

FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-136-18-NURE

**Cable supporting system NIEDAX with power and communication
halogen-free cables PRAKAB**

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FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH ČSN 73 0895: 2016

FIRES-JR-136-18-NURE

Name of the product: Cable supporting system NIEDAX with power and communication halogen-free cables PRAKAB

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

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1. INTRODUCTION

This expert judgement report with classification defines the functional resistance in fire classification assigned to element Cable supporting system NIEDAX with power and communication halogen-free cables PRAKAB in accordance with the classes given in ČSN 73 0895: 2016.

Deviations from standard at the test according to ČSN 73 0895: 2016: This test was carried out according to standard STN 92 0205 and meets also all requirements of ČSN 73 0895: 2016 and test results can be directly used for classification of tested cables according to ČSN 73 0895: 2016. There are no deviations identified in process and carrying out of test.

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

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cable supporting system NIEDAX with power and communication halogen-free cables PRAKAB, is defined as a cable supporting system for power and communication halogen free cables with circuit integrity maintenance.

2.2 PRODUCT DESCRIPTION

Product comprised of cable supporting system NIEDAX (cable trays, mesh trays, ladders with accessories) with halogen-free power and communication cables PRAKAB.

Cable supporting system of Niedax:

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 nut bolts. Maximum tested loading is 20kg.m⁻¹. Tested cable trays are RLVC 60.100 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 54,0 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 KL 60

Cable ladder is made of steel sheet thickness 1,5 mm and spacing of transoms is 150 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 600 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 ladders are KL 60.415 and KL 60.615.

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.

C-profile 2986

Profile with dimensions (40 x 22) mm is made of bent steel sheet 2,0 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

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.

Adjustable connection bracket AWG 110/140

Bracket with dimensions (140 x 110) mm is made of steel sheet 4,0 mm thick and is used in combination with U-profile for fixation of cable trays/ladders to wall.

U-profile U 5050

Profile with dimensions (50 x 50) mm is made of perforated bent steel sheet 2,5 mm thick.

U-profile U 50/...

Profile with dimensions (50 x 22) mm is made of perforated bent steel sheet 2,0 mm thick.

Corner angle WWU 150/8

Corner angle with dimensions (60 x 60) mm is made of bent steel sheet 5,0 mm.

Support bracket WA

Bracket with dimensions (52 x 52) mm is made of bent steel sheet 2,0 mm thick.

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.

Barrier strip RW 35

Barrier strip with dimensions (24 x 30) mm is made of bent steel sheet 0,75 mm thick and is used for separation of cables at cable ladders.

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.

**Cable hanger SHS**

Closed cable hanger with dimensions (105 x 129 x 82) mm is made of steel sheet 1,25 mm thick and is used for fixation of cables to wall or ceiling.

All parts of cable supporting systems are made of galvanized steel according to EN ISO 1461.

Steel chains were used for additional loading of tracks.

Cables

Halogen-free cables are used for applications in public buildings, where fire would present a significant hazard to human life as a result of emission of toxic gasses and dense smoke hampering the evacuation or when the losses caused by the corrosive acid gasses would be higher than other damage caused by fire.

Cables used by test:Power cables:

PRAFlaDur 90 (N)HXH FE180 P90-R, P90-R, E90 0.6/1 kV

PRAFlaDur 1-CSKH-V180 P15-R - P60-R, PH 120-R, P75090-R, PS15 - PS60, 0.6/1 kV

Communication cables:

PRAFlaGuard F SSKFH-V180 P15-R - P90-R, PH 120-R, P75090-R, PS15 - PS90

PRAFlaGuard FTP TCSPKFH-V180 P15-R - P90-R, PH 120-R, P75090-R, PS15 - PS90

PRAFlaGuard SPF TCSPKFH-V180 P15-R - P90-R, PH 120-R, P75090-R, PS15 - PS90

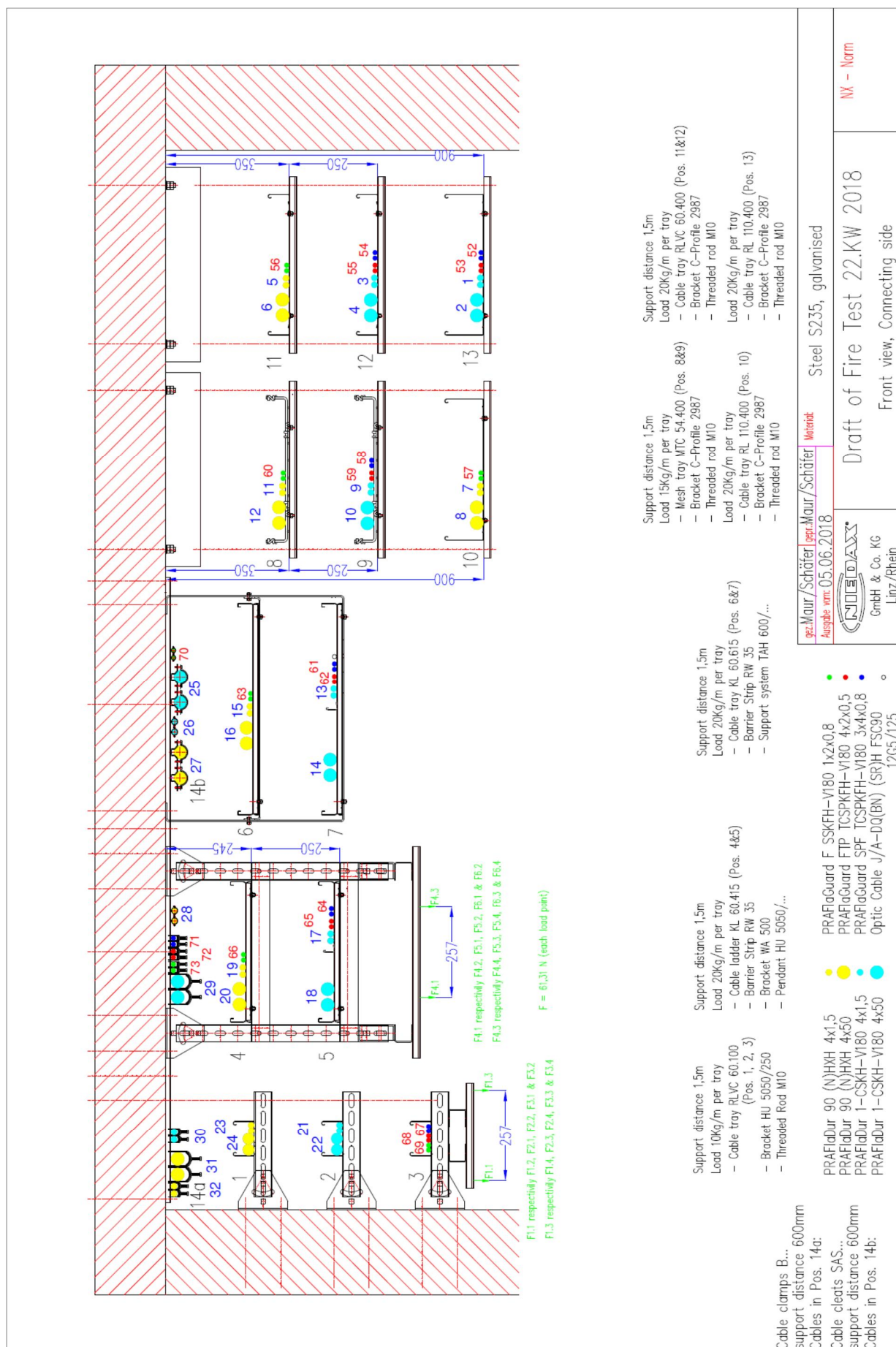
The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

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

More detailed information about product construction is shown in test reports [1] and [2].

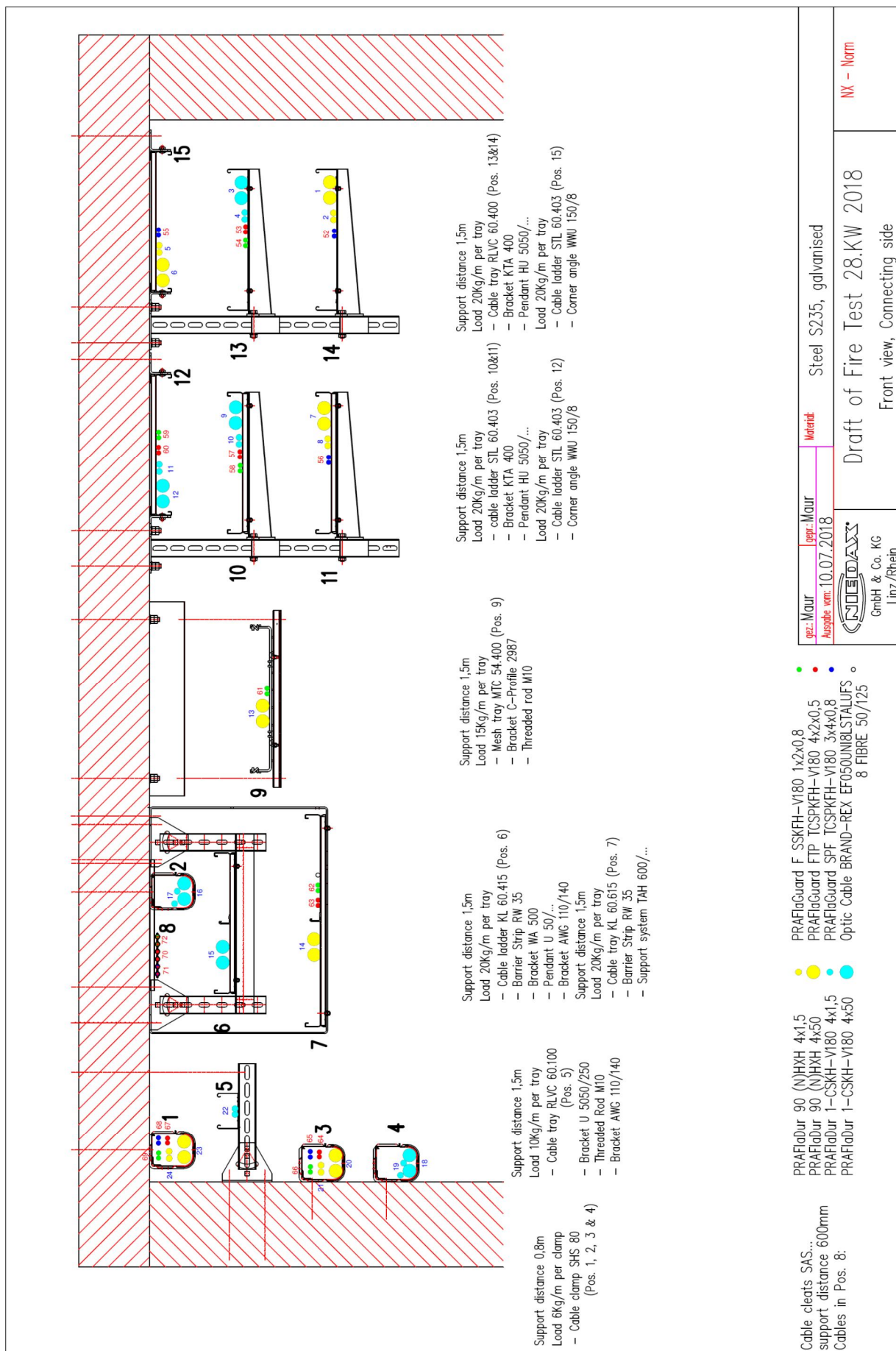


Constructions tested by test [1]:





Constructions tested by test [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-112-18-AUNE	31. 05. 2018	STN 92 0205
[2]			FIRES-FR-150-18-AUNE	12. 07. 2018	

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 PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	13	90 minutes no failure / interruption
	2	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	3	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	12	90 minutes no failure / interruption
	4	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	5	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	11	90 minutes no failure / interruption
	6	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	7	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	10	90 minutes no failure / interruption
	8	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	9	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	9	90 minutes no failure / interruption
	10	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		76 minutes
	11	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	8	90 minutes no failure / interruption
	12	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		60 minutes
	13	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	7	66 minutes
	14	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	15	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	6	90 minutes no failure / interruption
	16	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		59 minutes
	17	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	5	90 minutes no failure / interruption
	18	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		59 minutes
	19	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	4	90 minutes no failure / interruption
	20	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	21	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	2	45 minutes
	22	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	23	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV	1	90 minutes no failure / interruption
	24	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	25	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	14b	90 minutes no failure / interruption
	26	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	27	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	28	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	29	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	14a	90 minutes no failure / interruption
	30	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	31	2 cables PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	32	2 cables PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 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	52	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	13	90 minutes no failure / interruption
	53	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	54	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	12	90 minutes no failure / interruption
	55	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	56	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	11	90 minutes no failure / interruption
	57	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	10	90 minutes no failure / interruption
	58	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	9	90 minutes no failure / interruption
	59	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	60	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	8	67 minutes
	61	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	7	90 minutes no failure / interruption
	62	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		9 minutes
	63	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	6	22 minutes
	64	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	5	90 minutes no failure / interruption
	65	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	66	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	4	90 minutes no failure / interruption
	67	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	3	90 minutes no failure / interruption
	68	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	69	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		90 minutes no failure / interruption
	70	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	14b	35 minutes
	71	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	14a	90 minutes no failure / interruption
	72	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8		90 minutes no failure / interruption
	73	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		90 minutes no failure / interruption
[2] STN 92 0205: 2014	1	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	14	51 minutes
	2	2 cables PRAFlaDur 90 (N)HXH 4x1,5 RE 0.6/1 kV		53 minutes
	3	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	13	90 minutes no failure / interruption
	4	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	5	2 cables PRAFlaDur 90 (N)HXH 4x1,5 RE 0.6/1 kV	15	90 minutes no failure / interruption
	6	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV		43 minutes
	7	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	11	30 minutes
	8	2 cables PRAFlaDur 90 (N)HXH 4x1,5 RE 0.6/1 kV		61 minutes
	9	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	10	90 minutes no failure / interruption
	10	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		85 minutes
	11	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	12	90 minutes no failure / interruption
	12	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV		90 minutes no failure / interruption
	13	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	9	90 minutes no failure / interruption
	14	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	7	90 minutes no failure / interruption
	15	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	6	90 minutes no failure / interruption
	16	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	2	90 minutes no failure / interruption
	17	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	18	2 cables PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV	4	90 minutes no failure / interruption
	19	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV		76 minutes
	20	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	3	36 minutes
	21	2 cables PRAFlaDur 90 (N)HXH 4x1,5 RE 0.6/1 kV		90 minutes no failure / interruption
	22	2 cables PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV	5	90 minutes no failure / interruption
	23	2 cables PRAFlaDur 90 (N)HXH 4x50 RM 0.6/1 kV	1	42 minutes
	24	2 cables PRAFlaDur 90 (N)HXH 4x1,5 RE 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	52	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	14	90 minutes no failure / interruption
	53	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5	13	90 minutes no failure / interruption
	54	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		37 minutes
	55	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	15	90 minutes no failure / interruption
	56	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8	11	90 minutes no failure / interruption
	57	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5	10	90 minutes no failure / interruption
	58	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		25 minutes
	59	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	12	20 minutes
	60	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5		90 minutes no failure / interruption
	61	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	9	90 minutes no failure / interruption
	62	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8	7	8 minutes
	63	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5		8 minutes
	64	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5	3	90 minutes no failure / interruption
	65	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8		34 minutes
	66	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		36 minutes
	67	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5	1	51 minutes
	68	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8		90 minutes no failure / interruption
	69	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		57 minutes
	70	2 cables PRAFlaGuard FTP TCSPKFH-V180 4x2x0,5	8	90 minutes no failure / interruption
	71	2 cables PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8		90 minutes no failure / interruption
	72	2 cables PRAFlaGuard F SSKFH-V180 1x2x0,8		90 minutes no failure / interruption

[1], [2] The tests were discontinued in 94th minute upon request of the 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.



4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 CLASSIFICATION

The element, **Cable supporting system NIEDAX with power and communication halogen-free cables PRAKAB**, 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
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0,6/1 kV [1]	Cable tray RLVC 60.100. Adjustable connection bracket AWG 1140/140, profile U5050 and threaded rod M10. Plastic distance plates used between bracket and wall. Brackets in spacing of 1500 mm. Maximum loading 10kg.m ¹ . Wall installation. Non-standard tracks: No. 1 – 3 [1]. ¹⁾ No. 5 [2].	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0,6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0,6/1 kV [2]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0,6/1 kV [1]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0,6/1 kV [1]	Cable ladder KL 60.415. Consoles combined of two connection brackets AWG 110/140, two profiles U 50/... and horizontal bracket WA 500. Consoles suspended to ceiling. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Suspended installation. Non-standard tracks: No. 4 and 5 [1]. ²⁾ No. 6 [2].	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0,6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0,6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0,6/1 kV [2]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$

¹⁾ Additional supporting construction for lighting devices is constructed under track. Construction consists of two U-profiles (U 5050) fixed longitudinally with track to brackets by nut bolts (FLM 10x25). Profiles are fixed together by 12 nut bolts (FLM 10x25) and reinforced by steel plates 2,0 mm thick. Maximum weight of lighting device 25kg.

²⁾ Additional supporting construction for lighting devices is constructed under track. Construction consists of two U-profiles (U 5050) fixed longitudinally with track to consoles by nut bolts (FLM 10x25) and shelf bracket (TRV 40). Profiles are fixed together by 12 nut bolts (FLM 10x25) and reinforced by steel plates 2,0 mm thick. Maximum weight of lighting device 25kg.



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
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]	Cable ladder KL 60.615. Consoles TAH-D 600 fixed to ceiling through plastic plates. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Suspended installation. Non-standard tracks: No. 6 and 7 [1]. No. 7 [2].	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [2]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]		P60-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P90-R	P60-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P15-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P15-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P90-R
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]	Cable mesh tray MTC 54.400. Consoles combined of C-profile 2986 and threaded rods M10. Consoles suspended to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M8. Consoles in spacing of 1500 mm. Maximum loading 15kg.m ¹ . Suspended installation. Non-standard tracks: No. 8 and 9 [1] No. 9 [2]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [2]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P60-R	P60-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P90-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P90-R
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$ P90-R
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]	Cable tray RLVC 60.400. Consoles combined of C-profile 2986 and threaded rods M10. Consoles suspended to supporting construction ¹⁾ by trapezoidal hangers DBT40 and threaded rods M8. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Suspended installation. Non-standard tracks: No. 11 and 12 [1]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P90-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P90-R
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$ P90-R

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
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]	Cable tray RLVC 60.400. Consoles combined of C-profile 2987 and threaded rods M10. Consoles suspended to ceiling. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Non-standard tracks: No. 10 and 13 [1]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]	Track is 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 track: No. 14a [1]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [1]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [1]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [1]	Track is made of C-profiles 2970 fixed to ceiling in spacing of 600 mm. Cables are fixed to profiles by cable clips SAS. Non-standard tracks: No. 14b [1] No. 8 [2]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [1]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [1]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$



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
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [2]	Tracks are made of closed cable hangers SHS 80 fixed to ceiling in spacing of 800 mm. Maximum loading 6kg.m ¹ . Non-standard tracks: No. 1 and 2 [2]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [2]		P30-R	P30-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [2]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [2]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P45-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P45-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P90-R
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P45-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$ P45-R
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [2]	Tracks are made of closed cable hangers SHS 80 fixed to wall in spacing of 800 mm. Maximum loading 6kg.m ¹ . Non-standard tracks: No. 3 and 4 [2]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [2]		P30-R	P30-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [2]		P60-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [2]		P90-R	P60-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P30-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P30-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P30-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P30-R
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$ P90-R
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0.6/1 kV [2]	Cable ladder STL 60.403. Consoles HU 5050, brackets KTA 400 and spacers HDS 5050. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Suspended installation. Non-standard tracks: No. 10 and 11 [2]	P60-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0.6/1 kV [2]		P30-R	P30-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0.6/1 kV [2]		P60-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0.6/1 kV [2]		P90-R	P60-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P15-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$ P15-R
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$ P90-R
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$ P90-R



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
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0,6/1 kV [2]	Cable tray RLVC 60.400. Consoles HU 5050, brackets KTA 400 and spacers HDS 5050. Consoles in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Suspended installation. Non-standard tracks: No. 13 and 14 [2]	P45-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0,6/1 kV [2]		P45-R	P45-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0,6/1 kV [2]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0,6/1 kV [2]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P30-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$
PRAFlaDur 90 (N)HXH FE180 0,6/1 kV	PRAFlaDur 90 (N)HXH FE180 4x1,5 RE 0,6/1 kV [2]	Cable ladder STL 60.403 fixed to ceiling at up-side down position by corner angles WWU 150/8. Cables fixed to ladder by cable clamps type B spaced each 300 mm. Fixation in spacing of 1500 mm. Maximum loading 20kg.m ¹ . Ceiling installation. Standard tracks: No. 12 and 15 [2]	P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 90 (N)HXH FE180 4x50 RM 0,6/1 kV [2]		P30-R	P30-R
PRAFlaDur 1-CSKH-V180 0,6/1 kV	PRAFlaDur 1-CSKH-V180 4x1,5 RE 0,6/1 kV [2]		P90-R	$n \times \geq 1,5 \text{ mm}^2$ $n \geq 2$
	PRAFlaDur 1-CSKH-V180 4x50 RM 0,6/1 kV [2]		P90-R	P90-R
PRAFlaGuard F SSKFH-V180	PRAFlaGuard F SSKFH-V180 1x2x0,8 [2]		P15-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 1$
PRAFlaGuard SPF TCSPKFH-V180	PRAFlaGuard SPF TCSPKFH-V180 3x4x0,8 [2]		P90-R	$n \times 4 \times \geq 0,8 \text{ mm}$ $n \geq 3$
PRAFlaGuard FTP TCSPKFH-V180	PRAFlaGuard FTP TCSPKFH-V180 4x2x0,8 [2]		P90-R	$n \times 2 \times \geq 0,8 \text{ mm}$ $n \geq 4$

The element, **Cable supporting system NIEDAX with power and communication halogen-free cables PRAKAB** with circuit integrity maintenance classes are classified to classes according to achieved test results of tested cables at tracks. Other classification is not allowed.

4.2 FIELD OF APPLICATION

This classification is valid for the following end use applications:

General:

- cable track functionality shall not be affected negatively by adjacent building or technological elements, another cable tracks, piping tracks or other technological device;
- test results are applicable only in case the cable track in practice will be fixed to a building construction which is sufficient in term of its statics performance for period of functionality in fire, i. e. the element meets the loadbearing criterion R according to EN 13501-2+A1;
- if the cable track is fixed directly to a building construction element made of material such as concrete, bricks, aerated concrete or steel supporting structure, 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 functionality in fire and mechanical actions caused by cable support construction with cables;

- the cable track can be fixed for example by means of bolted joints, riveted joints, welded joints or joints of direct assembling (inserting). Suitability of fixing type for the purpose shall be demonstrated by a test or statics calculation;
- 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 previous clause shall be met;
- the number of cables placed on the cable support construction in horizontal arrangement is limited just by area disposition, but the maximal load acting on the cable support construction, stated by manufacturer, shall not be exceeded. Manufacturer specification of the number of cables, if available, shall also be respected;
- if cables run freely they need not be fixed by clips when they are arranged horizontally on trays or ladders;
- on their whole length the cables shall be installed in such a manner, that the minimal bend radius stated by manufacturer is observed;
- also cables without functionality in fire may be placed on cable system together with cables with functionality in fire but only under the condition, that minimum distance of 200 mm is observed between them or they are separated by means of suitable fire resistant partition. In addition the common cable management is possible only in case when each power cable or conductor is insulated to maximal voltage used in power management system;
- communication, data and signal cables shall be placed in such a way, that at all events a distance minimum of 100 mm is provided between those cables and power cables;

When the cable routes are installed in sloped or vertical position following shall be met:

- in points where it turns from horizontal to other orientation the cable route shall be effectively attached and in orientation other than horizontal the cables shall be fixed firmly also in places of bending whereas the allowable support position maximal distances and the allowable minimal bend radius are retained;
- cables with vertical orientation shall be installed individually into clips arranged with spacing maximum of 300 mm; to reduce the longitudinal tension they have to be effectively attached after each 3500 mm length;
- cables with sloped orientation shall be installed individually into clips arranged with spacing maximum calculated acc. to cl. 8.1.11 of ČSN 73 0895;
- cables with sloped orientation shall be effectively fixed to ensure the reduction of longitudinal tension, provided that maximum distance between two fixing points is defined in standard ČSN 73 0895, cl. 8.1.11;
- cable tracks installed in arrangement with the angle between the horizontal plane and their longitudinal axis is less than 20° are considered as horizontal;

Suitable methods for the longitudinal tension reduction are as follows:

- the standard clips of cables are protected from direct thermal attack by means of a fire casing;
- the meander dilatation arrangement;
- the sealing in floor apertures;

Cables and cable support systems:

- test results are applicable to tested cable route, it means to combination of type, cross-section and manufacturer of the cable and of type and manufacturer of the cable support system;

Test results for power cables are directly applicable as follows:



- where test specimens according to ČSN 73 0895 are used, the worst test result obtained from testing of these specimens applies to all dimensions and tested arrangement method of tested cable;
- if cables with maximal cross-section of the core less than 50 mm² are tested, the worst test result applies to all cross-sections of cables in range of tested cross-sections;
- test result obtained from testing of cables with five or four conductors applies also to cables of the same type with smaller or greater number of conductors;
- in case only cables with minimal or maximal tested cross-section passed successfully the test, the test result is applicable only to the same type of cable, section and arrangement method as tested;

Test results obtained from testing of communication or signal cables are directly applicable as follows:

- test results are applicable to all constructions of specified type with diameter (cross-section) and number of cores equal to or greater than that of test specimen;

Test results for cable supports systems are directly applicable as follows:

- in case the cables are attached into cable clips type SAS or cable clamps B it is allowed to apply test results also to arrangement of more than one cable into one clip but maximum of 3. For arrangement of more than 3 cables into one clip it is necessary to demonstrate the functionality of the assembly by a separate test;
- test results obtained from testing of cables attached under the floor using clips type SAS or cable clamps B are applicable also for attachment by means of cable clips to a wall horizontally;
- test results obtained from testing of installation on cable trays or cable ladders suspended on floor suspension devices are allowed to be applied to support constructions attached to a wall;
- test results obtained from testing of individual cable clips attached to profile ledges are applicable to an attachment of individual clips directly into an element of building construction;
- in case the test was carried out with cable tray or ladder with jointing point placed in the middle between support constructions (± 5 % of their distance) the test results apply to any position of jointing point between support constructions;
- test results from test with specimen of cable trays or ladders are applicable also to event when the surface is treated with a colour painting or spraying in layer of surface density $< 1,0 \text{ kg/m}^2$ or of thickness $< 1,0 \text{ mm}$ in accordance with EN 13501-1+A1. When the thickness or surface density of this layer is of greater value it is necessary to carry out a test according to this standard;
- when test specimens of support constructions made in conformity with EN 61537 ed. 2 form steel with surface treatment are used, the test results are directly applicable to support constructions of the same type made of stainless steel but not vice versa. However, it is necessary to demonstrate the mechanical characteristics of stainless steel in range of test temperatures are equal to or greater than those of steel used in test specimens;

Test results for standard cable support constructions are directly applicable as follows:

- test results from tests of functionality of cables arranged on standard cable support construction by one manufacturer are applicable to tested standard cable support constructions made by another manufacturer. The applicability of test results between constructions which differ from standard constructions in any parameter is not possible;
- in case the test is carried out on nonstandard cable support construction differing from standard support construction just in one parameter, it is possible to apply the test results also to standard cable support construction provided the different parameter within its range covers also parameter of standard cable support construction (e. g. nonstandard cable support construction with attachment spacing greater than that of standard support construction);

Test results for non-standard cable support constructions are directly applicable as follows:

- results from tests carried out on cable trays and cable ladders are applicable to all cable trays and cable ladders of identical construction of smaller width than tested;
- direct application of test results from test on a test specimen is not possible to different design nor to any other product made by another manufacturer;

Direct application for vertical arrangement:

- for cables arranged vertically or with a slope test results obtained from cables arranged individually in cable clips under the floor apply;
- test results carried out on horizontally arranged cable support constructions apply also to vertical or sloped arrangements provided the conditions given in clause 8.1.11 of ČSN 73 0895 are met;

4.3 FIELD OF EXTENDED APPLICATION

- 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 provided that individual disposition has been assessed by an accredited testing laboratory;

NOTE 1 – Typical examples of cable system are: elbows, fittings of shape T, cross elements.

NOTE 2 – In case of cable trays RLVC 60 (RES 60 – 90° elbow; RTS 60 – tee; RTA 60 – extension tee; RBA 60 – 45° elbow; RKS 60 – cross and RGV 60 – connector/joint for vertical offset.

NOTE 3 – In case of cable mesh trays MTC 54 (MTCE 54 - 90° elbow).

4.4 LABELING OF CABLE TRACK

The contractor shall always label the cable track at the accessible place and by permanent way. Label contains following information:

- the name of individual or legal person whose workers have installed the system;
- indication of cable bearing system which is stated in classification report;
- class of function in fire, number of classification report;
- year of installation of cable bearing system.

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

5. LIMITATIONS

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

The classification is valid until 23. 01. 2024 provided that the product, field of application and standards and regulations are not changed.

Approved:

Signed:

Ing. Štefan Rástocký
leader of the testing laboratory



Dávid Šubert
technician of the testing laboratory