

FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-145-22-NURE

**Cable supporting system of Niedax with power and communication cables of
Technokabel S.A.**

This is an electronic version of the classification report, which is equivalent to the printed version. The electronic version is always issued, the printed version is issued only at the request of the sponsor. The document does not contain visual signatures of the responsible persons. The validity of the document is conditional upon a valid certified digital seal. The original file containing this document can be downloaded from the secure cloud FIRES, s.r.o., after getting the link from the sponsor. Any information listed in this document is the property of the sponsor and shall not be used or published without written permission. This file may only be modified by the editor i.e. Testing laboratory FIRES, s.r.o. Sponsor is allowed to publish this document in parts only with written permission of the editor.

FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH STN 92 0205: 2014/Z1: 2019

FIRES-JR-145-22-NURE

Name of the product: Cable supporting system of Niedax with power and communication cables of Technokabel S.A.

Sponsor: Niedax GmbH & Co. KG
Asbacher Strasse 141
Linz am Rhein D-53545
Germany

Prepared by: FIRES, s.r.o.
Approved Body No. SK01
Osloboditeľov 282
059 35 Batizovce
Slovak Republic

Task No.: PR-22-0278

Date of issue: 11. 11. 2022

Reports: 2

Copy No.: 2

Distribution list:

Copy No. 1 FIRES, s. r. o., Osloboditeľov 282, 059 35 Batizovce, Slovak Republic

Copy No. 2 Niedax GmbH & Co. KG, Asbacher Strasse 141, Linz am Rhein D-53545, Germany

This expert judgement report with classification may only be used or reproduced in its entirety.



1. INTRODUCTION

This expert judgement report with classification defines the function in fire classification assigned to element „Cable supporting system of Niedax with power and communication cables of Technokabel S.A.” in accordance with the classes given in STN 92 0205: 2014/ Z1: 2019.

This expert judgement report defines field of application which is outside the field of direct application and field of extended application according test standard. This expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

This product has already been classified by FIRES, s.r.o. and number of previous fire resistance expert judgement report with classification is FIRES-JR-150-17-NURE (issued on 06. 12. 2017) with validity until 06. 12. 2022. Document FIRES-JR-145-22-NURE replaces expert judgement report with classification FIRES-JR-150-17-NURE.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cable supporting system of Niedax with power and communication cables of Technokabel S.A., is defined as a cable supporting system with cables with circuit integrity maintenance classes.

2.2 PRODUCT DESCRIPTION

Product comprise of cable supporting system NIEDAX – cable trays, mesh trays, ladders with accessories (consoles, brackets, supports, hangers, etc.) and power and communication halogen free cables of company Technokabel S.A.

Cable supporting system:

Cable tray RLVC 60

Cable tray is made of steel sheet thickness 0,75 mm, 0,8 mm or 0,9 mm thick. Height of side wall is 60 mm and maximum tested width is 400 mm. Trays are fixed together by integrated plug-in connectors and nut bolts (FLM 6x12) or alternatively by connectors RVV50 with same nut bolts. Maximum tested loading is 20kg.m⁻¹. Tested cable trays are RLVC 60.300 and RLVC 60.400.

Cable tray RL 110

Cable tray is made of steel sheet thickness 0,8 mm, 0,9 mm or 1,0 mm thick. Height of side wall is 110 mm and maximum tested width is 400 mm. Trays are fixed together by connectors (RV 110.400) with nut bolts (FLM 6x12). Maximum tested loading is 20kg.m⁻¹. Tested cable tray is RL 110.400.

Cable mesh tray MTC 54

Cable mesh tray is made of longitudinal steel wires either ø 3,9 mm or ø 4,8 mm and transverse steel wires ø 3,9 mm, ø 4,8 mm or ø 5,8 mm. Height of side wall is 54 mm and maximum tested width of cable mesh tray is 400 mm. Mesh trays are fixed together by integrated plug-in connectors or alternatively by nut bolts GRHKM 6x15. Maximum tested loading is 15kg.m⁻¹. Tested mesh tray is MTC 54.400.

Cable ladder STL 60

Cable ladder is made of steel sheet thickness 1,5 mm and spacing of transoms is 300 mm. Cross-section dimensions of transoms are (30 x 15 x 1,5) 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 side connectors (KLVB 60/4) with nut bolts (FLM8x13, 4 pcs per connector). Maximum tested loading is 20kg.m⁻¹. Tested ladder is STL 60.403.

C-profile 2970

Profile with dimensions (30 x 15) mm is made of bent steel sheet 1,5 mm thick. Profile is used for fixing of cables to ceiling and wall by cable clips.

**C-profile 2987**

Profile with dimensions (48 x 22) mm is made of bent steel sheet 1,75 mm thick. Profile is used for suspension of trays and ladders.

Console HU 5050

Console consists of base plate with dimensions (140 x 80 x 5) mm and support with dimensions (50 x 50 x 2,5) mm. Console is used for gripping of brackets to ceiling.

Bracket KTA and KTAG

Bracket consists of two parts – base plate (from 4,0 to 6,0 mm thick) and bent steel sheet (from 1,5 to 2,0 mm thick) welded together. Brackets are used for fixation of trays and ladders.

Support TAH

Support consists of two parts and is made of bent steel sheet 4,0 mm thick and 30 mm wide. Support is used for suspension of trays and ladders.

Trapezoidal hanger DBT 40

Hanger is made of bent steel sheet 1,5 mm thick.

Spacer HDS

Spacer is made of bent steel sheet 1,5 mm thick with dimensions (80 x 43) mm. Spacers are used for reinforcement of consoles at place of brackets fixation.

Cable clip SAS

Cable clip consists of two parts made of bent steel sheet from 1,2 to 2,0 mm thick and is used for fixation of cables to ceiling or wall.

Cable clamps “B”

Cable clamp consists of two parts made of bent steel sheet from 1,5 to 2,0 mm thick and is used for fixation of cables to ceiling or wall.

All parts of cable supporting systems are made of galvanized steel acc. to EN ISO 1461 and pre-galvanised sheet steel acc. to EN 10346.

Steel chains were used for additional loading of tracks.

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 firefighting (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:

NHXXH FE180 PH30/E30 0.6/1 kV
NHXXH FE180 PH90/E90 0.6/1 kV
NHXCH FE180 PH90/E90 0.6/1 kV
(N)HXXH FE180 PH30/E30 0.6/1 kV
(N)HXXH FE180 PH90/E90 0.6/1 kV
(N)HXCH FE180 PH90/E90 0.6/1 kV
(N)HXCH-J-SERVO FE180 PH90/E90 0.6/1 kV

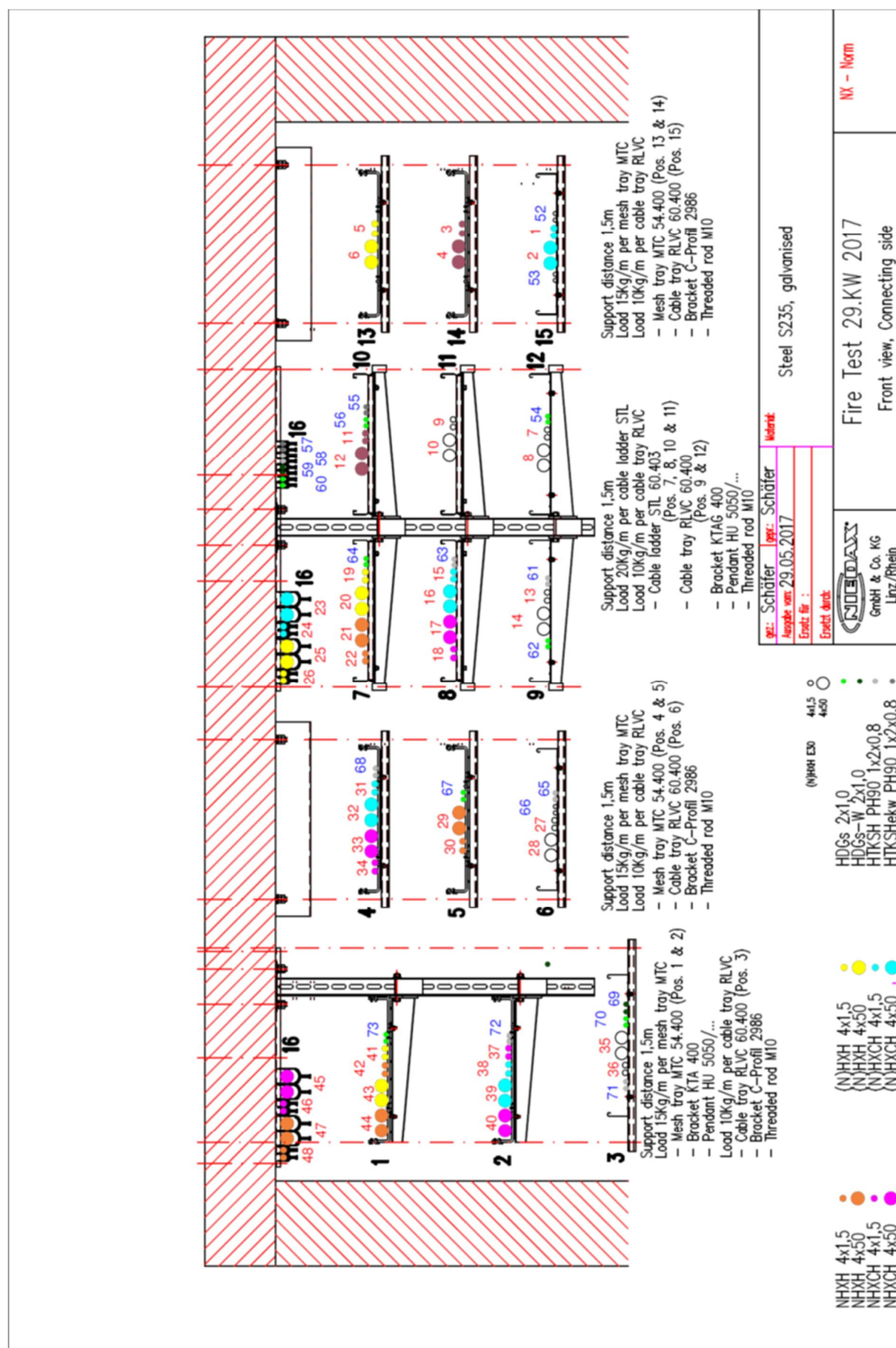
Communication cables:

HTKSH FE180 PH90/E30-E90 240 V
HTKSHekw FE180 PH90/E30-E90 240 V
HDGs FE180 PH90/E30-E90 300/500 V
HDGs-W FE180 PH90/E30-E90 300/500 V
HLGs FE180 PH90/E30-E90 300/500 V
JE-H(St)H Bd FE180/E30-E90 240 V

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

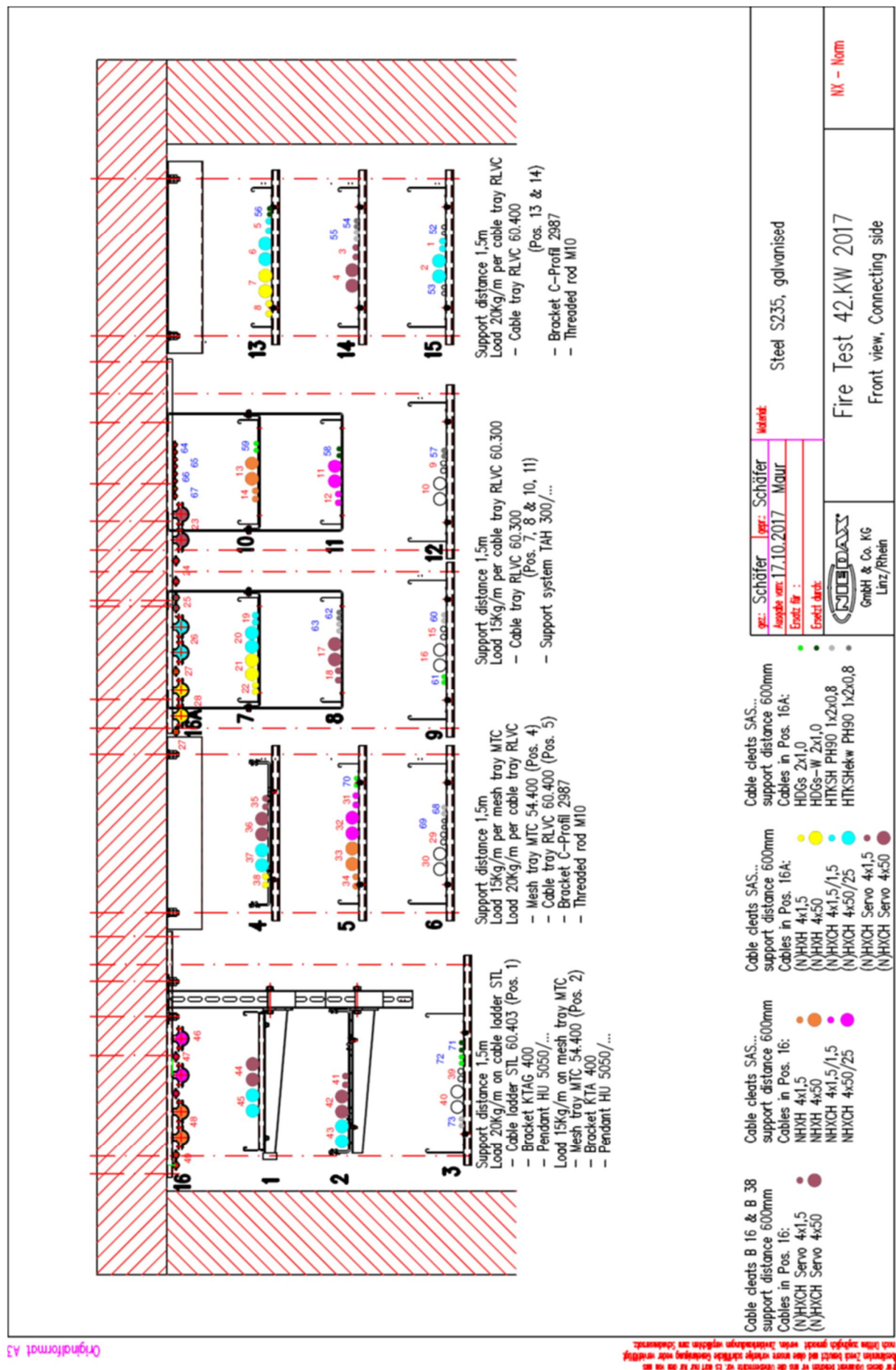
More detailed information about product construction is shown in the drawings which form an integral part of test report [1]. Drawings were delivered by sponsor.

Page: 5/20





Assembly of the tested structure, more information in the test report [2].





3. TEST REPORTS AND EXTENDED APPLICATION REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS AND EXTENDED APPLICATION REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SR	Niedax GmbH & Co. KG, Linz am Rhein, DE	FIRES-FR-066-17-AUNE	19. 07. 2017	STN 92 0205
[2]			FIRES-FR-192-17-AUNE	19. 10. 2017	

3.2 TEST RESULTS

No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205: 2014	1	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	15	76 minutes
	2	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	3	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	14	65 minutes
	4	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		37 minutes
	5	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	13	86 minutes
	6	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	7	2 cables NHHX-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	12	32 minutes
	8	2 cables NHHX-J FE180 PH30/E30 4x50 RM 0.6/1 kV		86 minutes
	9	2 cables (N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	11	90 minutes no failure / interruption
	10	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		68 minutes
	11	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	10	90 minutes no failure / interruption
	12	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		44 minutes
	13	2 cables (N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	9	90 minutes no failure / interruption
	14	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		43 minutes
	15	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	8	90 minutes no failure / interruption
	16	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		33 minutes
	17	2 cables NHHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	18	2 cables NHHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	19	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	7	90 minutes no failure / interruption
	20	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	21	2 cables NHHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	22	2 cables NHHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	23	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV	16	90 minutes no failure / interruption
	24	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	25	2 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		90 minutes no failure / interruption
	27	2 cables NHHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	6	31 minutes
	28	2 cables NHHXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	29	2 cables NHHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	5	90 minutes no failure / interruption
	30	2 cables NHHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	31	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	4	90 minutes no failure / interruption
	32	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		45 minutes
	33	2 cables NHHXCH FE180 PH90/E90 4x50/25 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: 2014	34	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	35	2 cables NHXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV	3	74 minutes
	36	2 cables NHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV		37 minutes
	37	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	2	90 minutes no failure / interruption
	38	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	39	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		84 minutes
	40	2 cables NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	41	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV	1	90 minutes no failure / interruption
	42	2 cables NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		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 NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	45	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	16	90 minutes no failure / interruption
	46	2 cables NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	47	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	48	2 cables NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	52	2 cables JE-H(St)H Bd FE180/E30-E90 1x2x0.8 mm 240 V	15	24 minutes
	53	2 cables HLGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		30 minutes
	54	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V	12	90 minutes no failure / interruption
	55	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	10	90 minutes no failure / interruption
	56	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	57	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	16	90 minutes no failure / interruption
	58	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V		90 minutes no failure / interruption
	59	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	60	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	61	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	9	61 minutes
	62	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		31 minutes
	63	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	8	90 minutes no failure / interruption
	64	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	7	90 minutes no failure / interruption
	65	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	6	35 minutes
	66	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V		89 minutes
	67	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	5	90 minutes no failure / interruption
	68	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	4	90 minutes no failure / interruption
	69	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V	3	90 minutes no failure / interruption
	70	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	71	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V		51 minutes
	72	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	2	90 minutes no failure / interruption
	73	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	1	90 minutes no failure / interruption
[2] STN 92 0205: 2014	1	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	15	90 minutes no failure / interruption
	2	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	3	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	14	90 minutes no failure / interruption
	4	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	5	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	13	90 minutes no failure / interruption
	6	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	7	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	8	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	9	2 cables NHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	12	30 minutes
	10	2 cables NHXH-J FE180 PH30/E30 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
[2] STN 92 0205: 2014	11	2 cables NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV	11	90 minutes no failure / interruption
	12	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	13	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV	10	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)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	9	87 minutes
	16	2 cables (N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	17	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	8	90 minutes no failure / interruption
	18	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		75 minutes
	19	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	7	90 minutes no failure / interruption
	20	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	21	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	22	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	23	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	16A	90 minutes no failure / interruption
	24	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV		88 minutes
	25	2 cables (N)HXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	26	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	27	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	28	2 cables (N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	29	2 cables NHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	6	28 minutes
	30	2 cables NHXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	31	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV	5	90 minutes no failure / interruption
	32	2 cables NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	33	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		47 minutes
	34	2 cables NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		48 minutes
	35	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	4	81 minutes
	36	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	37	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	38	2 cables (N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	39	2 cables NHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV	3	28 minutes
	40	2 cables NHXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	41	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV	2	9 minutes
	42	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	43	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	44	2 cables (N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV	1	90 minutes no failure / interruption
	45	2 cables (N)HXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV		90 minutes no failure / interruption
	46	2 cables NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV	16	85 minutes
	47	2 cables NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	48	2 cables NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	49	2 cables NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV		90 minutes no failure / interruption
	52	2 cables JE-H(St)H Bd FE180/E30-E90 1x2x0.8 mm 240 V	15	62 minutes
	53	2 cables HLGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	54	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	14	90 minutes no failure / interruption
	55	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V		90 minutes no failure / interruption
	56	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V	13	90 minutes no failure / interruption



No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[2] STN 92 0205: 2014	57	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	12	90 minutes no failure / interruption
	58	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V	11	90 minutes no failure / interruption
	59	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	10	25 minutes
	60	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	9	28 minutes
	61	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		59 minutes
	62	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	8	46 minutes
	63	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V		44 minutes
	64	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V	16A	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 HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	67	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	68	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V	6	90 minutes no failure / interruption
	69	2 cables HTKSHekw FE180 PH90/E30-E90 1x2x0.8 mm 240 V		90 minutes no failure / interruption
	70	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V	5	33 minutes
	71	2 cables HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V	3	90 minutes no failure / interruption
	72	2 cables HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V		90 minutes no failure / interruption
	73	2 cables HTKSH FE180 PH90/E30-E90 1x2x0.8 mm 240 V		72 minutes

- [1] The fire test was terminated in the 94th minute upon request of test sponsor.
Specimens S1 – S48 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S73 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.
Circuit breakers with rating 3 A were used.
- [2] The fire test was terminated in the 94th minute upon request of test sponsor.
Specimens S1 – S49 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S73 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. CHANGES OF PRODUCT OR PRODUCT FINAL USAGE WHICH EXCEED A RANGE OF DIRECT OR EXTENDED APPLICATION

- Beyond the range of extended application in this expert judgement report is allowed to use a power cables also with one conductor.

5. REASONS SUPPORTING THE PERMIT OF CHANGES

Number of conductors will not affect of functional resistance in fire, if the same cable construction is maintained.



6. CLASSIFICATION AND FIELD OF APPLICATION

6.1 CLASSIFICATION ACCORDING TO STN 92 0205: 2014

The element, **Cable supporting system of Niedax with power and communication cables of Technokabel S.A.**, 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
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]	Cable mesh tray MTC 54.400. Consoles HU 5050, brackets KTA 400, spacers HDS 5050. Loading 15kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 1 and 2 [1] No. 2 [2]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
NHXXCH FE180 PH90/E90 0,6/1 kV	NHXXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5/1,5 mm ² n ≥2 PS 90
	NHXXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [1]		PS 90	
(N)HXXH FE180 PH90/E90 0,6/1 kV	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
(N)HXXCH FE180 PH90/E90 0,6/1 kV	(N)HXXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		Without classification	Without classification
	(N)HXXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]	Cable tray RLVC 60.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation to ceiling by suspension devices DBG12. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard system No. 3 [1]	PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
NHXXH FE180 PH30/E30 0,6/1 kV	NHXXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [1]		PS 30	n x ≥1,5 mm ² n ≥1 PS 30
	NHXXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [1]		PS 60	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 45	n x 2 x ≥0,8 mm n ≥1 PS 45
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 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
NHXXH FE180 PH30/E30 0,6/1 kV	NHXXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [2]	Cable tray RL 110.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation directly to ceiling. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard system No. 3, 9 and 12 [2]	PS 15	n x ≥1,5 mm ² n ≥1 PS 15
	NHXXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [2]		PS 60	n x ≥1,5 mm ² n ≥1 PS 60
	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 15	n x 2 x ≥0,8 mm n ≥1 PS 15
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 45	n x ≥1,0 mm ² n ≥2 PS 45
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]	Cable mesh tray MTC 54.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M10. Loading 15kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 4 – 5 and 13 – 14 [1] No. 4 [2]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
NHXXCH FE180 PH90/E90 0,6/1 kV	NHXXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5/1,5 mm ² n ≥1 PS 90
	NHXXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [1]		PS 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 60	n x ≥1,5 mm ² n ≥1 PS 60
	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90

¹⁾ Supporting construction is made of segments of steel sheets 1,2 mm thick bent to wave 550 mm long. Individual segments are fixed to ceiling by 4 pcs of anchors in spacing of 1500 mm.



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
NHXXH FE180 PH30/E30 0,6/1 kV	NHXXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [1]	Cable tray RLVC 60.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M10. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 6 and 15 [1]	PS 30	n x ≥1,5 mm ² n ≥1 PS 30
	NHXXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [1]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 60	n x ≥1,5 mm ² n ≥1 PS 60
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 30	n x 2 x ≥0,8 mm n ≥1 PS 30
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 60	n x 2 x ≥0,8 mm n ≥1 PS 60
HLGs FE180 PH90/E30-E90 300/500V	HLGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 30	n x ≥1,0 mm ² n ≥2 PS 30
JE-H(St)H Bd FE180/E30-E90 240V	JE-H(St)H Bd FE180/E30-E90 1x2x0,8 mm 240 V [1]		PS 15	n x 2 x ≥0,8 mm n ≥1 PS 15
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]	Cable tray RLVC 60.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 5, 13 and 14 [2]	PS 45	n x ≥1,5 mm ² n ≥1 PS 45
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 45	
NHXCH FE180 PH90/E90 0,6/1 kV	NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5/1,5 mm ² n ≥1 PS 90
	NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [2]		PS 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 30	n x ≥1,0 mm ² n ≥2 PS 30
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 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
NHXXH FE180 PH30/E30 0,6/1 kV	NHXXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [2]	Cable tray RL 110.400. Consoles combined of C-profile 2986 and threaded rods M10. Fixation to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M10. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 6 and 15 [2]	PS 15	n x ≥1,5 mm ² n ≥1 PS 15
	NHXXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HLGs FE180 PH90/E30-E90 300/500V	HLGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
JE-H(St)H Bd FE180/E30-E90 240V	JE-H(St)H Bd FE180/E30-E90 1x2x0,8 mm 240 V [2]		PS 60	n x 2 x ≥0,8 mm n ≥1 PS 60
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]	Cable ladder STL 60.403. Consoles HU 5050, brackets KTAG 400, threaded rods M10, spacers HDS5050. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 7, 8, 10 and 11 [1] No. 1 [2]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
NHXCH FE180 PH90/E90 0,6/1 kV	NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5/1,5 mm ² n ≥1 PS 90
	NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [1]		PS 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 60
	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [1]		PS 60	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	

¹⁾ Supporting construction is made of segments of steel sheets 1,2 mm thick bent to wave 550 mm long. Individual segments are fixed to ceiling by 4 pcs of anchors in spacing of 1500 mm.



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)HXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]	Cable ladder STL 60.403. Consoles HU 5050, brackets KTAG 400, threaded rods M10, spacers HDS5050. Loading 20kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 7, 8, 10 and 11 [1] No. 1 [2]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
(N)HXH FE180 PH30/E30 0,6/1 kV	(N)HXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [1]	Cable tray RLVC 60.400. Consoles HU 5050, brackets KTAG 400, threaded rods M10, spacers HDS5050. Loading 10kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 9 and 12 [1]	PS 90	n x ≥1,5 mm ² n ≥1 PS 30
	(N)HXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [1]		PS 30	
NHXH FE180 PH30/E30 0,6/1 kV	NHXH-J FE180 PH30/E30 4x1.5 RE 0.6/1 kV [1]		PS 30	n x ≥1,5 mm ² n ≥1 PS 30
	NHXH-J FE180 PH30/E30 4x50 RM 0.6/1 kV [1]		PS 60	
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 30	n x ≥1,0 mm ² n ≥2 PS 30
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 60	n x 2 x ≥0,8 mm n ≥1 PS 60
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
NHXH FE180 PH90/E90 0,6/1 kV	NHXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]	Cable tray RLVC 60.300. Supports TAH-D 300/500. Loading 15kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 7, 8, 10 and 11 [2]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	NHXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXH FE180 PH90/E90 0,6/1 kV	(N)HXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
NHXCH FE180 PH90/E90 0,6/1 kV	NHXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5/1,5 mm ² n ≥1 PS 90
	NHXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [2]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	

1) Supporting construction is made of segments of steel sheets 1,2 mm thick bent to wave 550 mm long. Individual segments are fixed to ceiling by 4 pcs of anchors in spacing of 1500 mm.



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)HXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]	Cable tray RLVC 60.300. Supports TAH-D 300/500. Loading 15kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard systems No. 7, 8, 10 and 11 [2]	PS 60	n x ≥1,5 mm ² n ≥1 PS 60
	(N)HXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 30	n x 2 x ≥0,8 mm n ≥1 PS 30
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 45	n x 2 x ≥0,8 mm n ≥1 PS 45
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 15	n x ≥1,0 mm ² n ≥2 PS 15
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]	Track made of C-profiles 2970 fixed to ceiling in spacing of 600 mm. Cables are fixed to profiles by cable yoke clamps type "B". Non-standard systems No. 16 [1]	PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
NHXXCH FE180 PH90/E90 0,6/1 kV	NHXXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5/1,5 mm ² n ≥1 PS 90
	NHXXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [1]		PS 90	
(N)HXXH FE180 PH90/E90 0,6/1 kV	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥2 PS 90
	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
(N)HXCH FE180 PH90/E90 0,6/1 kV	(N)HXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [1]		PS 90	n x ≥1,5 mm ² n ≥1 PS 90
	(N)HXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [1]		PS 90	
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [1]		PS 90	n x ≥1,0 mm ² n ≥2 PS 90
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 90
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [1]		PS 90	n x 2 x ≥0,8 mm n ≥1 PS 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
NHXXH FE180 PH90/E90 0,6/1 kV	NHXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]	Track made of C-profiles 2970 fixed to ceiling in spacing of 600 mm. Cables are fixed to profiles by cable clips SAS. Non-standard systems No. 16 [2]	PS 90	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 1$ PS 90
	NHXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXXH FE180 PH90/E90 0,6/1 kV	(N)HXXH-J FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 1$ PS 90
	(N)HXXH-J FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
NHXXCH FE180 PH90/E90 0,6/1 kV	NHXXCH FE180 PH90/E90 4x1.5/1.5 RE 0.6/1 kV [2]		PS 90	$n \times \geq 1,5/1,5 \text{ mm}^2$ $n \geq 1$ PS 60
	NHXXCH FE180 PH90/E90 4x50/25 RM 0.6/1 kV [2]		PS 60	
(N)HXXCH FE180 PH90/E90 0,6/1 kV	(N)HXXCH FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 90	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 1$ PS 90
	(N)HXXCH FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
(N)HXXCH-J-SERVO FE180 PH90/E90 0,6/1 kV	(N)HXXCH-J-SERVO FE180 PH90/E90 4x1.5 RE 0.6/1 kV [2]		PS 60	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 1$ PS 60
	(N)HXXCH-J-SERVO FE180 PH90/E90 4x50 RM 0.6/1 kV [2]		PS 90	
HTKSH FE180 PH90/E30-E90 240V	HTKSH FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ PS 90
HTKSHekw FE180 PH90/E30-E90 240V	HTKSHekw FE180 PH90/E30-E90 1x2x0,8 mm 240 V [2]		PS 90	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ PS 90
HDGs FE180 PH90/E30-E90 300/500V	HDGs FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	$n \times \geq 1,0 \text{ mm}^2$ $n \geq 2$ PS 90
HDGs-W FE180 PH90/E30-E90 300/500V	HDGs-W FE180 PH90/E30-E90 2x1 mm ² 300/500 V [2]		PS 90	$n \times \geq 1,0 \text{ mm}^2$ $n \geq 2$ PS 90

The element, Cable supporting system of Niedax with power and communication cables of Technokabel S.A. with circuit integrity maintenance classes are classified to classes according to achieved test results of tested cables at tracks.

Other classification is not allowed.

6.2 FIELD OF APPLICATION

This classification is valid for the following end use applications:

General

- the circuit integrity shall not be affected negatively by adjacent building constructions. Although testing is only carried out on test specimens of cable systems arranged horizontally, test results also apply to sloped or vertical arrangement provided the next conditions given in this chapter are met. In such a case the cable system shall be effectively fixed in places where it turns from horizontal to vertical arrangement, i.e. the cable products shall be attached effectively in places of bending;
- direct application of test results obtained from tests of test specimen of cable system support and fixing structures is not possible to another construction project or to any other product from another manufacturer;
- test results obtained for cable system with cable trays are directly applicable also for usage of cable trays coverings; the coverings shall be ensured against movement with a proper manner;



- the condition for validity of direct application of test results is that the support and fixing structure is attached only to such building construction that statically allows it and meets the criterion of fire resistance R according to STN EN 13501-2 at least in the required time of function in fire;
- if the support and fixing structure is fixed directly to a building construction made of a rigid material such as concrete, bricks, aerated concrete or steel load-bearing construction, such anchoring components shall be used, which, in term of their properties, are suitable with respect to used material, used installation method, required thermal attack curve, required period of circuit integrity and mechanical action caused by the support and fixing structure with cables;
- without tests under considered fire temperatures the support and fixing structure may be fixed to a building construction only by means of bolted joints, riveted joints and welded joints made of elements standardized in term of their material and dimensions;
- in case when it is not possible to fix the support and fixing structure directly to a building construction, an additional construction may be used. Design of such construction shall apply all principles for design of support and fixing structure withstanding the fire effects for specified period. It is possible to verify the additional construction properties by means of a calculation in accordance with Eurocodes or by a test; for attachment of the additional construction to an element of building construction all requirements given in clauses 7.1.5 and 7.1.6 of STN 92 0205 apply;
- direct application of function in fire test results must not lead to such construction solutions of cable systems that are in conflict particularly with requirements of chapter 522 of standard STN 33 2000-5-52 and with the requirements of the method of installing cables in electrical installations according to the technical standard.

Cable systems with integrated circuit integrity maintenance

- when cable test specimens according to 6.4.4.1.2 or 6.4.4.1.4 or 6.4.4.1.5 of STN 92 0205 are used the test results are directly applicable to all constructions of tested type of cable product in a specific type of cable system. It is not permitted to transfer the test results between support and fixing structures, which in any parameter differ from standard support structures;
- test results of cable systems obtained from tests with standard support structures from specified manufacturer are directly applicable also to tested cable systems with standard support structures of the same type from another manufacturer;
- test results of cable systems with cable trays or cable ladders are applicable to all cable trays and cable ladders with the same construction and with width less than tested. Direct application of test results is possible also to other methods of joining of cable trays and cable ladders than shown on Figure 3b) of STN 92 0205 provided they are assessed by an accredited testing laboratory;
- support structures made of mesh cable trays according to STN EN 61537 are not considered to be standard support structures. In case of test specimens of support structures made according to STN EN 61537 of steel with a finishing the test results are directly applicable also to support structures of the same type and made of stainless steel but not vice versa;
- if a non-standard support structure is tested than the test results may be directly applied also to a similar standard support structure within a range stated by accredited testing laboratory;
- test results of a test specimen of cable system with cable trays or cable ladders which are suspended on the floor using suspension devices are directly applicable to these cable systems fixed to a wall;
- test results of a test specimen of cable system with cable trays or cable ladders are directly applicable to all cable system parts used for changing of direction or dimension or for termination of lengths (elbows, fittings of shape T, cross elements) provided that individual disposition has been assessed by an accredited testing laboratory;
- in case of test with specimen of cable system with cable trays or cable ladders with joining point positioned in the middle of distance between supporting constructions, allowance of $\pm 5\%$, test result is directly applicable to any position of joining point between supporting constructions. If the position of joining point is closer to one of supporting constructions the test result is directly applicable only in case the point of cable tray or cable ladder joining is positioned in this reduced distance from supporting construction;
- test results of a test specimen of cable system with cable trays or cable ladders may be directly applied also in case of finishing by means of a coloured paint or spray representing a non-substantial component according to STN EN 13501-1; this painting or spraying may be realised only by manufacturer of cable trays or ladders. If the thickness of finishing layer is greater than given in STN EN 13501-1 a test according this standard shall be carried out;
- test results obtained from test of specimen of cable system with cable clips under the floor are directly applicable also to a horizontal cable system with cable clips on the wall;



- test results obtained from test of specimen of cable system with cable clips are directly applicable also to attachment of a number of cable products into one cable clip but maximal of three. For arrangement of more than 3 cables into one clip it a test shall be carried out;
- test results from test of cable system with cable clips under the floor are directly applicable to vertical cable system with cable clips on a wall provided that the cable product in cable system is effectively fixed (i.e. the distance between effective fixings is $\leq 3\,500$ mm and the distance between cable clips is ≤ 300 mm) according to standard;
- effective method of fixing of cable system according to Figure 5a) requires the usage of metal cable clips tested in standard support structures which are protected (spacing between protected clips is $\leq 3\,500$ mm) by cladding and sealing against direct effect of heat exposition. The suitability of such protection solution must be assessed by and accredited testing laboratory;
- another method of efficient fixing of cable product in a vertical cable system with cable clips using so-called meander dilatation fixing is shown on Figure 5b) of STN 92 0205;
- cable product in a vertical cable system with cable clips may be effectively fixed also by means of sealing of openings in ceilings and floors according to Figure 5c) of STN 92 0205 provided that the penetration seal satisfies fire resistance classification according to STN EN 13501-2 with period at least equal to period of cable system circuit integrity. However penetration seal fire resistance requirements resulting from fire safety disposition of the building according to relevant enactments are not affected;
- for vertical cable system with cable clips it is allowed to arrange more than one cable product into one clip but maximum of 3. For arrangement of more than 3 cable products into one clip it is necessary to carry out test with a method of effective fixing of cable products according to 7.4.12 of STN 92 0205;
- test results obtained from test with specimen of cable system with cable clips are directly applicable also to usage of protective tube for mechanical protection of cable product in accordance with conditions given in 7.6 of STN 92 1101-1. Different application of protective tube is considered as non-standard support structure; such structure shall be tested according to this standard and test result may be directly applied only to a horizontal arrangement;
- to achieve full classification of cable product of specified type it is possible to combine test results from two tests only after an assessment by approved testing laboratory;
- if a test specimen of cable for distribution of electric power with maximal cross-section of conductor less than 50 mm^2 is used, than test results are directly applicable to all cross-sections of conductors within a range from minimal to maximal tested conductor cross-section;
- in case of cable products for distribution of electric power with five or four conductors test results from tests with cable test specimen are directly applicable also to cable products with a less number of conductors (excepting cable products with one conductor);
- if test specimens of cables for electric power distribution with cross-section and number of conductors other than specified, than test results are directly applicable only to tested type of cable product with tested cross-section of conductor and type of cable system;
- in case only cable products for electric power distribution with minimal or maximal cross-section of the conductors passed the test satisfactorily, the test results are directly applicable only to tested type and cross-section of conductors and type of cable system;
- test results from testing of a test specimen of cables for control and communication are directly applicable to all constructions of specified type with diameter and number of conductors equal to or greater than those in cable test specimen;
- when test specimens of control and communication cables with a higher number of conductors are tested the test results are directly applicable only to cable product types with a number of conductors equal to or greater than that tested. The test results are directly applicable only to cable products with the same or greater diameter of conductor as used in cable test specimen;

Products used for connection of cables

- test results obtained for products used for connection of cables may be directly applied also to an application with cable products from another manufacturer which were tested following this standard and those constructional realisation was assessed by an approved testing laboratory;

6.3 FIELD OF EXTENDED APPLICATION

- classification for type of cable (by cross-sections and number of conductors) is valid only for tested cable types, number and cross-sections of conductors;
- classification for cable is valid for all numbers and cross-sections of tested cable type;
- test results of cable systems placed on a non-standard support structures are directly applied only to the tested cable systems;



6.4 LABELING OF CABLE TRACK

Contractor marks cable system by attachment of label which must contain the following informations:

- name of responsible person, who installed the system;
- name of cable system as it is stated in this judgement;
- class of circuit integrity maintenance and classification report number;
- real value of mechanical loading of cable system by cables
- date of assembly of cable system.

If the track is long, it is appropriate to repeat the labelling approximately every 50 m.

7. 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 by:

Ing. Štefan Rástocký
Chief Operating Officer

Prepared by:

Ing. Slavomír Hudák
Technician of the Testing Laboratory

