

CLASSIFICATION OF FUNCTION RESISTANCE IN FIRE FIRES-CR-145-15-AUPE

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

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CLASSIFICATION OF FUNCTION RESISTANCE IN FIRE IN ACCORDANCE WITH DIN 4102-12: 1998-11 with direct field of application

FIRES-CR-145-15-AUPE

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

Sponsor: Technokabel S.A.
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Poland

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Tested property: Functional resistance in fire
Test method: STN 92 0205
Type of test: Accredited

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1. INTRODUCTION

This classification report defines the function in fire classification assigned to element Power and communication cables Technokabel S.A. at cable bearing system BAKS in accordance with the procedures given in 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.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Power and communication cables Technokabel S.A. at cable bearing system BAKS, is defined as a cables with circuit integrity maintenance at cable bearing system in case of fire.

2.2 PRODUCT DESCRIPTION

Product comprise of power and communication cables Technokabel S.A. and cable bearing system BAKS – cable trays, mesh trays, ladders, cable clips and hangers with accessories (consoles, brackets, supports, hangers, etc.).

Power and communication cables

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).

Fire resistant and halogen free communication cables are intended for installation in alarm, signaling, 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 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 – data are transmitted and power is supplied to equipment which must operate in fire conditions and during fire fighting (e.g. emergency lighting, smoke removing fans). 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.

Cables used by test:

Power cables:

NHXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	(5x)
NHXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV	(5x)
(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV	(10x)
(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV	(10x)
(N)HXH-J FE180 PH30/E30 3x1,5 RE 0,6/1 kV	(2x)
(N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV	(8x)
(N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV	(6x)
(N)HXH-J FE180 PH90/E90 3x1,5 RE 0,6/1 kV	(2x)
(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	(25x)
(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV	(27x)



Communication cables:

HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	(30x)
HTKGs FE180 PH90/E30 2x0,75 mm ² 110 V	(4x)
HDGs FE180 PH90/E30-E90 3x1,5 mm ² 300/500 V	(2x)
HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	(14x)

Cable bearing system BAKS

Cable trays KBJ

Cable trays are made of steel sheet thickness 0,9 mm. Trays are not perforated. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by nut bolts SGK M6x12. Maximum tested loading is 20kg.m⁻¹. Cable trays could be covered by cover PKJ made of steel sheet thickness 1,0 mm and fixed to cable tray by clips ZPD H60. Partition (PGJ60) is fixed by screws (SGK M6x12). Tested tray is KBJ400H60.

Cable trays KCL/KCOL

Cable trays are made of steel sheet thickness 0,7 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 300 mm. Trays are fixed together by nut bolts SGK M6x12. Partition (PGL H60) is fixed by screws (SGK M6x12). Maximum tested loading is 10kg.m⁻¹. Tested tray is KCL/KCOL300H60.

Cable trays KGJ/KGOJ

Cable trays are made of steel sheet thickness 0,9 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 400 mm. Trays are fixed together by nut bolts SGK M6x12. Maximum tested loading is 20kg.m⁻¹. Tested tray is KGJ/KGOJ400H60.

Cable trays KFL

Cable trays are made of steel sheet thickness 0,7 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 300 mm. Trays are fixed together by integrated junctions and one nut bolt SGK M6x12. Maximum tested loading is 20kg.m⁻¹. Partition (PGL H60) is fixed by screws (SGK M6x12). Tested tray is KFL300H60.

Cable mesh trays KDS/KDSO

Cable mesh trays are made of steel wire Ø 4,0 mm and Ø 4,5 mm. Height of side wall is 60 mm and maximum tested width of cable mesh tray is 400 mm. Mesh trays are fixed together by junctions (USS/USSO). Maximum tested loading is 20kg.m⁻¹. Tested mesh trays are KDS/KDSO300H60 and KDS/KDSO400H60.

Cable mesh trays KDS/KDSZ

Cable mesh trays are made of steel wire Ø 4,5 mm. Height of side wall is 60 mm and maximum tested width of cable mesh tray is 200 mm. Mesh trays are fixed together by integrated junctions. Maximum tested loading is 10kg.m⁻¹. Tested mesh trays are KDS/KDSZ100H60 and KDS/KDSZ200H60.

Cable ladders DUD

Cable ladders are made of steel sheet thickness 1,2 mm and spacing of transoms is 300 mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by two junctions (LDC/LDOCH60) and nut bolts (SGK M8x14) on sides. Partition (PGDJ40) is fixed by screws (SR M6x16). Maximum tested loading is 25kg.m⁻¹. Tested ladders are DUD300H60 and DUD400H60.

Cable ladders DFP

Cable ladders are made of steel sheet thickness 1,5 mm and spacing of transoms is 300 mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together integrated junction. Maximum tested loading is 20kg.m⁻¹. Tested ladder is DFP400H60.

Supports CWP/CWOP40H40

Supports with dimensions (40 x 40) mm are made of steel sheet thickness 1,5 mm.

Cable clips KSA

Single cable clips KSA are made of steel sheet 1,2 mm thick. Cable clips are used for fixing of cables directly to wall or ceiling.

Consoles WPCB

Consoles consist of base plate with dimensions (130 x 45 x 5) mm and support with dimensions (50 x 35 x 2) mm. Consoles are used for gripping of brackets to ceiling.



Brackets WWS/WWSO

Brackets are made from steel sheet thickness 2,0 mm. Tested brackets are WWS/WWSO300 and WWS/WWSO400. Brackets are used to gripping trays or ladders to ceiling or to wall.

Cable hangers

Cable hangers OZ/OZO with dimensions (100 x 120 x 82) mm are made of steel sheet thickness 1,5 mm. Cable hangers OZS/OZSO with dimensions (52 x 81 x 38) mm are made of steel sheet thickness 0,7 mm. Cable hangers OZM/OZMO with dimensions (42 x 62 x 33) mm are made of steel sheet thickness 0,7 mm.

Trapezoidal hanger

Trapezoidal hangers WT/WTO120 are made of steel sheet 2,5 mm thick.

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

3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SR	Technokabel S.A., Warszawa, PL	FIRES-FR-150-15-AUNE	06. 08. 2015	STN 92 0205

[1] Test specimens were conditioned according to EN 1363-1 before the fire resistance test



3.2 TEST RESULTS

No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205	1	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	16	21 minutes
	2	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		18 minutes
	3	2 cables (N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV	15a	90 minutes no failure / interruption
	4	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		25 minutes
	5	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV	14	90 minutes no failure / interruption
	6	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		90 minutes no failure / interruption
	7	2 cables (N)HXH-J FE180 PH30/E30 3x1,5 RE 0,6/1 kV (230V)		90 minutes no failure / interruption
	8	cable (N)HXH-J FE180 PH90/E90 3x1,5 RE 0,6/1 kV (230V) + fireboxes PMO1	23	90 minutes no failure / interruption
	9	cable (N)HXH-J FE180 PH90/E90 3x1,5 RE 0,6/1 kV (230V) + fireboxes PMO1		90 minutes no failure / interruption
	10	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV	13	22 minutes
	11	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV		61 minutes
	12	2 cables (N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV		33 minutes
	13	2 cables (N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV		82 minutes
	14	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV	12	24 minutes
	15	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		24 minutes
	16	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		57 minutes
	17	2 cables (N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV		90 minutes no failure / interruption
	18	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV	11	90 minutes no failure / interruption
	19	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	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 FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV		90 minutes no failure / interruption
	22	3 cables NHXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	22	90 minutes no failure / interruption
	23	3 cables NHXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	24	3 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		90 minutes no failure / interruption
	25	3 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	26	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	9	90 minutes no failure / interruption
	27	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		25 minutes
	28	2 cables (N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV	8	79 minutes
	29	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV		39 minutes
	30	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	7	90 minutes no failure / interruption
	31	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	32	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV	6	90 minutes no failure / interruption
	33	2 cables (N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV		78 minutes
	34	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV	5	25 minutes
	35	2 cables (N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV		90 minutes no failure / interruption
	36	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV		90 minutes no failure / interruption
	37	2 cables (N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV	4	90 minutes no failure / interruption
	38	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	39	2 cables NHXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	10	90 minutes no failure / interruption
	40	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		61 minutes
	41	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		36 minutes
	42	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	21	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



No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205	44	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	3	78 minutes
	45	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		68 minutes
	46	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	2	90 minutes no failure / interruption
	47	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		27 minutes
	48	2 cables (N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	1	48 minutes
	49	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		90 minutes no failure / interruption
	50	cable HDGs FE180 PH90/E30-E90 3x1,5 mm2 300/500 V + fireboxes PMO1	17	90 minutes no failure / interruption
	51	cable HDGs FE180 PH90/E30-E90 3x1,5 mm2 300/500 V + fireboxes PMO1		90 minutes no failure / interruption
	52	2 cables HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V	15b	71 minutes
	53	2 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	13	69 minutes
	54	2 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	12	75 minutes
	55	2 cables HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		90 minutes no failure / interruption
	56	2 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	11	90 minutes no failure / interruption
	57	2 cables HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		90 minutes no failure / interruption
	58	7 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	22	90 minutes no failure / interruption
	59	4 cables HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		90 minutes no failure / interruption
	60	3 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V		90 minutes no failure / interruption
	61	7 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	20	90 minutes no failure / interruption
	62	4 cables HDGs FE180 PH90/E30-E90 2x1 mm2 300/500 V		90 minutes no failure / interruption
	63	3 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V		90 minutes no failure / interruption
64	2 cables HTKGs FE180 PH90/E30 2x0,75 mm2 110 V	19	90 minutes no failure / interruption	
65	2 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V		90 minutes no failure / interruption	
66	2 cables HTKGs FE180 PH90/E30 2x0,75 mm2 110 V	18	90 minutes no failure / interruption	
67	2 cables HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V		90 minutes no failure / interruption	

[1] The test was discontinued in 35th minute at the request of test sponsor

Specimens S1 – S49 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Specimens S7, S8, S9, S50 and S51 were tested by three-phase voltage supply 1 x 230V with bulbs 240V / 60 W.

Specimens S52 – S67 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.

Circuit breakers with rating 3 A were used.



4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 3.2 of DIN 4102 – 12: 1998-11.

4.2 CLASSIFICATION ACCORDING TO DIN 4102-12: 1998-11

The element, **Power and communication cables Technokabel S.A. at cable bearing system BAKS**, is classified according to the following combinations of performance parameters and classes as appropriate.

Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable trays KBJ400H60 and partition PGJ60 + cover PKJ400 with clips ZPD H60. Consoles combined of supports CWP40H22/05 and threaded rods PG M12. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 1.	E 30	n x ≥ 1,5 mm ² n ≥ 2 E 30
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable mesh trays KDS/KDSO400H60. Consoles combined of supports CWP40H22/05 and threaded rods PG M12. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 2.	E 90	Without classification
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		Without classification	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable ladders DUD400H60. Consoles combined of supports CWP40H22/05 and threaded rods PG M12. Loading 25kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 3.	E 60	n x ≥ 1,5 mm ² n ≥ 2 E 60
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 60	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV	Cable trays KCL/KCOL300H60 and partition PGL H60. Consoles WPCB900, spacers BR55, brackets WWS/WWSO300. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 4 and 7.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV		E 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable mesh trays KDS/KDSO300H60. Consoles WPCB900, spacers BR55, brackets WWS/WWSO300. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 5 and 8.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		Without classification	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV	Cable ladders DUD300H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO300. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 6 and 9.	E 60	n x ≥ 1,5 mm ² n ≥ 2 E 60
	(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV		E 30	
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV	Cable ladders DUD300H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO300. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 6 and 9.	E 60	n x ≥ 1,5 mm ² n ≥ 2 E 60
	(N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV		E 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable ladders DUD300H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO300. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Tracks No. 6 and 9.	E 90	Without classification
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		Without classification	



Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable ladders DUD400H60 and partition PGDJ40 fixed reversely to steel profiles on ceiling by supports CWP/CWOP40H40/05, ceiling clamps UDC and hangers UTM/UTMO. Cables fixed by cable clamps UK1/UKO1. Loading 20kg.m ⁻¹ . Supports in spacing of 1500 mm. Track No. 10.	E 60	n x ≥ 1,5 mm ² n ≥ 2 E 30	
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 30		
NHXH FE180 PH90/E90 0,6/1 kV	NHXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90	
	NHXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 90		
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV		Cable trays KGJ/KGOJ400H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 11.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV			E 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV			E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV			E 90	
HGs FE180 PH90/E30-E90 300/500V	HGs FE180 PH90/E30-E90 2x1 mm ² 300/500V			E 90	n x ≥ 1,0 mm ² n ≥ 2 E 90
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V			E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable mesh trays KDS/KDSO400H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 12.		E 30	Without classification
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV			Without classification	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV			E 90	Without classification
	(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV			Without classification	
HGs FE180 PH90/E30-E90 300/500V	HGs FE180 PH90/E30-E90 2x1 mm ² 300/500V		E 90	n x ≥ 1,0 mm ² n ≥ 2 E 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V		E 60	n x 2 x ≥ 0,8 mm n ≥ 1 E 60	
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV		Cable ladders DUD400H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 25kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 13.	E 30	n x ≥ 1,5 mm ² n ≥ 2 E 30
	(N)HXH-J FE180 PH30/E30 4x50 RM 0,6/1 kV			E 60	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1,5/1,5 RE 0,6/1 kV			E 60	Without classification
	(N)HXCH FE180 PH90/E90 4x50/25 RM 0,6/1 kV			Without classification	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	E 60		n x 2 x ≥ 0,8 mm n ≥ 1 E 60	



Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 3x1,5 RE 0,6/1 kV (230V)	Cable trays KFL300H60 and partition PGL H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 14.	E 90	Without classification
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV		E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 90	
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1,5 RE 0,6/1 kV	Cable mesh trays KDS/KDSZ200H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 15a.	E 90	Without classification
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		Without classification	Without classification
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500V	Cable mesh trays KDS/KDSZ100H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 15b.	E 60	n x ≥ 1,0 mm ² n ≥ 2 E 60
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable ladders DFP400H60. Consoles WPCB1200, spacers BR55, brackets WWS/WWSO400, holders UPW/UPWO, threaded rods PG M10 and ceiling holders USV/USOV. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Track No. 16.	Without classification	Without classification
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		Without classification	
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 3x1,5 mm ² 300/500V + fireboxes PMO1 (230V)	Cables laid at supports CWP/CWOP40H40. Supports fixed to trapezoidal steel sheets on ceiling (represent roof construction) by hangers WT/WTO120M8 and threaded rods PG M8 in spacing of 1500 mm. Supports loaded in place of joining by 5kg. Track No. 17.	E 90	Without classification
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	Cable hangers OZS/OZSO fixed to trapezoidal steel sheets on ceiling (represent roof construction) by hangers WT/WTO120M6 and threaded rods PG M6 in spacing of 600 mm. Track No. 18.	E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90
HTKGs FE180 PH90/E30 110V	HTKGs FE180 PH90/E30 2x0,75 mm ² 110V		E 90	n x ≥ 0,75 mm ² n ≥ 2 E 90
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V	Cable hangers OZM/OZMO fixed to trapezoidal steel sheets on ceiling (represent roof construction) by hangers WT/WTO120M6 and threaded rods PG M6 in spacing of 600 mm. Track No. 19.	E 90	n x 2 x ≥ 0,8 mm n ≥ 1 E 90
HTKGs FE180 PH90/E30 110V	HTKGs FE180 PH90/E30 2x0,75 mm ² 110V		E 90	n x ≥ 0,75 mm ² n ≥ 2 E 90
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1,5 RE 0,6/1 kV	Cable hangers OZ/OZO fixed to steel profiles on ceiling by clamps ZK8/19 and threaded rods PG M6 in spacing of 600 mm. Track No. 21.	E 90	n x ≥ 1,5 mm ² n ≥ 2 E 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0,6/1 kV		E 90	



Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 3x1,5 RE 0,6/1 kV + fireboxes PMO1 (230V)	Cables laid at supports CWP/CWOP40H40. Supports fixed to steel profiles on ceiling by clamps ZK8/19 and threaded rods PG M8 in spacing of 1500 mm. Supports loaded in place of joining by 5kg. Track No. 23.	E 90	Without classification

4.3 FIELD OF APPLICATION

This classification is valid for the following end use applications:

- § throughout the period during which circuit integrity is to be maintained, neighbouring building components shall not have a negative effect on circuit integrity;
- § although testing is only carried out on cables arranged horizontally, test results also apply to cables arranged either diagonally or vertically (e.g. risers), as long as the cable system is supported in transitional areas (i.e. where it switches from a horizontal to a vertical arrangement) in such a manner that the cables will not slip or kink at corners;
- § test results of function in fire test of cables tested at standard supporting construction are also applicable for tested standard supporting construction of other producers;
- § test results of function in fire test of cables tested at standard supporting construction are also applicable for cables of other producers tested at standard supporting construction;
- § maximal length of increasing routing shall be 3500 mm with consistent horizontal placing of cable with minimal length of 300 mm (apart from cable bending) and with maximal spacing of clips of 300 mm, eventually the cables are stabilized by cable transmissions at floor or ceiling with particular fire resistance;
- § for vertical systems, the test results obtained for cables mounted singly on the ceiling using single clips apply. Brackets of proven suitability may also be used, as long as their spacing is equal to that of the single clips tested;
- § results of testing single cables on the ceiling apply also to cables mounted horizontally on walls;
- § results of testing bunched cables on a ladder or tray also apply to support construction attached to a wall. However, such constructions required proof of suitability by means of a test certificate or other document issued by an accredited testing laboratory.

5. LIMITATIONS

This classification document does not represent type approval or certification of the product.

The classification is valid provided that the product, field of application and standards and regulations are not changed.

Approved:

Signed:

Ing. Štefan Rástocký
leader of the testing laboratory



Bc. Dávid Šubert
technician of the testing laboratory