TEST REPORT FIRES-FR-035-15-AUNE

Cable bearing system BAKS with cables business Fabryka Kabli ELPAR

Reg. No. 041/S-159

The Experts on Fire Safety

TEST REPORT

FIRES-FR-035-15-AUNE

Tested property:	Functional resistance in fire
Test method:	STN 92 0205: 2014 (ZP-27/2008, DIN 4102-12: 1998-11) acc. to cl. 1 of this test report
Type of test:	Accredited
Date of issue:	10. 04. 2015
Name of the product:	Cable bearing system BAKS with cables business Fabryka Kabli ELPAR
Manufacturer:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland (producer of cable bearing system) Fabryka Kabli ELPAR Sp. z o.o., Ul. Laskowska 1, Parczew 21-200, Poland (producer of cables)
Sponsor:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland
Test carried out by:	FIRES, s.r.o., Testing laboratory
Task No.:	PR-15-0063
Specimens received:	19. 02. 2015
Date of the test:	26. 02. 2015

Technician responsible for the technical side of this report: Bc. Dávid Šubert

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1. INTRODUCTION

This test report contains the results of test carried out by FIRES, s.r.o., Testing laboratory in Batizovce, accredited by SNAS for testing. Certificate of accreditation No.: S-159. The purpose of the test was to gain information for product classification.

Test of function in fire was carried out according to standard STN 92 0205. Similar standards and regulations for tests of function in fire are ZP-27/2008 PAVUS and DIN 4102-12: 1998-11.

Deviations from standard at the test according to ZP-27/2008: This test was carried out according to standard STN 92 0205 and meets also all requirements of ZP-27/2008 and test results can be directly used for classification of tested cables according to ZP-27/2008. There are no deviations identified in process and carrying out of test.

Deviations from standard at the test according to DIN 4102-12: 1998-11: This test was carried out according to standard STN 92 0205 and meets requirements of DIN 4102-12: 1998-11. Basic deviation in process and carrying out of test between these standards is in measuring and in control of temperature in the test furnace. According to STN 92 0205, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 025 for classification of tested cables according to DIN 4102-12: 1998-11, but not conversely. Identified deviation results in stricter course of test and it can lead to reduced classification of tested cables what is accepted as enhanced security in practice.

Sponsor's representatives witnessing the test:

Mr. Tomasz Żukowski	BAKS Kazimierz Sielski
Mr. Dariusz Gowronski	BAKS Kazimierz Sielski
Mr. Piotr Grabowski	Fabryka Kabli ELPAR Sp. z o.o.
Mr. Krzystof Niedziela	Fabryka Kabli ELPAR Sp. z o.o.
Mr. Zbigniew Waszczuk	Fabryka Kabli ELPAR Sp. z o.o.

test directed by	Ing. Marek Gorlický
test carried out by	Bc. Dávid Šubert
operator	Miroslav Hudák

2. MEASURING EQUIPMENT

Identification number	Measuring equipment	Note
F 90 004	Horizontal test furnace for fire resistance testing	-
F 69 010	PLC system for data acquisition and control TECOMAT TC 700	-
F 40 019	Visual and calculating software to PLC TECOMAT TC 700	-
F 40 017	Control and communication software to PLC TECOMAT TC 700	-
F 40 018	SW Reliance	-
F 40 020	Driver Tecomat - Reliance (SW)	-
F 71 041, F 71 042	Transducer of differential pressure (–50 to + 150) Pa	measurement of pressure inside the test furnace
F 54 064	Digital calliper (0 to 160) mm	-
F 54 056	Racking meter	-
F 69 009	PLC system for data acquisition and climate control TECOMAT TC 604	-

Identification number	Measuring equipment	Note
F 60 001 - F 60 009	Sensors of temperature and relative air humidity	measurement of climatic conditions
F 10 521 - F 10 528	Plate thermometers	measurement of temperature inside the test furnace according to EN 1363-1
F 10 701	Sheathed thermocouple type K Ø 3 mm	measurement of ambient temperature
F 57 007	Digital stop-watch	-
F 96 015	Test signal panel	-

3. PREPARATION OF THE SPECIMENS

Testing laboratory didn't take off individual components of the specimens. Components take-off and its delivering to the testing laboratory were carried out by the test sponsor. Assembling of the supporting system into the test furnace and mounting of cables and weights into the supporting system was carried out by workers of BAKS Kazimierz Sielski and Fabryka Kabli ELPAR under supervision of laboratory technician.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMEN STRUCTURE

Test specimen comprised from cable bearing system of company BAKS Kazimierz Sielski – cable trays, mesh trays, ladders, cable clips and hangers with accessories (consoles, brackets, supports, hangers, etc.) and power and communication halogen free cables of company Fabryka Kabli ELPAR.

Cables
Used cables by test:

Power cables:

(N)HXH 0,6/1kV 4x1,5RE mm^2 E90	(12x)
(N)HXH 0,6/1kV 4x50RM mm^2 E90	(8x)
(N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	(10x)
(N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	(16x)
NHXH 0,6/1kV 4x1,5RE mm^2 E90	(12x)
NHXH 0,6/1kV 4x50RM mm^2 E90	(10x)
NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	(16x)
NHXCH 0,6/1kV 4x50/25RM mm^2 E90	(12x)

Communication cables:

HDGs 300/500V 2x1 mm^2 E90 PH90	(18x)
HTKSHmika FE180/PH90 240V 1x2x0,8 mm	(20x)

The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

Cable bearing systems were made of following constructions:

Suspension tracks No. 1 and 2
Tracks are made of four consoles (WPCB700) fixed to ceiling by threaded rods (PG M10) in spacing of 1200 mm. Brackets (WWS/WWSO400) are fixed to consoles by screws (SM M10x80). Consoles are reinforced in place of fixing brackets by spacer (BR55). Holders (UPW/UPWO) are fixed at the end of brackets with screws (SGK M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washers (PP10) and nuts (NS M10) to ceiling through ceiling hanger (USV/USOV). Holders (USV/USOV) are fixed to ceiling by threaded rods (PG M10). Standard supporting constructions.

Track No. 1:
Cable trays (KCP/KCOP300H60, height 60 mm, width 300 mm, steel sheet thickness 1,5 mm) fixed together by junctions (LPP/LPOPH60, 2 pcs) and screws (SGK M6x12, 16 pcs) on sides and by junction (BL/BLO300) and screws (SGK M6x12, 8 pcs) on the bottom. Trays are fixed to brackets by screws (SGK M6x12, 2 pcs) and loaded with 10kg.m^{-1}. Cables are fixed to trays by cable clips (UDF).

Track No. 2:
Cable ladders (DGOP400H60, height 60 mm, width 400 mm, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) fixed together by junctions (LDC/LDOCH60, 2 pcs) and screws (SGK M8x14, 8 pcs) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO) and by screws (SGK M8x14, 2 pcs) and loaded with 20kg.m^{-1}. Cables are fixed to ladders by cable clamps (UK1/UKO1).

Suspension tracks No. 3 and 4
Tracks are made of four consoles combined of two supports (CWP/CWOP40H40/05) and two threaded rods (PG M10) fixed together by washers (PP10) and nuts (NS M10). Consoles are fixed to ceiling in spacing of 1500 mm.

Cable mesh trays (KDS/KDSO400H60, height 60 mm, width 400 mm, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO, 5 pcs). Mesh trays are fixed to supports by junctions (ZS/ZSO, 2 pcs) and loaded with 20kg.m^{-1}. Cables are fixed to cable trays by plastic stripes only.

Suspension tracks No. 5 – 7
Tracks are made of four consoles combined of three supports (CWP/CWOP40H40/05) and two threaded rods (PG M12) fixed together by washers (PP12) and nuts (NS M12). Consoles are fixed to ceiling in spacing of 1500 mm.

Track No. 5:
Cable trays (KGJ/KGOJ400H60, height 60 mm, width 400 mm, steel sheet thickness 0,9 mm) fixed together by screws (SGK M6x12, 7 pcs). Trays are fixed to supports by screws (SGK M6x12, 2 pcs) and loaded with 20kg.m^{-1}. Cables are fixed to cable trays by plastic stripes only.

Tracks No. 6 and 7:
Cable ladders (DUP/DUOP400H60, height 60 mm, width 400 mm, steel sheet thickness 1,5 mm, spacing of transoms 300 mm) fixed together by junctions (LDC/LDOCH60, 2 pcs) and nut bolts (SGK M8x14, 8 pcs) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO, 2 pcs) and nut bolts (SGK M8x14, 2 pcs) and loaded with 20kg.m^{-1}. Cables are fixed to cable trays by plastic stripes only.

Suspension tracks No. 8 and 9
Tracks are made of four consoles (WPCB700) fixed to ceiling by threaded rods (PG M10) in spacing of 1500 mm. Brackets (WWS/WWSO300) are fixed to consoles by screws (SM M10x80). Consoles are reinforced in place of fixing brackets by spacer (BR55).

Cable trays (KGL/KGOL300H60, height 60 mm, width 300 mm, steel sheet thickness 0,7 mm) fixed together by screws (SGK M6x12, 7 pcs). Trays are fixed to brackets by screws (SGK M6x12, 2 pcs) and loaded with 10kg.m^{-1}. Cables are fixed to cable trays by plastic stripes only.

Suspension tracks No. 10 – 11
Tracks are made of four consoles combined of two supports (CWP40H22/05) and two threaded rods (PG M10) fixed together by washers (PP10) and nuts (NS M10). Consoles are fixed to ceiling in spacing of 1500 mm.

Cable ladders (DUD400H60, height 60 mm, width 400 mm, steel sheet thickness 1,2 mm, spacing of transoms 300 mm) fixed together by junctions (LDC/LDOCH60, 2 pcs) and nut bolts (SGK M8x14, 8 pcs) on sides. Ladders are fixed to supports by junctions (ZM/ZMO, 2 pcs) and nut bolts (SGK M8x14, 2 pcs) and loaded with 20kg.m^{-1}. Cables are fixed to ladders by cable clamps (UK1/UKO1).

Ceiling track No. 12
Track is made of assembling profiles (SDOP400, length 400 mm) fixed to ceiling by threaded rods (PG M6, 2 pcs per profile) in spacing of 300 mm. Cables are fixed to profiles by cable clamps (UK1/UKO1).

Ceiling tracks No. 13 and 14
Tracks are made of assembling profiles (SDOP400, length 400 mm) fixed to ceiling by threaded rods (PG M6, 2 pcs per profile) in spacing of 600 mm. Cables are fixed to profiles by cable clamps (UK1/UKO1).

Ceiling tracks No. 15 and 16
Tracks are made of cable clips (UDF) fixed to ceiling by screws (MKR 6x32) in spacing of 600 mm.

Ceiling track No. 17
Track is made of cable clips (UDF) fixed to ceiling by screws (MKR 6x32) in spacing of 300 mm.

All bearing systems were from steel, galvanized according to the Sendzimir method PN-EN 10327:2005.
Cable penetration through the wall of test furnace was sealed by mineral wool.
Loading with steel chain and line loads was used as the equivalent load.

More detailed information about construction of specimens is shown in the drawings which form an integral part of this test report. Drawings were delivered by sponsor.

All the information about technical specifications of used materials and semi-products, information about their type sign were delivered by sponsor. This information was not subject of the inspection of specimens. Parameters which were checked are quoted in paragraph 4.3.

4.2 DESCRIPTION OF THE SPECIMENS FIXATION

The test specimens were fixed on the ceiling of the test furnace which was created from aerated concrete panels with dimensions (4000 x 600 x 240) mm – 7 pieces. Ceiling panels were jointed by beam which provides balance deflection of the ceiling.

The type of specimen's fixation into the test furnace is shown in drawing documentation and it was selected by the sponsor.

4.3 INSPECTION OF THE SPECIMENS

The conformity of the drawings and the test specimens was checked before and after the fire resistance test. The specimens corresponded to the drawings which are part of this test report. The visual review of the test specimens, the used materials as well as the size verification (number and cross sections of conductors, thickness, measurements of cables and trays) and also the way of specimens fixation to supporting construction were subject of this inspection.

4.4 CLIMATIC CONDITIONING OF THE SPECIMENS

Test specimens were stored in the hall of testing laboratory under the following climatic conditions:

Ambient air temperature [°C]

mean	19,1
standard deviation	1,3

Relative air humidity [%]

mean	43,0
standard deviation	2,0

The humidity equilibrium state of test specimens was not determined. Test specimens did not comprise hygroscopic materials.

5. CARRYING OUT OF THE TEST

5.1 TEST GENERALLY

The test was carried out in horizontal test furnace with dimensions of (4000 x 3000 x 3000) mm (length x width x height).

5.2 CONDITIONS OF THE TEST

Conditions in the test furnace (temperature – standard temperature/time curve, pressure, content of O_2) as well as in the testing room (ambient temperature) corresponded to EN 1363-1 during the test. Detailed information is part of this test report.

Values characterizing environment in the testing room directly before the test:

Relative air humidity [%]	**Ambient air temperature [°C]**
44,4	19,0

5.3 RESULTS OF THE TEST

Measured values of individual cables are stated in this test report.
During the test there was a gradual deflection of cable bearing system, but no failure or damage of tracks – even during cooling down of the tracks after termination of the test. Deflection of cable bearing system was not measured.

6. CLOSING

Evaluation of the test:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	11	90 minutes no failure / interruption
2	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		39 minutes
3	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90		90 minutes no failure / interruption
4	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
5	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	10	90 minutes no failure / interruption
6	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
7	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90		90 minutes no failure / interruption
8	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
9	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	17	90 minutes no failure / interruption
10	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90	16	90 minutes no failure / interruption
11	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	9	90 minutes no failure / interruption
12	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90		55 minutes
13	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90	8	71 minutes
14	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
15	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	16	90 minutes no failure / interruption
16	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
17	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90		69 minutes
18	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	15	90 minutes no failure / interruption
19	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90		90 minutes no failure / interruption
20	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
21	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
22	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	7	90 minutes no failure / interruption
23	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90		90 minutes no failure / interruption
24	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
25	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	6	90 minutes no failure / interruption
26	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90		40 minutes
27	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	5	90 minutes no failure / interruption
28	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
29	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90		90 minutes no failure / interruption
30	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90	14	90 minutes no failure / interruption
31	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90		55 minutes
32	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90		90 minutes no failure / interruption
33	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90		71 minutes
34	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	4	37 minutes
35	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90		90 minutes no failure / interruption
36	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		40 minutes
37	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	3	90 minutes no failure / interruption
38	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
39	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	13	90 minutes no failure / interruption
40	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
41	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90		90 minutes no failure / interruption
42	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
43	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90	2	90 minutes no failure / interruption
44	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		41 minutes

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
45	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	**1**	90 minutes no failure / interruption
46	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90		65 minutes
47	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	**12**	90 minutes no failure / interruption
48	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90		90 minutes no failure / interruption
52	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90	**11**	33 minutes
53	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**10**	53 minutes
54	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90	**9**	36 minutes
55	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**8**	39 minutes
56	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**15**	88 minutes
57	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		90 minutes no failure / interruption
58	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**6**	32 minutes
59	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		90 minutes no failure / interruption
60	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**5**	43 minutes
61	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		51 minutes
62	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**4**	32 minutes
63	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90	**3**	54 minutes
64	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**13**	90 minutes no failure / interruption
65	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		76 minutes
66	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**2**	34 minutes
67	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**1**	90 minutes no failure / interruption
68	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		90 minutes no failure / interruption
69	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**12**	90 minutes no failure / interruption
70	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90		90 minutes no failure / interruption

The fire test was discontinued in 94th minute at the request of test sponsor.

Specimens S1 – S48 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S70 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.

Circuit breakers with rating 3 A were used.

7. DIRECT APPLICATION OF TEST RESULTS

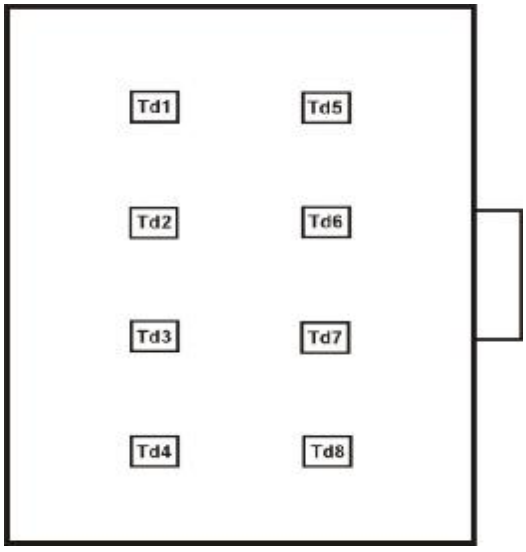
Direct field of application is valid in accordance with STN 92 0205: 2014 (cl. 7), ZP-27/2008 (cl. 11) and DIN 4102-12: 1998-11 (clause 8). Validity of individual items of field of direct application shall be determined in classification process.

Measured values inside the test furnace

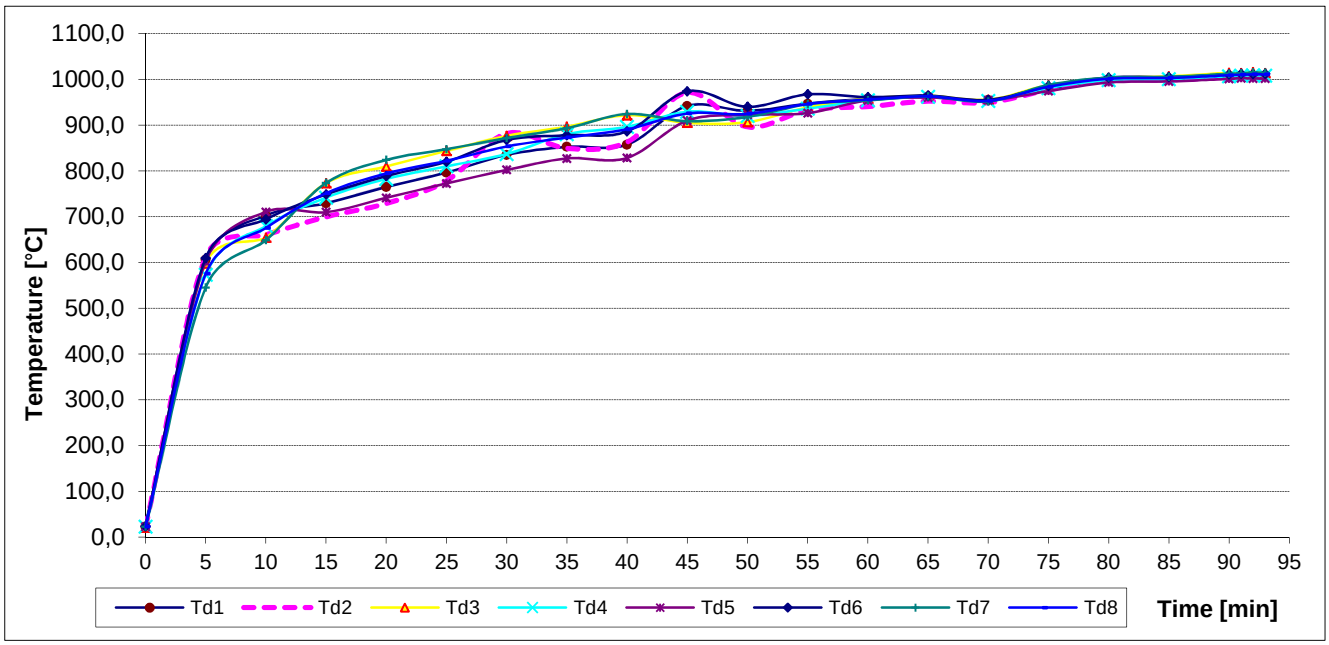
Time	Temperature [°C]											Deviation	Pressure
t [min]	Td1	Td2	Td3	Td4	Td5	Td6	Td7	Td8	Tave	Tn	To	d_e [%]	p [Pa]
0	23,2	21,4	20,6	22,9	22,9	23,4	22,8	23,0	22,5	20,0	19,0	0,0	8,1
5	605,8	612,2	597,5	573,5	601,8	609,8	545,1	575,5	590,1	576,0	19,1	-7,9	19,5
10	702,3	660,1	654,5	679,5	710,4	694,2	648,6	675,5	678,1	678,0	19,1	-3,5	18,5
15	729,4	699,8	773,3	741,8	710,0	748,8	773,6	751,5	741,0	739,0	19,2	-1,2	17,9
20	765,0	729,0	809,7	782,6	741,1	788,8	824,1	794,5	779,3	781,0	19,2	-0,2	18,0
25	796,6	778,6	843,8	810,2	772,8	820,3	847,5	822,0	811,5	815,0	19,3	-0,1	17,1
30	835,0	881,9	876,6	837,1	802,2	867,8	871,9	853,5	853,2	842,0	19,3	0,0	18,3
35	852,7	849,5	896,7	880,3	827,3	878,1	893,3	873,0	868,9	865,0	19,4	0,0	18,4
40	857,4	863,1	921,7	896,5	828,4	886,3	924,5	890,9	883,6	885,0	19,4	0,1	18,5
45	942,0	971,4	905,2	929,4	909,9	974,1	908,8	925,4	933,3	902,0	19,5	0,5	17,8
50	931,3	896,2	906,8	920,3	922,5	940,0	918,0	924,6	920,0	918,0	19,5	0,6	17,6
55	946,9	933,3	939,0	936,1	926,4	967,4	945,8	946,4	942,7	932,0	19,6	0,6	19,4
60	957,9	940,8	958,0	954,3	954,4	961,3	954,2	956,0	954,6	945,0	19,7	0,5	17,6
65	962,6	952,3	964,3	961,7	960,4	964,7	962,9	962,7	961,4	957,0	19,7	0,5	17,6
70	954,7	949,3	955,8	952,9	954,1	955,2	951,7	953,2	953,4	968,0	19,7	0,4	18,7
75	980,0	977,2	987,4	981,1	974,5	985,5	987,7	983,9	982,2	979,0	19,8	0,3	19,7
80	998,7	998,4	1003,3	998,5	993,1	1004,2	1003,9	1001,3	1000,2	988,0	19,9	0,4	19,0
85	1000,4	998,8	1006,7	1000,5	995,6	1005,2	1005,4	1002,9	1001,9	997,0	19,9	0,4	18,3
90	1005,9	1005,1	1014,6	1006,8	1001,1	1010,6	1012,4	1009,1	1008,2	1006,0	19,9	0,4	19,9
91	1007,5	1005,3	1013,7	1007,9	1002,8	1012,1	1012,9	1010,2	1009,0	1008,0	20,0	0,4	16,9
92	1006,9	1005,2	1015,6	1008,6	1002,0	1011,7	1015,2	1011,0	1009,5	1009,0	20,0	0,4	18,5
93	1007,1	1005,2	1013,8	1008,0	1001,7	1012,5	1014,3	1010,7	1009,2	1011,0	20,0	0,4	19,6

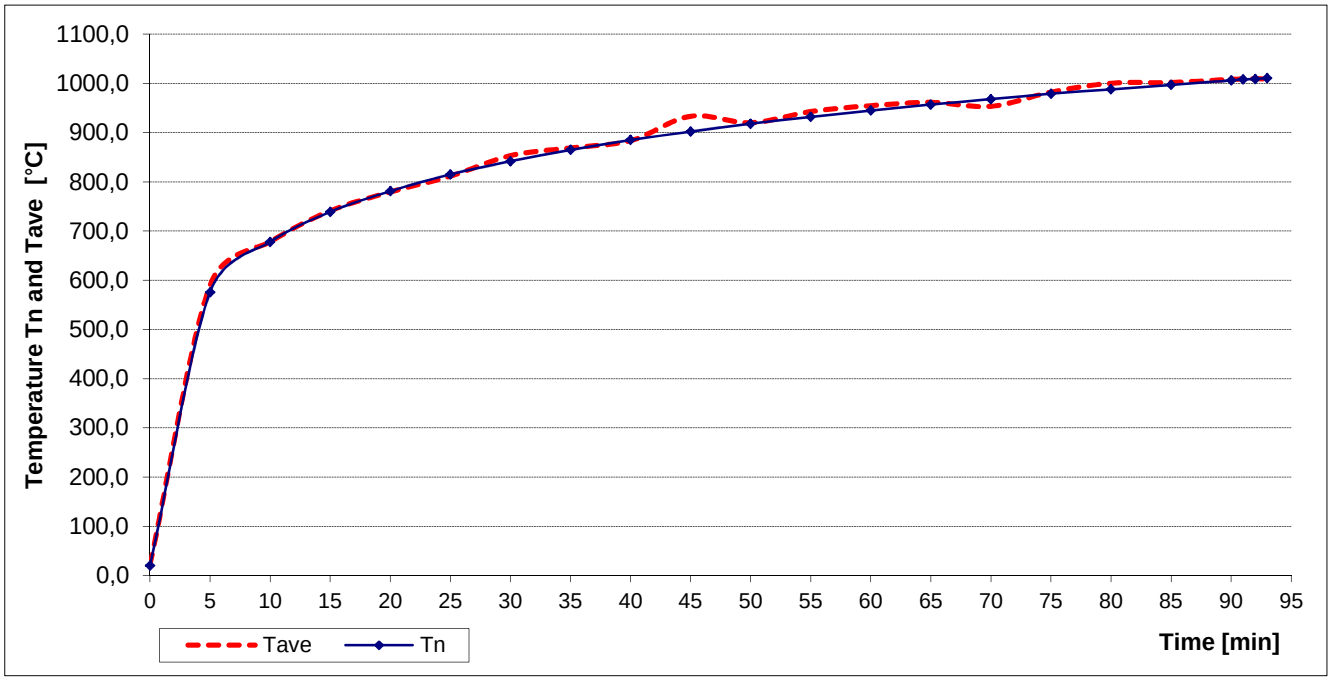
Tave Average temperature in the test furnace calculated from plate thermometers
Tn Standard temperature in the test furnace laid down to test guideline
To Ambient temperature
d_e Deviation of the average temperature from the standard temperature calculated according to test guideline
p Pressure inside the test furnace measured under the ceiling of the test furnace

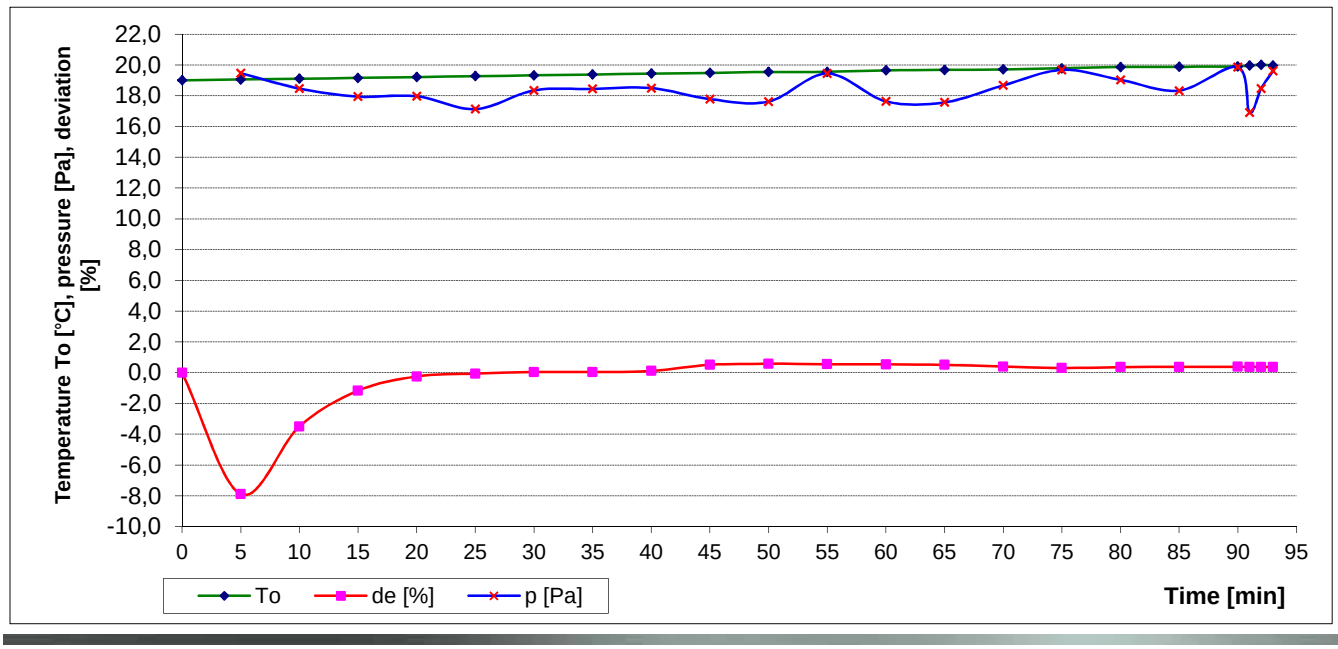
Layout of measuring points inside the test furnace:



Measured values inside the test furnace /graph







Measured time of tested specimens from S1 to S10 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S1	1-L1	no failure / interruption
	2-L2	no failure / interruption
	3-L3	no failure / interruption
	4-PEN	no failure / interruption
S2	5-L1	x
	6-L2	x
	7-L3	39:15
	8-PEN	x
S3	9-L1	no failure / interruption
	10-L2	no failure / interruption
	11-L3	no failure / interruption
	12-PEN	no failure / interruption
S4	13-L1	no failure / interruption
	14-L2	no failure / interruption
	15-L3	no failure / interruption
	16-PEN	no failure / interruption
S5	17-L1	no failure / interruption
	18-L2	no failure / interruption
	19-L3	no failure / interruption
	20-PEN	no failure / interruption
S6	21-L1	no failure / interruption
	22-L2	no failure / interruption
	23-L3	no failure / interruption
	24-PEN	no failure / interruption
S7	25-L1	no failure / interruption
	26-L2	no failure / interruption
	27-L3	no failure / interruption
	28-PEN	no failure / interruption
S8	29-L1	no failure / interruption
	30-L2	no failure / interruption
	31-L3	no failure / interruption
	32-PEN	no failure / interruption
S9	33-L1	no failure / interruption
	34-L2	no failure / interruption
	35-L3	no failure / interruption
	36-PEN	no failure / interruption
S10	37-L1	no failure / interruption
	38-L2	no failure / interruption
	39-L3	no failure / interruption
	40-PEN	no failure / interruption

Specimen No.	Cables
1	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
2	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90
3	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90
4	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90
5	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
6	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
7	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
8	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90
9	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
10	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S11 to S20 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S11	41-L1	no failure / interruption
	42-L2	no failure / interruption
	43-L3	no failure / interruption
	44-PEN	no failure / interruption
S12	45-L1	55:41
	46-L2	x
	47-L3	x
	48-PEN	x
S13	49-L1	71:02
	50-L2	x
	51-L3	71:02
	52-PEN	x
S14	53-L1	no failure / interruption
	54-L2	no failure / interruption
	55-L3	no failure / interruption
	56-PEN	no failure / interruption
S15	57-L1	no failure / interruption
	58-L2	no failure / interruption
	59-L3	no failure / interruption
	60-PEN	no failure / interruption
S16	61-L1	no failure / interruption
	62-L2	no failure / interruption
	63-L3	no failure / interruption
	64-PEN	no failure / interruption
S17	65-L1	x
	66-L2	x
	67-L3	69:31
	68-PEN	x
S18	69-L1	no failure / interruption
	70-L2	no failure / interruption
	71-L3	no failure / interruption
	72-PEN	no failure / interruption
S19	73-L1	no failure / interruption
	74-L2	no failure / interruption
	75-L3	no failure / interruption
	76-PEN	no failure / interruption
S20	77-L1	no failure / interruption
	78-L2	no failure / interruption
	79-L3	no failure / interruption
	80-PEN	no failure / interruption

Specimen No.	Cables
11	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
12	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
13	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
14	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90
15	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
16	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90
17	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90
18	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
19	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
20	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S21 to S30 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S21	81-L1	no failure / interruption
	82-L2	no failure / interruption
	83-L3	no failure / interruption
	84-PEN	no failure / interruption
S22	85-L1	no failure / interruption
	86-L2	no failure / interruption
	87-L3	no failure / interruption
	88-PEN	no failure / interruption
S23	89-L1	no failure / interruption
	90-L2	no failure / interruption
	91-L3	no failure / interruption
	92-PEN	no failure / interruption
S24	93-L1	no failure / interruption
	94-L2	no failure / interruption
	95-L3	no failure / interruption
	96-PEN	no failure / interruption
S25	97-L1	no failure / interruption
	98-L2	no failure / interruption
	99-L3	no failure / interruption
	100-PEN	no failure / interruption
S26	101-L1	40:15
	102-L2	x
	103-L3	40:15
	104-PEN	x
S27	105-L1	no failure / interruption
	106-L2	no failure / interruption
	107-L3	no failure / interruption
	108-PEN	no failure / interruption
S28	109-L1	no failure / interruption
	110-L2	no failure / interruption
	111-L3	no failure / interruption
	112-PEN	no failure / interruption
S29	113-L1	no failure / interruption
	114-L2	no failure / interruption
	115-L3	no failure / interruption
	116-PEN	no failure / interruption
S30	117-L1	no failure / interruption
	118-L2	no failure / interruption
	119-L3	no failure / interruption
	120-PEN	no failure / interruption

Specimen No.	Cables
21	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
22	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
23	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90
24	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90
25	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
26	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
27	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
28	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90
29	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
30	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable

Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S31 to S40 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S31	121-L1	55:23
	122-L2	x
	123-L3	x
	124-PEN	x
S32	125-L1	no failure / interruption
	126-L2	no failure / interruption
	127-L3	no failure / interruption
	128-PEN	no failure / interruption
S33	129-L1	71:03
	130-L2	x
	131-L3	x
	132-PEN	x
S34	133-L1	37:49
	134-L2	x
	135-L3	x
	136-PEN	x
S35	137-L1	no failure / interruption
	138-L2	no failure / interruption
	139-L3	no failure / interruption
	140-PEN	no failure / interruption
S36	141-L1	x
	142-L2	40:31
	143-L3	40:31
	144-PEN	x
S37	145-L1	no failure / interruption
	146-L2	no failure / interruption
	147-L3	no failure / interruption
	148-PEN	no failure / interruption
S38	149-L1	no failure / interruption
	150-L2	no failure / interruption
	151-L3	no failure / interruption
	152-PEN	no failure / interruption
S39	153-L1	no failure / interruption
	154-L2	no failure / interruption
	155-L3	no failure / interruption
	156-PEN	no failure / interruption
S40	157-L1	no failure / interruption
	158-L2	no failure / interruption
	159-L3	no failure / interruption
	160-PEN	no failure / interruption

Specimen No.	Cables
31	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
32	2 cables NHXH 0,6/1kV 4x50RM mm^2 E90
33	2 cables (N)HXH 0,6/1kV 4x50RM mm^2 E90
34	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
35	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90
36	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90
37	2 cables (N)HXCH 0,6/1kV 4x50/25RM mm^2 E90
38	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
39	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
40	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S41 to S48 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S41	161-L1	no failure / interruption
	162-L2	no failure / interruption
	163-L3	no failure / interruption
	164-PEN	no failure / interruption
S42	165-L1	no failure / interruption
	166-L2	no failure / interruption
	167-L3	no failure / interruption
	168-PEN	no failure / interruption
S43	169-L1	no failure / interruption
	170-L2	no failure / interruption
	171-L3	no failure / interruption
	172-PEN	no failure / interruption
S44	173-L1	x
	174-L2	x
	175-L3	41:26
	176-PEN	x
S45	177-L1	no failure / interruption
	178-L2	no failure / interruption
	179-L3	no failure / interruption
	180-PEN	no failure / interruption
S46	181-L1	65:41
	182-L2	x
	183-L3	x
	184-PEN	x
S47	185-L1	no failure / interruption
	186-L2	no failure / interruption
	187-L3	no failure / interruption
	188-PEN	no failure / interruption
S48	189-L1	no failure / interruption
	190-L2	no failure / interruption
	191-L3	no failure / interruption
	192-PEN	no failure / interruption

Specimen No.	Cables
41	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
42	2 cables (N)HXH 0,6/1kV 4x1,5RE mm^2 E90
43	2 cables NHXCH 0,6/1kV 4x50/25RM mm^2 E90
44	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90
45	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
46	2 cables (N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
47	2 cables NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90
48	2 cables NHXH 0,6/1kV 4x1,5RE mm^2 E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimen S52 to S61 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S52A	209-L	33:42
	210-PEN	-
S52B	211-L	55:42
	212-PEN	-
S53A	213-L	53:05
	214-PEN	-
S53B	215-L	78:00
	216-PEN	-
S54A	217-L	36:46
	218-PEN	-
S54B	219-L	88:52
	220-PEN	-
S55A	221-L	39:16
	222-PEN	-
S55B	223-L	41:40
	224-PEN	-
S56A	225-L	88:33
	226-PEN	-
S56B	227-L	88:13
	228-PEN	-
S57A	229-L	no failure / interruption
	230-PEN	no failure / interruption
S57B	231-L	no failure / interruption
	232-PEN	no failure / interruption
S58A	233-L	35:49
	234-PEN	-
S58B	235-L	32:00
	236-PEN	-
S59A	237-L	no failure / interruption
	238-PEN	no failure / interruption
S59B	239-L	no failure / interruption
	240-PEN	no failure / interruption
S60A	241-L	43:42
	242-PEN	-
S60B	243-L	no failure / interruption
	244-PEN	no failure / interruption
S61A	245-L	70:49
	246-PEN	-
S61B	247-L	51:20
	248-PEN	-

Specimen No.	Cables
52	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
53	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
54	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
55	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
56	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
57	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
58	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
59	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
60	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
61	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90

Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S62 to S70 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S62A	249-L	32:23
	250-PEN	-
S62B	251-L	40:36
	252-PEN	-
S63A	253-L	54:51
	254-PEN	-
S63B	255-L	no failure / interruption
	256-PEN	no failure / interruption
S64A	257-L	no failure / interruption
	258-PEN	no failure / interruption
S64B	259-L	no failure / interruption
	260-PEN	no failure / interruption
S65A	261-L	76:13
	262-PEN	-
S65B	263-L	no failure / interruption
	264-PEN	no failure / interruption
S66A	265-L	34:18
	266-PEN	-
S66B	267-L	35:00
	268-PEN	-
S67A	269-L	no failure / interruption
	270-PEN	no failure / interruption
S67B	271-L	no failure / interruption
	272-PEN	no failure / interruption
S68A	273-L	no failure / interruption
	274-PEN	no failure / interruption
S68B	275-L	no failure / interruption
	276-PEN	no failure / interruption
S69A	277-L	no failure / interruption
	278-PEN	no failure / interruption
S69B	279-L	no failure / interruption
	280-PEN	no failure / interruption
S70A	281-L	no failure / interruption
	282-PEN	no failure / interruption
S70B	283-L	no failure / interruption
	284-PEN	no failure / interruption

Specimen No.	Cables
62	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
63	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
64	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
65	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
66	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
67	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
68	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90
69	2 cables HTKSHmika FE180/PH90 240V 1x2x0,8 mm
70	2 cables HDGs 300/500V 2x1 mm^2 E90 PH90

Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

PHOTOS

Photo taken before the test.

Photo taken before the test.

Photo taken before the test.

PHOTOS

Photo taken before the test.

Photo taken before the test.

Photo taken before the test.

PHOTOS

Photo taken after the test.

Photo taken after the test.

Photo taken after the test.

PHOTOS

Photo taken after the test.

Photo taken after the test.

Photo taken after the test.

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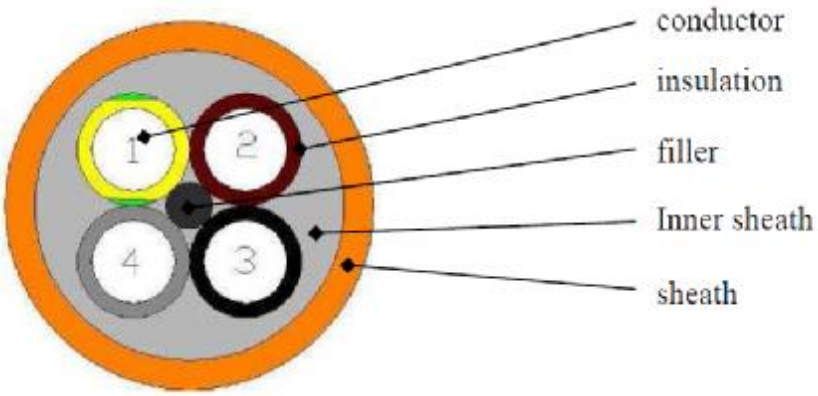
(N)HXH-J(O)

Fire resistant halogen free power cables



TECHNICAL DATA:

CONSTRUCTION:	
Conductors:	Copper solid or stranded PN-EN 60228:2007
Insulation:	Cross-linked halogen free ceramic forming polymer compound acc. to DIN VDE 0266
Filler:	flame resistant, halogen free polymer compound
Inner sheath:	flame resistant, halogen free polymer compound
Sheath:	flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604
Operating temperature:	-30℃ to +70℃
Temperature of laying:	-5℃ to +50℃
Bending radius multi core:	15 x D single core 12 x D multi core D- outer diameter
Nominal voltage:	0,6/1 k V
Voltage test:	4000 V; 50 Hz
Fire resistance:	E90
Behaviour in fire:	PN-EN 50226:2006; IEC 60332-3
Application:	Safety cables are used in all locations where a special protection fire and fire damage in necessary from human life and equipment and where strict safety regulations have to met and large emergency running time is necessery. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

Conductor cross-section	
n	mm^2
1÷4	1,5÷240
5÷7	1,5÷70
7÷10	1,5÷25
10÷24	1,5÷2,5

CABLES

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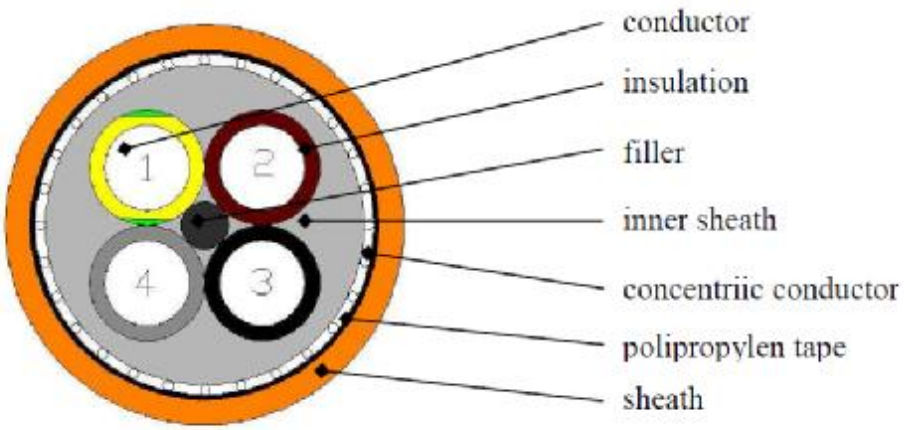
(N)HXCH-J(O)

Fire resistant halogen free power cables



TECHNICAL DATA:

CONSTRUCTION:	
Conductors:	Copper solid or stranded PN-EN 60228:2007
Insulation:	Cross-linked halogen free ceramic forming polymer compound acc. to DIN VDE 0266
Filler:	flame resistant, halogen free polymer compound
Inner sheath:	flame resistant, halogen free polymer compound
Concentriic conductor:	made of copper wires counter-wrapped
Polipropylen tape:	Polipropylen tape
Sheath:	flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604
Operating temperature:	-30℃ to +70℃
Temperature of laying:	-5℃ to +50℃
Bending radius multi core:	15 x D single core 12 x D multi core D- outer diameter
Nominal voltage:	0,6/1 k V
Voltage test:	4000 V; 50 Hz
Fire resistance:	E90
Behaviour in fire:	PN-EN 50226:2006; IEC 60332-3
Application:	Safety cables are used in all locations where a special protection fire and fire damage in necessary from human life and equipment and where strict safety regulations have to met and large emergency running time is necessery. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

Conductor cross-section	
n	mm^2
1÷4	1,5/1,5÷240/70
5÷7	1,5/1,5÷4/4
10÷24	1,5/2,5÷2,5/10

FABRYKA KABLI

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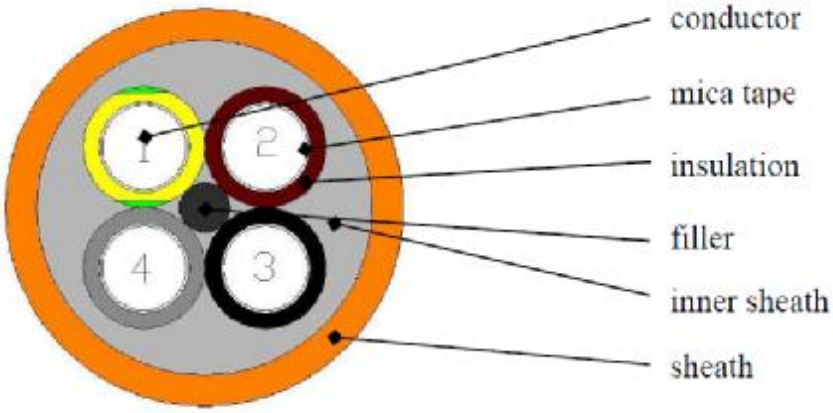
NHXH-J(O)

Fire resistant halogen free power cables



TECHNICAL DATA:

CONSTRUCTION:	
Conductors:	copper solid or stranded PN-EN 60228:2007
Insulation:	mica tape and cross-linked halogen free forming polymer compound acc. to DIN VDE 026
Filler:	flame resistant, halogen free polymer compound
Inner sheath:	flame resistant, halogen free polymer compound
Sheath:	flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604
Operating temperature:	-30℃ to +70℃
Temperature of laying:	-5℃ to +50℃
Bending radius multi core:	15 x D single core 12 x D multi core D- outer diameter
Nominal voltage:	0,6/1 k V
Voltage test:	4000 V; 50 Hz
Fire resistance:	E90
Behaviour in fire:	PN-EN 50226:2006; IEC 60332-3
Application:	Safety cables are used in all locations where a special protection fire and fire damage in necessary from human life and equipment and where strict safety regulations have to met and large emergency running time is necessery. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

Conductor cross-section	
n	mm^2
1÷4	1,5÷240
5÷7	1,5÷70
7÷10	1,5÷25
10÷24	1,5÷2,5

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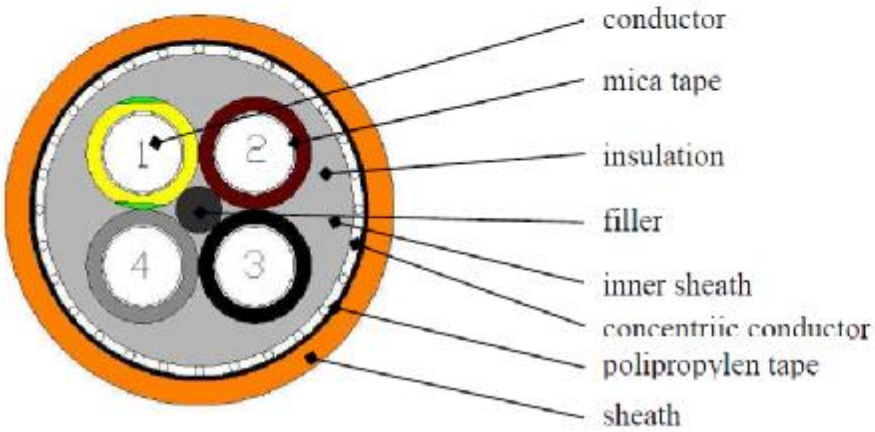
NHXCH-J(O)

Fire resistant halogen free power cables



TECHNICAL DATA:

CONSTRUCTION:	
Conductors:	copper solid or stranded PN-EN 60228:2007
Insulation:	mica tape and cross-linked halogen free forming polymer compound acc. to DIN VDE 0266
Filler:	flame resistant, halogen free polymer compound
Inner sheath:	flame resistant, halogen free polymer compound
Concentriic conductor:	made of copper wires counter-wrapped
Polipropylen tape:	Polipropylen tape
Sheath:	flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604
Operating temperature:	-30℃ to +70℃
Temperature of laying:	-5℃ to +50℃
Bending radius multi core:	15 x D single core 12 x D multi core D- outer diameter
Nominal voltage:	0,6/1 k V
Voltage test:	4000 V; 50 Hz
Fire resistance:	E90
Behaviour in fire:	PN-EN 50226:2006; IEC 60332-3
Application:	Safety cables are used in all locations where a special protection fire and fire damage in necessary from human life and equipment and where strict safety regulations have to met and large emergency running time is necessery. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

Conductor cross-section	
n	mm^2
1÷4	1,5/1,5÷240/70
5÷7	1,5/1,5÷4/4
10÷24	1,5/2,5÷2,5/10

CABLES

HTKSHmika 240V
FE180/PH90

NORMA: NF-ELPAR-14:2008

STANDARD: NF-ELPAR-14:2008

TELEKOMUNIKACYJNE KABLE STACYJNE BEZHALOGENOWE, OGNIOODPORNE
LOCAL TELECOMMUNICATION HALOGE-FREE, FLAME-RESISTANT CABLES

INFORMACJE TECHNICZNE	
Objaśnienia symboliki literowej kabla	HTKSHmika PH90 - telekomunikacyjny (T) kabel (K) stacyjny (S) odporny na działanie ognia o żyłach miedzianych jednodrutowych, o izolacji z taśmy mikowej i z tworzywa bezhalogenowego (H), nierozprzestrzeniającego płomienia o ograniczonym wydzielaniu dymu i gazów korozyjnych oraz o powłoce z tworzywa bezhalogenowego (H), z funkcją (PH)
Żyła	jednodrutowa miedziana kl. 1
Izolacja	dwuwarstwowa, taśma mikowa + tworzywo bezhalogenowe
Ośrodek	żyły skręcone w pary, a pary w ośrodek
Powłoka	tworzywo bezhalogenowe nierozprzestrzeniające płomienia, o ograniczonym wydzielaniu dymu oraz gazów toksycznych i korozyjnych
Kolory izolacji	zgodna z IEC 60189-2 + A1 + A2
Temperatura pracy	-30°C do +70°C
Napięcie znamionowe	240V
Zastosowanie	przewody przeznaczone są do połączeń stałych urządzeń stacyjnych, telefonicznych, teletransmisyjnych, wykorzystywane są do układania w obszarach zagrożonych pożarem w obwodach sygnalizacji przeciwpożarowej DSO
Pakowanie	krążki o długości 100 m oraz inne formy, zgodnie z życzeniem klienta

TECHNICAL INFORMATION	
Cable symbol explanation	HTKSHmika PH90 - telecommunication (T) cable (K) local (S) flame-resistant with copper single-wire conductor, in halogen-free micro insulation (H) made of flame-retardant plastics with limited emission of smoke and corrosion gases and in halogen-free sheath (H), with (PH) function
Conductor	copper single-wire, class 1
Insulation	double-layer micro tape + halogen-free plstics
Central core	conductors stranded into pairs, and pairs into a central core
Sheath	halogen-free, flame-retardant plastics, with limited emission of smoke and toxic, corrosion gases
Insulation colours	in compliance with IEC 60189-2 + A1 + A2
Operating temperature	-30°C to +70°C
Nominal voltage	240V
Application	cables are intended for permanent connections in local, telephone, teletransmission devices, they are used for installations in the areas with a danger of fire, in fire-protection signalling DSO
Packing	coils of the length of 100 m and others, according to customer's wishes

CABLES

HTKSHmika 240V
FE180/PH90

Ilość par x średnica żyły Number of pairs x conductor diameter (mm)	Przybliżona średnica zewnętrzna kabla Approximate cable full diameter (mm)	Przybliżona masa kabla Approximate cable full diameter (kg/km)
1 x 2 x 0,8	6,63	51,97
1 x 4 x 0,8	7,22	60,39
2 x 2 x 0,8	8,41	79,69
3 x 2 x 0,8	9,50	96,52
4 x 2 x 0,8	9,80	101,97
5 x 2 x 0,8	10,89	118,8
1 x 2 x 1,0	7,32	63,36
2 x 2 x 1,0	10,39	94,05
3 x 2 x 1,0	10,89	145,53
1 x 2 x 1,4	9,99	119,71
2 x 2 x 1,4	11,58	135,63
1 x 2 x 1,8	10,28	128,87
1 x 2 x 2,3	11,52	172,86
1 x 2 x 2,8	12,75	222,21

CABLES

HDGs(żo) 300/500V
FE180/PH90

NORMA: NF-ELPAR-02:2007

STANDARD: NF-ELPAR-02:2007

KABLE BEZHALOGENOWE, OGNIOODPORNE
HALOGEN-FREE, FLAME-RESISTANT CABLES

INFORMACJE TECHNICZNE	
Objaśnienia symboliki literowej kabla	HDGs(żo) PH90 - kabel elektroenergetyczny o żyłach miedzianych o izolacji z gumy silikonowej ceramizującej (Gs) i powłoce z tworzywa bezhalogenowego (H) z żyłą ochronną (żo) z funkcja PH90
Żyły	jednodrutowe miedziane kl. 1
Izolacja	mieszanka silikonowa ceramizująca
Powłoka	tworzywo bezhalogenowe
Kolory izolacji	- z żyłą ochronną (żo): 3-żyły zielono-żółta, niebieska, brązowe 4-żyły zielono-żółta, brązowa, czarna, szara 5-żył: zielono-żółta, niebieska, brązowe, czarna, szara więcej niż 5 żył: w warstwie zewnętrznejzielono-żółta (żyła licznikowa), niebieska, (żyła kierunkowa) i pozostałe żyły - ta sama dowolna barwa z wyjątkiem zielono-żółtej, żółtej, brązowej i niebieskiej - w innych warstwach: brązowa (żyła licznikowa),niebieska (żyła kierunkowa), pozostałe żyły - ta sama dowolna barwa z wyjątkiem zielono-żółtej, brązowej i niebieskiej. - bez żyły ochronnej: 2-żyły niebieska, brązowa 3-żyły czarna brązowa, szara 4-żyły niebieska, brązowa, czarna, szara 5-żył: niebieska, brązowa, czarna, szara, czarna - więcej niż 5 żył - w każdej warstwie: brązowa, (żyła licznikowa), niebieske, (żyła kierunkowa) i pozostałe żyły - ta sama, dowolna barwa z wyjątkiem zielono-żółtej, brązowej i niebieskiej
Temperatura pracy	-25°C do +90°C
Napięcie znamionowe	300/500V
Zastosowanie	kable ognioodporne mają zastosowanie w miejscach, gdzie musi być zapewnione funkcjonowanie urządzeń podczas trwanie pożaru, specjalne tworzywa i sposób montażu kabli zapewniają dopływ energii elektrycznej przez przynajmniej 90 min. a trwałość izolacji kabli wynosi 180 min. przy temp. 750°C, kable stosuje się w instalacjach oświetlenia awaryjnego, wyciągach dymu, systemach alarmowych, sygnalizacyjnych DSO, sygnalizacji pożaru i automatyce pożarniczej
Pakowanie	bębny lub krążki o długości 100 i 200 m oraz inne formy, zgodnie z życzeniem klienta

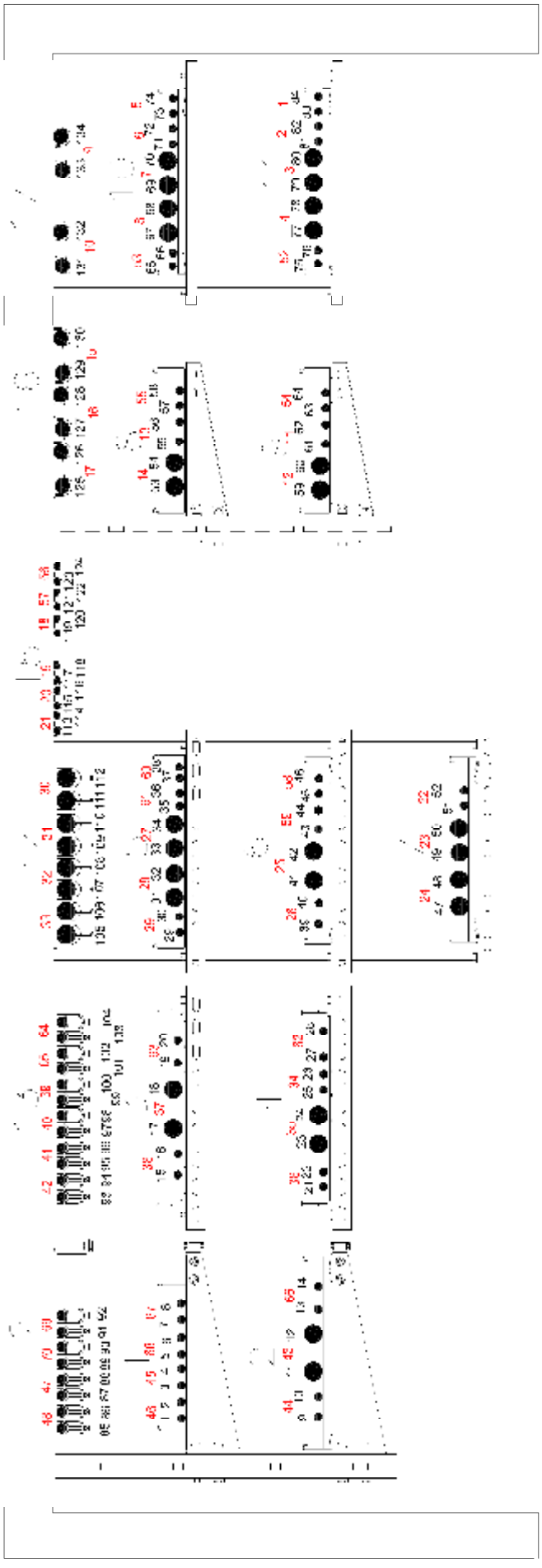
TECHNICAL INFORMATION	
Cable symbol explanation	HDGs(żo) PH90 – power cable with copper conductors and in ceramising silicone rubber insulation (Gs) and halogen-free plastic sheath (H) with protective conductor (żo) with PH90 function
Conductors	single-wire copper, class 1
Insulation	ceramising silicone mixture
Sheath	halogen-free plastics
Insulation colours	- with protective conductor (żo): 3-core: green and yellow, blue, brown 4-core: green and yellow, brown, black, grey 5-core: green and yellow, blue, brown, black, grey more than 5-core: in outer layer green and yellow (meter conductor), blue, (directional conductor) and remaining conductors - the same optional colour with the exception of: green and yellow, yellow, brown and blue - in other layers:brown (meter conductor) blue, (directional conductor), the remaining conductors - the same optional colour with the exception of: green and yellow, brown and blue - without protective conductor: 2-core: blue, brown 3-core: black, brown, grey 4-core: blue, brown, black, grey 5-core: blue, brown, black, grey, black - more than 5-core: in each layer: brown (meter conductor) blue, (directional conductor), the remaining conductors - the same optional colour with the exception of: green and yellow, brown and blue
Operating temperature	-25°C to +90°C
Nominal voltage	300/500V
Application	fire resistant cables are used in places where it is necessary that devices should operate during a fire, special materials and the way of cables installation ensure the supply of electrical power for at least 90 min., cables insulation resistance is 180 min, at temperatures of 750°C, cables are used in emergency lighting installations, smoke extractors, alarm systems, signalling DSO systems, fire alarms and fire automation
Packing	drums or coils of the length of 100, 200 m and others, according to customer's wishes

CABLES

HDGs(żo) 300/500V
FE180/PH90

Liczba i przekrój znamionowy żył Number and nominal cross-section of conductors (n x mm²)	Przybliżona średnica zewnętrzna kabla Approximate cable full diameter (mm)	Przybliżona masa kabla Approximate cable full diameter (kg/km)
2 x 1	5,7	47
2 x 1,5	6,5	62
2 x 2,5	8,1	97
2 x 4	9,0	131
3 x 1	6,0	63
3 x 1,5	7,0	83
3 x 2,5	8,7	130
3 x 4	9,9	183
4 x 1	6,8	82
4 x 1,5	8,1	113
4 x 2,5	9,7	170
4 x 4	10,8	234
5 x 1	7,7	105
5 x 1,5	8,9	140
5 x 2,5	10,7	211
5 x 4	11,9	292
7 x 1	8,4	133
7 x 1,5	9,9	183
7 x 2,5	11,7	272
10 x 1	10,9	191
10 x 1,5	12,6	255
10 x 2,5	15,6	404
12 x 1	11,3	220
12 x 1,5	13,1	296
12 x 2,5	16,2	468
16 x 1	12,6	281
16 x 1,5	15,2	402
16 x 2,5	18,6	629
20 x 1	14,6	364
20 x 1,5	17,5	515
20 x 2,5	20,7	768
24 x 1	16,2	430
24 x 1,5	19,4	607
24 x 2,5	23,6	942
30 x 1	17,7	543
30 x 1,5	20,5	730
30 x 2,5	24,9	1137
37 x 1	19,1	649
37 x 1,5	22,7	909
37 x 2,5	26,9	1369

DRAWINGS



DRAWINGS

No	No FIRES	Cable type	Position	Construction details, loading, ...
1	46	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90	1	Korytko kablowe KCP/KCOP 300H60/... B-300, 1.2 m, , /10kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCB 700, Wysięgnik WWS/WWSO 400 , pręt gwintowany PGM10/..., i uchwytu USV/USOV
2		(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
3	45	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
4		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
5	68	HDGs 300/500V 2x1 mm2 E90 PH90		
6		HDGs 300/500V 2x1 mm2 E90 PH90		
7	67	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
8		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
9	44	NHXH 0,6/1kV 4x1,5RE mm2 E90	2	Drabinka kablowa DGOP 400H60/... B-400. 1.2 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCB 700, Wysięgnik WWS/WWSO 400 , pręt gwintowany PGM10/..., i uchwytu USV/USOV
10		NHXH 0,6/1kV 4x1,5RE mm2 E90		
11	43	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
12		NHXCH 0,6/1kV 4x50/25RM mm2 E90		
13	66	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
14		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
15	38	(N)HXH 0,6/1kV 4x1,5RE mm2 E90	3	Koryto siatkowe KDSO 400H60/... B-400. 1.5 m /20kg/m Mocowanie : Ceownik CWP/CWOP40H40/05, pręt gwintowany PG M10
16		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
17	37	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
18		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
19	63	HDGs 300/500V 2x1 mm2 E90 PH90		
20		HDGs 300/500V 2x1 mm2 E90 PH90		
21	36	NHXH 0,6/1kV 4x1,5RE mm2 E90	4	Koryto siatkowe KDSO 400H60/... B-400. 1.5 m /20kg/m Mocowanie : Ceownik CWP/CWOP40H40/05, pręt gwintowany PG M10
22		NHXH 0,6/1kV 4x1,5RE mm2 E90		
23	35	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
24		NHXCH 0,6/1kV 4x50/25RM mm2 E90		
25	34	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
26		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
27	62	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
28		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
29	29	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90	5	Korytko kablowe KGJ/KGOJ 400H60/... B-400 1.5 m /20kg/m / grubość blachy 0,9 mm Mocowanie : Ceownik CWP/CWOP40H40/05, pręt gwintowany PG M12
30		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
31	28	NHXH 0,6/1kV 4x50RM mm2 E90		
32		NHXH 0,6/1kV 4x50RM mm2 E90		
33	27	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
34		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
35	61	HDGs 300/500V 2x1 mm2 E90 PH90		
36		HDGs 300/500V 2x1 mm2 E90 PH90		
37	60	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
38		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		

DRAWINGS

No	No FIRES	Cable type	Position	Construction details, loading, ...
39	**26**	(N)HXH 0,6/1kV 4x1,5RE mm2 E90	**6**	Drabinka kablowa DUOP 400H60/... B-400. 1.5 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Ceownik CWP/CWOP40H40/05, pręt gwintowany PG M12
40		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
41	**25**	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
42		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
43	**59**	HDGs 300/500V 2x1 mm2 E90 PH90		
44		HDGs 300/500V 2x1 mm2 E90 PH90		
45	**58**	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
46		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
47	**24**	NHXH 0,6/1kV 4x50RM mm2 E90	**7**	Drabinka kablowa DUOP 400H60/...B-400. 1.5 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Ceownik CWP/CWOP40H40/05, pręt gwintowany PG M12
48		NHXH 0,6/1kV 4x50RM mm2 E90		
49	**23**	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
50		NHXCH 0,6/1kV 4x50/25RM mm2 E90		
51	**22**	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
52		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
53	**14**	(N)HXH 0,6/1kV 4x50RM mm2 E90	**8**	Korytko kablowe KGL/KGOL 300H60/... B-300 1.5 m /10kg/m / grubość blachy 0,7 mm Mocowanie : Podstawa WPCB700, Wysięgnik WWS/WWSO300
54		(N)HXH 0,6/1kV 4x50RM mm2 E90		
55	**13**	(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
56		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
57	**55**	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
58		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
59	**12**	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90	**9**	Korytko kablowe KGL/KGOL 300H60/... B-300 1.5 m /10kg/m / grubość blachy 0,7 mm Mocowanie : Podstawa WPCB700, Wysięgnik WWS/WWSO300
60		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
61	**11**	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
62		(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
63	**54**	HDGs 300/500V 2x1 mm2 E90 PH90		
64		HDGs 300/500V 2x1 mm2 E90 PH90		
65	**63**	HTKSHmika FE180/PH90 240V 1x2x0,8 mm	**10**	Drabinka kablowa DUD 400H60/... B-400. 1.5 m /20kg/m / grubość blachy 1,2 mm Mocowanie : Ceownik CWP40H22/05, pręt gwintowany PG M10
66		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
67	**8**	(N)HXH 0,6/1kV 4x50RM mm2 E90		
68		(N)HXH 0,6/1kV 4x50RM mm2 E90		
69	**7**	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
70		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
71	**6**	(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
72		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
73	**5**	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
74		(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		

DRAWINGS

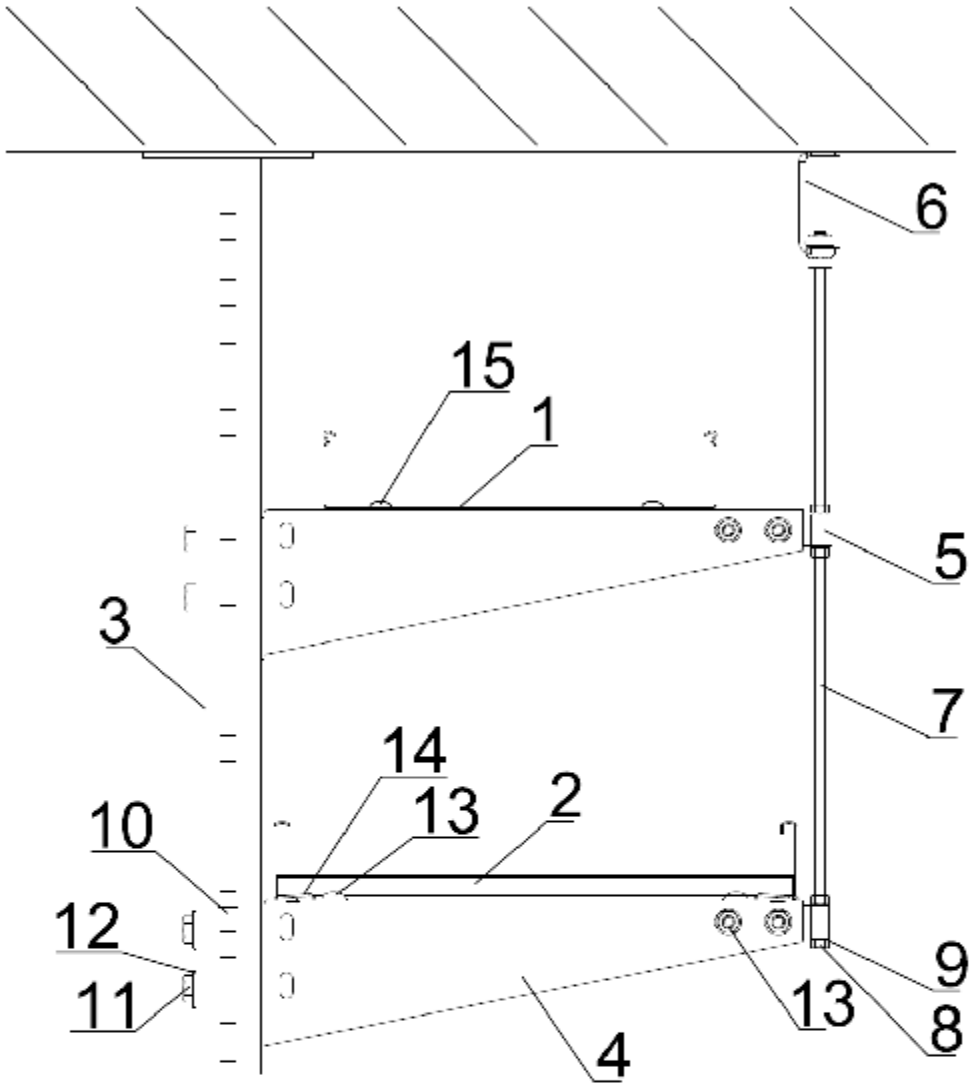
No	No FIRES	Cable type	Position	Construction details, loading, ...
75	52	HDGs 300/500V 2x1 mm2 E90 PH90	11	Drabinka kablowa DUD 400H60/... B-400. 1.5 m /20kg/m / grubość blachy 1,2 mm Mocowanie : Ceownik CWP40H22/05, pręt gwintowany PG M10
76		HDGs 300/500V 2x1 mm2 E90 PH90		
77	4	NHXH 0,6/1kV 4x50RM mm2 E90		
78		NHXH 0,6/1kV 4x50RM mm2 E90		
79	3	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
80		NHXCH 0,6/1kV 4x50/25RM mm2 E90		
81	2	NHXH 0,6/1kV 4x1,5RE mm2 E90		
82		NHXH 0,6/1kV 4x1,5RE mm2 E90		
83	1	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
84		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
85	48	NHXH 0,6/1kV 4x1,5RE mm2 E90	12	Uchwyt kablowy UKO1 + Szczebel SDOP 400 Mocowanie do stropu co 300 mm
86		NHXH 0,6/1kV 4x1,5RE mm2 E90		
87	47	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
88		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
89	70	HDGs 300/500V 2x1 mm2 E90 PH90		
90		HDGs 300/500V 2x1 mm2 E90 PH90		
91	69	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
92		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
93	42	(N)HXH 0,6/1kV 4x1,5RE mm2 E90	13	Uchwyt kablowy UKO1 + Szczebel SDOP 400 Mocowanie do stropu co 600 mm
94		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
95	41	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
96		(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
97	40	NHXH 0,6/1kV 4x1,5RE mm2 E90		
98		NHXH 0,6/1kV 4x1,5RE mm2 E90		
99	39	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
100		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
101	65	HDGs 300/500V 2x1 mm2 E90 PH90		
102		HDGs 300/500V 2x1 mm2 E90 PH90		
103	64	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
104		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
105	33	(N)HXH 0,6/1kV 4x50RM mm2 E90	14	Uchwyt kablowy UKO1 + Szczebel SDOP 400 Mocowanie do stropu co 600 mm
106		(N)HXH 0,6/1kV 4x50RM mm2 E90		
107	32	NHXH 0,6/1kV 4x50RM mm2 E90		
108		NHXH 0,6/1kV 4x50RM mm2 E90		
109	31	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
110		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
111	30	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
112		NHXCH 0,6/1kV 4x50/25RM mm2 E90		

DRAWINGS

No	No FIRES	Cable type	Position	Construction details, loading, ...
113	21	(N)HXH 0,6/1kV 4x1,5RE mm2 E90	15	Uchwyty kablowe UDF. Mocowanie co 600mm
114		(N)HXH 0,6/1kV 4x1,5RE mm2 E90		
115	20	NHXH 0,6/1kV 4x1,5RE mm2 E90		
116		NHXH 0,6/1kV 4x1,5RE mm2 E90		
117	19	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
118		(N)HXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
119	18	NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
120		NHXCH 0,6/1kV 4x1,5/1,5RE mm2 E90		
121	57	HDGs 300/500V 2x1 mm2 E90 PH90		
122		HDGs 300/500V 2x1 mm2 E90 PH90		
123	56	HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
124		HTKSHmika FE180/PH90 240V 1x2x0,8 mm		
125	17	NHXH 0,6/1kV 4x50RM mm2 E90	16	Uchwyty kablowe UDF. Mocowanie co 600mm
126		NHXH 0,6/1kV 4x50RM mm2 E90		
127	16	(N)HXH 0,6/1kV 4x50RM mm2 E90		
128		(N)HXH 0,6/1kV 4x50RM mm2 E90		
129	15	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
130		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		
131	10	NHXCH 0,6/1kV 4x50/25RM mm2 E90		
132		NHXCH 0,6/1kV 4x50/25RM mm2 E90		
133	9	(N)HXCH 0,6/1kV 4x50/25RM mm2 E90	17	Uchwyty kablowe UDF. Mocowanie co 300mm
134		(N)HXCH 0,6/1kV 4x50/25RM mm2 E90		

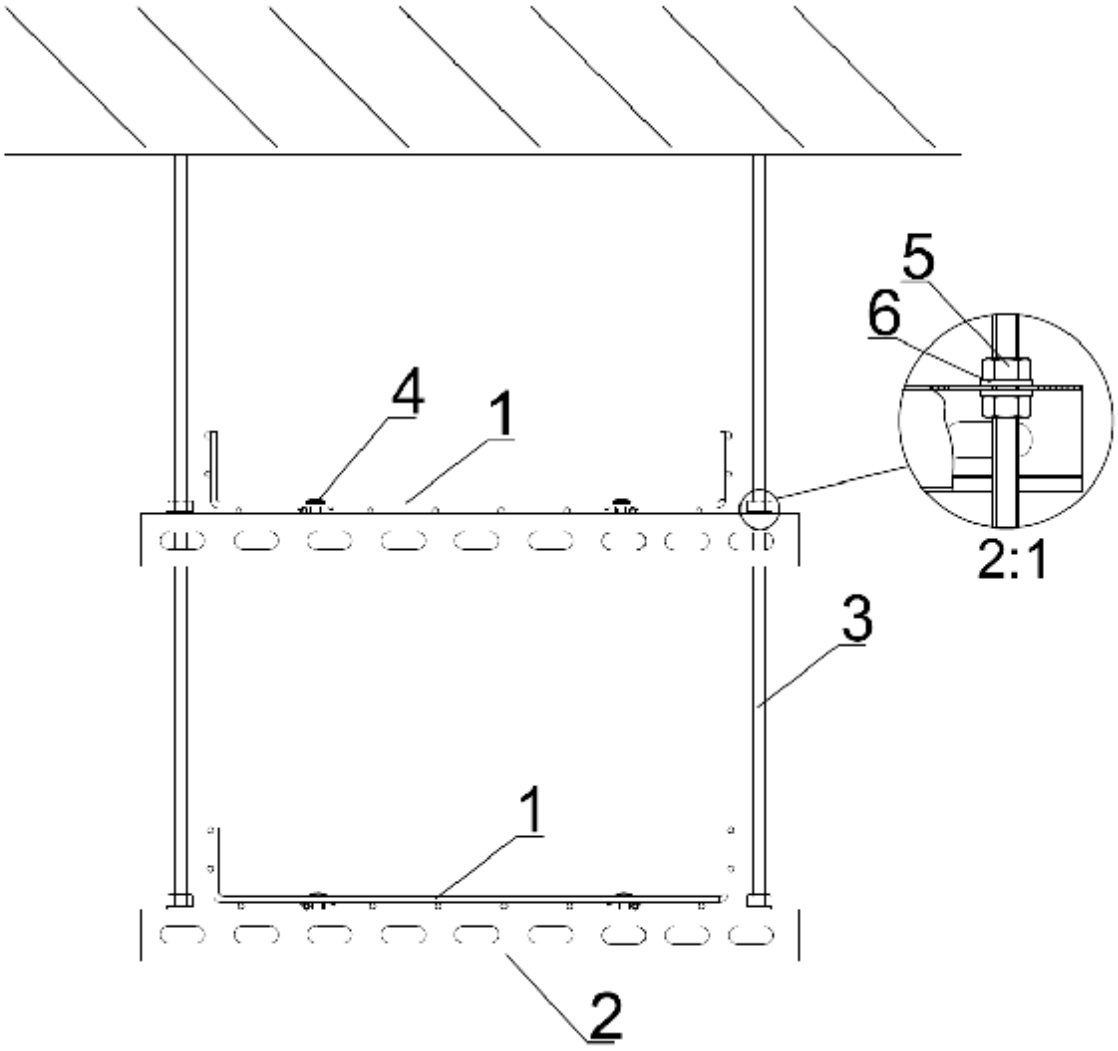
No	Cable type	Cable diameter (approx.)	Cable weight [kg/m^{-1}], approx.	Amount
1	(N)HXH 0,6/1kV 4x50RM mm^2 E90	38,0	3,14	8
2	(N)HXH 0,6/1kV 4x1,5RE mm^2 E90	16,0	0,35	12
3	(N)HXCH 0,6/1kV 4x50/25RM mm^2 E90	41,0	3,37	16
4	(N)HXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	17,0	0,42	10
5	NHXH 0,6/1kV 4x50RM mm^2 E90	36,6	3,01	10
6	NHXH 0,6/1kV 4x1,5RE mm^2 E90	15,5	0,34	12
7	NHXCH 0,6/1kV 4x50/25RM mm^2 E90	39,4	3,36	12
8	NHXCH 0,6/1kV 4x1,5/1,5RE mm^2 E90	17,1	0,40	16
9	HDGs 300/500V 2x1 mm^2 E90 PH90	7,5	0,07	18
10	HTKSHmika FE180/PH90 240V 1x2x0,8 mm	6,7	0,05	20
			TOTAL	134

DRAWINGS



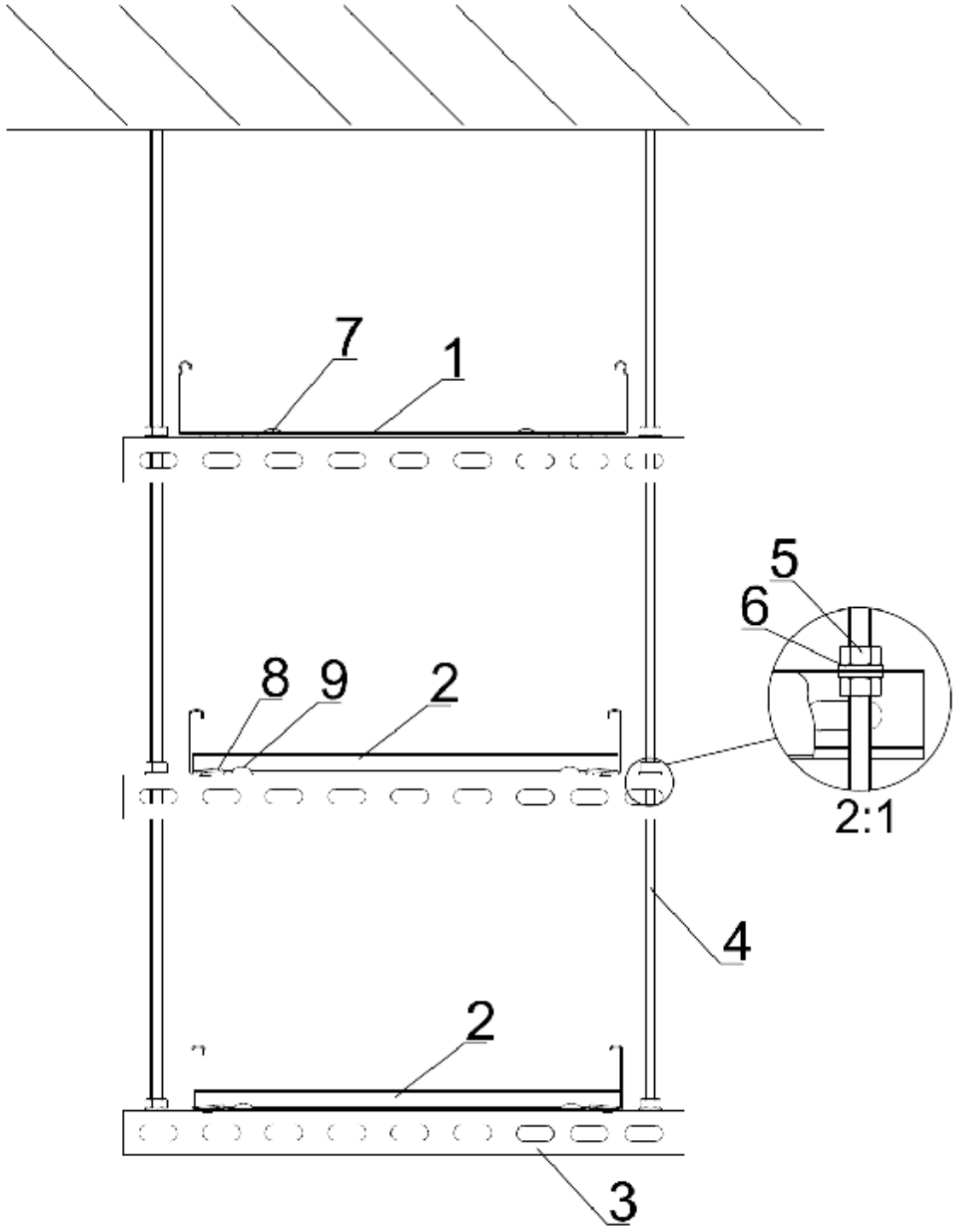
L.p.	Nazwa	Symbol	Szt.
15	Śruba z łbem grzybkowym	SGKM6x12	2
14	Zacisk mocujący	ZM/ZMO	2
13	Śruba z łbem grzybkowym	SGKM8x14	6
12	Podkładka powiększona	PW10	4
11	Śruba	SM M10x80	4
10	Blacha rozporowa	BR55	2
9	Podkładka	PP10	6
8	Nakrętka	NSM10	6
7	Pręt gwintowany	PGM10/...	1
6	Uchwyt sufitowy	USV/USOV	1
5	Uchwyt	UPW/UPWO	2
4	Wysięgnik	WWS/WWSO400	2
3	Wspornik sufitowy	WPCB...	1
2	Drabina	DGOP400H60/...	1
1	Koryto	KCP/KCOP300H60/...	1

DRAWINGS



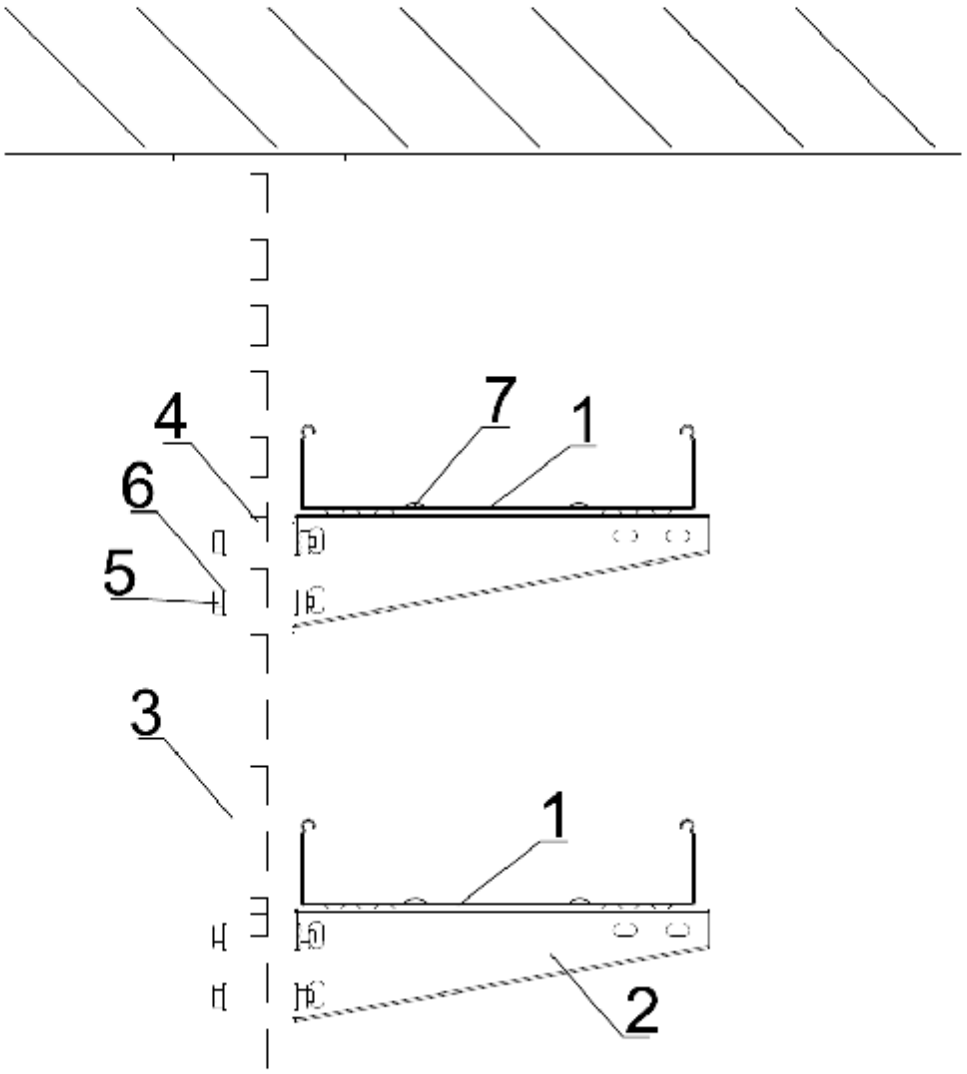
L.p.	Nazwa	Symbol	Szt.
6	Podkładka	PP10	8
5	Nakrętka	NSM10	8
4	Zacisk śrubowy	ZS/ZSO	4
3	Pręt gwintowany	PGM10/...	2
2	Ceownik	CWP/CWOP40H40/...	2
1	Koryto siatkowe	KDS/KDSO400H60/...	2

DRAWINGS



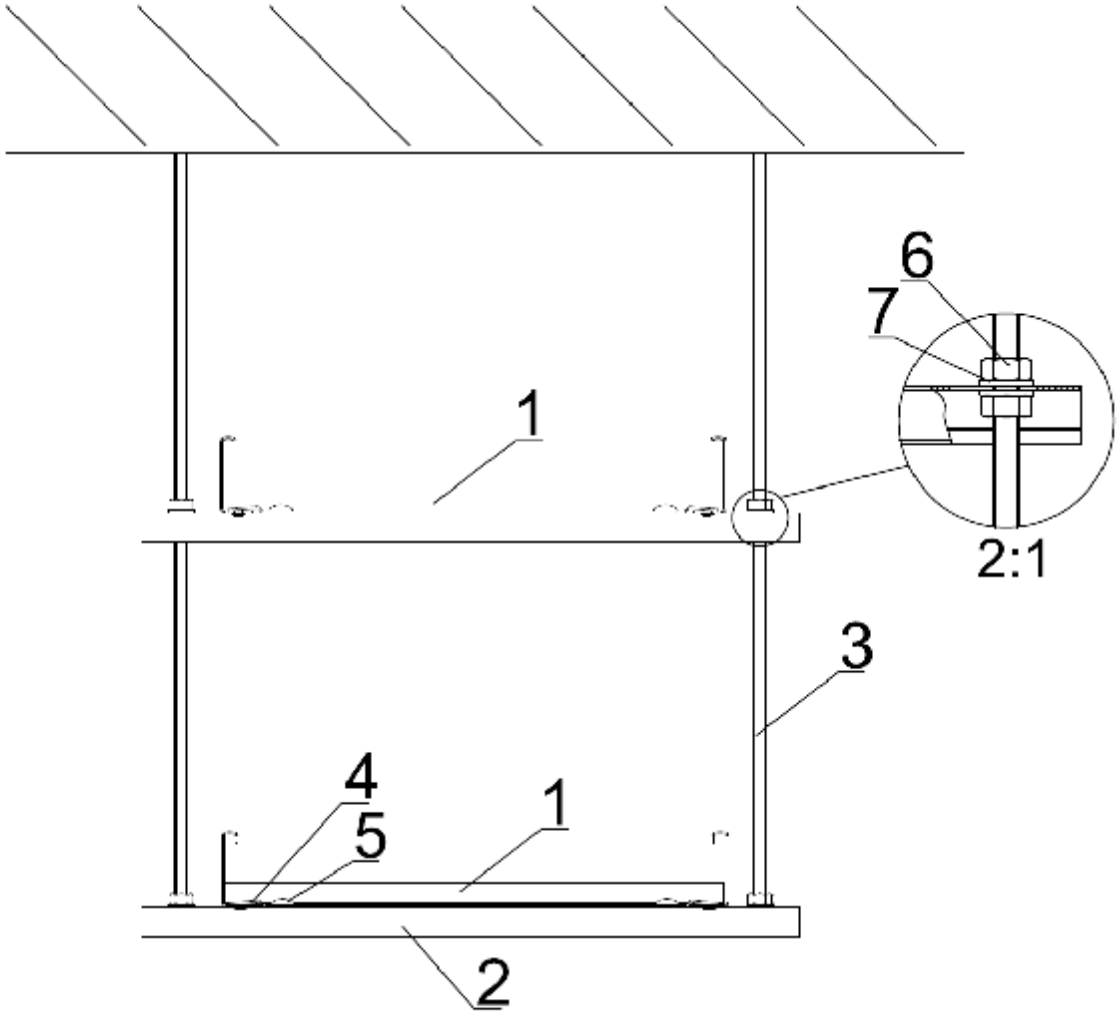
L.p.	Nazwa	Symbol	Szt.
9	Śruba z łbem grzybkowym	SGKM8x14	4
8	Zacisk mocujący	ZM/ZMO	4
7	Śruba z łbem grzybkowym	SGKM6x12	2
6	Podkładka	PP12	12
5	Nakrętka	NSM12	12
4	Pręt gwintowany	PGM12/...	2
3	Ceownik	CWP/CWOP40H40/...	3
2	Drabina	DUP/DUOP400H60	2
1	Koryto	KGJ/KGOJ400H60/...	1

DRAWINGS



L.p.	Nazwa	Symbol	Szt.
7	Śruba z łbem grzybkowym	SGKM6x12	4
6	Podkładka powiększona	PW10	4
5	Śruba	SM M10x80	4
4	Blacha rozporowa	BR55	2
3	Wspornik sufitowy	WPCB...	1
2	Wysięgnik	WWS/WWSO300	2
1	Koryto	KGL/KGOL300H60/...	2

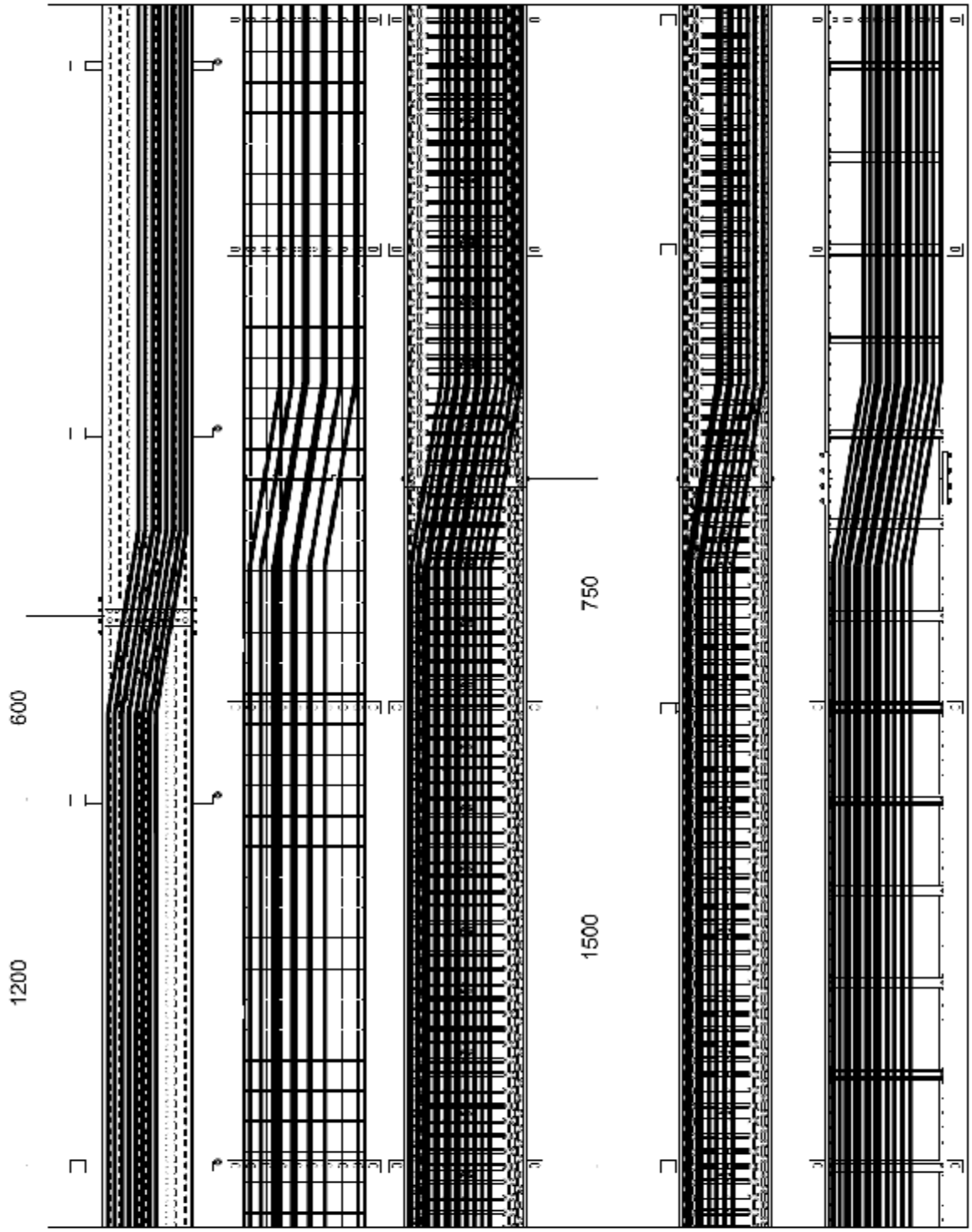
DRAWINGS



L.p.	Nazwa	Symbol	Szt.
7	Podkładka powiększona	PW10	8
6	Nakrętka	NSM10	8
5	Śruba z łbem grzybkowym	SGKM8x14	4
4	Zacisk mocujący	ZM/ZMO	4
3	Pręt gwintowany	PGM10/...	2
2	Ceownik	CWP40H22/...	2
1	Drabina	DUD400H60/...	2

DRAWINGS

A-A



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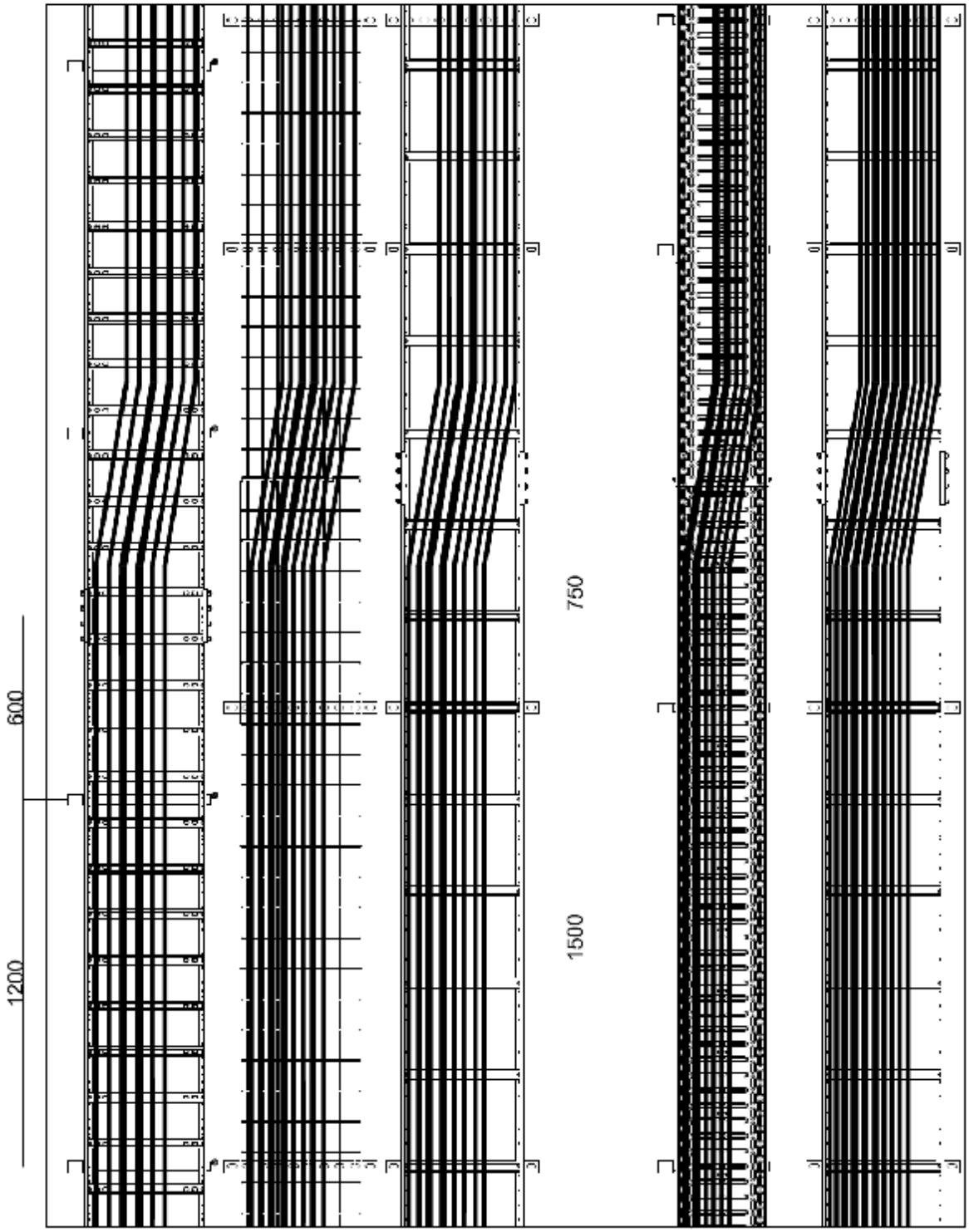
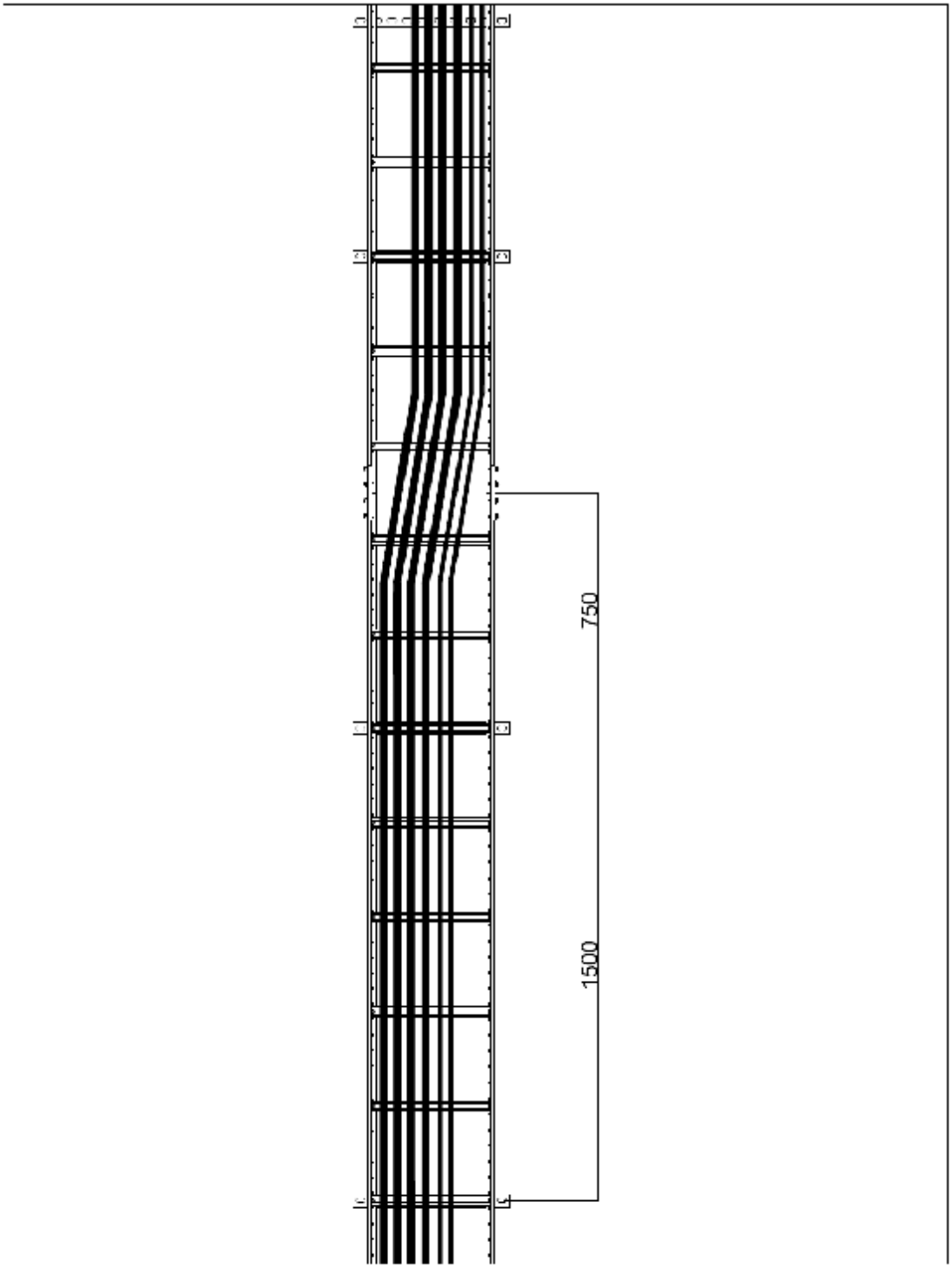
B - B



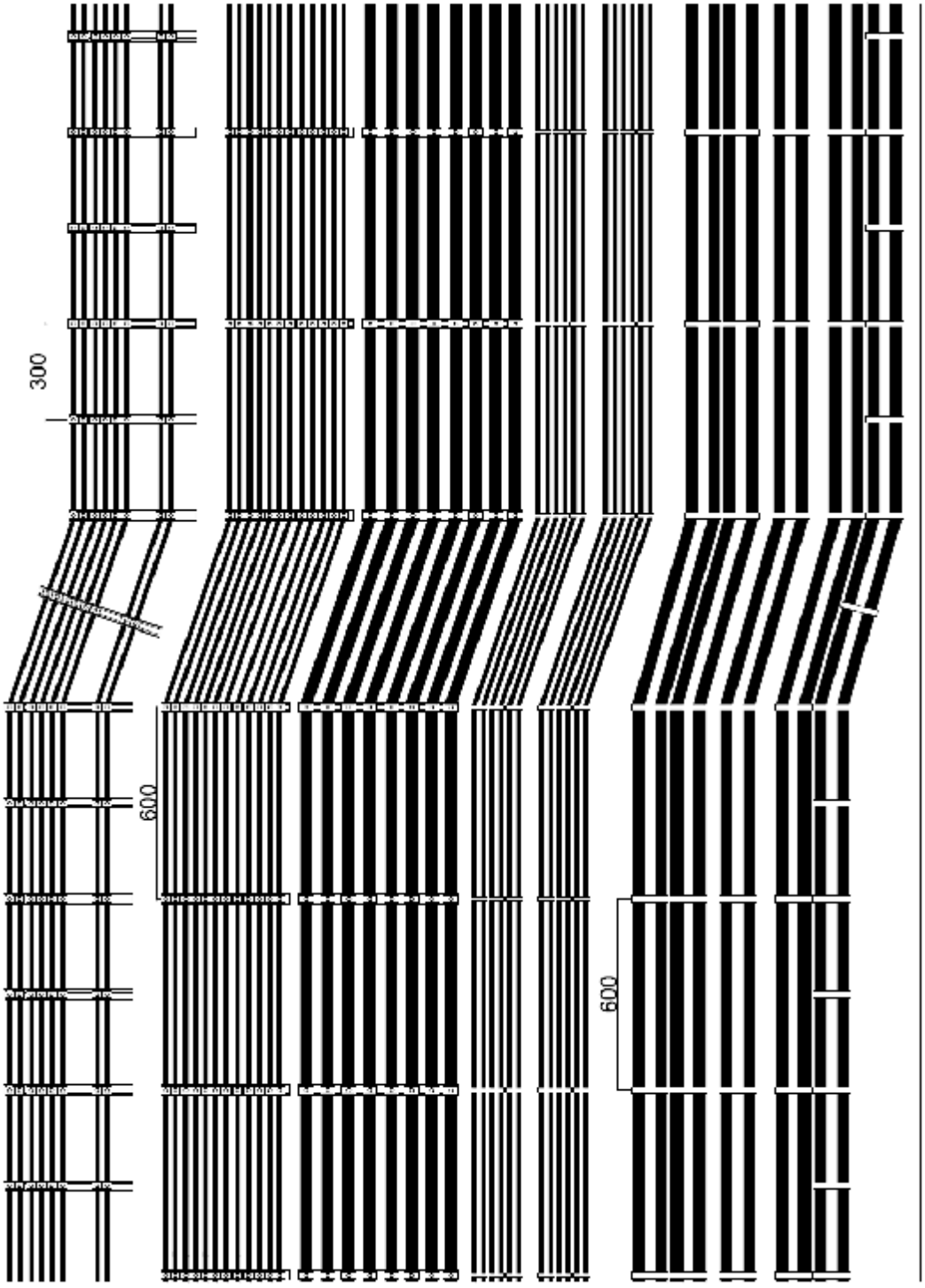
ELPAR-BAKS 26.02.2015

C-C



ELPAR-BAKS 26.02.2015

D-D



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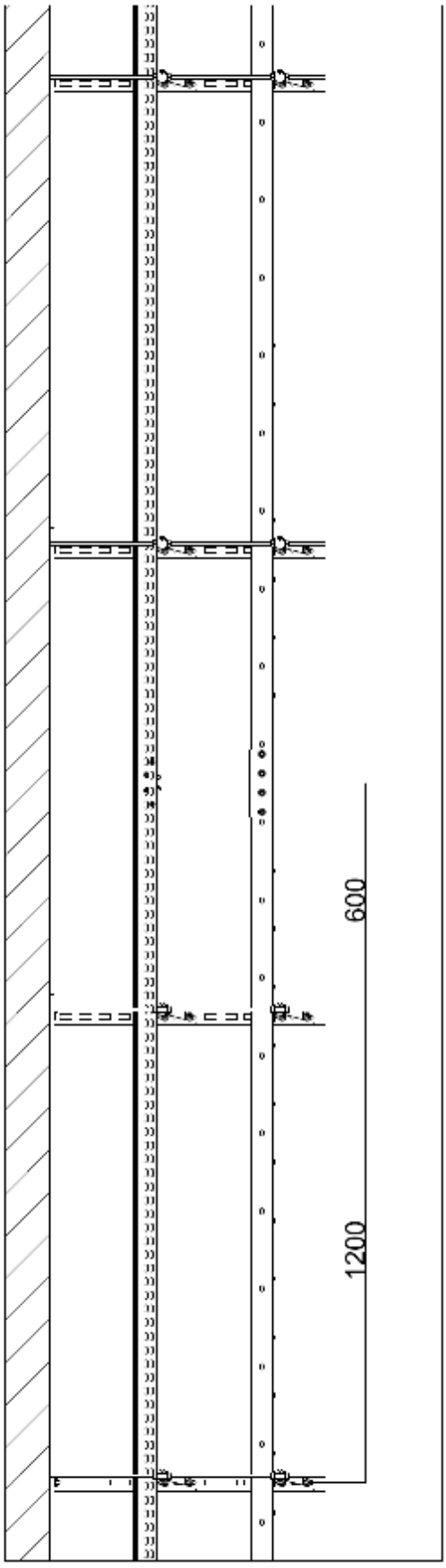
DRAWINGS

E-E



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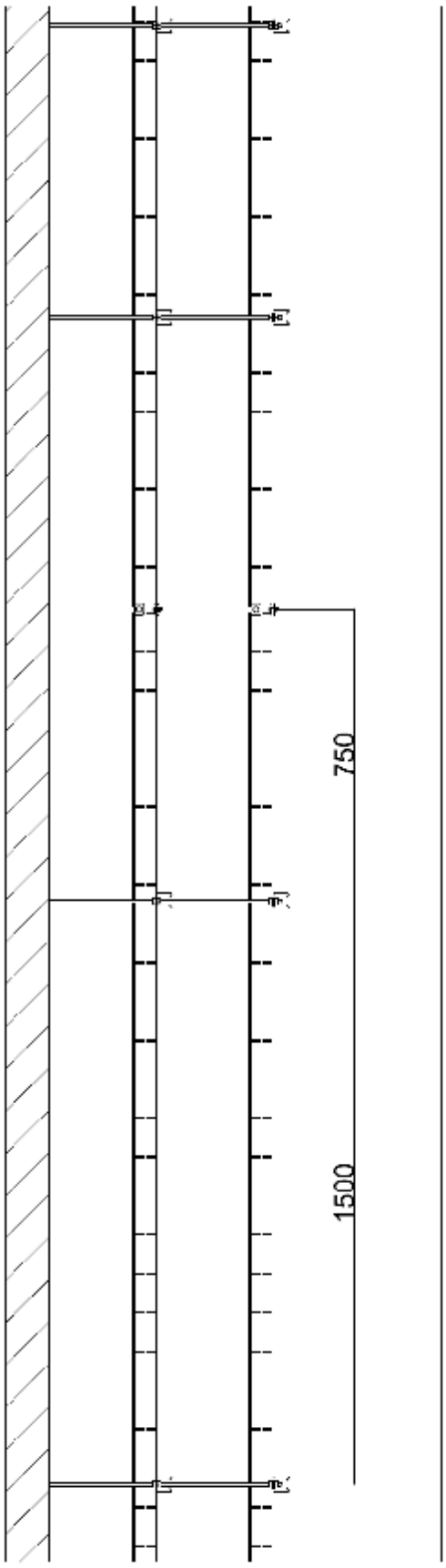
DRAWINGS

F-F



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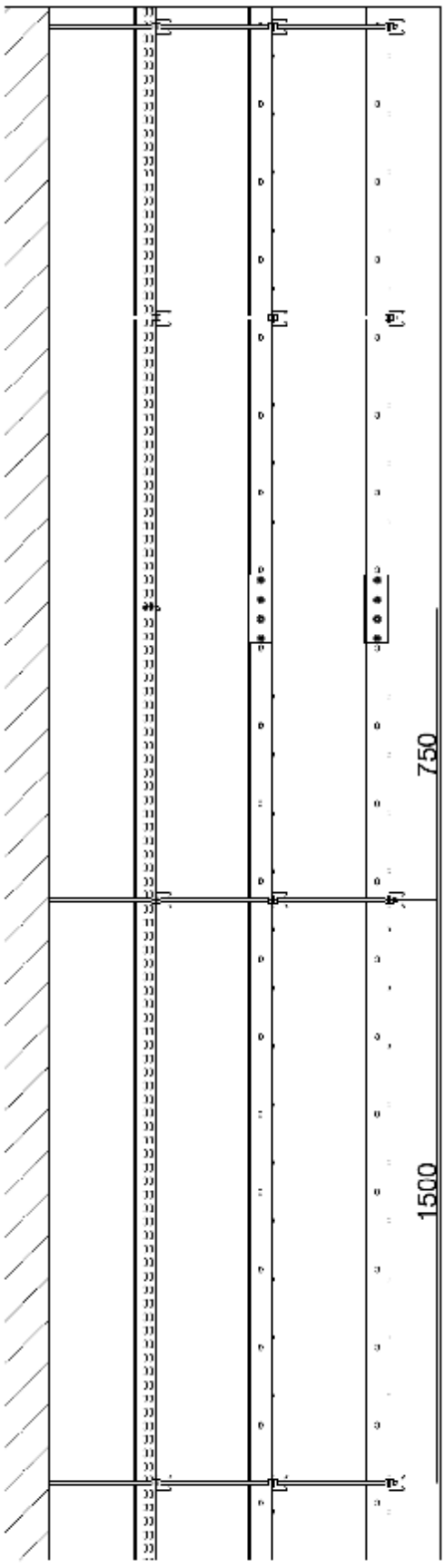
DRAWINGS

G-G



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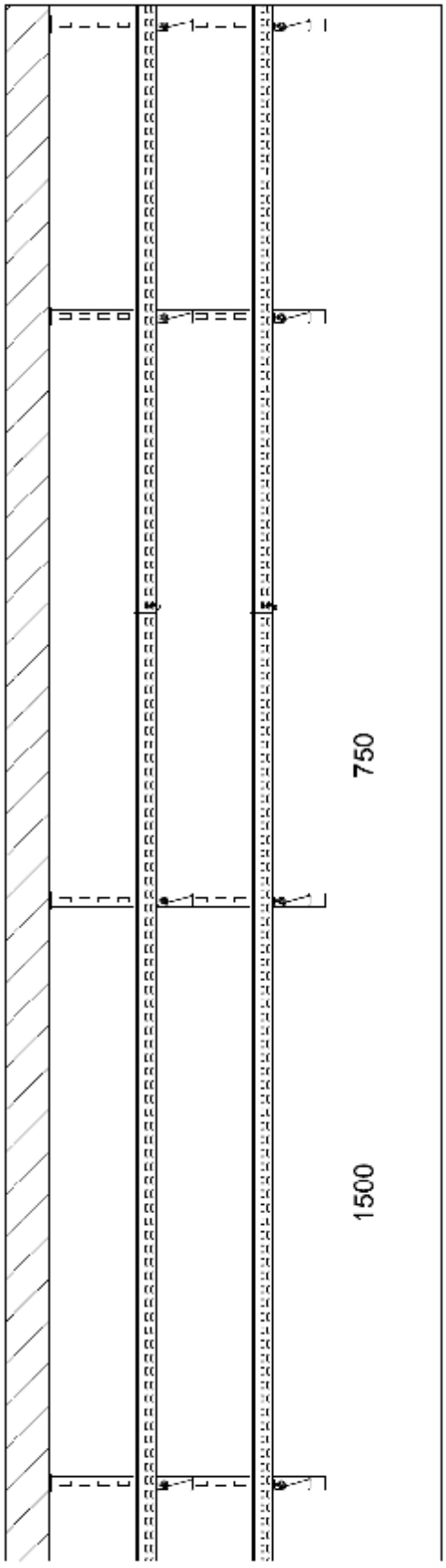
DRAWINGS

H-H



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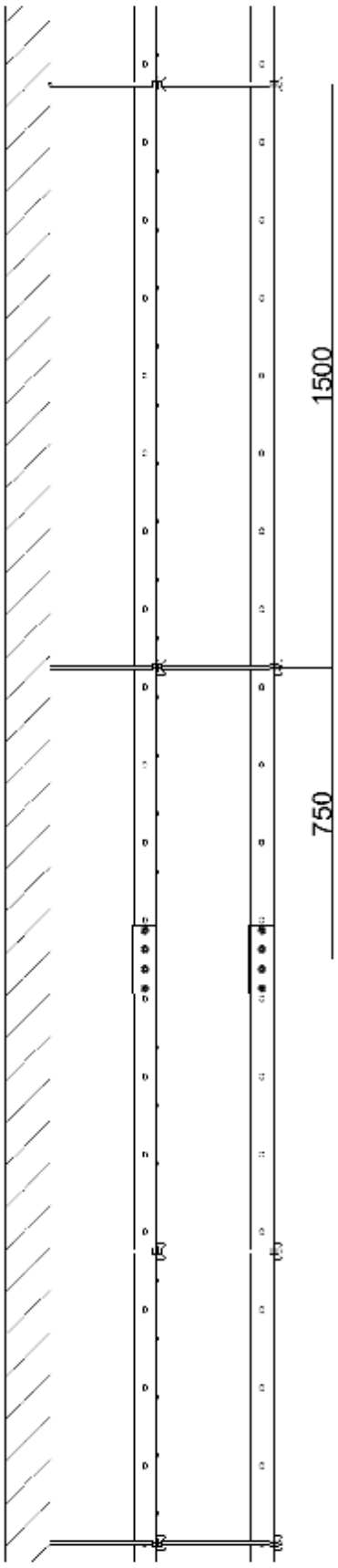
I-I



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8. FINAL PROVISION

§ This report details the method of construction, the test conditions and results obtained when the specific element of construction described herein was following the procedure outlined in EN 1363-1, and where appropriate STN 92 0205. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

§ Because of the nature of the fire resistance testing and consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

§ The test results refer only to the tested subjects. This test report is not an approval of the tested product by the test laboratory or the accreditation body overseeing the laboratory's activities. The test was carried out on testing equipment that is the property of FIRES, s.r.o., Batizovce. Without the written permission of the test laboratory this test report may be copied and/or distributed only as the whole. Any modifications of the test report can be made only by the fire resistance test laboratory FIRES, s.r.o., Batizovce.

Approved by:

Ing. Štefan Rástocký
leader of the testing laboratory

SKÚŠOBNÉ LABORATÓRIUM • PRÜFLABORATORIUM • TESTING LABORATORY
FIRES
The Experts on Fire Safety
-1-

Prepared by:

Bc. Dávid Šubert
technician of the testing laboratory

9. NORMATIVE REFERENCES

EN 1363-1: 2012	Fire resistance tests. Part 1: General requirements
STN 92 0205:2014	Fire behaviour of construction products and building constructions. Circuit integrity maintenance of cable systems. Requirements, testing and classification.
DIN 4102 – 2:1977-09	Fire behaviour of building materials and elements - requirements and testing
DIN 4102 – 12:1998-11	Fire resistance of electric cable systems required to maintain circuit integrity
ZP-27/2008 PAVUS	Test method for determination of functionality class of cables and cable loadbearing constructions - cable circuits in case of fire

THE END OF THE TEST REPORT