-*-*; IEC61000-*-*; IEC61008-1; IEC61009-1; IEC61131-2; IEC61204-3; IEC61326-*; IEC61543; IEC61547; IEC61800-*; IEC62040-2; IEC62052-*; IEC62053-*; IEC62054-*;	* see note 3
B. Electromagnetic Compatibility (EMC): Automotive tests				
1	Vehicles, Motorcycles, Motorboats and Spark-ignited engine-driven devices	Radiated emission 30 to 1000 MHz OATS	European Directives 2004/104/EC, 97/24/EC European regulation ECE-R10.04 EN 55012, CISPR 12	
2	Vehicles, Motorcycles, Motorboats and Spark-ignited engine-driven devices	Radiated immunity up to 30 V/m 20 to 2000 MHz OATS	European Directive 2004/104, 97/24/EC European regulation ECE-R10.04	

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No.	Material or product	Type of activity	Reference number	Remarks
3	Electrical/ electronic sub-assembly	Pulse emission for ESA's along supply lines 12V and 24V	European Directive 2004/104/EC European regulation ECE-R10.04 ISO 7637-1 ISO 7637-2	
4		Conducted emission for ESA's (V–method, LISN) 150 kHz to 108 MHz	European Directive 2004/104/EC European regulation ECE-R10.04 CISPR25	
5		Radiated emission for ESA's Anechoic Chamber method 30 to 1000 MHz	European Directive 2004/104/EC European regulation ECE-R10.04 CISPR25	
6		Radiated immunity for ESA's Anechoic Chamber method and GTEM method 20 to 2000 MHz up to 30V/m	European Directive 2004/104/EC European regulation ECE-R10.04 ISO 11452-1, ISO 11452-2, ISO 11452-3	
7	Electrical/ electronic sub-assembly	Bulk Current Injection for ESA's 20 to 400 MHz up to 100 mA	European Directive 2004/104/EC European regulation ECE-R10.04 ISO 11452-1, ISO 11452-4	
8		Pulse immunity for ESA's along supply lines 12V and 24V	European Directive 2004/104/EC European regulation ECE-R10.04 ISO 7637-1 ISO 7637-2	
		C. Electromagnetic Compatibility (EMC): EMF tests		
1	Electrical and electronic equipment	EMF measurements: 0-400 kHz	EN 62233 EN 62493	

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No.	Material or product	Type of activity	Reference number	Remarks
D. Electromagnetic Compatibility (EMC): Emission tests				
1	Electrical and electronic equipment	Conducted emission 9 kHz to 30 MHz	EN 55011, CISPR 11 EN 55013, CISPR 13 EN 55014-1, CISPR 14-1 EN 55015, CISPR 15 EN 55022, CISPR 22	
2		Radiated Emission Electric (EM) Field 30 MHz to 18 GHz	EN 55011, CISPR 11 EN 55014-1, CISPR 14-1 EN 55022, CISPR 22	
3		Disturbance power 30 MHz to 300 MHz	EN 55014-1, CISPR 14-1	
4		Click disturbances 150 kHz to 30 MHz	EN 55011, CISPR 11 EN 55014-1, CISPR 14-1	
5		Radiated Emission Magnetic Field 9 kHz to 30 MHz	EN 55011, CISPR 11 EN 55015, CISPR 15	
6		Harmonic current emissions 0 Hz to 2 kHz up to 16 A per phase	IEC / EN 61000-3-2	
7		Pulse magnetic field immunity up to 1000 A/m	IEC/EN 61000-4-9	
8		Limitation of voltage fluctuations and flicker up to 16 A per phase	IEC / EN 61000-3-3	
E. Electromagnetic Compatibility (EMC): FCC tests (USA legislation)				
1	Radio-Frequency Devices Industrial, Scientific and Medical Equipment	Emission 9 kHz to 3 GHz	47 CFR FCC Part 15, Part 18 ANSI C63.4 FCC MP-5	
F. Electromagnetic Compatibility (EMC): Immunity test				
1	Electric and electronic equipment	Electrostatic discharge immunity up to 30 kV	IEC/EN 61000-4-2	
2		Radiated EM field immunity up to 2,5 GHz up to 30 V/m	IEC/EN 61000-4-3	
3		EFT Burst immunity up to 4 kV	IEC/EN 61000-4-4	

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No.	Material or product	Type of activity	Reference number	Remarks
4	Electric and electronic equipment	Surge immunity up to 10 kV	IEC/EN 61000-4-5	
5		Immunity to conducted RF disturbances up to 230 MHz, up to 30 Vrms	IEC/EN 61000-4-6	
6		Power frequency magnetic field immunity up to 100 A/m	IEC/EN 61000-4-8	
7		Voltage dips and interruptions Single phase equipment up to 16 A	IEC/EN 61000-4-11	
8		Ring wave immunity test	IEC/EN 61000-4-12	
		G. Electromagnetic Compatibility (EMC): MISC		
1	Railway applications - Electromagnetic compatibility	Electromagnetic compatibility testing according the listed product standards	EN 50121-1 to -5	
2	Road traffic signal systems	Electromagnetic compatibility testing according the listed product standard	EN 50293	
		H. Photometric Tests (all tests are in accordance with the reference method)		
1	Headlamps low and high beams and front fog lamps	All tests as mentioned in the ECE Regulations stated under Test method Photometry Colorimetry Heat tests Plastic tests	ECE Regulations Nos. 1, 5, 8, 19, 20, 31, 56, 57, 72, 76, 82, 98, 112, 113 and 123; European Directives 76/761, 76/762 and 97/24	**Note 1**
2	Signalling lamps	All tests as mentioned in the ECE Regulations stated under Test method Photometry Colorimetry Heat test	ECE Regulations Nos. 6, 7, 23, 38, 50, 77, 87 and 91 and European Directives 76/757, 76/759, 76/758, 77/538, 77/539, 77/540 and 97/24 ECE Regulation 38 (rear fog lamps only)	
3	Devices for the illumination of rear registration plates	All tests as mentioned in the ECE Regulations stated under Test method Luminance	ECE Regulations Nos. 4 and 50 European Directives 76/760 and 97/24	

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No.	Material or product	Type of activity	Reference number	Remarks
4	Retro-reflective devices	All tests as mentioned in the ECE Regulations stated under Test method Retro-reflection Colorimetry Water resistance test Corrosion Fuel and oil resistance Heat test UV resistance	ECE Regulations Nos. 3, 27, 69, 70, 88 and 104 European Directive 76/757	**Note 2**
5	Light Sources	All tests as mentioned in the ECE Regulations stated under Test method Geometry Photometry Colorimetry Optical quality Mechanical tests	ECE Regulations Nos. 37, 99 IEC 60809 IEC 60810 IEC 60983 IEC 60061	
6	Special warning lamps (beacons and flash lights)	All tests as mentioned in the ECE Regulations stated under Test method Photometry Colorimetry Water resistance test	ECE Regulation No. 65	
7	Cornering Lamps	All tests as mentioned in the ECE Regulation stated under Test method Photometry Colorimetry	ECE Regulation No.119	

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No.	Material or product	Type of activity	Reference number	Remarks
		I. Lighting testing: EPA ENERGY STAR Program		
1	Non-directional Fluorescent Luminaires	Specifications for Performance of Self-Ballasted Compact Fluorescent Lamps, Source Run-up Time (ms)	ANSI C78.5:2003	
		Method of Measurement of Fluorescent Lamp Ballasts, Power Factor, Operating Frequency	ANSI C82.2:2002	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Electric and Photometric Measurements of Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-9:2009	
		Life Testing of Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-40:2010	
		Life Testing of Compact Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-65:2010	
		Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-66:2011	

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No.	Material or product	Type of activity	Reference number	Remarks
2	Directional Fluorescent Luminaires	Specifications for Performance of Self-Ballasted Compact Fluorescent Lamps, Source Run-up Time (ms)	ANSI C78.5:2003	
		Method of Measurement of Fluorescent Lamp Ballasts, Power Factor, Operating Frequency	ANSI C82.2:2002	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Electric and Photometric Measurements of Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-9:2009	
		Life Testing of Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-40:2010	
		Life Testing of Compact Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-65:2010	
		Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-66:2011	
		Photometric Testing of Outdoor Fluorescent Luminaires, Efficacy, Light Output, Zonal Lumen Distribution	IES LM-10:2013	
		Approved Method for Photometric Testing of Indoor Fluorescent Luminaries, Efficacy, Light Output, Zonal Lumen Distribution	IES LM-41:2013	
3	Luminaires CSD - Fluorescent Ballasts	Method of Measurement of Fluorescent Lamp Ballasts, Power Factor, Operating Frequency	ANSI C82.2:2002	

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No.	Material or product	Type of activity	Reference number	Remarks
4	Luminaires CSD - Fluorescent Lamps	Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering	CIE Pub. No.13.3:1995	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Electric and Photometric Measurements of Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-9:2009	
		Life Testing of Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-40:2010	
		Life Testing of Compact Fluorescent Lamps, Light Source Life, Lumen Maintenance	IES LM-65:2010	
		Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps, Efficacy, Light Output, Lumen Maintenance, CCT, CRI	IES LM-66:2011	
5	Non-Directional HID Luminaires	High-Intensity Discharge (HID)—Methods of Measuring Characteristics, Operating Frequency	ANSI C78.389:2004 (R2009)	
		Ballasts for High Intensity Discharge (HID) Lamps - Methods of Measurement, Power Factor, Lamp Current Crest Factor	ANSI C82.6:2005	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering	CIE Pub. No.13.3:1995	
		Life Testing of High Intensity Discharge (HID) Lamps, Light Source Life, Lumen Maintenance	IES LM-47:2012	
		Electrical and Photometric Measurements of High Intensity Discharge Lamps, Efficacy, Light Output, CCT, CRI	IES LM-51:2013	

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No.	Material or product	Type of activity	Reference number	Remarks
6	Directional HID Luminaires	High-Intensity Discharge (HID)—Methods of Measuring Characteristics, Operating Frequency	ANSI C78.389:2004 (R2009)	
		Ballasts for High Intensity Discharge (HID) Lamps - Methods of Measurement, Power Factor, Lamp Current Crest Factor	ANSI C82.6:2005	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering	CIE Pub. No.13.3:1995	
		Life Testing of High Intensity Discharge (HID) Lamps, Light Source Life, Lumen Maintenance	IES LM-47:2012	
		Electrical and Photometric Measurements of High Intensity Discharge Lamps, Efficacy, Light Output, CCT, CRI	IES LM-51:2013	
		Photometric Testing of Roadway Luminaires Using Incandescent Filament and High Intensity Discharge (HID) Lamps, Efficacy, Output, Zonal Lumen Distribution	IES LM-31:2013	
		Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps, Efficacy, Light Output, Zonal Lumen Distribution	IES LM-46:2004	
7	Luminaires CSD - HID Ballasts	High-Intensity Discharge (HID)—Methods of Measuring Characteristics, Operating Frequency	ANSI C78.389:2004 (R2009)	
		High-Intensity Discharge (HID)—Methods of Measuring Characteristics, Operating Frequency	ANSI C78.389:2004 (R2009)	
		Ballasts for High Intensity Discharge (HID) Lamps - Methods of Measurement, Power Factor, Lamp Current Crest Factor	ANSI C82.6:2005	

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No.	Material or product	Type of activity	Reference number	Remarks
8	Luminaires CSD - HID Lamps	Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering	CIE Pub. No.13.3:1995	
		Life Testing of High Intensity Discharge (HID) Lamps, Light Source Life, Lumen Maintenance	IES LM-47:2012	
		Electrical and Photometric Measurements of High Intensity Discharge Lamps, Efficacy, Light Output, CCT, CRI	IES LM-51:2013	
9	Non-directional Solid State Luminaires and Subcomponents	Electrical and Photometric Measurements of Solid-State Lighting Products (section 10 not required for non-directional or subcomponents), Efficacy, Output, Lumen Maintenance, CCT, CRI, Color Maintenance	IES LM-79:2008	
		Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment, Power Factor	ANSI C82.77:2002	
		Method of Measuring and Specifying Color Rendering of Light Sources, CRI	CIE Pub. No.13.3:1995	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Characterization of LED Light Engines and LED Lamps for Electrical and Photometric Properties as a Function of Temperature, Efficacy, Light Output, Lumen Maintenance, CCT , CRI, Color Maintenance, Light Source Life	IES LM-82-2012	
10	Directional Solid State Luminaires	Electrical and Photometric Measurements of Solid-State Lighting Products (Goniophotometer), Zonal Lumen Distribution, Color Angular Uniformity, Luminaire Photometry	IES LM-79:2008 sections 10 and 12	
		Guide to Spectroradiometric Measurements, Color Angular Uniformity	IES LM-58:2013	

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No.	Material or product	Type of activity	Reference number	Remarks
10	Directional Solid State Luminaires	Method of Measuring and Specifying Color Rendering of Light Sources, CRI	CIE Pub. No.13.3:1995	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Electrical and Photometric Measurements of Solid-State Lighting Products, Efficacy, Light Output, Lumen Maintenance, CCT, CRI, Color Maintenance	IES LM-79:2008	
11	Lumen Maintenance of LED Packages, Arrays, and Modules	Method for Measuring Lumen Maintenance of LED Light Sources, Light Source Life, Lumen Maintenance	IES LM-80:2008	
12	Non-Directional Outdoor Halogen Luminaires	Approved Method for Life Testing of Filament Lamps, Light Source Life Requirements	IES LM-49:2001, IES LM-49:2011	
13	Directional Outdoor Halogen Luminaires	Approved Method for Life Testing of Filament Lamps, Light Source Life Requirements	IES LM-49:2001	
		Photometric Testing of Outdoor Fluorescent Luminaires, Zonal Lumen Distribution	IES LM-10:1996	
		Photometric Testing of Roadway Luminaires Using Incandescent Filament and High Intensity Discharge (HID) Lamps, Zonal Lumen Distribution	IES LM-31:1991	
		Photometric Testing of Indoor Fluorescent Luminaires, Zonal Lumen Distribution	IES LM-41:1998	
		Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps, Zonal Lumen Distribution	IES LM-46:2004	
		Electrical and Photometric Measurements of Solid-State Lighting Products, Zonal Lumen Distribution	IES LM-79:2008 Section 10	

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No.	Material or product	Type of activity	Reference number	Remarks
14	CFL Directional Lamps	Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps, Efficacy, Light Output, Center beam Intensity, Lumen Maintenance, Lifetime, CCT, CRI	IES LM-66:2011	
		Life Testing of Compact Fluorescent Lamps, Lumen Maintenance, Lifetime, Rapid Cycle Stress Test	IES LM-65:2010	
		IEEE Recommended Practice on Characterization of surges in Low Voltage (1000V and Less) AC Power Circuits, Transient Protection	ANSI/IEEE C62.41.2-2002	
		Fluorescent Lamp Ballasts, Method of Measurement of Power Factor (included supplements)	ANSI C82.2:2002	
		Specifications for the Chromaticity of Fluorescent lamps, CCT	ANSI C78.376-2001	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		Tool for Calculating Minimum Center beam Intensity, Minimum Center Beam Intensity – PAR and MR Lamps	Energy Star Online CBCP Tool	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, ETLOR	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Light Output Ratio	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	

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No.	Material or product	Type of activity	Reference number	Remarks
14	CFL Directional Lamps	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Run-up Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Run-up Time	
15	CFL Omnidirectional and Decorative Lamps	Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps, Efficacy, Light Output, Center beam Intensity, Lumen Maintenance, Lifetime, CCT, CRI	IES LM-66:2011	
		Life Testing of Compact Fluorescent Lamps, Lumen Maintenance, Lifetime, Rapid Cycle Stress Test	IES LM-65:2010	
		IEEE Recommended Practice on Characterization of surges in Low Voltage AC Power Circuits, Transient Protection	ANSI/IEEE C62.41.2-2002	
		Specifications for the Chromaticity of Fluorescent lamps, CCT	ANSI C78.376-2001	
		Method of Measurement of Fluorescent Lamp Ballasts, Power Factor	ANSI C82.2:2002	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Run-up Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Run-up Time	

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No.	Material or product	Type of activity	Reference number	Remarks
16	LED Directional Lamps	Electrical and Photometric Measurements of Solid-State Lighting Products, Efficacy, Output, Center Beam Intensity, Luminous Intensity Distribution, Lumen Maintenance, Lifetime, CCT, CRI, Color Maintenance, Color Angular Uniformity	IES LM-79:2008	
		Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment, Power Factor	ANSI C82.77:2002 Sections 6 and 7	
		IEEE Recommended Practice on Characterization of surges in Low Voltage AC Power Circuits, Transient Protection	ANSI/IEEE C62.41.2-2002	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Chromaticity of Solid State Lighting Products, CCT	ANSI C78.377-2011	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		Tool for Calculating Minimum Center beam Intensity, Minimum Center Beam Intensity – PAR and MR Lamps	Energy Star Online CBCP Tool	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Ambient Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Ambient Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, ETLOR	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Light Output Ratio	

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No.	Material or product	Type of activity	Reference number	Remarks
16	LED Directional Lamps	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	
17	LED Omnidirectional and Decorative Lamps	Electrical and Photometric Measurements of Solid-State Lighting Products, Efficacy, Output, Center Beam Intensity, Luminous Intensity Distribution, Lumen Maintenance, Lifetime, CCT, CRI, Color Maintenance, Color Angular Uniformity	IES LM-79:2008	
		Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment, Power Factor	ANSI C82.77:2002 Sections 6 and 7	
		IEEE Recommended Practice on Characterization of surges in Low Voltage AC Power Circuits, Transient Protection	ANSI/IEEE C62.41.2-2002	
		Colorimetry, CCT	CIE Pub No. 15:2004	
		Method of Measuring and Specifying Color Rendering of Light Sources, Color Rendering (CRI)	CIE Pub. No.13.3:1995	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Elevated Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Ambient Temperature Life Testing, Lumen Maintenance, Lifetime	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Ambient Temperature Life Testing	
		ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Start Time	

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No.	Material or product	Type of activity	Reference number	Remarks
		I. Additional Standards related to Energy Star		
1	Reflector type lamps	Photometric Testing	IES LM-35:2002	
2	Floodlights Using Incandescent Filament of Discharge Lamps	Electrical and photometric measurements	IES LM-45:2009	
3	Fluorescent Lamps	Electrical measurements	ANSI C78.375:1997 ANSI C78.375:2014	
4	Fluorescent Lamps	Chromaticity of Fluorescent Lamps	ANSI C78.376-2001	
5	Fluorescent Lamps	Chromaticity of Solid State Lighting Products	ANSI C78.377-2011	
6	Mercury Lamps	Measuring Characteristics	ANSI C78.386:1989	
7	Metal-Halide Lamps	Measuring Characteristics	ANSI C78.387:1987	
8	High Pressure Sodium Lamps	Measuring Characteristics	ANSI C78.388:1990	
9	High-Frequency Fluorescent Lamp Ballast	Measurement of a High-Frequency Fluorescent Lamp Ballast	ANSI C82.11-2002	
10	Light sources	The measurement of luminous flux	CIE 84:1989	
11	Luminaires	The Photometry and goniophotometry of luminaires	CIE121:1996	
12	All LED Products	Measurements of LEDs	CIE127:1997 CIE127:2007	
13	All products	Transient protection	ANSI/IEEE C62.41.1 ANSI/IEEE C62.41.2	
14	Decorative Light Strings	Weathering Test	ASTM G154-06 ASTM G154-12a	
15	Decorative Light Strings	ENERGY STAR Test Method for Decorative Light Strings	ENERGY STAR Test Method for Decorative Light Strings	
16	All products	ENERGY STAR Program requirements Product Specification for Lamps Version 1.0: Final Test Methods and Recommended Practices	ENERGY STAR Program Requirements Product Specification for Lamps Version 1.0: Final Test Methods and Recommended Practices	

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Note 1: Weather-beaten tests of synthetic lenses is subcontracted
Note 2: Salt-nebula test is subcontracted
Note 3: See current list of sub set of standards on the IECEE CBTL website

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Вертикален предпазител-разединител НН 400 А, с триполюсно управление"

Приложение № 5

JEAN MÜLLER
THE NAME FOR SAFETY

EG-Konformitätserklärung
EC Conformity Declaration

Dok.-Nr.L_98_01
Doc. No.

Hersteller, Anschrift
Manufacturer, Adress

Jean Müller GmbH Elektrotechnische Fabrik
H.J.-Müller-Straße 7, D-65343 Eltville am Rhein

Produktbezeichnung
Product designation

NH-Sicherungslastschaltleisten Baureihe SL, für Schalttafeleinbau und Schalttafelaufbau inklusive Zubehör.
LV HRC Strip type fuse switch disconnectors, series SL and accessories, for panel board building.
DIN-Size 00 (160A): SL00-3x3/100/; SL00-3x(3); SL00-3x/400A
DIN-Size 1 to 3 (250A/400A/630A):SL123-3x(3)
DIN-Size 3: SL3-3x(3)/1000A (NH-Trennleiste)
(LV HRC Busbar disconnect strip 1-and 3 pole switchable)
DIN-Size 3: SL3-3x2/1.250A or 1.600A
DIN-Size 3: SL3-3x(3)/910A
DIN-Size 3; SL3-3X6/2.000A
DIN-Size 3: SLT3-3SRSL)/3x(3)/50 (NH-Stromschienen-Trennleiste)
(busbar disconnect strip

Jahr der Anbringung der CE-Kennzeichnung : 1998
Affixing of the CE marking

Das bezeichnete Produkt stimmt mit den Vorschriften folgender EG-Richtlinie/n überein:
The designated product conforms to the provisions of the following European directives

2006/95/EG
Richtlinie des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffen elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.

Directive of the European Parliament and of the concil of 12. December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Die Übereinstimmung des bezeichneten Produktes mit den Vorschriften der oben genannten Richtlinie/n wird nachgewiesen durch die Einhaltung folgender Normen:
The conformity of the designated product with the provisions of the above mentioned Directives is proved by full compliance with the following standards

Europäische Normen EN 60947-3
Harmonized European standards
IEC-Standards
IEC standards
Nationale Normen VDE 0660 Teil 107
National standards

Aussteller / Issuer

Ort, Datum / Place, Date

На основание чл. 2
от ЗЗЛД

Rechtsverb. Unterschrifte
Legally binding signature

I.V. A. Göttert

Diese Erklärung bescheinigt die Üb... linien, beinhaltet jedoch keine Zusicherung von Eigenschaften. Mitgelieferte Sicherheitshinweise si...
This declaration certifies compliance with the indicated directives but implies no warranty of properties. The safety instructions of the accompanying product documentation shall be observed.

ОТПИС
ОРИГИНАЛА

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Вертикален предпазител-разединител НН 400 А, с триполюсно управление"

Приложение № 6

ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

Долуподписаният /-ната/ инж. Георги Димитров Георгиев
в качеството ми на Управител на "ЕЛЕКТРОГЕЦ" ООД
със седалище и адрес на управление: гр. София, ул. Майор Горталов 9А, вписано в Търговския регистър към Агенцията по вписванията с ЕИК 130 761 934, за участие в процедура за възлагане на обществена поръчка за Доставка и монтаж на Бетонови комплектни трансформаторни постове /БКТП/, РЕФ. № PPD 15-042,

Д Е К Л А Р И Р А М,

че предлагания материал Вертикален предпазител-разединител НН 400 А, с триполюсно управление Jean Muller тип SL2G-3X3/9/KM2G-F, съответства с изискванията на техническата спецификация на стандарт за материал Вертикален предпазител-разединител НН 400 А, с триполюсно управление, вкл. на параграфи „Характеристика на материала" и „Съответствие на предложеното изпълнение с нормативно-техническите документи" от документацията по търг с реф. № РЕФ. № PPD 15-042.

Дата 08.12.2017 г.

Декларатор:

инж. Георги Димитров

На основание чл. 2
от ЗЗЛД

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Вертикален предпазител-разединител НН 400 А, с триполюсно управление”

Приложение № 7

Инструкция за съхранение, монтаж и експлоатация на вертикални разединители тип SL

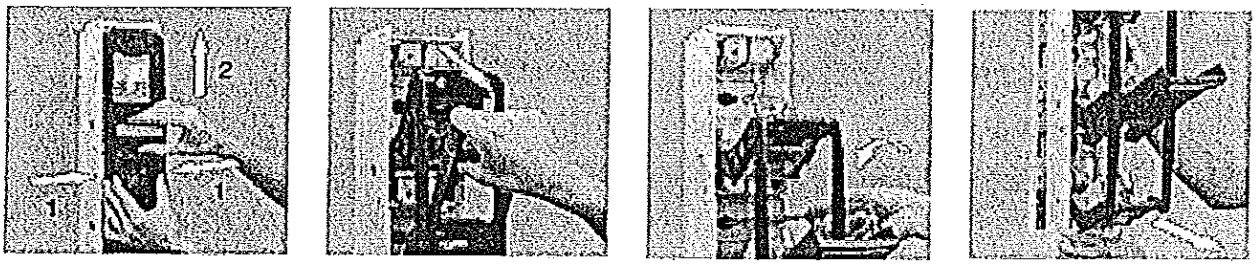
Разединителите да се съхраняват в помещения, опаковани, при температури от – 25 ^{0} C до + 55 ^{0} C.

При съхранението касетите да бъдат подредени по същият начин, по който се монтират.

Монтажът да се извършва само от правоспособни лица.

При монтажа да се спазват всички изисквания на Правилника за техническа безопастност и охрана на труда, както и всички действащи в момента нормативни документи за извършване на такъв род дейности.

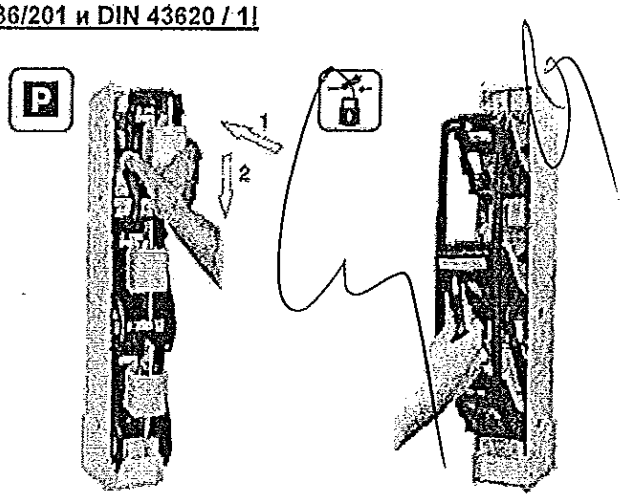
Разединителите са вертикални с едновременно разкъсване на трите фази. На фиг.1 е посочен начина на демонтаж на горната част на предпазител-разединителите.



Фиг 1

ВАЖНО: Да се използват само стопяеми предпазители с посребрени ножови контакти, отговарящи на БДС 5209-77, IEC 60269-2-1, VDE 0636/201 и DIN 43620 / 1!

Предпазител-разединителите могат да бъдат поставени в паркирано положение или да бъдат заключени в изключено положение Фиг. 2 Прекъсвач - предпазителите отговарят на изискванията на VDE 0636 – IEC / EN 60269 и DIN 43623.



Фиг. 2

Препоръчителни усилия за завиване на присъединителните болтове към шината са 40 Nm.

Диапазон на присъединителната V-клема на прекъсвач - предпазителите:

- 25 - 240 rm / re
- 35 - 240 sm
- 35 – 300 se

Препоръчителни усилия за завиване на присъединителната V–клема 25 Nm

Не се изискват специални процедури за поддръжка при нормални експлоатационни условия. Препоръчват се регулярни технически проверки, когато повредата би причинила сериозни материални щети или е застрашен човешки живот.

ВЯРНО С ОРИГИНАЛА

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Честотата на инспекция зависи най-вече от климатичните условия и мястото на инсталиране, като тази честота се определя от експлоатационната практика на крайният потребител.

Проверката да включва оглед на изолационните части на съоръжението.

Не трябва да съществуват натрупвания на чужди частици върху изолационните части, които могат да нарушат изолационните качества на съоръженията.

На основание чл. 2
от ЗЗЛД

Управител

в /

15.07.2013
София

ВЯРНО С
ОРИГИНАЛА

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Предпазители със стопяема вложка НН, размер 2 XXX A за 400 (500) V, високомощни, ножови, характеристика gG, система A (NH система)"

Приложение № 1

389

Low voltage NH knife-blade fuse-links

NV KOMBI advantages

ETI is introducing a new generation of low-voltage fuse-links from size NV00C up to NV3 with new, dual indication of fuse-link operation, called KOMBI. The indicator is easily visible on the top and centre of the fuse-link, whether it is situated in a standard fuse base or vertical fuse rail or in fuse-switch disconnector.

The most important advantages of NV/NH KOMBI fuse-links:

- High breaking capacity, 120 kA (400 V gG - except NV00C and NV00CI, and 500 V gG) and 100 kA (400 V gG NV00C and NV00CI, 690 V gG, 400 V gTR, 400 V gF and 690 V aM)
- Rated voltages: 400 V a.c., 500 V a.c., 690 V a.c. and 1000 V a.c.
- Two versions of covers: aluminium, when the removal tag is under voltage and plastic, when insulated metal removal tag is incorporated into the plastic cover
- VDE certificates and CCA/CB test reports

General about NV/NH fuse-links

Their dimensions correspond with DIN 43620, other technical characteristics correspond with the requirements of the following standards:

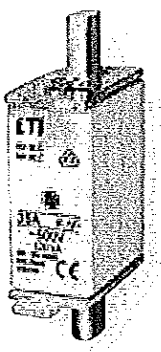
- Rated voltage 400V/500V/690V/gG: IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1:1996+A1[1995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
- Rated voltage 690V/aM: VDE 0636-2011
- Rated voltage 400V/gF: PN-IEC 60269-2
- Rated voltage 400V/gTr: VDE 0636-2011

Short description of constituent parts for NV fuse-links

The body of the fuse-link is made of quality steatite which is highly resistant against temperature overloads. In the inner part of the steatite body there is a copper melting element which is welded on a specially shaped inner part of the contact knife by spot welding. By careful shaping of this part we achieved that during assembly the melting element is placed exactly into the middle of the inner place. The remaining inside place of the ceramic body is filled up with precisely determined granulation and chemical structure quartz sand. All contact knives are additionally protected with a layer of silver or on special order of nickel. On the base of cyclic tests we have proved that the fusing characteristics are very stable and the tolerance on the current axis can be up to ± 10%.

Fuse-link NV/NH gG

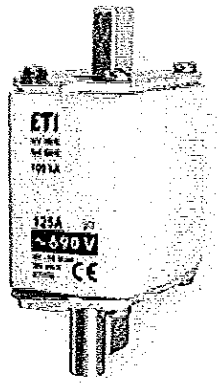
Rated current	Breaking capacity	Rated voltage
2-1600 A	120 kA / 100 kA	400, 500, 690, 1000 V



NV/NH 00C KOMBI gG

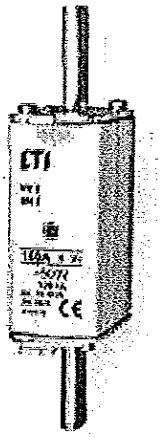
Rated current [A]	Code No. ~ 400V 100 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
2	004181101	004181201	004181301	125	3/120
4	004181102	004181202	004181302	125	3/120
6	004181103	004181203	004181303	125	3/120
10	004181104	004181204	004181304	125	3/120
16	004181105	004181205	004181305	125	3/120
20	004181106	004181206	004181306	125	3/120
25	004181107	004181207	004181307	125	3/120
32	004181108	004181208	004181308	125	3/120
35	004181109	004181209	004181309	125	3/120
40	004181110	004181210	004181310	125	3/120
50	004181111	004181211	004181311	125	3/120
63	004181112	004181212		125	3/120
80	004181113	004181213		125	3/120
100	004181114	004181214		125	3/120
125		004181215		125	3/120
160	004181216			125	3/120

Technical data on page 521



NV/NH 00 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	Weight [g]	Packaging [pcs]
50	004111182	205	3
63	004111183	205	3
80	004111184	205	3
100	004111185	205	3
125	004111186	205	3



NV/NH 0 KOMBI gG

Rated current [A]	Code No. ~ 500 V 120 kA	Code No. ~ 690 V 100 kA	Weight [g]	Packaging [pcs]
6	004183203	004183303	226	3/45
10	004183204	004183304	226	3/45
16	004183205	004183305	226	3/45
20	004183206	004183306	226	3/45
25	004183207	004183307	226	3/45
32	004183208	004183308	226	3/45
35	004183209	004183309	226	3/45
40	004183210	004183310	226	3/45
50	004183211	004183311	226	3/45
63	004183212	004183312	226	3/45
80	004183213	004183313	226	3/45
100	004183214	004183314	226	3/45
125	004183215	004183315	226	3/45
160	004183216		226	3/45

NV/NH 1C KOMBI gG

Rated current [A]	Code No. ~ 400 V 120 kA	Code No. ~ 500 V 120 kA	Code No. ~ 690 V 100 kA	Weight [g]	Packaging [pcs]
25	004184107	004184207	004184307	233	3/45
32	004184108	004184208	004184308	233	3/45
35	004184109	004184209	004184309	233	3/45
40	004184110	004184210	004184310	233	3/45
50	004184111	004184211	004184311	233	3/45
63	004184112	004184212	004184312	233	3/45
80	004184113	004184213	004184313	233	3/45
100	004184114	004184214	004184314	233	3/45
125	004184115	004184215	004184315	233	3/45
160	004184116	004184216		233	3/45

Technical data on page 521

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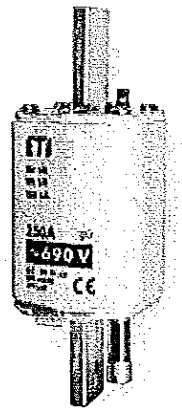
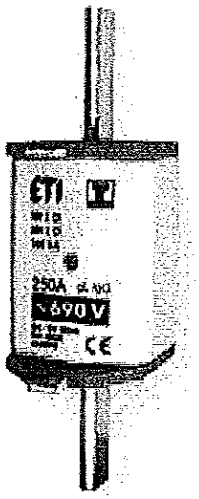


NV/NH 1 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	Weight [g]	Packaging [pcs]
63	004113340	452	3
80	004113341	452	3
100	004113342	452	3
125	004113343	452	3
160	004113344	452	3
200	004113345	452	3
224	004113346	452	3
250	004113347	452	3

NV/NH 2C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
63	004185112	004185212	004185312	430	3/15
80	004185113	004185213	004185313	430	3/15
100	004185114	004185214	004185314	430	3/15
125	004185115	004185215	004185315	430	3/15
160	004185116	004185216	004185316	430	3/15
200	004185117	004185217	004185317	430	3/15
224	004185118	004185218	004185318	430	3/15
250	004185119	004185219	004185319	430	3/15

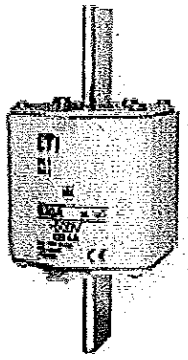


NV/NH 2C I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
63	004195112	004195212	004195312	430	3/15
80	004195113	004195213	004195313	430	3/15
100	004195114	004195214	004195314	430	3/15
125	004195115	004195215	004195315	430	3/15
160	004195116	004195216	004195316	430	3/15
200	004195117	004195217	004195317	430	3/15
224	004195118	004195218	004195318	430	3/15
250	004195119	004195219	004195319	430	3/15

* INSULATED

Technical data on page 521



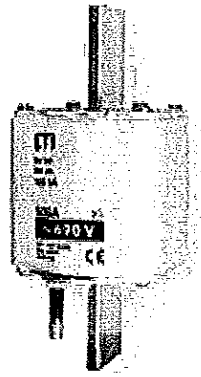
NV/NH 3 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
355			004186328	923	3/12
400			004186329	923	3/12
425	004186130	004186230	004186330	923	3/12
500	004186131	004186231	004186331	923	3/12
560	004186132	004186232		923	3/12
630	004186133	004186233		923	3/12

NV/NH 3 I KOMBI gG*

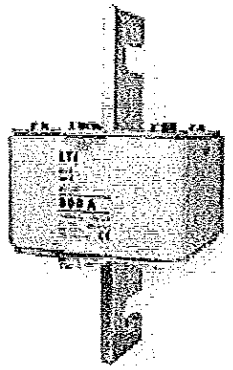
Rated current [A] [A]	Code No. ~ 400V 120 kA ~ 400 V	~ 500V 120 kA ~ 500 V	~ 690V 100 kA ~ 690 V	Weight [g] [g]	Packaging [pcs] [pcs]
225	004196124	004196224	004196324	923	3/12
250	004196125	004196225	004196325	923	3/12
300	004196126	004196226	004196326	923	3/12
315	004196127	004196227	004196327	923	3/12
355	004196128	004196228	004196328	923	3/12
400	004196129	004196229	004196329	923	3/12
425	004196130	004196230	004196330	923	3/12
500	004196131	004196231	004196331	923	3/12
560	004196132	004196232		923	3/12
630	004196133	004196233		923	3/12

* INSULATED



NV/NH 3 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	Weight [g]	Packaging [pcs]
250	004115120	895	3
300	004115121	895	3
315	004115122	895	3
400	004115123	895	3
425	004115124	895	3
500	004115125	895	3



NV/NH 4 gG

Rated current [A]	Code No. ~ 500 V 120 kA	Weight [g]	Packaging [pcs]
630	004116101	2130	1/12
710	004116102	2130	1/12
800	004116103	2130	1/12
900	004116105	2130	1/12
1000	004116104	2130	1/12
1250	004116106	2130	1/12

NV/NH

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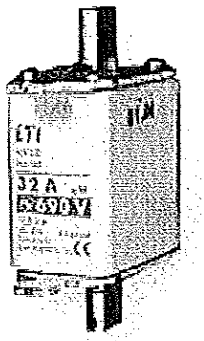
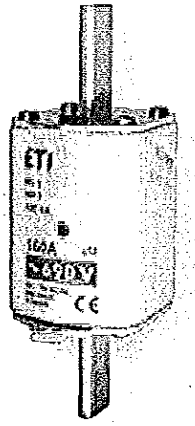
Fuse-link NV/NH aM

Rated current **2-1250 A** | Breaking capacity **100 kA / 120 kA** | Rated voltage **500V, 690 V**

Fuse-links with aM characteristics are intended for protection of switchgears and controlgears as well as motors in motor drives where gG characteristics do not comply with all requirements of succesful protection of these devices. They are made in all standard NV sizes from 00 to 4a for all standard rated currents and for voltages to 690 V. Their main duty is to enable a full usage of switchgears and controlgears in the region of starting currents and to prevent sparking or destruction of protective contacts in case of short-circuit currents. It should be noted that these fuse-links are intended only for protection in the limited region (in the region of short-circuit currents).





NV/NH fuse-link aM

Rated current [A]	Code No. ~ 690 V, 100 kA NV 00 C kombi	NV 00 kombi	NV 0	NV 1 kombi	NV 2 C kombi	NV 2 kombi	NV 3 kombi	NV 4a
2	004181401							
4	004181402							
6	004181403							
10	004181404			004184425				
16	004181405		004112125**	004184426				
20	004181406		004112126**	004184427				
25	004181407		004112127**	004184428				
32	004181408		004112128**					
35	004181409		004112129**	004184429	004185429			
40	004181410		004112130**	004184430	004185430			
50	004181411	004182411	004112131**	004184431	004185431			
63	004181412	004182412	004112132**	004184420	004185412			
80	004181413*	004182413	004112133**	004184421	004185413			
100	004181414*	004182414	004112134**	004184422	004185414			
125		004111735**	004112135**	004184423	004185415			
160		004111736**	004112136**	004184424	004185416	004185425		
200				004184417	004185417	004185426		
224				004184418	004185418	004185427		
250				004184419	004185419	004185428		
280						004185420		
300						004185421		
315						004185422		
355						004185423	004186428	
400						004185424	004186429	
425							004186430	
500							004186431	
630								004187432**
710								004187433**
800								004187434**
900								004187435**
1000								004187436**
1250								004187437**

Weight and Packaging the same as for gG fuse-links.
*500V, 120 kA
** NOT in KOMBI version

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Предпазители със стопяема вложка НН, размер 2 XXX A за 400 (500) V, високомощни, ножови, характеристика gG, система A (NH система)"

Приложение № 2

Low voltage NH knife-blade fuse-links

NV-KOMBI advantages

ETI is introducing a new generation of low-voltage fuse-links from size NV00C up to NV3 with new, dual indication of fuse-link operation, called KOMBI. The indicator is easily visible on the top and centre of the fuse-link, whether it is situated in a standard fuse base or vertical fuse rail or in fuse-switch disconnector.

The most important advantages of NV/NH KOMBI fuse-links:

- High breaking capacity, 120 kA (400 V gG - except NV00C and NV00CI, and 500 V gG) and 100 kA (400 V gG NV00C and NV00CI, 690 V gG, 400 V gTR, 400 V gF and 690 V aM)
- Rated voltages: 400 V a.c., 500 V a.c., 690 V a.c. and 1000 V a.c.
- Two versions of covers: aluminium, when the removal tag is under voltage and plastic, when insulated metal removal tag is incorporated into the plastic cover
- VDE certificates and CCA/CB test reports

General about NV/NH fuse-links

Their dimensions correspond with DIN 43620, other technical characteristics correspond with the requirements of the following standards:

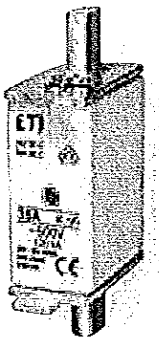
- Rated voltage 400V/500V/690V/gG: IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1:1996+A11995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
- Rated voltage 690V/aM: VDE 0636-2011
- Rated voltage 400V/gF: PN-IEC 60269-2
- Rated voltage 400V/gTr: VDE 0636-2011

Short description of constituent parts for NV fuse-links

The body of the fuse-link is made of quality steatite which is highly resistant against temperature overloads. In the inner part of the steatite body there is a copper melting element which is welded on a specially shaped inner part of the contact knife by spot welding. By careful shaping of this part we achieved that during assembly the melting element is placed exactly into the middle of the inner place. The remaining inside place of the ceramic body is filled up with precisely determined granulation and chemical structure quartz sand. All contact knives are additionally protected with a layer of silver or on special order of nickel. On the base of cyclic tests we have proved that the fusing characteristics are very stable and the tolerance on the current axis can be up to ± 10%.

Fuse-link NV/NH gG

Rated current **2-1600 A** | Breaking capacity **120 kA / 100 kA** | Rated voltage **400, 500, 690, 1000 V**



NV/NH 00C KOMBI gG

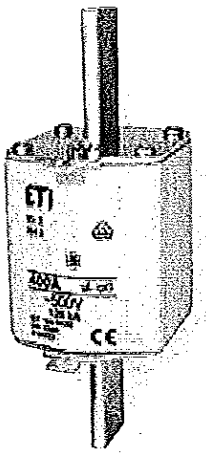
Rated current [A]	Code No. ~400V 100 kA	~500V 120 kA	~690V 100 kA	Weight [g]	Packaging [pcs]
2	004181101	004181201	004181301	125	3/120
4	004181102	004181202	004181302	125	3/120
6	004181103	004181203	004181303	125	3/120
10	004181104	004181204	004181304	125	3/120
16	004181105	004181205	004181305	125	3/120
20	004181106	004181206	004181306	125	3/120
25	004181107	004181207	004181307	125	3/120
32	004181108	004181208	004181308	125	3/120
35	004181109	004181209	004181309	125	3/120
40	004181110	004181210	004181310	125	3/120
50	004181111	004181211	004181311	125	3/120
63	004181112	004181212		125	3/120
80	004181113	004181213		125	3/120
100	004181114	004181214		125	3/120
125		004181215		125	3/120
160	004181216			125	3/120

Technical data on page 521

Low voltage NH knife-blade fuse-links

NV/NH 2 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
280	004185120	004185220	004185320	500	3/15
300	004185121	004185221	004185321	500	3/15
315	004185122	004185222	004185322	500	3/15
355	004185123	004185223		500	3/15
400	004185124	004185224		500	3/15



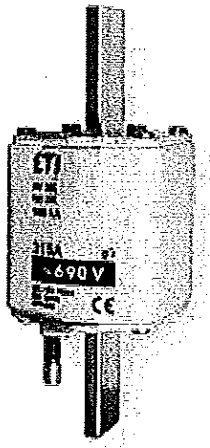
NV/NH 2 I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
280	004195120	004195220	004195320	500	3/15
300	004195121	004195221	004195321	500	3/15
315	004195122	004195222	004195322	500	3/15
355	004195123	004195223		500	3/15
400	004195124	004195224		500	3/15

* INSULATED

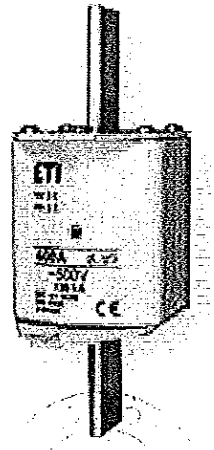
NV/NH 2 gG with striker pin

Rated current [A]	Code No. ~ 690V 100 kA	Weight [g]	Packaging [pcs]
160	004114345	593	3
200	004114346	593	3
224	004114347	593	3
250	004114348	593	3
300	004114349	593	3
315	004114350	593	3



NV/NH 3C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Weight [g]	Packaging [pcs]
250	004186119	004186219	004186319	510	3/12
280	004186120	004186220	004186320	510	3/12
300	004186121	004186221	004186321	510	3/12
315	004186122	004186222	004186322	510	3/12
355	004186123	004186223		510	3/12
400	004186124	004186224		510	3/12



Technical data on page 521

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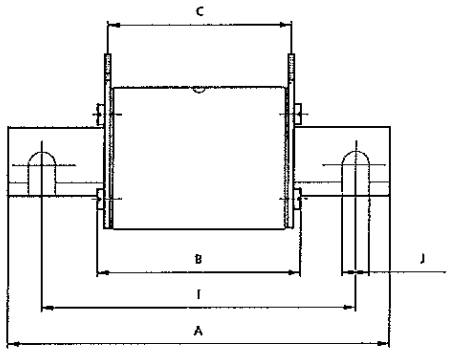
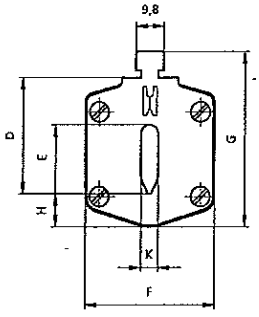
Fuse Links NV/NH

Electrical characteristics	
Rated voltage U_e	400 V AC, 500 V AC, 690, 1000 V AC
Rated current I_n	2 - 1600 A
Breaking capacity U_e	120 kA, 100 kA, 50 kA
Melting characteristic	gG, aM, gF, gTr
Certified	DIN VDE0636-201 (1998-06)
In accordance with	IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1:1996+A11995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
Dimensions according to	DIN43620 Part: 1 - 4
Two versions of covers	aluminium and plastic

Fuse Links NV/NH gG Dimensions

Type	Dimensions											
	A	B	C	D	E	F	G	H	I	J	K	
NV00C	79	53	47	35	15	21	52	7,5			6	kombi
NV00C I	79	53	47	35	15	21	52	7,5			6	kombi
NV00	79	53	47	35	15	28	56	12			6	kombi
NV00 I	79	53	47	35	15	28	56	12			6	kombi
NV0	125	68	65	35	15	28	56	12			6	kombi
NV1C	135	68	65	40	15	28	61	12			6	kombi
NV1C I	135	68	65	40	15	28	61	12			6	kombi
NV1	135	72	65	40	20	46	65	14			6	kombi
NV1 I	135	72	65	40	20	46	65	14			6	kombi
NV2C	150	72	65	48	20	46	73	14			6	kombi
NV2C I	150	72	65	48	20	46	73	14			6	kombi
NV2	150	72	65	48	26	54	73	14			6	kombi
NV2 I	150	72	65	48	26	54	73	14			6	kombi
NV3C	150	72	65	60	26	54	84	14			6	kombi
NV3	150	72	65	60	33	65	84	14			6	kombi
NV4	200	75	66	87	50	100	121	24	150	16	8	
NV4a	200	99	87	85	50	95	121	27			6	
NV4a SI*	200	99	87	85	50	95	121	27			6	
NV1/1000V	155	90	87	40	20	45	59	9			6	

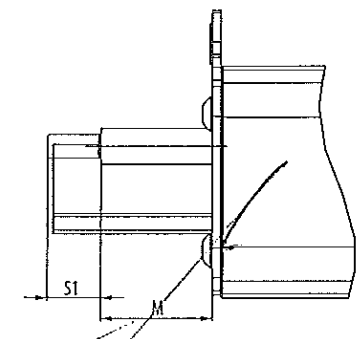


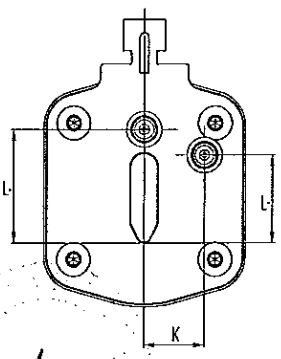


NV/NH

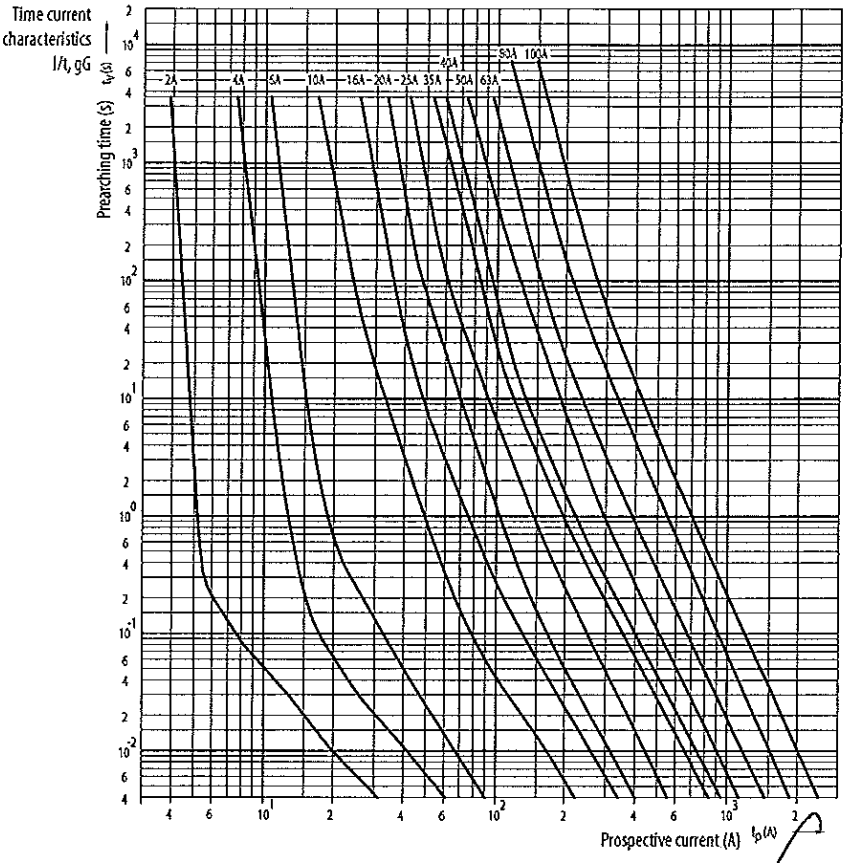
Fuse Links NV/NH gG with Striker Pin Dimensions

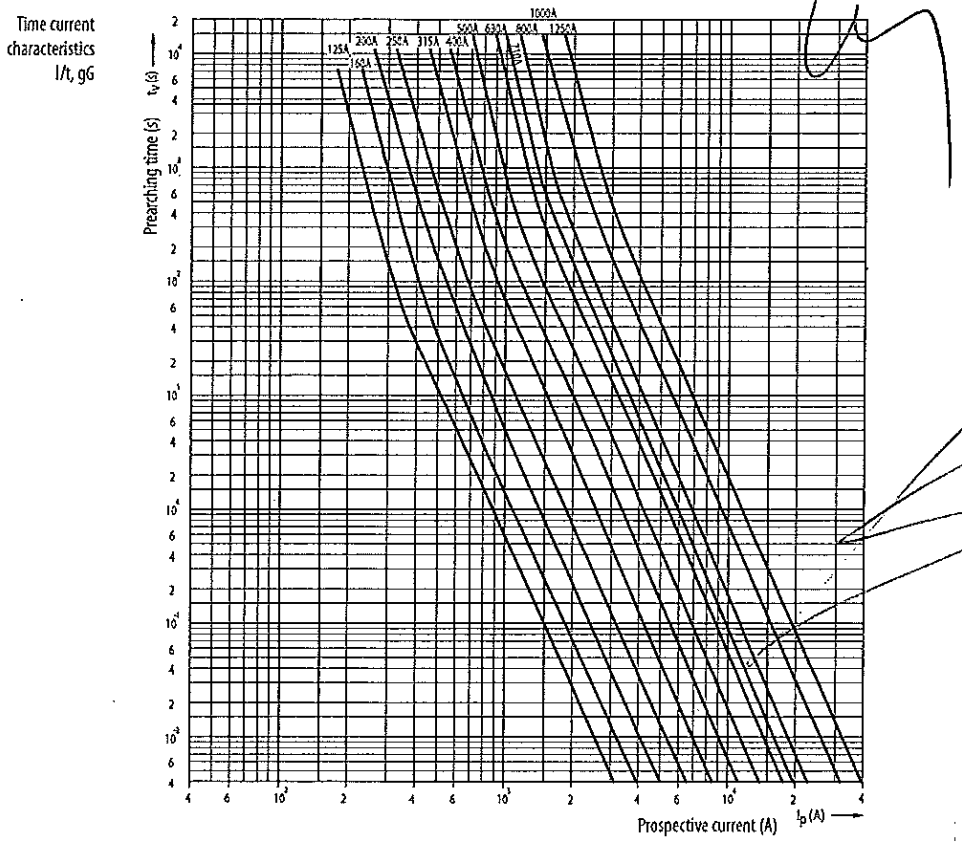
Type	Dimensions			
	K	L	M	S1
00C	0	20.7	16.7	7.5
00	0	20.7	16.7	7.5
1	13.7	19.7	25	12
2	16.2	27.4	25	12
3	17	35.6	25	12
4a	24	49	25	12





Fuse-link NV/NH gG characteristics





NV/NH

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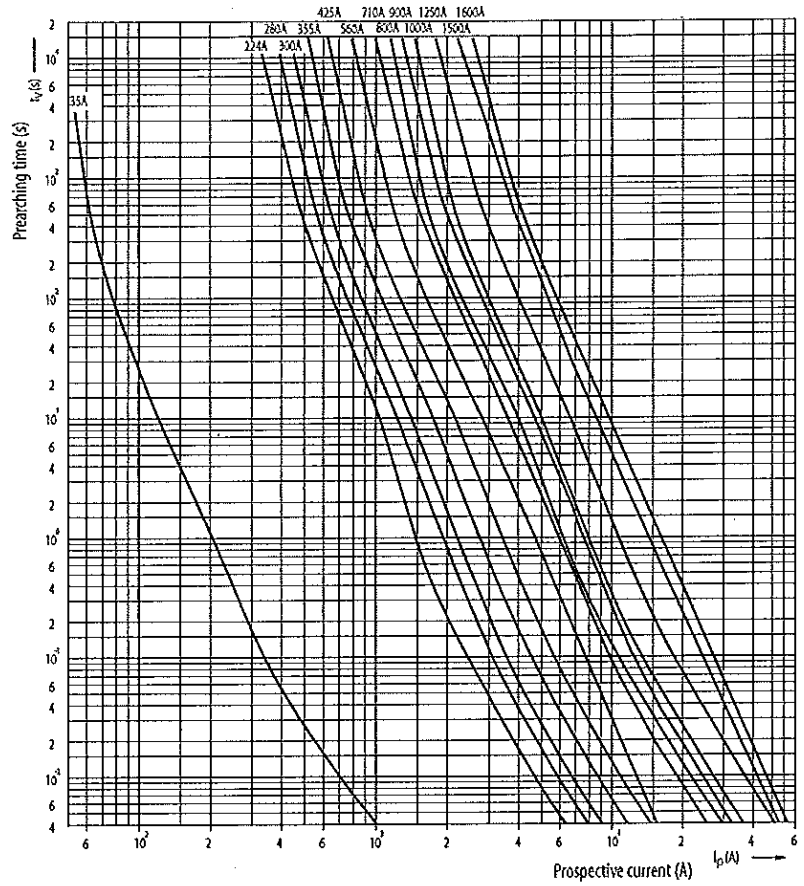
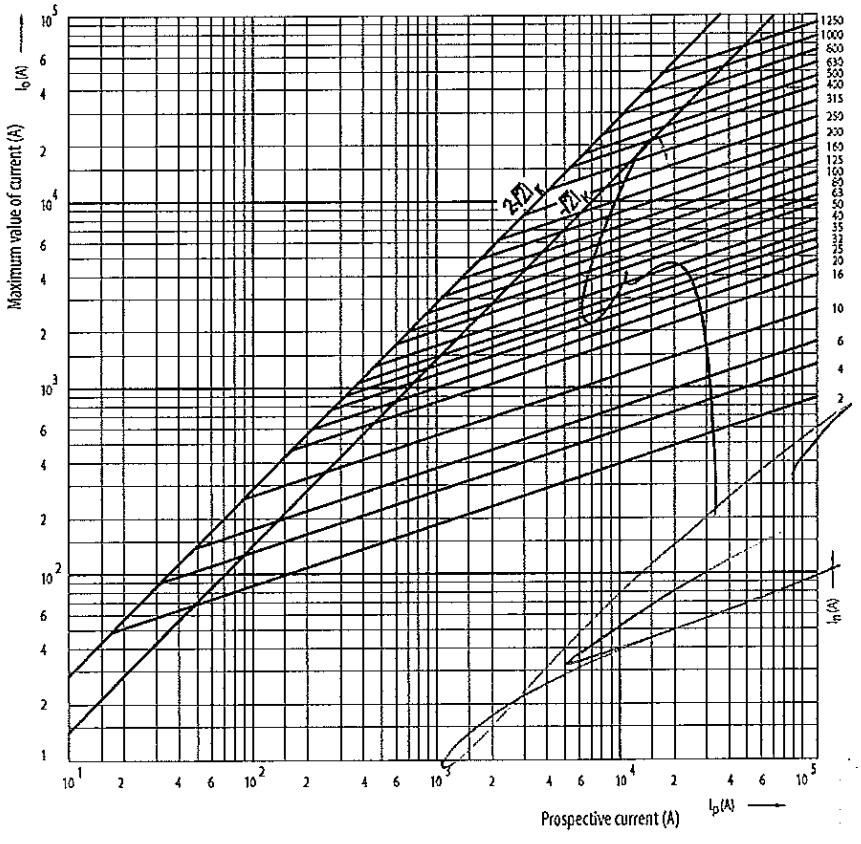
Technical data

Time current characteristics I/t, gG (nonstandard rated currents)



Cut-off current characteristics



NV/NH

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Предпазители със стопяема вложка НН, размер 2 XXX A за 400 (500) V, високомощни, ножови, характеристика gG, система A (NH система)”

Приложение № 3

EC - Declaration of conformity

Manufacturer: **ETI Elektroelement d.d.**

Address: **Obrezija 5**
1411 Izlake, SLOVENIA

Product: **NV (NH) Low-voltage Fuse Links, KOMBI Type**
(with combined indicating devices, insulated and non-insulated gripping-lugs)
Size NH 2 and NH 2 I gG
315A – 400A / 500 / 400 V a.c.

The product confirm with the following European directives:

Number: **2006/95/EC**

Text: **Directive of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member states relating to electrical equipment designed for use within certain voltage limits.**

Harmonised standards: **EN 60269-1: 2007**
HD 60269-2: 2007

The type test of listed product was made under the requirements of the following standards and with that fulfiled the requirements of European directive.

Standards: **IEC 60269-1 Ed. 4.0: 2006-11**
IEC 60269-2 Ed. 3.0: 2006-11

Licence No.: ***VDE 40016516, STC AT 832***
CB/ CCA - Test report 2.03.00516.1.0/NH2/COMBI/500/gG/CB/CCA
CB/ CCA - Test report 2.03.00516.1.0/NH2/COMBI/400/gG/CB/CCA

Marking with CE: On the product
On the packaging

Place and date: Izlake, 29.08.2008

Manufacturer representative signature and stamp: l.ing.

На основание чл. 2
от ЗЗЛД

ВЕРНО С
ОРИГИНАЛА

402

1309 София, бул. "Александър Стамболийски" 205
тел./факс: (02) 920 22 85, 822 36 90, e-mail: sales@electris.biz
9010 Варна, ул. "Осми приморски полк" 128, етаж 3, офис 77
тел./факс: (052) 301 456, e-mail: sales-varna@electris.biz

www.electris.biz

ЕЛЕКТРИС ЕООД

ISO 9001:2000 SGS-България

Декларация за съответствие

С настоящето, ЕЛЕКТРИС ЕООД, гр. София, Бул. "Ал. Стамболийски", №205
Тел:02/9202285, факс:02/8223690, e-mail:sales@electris.biz

Декларира, че:

Продукти: **Високомощни предпазители тип NV2 KOMBI gG 315- 400A**

За номинално напрежение/номинален ток: 500V a.c.

Производител: ETI Elektroelement d.d ,Obrezija 5, 1411 Izlake, SLOVENIA

са в съответствие с посочените по-долу стандарти и с това изпълняват изискванията на Европейската директива.

Съответствие на хармонизирани стандарти: EN 60269-1:1998+A1:2005, EN 60269-2:1995+A1:1998 + A2:2002, HD 630.2.1 S6:2003

Дата/Упълномощен представител: 12.08.2010

Бор

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

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"Предпазители със стопяема вложка НН, размер 2 XXX А за 400 (500) V, високомощни, ножови, характеристика gG, система А (NH система)"

Приложение № 4

arsenal research
Ein Unternehmen der Austrian Research Centers.

Accredited by BMWA, number BMWA-92.714/5379-II/12/2004

Test Report

Project Designation

TYPE TEST
AT LOW-VOLTAGE HRC FUSE-LINKS
WITH COMBINED INDICATING DEVICES
TYPE NH2 – 500VAC / gG

Client

ETI Elektroelement d.d.
1411 Izlake, Obrezija 5
SLOVENIA

Order from / No 01/2005 / ---

Project number 2.03.00516.1.0/NH2/COMBI/500/gG Test Engineer Ing.J.Ainetter

Date of issue	09.08.2005
Total number of issues / No	1 / 1
Number of pages	5
Annex	CB/CCA – Test Report 2.03.00516.1.0/NH2/COMBI/500/gG/CB/CCA (54 pages)

The results relate exclusively to the terms tested

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ВЯРНО С ОРИГИНАЛА

Test item

Identification:
Low-voltage HRC fuse-links type NH2 with combined indicating devices
Manufacturer: ETI Elektroelement d.d.
Trademark: ETI
Size: 2
Indicating device: In the middle of ceramic body and on cover plate
Rated voltage: 500VAC
Rated current: 315A, 400A
Rated breaking capacity: 120kA
Breaking range and utilization category: gL/gG

Technical data and description:
See page 4

Testing location, Period of testing

Testing location:
ÖFPZ Arsenal Ges.m.b.H.,
Business Unit Monitoring, Energy and Drive Technologies,
Power Service Center

Period of testing:
01...05/2005

Test(s)

Test standard(s):
IEC 60269-1 Ed. 3.0:1998+Corr.1:2000+A1:2005 / EN 60269-1:1998+A1:2005
IEC 60269-2 Ed. 2.0:1986+Corr.1:1996+A1:1995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002
IEC 60269-2-1 Ed. 4.0:2004 / HD 630.2.1 S6:2003

Test procedure(s):
CB-scheme / CCA-scheme

Test(s) performed:
Type test

Result

The low-voltage HRC fuse-links type NH2 with combined indicating devices have passed the type test successfully.

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ОРИГИНАЛА

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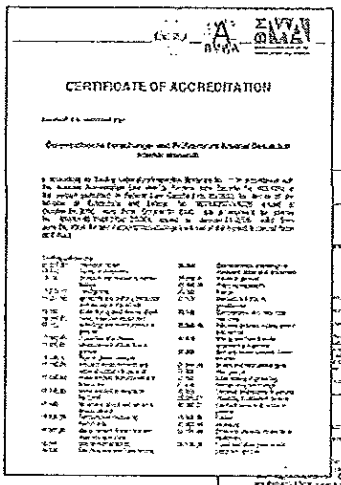
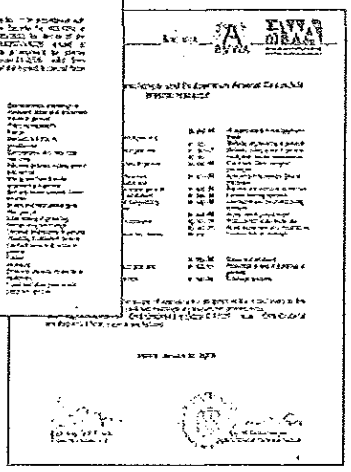
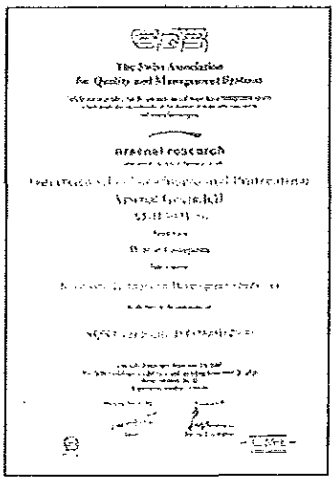
Testing laboratory



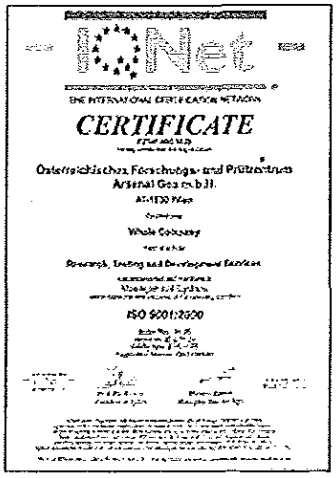
ACCREDITED
according to
EN ISO/IEC 17025
No. BMWA-92.714/5379-I/12/2004



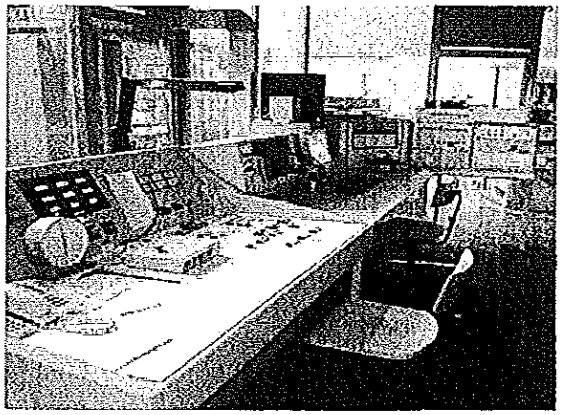


CERTIFICATED
according to
ISO 9001
Reg. No. 12769-03

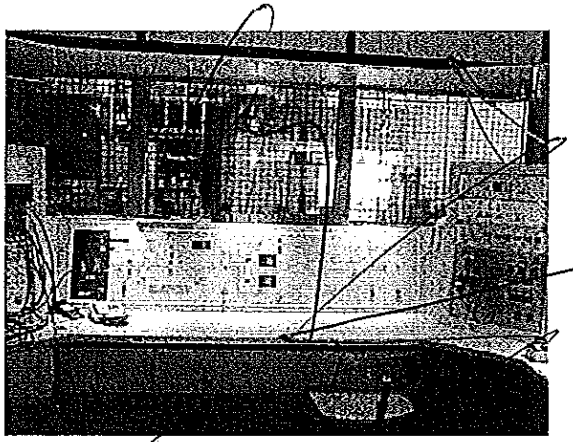
ACCEPTED
CB TESTING LABORATORY
under the responsibility of OVE
as National Certification Body



PSC – POWER SERVICE CENTER:



Control station for tests up to 10kA



Control station for tests above 10kA

407

Technical data and description of test item

Test item	Low-voltage HRC fuse-link with combined indicating devices
Model/Type reference	NH2
Identification reference	315A: 004185222 400A: 004185224
Standard	IEC 60269-1 Ed. 3.0:1998+Corr.1:2000+A1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2 Ed. 2.0:1986+Corr.1:1996+A1:1995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1 Ed. 4.0:2004 / HD 630.2.1 S6:2003
Test procedure	CB-scheme / CCA-scheme
Manufacturer	ETI Elektroelement d.d.
Place of manufacture	Obrezija 5, 1411 Izlake, SLOVENIA
Nature of supply	AC
Size	2
Utilization category	gL/gG
Rated current	315A, 400A
Rated voltage	500V
Rated frequency	45Hz to 62Hz
Rated breaking capacity	120kA
Homogeneous series	315A to 400A
Indicating device	In the middle of ceramic body and on cover plate
Gripping-lugs	Energized
Type of contacts	Blade contacts
Material of contacts	CuZn gal. Ag
Material of fuse-link body	Steatit C221
Material of cover plates	Al
Extinguishing means	Quartzsand

ВЕРНО С ОРИГИНАЛА

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Measuring equipment

Measured quantity	Device	Manufacturer	Code
Voltage (tests up to 10kA)	Voltage divider 1:2000 Difference amplifier AM 502 Transient recorder SMR II	ÖFPZ Arsenal Tektronix W&W	- AM 502/1...3 SMRII32
Current (tests up to 10kA)	Lin. current transformer LGSSO Burden 1Ω Transient recorder SMR II	Ritz ÖFPZ Arsenal W&W	WLIN5000/1...3 - SMRII32
Voltage (tests above 10kA)	3-channel insulating measuring amplifier Transient recorder SMR II	Rohrer W&W	T908D SMRII64/1
Current (tests above 10kA)	Lin. current transformer LGSSO Burden 0,7mΩ Transient recorder SMR II	Ritz ÖFPZ Arsenal W&W	WLIN6000.HVF/1...3 - SMRII64/1
Current (tests at reduced voltage)	Current transformer GE 4461 Current transformer AETt10 True-RMS amperemeter Kl. 0,5	Goerz Siemens Norma	WI600/1...3 WI4000/1...3 A0,5/1...3
Transient recovery voltage	Adjustment equipment for TRV Oscilloscope G 801.1	ÖFPZ Arsenal Tektronix	- G801.1
Voltage drop	Digital multimeter Fluke 185	Fluke	FLUKE185/1
Dielectric properties	High-voltage test equipment 90-1F	Elabo	HSG5KV
Internal resistance	Resistance meter microhm 300/0	Stetter	MICROHM
Time	Transient recorder SMR II Stopwatch	W&W Junghans	SMRII32, SMRII64/1 938-2
Temperature	24-channel recorder POLYCOMP SK 30 Temperature meter TESTO 901	H & B Testoterm	SK 30 TESTO
Heat	Heating cabinet UT 6060	Heraeus	-
Mechanical impact	Impact test apparatus	PTL	-
Resistance to rusting	Test chamber C330	Liebich	77
Dimensions	Digital slide gauge CD-20D	Mitutoyo	SCHUB

ВЯРНО С
ОРИГИНАЛА

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ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

"Предпазители със стопяема вложка НН, размер 2 XXX A за 400 (500) V, високомощни, ножови, характеристика gG, система A (NH система)"

Приложение № 5

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bmwf

Federal Ministry of
Economy, Family and Youth

Confirmation of Accreditation

The Federal Ministry of Economics, Family and Youth confirms that

Österreichisches Forschungs- und Prüfzentrum Arsenal Ges.m.b.H

Giefinggasse 2, A-1210 Wien

Identification number: 1

Initial date of Accreditation: December 01, 1993

is accredited as Testing Laboratory and Inspection Body and fulfills the requirements of ÖVE/ÖNORM EN ISO/IEC 17025:2007 and ÖVE/ÖNORM EN ISO/IEC 17020:2004 Type A.

The detailed scope of accreditation is given in the currently valid decree.

The accredited technical fields are published in the list of accredited bodies at www.bmwfj.gv.at/akkreditierung.

Vienna, May 07, 2010

На основание чл. 2
от ЗЗЛД

Di iers

ВЯРНО С
ОРИГИНАЛА

Division I/12 - Accreditation Body
Stubenring 1 | 1011 Vienna | Austria | phone: +43 (0)1 711 00 - 8236 | fax: +43 (0)1 711 00 93 - 8236 | DVR 0037257
e-mail: akkreditierung@bmwfj.gv.at | **www.bmwfj.gv.at/akkreditierung**

Fachgebietsliste der Prüfstelle
Österreichisches Forschungs- und Prüfzentrum Arsenal Ges.m.b.H / (Kurzbez: arsenal research)

PSID = 1 Aktualisierung 01.03.2010

L.Nr	FachgebietsNr nach ICS-Klassifikation	Titel der ICS-Klassifikation	Geltungsbeginn
1	03.220.30	Schienenverkehr	04.05.06
2	13.060.20	Trinkwasser	04.05.06
3	13.110	Sicherheit von Maschinen	04.05.06
4	13.160	Personenbezogene Vibrationen	04.05.06
5	13.220.10	Brandbekämpfung. Feuerwehreinsätze	04.05.06
6	13.220.40	Zünd- und Brennverhalten (Feuerfestigkeit) von Materialien und Produkten	04.05.06
7	13.260	Schutz vor elektrischem Schlag. Arbeiten unter Spannung	04.05.06
8	17.020	Metrologie und Messwesen im Allgemeinen	04.05.06
9	17.120.01	Durchflussmessungen im Allgemeinen	04.05.06
10	17.120.10	Durchflussmessung in Rohrleitungen	04.05.06
11	17.140.01	Akustik und akustische Messungen im Allgemeinen	04.05.06
12	17.140.20	Von Maschinen und Geräten emittierter Lärm	04.05.06
13	17.140.30	Von Fahrzeugen und Verkehrseinrichtungen emittierter Lärm	04.05.06
14	17.160	Vibrationen (Schwingungen). Stoßmessungen. Schwingungsmessungen	04.05.06
15	17.220.20	Messungen elektrischer und magnetischer Größen	04.05.06
16	19.040	Prüfung äußerer Einflussgrößen (Umgebungsprüfungen)	04.05.06
17	19.080	Elektrische und elektronische Prüfungen	04.05.06
18	21.020	Kennwerte und Konstruktion von Maschinen, Geräten und Betriebsmitteln	04.05.06

ВЕРНО С ОРИГИНАЛА

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Fachgebietsliste der Prüfstelle arsenal research

PSID = 1 Aktualisierung 01.03.2010

L.Nr	FachgebietsNr nach ICS-Klassifikation	Titel der ICS-Klassifikation	Geltungsbeginn
19	23.060.01	Ventile und Armaturen im Allgemeinen	04.05.06
20	23.060.40	Druckregler. Stellventile	04.05.06
21	23.080	Pumpen	04.05.06
22	23.120	Ventilatoren. Lüfter. Luftaufbereitungsanlagen	04.05.06
23	23.140	Kompressoren. Pneumatische Maschinen	04.05.06
24	25.040.40	Prozesstechnik (Mess- und Steuertechnik für Verfahren)	04.05.06
25	27.010	Energietechnik und Wärmeübertragungstechnik im Allgemeinen	04.05.06
26	27.040	Gasturbinen. Dampfturbinen. Dampferzeuger	04.05.06
27	27.060.30	Kessel. Wärmetauscher	04.05.06
28	27.080	Wärmepumpen	04.05.06
29	27.160	Solartechnik	04.05.06
30	27.200	Kältetechnik	04.05.06
31	29.020	Elektrotechnik im Allgemeinen	04.05.06
32	29.035.01	Isolierstoffe im Allgemeinen	04.05.06
33	29.080.01	Isolierung im Allgemeinen	04.05.06
34	29.080.10	Isolatoren	04.05.06
35	29.120.50	Sicherungen. Überstromschutzgeräte. Überspannungsschutzgeräte	04.05.06
36	29.130.10	Kontroll- und Steuergeräte für Hochspannungen	04.05.06

ВЯРНО С ОРИГИНАЛА

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Fachgebietsliste der Prüfstelle arsenal research

PSID = 1 Aktualisierung 01.03.2010

L.Nr	FachgebietsNr nach ICS-Klassifikation	Titel der ICS-Klassifikation	Geltungsbeginn
37	29.130.20	Kontroll- und Steuergeräte für Niederspannungen	04.05.06
38	29.160.01	Umlaufende elektrische Maschinen im Allgemeinen	04.05.06
39	29.160.30	Motoren	04.05.06
40	29.180	Transformatoren. Drosselspulen	04.05.06
41	29.220.10	Primärzellen. Primärbatterien	04.05.06
42	29.220.20	Säuresekundärzellen. Säuresekundärbatterien	04.05.06
43	29.220.30	Alkalische Sekundärzellen. Alkalische Sekundärbatterien	04.05.06
44	29.240.01	Stromverteilanlagen im Allgemeinen	04.05.06
45	29.240.30	Steuergeräte in Verteilsystemen	04.05.06
46	29.280	Ortsfeste elektrische Bahnanlagen	04.05.06
47	33.100.01	Elektromagnetische Verträglichkeit (EMV) im Allgemeinen	04.05.06
48	33.100.10	Emission (EMV). Störaussendung	17.07.07
49	33.100.20	Immunität (EMV). Störfestigkeit	04.05.06
50	35.240.15	Identifikationskarten	04.05.06
51	35.240.60	IT-Anwendungen in Verkehr, Handel, Verwaltung	04.05.06
52	45.020	Eisenbahntechnik im Allgemeinen	04.05.06
53	45.060.01	Eisenbahnfahrzeuge im Allgemeinen	04.05.06
54	55.180.40	Vollständige Verpackungs- und Transporteinheiten	04.05.06

Fachgebietsliste der Prüfstelle arsenal research

PSID = 1 Aktualisierung 01.03.2010

L.Nr	FachgebietsNr nach ICS-Klassifikation	Titel der ICS-Klassifikation	Geltungsbeginn
55	91.120.20	Bauakustik. Schallschutz	04.05.06
56	91.120.25	Erdbebenschutz. Erschütterungsschutz	04.05.06
57	91.120.40	Blitzschutz	04.05.06
58	91.140.10	Heizungsanlagen	04.05.06
59	91.140.30	Belüftungsanlagen. Klimaanlagen	04.05.06
60	91.140.50	Elektrische Anlagen	04.05.06
61	93.080.20	Straßenbaumaterialien	04.05.06
62	93.080.30	Straßennebenanlagen	04.05.06
63	93.100	Streckenbau. Gleisbau	04.05.06

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

“Предпазители със стопяема вложка НН, размер 2 XXX A за 400 (500) V, високомощни, ножови, характеристика gG, система A (NH система)”

Приложение № 6

ДОКЛАД ЗА ПРОВЕДЕНИ РУТИННИ И ТИПОВИ ИЗПИТАНИЯ

Продукт: **Предпазители н.н, Размер 2, х-ка gG, 500V**

Manufactured by: **ETI Elektroelement d.d.**
1411 Izlake, Obrezija 5
SLOVENIA

Продуктът е в съответствие със следните стандарти:

IEC 60269-1 Ed.3.0:1998 +Corr.1:2000 +A1:2005 /
EN60269-1:1998 +A1:2005
IEC 60269-2 Ed.2.0:1986 +Corr.1:1996 +A1:1995 +A2:2001/
EN 60269-2:1995 +A1:1998 +A2:2002
IEC 60269-2-1 Ed.4.0:2004 / HD 630.2.1 S6:2003
VDE 0636-2011

Фактура No:

Номинален ток (A)	**Доклад от рутинните изпитания** Съпротивление, Визуална инспекция (маркировка, проверка за пукнатини), Размери съгласно DIN 43620			**Доклад от типовите изпитания** Разсейвана мощност		
	Обем на изпитаниията	Изпитана стойност на съпротивлението (mΩ)±10%	Забележка	Обем на изпитанията	Изпитателна стойност (W)±10%	Забележка
315	100%	175		0.20 %	23.7	

Място и дата: **Излаке,**

Представител на производителя – подпис и печат:
Качествен контрол:
Mag. Tomaž Klopčič

ВЯРНО С ОРИГИНАЛА

Този фирмен инспекционен сертификат е направен за фирма

ROUTINE AND TYPE TEST REPORT

Product: **Low-voltage Fuse Links, Size 2, gG, 500V**

Manufactured by: **ETI Elektroelement d.d.**
1411 Izlake, Obrezija 5
SLOVENIA

The product confirm with the following standards:

IEC 60269-1 Ed.3.0:1998 +Corr.1:2000 +A1:2005 /
EN60269-1:1998 +A1:2005
IEC 60269-2 Ed.2.0:1986 +Corr.1:1996 +A1:1995 +A2:2001/
EN 60269-2:1995 +A1:1998 +A2:2002
IEC 60269-2-1 Ed.4.0:2004 / HD 630.2.1 S6:2003
VDE 0636-2011

Invoice No: Order 10000891 15.07.2013

Rated current (A)	Routine test report Resistance, Visual inspection (marking, checking on cracks), Dimensions to DIN 43620			Type test report Power dissipation		
	QTY tested	Resistance Test value (mΩ)±10%	Remarks	QTY tested	Test value (W)±10%	Remarks
400	100 %	152	**OK**	0.20 %	30.5	**OK**

Place and date: **Izlake, 12.07.2013**

Manufacturer representative - signature and stamp:
Quality assurance:

Mag. Tomaž Klopčič

ВЯРНО С ОРИГИНАЛА

This company inspection certificate has been established for Firm:

ELECTRIS LTD
Aleksander Stambolyski
BLV 205
1309 S O F I A
BOLGARIJA

ДОКУМЕНТАЦИЯ

ЗА УЧАСТИЕ В „ОТКРИТА“ ПО ВИД ПРОЦЕДУРА ЗА СКЛЮЧВАНЕ НА РАМКОВО СПОРАЗУМЕНИЕ С ПРЕДМЕТ:

„Доставка на разпределителни табла за ниско напрежение“

РЕФ. № PPD 17-118

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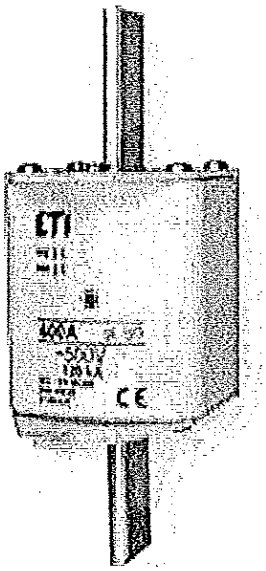
Приложение № 7

Инструкция за съхранение, монтаж и експлоатация на високомощни предпазители тип NV с двойна индикация

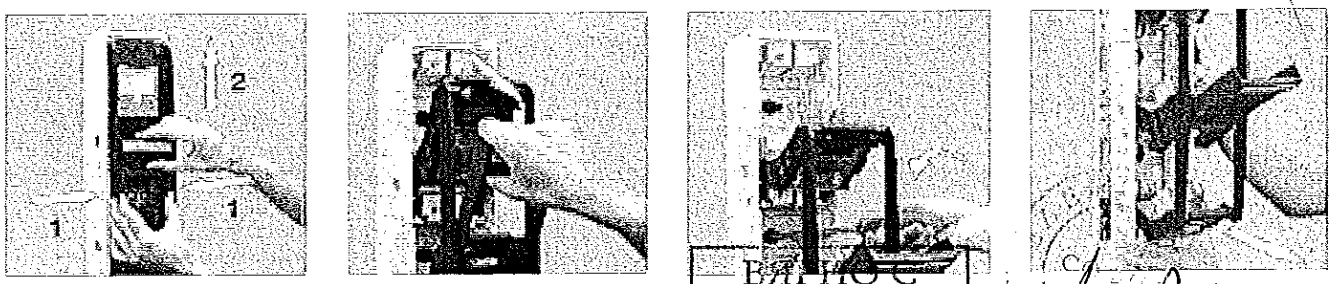


Предпазителите не трябва да се съхраняват в помещения с висока влажност в близост до течности предизвикващи корозия. Те трябва да се съхраняват в оригиналната опаковка подредени по стелажи, при температури от – 25 ^{0} С до + 55 ^{0} С.

Монтажът да се извършва само от правоспособни лица.

При монтажа да се спазват всички изисквания на Правилника за техническа безопастност и охрана на труда, както и всички действащи в момента нормативни документи за извършване на такъв род дейности.

Монтажът на предпазителите се извършва във вертикални разединители с едновременно разкъсване на трите фази или основи тип РК. На фиг.1 е посочен начина на демонтаж на горната част на предпазител-разединителите.



Фиг 1

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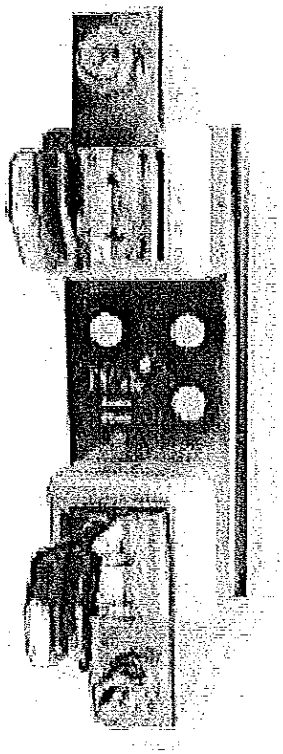
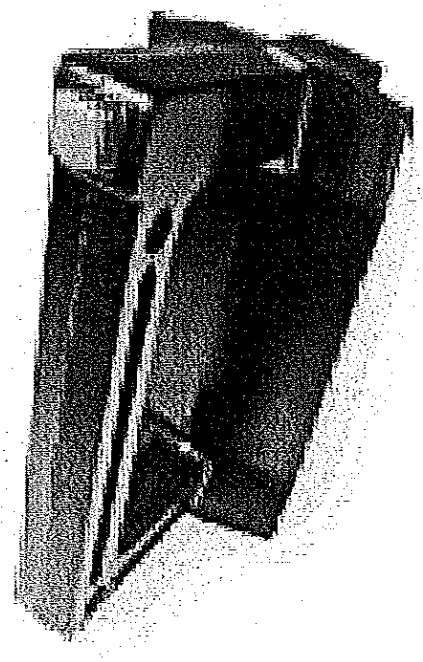
Монтажът на предпазителя в основа РК /фиг.2/ се извършва посредством ръкохватка /фиг.3



Фиг.2



Фиг.3

Предпазителите отговарят на следните стандарти:

☒ Rated voltage 400V/500V/ 690V/gG:	IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1: 1996+A11995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
☒ Rated voltage 690V/aM:	VDE 0636-2011
☒ Rated voltage 400V/gF:	PN-IEC 60269-2
☒ Rated voltage 400V/gTr:	VDE 0636-2011

Не се изискват специални процедури за поддръжка при нормални експлоатационни условия. Препоръчват се регулярни технически проверки включващи оглед на двойна сигнализация за сработил предпазител. Когато се установи сработил предпазител, то същият подлежи на подмяна.

Честотата на инспекция зависи най-вече от климатичните условия и мястото на инсталиране, като тази честота се определя от експлоатационната практика на крайният потребител.

Не трябва да съществуват натрупвания на чужди частици върху корпуса и контактните ножове на предпазителя.

ВЯРНО С ОРИГИНАЛА

Бено Млакар
Изпълнителен директор- Продажби източна Европа

Излаке:09.06.2015

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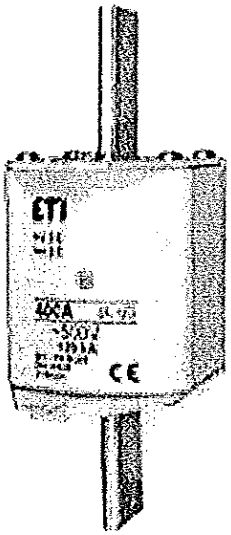
ETI d. d.
Obrezija 5,1411 Izlake,
Slovenija
tel. + 386 (0)3 56 57 570
faks + 386 (0)3 56 74 077
e-mail. eti@eti.si, www.eti.si

Instructions for storage, installation and operation of Low voltage NH/ NV knife-blade fuse-links with dual indication



The fuses should not be kept in storehouse with high humidity near corrosive liquids. They should be stored in the original package stacked on shelves, at temperatures from – **25 ^{0} C to + 55 ^{0} C.**

Installation must be done by authorized persons only.

During installation all requirements concerning Rules of technical safety and labor protection should be observed, as well as all the existing regulations for carrying out such activities.

The installation of fuses is done in vertical switch-disconnectors with simultaneous interruption of the three phases or bases type PK. On Figure 1 is shown the way for dismantling of the upper fuse-disconnectors.

Figure. 1

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Installation of fuses in the base PK / by handle /figure.3/

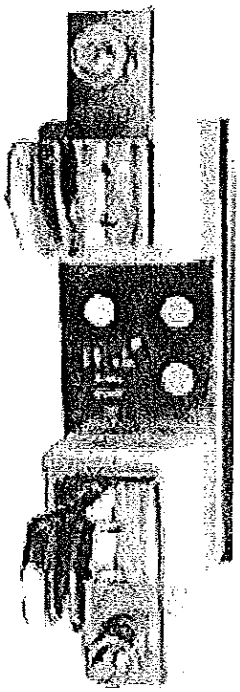

Figure 2

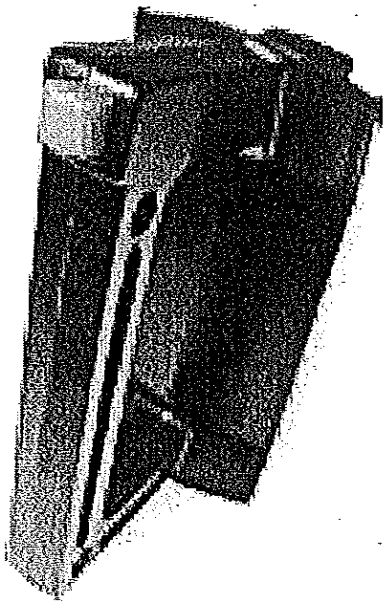

Figure 3

Fuses meet the following standards:

Rated voltage 400V/500V/ 690V/gG:	IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1: 1996+A1 1995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
Rated voltage 690V/aM:	VDE 0636-2011
Rated voltage 400V/gF:	PN-IEC 60269-2
Rated voltage 400V/gTr:	VDE 0636-2011

No special maintenance procedures under normal operating conditions is required. It is recommended regular technical checks including dual view of alarm tripped fuse. When tripped fuse is established, it must be replaced. The frequency of inspection depends primarily on climatic conditions and the installation location, as this frequency is determined by the operational practices of the end user.

There should be no accumulation of foreign particles on the body and the contact blades of the fuse.

Beno Mlakar
Executive director – Sales Eastern Europe

Izlake: 09.06.2015

ELEKTROELEMENT d.d.
IZLAKE
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ВЯРНО С
ОРИГИНАЛА

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Приложение 3 към Техническо предложение

За Обособена позиция 1

СРОКОВЕ ЗА ДОСТАВКА

„Главно трансформаторно-разпределително табло за ниско напрежение до 1250А/8х400 за трансформаторни постове в сгради“ – Обособена позиция 1

№	Наименование	Мярка	Количество със срок на доставка до 7 кал. дни	Количество със срок на доставка до 30 кал. дни
1	2	3	4	5
1	ГТРТ НН 1250 А / 8х400 А	бр.	4	8

Забележки:

1/ Срокът на доставките започва да тече от датата на изпращане на поръчката.

2/ Количествата в колона 4, със срок на доставка до 7 /седем/ календарни дни, се доставят след SAP поръчка до посочените в обявлението складове на Възложителя за покриване на спешни нужди на Възложителя.

Възложителят може до поръчва посоченото спешно количество веднъж месечно.

3/ В случай, че крайният срок на доставката съвпада с празничен или неработен ден, то доставката се извършва не по-късно от първия работен ден след изтичането на срока.

4/ При поръчки на Възложителя на количества в рамките на потвърдените от Изпълнителя и недоставени в посочените срокове, ще бъдат налагани неустойки, съгласно условията на договора.

5/ Възложителят може да поръча количества по-малки от посочените в колони 4 и 5.

6/ Възложителят може да поръчва количества по-високи от посочените в колони 4 и 5, като това обстоятелство ще бъде посочено текстово в съответната поръчка изпратена към Изпълнителя. С потвърждението на поръчката, Изпълнителят вписва в същата очаквана дата за доставка на количествата надвишаващи посочените в колони 4 и 5.

7/ Количествата за доставка в колони 4 и 5 са отделни и независими едно от друго.

8/ Количествата за доставка в колона 5 не включват в себе си количествата за доставка в колона 4.

9/ Възложителят има право да направи едновременно поръчки за доставка на количества от колони 4 и 5.

Дата 08.12.2017 г.

ПОДПИС и ПЕЧАТ:

На основание чл. 2 от ЗЗЛД

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