

TEST REPORT FIRES-FR-018-16-AUNE

Power and communication cables of Technokabel S.A. at cable bearing system BAKS

This is an electronic version of a test report which was made as a copy of test report officially issued in a paper form. The electronic version of a test report shall be used only for informative purposes. Any information listed in this test report is the property of the sponsor and shall not be used or published without written permission. Contents of this file may only be modified by the editor i.e. Testing laboratory FIRES s.r.o. Batizovce. Sponsor is allowed to publish this test report in parts only with written permission of the editor.



TEST REPORT

FIRES-FR-018-16-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: 26. 04. 2016

Name of the product: Power and communication cables of Technokabel S.A. at cable bearing system BAKS

Manufacturer: Technokabel S.A., Nasielska 55, 04 – 343 Warszawa, Poland
(producer of cables)
BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland
(producer of cable bearing system)

Sponsor: Technokabel S.A., Nasielska 55, 04 – 343 Warszawa, Poland

Test carried out by: FIRES, s.r.o., Testing laboratory
Task No.: PR-16-0012
Specimens received: 21. 01. 2016
Date of the test: 28. 01. 2016

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

Number of pages: 62
Test reports: 5

Copy No.: 3

Distribution list:

- Copy No. 1 FIRES, s. r. o., Osloboditeľov 28 2, 059 35 Batizovce, Slovak Republic (electronic version)
- Copy No. 2 Technokabel S.A., Nasielska 55, 04 – 343 Warszawa, Poland (electronic version)
- Copy No. 3 BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland (electronic version)
- Copy No. 4 Technokabel S.A., Nasielska 55, 04 – 343 Warszawa, Poland
- Copy No. 5 BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland

This report includes accreditation mark SNAS with additional mark ILAC-MRA. SNAS is signatory of ILAC-MRA, Mutual recognition agreement (of accreditation), which is focused on promoting of international acceptance of accredited laboratory data and reducing technical barriers to trade, such as the retesting of products on markets of signatories. More information about ILAC-MRA is on www.ilac.org. Signatories of ILAC-MRA are e.g. SNAS (Slovakia), CAI (Czech Republic), PCA (Poland), DakKS (Germany) or BMWA (Austria). Up to date list of ILAC-MRA signatories is on <http://ilac.org/ilac-mra-and-signatories/>. FIRES, s.r.o. Batizovce is full member of EGOLF also, more information www.egolf.org.uk.



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. Mariusz Kwiatkowski	Technokabel S.A.
Mr. Jacek Kliczek	BAKS Kazimierz Sielski

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 54 020	Digital calliper (0 to 200) mm	-
F 54 056	Racking meter	-
F 73 002	Suspension load-cell scale	finding out of humidity equilibrium state
F 69 009	PLC system for data acquisition and climate control TECOMAT TC 604	-
F 60 001 - F 60 009	Sensors of temperature and relative air humidity	measurement of climatic conditions



Identification number	Measuring equipment	Note
F 13 521 - F 13 528	Plate thermometers	measurement of temperature inside the test furnace according to EN 1363-1
F 13 701	Sheathed thermocouple type K Ø 3 mm	measurement of ambient temperature
F 57 005	Digital stop-watch	-
F 96 015	Test signal panel	-

3. PREPARATION OF THE SPECIMENS

Testing laboratory noted down production data of specimens from certified production.

Place of production of cables	Technokabel S.A., Nasielska 55, 04 – 343 Warszawa, Poland
Number of certificate ISO 9001	12 100 23870 TMS
Issuing Body	TÜV SÜD Management Service GmbH
Date of issuing	02. 11. 2013

Place of production of cable bearing system	BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland
Number of certificate ISO 9001	01 100 1331984
Issuing Body	TÜV Rheinland
Date of issuing	19. 05. 2014

Individual materials of specimens (consoles, brackets, threaded rods, cables, etc.) were delivered to the testing laboratory by test sponsor. Assembling of the specimens (assembling of cable bearing systems and mounting of cables and additional weights into the bearing systems) and its installation to supporting construction of was carried out by workers of test sponsor under supervision.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMENS STRUCTURE

Test specimens comprised from power and communication cables of company Technokabel S.A. and cable bearing system of company BAKS Kazimierz Sielski (cable trays, mesh trays, ladders with accessories).

Cables used by test:

Power cables:

NHXH-J FE180 PH90/E90 0.6/1 kV
 NHXH-J FE180 PH90/E90 B2cas1d0 0.6/1 kV
 (N)HXCH FE180 PH90/E90 0.6/1 kV
 (N)HXH-J FE180 PH30/E30 0.6/1 kV
 (N)HXH-J FE180 PH90/E90 0.6/1 kV
 (N)HXCH-J-SERVO FE180 PH90/E90 0.6/1 kV
 (N)HXCH-J-SERVO-W FE180 PH90/E90 0.6/1 kV

Communication cables:

HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	(26x)
HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V	(12x)
HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V	(10x)
HDGs FE180 PH90/E30-E90 3x1.5 mm ² 300/500 V	(1x)

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 track No. 1

Track is made of four consoles combined of head plate (PSU-E) and support (CWP/CWOP40H40-E) fixed together by nut bolts (SMM8x60-E) and reinforced in place of fixing by spacer (BR40-E). Bracket (WWS/WWSO300-E) is fixed to console by nut bolt (SMM10x20-E). Threaded rod grip (UPW/UPWO-E) is fixed on the opposite end of bracket by two nut bolts (SGKM8x14-E). Consoles are fixed to ceiling by throughbolt anchors (PSROM8x75-E) in spacing of 1200 mm. Brackets are fixed to ceiling by threaded rods (PGM10-E) through rod grips and ceiling holder (UTS-E). Support (KTP35H35-E) is fixed to bottom part of console to support (CWP/CWOP40H40-E) and threaded rod and it's used for fixing of emitting cables. **Emitting cables were not a subject of test.**

Cable trays (KCP/KCOP300H60-E, height 60 mm, width 300 mm, steel sheet thickness 1,5 mm) fixed together by junctions (LPP/LPOPH60-E, 2 pcs) with nut bolts (SGKM6x12-E, 8 pcs) on sides and by junction (BL/BLO300-E) with nut bolts (SGKM6x12-E, 8 pcs) on the bottom. Partition (PGL60-E) is fixed by nut bolts (SGKM6x12-E) in distance of 100 mm of cable tray side. Trays are fixed to brackets by nut bolts (SGKM6x12-E, 2 pcs) and loaded with 10kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Suspension tracks No. 2 and 3

Tracks are made of four consoles (WPCB700) fixed to ceiling in spacing of 1500 mm. Brackets (WWS/WWSO300) are fixed to consoles by nut bolts (SMM10x70) and washers (PW10). Consoles are reinforced in place of fixing brackets by spacer (BR55).

Track No. 2:

Cable ladders (DFP300H60, height 60 mm, width 300 mm, steel sheet thickness 1,5 mm, spacing of transoms 300 mm) fixed together by integrated coupling. Ladders are fixed to brackets by coupling (ZM/ZMO, 2pcs) and nut bolts (SGKM8x14, 2 pcs) and loaded with 10kg.m^{-1} . Cables are fixed to ladders plastic stripes only.

Track No. 3:

Cable trays (KGL/KGOL300H60, height 60 mm, width 300 mm, steel sheet thickness 0,7 mm) fixed together by screws (SGKM6x12, 7 pcs). Trays are fixed to brackets by nut bolts (SGKM6x12, 2 pcs) and loaded with 10kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Suspension tracks No. 4 - 6

Tracks are made of four consoles combined of two supports (CWP/CWOP40H40) and two threaded rods (PG M10) fixed together by washers (PP10) and nuts (NSM10). Consoles are fixed to ceiling in spacing of 1500 mm.

Tracks No. 4 and 4a:

Cable mesh trays (KDS/KDSO60H60, height 60 mm, width 60 mm, steel wire $\varnothing$ 4,5 mm) fixed together by junctions (USSN/USSO, 2 pcs). Mesh trays are fixed to supports by coupling (ZS/ZSO) and loaded with 3kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Track No. 5:

Cable mesh trays (KDSZ400H60, height 60 mm, width 400 mm, steel wire $\varnothing$ 4,5 mm) fixed together by integrated coupling. Mesh trays are fixed to supports by coupling (ZS/ZSO, 2 pcs) and loaded with 20kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Track No. 6:

Cable trays (KCP/KCOP600H60, height 60 mm, width 600 mm, steel sheet thickness 1,5 mm) fixed together by junctions (LPP/LPOPH60, 2 pcs) with nut bolts (SGKM6x12, 16 pcs) on sides and by junction (BL/BLO300) with nut bolts (SGKM6x12, 8 pcs) on the bottom. Partition (PGL60) is fixed by nut bolts (SGKM6x12) in distance of 100 mm of cable tray side. Trays are fixed to supports by nut bolts (SGKM6x12, 2 pcs) and loaded with 25kg.m^{-1} . Cables are fixed to ladders plastic stripes only.

Suspension track No. 7

Track is made of four consoles combined of support (CWP/CWOP40H40) and two threaded rods (PGM10) fixed together by washers (PP10) and nuts (NSM10). Consoles are fixed to ceiling in spacing of 1500 mm.



Cable ladders (DUP/DUOP600H60, height 60 mm, width 600 mm, steel sheet thickness 1,5 mm, spacing of transoms 300 mm) fixed together by junctions (LDC/LDOCH60, 2 pcs) and nut bolts (SGKM8x14, 8 pcs) on sides. Partition (PGDJ60) is fixed by screws (SRM6x16) in distance of 100 mm of ladder side. Ladders are fixed to supports by junctions (ZM/ZMO, 2 pcs) and nut bolts (SGKM8x14, 2 pcs) and loaded with 30kg.m^{-1} . Cables are fixed to ladders by cable clamps (UK1/UKO1).

Suspension tracks No. 8 – 10

Tracks are made of four consoles (WPCB1000) fixed together by nut bolts (SMM10x20). Three brackets (WWS/WWSO400) are fixed to console by nut bolt (SMM10x80). Threaded rod grip (UPW/UPWO) is fixed on the opposite end of each bracket by two nut bolts (SGKM8x14). Consoles are fixed to ceiling in spacing of 1500 mm. Brackets are fixed to ceiling by threaded rods (PGM10) through rod grips.

Track No. 8:

Cable trays (KFJ400H60, height 60 mm, width 400 mm, steel sheet thickness 1,0 mm) fixed together by integrated coupling. Trays are fixed to brackets by nut bolts (SGKM6x12, 2 pcs) and loaded with 20kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Track No. 9:

Cable mesh trays (KDSZ400H60, height 60 mm, width 400 mm, steel wire $\varnothing$ 4,5 mm) fixed together by integrated coupling. Mesh trays are fixed to supports by coupling (ZS/ZSO, 2 pcs) and loaded with 20kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only.

Track No. 10:

Cable ladders (DFP400H60, height 60 mm, width 400 mm, steel sheet thickness 1,5 mm, spacing of transoms 300 mm) fixed together by integrated coupling. Ladders are fixed to brackets by coupling (ZM/ZMO, 2pcs) and nut bolts (SGKM8x14, 2 pcs) and loaded with 20kg.m^{-1} . Cables are fixed to ladders plastic stripes only.

Suspension tracks No. 11 – 13

Tracks are made of four consoles (WPCB1000) fixed together by nut bolts (SMM10x20). Three brackets (WWS/WWSO400) are fixed to console by nut bolt (SMM10x80). Threaded rod grip (UPW/UPWO) is fixed on the opposite end of each bracket by two nut bolts (SGKM8x14). Consoles are fixed to ceiling in spacing of 1500 mm. Brackets are fixed to ceiling by threaded rods (PGM10) through rod grips.

Track No. 11:

Cable trays (KGL/KGOL300H60, height 60 mm, width 300 mm, steel sheet thickness 0,7 mm) fixed together by screws (SGKM6x12, 7 pcs). Partition (PGL60) is fixed by nut bolts (SGKM6x12) in distance of 100 mm of cable tray side. Trays are fixed to brackets by nut bolts (SGKM6x12, 2 pcs) and loaded with 20kg.m^{-1} . Cables are fixed to cable trays by plastic stripes only. Connection boxes PMO1 and PMO2 are fixed by nut bolts (SGKM6x12, 2 pcs) directly to cable trays side.

Track No. 12:

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

Track No. 13:

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 (SGKM8x14, 8 pcs) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO, 2 pcs) and nut bolts (SGKM8x14, 2 pcs) and loaded with 25kg.m^{-1} . Cables are fixed to ladders by cable clamps (UK1/UKO1).

Ceiling track No. 14

Track is made of single cable clips (UDF) fixed to ceiling in spacing of 600 mm.

Suspension tracks No. 15 and 15a

Cable trays (KFL50H60, height 60 mm, width 50 mm, steel sheet thickness 0,7 mm) fixed together by integrated coupling. Trays are fixed to bottom flange of segments of steel profiles (I 80) on ceiling by hanger (WC50), threaded rod (PG M6) and beam clamp (ZK8/19) in spacing of 1500 mm and loaded with 5kg.m^{-1} . Cables are laid at trays without bending and fixed to trays by plastic stripes only.

**Suspension track No. 17**

Track is made of supports (CWP/CWOP40H40) fixed together by junction (LC40H40) and screws (SGKM10x20, 6 pcs). Supports are fixed to bottom flange of segments of steel profiles (I 80) on ceiling by beam clamps (ZK8/19) and threaded rods (PGM8) in spacing of 1500 mm. Each track is additionally loaded at mid-length of span by weight (3,5kg) which represents illumination. Connection boxes PMO1 are fixed by nut bolts (SGKM6x12, 2 pcs) directly to support. Cable is laid inside the supports without bending.

Ceiling track No. 18

Track is made of cable clamps (KSA) fixed to ceiling by threaded rods (PGM6) and internally threaded wedge anchors (TRSOM6) in spacing of 600 mm.

Ceiling track No. 19

One wave segments of trapezoidal steel sheet 2,0 mm thick are fixed to ceiling by throughbolt anchors (M6) in spacing of 600 mm. Segments (approx. 100 mm width) of support (CWP/CWOP40H40) are fixed to trapezoidal steel sheet by self-drilling screws (SMD 4,8x16). Cables are fixed to support by single cable clips (UDF) by self-drilling screws (SMD 4,8x16).

Ceiling track No. 20

Track is made of cable hangers (OZO) fixed to ceiling in spacing of 600 mm.

Suspension track No. 21

Track is made of steel consoles fixed to ceiling of 600 mm. Cables are fixed to steel segments (part of consoles) 5,0 mm thick by beam clips (ZSK1).

Suspension track No. 22

Track is made of four consoles combined of head plate (PSU-E) and support (CWP/CWOP40H40-E) fixed together by nut bolts (SMM8x60-E) and reinforced in place of fixing by spacer (BR40-E). Supports (CP40H35-E) are fixed to consoles by nut bolts (SMM10x20-E). Consoles are fixed to ceiling by throughbolt anchors (PSROM8x75-E) in spacing of 1500 mm. Steel plates (represents illumination) are fixed to between supports by nut bolts (SMM10x20-E) and loaded with 4kg. **Track does not includes cables.**

All support systems are made of galvanized steel, according to Sendzimir method PN-EN 10-346 and PN-EN ISO 1461 apart from track no. 1. Track no. 1 is made of stainless steel.

Steel chain, line loads and cables were 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 specimens verification. Parameters which were verified 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 concrete panels made of common shocked concrete of class B 16/20, 150 mm thick – 4 pieces and side walls made of aerated concrete blocks YTONG, 250 mm thick.

Cable penetration through the wall of test furnace was sealed by mineral wool and sprayed insulation material Tecwool.

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



4.3 VERIFICATION OF THE SPECIMENS

The conformity of the drawings and the test specimens was verified before and after the fire resistance test. It was possible to carry out this verification on the test specimen. 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 (basic dimensions) and also the way of specimens fixation to supporting construction were subject of this verification.

4.4 CLIMATIC CONDITIONING OF THE SPECIMENS

Test specimens were stored in the hall of testing laboratory and were conditioned according to EN 1363-1 under the following climatic conditions:

Ambient air temperature [°C]

mean	19,1
standard deviation	1,3

Relative air humidity [%]

mean	41,5
standard deviation	1,5

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 CONDITIONS OF THE TEST

Conditions in the test furnace (temperature – standard temperature/time curve, pressure, content of O₂) 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, or in record from the test.

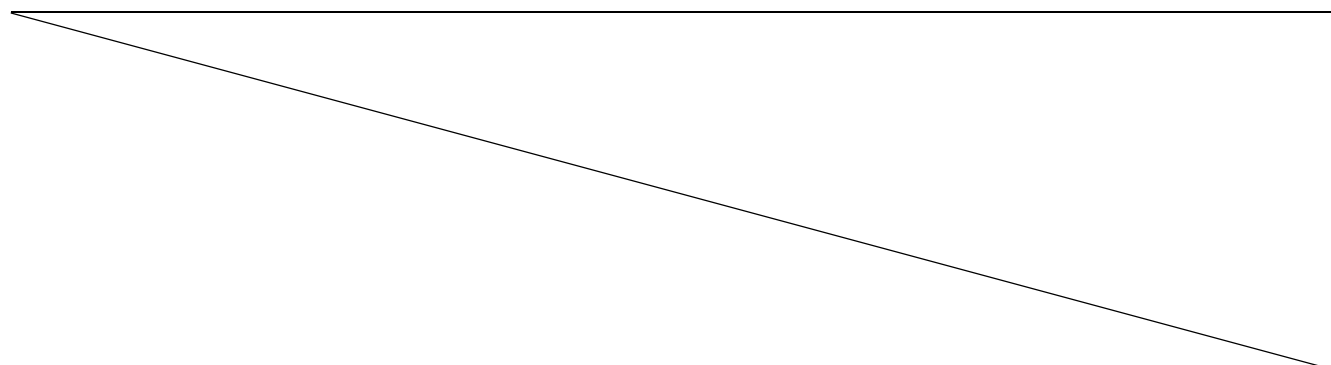
Values characterizing environment in the testing room directly before the test:

Relative air humidity [%]	Ambient air temperature [°C]
48,7	14,4

5.2 RESULTS OF THE TEST

Measured values 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 (N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	13	27 minutes
2	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		36 minutes
3	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	12	90 minutes no failure / interruption
4	2 cables (N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV		79 minutes
5	2 cables (N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
6	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		27 minutes
7	cable NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV + connection boxes PMO2	11	89 minutes
8	cable NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV + connection boxes PMO2		65 minutes
9	2 cables (N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
10	2 cables (N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
11	2 cables (N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	10	90 minutes no failure / interruption
12	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		26 minutes
13	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	9	90 minutes no failure / interruption
14	2 cables NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
15	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV	8	90 minutes no failure / interruption
16	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
17	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		55 minutes
18	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		78 minutes
19	2 cables (N)HXH-J FE180 PH90/E90 4x16 RM 0.6/1 kV	21	71 minutes
20	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
21	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	20	70 minutes
22	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
23	2 cables (N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	7	51 minutes
24	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		43 minutes
25	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		67 minutes
26	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		38 minutes
27	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	6	90 minutes no failure / interruption
28	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		81 minutes
29	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		49 minutes
30	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		48 minutes
31	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
32	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
33	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	5	45 minutes
34	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
35	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	4, 4a	22 minutes
36	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		13 minutes
37	6 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	18	90 minutes no failure / interruption
38	6 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
39	6 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		15 minutes
40	6 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		39 minutes
41	cable HDGs FE180 PH90/E30-E90 3x1.5 mm ² 300/500V (230V) + connection boxes PMO1	17	90 minutes no failure / interruption



Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
42	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	15, 15a	90 minutes no failure / interruption
43	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
44	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	3	90 minutes no failure / interruption
45	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		67 minutes
46	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	2	31 minutes
47	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		88 minutes
48	2 cables NHXH-J FE180 PH90/E90 B2cas1d0 4x1.5 RE 0.6/1 kV	1	90 minutes no failure / interruption
49	2 cables NHXH-J FE180 PH90/E90 B2cas1d0 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
50	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	14	90 minutes no failure / interruption
51	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
52	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	12	80 minutes
53	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	11	90 minutes no failure / interruption
54	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	21	90 minutes no failure / interruption
55	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V		90 minutes no failure / interruption
56	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	10	59 minutes
57	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	8	44 minutes
58	2 cables HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V	20	90 minutes no failure / interruption
59	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	7	56 minutes
60	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V		68 minutes
61	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	6	90 minutes no failure / interruption
62	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V		90 minutes no failure / interruption
63	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V	5	90 minutes no failure / interruption
64	2 cables HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V		90 minutes no failure / interruption
65	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	4a	90 minutes no failure / interruption
66	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V	4	90 minutes no failure / interruption
67	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	19	90 minutes no failure / interruption
68	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	15a	90 minutes no failure / interruption
69	2 cables HDGs FE180 PH90/E30-E90 2x1mm ² 300/500 V	15	84 minutes
70	2 cables HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V	3	57 minutes
71	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		39 minutes
72	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	2	81 minutes
73	2 cables HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V	1	90 minutes no failure / interruption
74	2 cables HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		90 minutes no failure / interruption
75	2 cables HDGszo-W FE180 PH90/E30-E90 3x1mm ² 300/500 V	14	90 minutes no failure / interruption

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

Specimens S1 – S51 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.

Specimens S52 – S75 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.

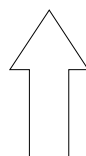
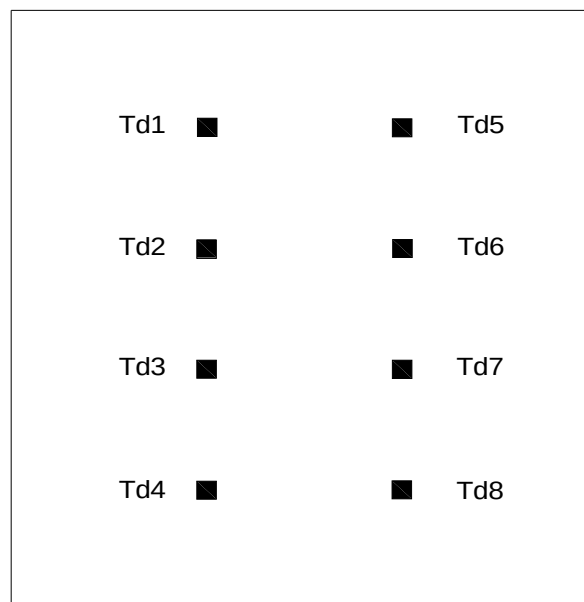


Measured values inside the test furnace

Time t [min]	Temperature [°C]											Deviation	Pressure [Pa]
	Td1	Td2	Td3	Td4	Td5	Td6	Td7	Td8	Tave	Tn	T _o	d _e [%]	p
0	21,0	21,2	20,5	20,8	21,4	23,3	22,7	23,0	21,7	20,0	14,4	0,0	0,5
5	618,2	669,9	641,4	543,4	627,6	566,5	623,1	562,0	606,5	576,0	14,5	-7,1	19,4
10	638,5	716,3	717,6	669,3	687,9	659,0	707,5	643,0	679,9	678,0	14,5	-2,1	20,0
15	731,4	783,7	788,1	752,3	762,7	732,7	768,5	723,3	755,3	739,0	14,6	-0,5	19,7
20	723,4	791,6	813,1	797,9	786,3	787,5	822,3	778,5	787,6	781,0	14,6	0,1	17,1
25	749,8	816,9	840,6	847,9	812,9	807,5	848,4	835,4	819,9	815,0	14,7	0,2	17,7
30	784,2	857,5	869,6	861,1	845,0	853,9	881,2	833,0	848,2	842,0	14,7	0,3	19,5
35	800,0	854,5	881,9	903,4	861,2	847,2	901,6	897,9	868,5	865,0	14,8	0,4	19,2
40	849,3	914,1	911,9	877,7	893,8	904,4	920,1	856,4	891,0	885,0	14,8	0,4	19,8
45	856,4	891,4	892,6	872,6	890,0	933,2	921,0	880,5	892,2	902,0	14,9	0,3	18,6
50	871,8	917,0	913,4	906,2	912,0	974,4	950,9	924,1	921,2	918,0	14,9	0,2	19,6
55	891,6	918,9	912,3	906,1	914,2	956,5	938,8	917,9	919,5	932,0	15,0	0,1	17,9
60	903,3	935,9	917,4	933,6	926,9	969,5	959,9	948,2	936,8	945,0	15,0	0,0	18,7
65	901,0	942,4	940,4	940,0	936,5	974,9	968,1	961,9	945,7	957,0	15,1	-0,1	17,0
70	906,8	950,0	951,2	949,9	944,8	965,5	976,4	980,6	953,2	968,0	15,2	-0,2	19,6
75	922,8	964,7	984,9	997,2	969,1	972,8	999,7	1014,1	978,2	979,0	15,2	-0,2	17,2
80	938,3	974,8	977,6	974,1	972,0	984,2	1000,1	991,7	976,6	988,0	15,2	-0,2	19,1
85	955,2	988,4	996,9	1005,0	990,3	1005,8	1018,8	1026,6	998,4	997,0	15,3	-0,3	17,5
90	955,8	995,1	1001,9	1010,9	994,0	1007,0	1024,2	1020,9	1001,2	1006,0	15,4	-0,3	18,6
91	968,0	1001,5	1001,9	1001,7	998,4	1012,4	1025,4	1020,7	1003,8	1008,0	15,3	-0,3	18,3
92	969,4	1003,2	1006,2	1010,2	1001,8	1014,5	1029,9	1027,8	1007,9	1009,0	15,3	-0,3	18,4
93	966,4	996,9	1009,0	1020,8	1001,1	1012,2	1027,8	1036,3	1008,8	1011,0	15,3	-0,3	17,7

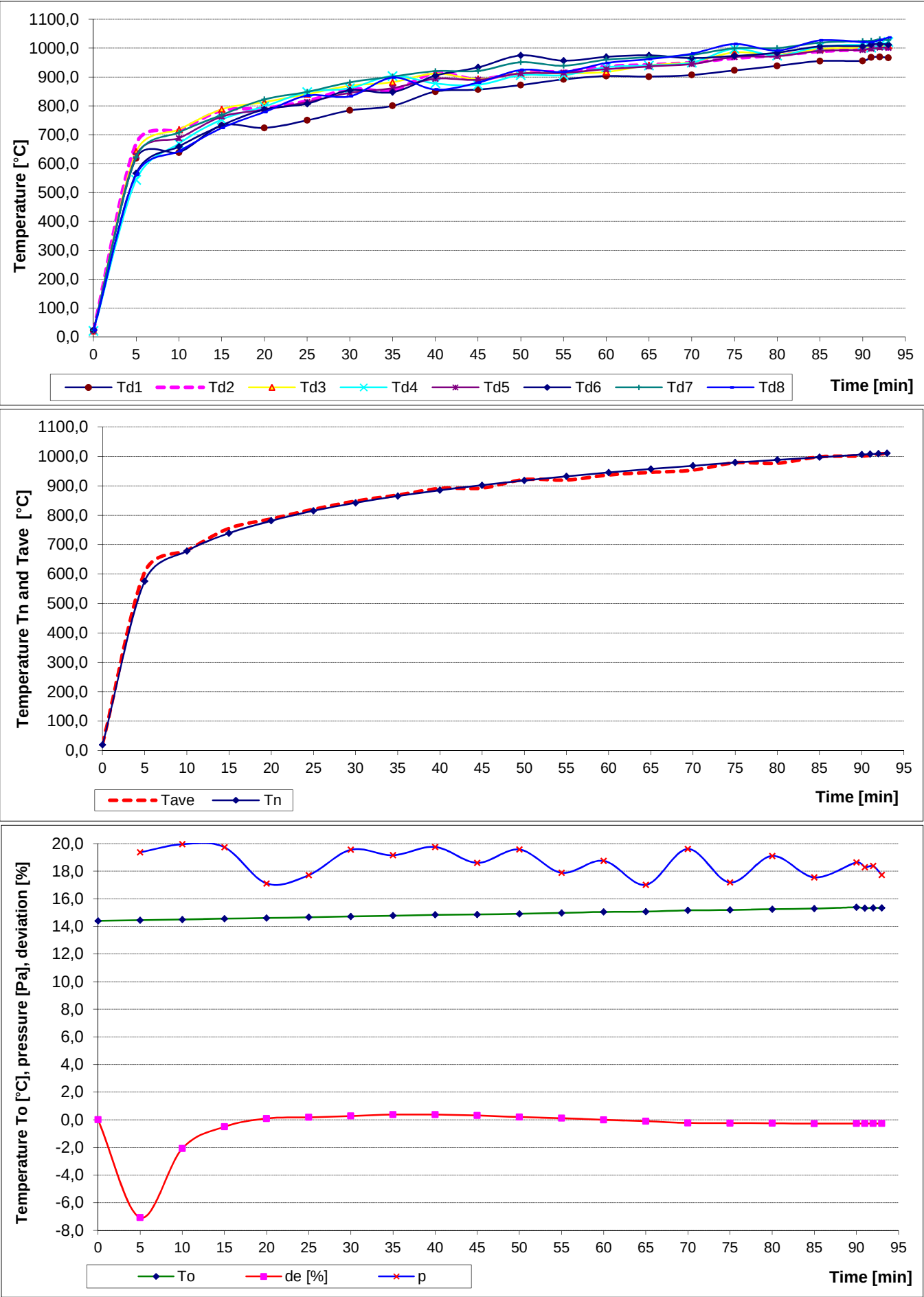
- Tave** Average temperature in the test furnace calculated from individual thermometers
Tn Standard temperature in the test furnace laid down according to test guideline
d_e Deviation of the average temperature from the standard temperature calc. acc. to test guideline
T_o Ambient temperature
p Pressure inside the test furnace measured under the ceiling of the test furnace

Layout of measuring points in the test furnace:





Measured values inside the test furnace /graph





PHOTOS TAKEN BEFORE THE TEST





PHOTOS TAKEN BEFORE THE TEST



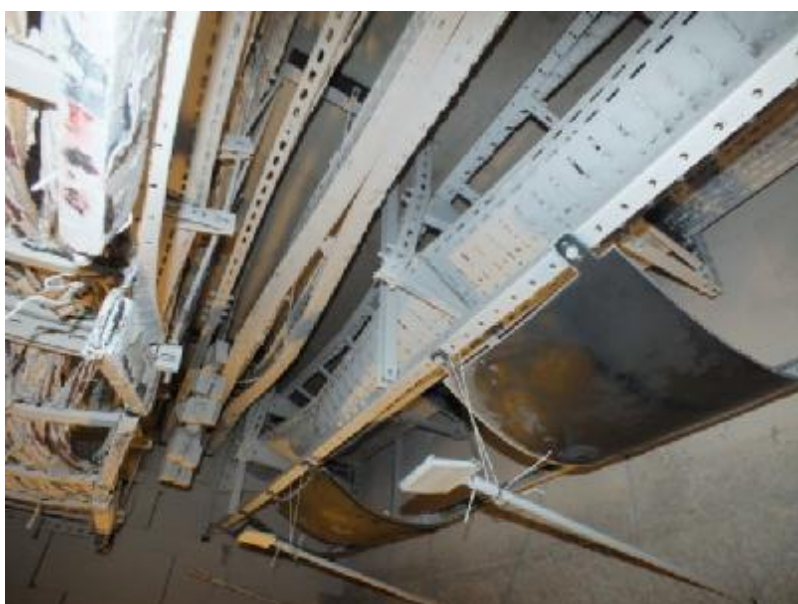


PHOTOS TAKEN AFTER THE TEST





PHOTOS TAKEN AFTER THE TEST





CABLES USED BY TEST

ISO
9001:2008

NHXH FE180 PH90/E90 0.6/1 kV, NHXH-J FE180 PH90/E90 0.6/1 kV

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

NHXH FE180 PH90/E90 0.6/1 kV and NHXH-J FE180 PH90/E90 0.6/1 kV fire resistant power cables, insulated and sheathed with halogen free compounds, are intended for power supply to fire protection equipment which is to operate in fire conditions (e.g. water pumps in fire extinguishing systems, smoke removing fans).

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are certified by Scientific and Research Development Centre for Fire Protection (Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej) at Józefów.

Cables for application in fire protected rooms with permanent installed water extinguishing system.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

conductor	–	bare copper, solid or stranded, according to PN-EN 60228, EN 60228, RE - single wire round conductor; RM - multiwire round conductor
insulation	–	mica tape and halogen free cross-linked compound insulation - colours in accordance with PN-HD 308,
filler	–	filler made of halogen free compound,
inner sheath	–	inner sheath made of halogen free compound,
sheath	–	orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 –HM4, (oxygen index bigger than 35%).

CABLES USED BY TEST

ISO
9001:2008

NHXH FE180 PH90/E90 0.6/1 kV, NHXH-J FE180 PH90/E90 0.6/1 kV

CHARACTERISTICS

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	10 ¹¹ Ω·cm	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius:	single core cables -15 x cable diameter multi core cables -12 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity*	
conductivity, approximate	0.4 μS/mm	E90	DIN 4102-12
Smoke density per PN-EN 61034-2, IEC 61034-2		PH90	PN-EN 50200 Annex E or EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24 PN-EN 50200 Annex E and PN-EN 50362
		Reference standards	AT-0603-0064/2010/2012, WT-TK-44 DIN VDE 0266, PN-HD 604 S1

*Circuit integrity is dependent on installation method.

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Liczba żył x przekrój żył	Średnica zewnętrzna (około)	Indeks miedziowy	Masa kabla (około)	Ciepło spalania
mm ²	mm	kg/km	kg/km	kWh/m
1 x 6 RE	7,3	58,0	108	0,23
1 x 10 RE	8,1	96,0	152	0,26
1 x 16 RE	9,0	154,0	215	0,30
1 x 25 RM	11,0	240,0	325	0,41
1 x 35 RM	12,0	336,0	425	0,46
1 x 50 RM	13,4	480,0	560	0,55
1 x 70 RM	15,4	672,0	780	0,69
1 x 95 RM	17,1	912,0	1090	0,78
1 x 120 RM	18,8	1152,0	1290	0,90
1 x 150 RM	20,9	1440,0	1620	1,12
1 x 185 RM	22,8	1776,0	2000	1,31
1 x 240 RM	25,7	2304,0	2600	1,59
1 x 300 RM	27,9	2880,0	3200	1,80
1 x 400 RM	31,2	3840,0	4300	2,20
2 x 1,5 RE	10,1	28,8	157	0,58
2 x 2,5 RE	10,9	48,0	193	0,66
2 x 4 RE	11,8	77,0	245	0,76
2 x 6 RE	12,8	115,0	305	0,88
2 x 10 RE	14,4	192,0	425	1,08
2 x 16 RE	16,4	307,0	595	1,37
2 x 25 RM	20,5	480,0	920	2,12
3 x 1,5 RE	10,7	43,2	178	0,60
3 x 2,5 RE	11,5	72,0	225	0,68
3 x 4 RE	12,5	115,0	290	0,78
3 x 6 RE	13,5	173,0	370	0,90
3 x 10 RE	15,5	288,0	530	1,13
3 x 16 RM	18,2	461,0	770	1,47
3 x 25 RM	21,8	720,0	1150	2,10
3 x 35 RM	24,1	1008,0	1500	2,48
3 x 50 RM	27,2	1440,0	1990	3,12
3 x 70 RM	31,4	2016,0	2760	4,05
3 x 95 RM	35,1	2736,0	3800	4,89
3 x 120 RM	38,8	3456,0	4550	5,82
4 x 1,0 RE	11,0	38,4	182	0,63
4 x 1,5 RE	11,6	58,0	215	0,69

Liczba żył x przekrój żył	Średnica zewnętrzna (około)	Indeks miedziowy	Masa kabla (około)	Ciepło spalania
mm ²	mm	kg/km	kg/km	kWh/m
4 x 2,5 RE	12,5	96,0	270	0,78
4 x 4 RE	13,6	154,0	355	0,89
4 x 6 RE	14,8	230,0	455	1,02
4 x 10 RE	16,9	384,0	660	1,28
4 x 16 RM	20,0	614,0	965	1,66
4 x 25 RM	24,1	960,0	1450	2,39
4 x 35 RM	26,8	1344,0	1910	2,88
4 x 50 RM	30,1	1920,0	2520	3,54
4 x 70 RM	34,7	2688,0	3550	4,59
4 x 95 RM	39,1	3648,0	4900	5,62
5 x 1,5 RE	12,6	72,0	255	0,79
5 x 2,5 RE	13,6	120,0	325	0,90
5 x 4 RE	14,9	192,0	425	1,04
5 x 6 RE	16,4	288,0	555	1,22
5 x 10 RE	18,6	480,0	800	1,49
5 x 16 RM	22,1	768,0	1190	1,99
5 x 25 RM	26,7	1200,0	1780	2,87
5 x 35 RM	29,6	1680,0	2330	3,37
5 x 50 RM	33,4	2400,0	3150	4,23
5 x 70 RM	38,5	3360,0	4350	5,48
5 x 95 RM	43,5	4560,0	6000	6,70
7 x 1,5 RE	13,7	101,0	310	0,89
7 x 2,5 RE	14,8	168,0	400	1,01
7 x 4,0 RE	16,4	269,0	535	1,19
12 x 1,5 RE	18,0	173,0	500	1,39
12 x 2,5 RE	19,5	288,0	650	1,57
14 x 1,5 RE	18,9	202,0	555	1,51
19 x 1,5 RE	21,2	274,0	715	1,87
19 x 2,5 RE	23,1	456,0	945	2,11
24 x 1,5 RE	24,7	346,0	905	2,34
24 x 2,5 RE	27,2	576,0	1210	2,71
30 x 1,5 RE	26,4	432,0	1080	2,70
30 x 2,5 RE	28,8	720,0	1440	3,06

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.

TECHNOKABEL SA, 04-343 Warszawa, ul. Nasielska 55, POLAND
Export Department: tel +(48 22) 516 97 67, fax +(48 22) 516 97 87www.technokabel.com.pl
export@technokabel.com.pl

K074A1510



CABLES USED BY TEST

ISO
9001:2008NHXH FE180 PH90/E90 B2_{cas}1d0 0.6/1 kV, NHXH-J FE180 PH90/E90 B2_{cas}1d0 0.6/1 kV

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

NHXH FE180 PH90/E90 B2_{cas}1d0 0.6/1 kV and NHXH-J FE180 PH90/E90 B2_{cas}1d0 0.6/1 kV fire resistant power cables, insulated and sheathed with halogen free compounds, are intended for power supply to fire protection equipment which is to operate in fire conditions (e.g. metro, tunnels, airports, hospitals, hotels, water pumps in fire extinguishing systems, smoke removing fans).

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

conductor	–	bare copper, solid or stranded, according to PN-EN 60228, EN 60228. RE - single wire round conductor; RM - multiwire round conductor
insulation	–	mica tape and halogen free cross-linked compound insulation - colours in accordance with PN-HD 308,
filler	–	filler made of halogen free compound,
inner sheath	–	inner sheath made of halogen free compound,
sheath	–	orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 –HM4, (oxygen index bigger than 35%).

CABLES USED BY TEST

ISO
9001:2008NHXH FE180 PH90/E90 B2_{ca}s1d0 0.6/1 kV, NHXH-J FE180 PH90/E90 B2_{ca}s1d0 0.6/1 kV

CHARACTERISTICS

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	10 ¹¹ Ω·cm	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius:	single core cables -15 x cable diameter multi core cables -12 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity*	
conductivity, approximate	0.4 μS/mm	E90	DIN 4102-12
Smoke density per PN-EN 61034-2, IEC 61034-2		PH90	PN-EN 50200 or EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 50399; PN-EN 60332-3-24, IEC 60332-3-24 PN-EN 50200 and PN-EN 50362
		Fire classification	B2 _{ca} s1d0, acc. PN-EN 13501-6
		Reference standards	WT-TK-44; PN-HD 604 S1
		Circuit integrity is dependent on installation method.	

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Liczba żył x przekrój żył	Średnica zewnętrzna (około)	Indeks miedziowy	Masa kabla (około)	Ciepło spalania
mm ²	mm	kg/km	kg/km	kWh/m
1 x 6 RE	7,3	58,0	108	0,23
1 x 10 RE	8,1	96,0	152	0,26
1 x 16 RE	9,0	154,0	215	0,30
1 x 25 RM	11,0	240,0	325	0,41
1 x 35 RM	12,0	336,0	425	0,46
1 x 50 RM	13,4	480,0	560	0,55
1 x 70 RM	15,4	672,0	780	0,69
1 x 95 RM	17,1	912,0	1090	0,78
1 x 120 RM	18,8	1152,0	1290	0,90
1 x 150 RM	20,9	1440,0	1620	1,12
1 x 185 RM	22,8	1776,0	2000	1,31
1 x 240 RM	25,7	2304,0	2600	1,59
1 x 300 RM	27,9	2880,0	3200	1,80
1 x 400 RM	31,2	3840,0	4300	2,20
2 x 1,5 RE	10,1	28,8	157	0,58
2 x 2,5 RE	10,9	48,0	193	0,66
2 x 4 RE	11,8	77,0	245	0,76
2 x 6 RE	12,8	115,0	305	0,88
2 x 10 RE	14,4	192,0	425	1,08
2 x 16 RE	16,4	307,0	595	1,37
2 x 25 RM	20,5	480,0	920	2,12
3 x 1,5 RE	10,7	43,2	178	0,60
3 x 2,5 RE	11,5	72,0	225	0,68
3 x 4 RE	12,5	115,0	290	0,78
3 x 6 RE	13,5	173,0	370	0,90
3 x 10 RE	15,5	288,0	530	1,13
3 x 16 RM	18,2	461,0	770	1,47
3 x 25 RM	21,8	720,0	1150	2,10
3 x 35 RM	24,1	1008,0	1500	2,48
3 x 50 RM	27,2	1440,0	1990	3,12
3 x 70 RM	31,4	2016,0	2760	4,05
3 x 95 RM	35,1	2736,0	3800	4,89
3 x 120 RM	38,8	3456,0	4550	5,92
4 x 1,0 RE	11,0	38,4	182	0,63
4 x 1,5 RE	11,6	58,0	215	0,69

Liczba żył x przekrój żył	Średnica zewnętrzna (około)	Indeks miedziowy	Masa kabla (około)	Ciepło spalania
mm ²	mm	kg/km	kg/km	kWh/m
4 x 2,5 RE	12,5	96,0	270	0,78
4 x 4 RE	13,6	154,0	355	0,89
4 x 6 RE	14,8	230,0	455	1,02
4 x 10 RE	16,9	384,0	660	1,28
4 x 16 RM	20,0	614,0	965	1,66
4 x 25 RM	24,1	960,0	1450	2,39
4 x 35 RM	26,8	1344,0	1910	2,88
4 x 50 RM	30,1	1920,0	2520	3,54
4 x 70 RM	34,7	2688,0	3550	4,59
4 x 95 RM	39,1	3648,0	4900	5,62
5 x 1,5 RE	12,6	72,0	255	0,79
5 x 2,5 RE	13,6	120,0	325	0,90
5 x 4 RE	14,9	192,0	425	1,04
5 x 6 RE	16,4	288,0	555	1,22
5 x 10 RE	18,6	480,0	800	1,49
5 x 16 RM	22,1	768,0	1190	1,99
5 x 25 RM	26,7	1200,0	1780	2,87
5 x 35 RM	29,6	1680,0	2330	3,37
5 x 50 RM	33,4	2400,0	3150	4,23
5 x 70 RM	38,5	3360,0	4350	5,48
5 x 95 RM	43,5	4560,0	6000	6,70
7 x 1,5 RE	13,7	101,0	310	0,89
7 x 2,5 RE	14,8	168,0	400	1,01
7 x 4,0 RE	16,4	269,0	535	1,19
12 x 1,5 RE	18,0	173,0	500	1,39
12 x 2,5 RE	19,5	288,0	650	1,57
14 x 1,5 RE	18,9	202,0	555	1,51
19 x 1,5 RE	21,2	274,0	715	1,87
19 x 2,5 RE	23,1	456,0	945	2,11
24 x 1,5 RE	24,7	346,0	905	2,34
24 x 2,5 RE	27,2	576,0	1210	2,71
30 x 1,5 RE	26,4	432,0	1080	2,70
30 x 2,5 RE	28,8	720,0	1440	3,06

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.

TECHNOKABEL SA, 04-343 Warszawa, ul. Nasielska 55, POLAND
Export Department: tel +(48 22) 516 97 67, fax +(48 22) 516 97 87www.technokabel.com.pl
export@technokabel.com.pl

K074FA1601



CABLES USED BY TEST

ISO
9001:2008

(N)HXH FE180 PH30/E30 0.6/1 kV; (N)HXH-J FE180 PH30/E30 0.6/1 kV

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

(N)HXH FE180 PH30/E30 0.6/1 kV and (N)HXH-J FE180 PH30/E30 0.6/1 kV fire resistant power cables, insulated and sheathed with halogen free compounds, are intended for power supply to fire protection equipment which is to operate in fire conditions (e.g. water pumps in fire extinguishing systems, smoke removing fans).

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are certified by Scientific and Research Development Centre for Fire Protection (Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej) at Józefów.

The cables are suitable for indoor and outdoor installations.

CONSTRUCTION

conductor	–	bare copper, solid or stranded, according to PN-EN 60228, EN 60228, RE – single wire round conductor; RM – multiwire round conductor
insulation	–	double insulation, cross-linked silicone rubber - colours in accordance with PN-HD 308,
filler	–	filler made of halogen free compound,
inner sheath	–	inner sheath made of halogen free compound,
sheath	–	orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 –HM4, (oxygen index bigger than 35%).



CABLES USED BY TEST

ISO
9001:2008

(N)HXH FE180 PH30/E30 0.6/1 kV; (N)HXH-J FE180 PH30/E30 0.6/1 kV

CHARACTERISTICS

The cables maintain their functions for 30 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	10 ¹¹ Ω·cm	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius:	single core cables -15 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2			multi core cables -12 x cable diameter
pH, approximate	6.8	Cable combustibility	flame retardant
conductivity, approximate	0.4 μS/mm	Circuit integrity *	
Smoke density per PN-EN 61034-2, IEC 61034-2		E30	DIN 4102-12
light transmittance, minimum	80%	PH30	PN-EN 50200 or PN-EN 50362
		Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24
			PN-EN 50200 and PN-EN 50362
		Reference standards	AT-0603-0064/2010/2012, WT-TK-44
			DIN VDE 0266, PN-HD 604 S1

* Circuit integrity is dependent on installation method.

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)	Fire load
mm ²	mm	kg/km	kg/km	kWh/m
1 x 16 RE	8,8	154,0	210	0,32
1 x 25 RM	10,8	240,0	315	0,44
1 x 35 RM	11,8	336,0	410	0,49
1 x 50 RM	13,4	480,0	550	0,61
1 x 70 RM	15,2	672,0	760	0,73
1 x 95 RM	17,3	912,0	1070	0,91
1 x 120 RM	18,8	1152,0	1270	1,00
2 x 1,5 RE	9,7	28,8	145	0,55
2 x 2,5 RE	10,5	48,0	179	0,64
2 x 4 RE	11,4	77,0	230	0,74
2 x 6 RE	12,4	115,0	290	0,86
2 x 10 RE	14,0	192,0	405	1,07
2 x 16 RE	16,0	307,0	575	1,37
2 x 25 RM	19,9	480,0	880	2,07
3 x 1,5 RE	10,2	43,0	167	0,59
3 x 2,5 RE	11,0	72,0	210	0,67
3 x 4 RE	12,0	115,0	275	0,78
3 x 6 RE	13,1	173,0	350	0,90
3 x 10 RE	14,8	288,0	500	1,11
3 x 16 RM	17,6	461,0	770	1,48

Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)	Fire load
mm ²	mm	kg/km	kg/km	kWh/m
3 x 25 RM	21,4	720,0	1110	2,14
4 x 1,5 RE	11,1	58,0	199	0,68
4 x 2,5 RE	12,0	96,0	255	0,77
4 x 4 RE	13,1	154,0	335	0,90
4 x 6 RE	14,3	230,0	430	1,04
4 x 10 RE	16,5	384,0	630	1,31
4 x 16 RM	19,4	614,0	970	1,70
4 x 25 RM	23,6	960,0	1400	2,45
4 x 35 RM	26,3	1344,0	1840	2,95
4 x 50 RM	30,1	1920,0	2480	3,79
5 x 1,5 RE	12,1	72,0	240	0,79
5 x 2,5 RE	13,1	120,0	305	0,90
5 x 4 RE	14,3	192,0	400	1,05
5 x 6 RE	15,9	288,0	530	1,24
5 x 10 RE	18,0	480,0	765	1,53
5 x 16 RM	21,5	768,0	1200	2,04
5 x 25 RM	26,2	1200,0	1720	2,94
5 x 35 RM	29,0	1680,0	2260	3,47
5 x 50 RM	33,4	2400,0	3100	4,54
7 x 1,5 RE	13,1	101,0	290	0,90

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.



CABLES USED BY TEST

ISO
9001:2008

(N)HXH FE180 PH90/E90 0.6/1 kV; (N)HXH-J FE180 PH90/E90 0.6/1 kV

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

(N)HXH FE180 PH90/E90 0.6/1 kV and (N)HXH-J FE180 PH90/E90 0.6/1 kV fire resistant power cables, insulated and sheathed with halogen free compounds, are intended for power supply to fire protection equipment which is to operate in fire conditions (e.g. water pumps in fire extinguishing systems, smoke removing fans).

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are certified by Scientific and Research Development Centre for Fire Protection (Centrum Naukowo-Badawcze Ochrony Przeciwpowarowej) at Józefów.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

conductor	–	bare copper, solid or stranded, according to PN-EN 60228, EN 60228, RE - single wire round conductor; RM - multiwire round conductor
insulation	–	double insulation, cross-linked silicone rubber - colours in accordance with PN-HD 308,
filler	–	filler made of halogen free compound,
inner sheath	–	inner sheath made of halogen free compound,
sheath	–	orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 –HM4, (oxygen index bigger than 35%).

CABLES USED BY TEST

ISO
9001:2008

(N)HXH FE180 PH90/E90 0.6/1 kV; (N)HXH-J FE180 PH90/E90 0.6/1 kV

CHARACTERISTICS

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	10 ¹¹ Ω·cm	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius:	single core cables -15 x cable diameter multi core cables -12 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity *	
conductivity, approximate	0.4 μS/mm	E90	DIN 4102-12
Smoke density per PN-EN 61034-2, IEC 61034-2		PH90	PN-EN 50200 or PN-EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24 PN-EN 50200 and PN-EN 50362
		Reference standards	AT-0603-0064/2010/2012, WT-TK-44 DIN VDE 0266, PN-HD 604 S1

* Circuit integrity is dependent on installation method.

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)	Fire load
mm ²	mm	kg/km	kg/km	kWh/m
1 x 16 RE	8,8	154	240	0,39
1 x 25 RM	10,8	240	360	0,42
1 x 35 RM	11,8	336	470	0,43
1 x 50 RM	13,4	480	630	0,59
1 x 70 RM	15,2	672	885	0,65
1 x 95 RM	17,3	912	1260	0,78
1 x 120 RM	18,8	1152	1500	0,88
2 x 1,5 RE	9,7	28,8	142	0,74
2 x 2,5 RE	10,5	48	175	0,82
2 x 4 RE	11,4	77	225	0,93
2 x 6 RE	12,4	115	280	1,03
2 x 10 RE	14,0	192	395	1,22
2 x 16 RE	16,0	307	555	1,37
2 x 25 RM	19,9	480	850	1,86
3 x 1,5 RE	10,2	43,2	168	0,79
3 x 2,5 RE	11,0	72	210	0,85
3 x 4 RE	12,0	115	275	0,99
3 x 6 RE	13,1	173	350	1,07
3 x 10 RE	14,8	288	500	1,26
3 x 16 RM	17,6	461	770	1,52
3 x 25 RM	21,4	720	1110	1,88
4 x 1,5 RE	11,1	58	200	0,87

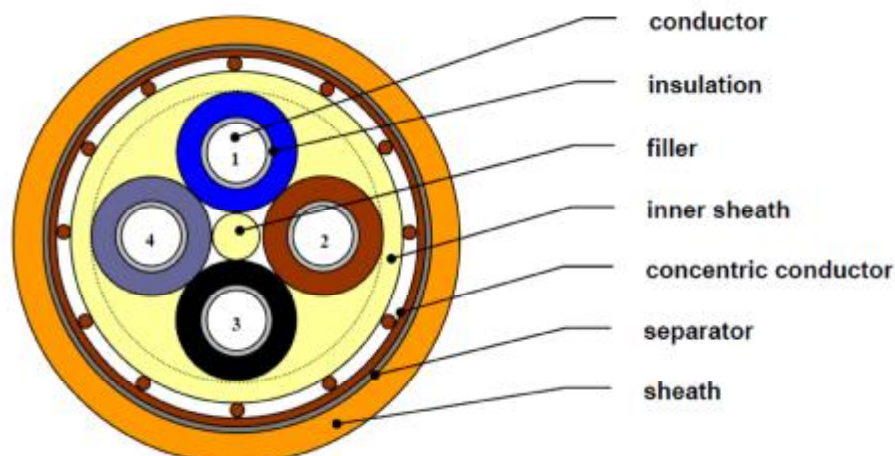
Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)	Fire load
mm ²	mm	kg/km	kg/km	kWh/m
4 x 2,5 RE	12,0	96	255	0,96
4 x 4 RE	13,1	154	335	1,06
4 x 6 RE	14,3	230	435	1,18
4 x 10 RE	16,5	384	630	1,40
4 x 16 RM	19,4	614	970	1,73
4 x 25 RM	23,6	960	1400	2,56
4 x 35 RM	26,3	1344	1840	3,03
4 x 50 RM	30,1	1920	2470	3,35
5 x 1,5 RE	12,1	72	240	0,98
5 x 2,5 RE	13,1	120	305	1,06
5 x 4 RE	14,3	192	400	1,16
5 x 6 RE	15,9	288	530	1,29
5 x 10 RE	18,0	480	765	1,57
5 x 16 RM	21,5	768	1190	1,88
5 x 25 RM	26,2	1200	1720	3,00
5 x 35 RM	29,0	1680	2250	3,24
5 x 50 RM	33,4	2400	3050	3,68
7 x 1,5 RE	13,1	101	280	1,07

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A. reserves the right to change specifications without prior notice.



CABLES USED BY TEST

ISO
9001:2008**(N)HXCH FE180 PH90/E90 0.6/1 kV****FIRE RESISTANT HALOGEN FREE POWER CABLES****APPLICATIONS**

(N)HXCH FE180 PH90/E90 0.6/1 kV fire resistant power cables, insulated and sheathed with halogen free compounds, are intended for power supply to fire protection equipment which is to operate in fire conditions (e.g. water pumps in fire extinguishing systems, smoke removing fans).

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are certified by Scientific and Research Development Centre for Fire Protection (Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej-PIB) at Józefów.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

conductor	–	bare copper, solid or stranded, according to EN 60228,
insulation	–	double insulation ,cross-linked silicone rubber - colours in accordance with PN-HD 308,
filler	–	filler made of halogen free compound,
inner sheath	–	inner sheath made of halogen free compound,
concentric conductor	–	concentric conductor made of bare copper wires and a copper tape binder wrapped over the inner sheath,
separator	–	polyester tape,
sheath	–	orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 – HM4, (oxygen index bigger than 35%).

TECHNOKABEL S.A., ul. Nasielska 55, 04-343 Warszawa, POLAND
Export Department: tel +(48) 22 516 97 67, fax +(48) 22 516 97 87

www.technokabel.com.pl
export@technokabel.com.pl

K274A1510

CABLES USED BY TEST

ISO
9001:2008

(N)HXCH FE180 PH90/E90 0.6/1 kV

CHARACTERISTICS

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards.

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	1 x 10 ¹¹ Ω·cm	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius	15 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity *	
conductivity, approximate	0.4 μS/mm	E90	DIN 4102-12
Smoke density per PN-EN 50268-2-3, IEC 61034-2		PH90	PN-EN 50200 or PN-EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24 PN-EN 50200 and PN-EN 50362
		Reference standards	AT-0603-0064/2010/2012, WT-TK-44 DIN VDE 0266; PN-HD 604 S1

* Circuit integrity is dependent on installation method.

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Article No.	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
	2x1.5/1.5 RE	13.5	43.2	245
	2x2.5/2.5 RE	14.5	72	293
	2x4/4 RE	15.7	115	366
	2x6/6 RE	17.0	173	455
	3x1.5/1.5 RE	14.1	63	285
	3x2.5/2.5 RE	15.0	96	335
	3x4/4 RE	16.0	154	420
	3x6/6 RE	17.7	230	520
	3x10/10 RE	19.7	384	711
	3x16/16 RM	22.5	614	1040
	3x25/16 RM	26.0	874	1430
	4x1.5/1.5 RE	14.9	72	325
	4x2.5/2.5 RE	16.0	120	390
	4x4/4 RE	17.1	192	490
	4x6/6 RE	18.7	288	615

RE - single wire round conductor;
RM - multiwire round conductor

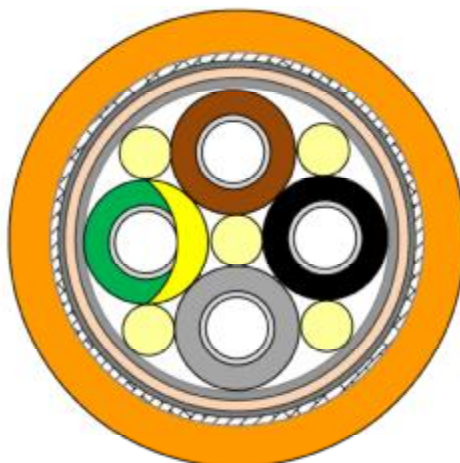
Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A. reserves the right to change specifications without prior notice.

Article No.	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
	4x10/10 RE	21.1	480	870
	4x16/16 RM	24.3	768	1250
	4x25/16 RM	28.4	1114	1740
	4x35/16 RM	31.2	1498	2200
	4x50/25 RM	35.5	2160	3000
	4x95/50 RM	45.0	4128	5600
	7x2.5/2.5 RE	17.2	192	480
	10x2.5/4 RE	21.1	278	675
	12x2.5/4 RE	21.7	326	845
	14x2.5/4 RE	22.7	374	830
	19x1.5/4 RE	22.9	312	810
	24x1.5/6 RE	26.7	403	1030



CABLES USED BY TEST

ISO
9001:2008
(N)HXCH-J-SERVO FE180 PH90/E90 0.6/1 kV
FIRE RESISTANT HALOGEN FREE MOTOR SUPPLY CABLES
**APPLICATIONS**

(N)HXCH-J-SERVO FE180 PH90/E90 fire resistant halogen free cables are intended for connecting converters or inverters with motors in industrial installations, production plants, air-conditioners and other equipment operating in dry and wet locations.

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

Cables are protected by a specially designed and highly effective collective shield against emission of electromagnetic interferences to environment and against influence of external interferences.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

- flexible, multiwire conductors, stranded of bare annealed copper wires (tin-plated on request), meeting requirements of class 5 per PN-EN 60228,
- double insulation ,cross-linked silicone rubber - colours in accordance with PN-HD 308,
- insulated conductors and fillers laid-up in a cable core,
- cable core wrapped in a polyester tape,
- collective shield, incorporating an aluminium-polyester tape under a tinned copper wire braid shield of coverage bigger than 80%,
- orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 – HM4, (oxygen index bigger than 35%).



CABLES USED BY TEST

ISO
9001:2008**(N)HXCH-J-SERVO FE180 PH90/E90 0.6/1 kV****CHARACTERISTICS**

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards.

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	$1 \times 10^{11} \Omega \cdot \text{cm}$	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius	15 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity *	
conductivity, approximate	0.4 $\mu\text{S}/\text{mm}$	E90	DIN 4102-12
Smoke density per PN-EN 50268-2-3, IEC 61034-2		PH90	PN-EN 50200 or PN-EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24
			PN-EN 50200 and PN-EN 50362
		Reference standards	WT-TK-44; PN-HD 604 S1
		Circuit integrity is dependent on installation method.	

CE = the cable meets requirements of the low voltage directive 2006/95/WE

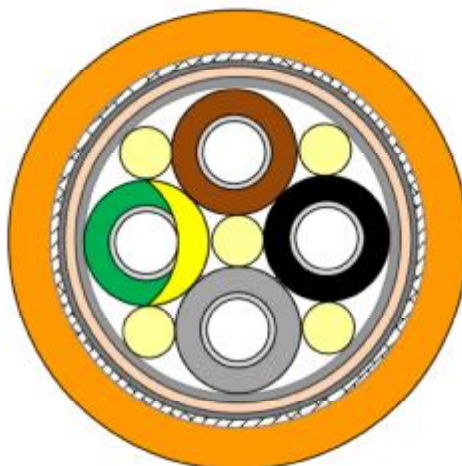
Article No.	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	number x mm ²	mm	kg/km	kg/km
	4 x 1.5	11.6	86.1	204
	4 x 50	36.8	2173	2772

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A. reserves the right to change specifications without prior notice.



CABLES USED BY TEST

ISO
9001:2008
(N)HXCH-J-SERVO-W FE180 PH90/E90 0.6/1 kV
FIRE RESISTANT HALOGEN FREE MOTOR SUPPLY CABLES
**APPLICATIONS**

(N)HXCH-J-SERVO-W FE180 PH90/E90 fire resistant halogen free cables are intended for connecting converters or inverters with motors in industrial installations, production plants, air-conditioners and other equipment operating in dry and wet locations.

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

Cables are protected by a specially designed and highly effective collective shield against emission of electromagnetic interferences to environment and against influence of external interferences.

Cables for application in fire protected rooms with permanent installed water extinguishing system.

The cables are suitable for indoor and outdoor installations. Laying cables outdoor is only permitted if additional UV protection is used.

CONSTRUCTION

- flexible, multiwire conductors, stranded of bare annealed copper wires (tin-plated on request), meeting requirements of class 5 per PN-EN 60228,
- double insulation ,cross-linked silicone rubber - colours in accordance with PN-HD 308,
- insulated conductors and fillers laid-up in a cable core,
- cable core wrapped in a polyester tape,
- cable core wrapped in mica tape,
- collective shield, incorporating an aluminium-polyester tape under a tinned copper wire braid shield of coverage bigger than 80%,
- orange, cable sheath made of halogen free compound according to HD 604 S1 and VDE 0276-604 – HM4, (oxygen index bigger than 35%).



CABLES USED BY TEST

ISO
9001:2008**(N)HXCH-J-SERVO-W FE180 PH90/E90 0.6/1 kV****CHARACTERISTICS**

The cables maintain their functions for 90 minutes, meeting requirements of DIN 4102-12 and PN-EN 50200 standards.

Operating voltage	0.6/1 kV	Operating temperature range	
Voltage test	4.0 kV rms	during operation	from -30 to +90°C
Insulation resistivity at 90°C, minimum	$1 \times 10^{11} \Omega \cdot \text{cm}$	during installation	from -5 to +50°C
Inductance, approximate	0.7 mH/km	Minimum bending radius	15 x cable diameter
Corrosivity of emitted gases per PN-EN 60754-2, IEC 60754-2		Cable combustibility	flame retardant
pH, approximate	6.8	Circuit integrity *	
conductivity, approximate	0.4 $\mu\text{S}/\text{mm}$	E90	DIN 4102-12
Smoke density per PN-EN 50268-2-3, IEC 61034-2		PH90	PN-EN 50200 Annex E or PN-EN 50362
light transmittance, minimum	80%	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Combustibility tests	PN-EN 60332-3-24, IEC 60332-3-24
			PN-EN 50200 Annex E and PN-EN 50362
		Reference standards	WT-TK-44; PN-HD 604 S1
		Circuit integrity is dependent on installation method.	

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Article No.	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	number x mm ²	mm	kg/km	kg/km
	4 x 1.5	12.2	87	222
	4 x 50	37.4	2175	2918

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.



CABLES USED BY TEST

ISO
9001:2008

**HDGs(żo)-W FE180 PH90/E30-E90, HDGsekw(żo)-W FE180 PH90/E30-E90
HLGs(żo)-W FE180 PH90/E30-E90, HLGsekw(żo)-W FE180 PH90/E30-E90**

page 1 of 2

FIRE RESISTANT HALOGEN FREE POWER CABLES**APPLICATIONS**

HDGs(żo)-W FE180 PH90/E30-E90 300/500 V, HLGs(żo)-W FE180 PH90/E30-E90 300/500 V fire resistant cables and **HDGsekw(żo)-W FE180 PH90/E30-E90 300/500 V, HLGsekw(żo)-W FE180 PH90/E30-E90 300/500 V** screened fire resistant cables, are intended for power supply to fire protection equipment which is to operate in fire conditions. The cables are suitable for installation in alarm, signalling, transmission, sound warning and similar systems.

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

Cables for application in fire protected rooms with permanent installed water extinguishing system.

An overall electrostatic shield (**ekw**) in screened cables protects cable circuits against interference by external electric fields.

CONSTRUCTION

- bare copper, single wire (**D**) or stranded multi wire (**L**), round conductors meeting requirements of class 1 or 5 per PN-EN 60228,
- special silicone rubber insulation,
- identification colour code according to PN-HD 308 S2,
- insulated conductors laid-up in layers,
- cable core wrapped in polyester tape,
- cable core wrapped in mica tape,
- overall electrostatic shield incorporating aluminium-polyester tape and stranded annealed tinned copper drain wire - in **HDGsekw** and **HLGsekw**,
- red cable sheath of halogen free compound.

CABLES USED BY TEST

ISO
9001:2008

HDGs(żo)-W FE180 PH90/E30-E90, HDGsekw(żo)-W FE180 PH90/E30-E90 HLGs(żo)-W FE180 PH90/E30-E90, HLGsekw(żo)-W FE180 PH90/E30-E90

page 2 of 2

CHARACTERISTICS

Conductor diameter	mm	1,0	1,1	1,4	1,8	2,3	2,8
Conductor cross-section	mm ²	0,75	1	1,5	2,5	4	6
DC conductor resistance at 20°C, maximum	Ω/km	26,0	19,5	13,3	7,98	4,95	3,30
Capacitance between conductors at 1 kHz, – maximum	nF/km	120	120	120	120	120	120
– average		70	70	80	80	100	100

Operating voltage U_o/U	300/500 V	Corrosivity of emitted gases	very low, halogen free
Voltage test	2 kVrms	pH, aprox.	PN-EN 50267-2-3, IEC 60754-2
Insulation resistivity at 20°C, minimum	500 MΩ·km	conductivity, aprox.	6,8
Inductance, approximate	0,7 mH/km	Smoke density per	0,4 μS/cm
Conductor temperature limit in work conditions	+ 85°C	light transmittance, minimum	low smoke density
in short-circuit (max 5 s)	+ 250°C	Cable combustibility	PN-EN 50268-2-3, IEC 61034-2
Operating temperature range during operation	from - 25 to + 85°C	Combustibility tests	94 %
during installation	from - 10 to + 50°C	Circuit integrity*	flame retardant
Minimum bending radius		E30-E90	PN-EN 60332-1-2, IEC 60332-1,
HDGs(ekw) cables	10 x cable diameter	PH90	PN-EN 60332-3-22, IEC 60332-3-22 (cat.A)
HLGs(ekw)cables	6 x cable diameter	Insulation integrity FE180	DIN 4102-12
		Reference standards	PN-EN 50200 Annex E or EN 50362
		Circuit integrity is dependent on installation method.	IEC 60331-21; IEC 60331-11
			WT-TK-46

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Cable type	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
HDGs-W	2 x 0,75	6,8	14,4	55
HDGs-W	2 x 1	7,0	19,2	60
HDGs-W	2 x 1,5	7,9	28,8	80
HDGs-W	2 x 2,5	9,3	48	110
HDGs-W	2 x 4	10,2	77	147
HDGs-W	2 x 6	12,2	115	203
HDGs-W	3 x 0,75	6,9	21,6	57
HDGs-W	3 x 1	7,2	28,8	71
HDGs-W	3 x 1,5	8,6	43,2	100
HDGs-W	3 x 2,5	9,8	72	142
HDGs-W	3 x 4	11,0	115	198
HDGs-W	3 x 6	12,9	173	282
HDGs-W	4 x 0,75	7,7	28,8	72
HDGs-W	4 x 1	8,0	38,4	93
HDGs-W	4 x 1,5	9,3	58	127
HDGs-W	4 x 2,5	10,8	96	187
HDGs-W	4 x 4	12,0	154	242
HDGs-W	4 x 6	14,0	230	348
HDGs-W	5 x 0,75	8,5	36	91
HDGs-W	5 x 1	8,8	48	126
HDGs-W	5 x 1,5	10,1	72	158
HDGs-W	5 x 2,5	11,8	120	227

Cable type	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
HDGs-W	5 x 4	13,1	192	312
HDGs-W	5 x 6	15,3	288	428
HDGs-W	7 x 1,5	11,1	101	197
HDGs-W	7 x 2,5	12,8	168	292
HDGs-W	2 x 1	7,2	19,2	60
HDGs-W	2 x 1,5	8,4	28,8	80
HDGs-W	2 x 2,5	9,8	48	115
HDGs-W	3 x 1	7,6	28,8	77
HDGs-W	3 x 1,5	8,9	43,2	104
HDGs-W	3 x 2,5	10,3	72	156
HDGs-W	4 x 1	8,4	38,4	99
HDGs-W	4 x 1,5	9,8	58	135
HDGsekw-W	2 x 1	7,0	26,4	64
HDGsekw-W	2 x 1,5	8,1	36,0	82
HDGsekw-W	2 x 2,5	9,5	55,0	119
HDGsekw-W	3 x 1,5	8,5	50,0	106
HDGsekw-W	3 x 2,5	10,0	79,0	156
HLGsekw-W	2 x 1	7,4	19,2	78
HLGsekw-W	2 x 1,5	8,4	36	86
HLGsekw-W	2 x 4	10,9	86	155

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.



CABLES USED BY TEST

ISO
9001:2008**HTKSH FE180 PH90/E30-E90, HTKSHekw FE180 PH90/E30-E90**

page 1 of 2

FIRE RESISTANT HALOGEN FREE CABLES**APPLICATIONS**

HTKSH FE180 PH90/E30-E90 and HTKSHekw FE180 PH90/E30-E90 fire resistant and halogen free cables are intended for installation in alarm, signalling, transmission, sound warning and similar systems, also for data processing systems and for analogue or digital data transmission in industrial electronics and control applications in objects of sharp fire protection requirements, particularly in fire alarm and fire automatic control systems.

Halogen free cables are applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – data are transmitted and power is supplied to equipment which must operate in fire conditions and during fire fighting (e.g. emergency lighting). The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

Cable circuits are protected by an overall electrostatic shield against external electric field interferences.

The cables are suitable for indoor installations.

CONSTRUCTION

conductor	–	bare copper, solid,
insulation	–	mica tape and halogen free compound insulation - colours in accordance with PN-92/T-90321 standard,
pair	–	insulated conductors twisted into pairs,
cable core	–	pairs laid-up into a cable core,
separator	–	polyester tape,
shielding	–	overall electrostatic shield incorporating a plastic laminated metal foil and a tinned copper drain wire – only in HTKSHekw FE180 PH90/E30-E90 ,
sheath	–	red, cable sheath made of halogen free compound according to EN 50290-2-27 and VDE 0250-214 – HM2.

CABLES USED BY TEST

ISO
9001:2008

HTKSH FE180 PH90/E30-E90, HTKSHekw FE180 PH90/E30-E90

page 2 of 2

CHARACTERISTICS

Cable type			HTKSH FE180 PH90/E30-E90						HTKSHekw FE180 PH90/E30-E90					
Conductor diameter		mm	0.8	1.0	1.4	1.8	2.3	2.8	0.8	1.0	1.4	1.8	2.3	2.8
Conductor cross-section		mm ²	0.5	0.75	1.5	2.5	4	6	0.5	0.75	1.5	2.5	4	6
DC loop resistance at 20°C, maximum		Ω/km	75	48	24.5	14.9	9.3	6.3	75	48	24.5	14.9	9.3	6.3
Capacitance between conductors at 1 kHz	maximum	nF/km	120	120	120	120	120	120	200	200	200	200	200	200
	average		60	70	70	70	100	100	90	130	130	130	150	150
Operating voltage		240 V	Operating temperature range						from - 30 to + 80°C					
Voltage test		1.5 kV rms	during operation						from - 5 to + 50°C					
Insulation resistance, minimum		500 MΩ·km	during installation						from - 5 to + 50°C					
Inductance, approximate		0.7 mH/km	Minimum bending radius						10 x cable diameter					
Corrosivity of emitted gases per PN-EN 50267-2-3, IEC 60754-2 pH, approximate		6.8	Cable combustibility						flame retardant					
conductivity, approximate		0.4 μS/mm	Fire resistance						90 minutes at 842°C					
Smoke density per PN-EN 50268-2-3, IEC 61034-2			Combustibility tests						PN-EN 60332-1-2, IEC 60332-1, PN-EN 60332-3-22, IEC 60332-3-22(cat.A)					
			Circuit integrity *											
			E30-E90						DIN 4102-12					
			PH90						PN-EN 50200 or EN 50362					
			Insulation integrity FE180						IEC 60331-21; IEC 60331-11					
			Reference standards						WT-TK-43, PN - 92/T-90321					
			Circuit integrity is dependent on installation method.											

CE = the cable meets requirements of the low voltage directive 2006/95/WE

Cable type	Number of pairs (x 2) x conductor diameter	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm	mm	kg/km	kg/km
HTKSH	1 x 2 x 0.8	5.1	9.6	30
HTKSH	2 x 2 x 0.8	7.8	19.2	58
HTKSH	40 x 2 x 0.8	26	384	740
HTKSH	50 x 2 x 0.8	26.6	480	1010
HTKSH	1 x 2 x 1.0	5.5	15.4	37
HTKSH	2 x 2 x 1.0	8.4	30.7	72
HTKSH	1 x 2 x 1.4	6.2	28.8	29
HTKSH	2 x 2 x 1.4	9.7	58	105
HTKSH	3 x 2 x 1.4	10.3	86	142
HTKSH	1 x 2 x 1.8	8.0	48	87
HTKSH	1 x 2 x 2.3	8.7	80	123
HTKSH	1 x 2 x 2.8	9.8	118	169

Cable type	Number of pairs (x 2) x conductor diameter	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm	mm	kg/km	kg/km
HTKSHekw	1 x 2 x 0.8	5.2	10.8	33
HTKSHekw	2 x 2 x 0.8	7.8	20.4	60
HTKSHekw	30 x 2 x 0.8	18	290	480
HTKSHekw	1 x 2 x 1.0	5.6	16.6	40
HTKSHekw	2 x 2 x 1.0	8.5	31.9	75
HTKSHekw	1 x 2 x 1.4	6.3	30	57
HTKSHekw	2 x 2 x 1.4	9.8	59	108
HTKSHekw	6 x 2 x 1.4	14.0	174	275
HTKSHekw	1 x 2 x 1.8	8.1	49.2	90
HTKSHekw	1 x 2 x 2.3	9.0	78	122
HTKSHekw	2 x 2 x 2.3	14.2	155	240
HTKSHekw	1 x 2 x 2.8	10.0	116	163

Cable type	Fire Load (appr.) kWh/m
HTKSH 1 x 2 x 0.8	0.09
HTKSH 2 x 2 x 0.8	0.17
HTKSH 1 x 2 x 1.0	0.10
HTKSH 2 x 2 x 1.0	0.19
HTKSH 1 x 2 x 1.4	0.12
HTKSH 2 x 2 x 1.4	0.22
HTKSH 3 x 2 x 1.4	0.26
HTKSH 1 x 2 x 1.8	0.19

Cable type	Fire Load (appr.) kWh/m
HTKSH 1 x 2 x 2.3	0.22
HTKSH 1 x 2 x 2.8	0.26
HTKSHekw 1 x 2 x 0.8	0.09
HTKSHekw 2 x 2 x 0.8	0.18
HTKSHekw 1 x 2 x 1.0	0.10
HTKSHekw 1 x 2 x 1.4	0.12
HTKSHekw 1 x 2 x 1.8	0.20

Other diameters and conductor counts available on request.
 TECHNOKABEL S.A reserves the right to change specifications without prior notice.

TECHNOKABEL SA, 04-343 Warszawa, ul. Nasielska 55, POLAND
 Export Department: tel +(48 22) 516 97 67, fax +(48 22) 516 97 87

www.technokabel.com.pl
export@technokabel.com.pl

K215A03W2016



CABLES USED BY TEST

ISO
9001:2008

HDGs(żo) FE180 PH90/E30-E90, HDGsekw(żo) FE180 PH90/E30-E90
HLGs(żo) FE180 PH90/E30-E90, HLGsekw(żo) FE180 PH90/E30-E90

page 1 of 3

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

HDGs(żo) FE180 PH90/E30-E90 300/500 V, HLGs(żo) FE180 PH90/E30-E90 300/500 V fire resistant cables and **HDGsekw(żo) FE180 PH90/E30-E90 300/500 V, HLGsekw(żo) FE180 PH90/E30-E90 300/500 V** screened fire resistant cables, are intended for power supply to fire protection equipment which is to operate in fire conditions. The cables are suitable for installation in alarm, signalling, transmission, sound warning and similar systems.

Halogen free cables shall be applied in locations where, in case of fire, higher safety for human beings and expensive electronic equipment is required.

Functions of the cables are maintained – power is supplied to equipment which must operate in fire conditions and during fire fighting. The cables are flame retardant and their smoke emission is low, emitted fumes are non toxic and non corrosive.

The cables are certified by Scientific and Research Development Centre for Fire Protection (Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej) at Józefów.

An overall electrostatic shield (**ekw**) in screened cables protects cable circuits against interference by external electric fields.

CONSTRUCTION

- bare copper, single wire (**D**) or stranded multi wire (**L**), round conductors meeting requirements of class 1 or 5 per PN-EN 60228,
- special silicone rubber insulation,
- identification colour code according to PN-HD 308 S2,
- insulated conductors laid-up in layers,
- cable core wrapped in polyester tape - in **HDGsekw** and **HLGsekw**,
- overall electrostatic shield incorporating aluminium-polyester tape and stranded annealed tinned copper drain wire - in **HDGsekw** and **HLGsekw**,
- red cable sheath of halogen free compound.



CABLES USED BY TEST

ISO
9001:2008

HDGs(żo) FE180 PH90/E30-E90, HDGsekw(żo) FE180 PH90/E30-E90
HLGs(żo) FE180 PH90/E30-E90, HLGsekw(żo) FE180 PH90/E30-E90

page 2 of 3

CHARACTERISTICS

Conductor diameter	mm	1,0	1,1	1,4	1,8	2,3	2,8
Conductor cross-section	mm ²	0,75	1	1,5	2,5	4	6
DC conductor resistance at 20°C, maximum	Ω/km	26,0	19,5	13,3	7,98	4,95	3,30
Capacitance between conductors at 1 kHz, – maximum – average	nF/km	120 70	120 70	120 80	120 80	120 100	120 100

Operating voltage U_o/U	300/500 V	Corrosivity of emitted gases	very low, halogen free
Voltage test	2 kVrms	pH, aprox.	PN-EN 50267-2-3, IEC 60754-2
Insulation resistivity at 20°C, minimum	500 MΩ·km	conductivity, aprox.	6,8
Inductance, approximate	0,7 mH/km	Smoke density per	0,4 μS/cm
Conductor temperature limit in work conditions	+ 85°C	light transmittance, minimum	low smoke density PN-EN 50268-2-3, IEC 61034-2
in short-circuit (max 5 s)	+ 250°C	Cable combustibility	94 %
Operating temperature range during operation	from - 25 to + 85°C	Combustibility tests	flame retardant
during installation	from -10 to + 50°C	Circuit integrity*	PN-EN 60332-1-2, IEC 60332-1, PN-EN 60332-3-22, IEC 60332-3-22 (cat.A)
Minimum bending radius		E30-E90	DIN 4102-12
HDGs(ekw) cables	10 x cable diameter	PH90	PN-EN 50200 or EN 50362
HLGs(ekw)cables	6 x cable diameter	Insulation integrity FE180	IEC 60331-21; IEC 60331-11
		Reference standards	AT-603-0248/2009/2014 and WT-TK-46
		Circuit integrity is dependent on installation method.	

CE = the cable meets requirements of the low voltage directive 2006/95/WE



CABLES USED BY TEST

ISO
9001:2008
HDGs FE180 PH90/E30-E90, HDGsekw FE180 PH90/E30-E90
HLGs FE180 PH90/E30-E90, HLGsekw FE180 PH90/E30-E90

strona 3 z 3

Cable type	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
HDGs	2 x 0,75	6,4	14,4	50
HDGs	2 x 1	6,6	19,2	55
HDGs	2 x 1,5	7,5	28,8	75
HDGs	2 x 2,5	8,9	48	105
HDGs	2 x 4	9,8	77	140
HDGs	2 x 6	11,8	115	196
HDGs	3 x 0,75	6,5	21,6	52
HDGs	3 x 1	6,8	28,8	66
HDGs	3 x 1,5	8,2	43,2	95
HDGs	3 x 2,5	9,4	72	137
HDGs	3 x 4	10,6	115	191
HDGs	3 x 6	12,5	173	275
HDGs	4 x 0,75	7,3	28,8	67
HDGs	4 x 1	7,6	38,4	88
HDGs	4 x 1,5	8,9	58	122
HDGs	4 x 2,5	10,4	96	180
HDGs	4 x 4	11,6	154	235
HDGs	4 x 6	13,6	230	340
HDGs	5 x 0,75	8,1	36	86
HDGs	5 x 1	8,4	48	121
HDGs	5 x 1,5	9,7	72	151
HDGs	5 x 2,5	11,4	120	220

Cable type	Number of conductors x conductor cross-section	Cable outer diameter (appr.)	Copper index	Cable weight (appr.)
	mm ²	mm	kg/km	kg/km
HDGs	5 x 4	12,7	192	305
HDGs	5 x 6	14,9	288	420
HDGs	7 x 1,5	10,7	101	190
HDGs	7 x 2,5	12,4	168	285
HLGs	2 x 1	6,8	19,2	55
HLGs	2 x 1,5	8,0	28,8	75
HLGs	2 x 2,5	9,4	48	110
HLGs	3 x 1	7,2	28,8	72
HLGs	3 x 1,5	8,5	43,2	99
HLGs	3 x 2,5	9,9	72	149
HDGs	4 x 1	8,0	38,4	94
HDGs	4 x 1,5	9,4	58	130
HDGsekw	2 x 1	6,6	26,4	59
HDGsekw	2 x 1,5	7,7	36,0	77
HDGsekw	2 x 2,5	9,1	55,0	114
HDGsekw	3 x 1,5	8,1	50,0	101
HDGsekw	3 x 2,5	9,6	79,0	149
HLGsekw	2 x 1	7,0	19,2	73
HLGsekw	2 x 1,5	8,0	36	81
HLGsekw	2 x 4	10,5	86	148

Other cross-sections and conductor counts available on request.

TECHNOKABEL S.A reserves the right to change specifications without prior notice.



DRAWINGS

BAKS-TECHNOKABEL 28.01.2016





DRAWINGS

No	No FIRES	Cable type	Position	Description of construction, loading, spacing of consoles ...		
1	49	NHXXH-J FE180 PH90/E90 B2cas1d0 4x50 RM 0.6/1 kV	1	Cable tray KCOP 300H60 + partition, 1.2 m /10kg/m / steel thickness 1,5 mm Construction: PSUE + CWOP40H40 + WWS/WWSO300E + PGM10/...E + UTS-E		
2		NHXXH-J FE180 PH90/E90 B2cas1d0 4x50 RM 0.6/1 kV				
3	48	NHXXH-J FE180 PH90/E90 B2cas1d0 4x1.5 RE 0.6/1 kV				
4		NHXXH-J FE180 PH90/E90 B2cas1d0 4x1.5 RE 0.6/1 kV				
5	74	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
6		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
7	73	HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
8		HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
9	72	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	2	Cable ladder DFP300H60 /1.5 m / 10kg/m. Construction: WPCB + WWS/WWSO300		
10		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
11	47	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
12		(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
13	46	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				
14		(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				
15	71	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V			3	Cable tray KGL/KGOL300H60 /1.5 m / 10kg/m. Construction: WPCB + WWS/WWSO300
16		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
17	70	HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
18		HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
19	45	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
20		(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
21	44	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				
22		(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				
23	36	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	4	Cable mesh tray KDS/KDSO60H60 /1.5 m / 3kg/m Construction: USK + CWP/CWOP40H40/07 + PGM10		
24	35	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
25	66	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
26		HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
27	36	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	4a			
28	35	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
29	65	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
30		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
31	64	HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V	5	Cable mesh tray KDSZ400H60 /1.5 m / 20kg/m. Construction: CWP/CWOP40H40/07 + PG M10		
32		HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
33	63	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
34		HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
35	34	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
36		(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
37	33	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				
38		(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV				



DRAWINGS

No	No FIRES	Cable type	Position	Description of construction, loading, spacing of consoles ...
39	32	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	6	Cable tray KCP/KCOP600H60 + partition 1.5 m /25kg/m / steel thickness 1,5 mm Construction: CWP/CWOP40H40/07 + PG M10
40		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
41	31	(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
42		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
43	30	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		
44		(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		
45	29	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
46		(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
47	28	(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
48		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
49	27	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
50		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
51	62	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		
52		HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		
53	61	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
54		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
55	26	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV	7	Cable ladder DUP/DUOP600H60 + partition 1.5 m /30kg/m / steel thickness 1,5 mm Construction: CWP/CWOP40H40/07 + PG M10
56		(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		
57	25	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
58		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
59	24	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
60		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
61	23	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV		
62		(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV		
63	60	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		
64		HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		
65	59	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
66		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
67	57	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	8	Cable tray KFJ400H60 1.5 m /20kg/m / steel thickness 0,9 mm Construction: WPCB 1000 + WWS/WWSO400 + PGM10
68		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
69	18	(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
70		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
71	17	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
72		(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
73	16	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		
74		(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		
75	15	(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
76		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
79	14	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	9	Cable mesh tray KDSZ400H60 /1.5 m / 20kg/m Construction: WPCB 1000 + WWS/WWSO400 + PGM10
80		NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
81	13	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
82		NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		



DRAWINGS

No	No FIRES	Cable type	Position	Description of construction, loading, spacing of consooles ...		
83	12	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV	10	Cable ladder DFP400H60 /1.5 m / 20kg/m / steel thickness 1,5 mm, Construction WPCB 1000 + WWS/WWSO400 + PGM10		
84		(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV				
85	11	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV				
86		(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV				
87	56	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
88		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
89	10	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV	11	Cable tray KGL300H60 + partition 1.5 m /20kg/m / steel thickness 0,7 mm, Construction: WPCB 1000 + WWS/WWSO400 +PGM10 Connection boxes PMO1 and PMO2 fixed to cable tray side.		
90		(N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV				
91	9	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
92		(N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
93	53	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
94		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
95	8	NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV + PMO1				
96	7	NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV + PMO2				
97	6	(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV			12	Cable mesh tray KDS/KDSO400H60 /1.5 m / 20kg/m Construction: WPCB 1000 + WWS/WWSO400 + PGM10
98		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV				
99	5	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV				
100		(N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV				
101	4	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
102		(N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
103	3	(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV				
104		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV				
105	52	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
106		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
107	2	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV	13	Cable ladder DUD400H60 /1.5 m / 25kg/m / steel thickness 1,2 mm, Construction: WPCB 1000 + WWS/WWSO400 + PGM10		
108		(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV				
109	1	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV				
110		(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV				
111	51	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	14	Single cable clips UDF fixed to ceiling in spacing of 600 mm.		
112		(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV				
113	50	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
114		(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
115	75	HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
116		HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V				
117	43	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	15	Cable tray KFL50H60 /1.5 m / 5kg/m. Construction: WC50 + PGM6 + ZK		
118	42	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
119	69	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
120		HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V				
121	43	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	15a			
122	42	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV				
123	68	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				
124		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V				



DRAWINGS

No	No FIRES	Cable type	Position	Description of construction, loading, spacing of consoles ...
125	41	HDGs FE180 PH90/E30-E90 3x1.5 mm ² 300/500 V - 230V +PMO1	17	Construction: CWP/CWOP40H40, PGM6 to steel profile on ceiling, 1,5 m. Connection boxes PMO1. Additional loading 3,5 Kg at place of profiles connection represent lighting.
126	40	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	18	Cable clamps KSA fixed to ceiling in spacing of 600 mm. (3 cables at one clip)
127		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
128		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
129		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
130		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
131		(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		
132	39	(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
133		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
134		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
135		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
136		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
137		(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		
138	38	(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
139		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
140		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
141		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
142		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
143		(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		
144	37	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
145		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
146		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
147		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
148		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
149		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
150	67	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	19	Cables fixed to CWP/CWOP40H40 (fixed to trapezoidal steel sheet) by steel self-drilling screws SMD4,8x16 in spacing to 600 mm.
151		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
152	21	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	20	Cable hangers OZO fixed to ceiling in spacing of 600 mm
153		(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		
154	22	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
155		(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
156	58	HDGszo-W FE180 PH90/E30-E90 3x1 mm ² 300/500 V		
157		HDGszo-W FE180 PH90/E30-E90 3x1 mm ² 300/500 V		
158	20	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	21	Beam clips ZSK1 fixed to steel profiles in spacing of 600 mm
159		(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		
160	19	(N)HXH-J FE180 PH90/E90 4x16 RM 0.6/1 kV		
161		(N)HXH-J FE180 PH90/E90 4x16 RM 0.6/1 kV		
162	55	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		
163		HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		
164	54	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		
165		HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V		

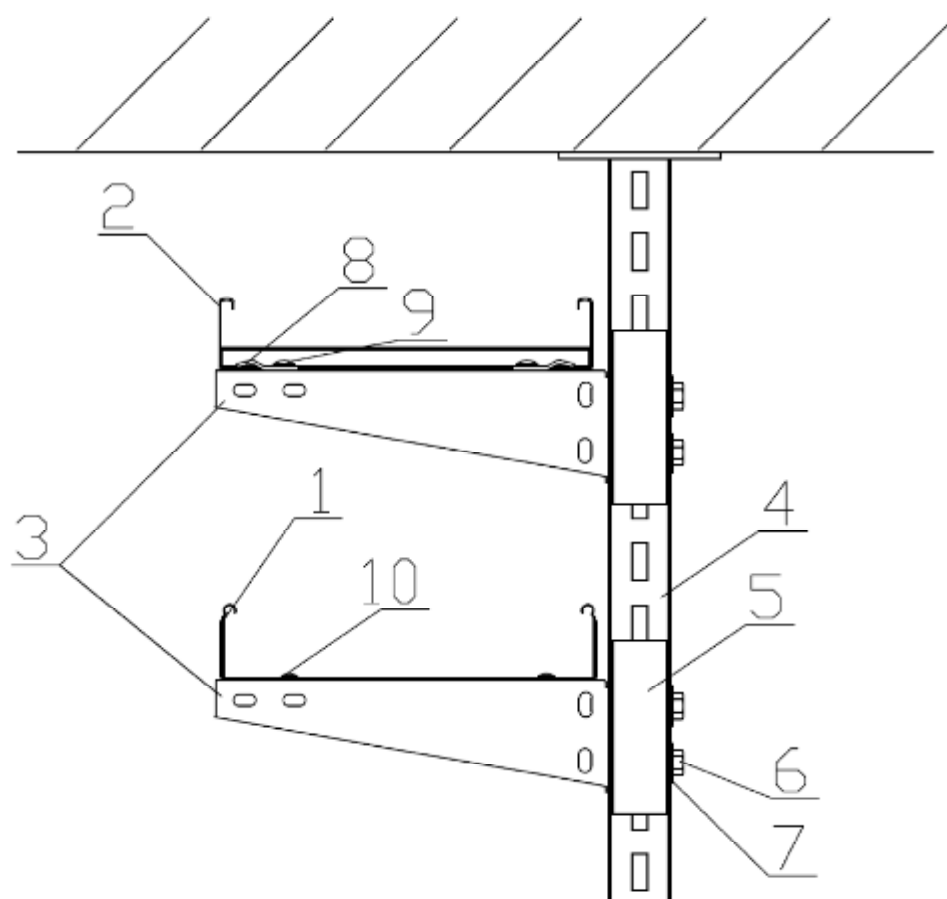


DRAWINGS

No.	Type of cable	Cable diameter (approx.)	Cable weight kg.m ⁻¹ (approx.)	Amount
1	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	12 mm	0.2	4
2	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	29 mm	2.4	2
3	NHXXH-J FE180 PH90/E90 B2cas1d0 4x1.5 RE 0.6/1 kV	12 mm	0.2	2
4	NHXXH-J FE180 PH90/E90 B2cas1d0 4x50 RM 0.6/1 kV	29 mm	2,4	2
5	(N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	11 mm	0.3	12
6	(N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV	32 mm	3.0	12
7	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	14 mm	0.2	6
8	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV	29 mm	2.4	6
9	(N)HXH-J FE180 PH90/E90 4x16 RM 0.6/1 kV	20 mm	1,0	2
10	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	11 mm	0.2	22
11	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	29 mm	2.4	20
12	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	12 mm	0.5	8
13	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	37 mm	3.3	8
14	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x1.5 RE 0.6/1 kV	12 mm	0.5	4
15	(N)HXCH-J-SERVO-W FE180 PH90/E90 4x50 RM 0.6/1 kV	37 mm	3.3	4
16	HTKSH FE180 PH90/E30-E90 1x2x1.0 mm 240 V	5 mm	0.1	26
17	HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V	6 mm	0.1	12
18	HDGszo-W FE180 PH90/E30-E90 3x1 mm2 300/500 V	7 mm	0.1	10
19	HDGs FE180 PH90/E30-E90 3x1.5 mm2 300/500 V	8 mm	0.2	1
			Total Amount	163



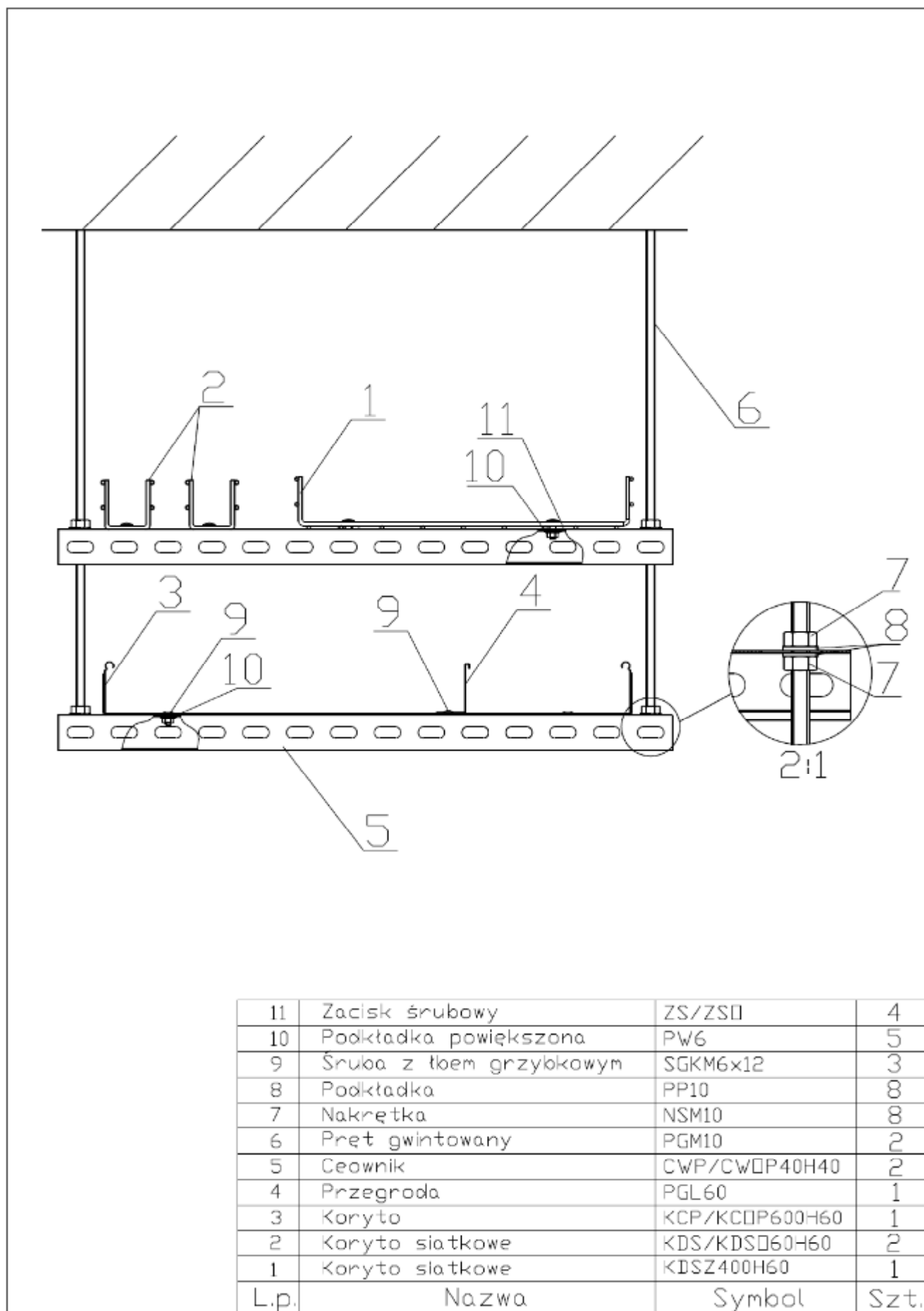
DRAWINGS



10	Śruba z łbem grzybkowym	SGKM6x12	2
9	Śruba z łbem grzybkowym	SGKM8x14	2
8	Zacisk mocujący	ZM/ZMD	2
7	Podkładka powiększona	PW10	4
6	Śruba	SMM10x70	4
5	Blacha rozporowa	BR55	2
4	Wspornik sufitowy	WPCB...	1
3	Wysięgnik	WWS/WWSI300	2
2	Drabina	DFP300H60	1
1	Koryto	KGL/KGDL300H60	1
L.p.	Nazwa	Symbol	Szt.

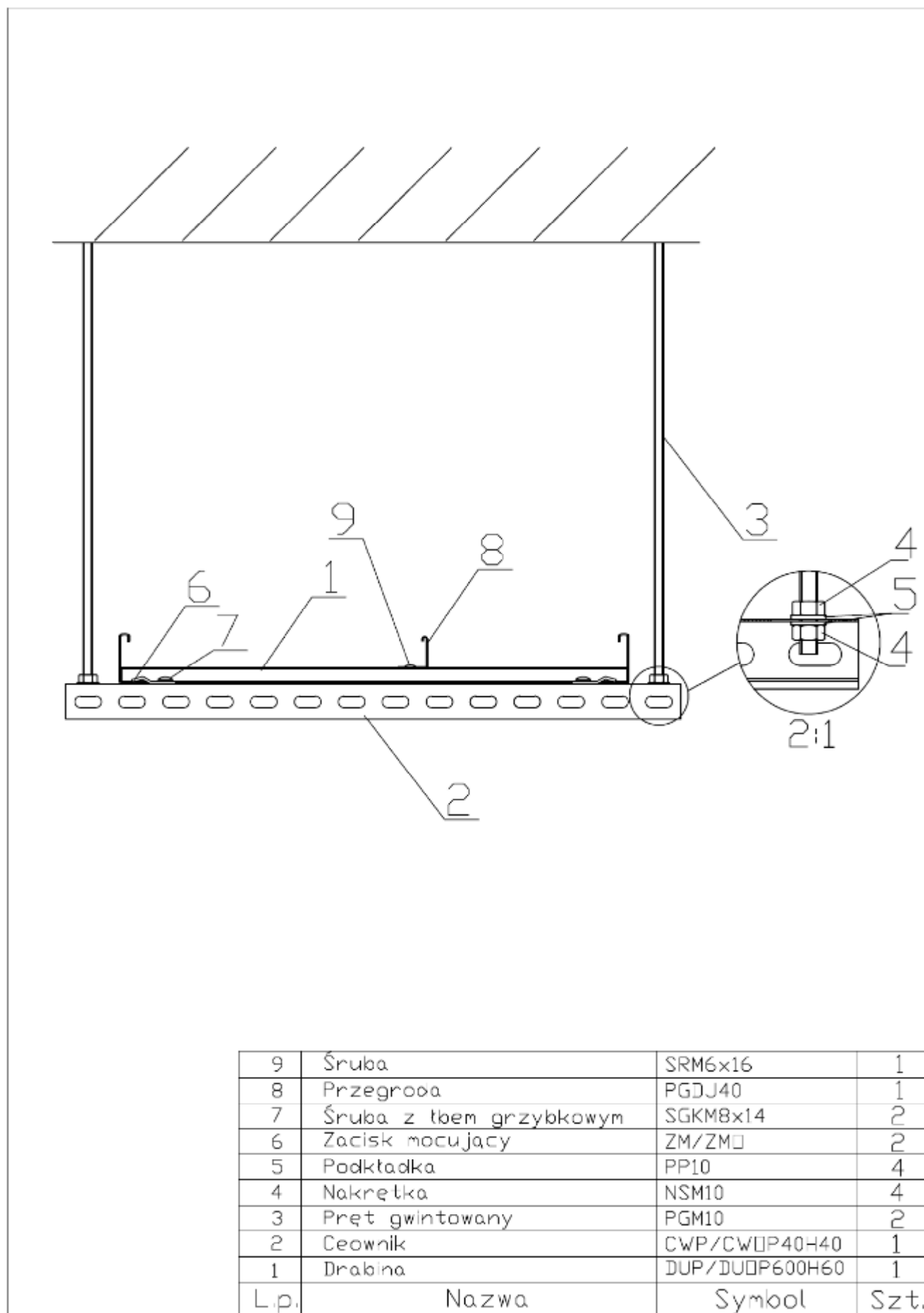


DRAWINGS



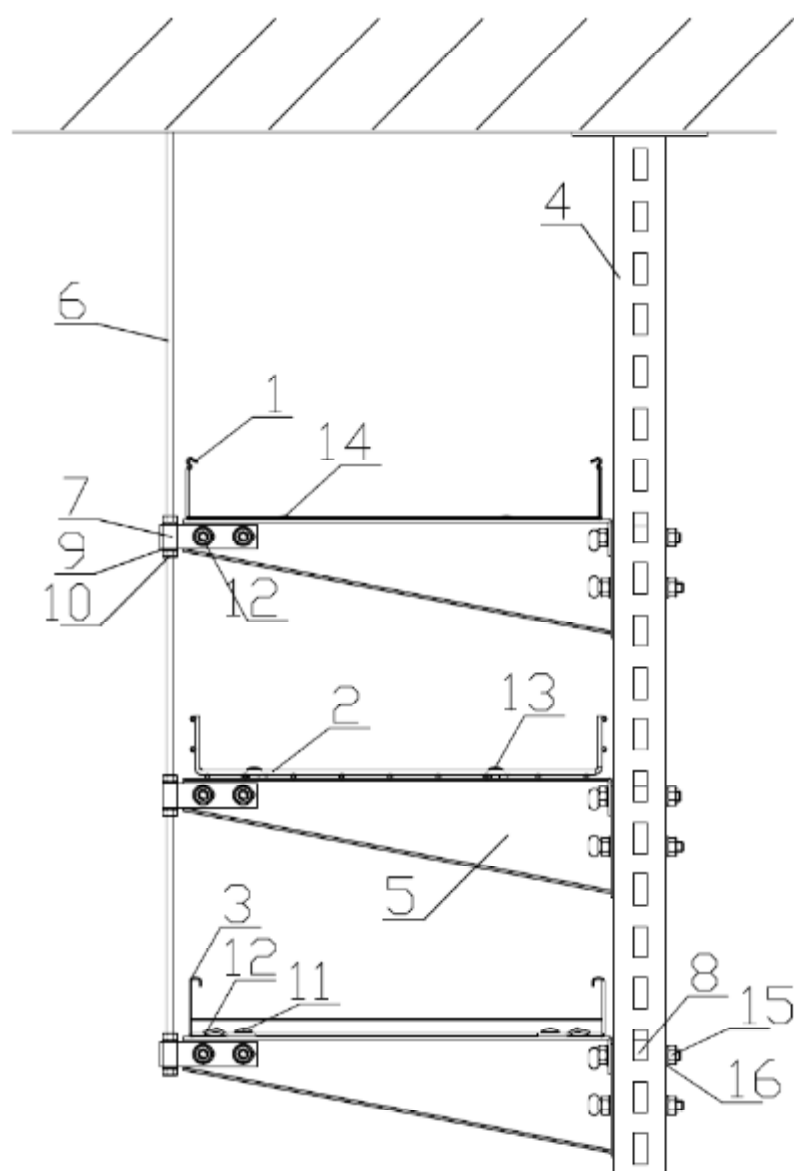


DRAWINGS





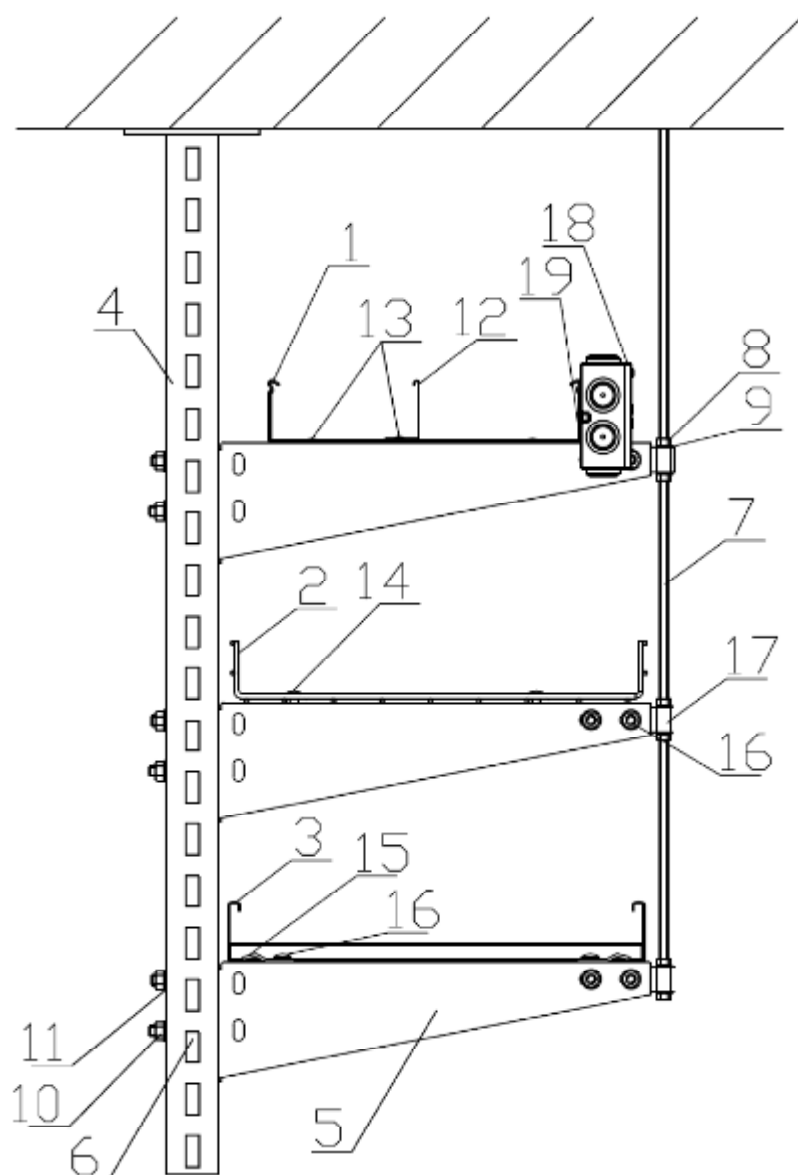
DRAWINGS



16	Podkładka powiększona	PW10	6
15	Śruba (kpl.)	SMM10x70	6
14	Śruba z łbem grzybkowym	SGKM6x12	2
13	Zacisk śrubowy	ZS/ZS□	2
12	Zacisk mocujący	ZM/ZM□	2
11	Śruba z łbem grzybkowym	SGKM8x14	8
10	Nakrętka	NSM10	8
9	Podkładka	PP10	8
8	Blacha rozporowa	BR55	3
7	Uchwyt	UPW/UPW□	3
6	Pręt gwintowany	PGM10	1
5	Wysięgnik wzmocniony	WWS/WWS□400	3
4	Wspornik sufitowy	WPCB	1
3	Drabina	DFP400H60	1
2	Koryto słatkowe	KDSZ400H60	1
1	Koryto	KFJ400H60	1
L.p.	Nazwa	Symbol	Szt.



DRAWINGS



19	Śruba z łbem grzybkowym	SGKM6x12	
18	Puszka	PM0...	
17	Uchwyt	UPW/UPW0	3
16	Śruba z łbem grzybkowym	SGKM8x14	8
15	Zacisk mocujący	ZM/ZM0	2
14	Zacisk śrubowy	ZS/ZS0	2
13	Śruba z łbem grzybkowym	SGKM6x12	3
12	Przegroda	PGL60	1
11	Podkładka powiększona	PW10	6
10	Śruba	SMM10x70	6
9	Podkładka	PP10	6
8	Nakrętka	NSM10	6
7	Pręt gwintowany	PGM10	1
6	Blacha rozporowa	BR55	3
5	Wysięgnik wzmocniony	WWS/WWS0400	3
4	Wspornik sufitowy	WPCB	1
3	Drabina	DUD400H60	1
2	Koryto słatkowe	KDS/KDS0400H60	1
1	Koryto	KGL300H60	1
L.p.	Nazwa	Symbol	Szt.



DRAWINGS

L.p.	Nazwa	Symbol	Szt.
8	Podkładka powiększona	PW6	
7	Śruba z łbem grzybkowym	SGKM6x12	
6	Puszka	PM...	
5	Podkładka	PW8	4
4	Nakrętka	NSM8	4
3	Zacisk	ZK8/19	1
2	Pręt gwintowany	PGM8	1
1	Ceownik	CWP/CW□P40H40	1

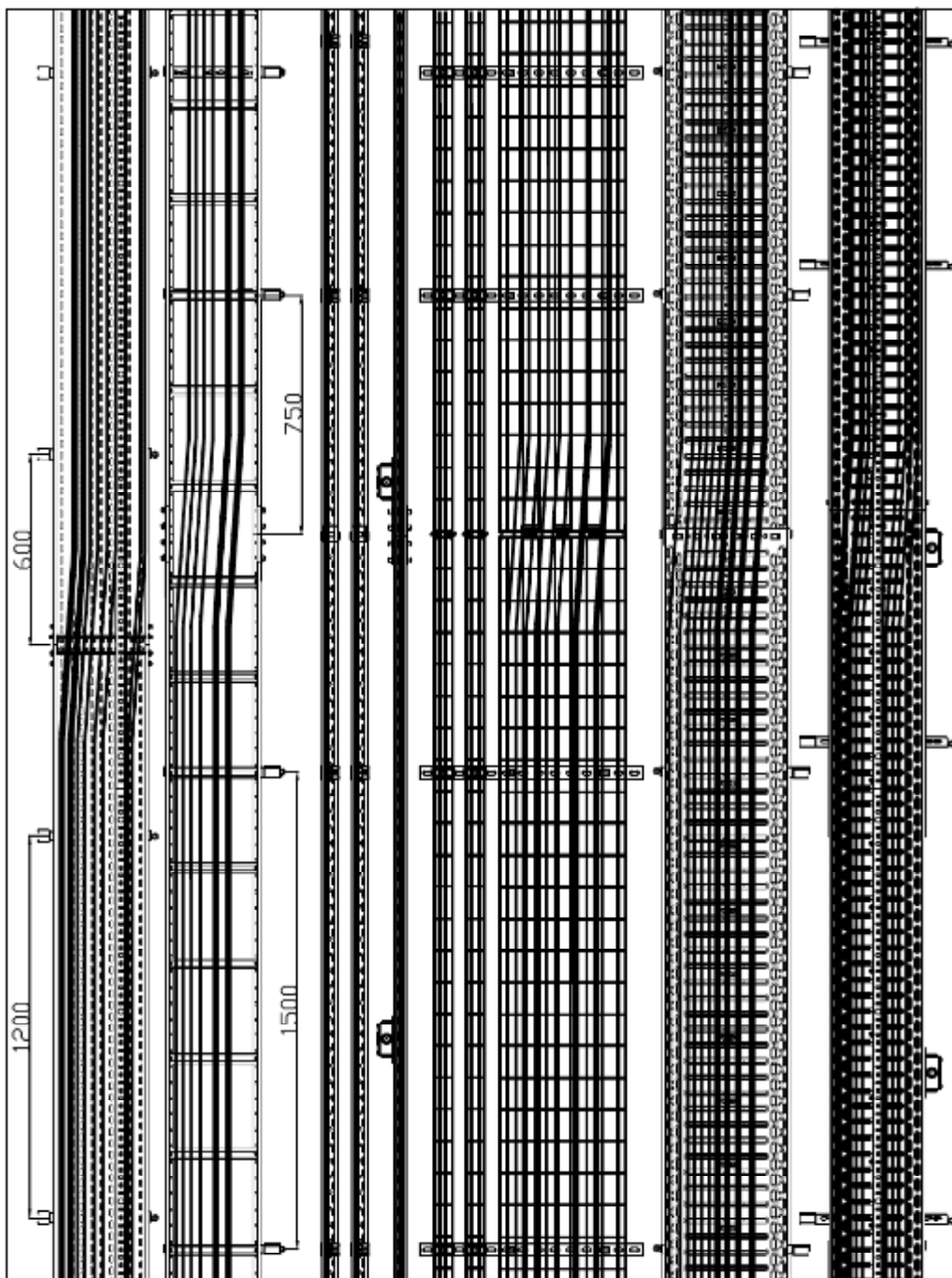
L.p.	Nazwa	Symbol	Szt.
7	Śruba z łbem grzybkowym	SGKM6x12	1
6	Podkładka	PW6	4
5	Nakrętka	NSM6	4
4	Zacisk	ZK8/19	1
3	Pręt gwintowany	PGM6	1
2	Wieszak	WC50	1
1	Koryta	KFL50H60	1



DRAWINGS

A-A

BAKS÷TECHNOKABEL 06.08.2015

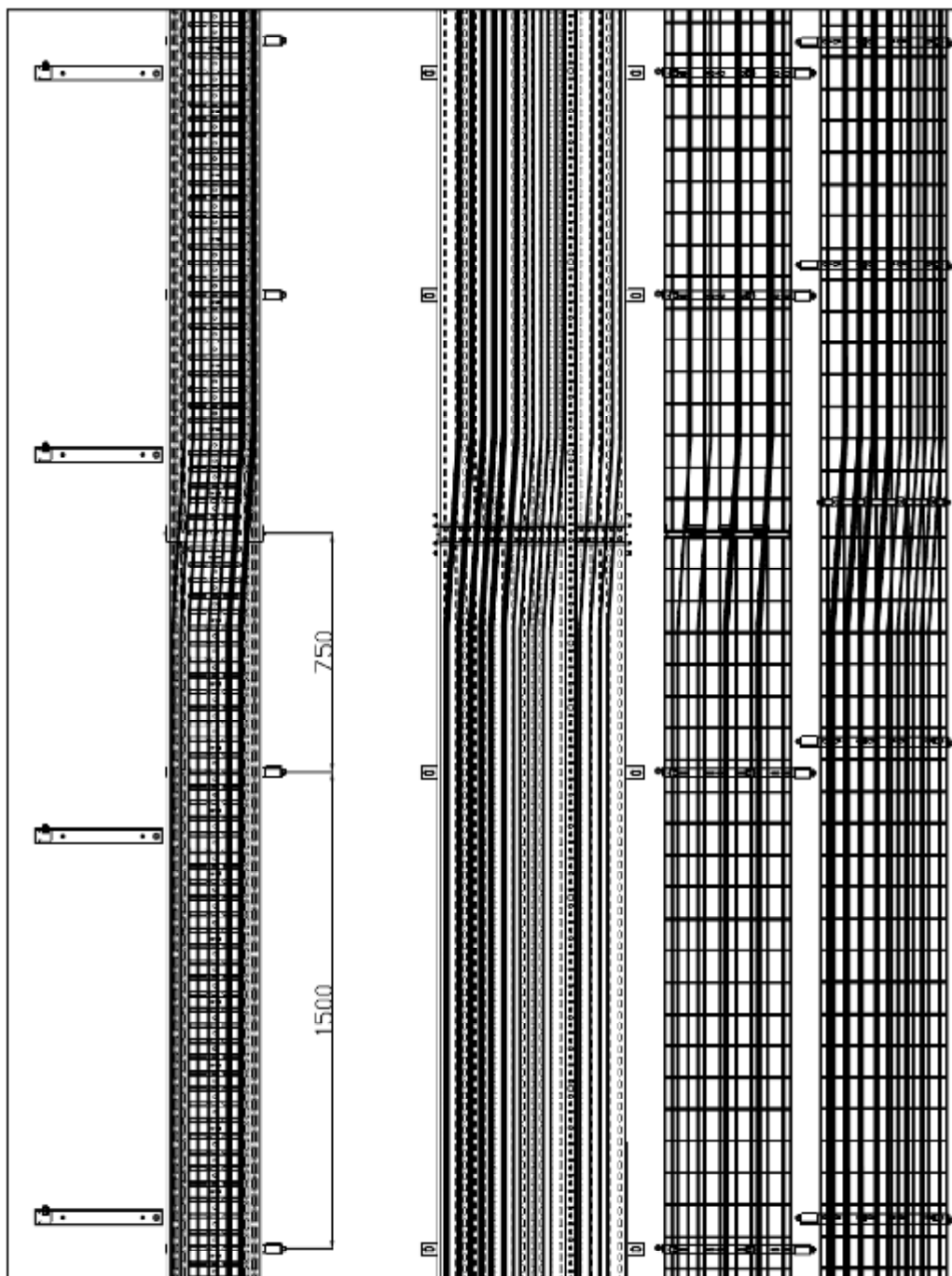




DRAWINGS

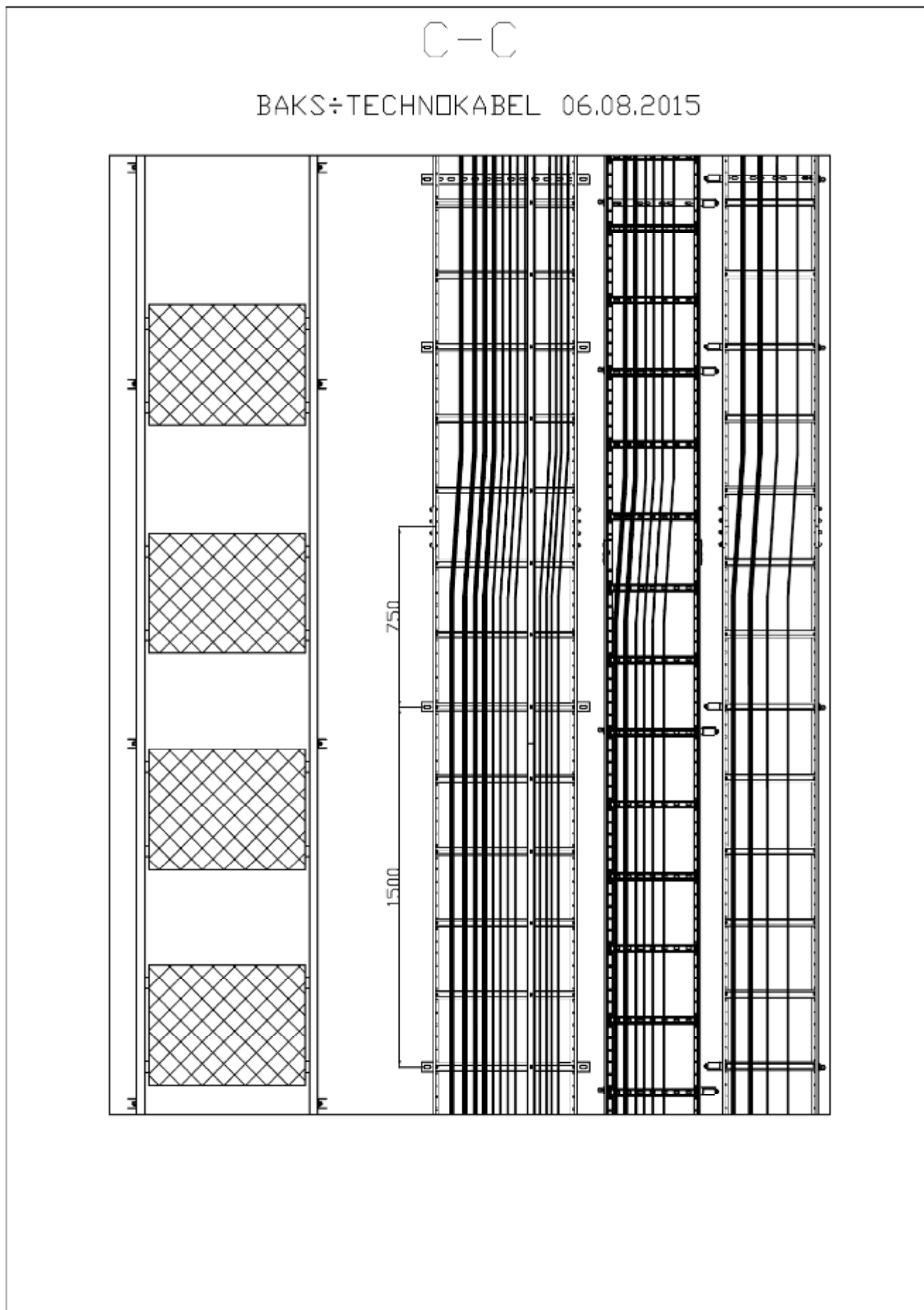
B-B

BAKS÷TECHNOKABEL 06.08.2015





DRAWINGS

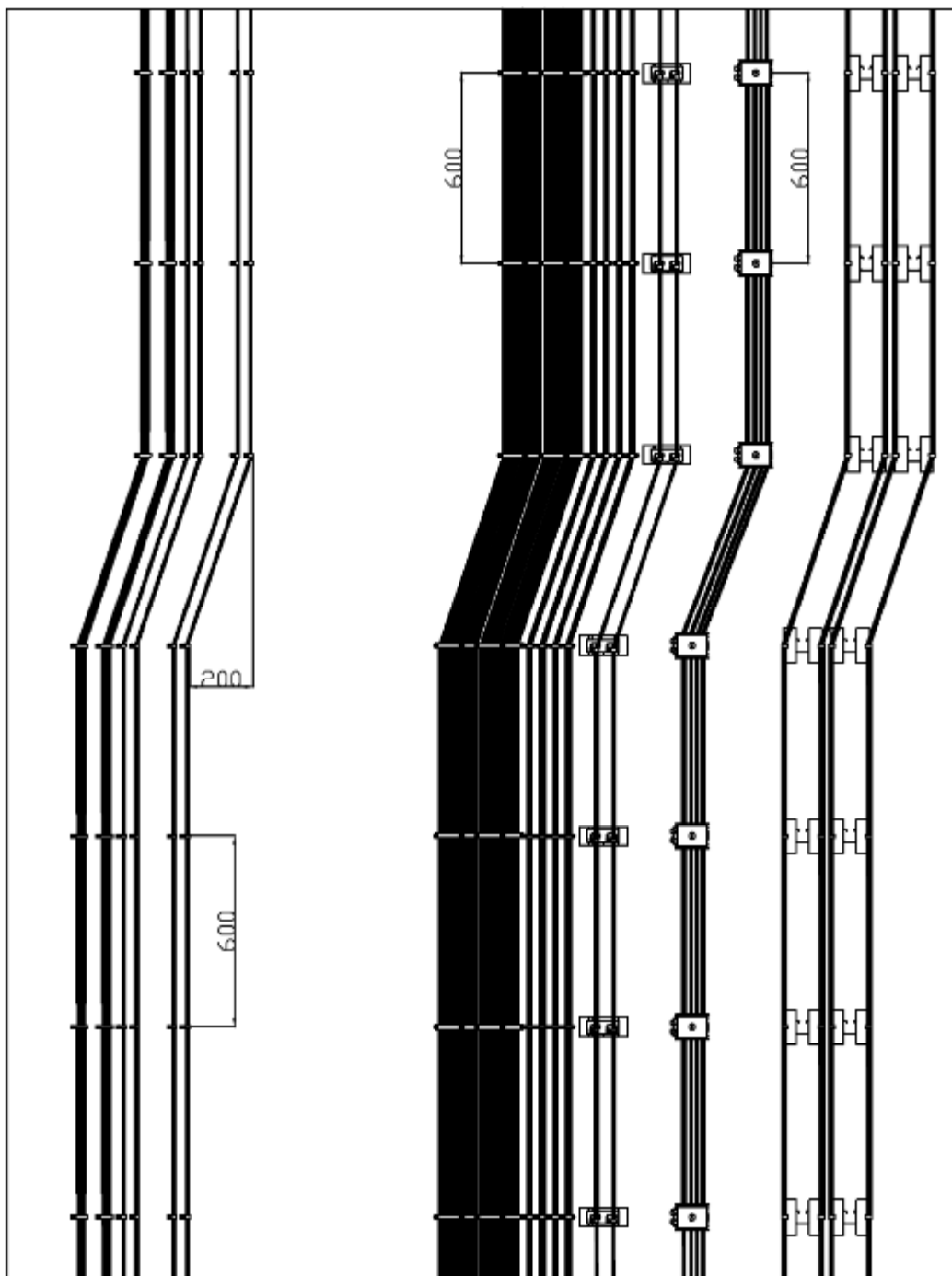




DRAWINGS

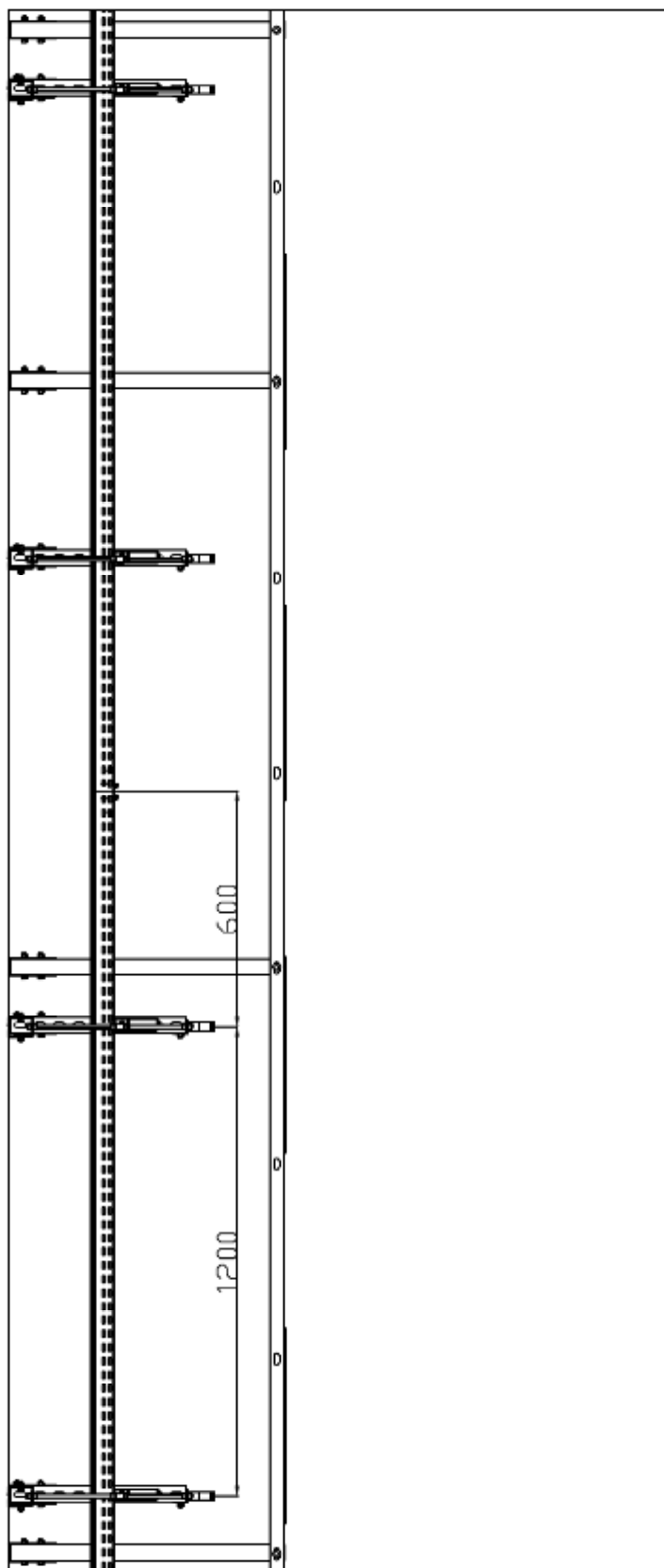
D-D

BAKS-TECHNOKABEL 06.08.2015





DRAWINGS

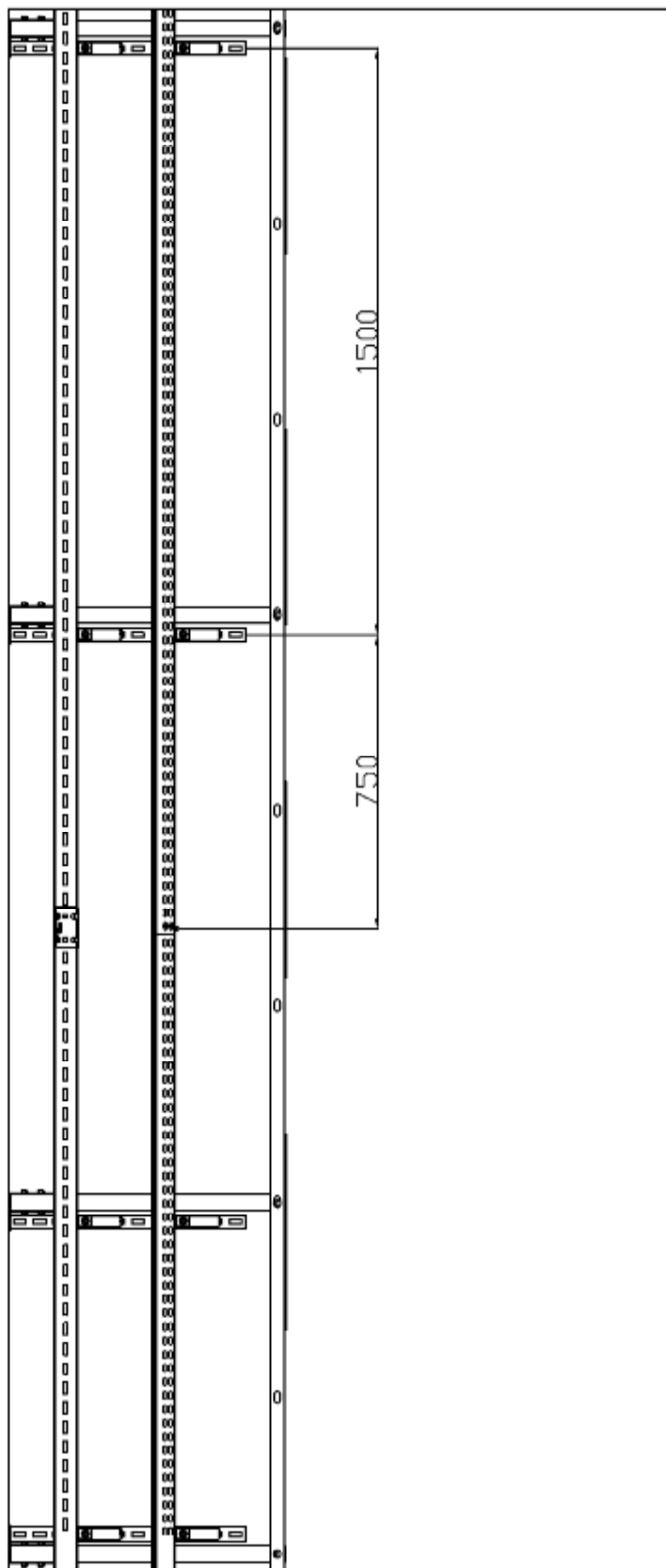


E-E

BAKS-TECHNDKABEL 06.08.2015



DRAWINGS

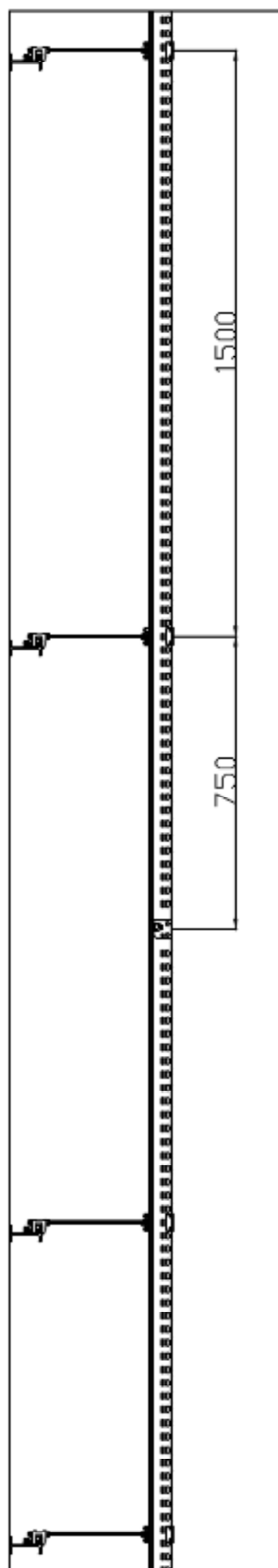


F-F

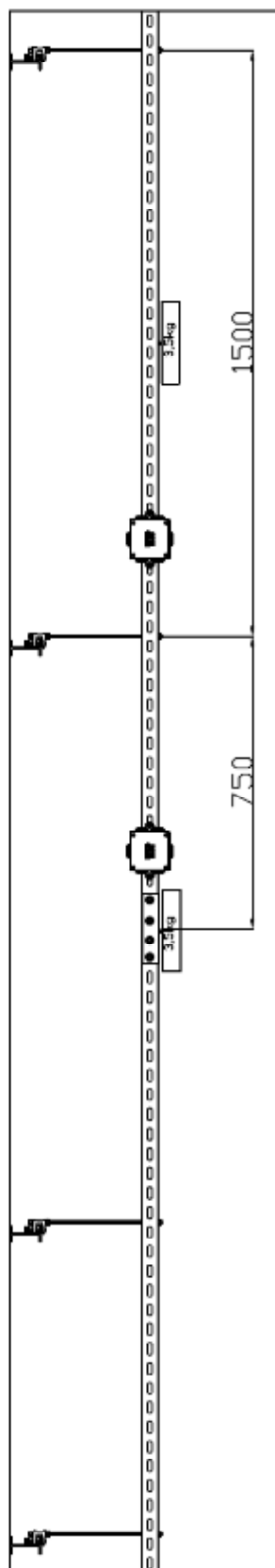
BAKS-TECHNDKABEL 06.08.2015



DRAWINGS



G-G,
G1-G1

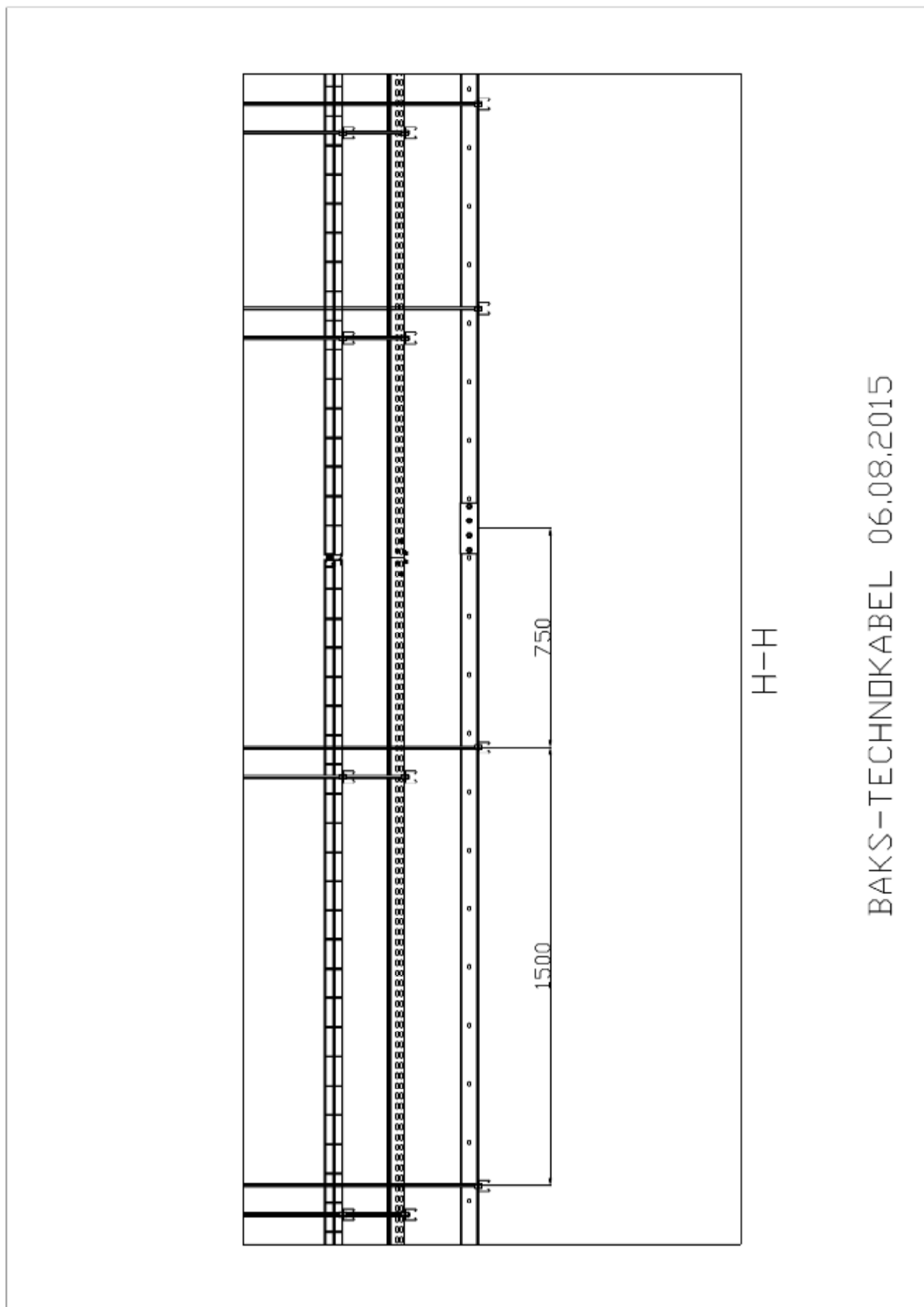


G2-G2

BAKS-TECHNOKABEL 06.08.2015



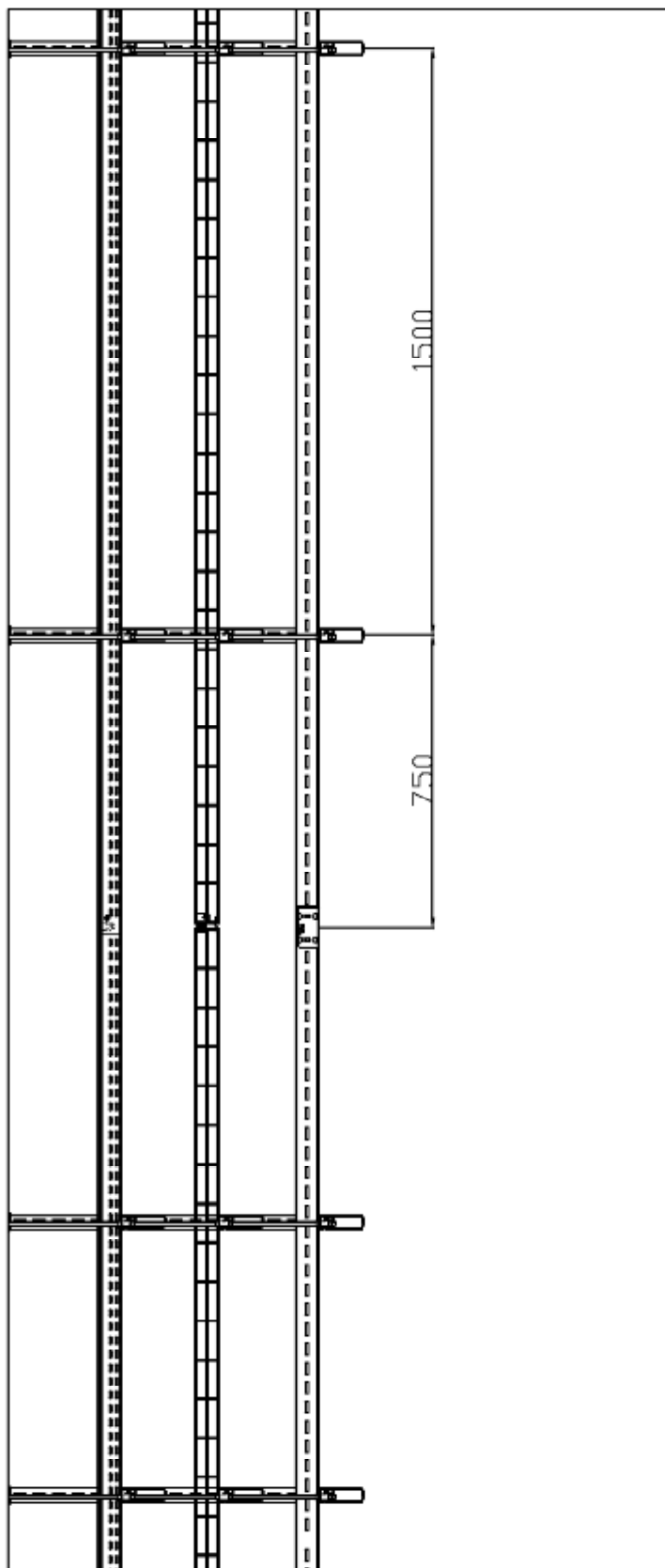
DRAWINGS



BAKS-TECHNOKABEL 06.08.2015



DRAWINGS

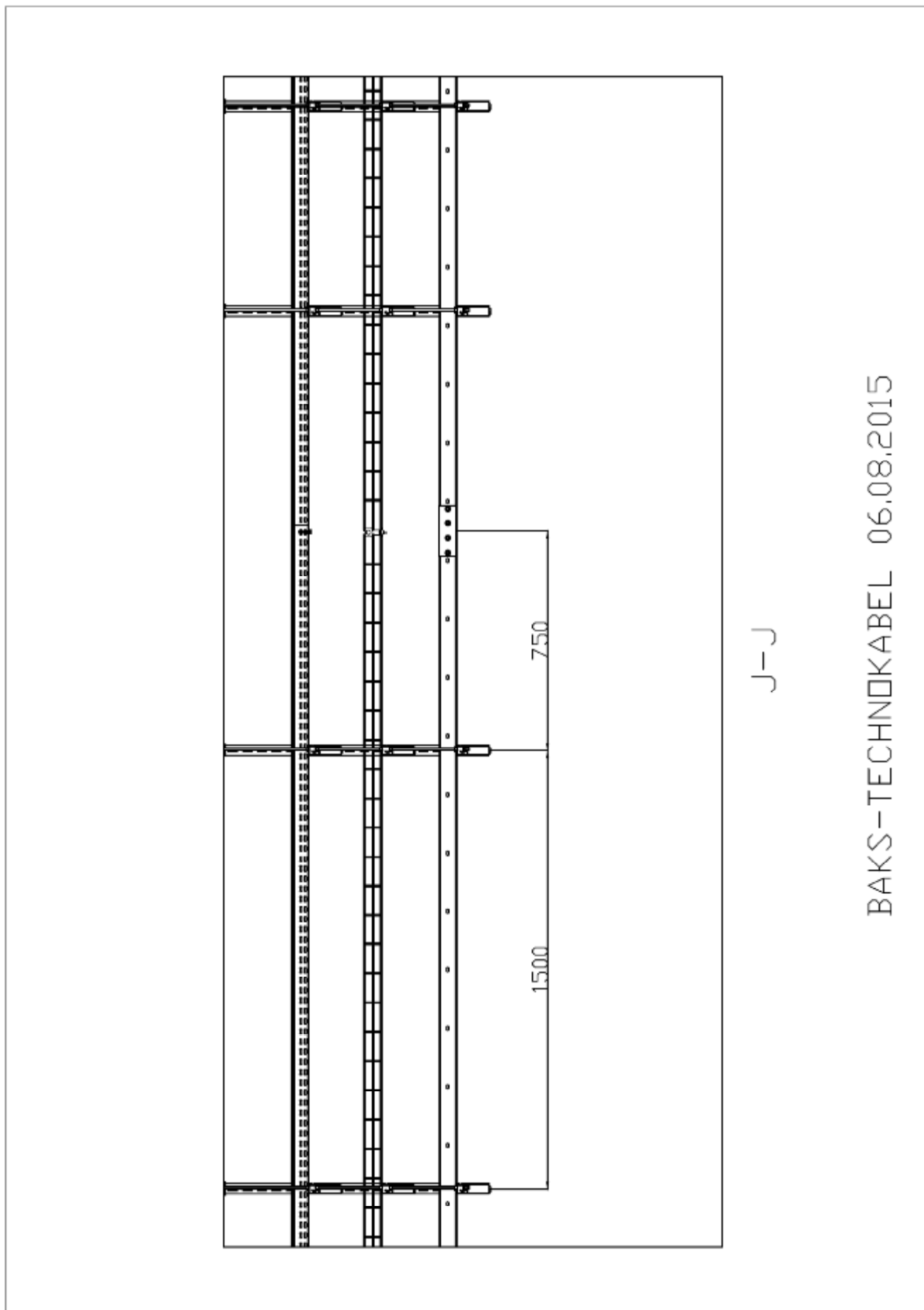


I-I

BAKS-TECHNOKABEL 06.08.2015



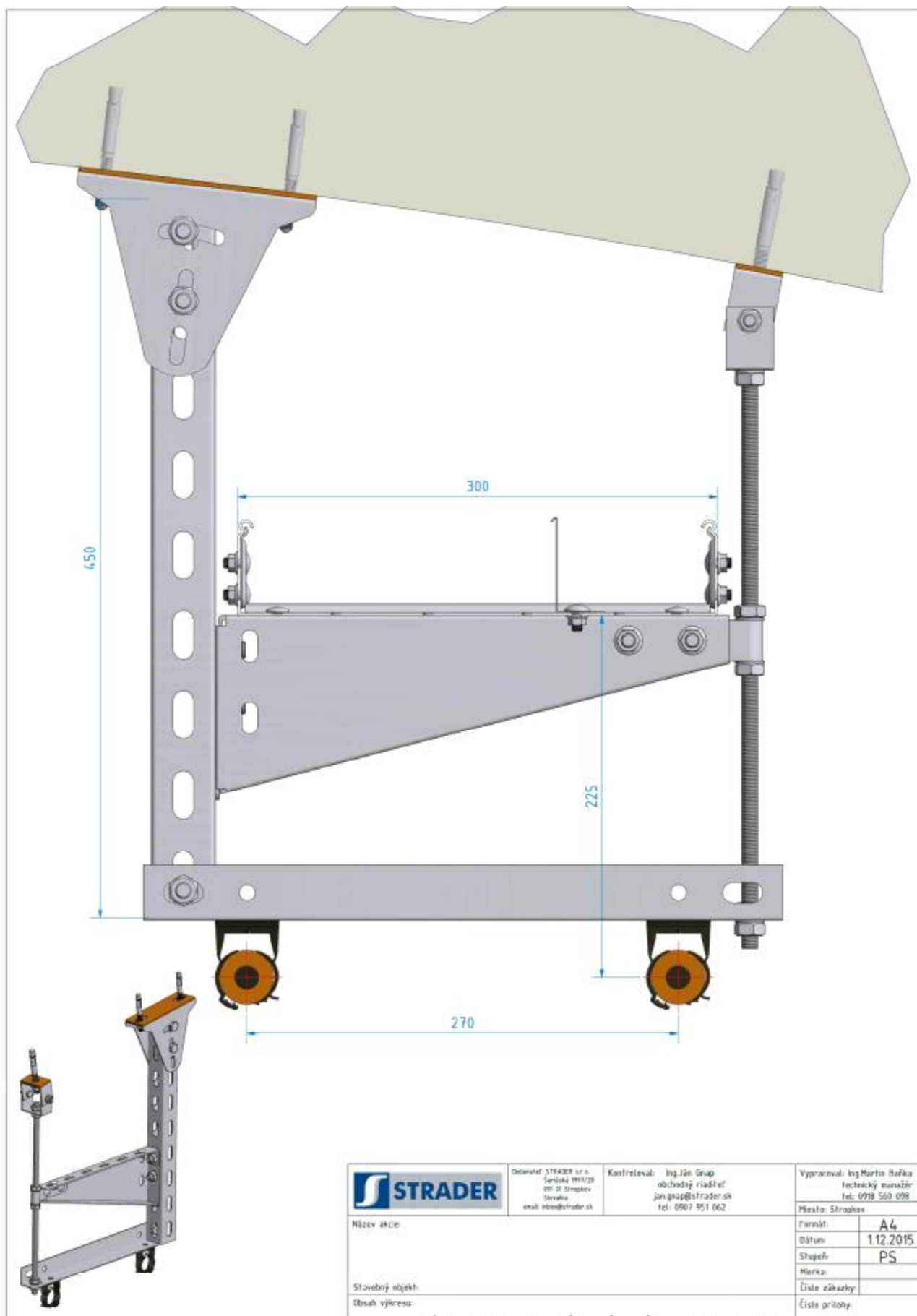
DRAWINGS



BAKS-TECHNOKABEL 06.08.2015



DRAWINGS



The diagram illustrates the assembly of a bridge deck using modular components. Key elements include:

- Main Deck Structure:** Composed of blue rectangular panels supported by a metal framework.
- Longitudinal Beams:** Labeled as CWP40H40/04S-E, running along the length of the deck.
- Transverse Bracing:** Includes components like PSU-E, CPL0H35/04T-E, SMM10x20-E, and WWS300-E.
- Dimensions:** Various measurements are provided, such as 600, 750, 1500, 1900, 225, 270, 300, 450, and 680 mm.
- Labels:** Components are identified by codes like PSH0M10x80-E, UTS-E, LPW/LPW0-E, SDN8x14-E, BC, BA, BB, AY, and LC10H35-E.

A detailed view at the bottom left shows a cross-section of a support or connection point, highlighting the arrangement of bolts and structural plates.



DRAWINGS

Узел крепления одиночного кабеля к профногнати через дистанционирующую вставку /
Mounting a single cable to a decking sheets through a spacer

M1: 2

Fig. A. / Вид А
1:2

Fig. B. / Вид В
1:2



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 EN 1363-2. 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:

Prepared by:

Ing. Štefan Rástocký
leader of the testing laboratory



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